Hisense

Refrigerator

Service Manual

Model:BCD-440WPZ/HC1(H)

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 icemaker 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

View of the appliance

1 Door bin
2 Mulion
3 Fridge LED light
4 Door bin
5 Ice maker
6 Freezer LED light
7 Ice storage box
8 Middle freezer drawer
9 Lower freezer drawer
10 Fridge LED light
11 Glass shelves
12 Crisper cover
13 Crisper
14 Multi drawer
15 Glass plates
16 Leveling leg

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 more space in the freezer, you can remove drawers

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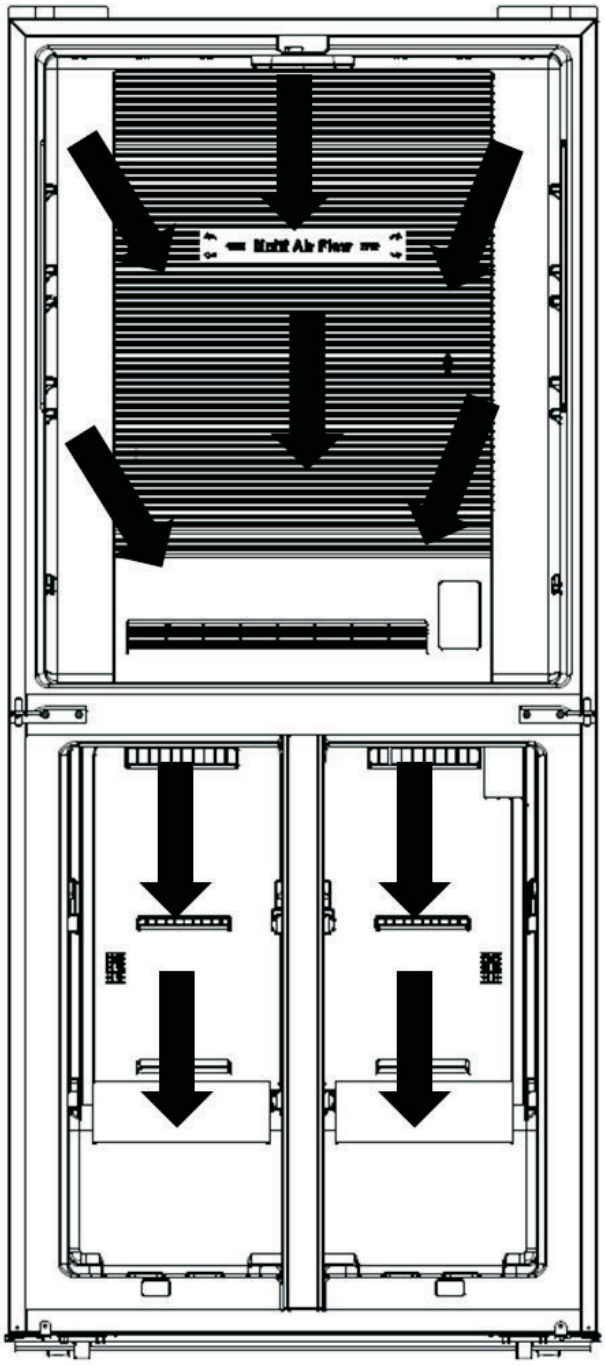
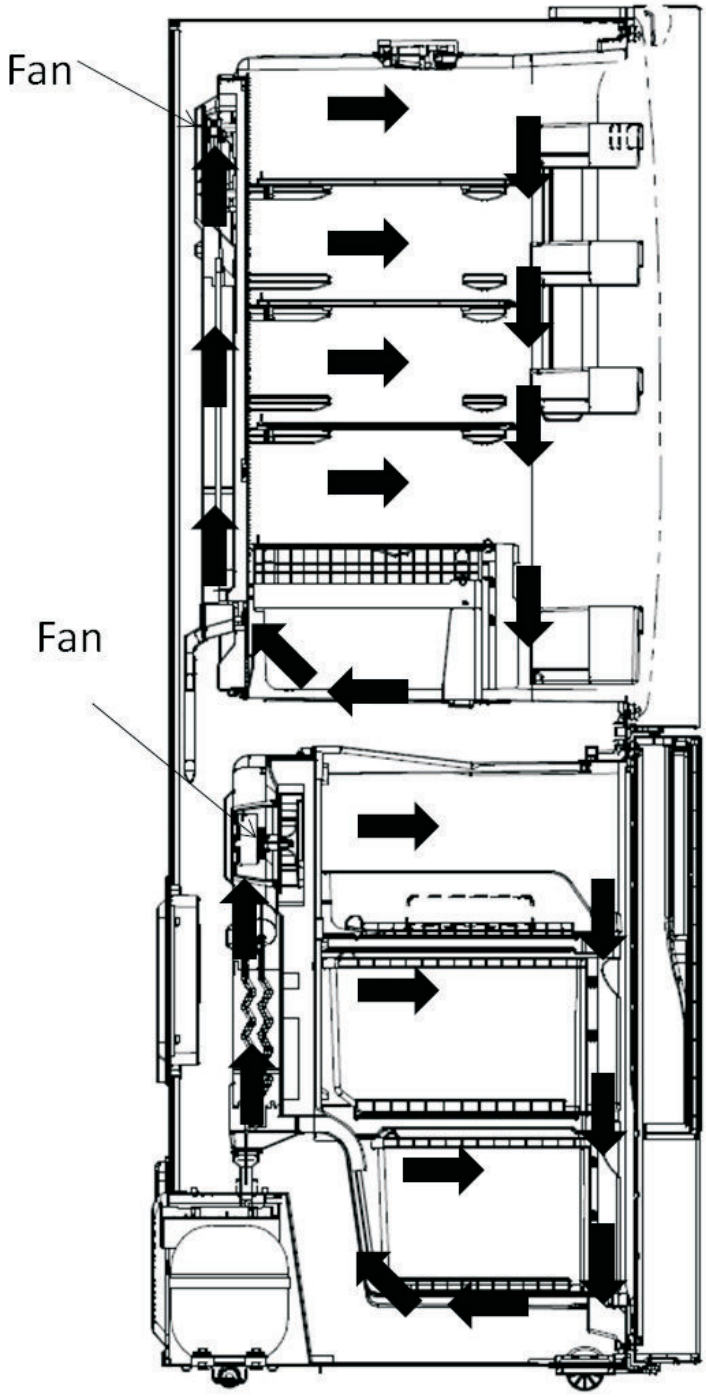
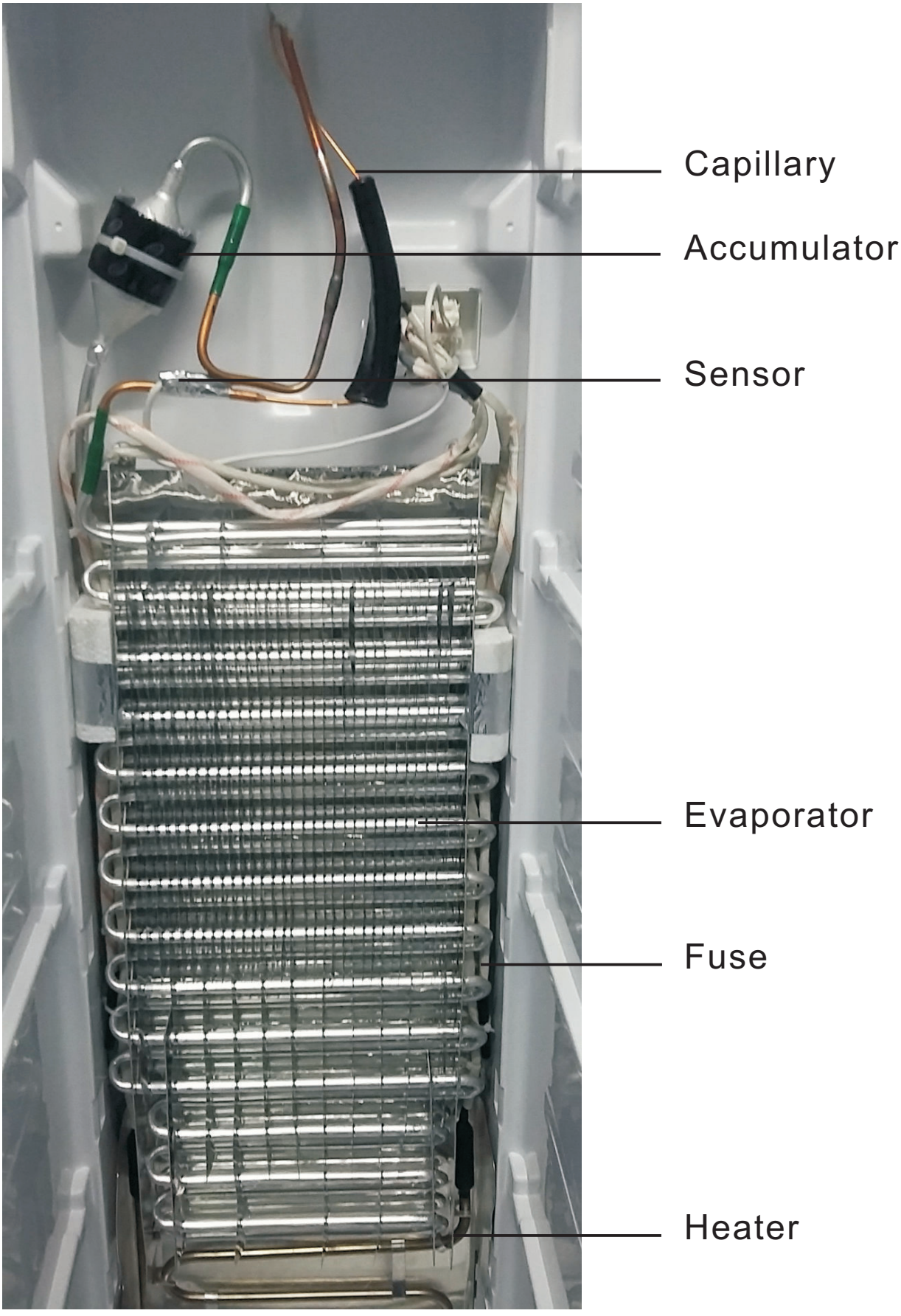
2.2 Wind channel structure

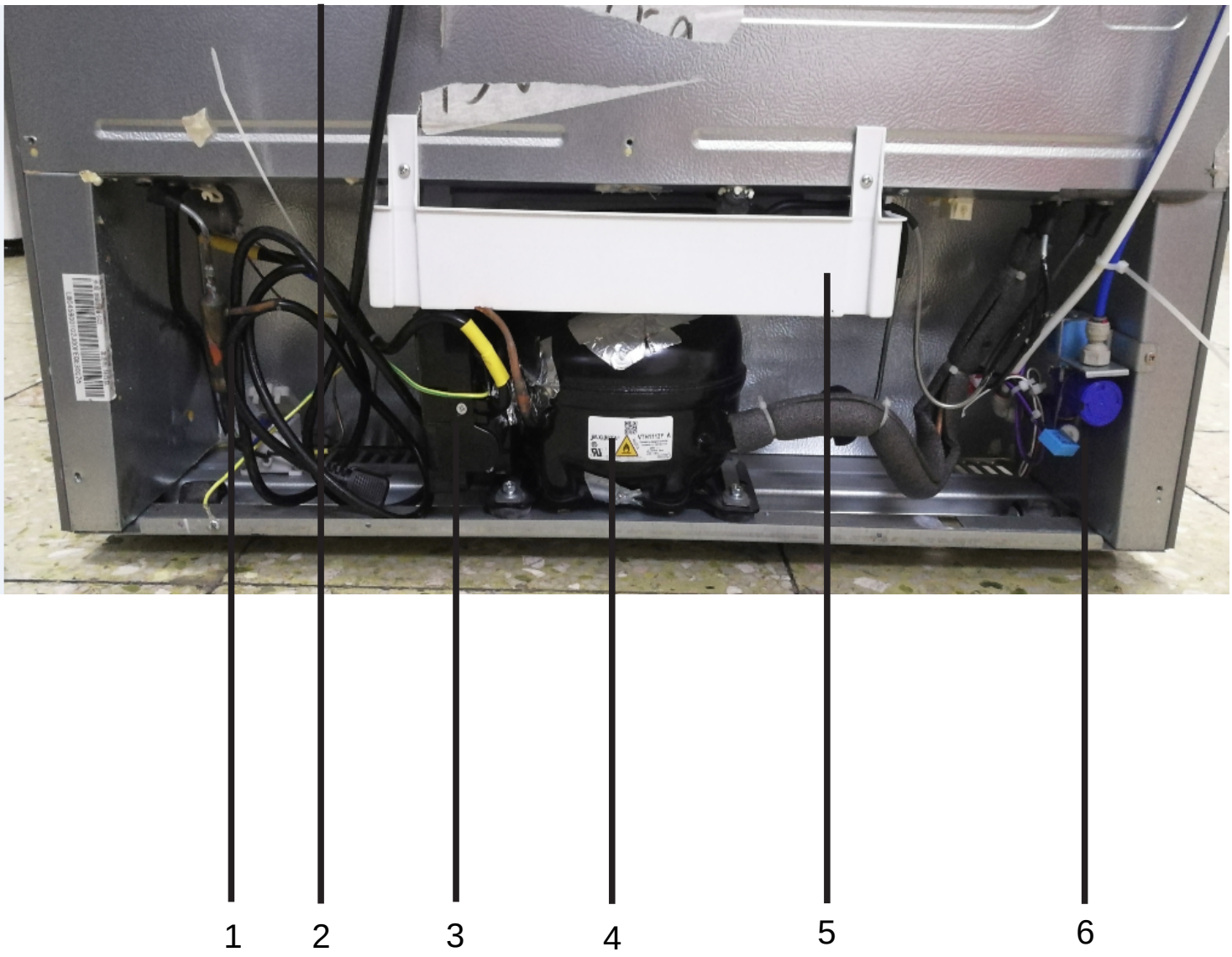




2.3 Evaporator structure



2.4 Compressor room structure



1 Dry filter

2 Electric box

3 Power cord

4 Compressor

5 Evaporation dish

6 Motorized value

3 Basic parameters

230

Content	Unit	Value
Voltage / frequency	V/Hz	110-115/60
Rated current	A	2.8
Rated input power	W	170
Defrost power	W	224
Net capacity	L	431
Net capacity fridge compartmen (Fridge/Chill)	L	71
Net capacity freezer compartment	L	289
Energy efficiency class		DOE
Climate class (SN=10~32°C, N=16~32°C, ST=16~38°C, T=16~43°C)		SN、N、ST
Refigerator room temperature	°C	1~7
Freezer room temperature	°C	-24~-18
Freezer compartment star rating		4 Star
Energy consumption / 24 hours	kWh/24h	1.590
Freezing capacity / 24 hours	kg/24 h	/
Max noise level	dB(A)	=43
Kind of coolant / Charge (R134a/R600a) / grammes	R / g	R600a/65g

4 Operation and functions

4.1 Display controls

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

When the appliance is powered on for the first time, the backlighting of the icons on the display panel will start working. If no buttons have been touched or the doors are closed, the backlighting will turn off after 60 seconds.

Super cool

Super Freeze

Energy Saving

Lock

Ice Maker

The temperature can be changed between ℃ and ° F by pressing "Fridge" button for 3 seconds.

⚠ CAUTION

When you set a temperature, you set an average temperature for the whole refrigerator cabinet. Temperatures inside each compartment may vary from the temperatures displayed on the panel, depending on how much food you store and where you place it. High or low room temperature may also affect the actual temperature inside the appliance.

Ice Control

This button controls the ice maker. You can touch the "Ice On/Off" button to control the ice maker. When the "Ice On/Off" function light is on, the ice maker is working. If you want to lock the ice maker, please touch the "Ice On/Off" button again until the button light is off.

Fridge Temperature Control

Press the "Fridge" button to turn on the refrigerator temperature control, then press and hold the Fridge button to select a temperature setting. If you have set the temperature type to Fahrenheit, the temperature settings cycle from 45°F to 34°F in one degree increments.

39°F–38°F–37°F–36°F–35°F–34°F
40°F–41°F–42°F–43°F–44°F–45°F

If you have set the temperature type to Celsius, the temperature settings cycle from 1°C to 7°C in one degree increments.

7°C—6°C—5°C—4°C
1°C—2°C—3°C

Soft Freeze

Press "Soft Freeze" button to set the soft freeze compartment temperature between 23°F and 0°F to suit your desired temperature, and the compartment temperature indicator will display corresponding value according to the following sequence.

-12℃-13℃--14℃--15℃--16℃--17℃--18℃
-11℃-10℃--9℃--8℃--7℃--6℃--5℃

10°F -9°F -8°F -7°F -6°F -5°F- 4°F- 3°F- 2°F -1°F -0°F
11°F-12°F-13°F-14°F-15°F-16°F-17°F-18°F-19°F-20°F-21°F-22°F-23°F

Super Cool

Use the “Super Cool” feature to cool food faster. Good for cooling food when you add a lot of food.

4.1 Display controls

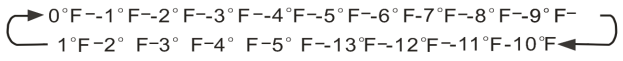
The “Super Cool” icon “” will be illuminated and the fridge temperature setting will display 34℉.

“Super Cool” automatically switches off after 6 hours. The refrigerator temperature setting will revert back to the previous setting.

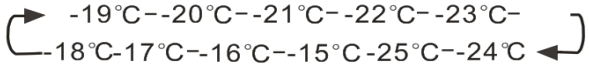
When the “Super Cool” function is on, you can touch the button again to switch it off. The fridge will not retain the “Super Cool” function when powered off.

Freezer Temperature Control

Press the Freezer button to turn on the freezer temperature control, then press and hold the Freezer button to select a temperature setting. If you have set the temperature type to Fahrenheit, the temperature settings cycle from 5°F to -13°F in one degree increments.



If you have set the temperature type to Celsius, the temperature settings cycle from -14°C and -24°C in one degree increments.



Super Freeze

Use the “Super Freeze” feature to freeze food faster. Good for cooling food when you add a lot of food. The “Super Freeze” icon “” will be illuminated and the freezer temperature setting will display -13℉.

Super Freeze can quickly lower the temperature and freeze your food faster than usual. This can retain more of the vitamins and nutrients in fresh food and keep your food longer.

The super freeze mode allows you to freeze items inside with maximum speed. We recommend that you let the appliance operate for 24 hours first. “Super Freeze” automatically switches off after 52 hours. The freezer temperature setting will revert back to the previous setting.

When the “Super Freeze” function is on, you can touch the button again to switch it off. The freezer will not retain the “Super Freeze” function when powered off. If power cutoff happens while super freeze is activated, the super freeze will not be reactivated after power resupplied.

Energy Saving

You can touch this button to turn Energy Saving mode on and off. When you turn Energy Saving on, the Energy Saving icon “” lights up.

The temperature of the fridge is automatically switched to 43℉ and the freezer to 1℉.If Energy Saving is off, the icon “” will go off and the temperature setting will revert back to the previous setting.

Note:

- The control panel will light up when the fridge door is open, or you touch any button.
- The light will go off without touching any buttons or the doors have been closed over one minute.
- When the refrigerator is powered on, all the icons of the control panel will light up for 3 seconds, and a buzzer sounds. And the temperature setting reverts back to the previous setting.

Alarm

- When fridge or freezer door has been opened for over 2 minutes, door alarm will sound. In case of door alarm, buzzer will sound 3 times every 1 minute and will stop alarming automatically after 8 minutes.
- To save energy, please avoid keeping the

4.1 Display controls

door open for a long time when using the appliance. The door alarm can also be cleared by closing the door.

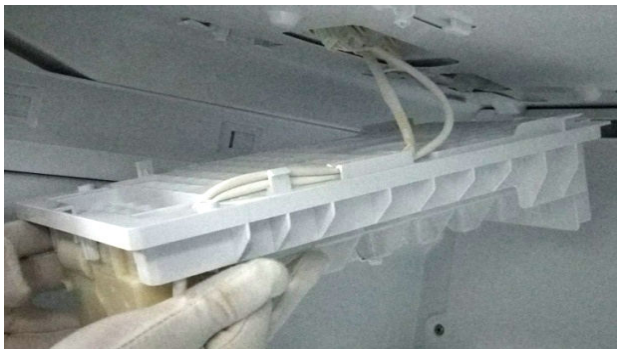
4.2 Ice Maker

4.2.1 Remove ice maker

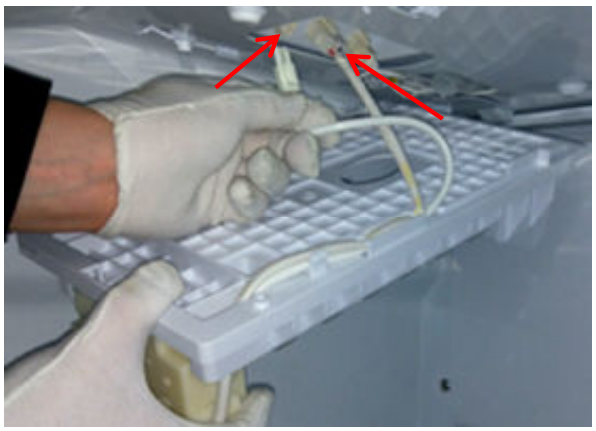
1. Open the freezer door, take the ice storage box and ice maker cover out.

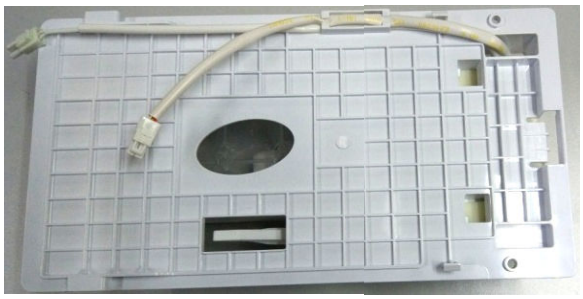
2. Disassemble two fixed screws with a cross screwdriver (+).

3. Pull out the ice maker part.



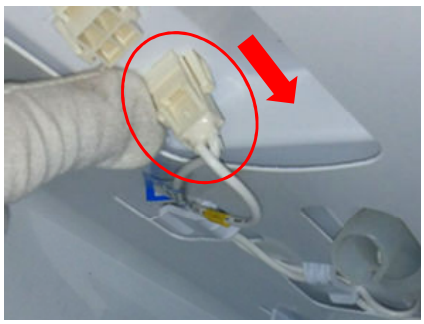
4. Unplug two terminals, then take out the ice maker part.



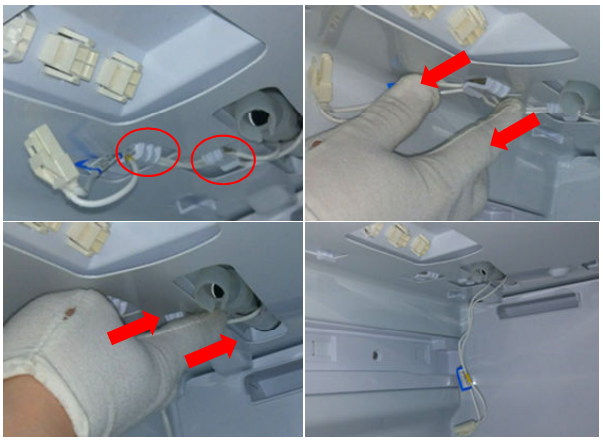


5. Remove the water pipe connector part

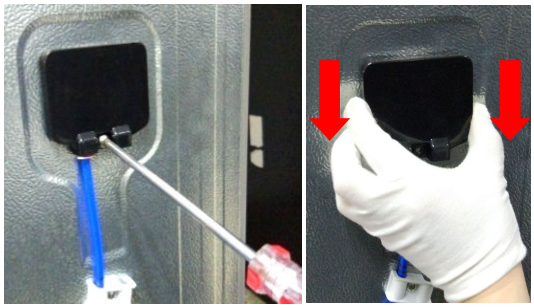
1. Remove the ice maker part.
2. Unplug the terminal.



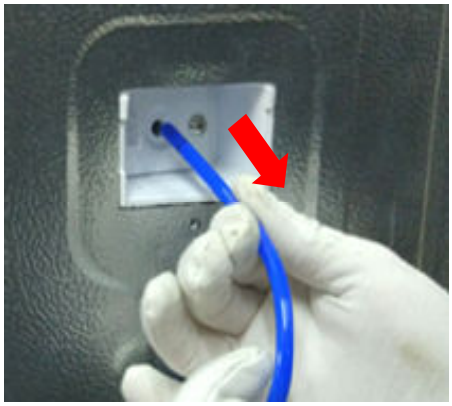
3. Remove wire line from two buckles in the direction of arrow one by one.



4. Disassemble the fixed screw with a cross screwdriver (+), then pull the ice maker inlet cover down.

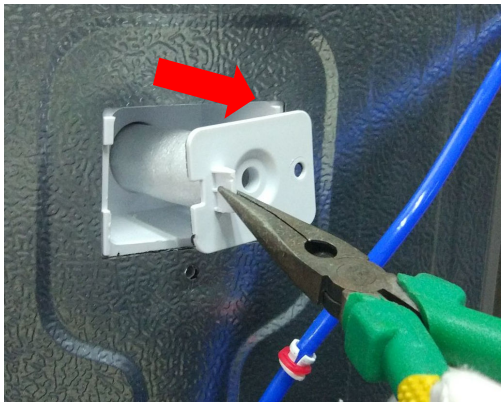


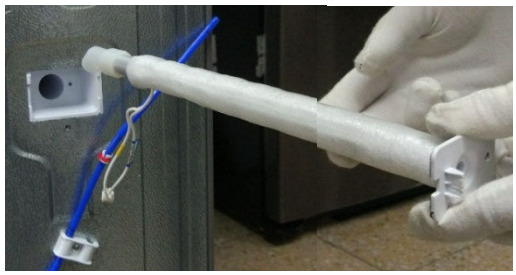
5. Pull the blue water tube out in the direction of arrow.



6. Disassemble the fixed screw with a cross screwdriver (+).

7. Pull the water pipe connector part out with pliers.



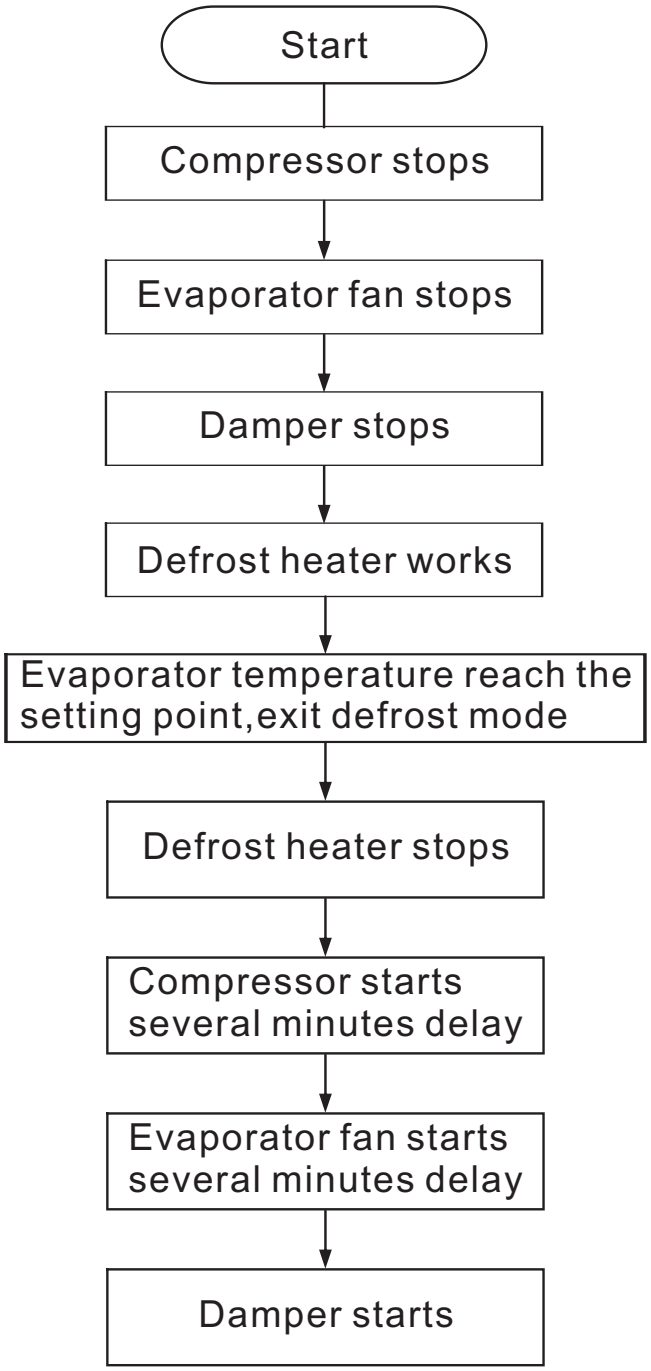


4.3 Defrost mode

4.3.1 Start condition

When compressor accumulated running time reach the setting point (depends on the environment temperature),it will enter defrost mode automatically.

4.3.2 Defrost flow

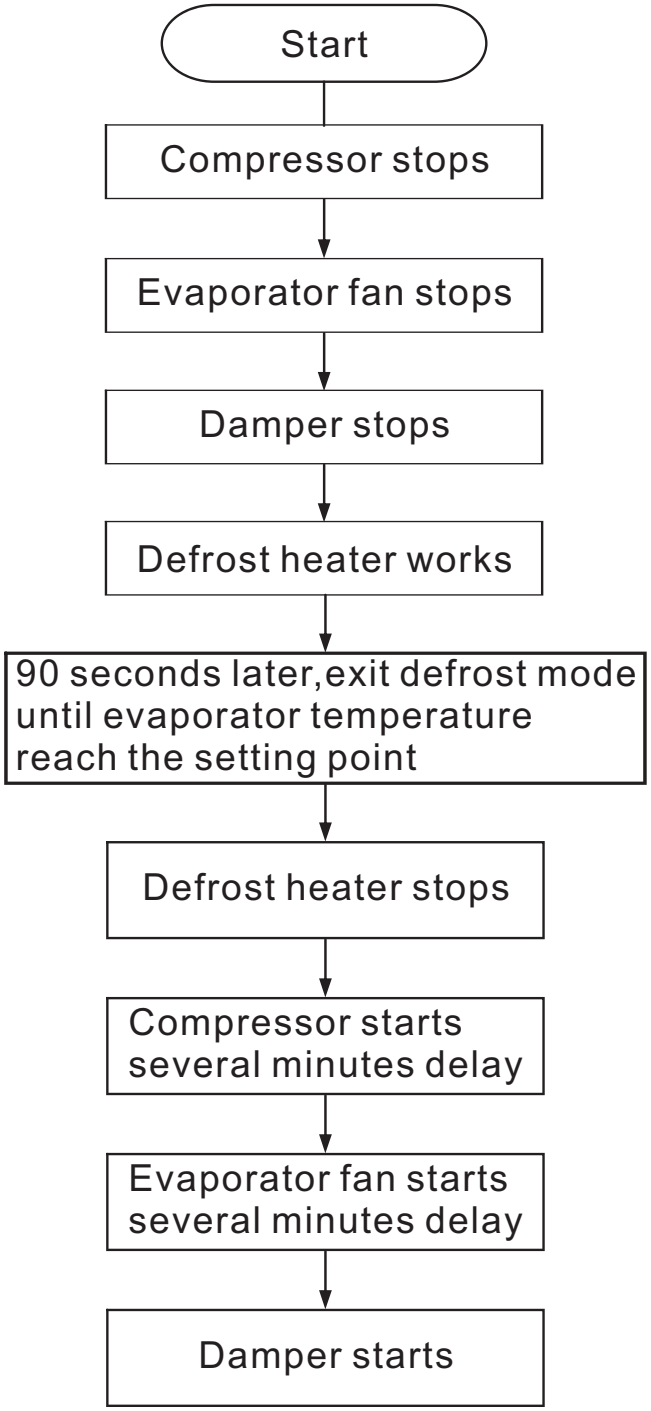


4.4 Compulsory Defrost mode

4.4.1 Start condition

When buttons are unlocked,touch and hold fridge button and fresh choice button at the same time for 5 seconds,it will enter special function selecting mode after a buzzing sound.There will be a signal blinks at freezer display area,touch the unlock button,when only the longest square blinks,stop touching the button.It will enter compulsory defrost mode after 10 seconds.

4.4.2 Compulsory defrost flow



4.5 Error display

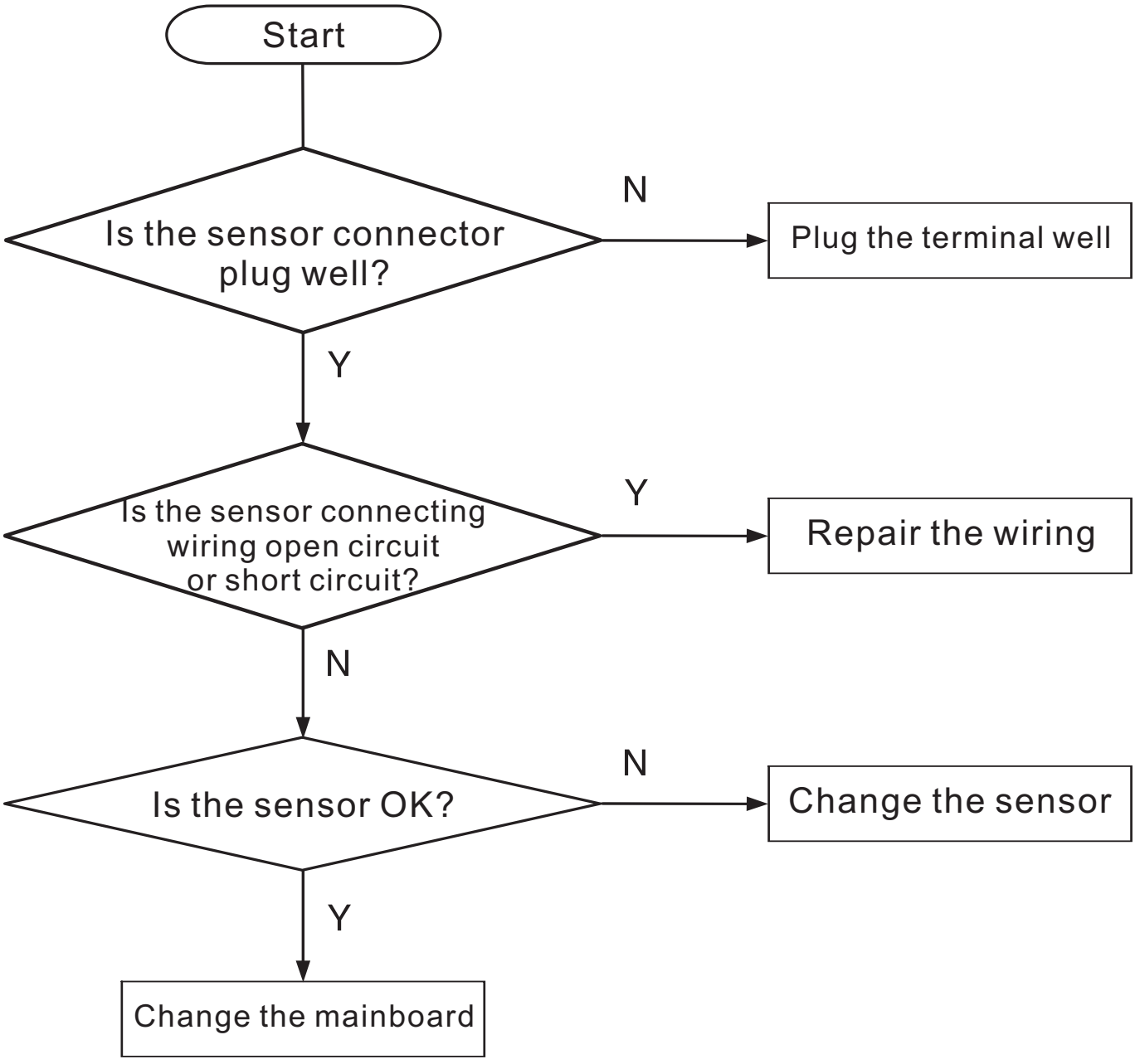
4.5.1 Error code

Code	Display area	Problem
Ec	Fridge temperature display area	Communication sending malfunctions
F2	Fridge temperature display area	Refrigerator fan motor malfunctions
E1	Fridge temperature display area	Refrigerator sensor malfunctions
E2	Fridge temperature display area	Refrigerator defrost sensor malfunctions
E0	Fridge temperature display area	Environment sensor malfunctions
Er	Freezer temparature display area	Communication receiving malfunctions
F1	Freezer temparature display area	Freezer fan motor malfunctions
E3	Freezer temparature display area	Freezer sensor malfunctions
E4	Freezer temparature display area	Freezer defrost sensor malfunctions
E5	My Fresh Choice temparature display area	Two-star compartment sensor malfunctions

4.5 Error display

4.5.2 Checking method

4.5.2.1 Refrigeartor&freezer&evaporator sensor error



4.5 Error display

4.5.2 Checking method

4.5.2.1 Refrigeartor&freezer&evaporator sensor error

Note:

1.Refrigerator sensor corresponding pin No.2 and No.6 on CN11 connector of mainboard.

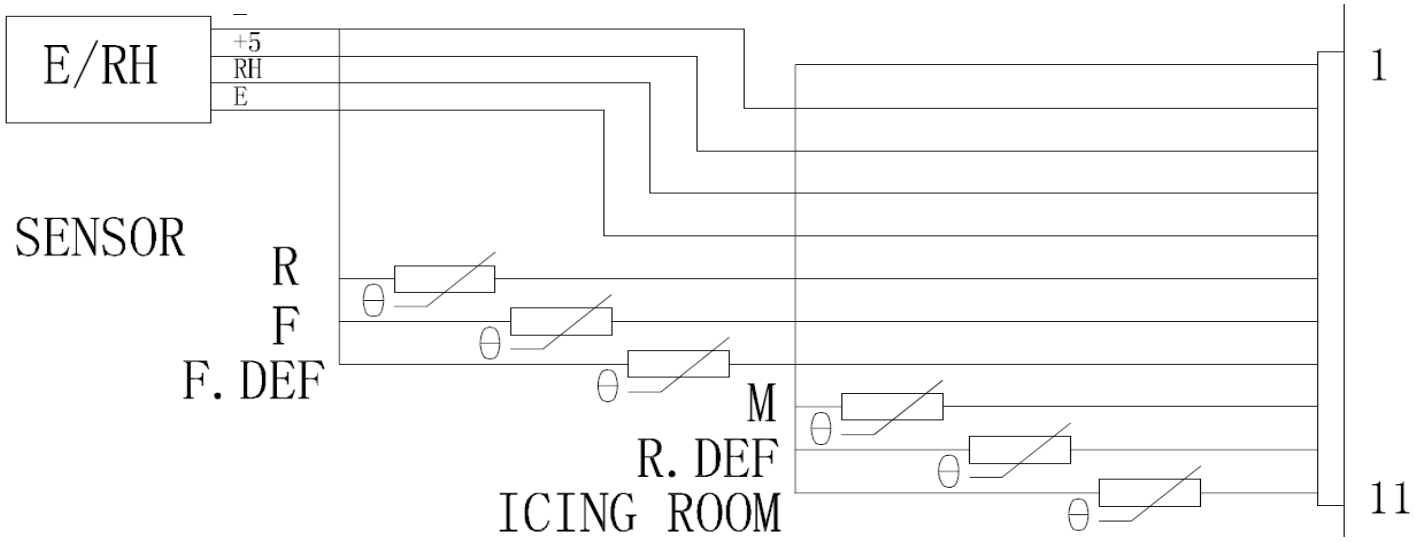
2.Freezer sensor corresponding pin No.2 and No.7 on CN11 connector of mainboard.

3.Environment sensor corresponding pin No.2 and No.5 on CN11 connector of mainboard.

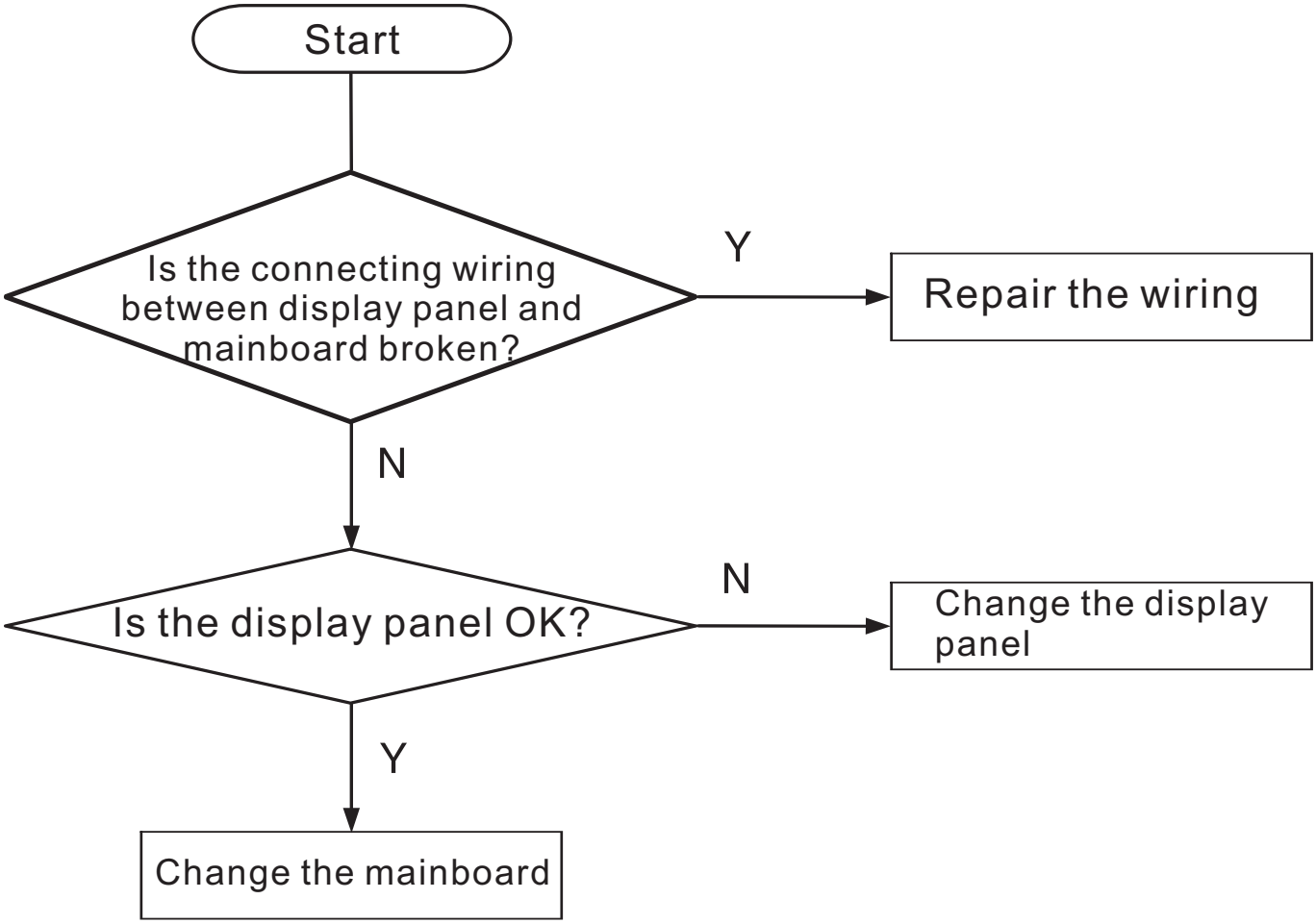
Two-star compartment sensor 4.corresponding pin No.1 and No.9 on CN11 connector of mainboard.

5. Refrigerator defrost sensor corresponding pin No.1 and No.10 on CN11 connector of mainboard.

6.corresponding pin No.2 and No.8 on Freezer defrost sensor CN11 connector of mainboard.



4.5 Error display
4.5.2 Checking method
4.5.2.3 Communication error

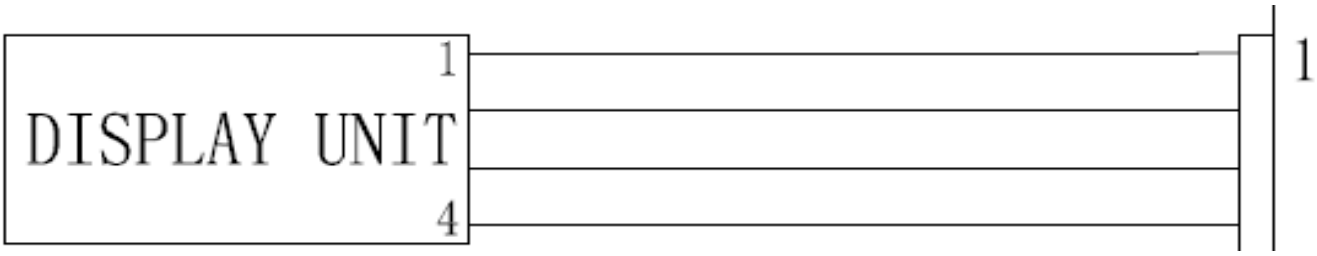


4.5 Error display

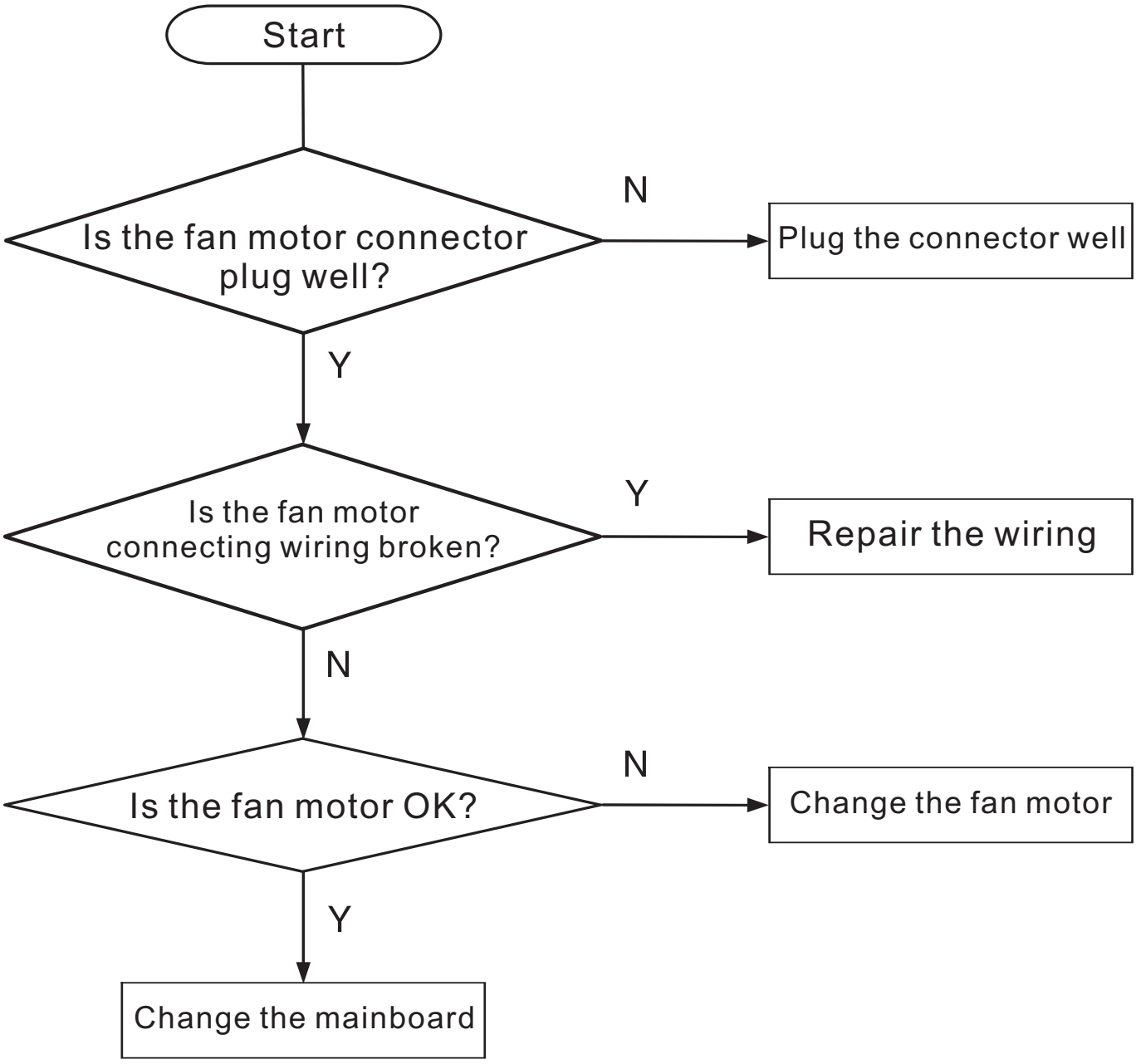
4.5.2 Checking method

4.5.2.3 Communication error

Note:
Communication sensor corresponding pin No.1~4 on CN8 connector of mainboard.



4.5 Error display
4.5.2 Checking method
4.5.2.4 Freezer fan motor error



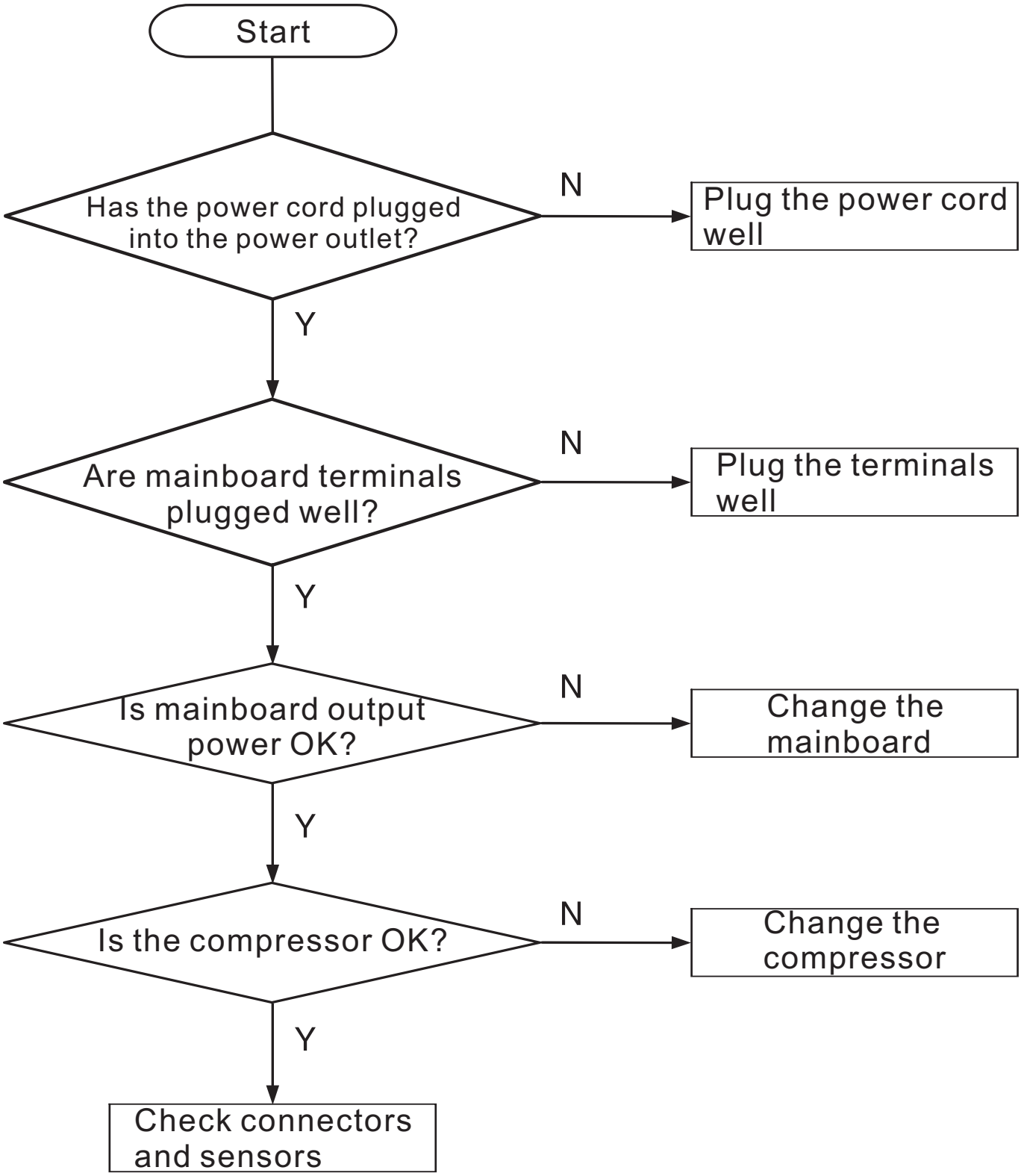
Note:
The checking method of fan motor refer to “6.4 Fan motor” chapter.

5.1 Common problem and checking

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
	The ambient temperature is too low. Try setting the chamber
	It is normal that the freezer is not operating during the automatic defrost cycle, or for a short time after the appliance
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
	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
The motor runs continuously	● It is normal to frequently hear the sound of the motor, it will need to run more when in following circumstances: Temperature setting is set colder than necessary. ● Large quantity of warm food has recently been stored within the appliance. ● The temperature outside the appliance is too high. ● Doors are kept open too long or too often. ● After your installing the appliance or it has been switched off

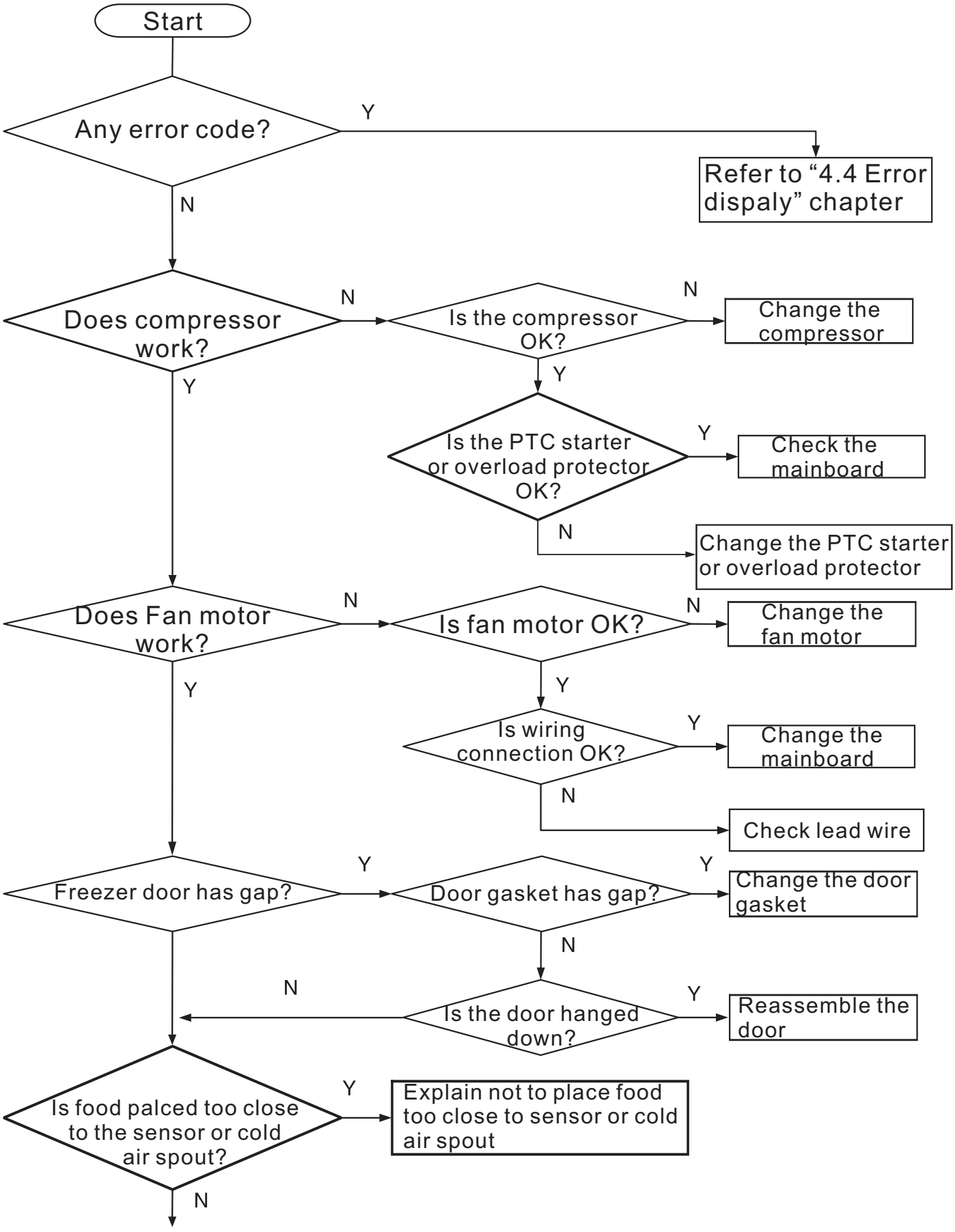
Problem	Possible cause & Solution
A layer of frost occurs in the compartment	Check that the air outlets are not blocked by food and ensure food is placed within the appliance to allow sufficient ventilation. Ensure that door is fully closed. To remove the frost,please refer to cleaning and care chapter.
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"Display controls" chapter.
Doors can't be cloased 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.
Water drips on the floor	he water pan (located at the rear bottom of the cabinet) may not be properly leveled, or the draining spout underneath the top of the compressor depot may not be properly positioned to direct water into this pan, or the water spout is blocked, or the water is not fully inserted into the connector. You may need to pull the refrigerator away from the wall to check the pan and spout and connector.
The light is not working	● The LED light may be damaged. Refer to replace LED lights in cleaning and care chapter. ● The control system has disabled the lights due to the door being kept open too long, close and reopens the door to reactivate the lights.

5.2 Faulty start



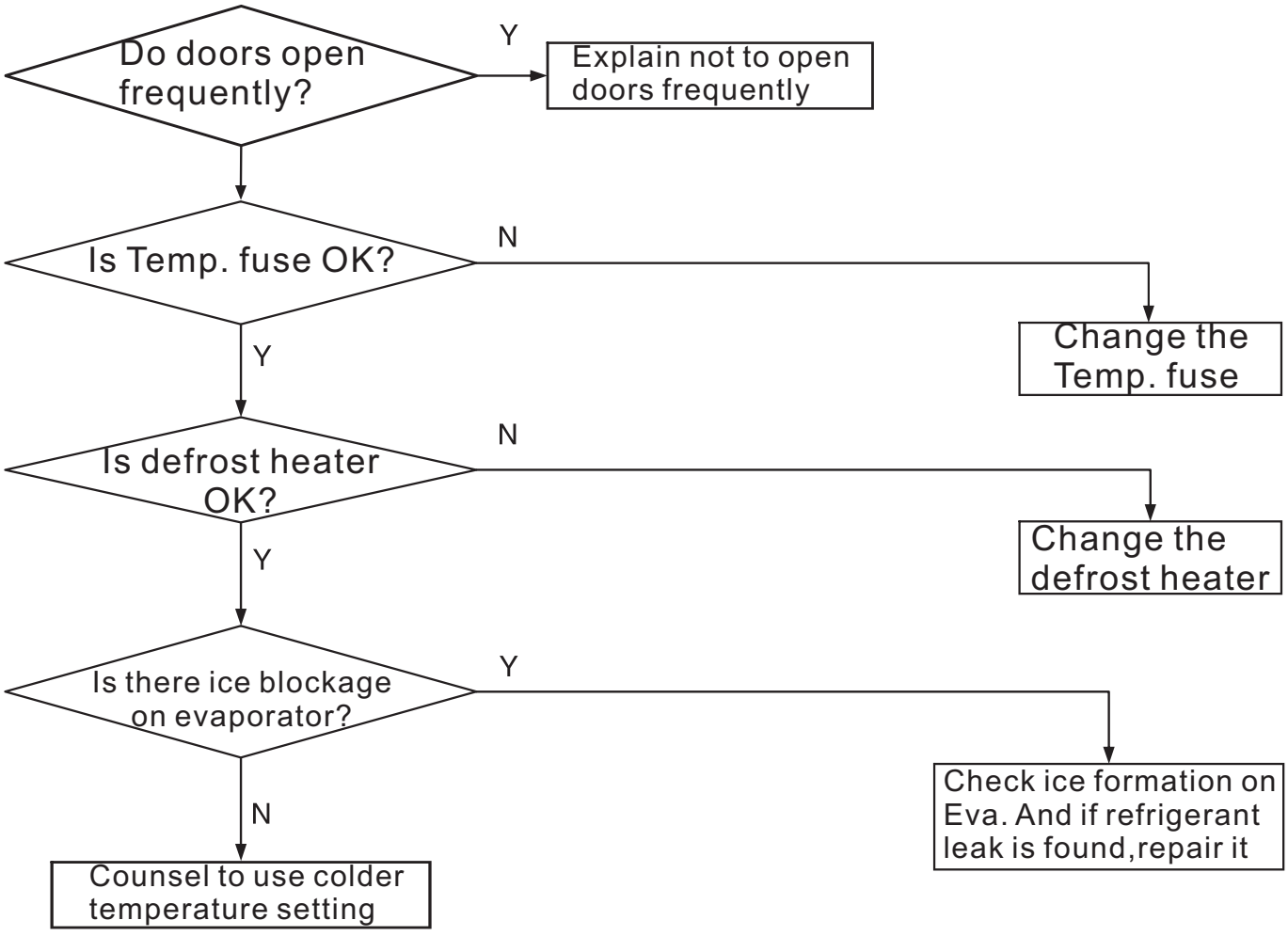
5.3 Refrigeration failure

5.3.1 Freezer compartment



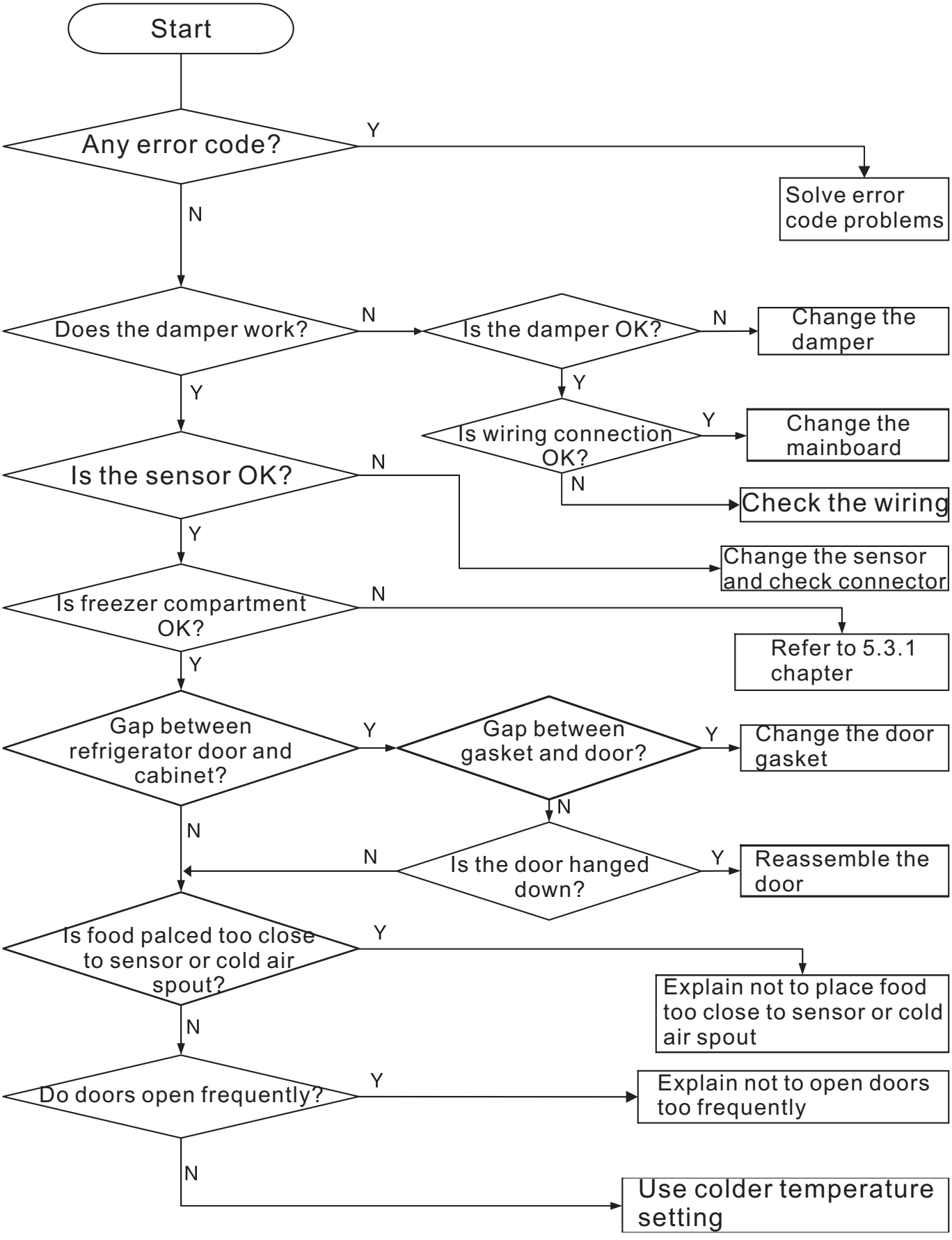
5.3 Refrigeration failure

5.3.1 Freezer compartment

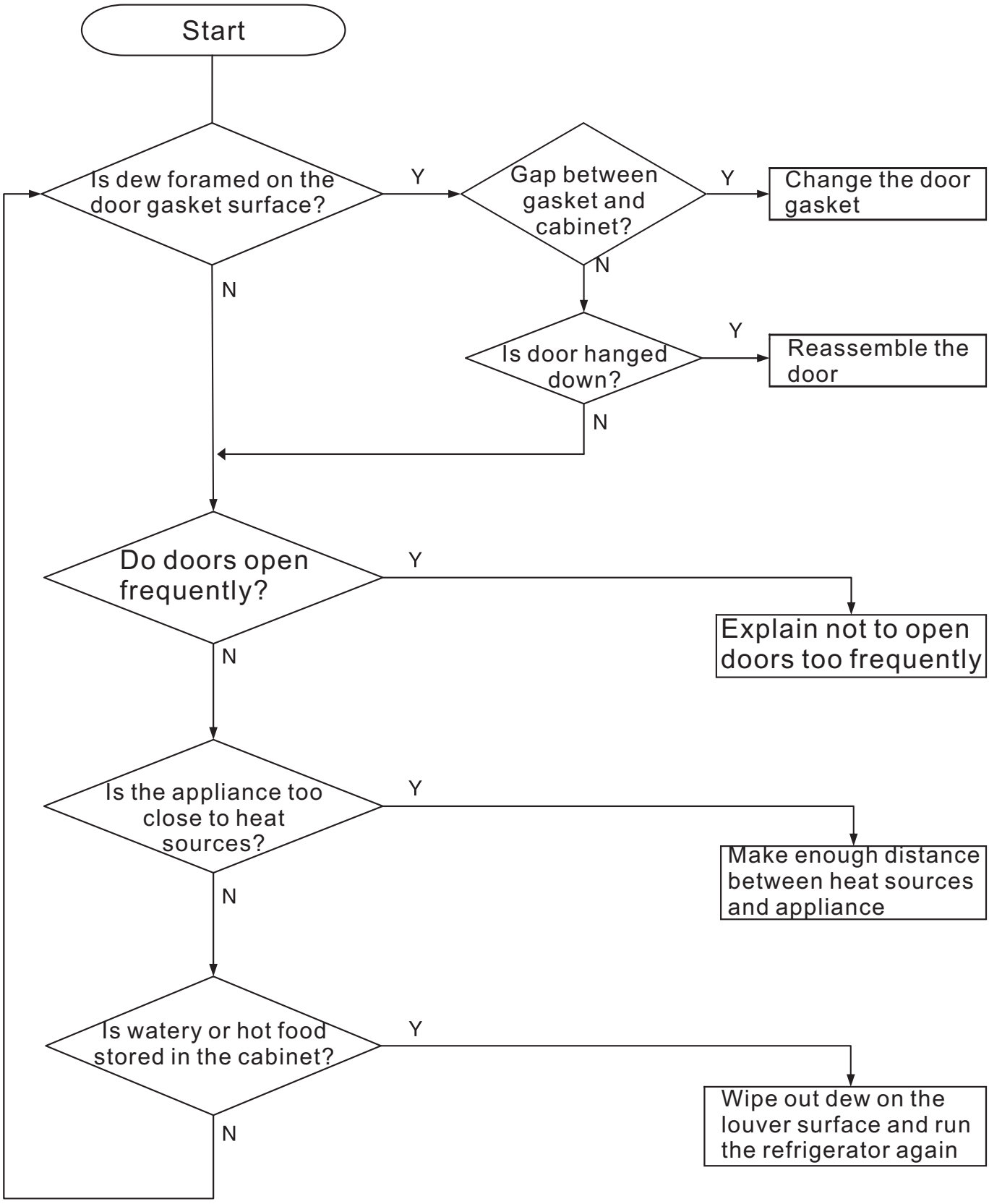


5.3 Refrigeration failure

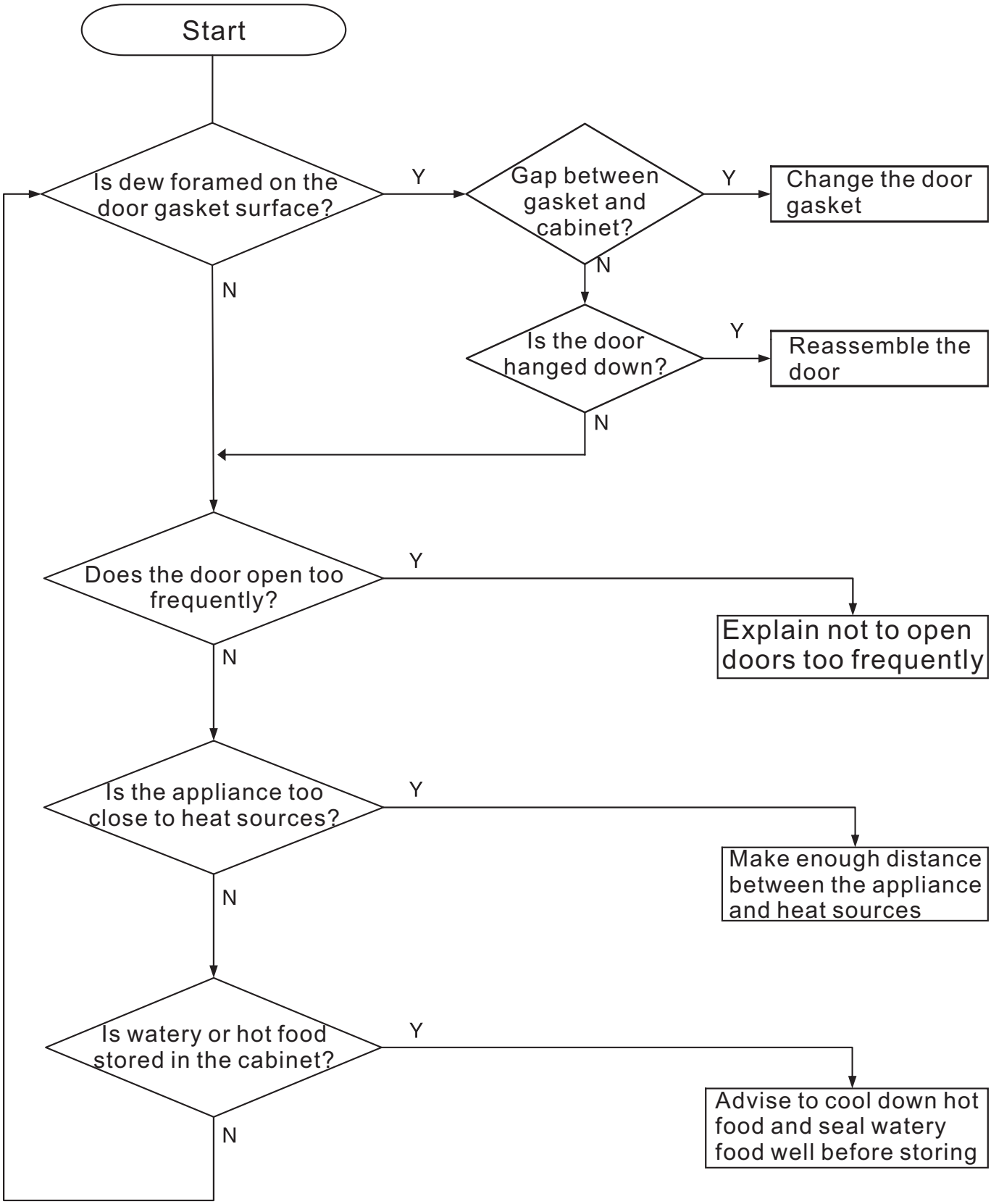
5.3.2 Refrigerator compartment



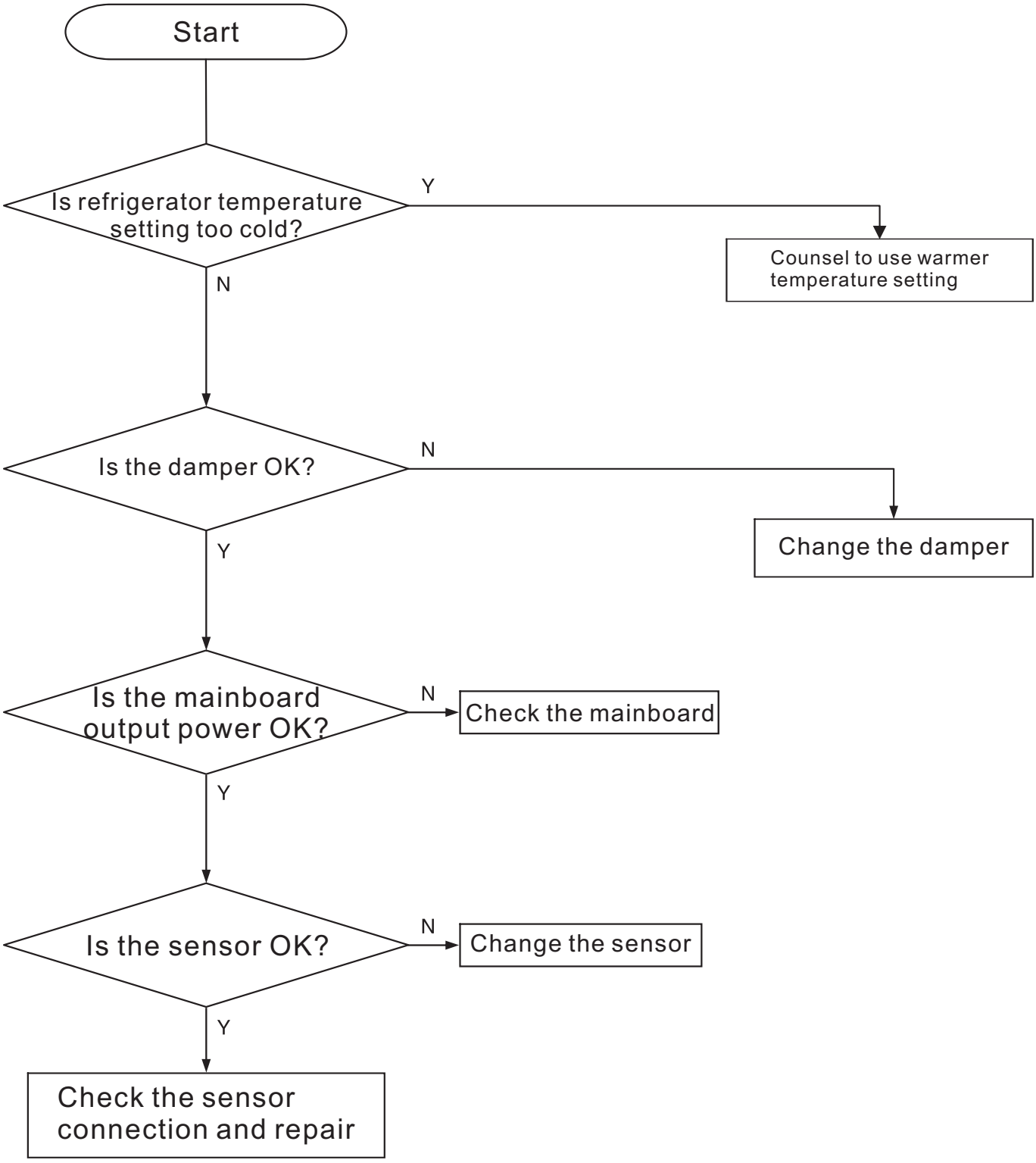
5.4 Thick frost in freezer compartment



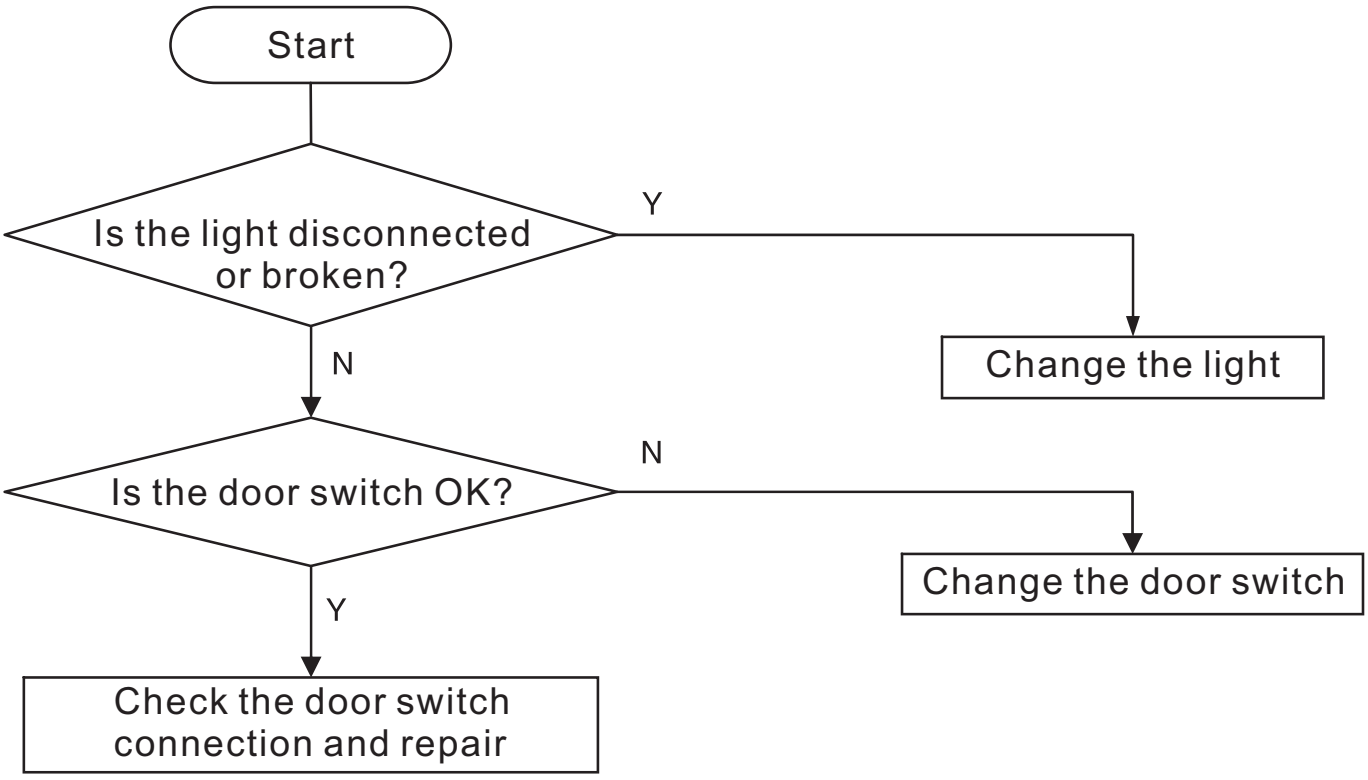
5.5 Dew in refrigerator compartment



5.6 Low temperature of vegetable vase

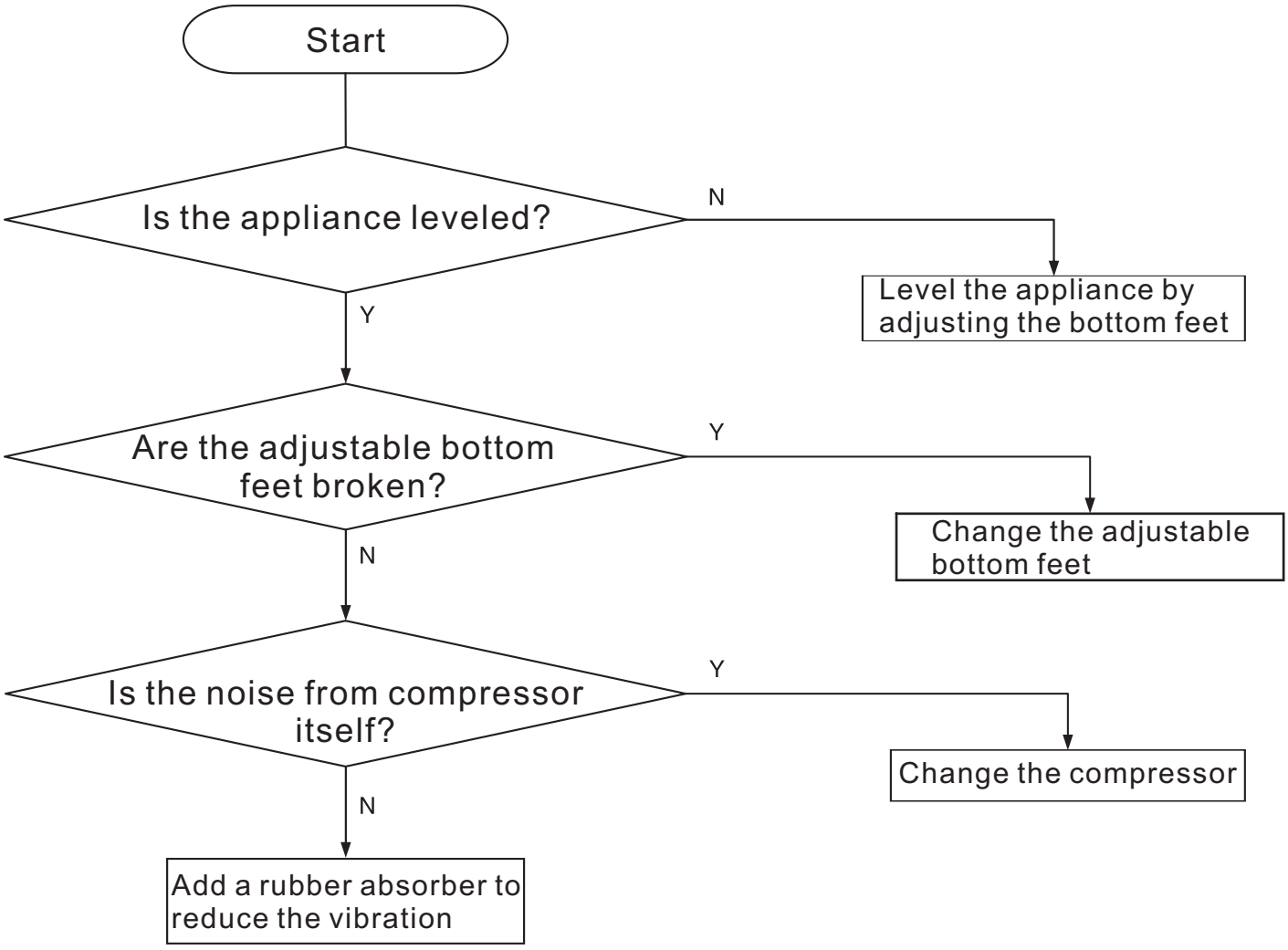


5.7 Breaking of light



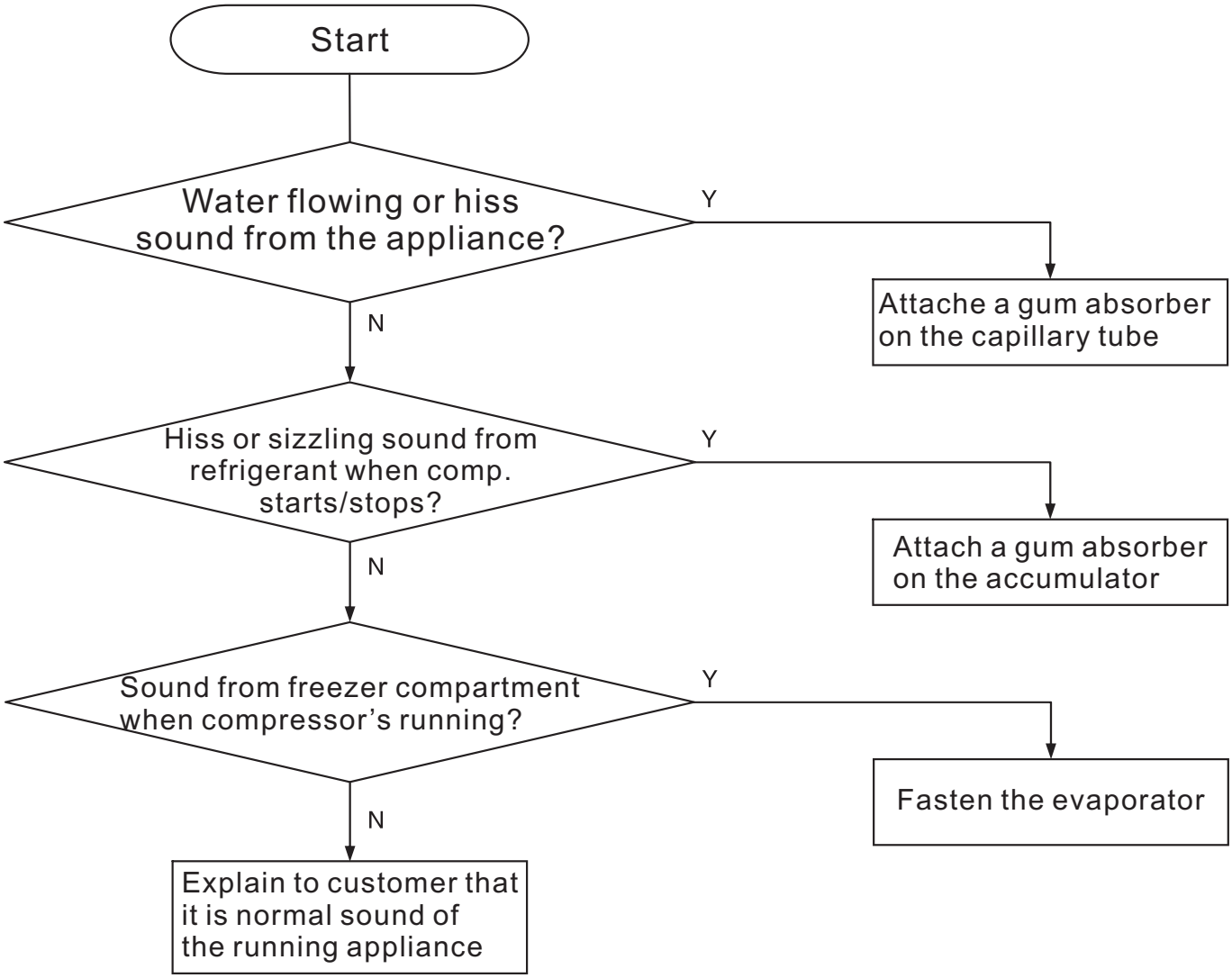
5.8 Noise

5.8.1 Compressor noise



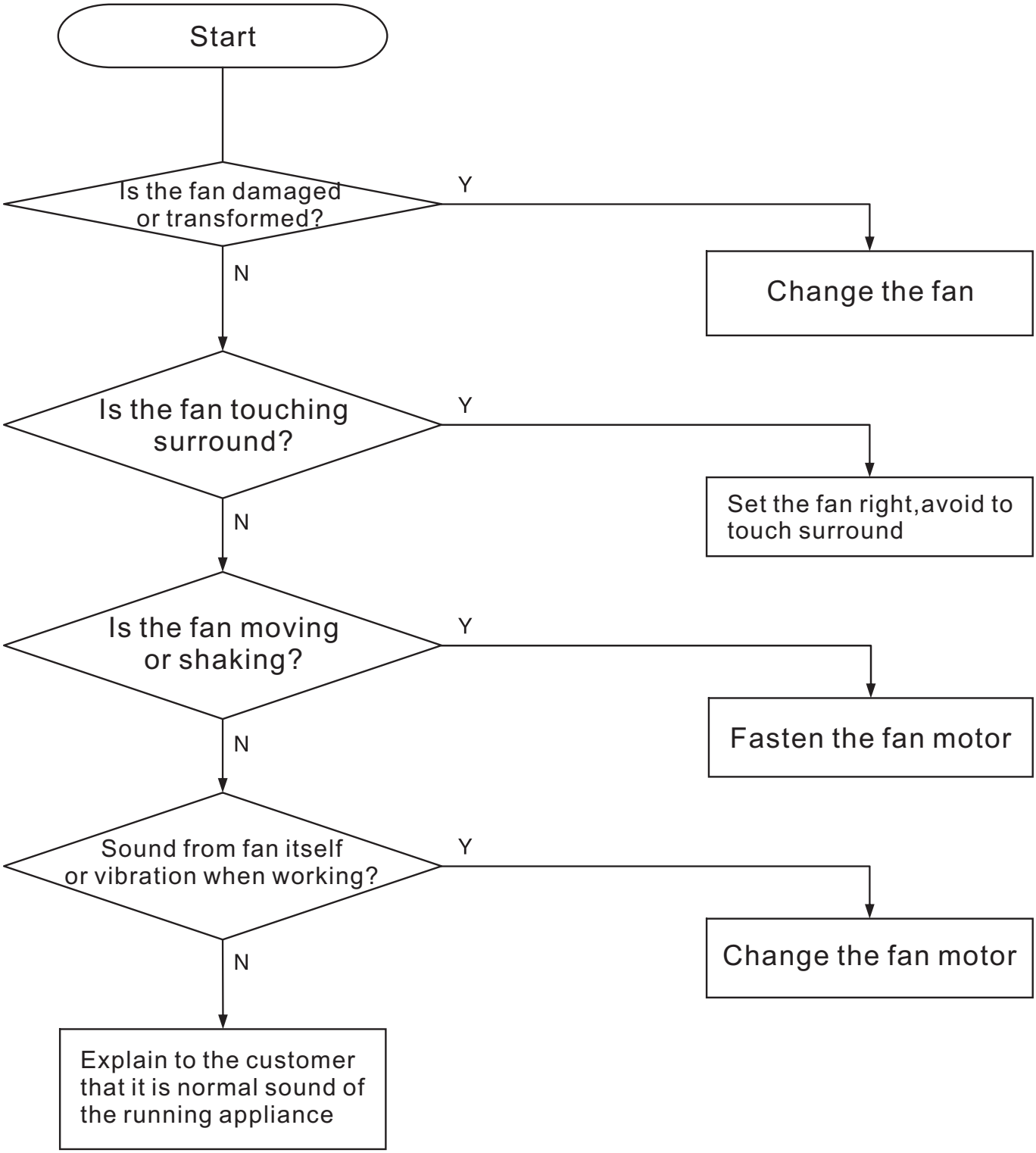
5.8 Noise

5.8.2 Refrigerator flowing noise



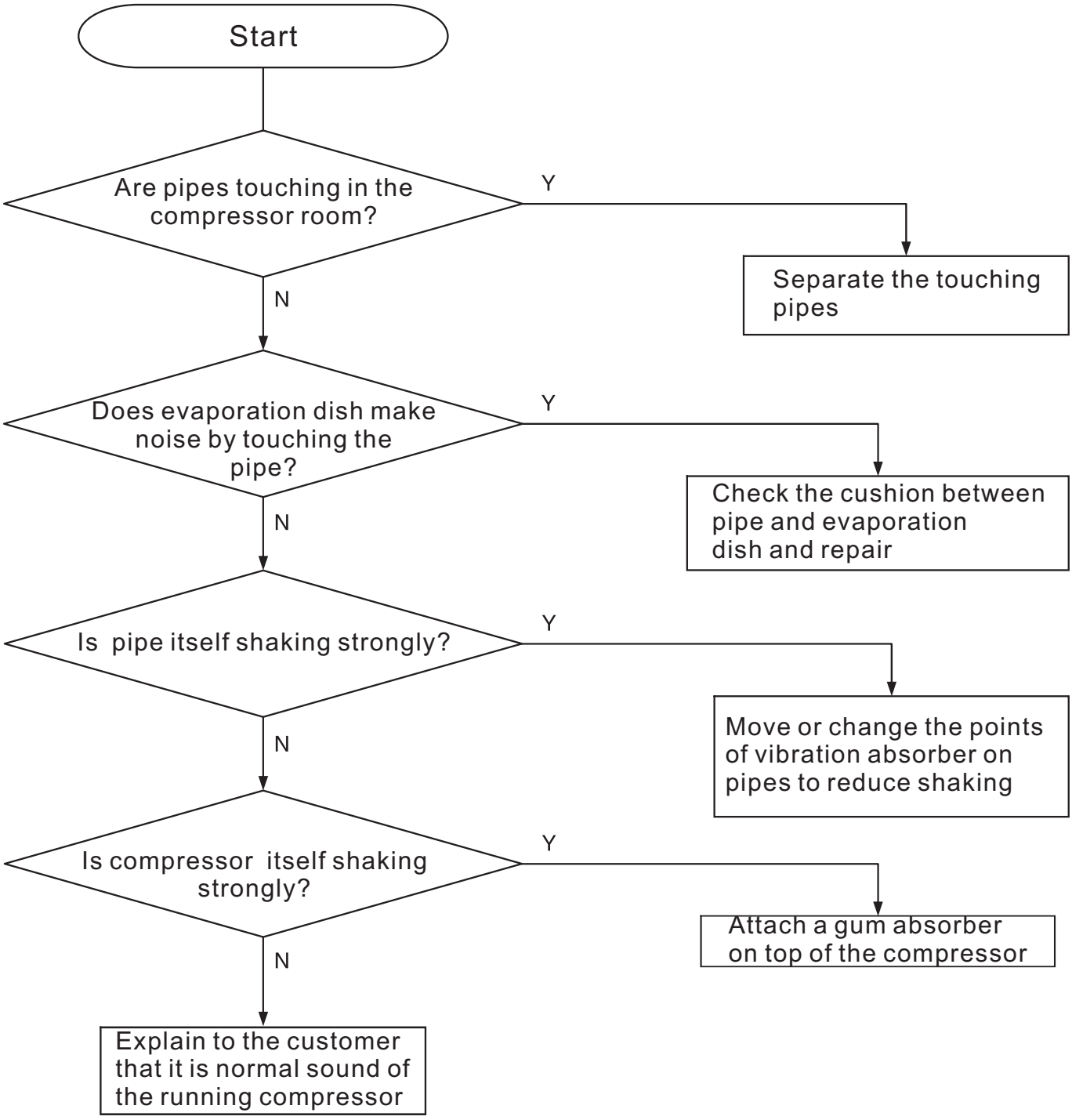
5.8 Noise

5.8.3 Fan motor noise



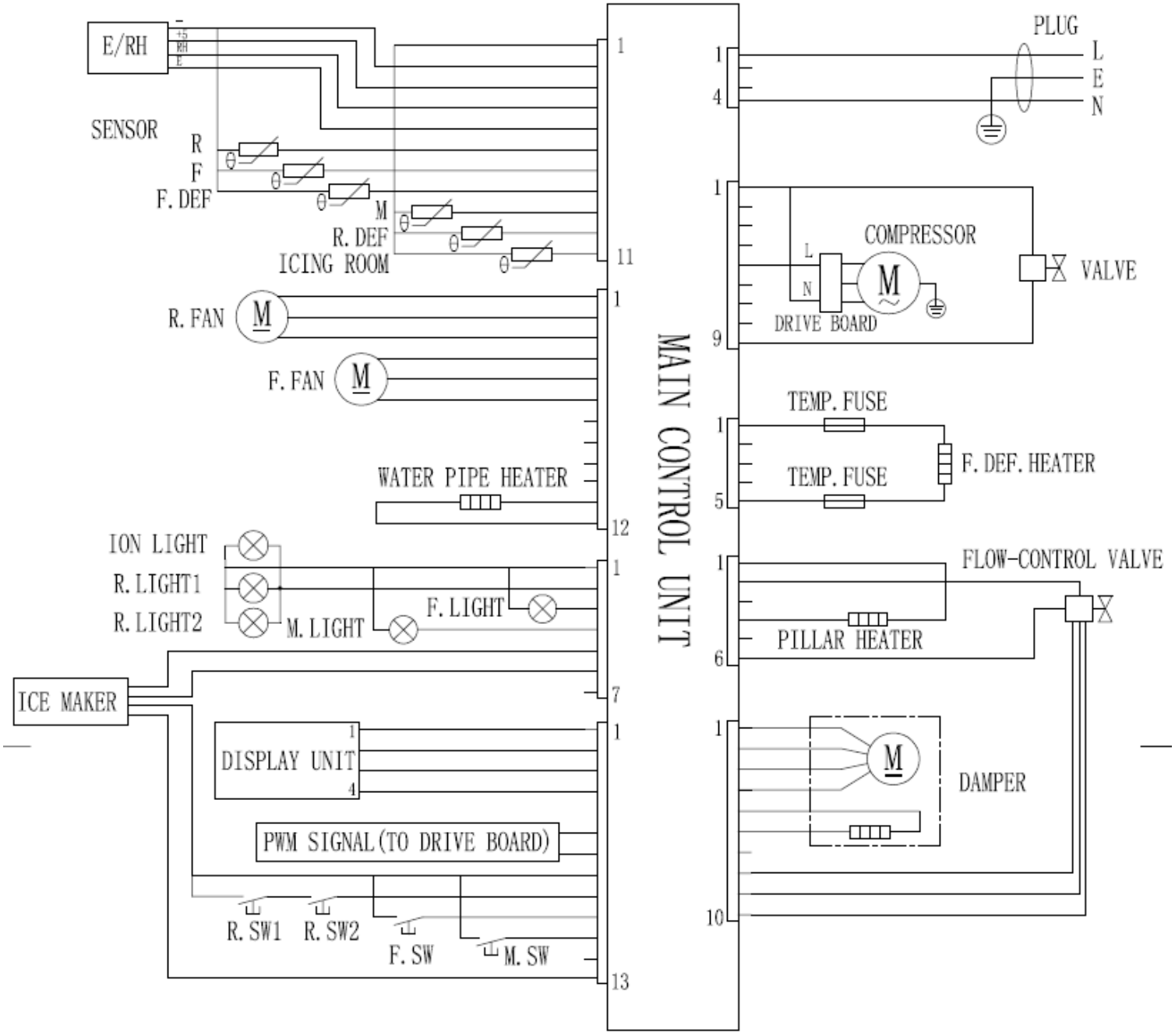
5.8 Noise

5.8.4 Pipe noise



6 Circuit and checking

6.1 Circuit diagram



6.2 Mainboard

6.2.1 Checking method

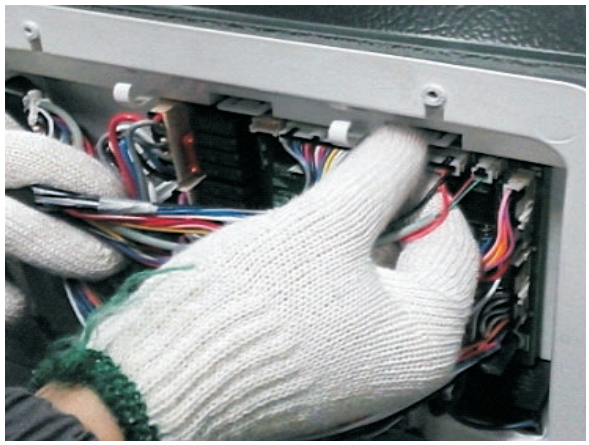
If the problem is probably caused by mainboard,change it directly to confirm.

6.2.2 Removing the mainboard

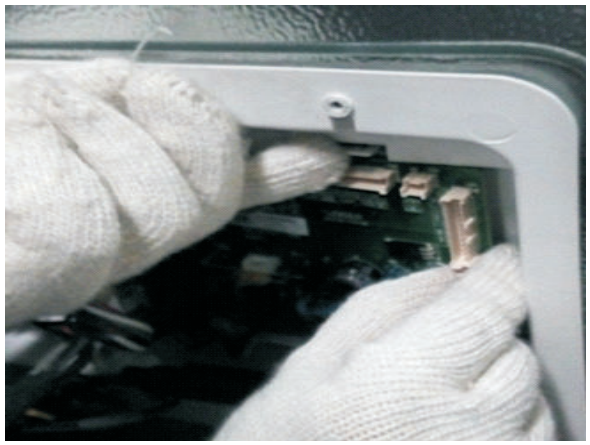
1.Unplug the appliance
2.Remove the screws of electric box cover by screwdriver,as picture 1.
3.Remove the electric box cover,as picture 2.
4.Unplug the terminals on the mainboard,as picture 3.
5.Pry up the mainboard by fingers and take it out,as picture 4.

Picture1

Picture2



Picture3



Picture4

6.3 Compressor

6.3.1 Basic parameters

Input voltage:110-115V

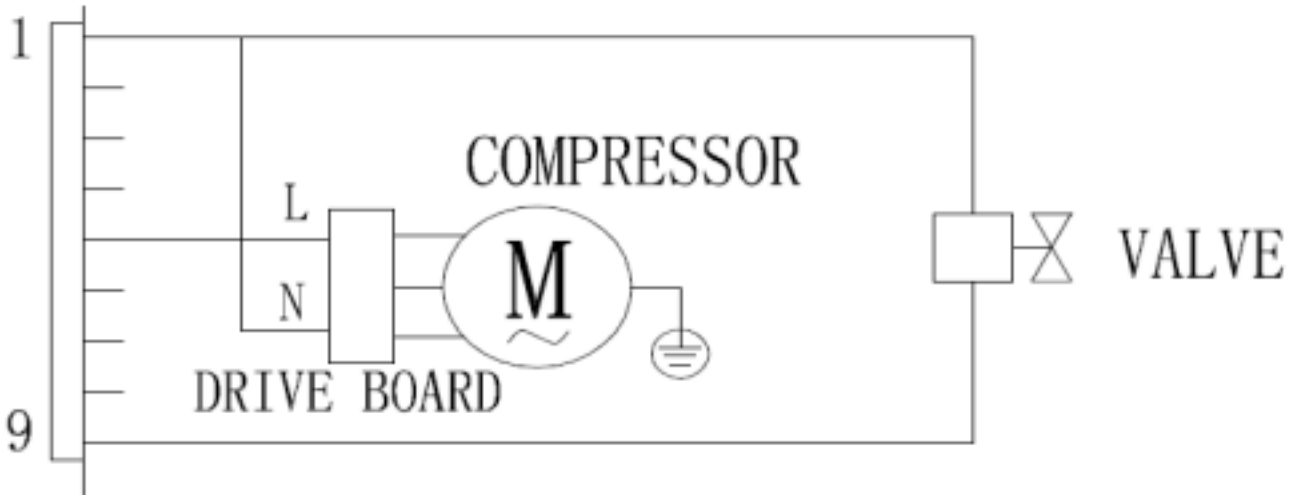
Input frequency:60Hz

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 mainboard and repair if it is broken.

3.Use a multimeter to measure voltage between pin No.1 and No.5 on CN3 connector of mainboard,if the voltage equal to electric supply power,it means the compressor is broken,change it;If not,change the mainboard.



6.3.3 Removing the PTC starter and overload protector

1.Unplug the appliance
2.Remove the screws of protector box by screwdriver,as picture 1.
3.Pry up the protector box from top by screwdriver,as picture 2.
4.Unplug the overload protector,as picture 3.
5.Unplug the PTC starter,as picture 4.

Picture1

Picture2

Picture3

Picture4

6.4 Fan motor

6.4.1 Basic parameters

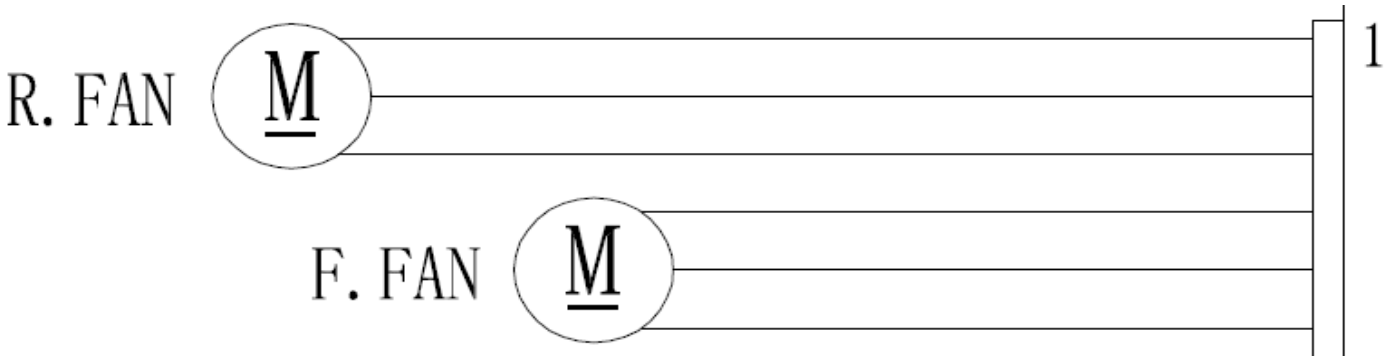
Rated voltage:DC12V

Rated input power:2W

6.4.2 Checking method

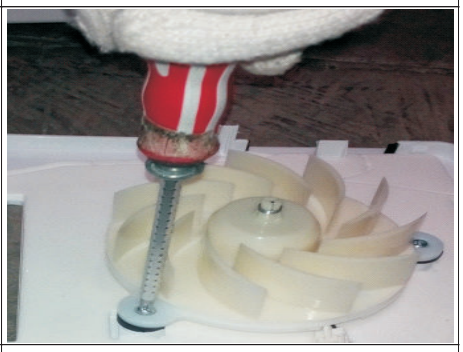
1.Check the connecting wiring of fan motor is well or not,repair if it is broken.The fan motor corresponding pin No.4~6 on CN9 connector of mainboard,as the drawing below.

2.Pin 2(No.5) connect 12V power and pin 3(No.6) connect GND,if the fan motor works normally,change the mainboard;If not,change the fan motor.



6.4.3 Removing the fan motor

1.Unplug the appliance
2.Remove the screws of freezer wind channel component by screwdriver,as picture 1.
3.Remove the wind channel component and unplug the terminals,as picture 2.
4.Remove the screw of the wind channel component by screwdriver, as picture 3.
5.Pry up the wind channel cover from the buckles by screwdriver,as picture 4.
6.Separate the front cover and back cover,as picture 5.
7.Remove the screws of fan motor and then remove the fan motor, as picture 6.

		
Picture1	Picture2	Picture3
		
Picture4	Picture5	Picture6

6.6 Light

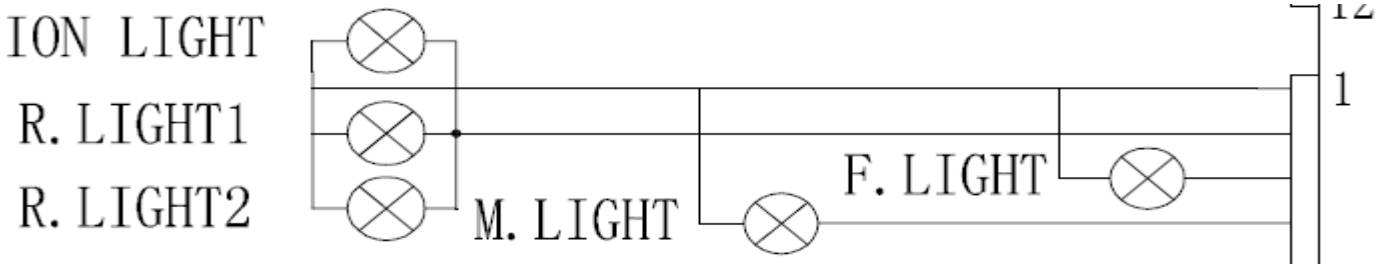
6.6.1 Basic parameters

Rated voltage:DC12V

6.6.2 Checking method

1.Check the connecting wiring between light and mainboard is well or not,repair if it is broken.Refrigerator light corresponding pin No.1 ~ No.4 on CN5 ,as the drawing below.

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



6.6.3 Removing the light

1.Unplug the appliance
2.Pry up the light cover from the buckles by screwdriver,as picture 1.
3.Remove the light cover,as picture 2.
4.Pry up the light from the buckles by screwdriver,as picture 3.
5.Unplug the terminal of the light,as picture 4.

	
Picture1	Picture2
	
Picture3	Picture4

6.7 Door switch

6.7.1 Basic parameters

Input voltage:5V

Rated current:0.05A

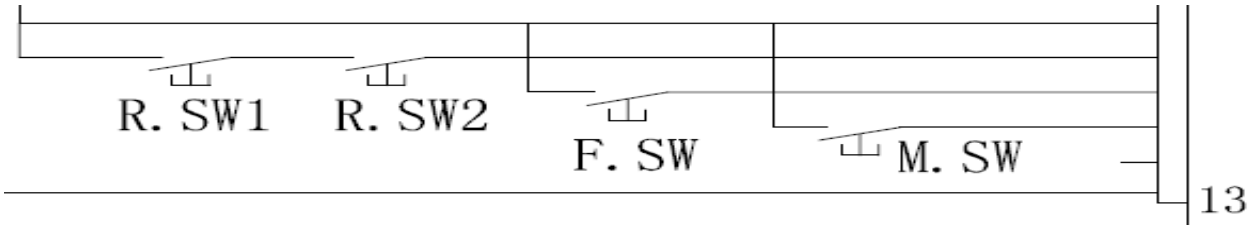
6.7.2 Checking method

1.Check the connecting wiring of door switch is well or not,repair if it is broken.
Door switch corresponding pin No. 8~ No.11 on CN8 connector of mainboard,
as the drawing below..

2.Check the magnet on the door is dropped out or not.

3.Normally,when the door is closed,the two pins of door switch should be short circuit;When the door is open,the two pins should be open circuit.If the result is abnormal,change the door switch.

4.If all above is OK,change the mainboard.



6.8 Temperature fuse

6.8.1 Basic parameters

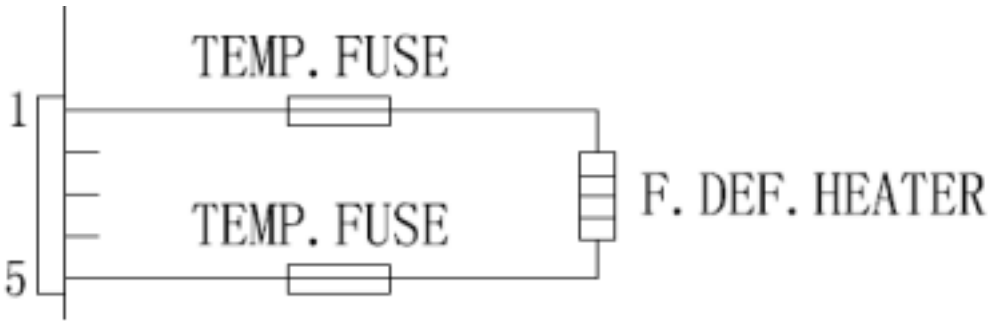
Max fusing-off temperature:72℃

Load voltage115V

Load current:10A

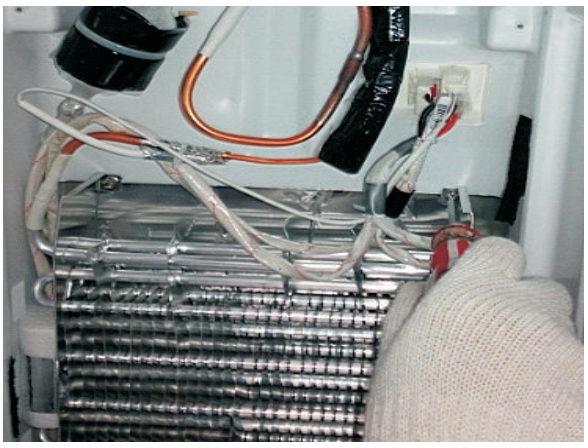
6.8.2 Checking method

Use a multimeter to measure resistance between the two terminals of the temperature fuse,if it is open circuit,change the fuse.



6.8.3 Removing the temperature fuse

1.After removing the freezer wind channel component,unplug the terminals,as picture 1.
2.Remove the screws of evaporator by screwdriver,as picture 2.
3.Separate the evaporator component from the cabinet and remove the foams at left side and right side,as picture 3.
4.Cut the self locking ties that fastening the temperature fuses by knife and then remove the fuses,as picture 4.

	
Picture1	Picture2
	
Picture3	Picture4

6.9 Defrost heater

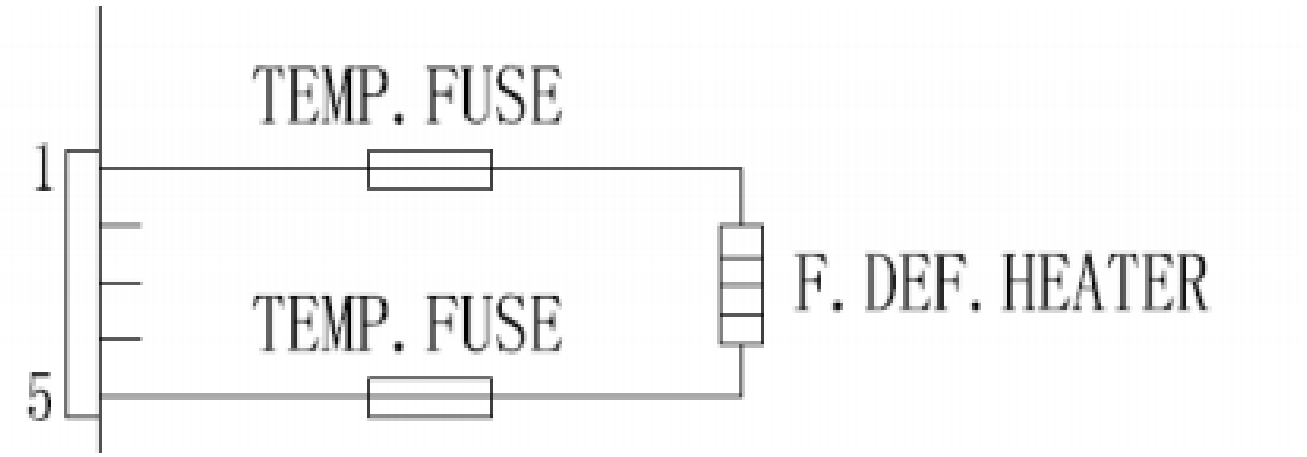
6.9.1 Basic parameters

Rated voltage:AC115V

Rated power:224W

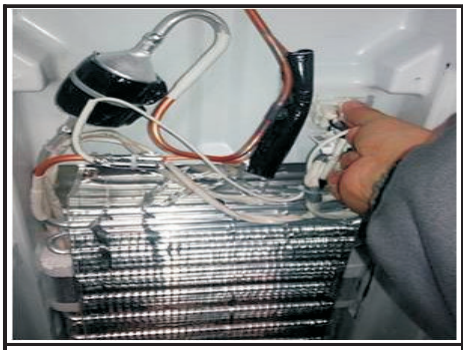
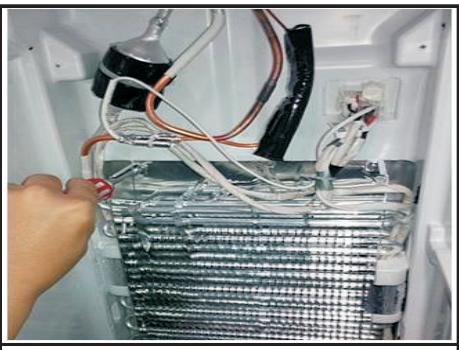
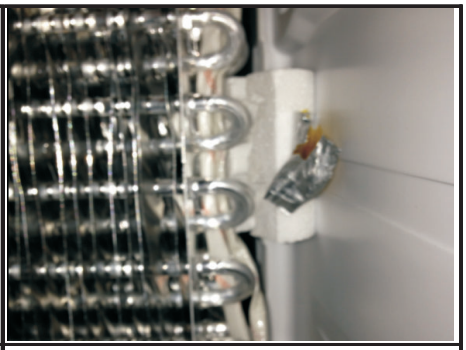
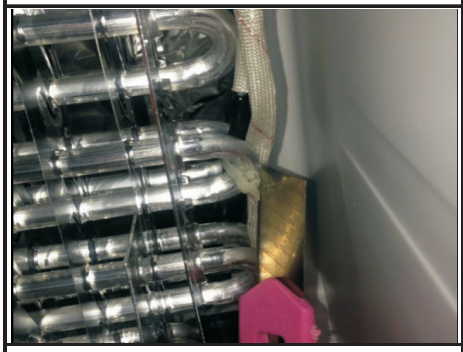
6.9.2 Checking method

1.Enter compulsory defrost mode,use a multimeter to measure voltage between pin No.2 and No.6 on VH-6 connector of the mainboard,if the voltage doesn't equal to electric supply power,it means the heater is broken,change it.
2.Check the fuse is well or not,refer to “6.8 Temperature fuse”chapter.
3.Use a multimeter to measure resistance of the heater ,if the value isn't 230Ω 5 %, it is broken,change the heater.



6.9.3 Removing the defrost heater

1.After removing the freezer wind channel component,unplug the terminals,as picture 1.
2.Remove the screws of evaporator by screwdriver,as picture 2.
3.Separate the evaporator component from the cabinet and remove the foams at left side and right side,as picture 3.
4.Cut the self locking ties that fastening the heater by knife,as picture 4.
5.Pry up the buckles that fastening the heater by screwdriver and then remove the heater,as picture 5.

		
Picture1	Picture2	Picture3
		
Picture4	Picture5	

6.10 electromagnetic valve

6.10.1 Checking method

Fault phenomenon 1：Leak

Detection method ：Use soap water coating on the welding place of the electromagnetic valve, pour the refrigerants into the system, to see if having the bubble, If yes, meaning the electromagnetic valve itself has the leakage.

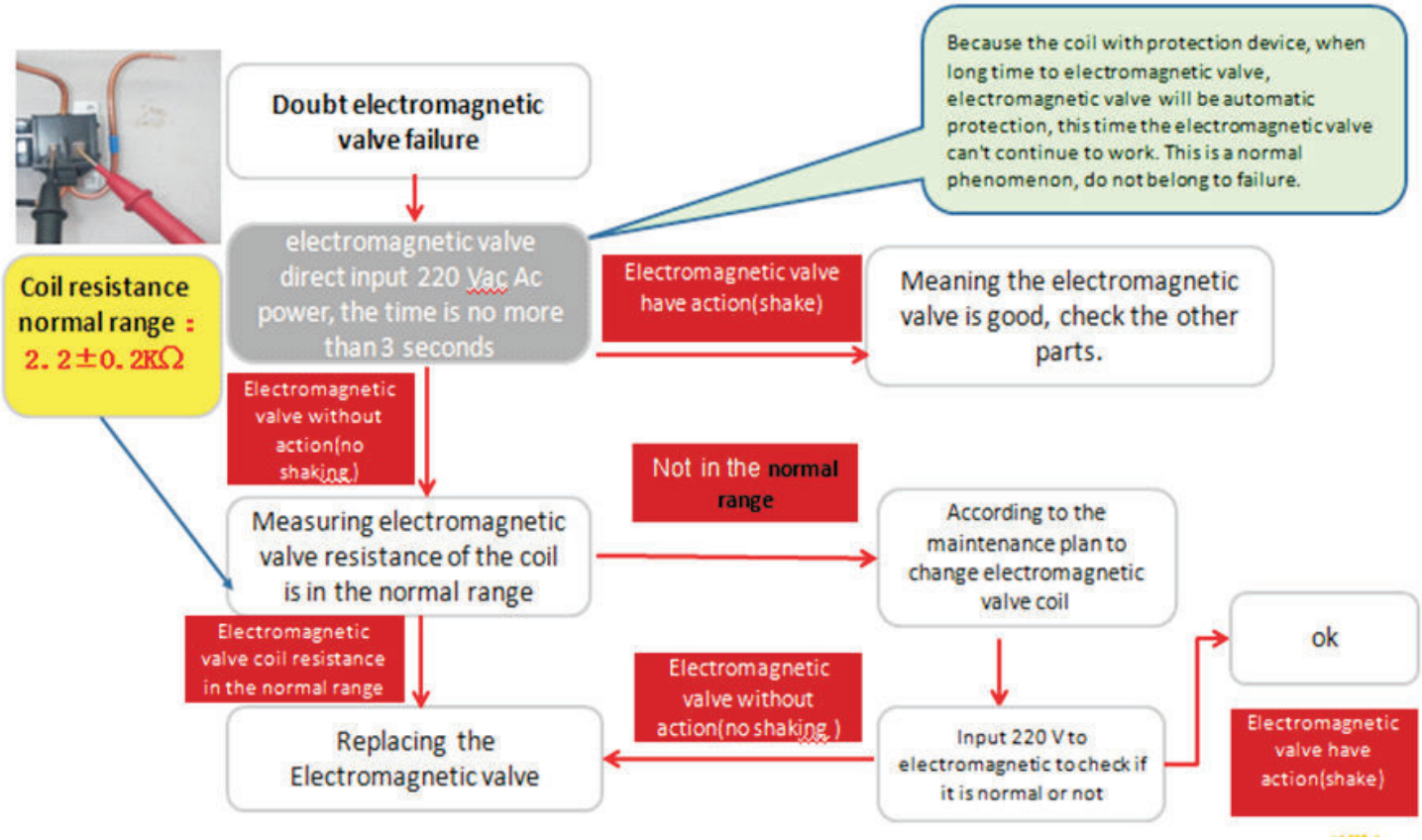
Fault phenomenon 2：Not reversing

Detection method ：With the hand to touch the electromagnetic valve, and power on it ,the voltage is 110－115V, then to fell if the electromagnetic valve has reversing action or hear if the electromagnetic valve has the sound of reversing action, If yes, meaning the electromagnetic valve is good.

Fault phenomenon 3：Reversing not reliable.

Detection method ：After power on the electromagnetic valve , With the hand to touch the electromagnetic valve, when fell the electromagnetic valve already action, stop power on, , with the hand to touch the electromagnetic valve should no longer have the reversing action feeling.

6.10.2Electromagnetic valve fault the judgement of the process



6.11 Ice maker

6.11.1 Checking method

Step 1.Check water line connection

Step 2.Touch and hold “Super Freeze” button and “Freezer” button at the same time for 3 seconds in 15 minutes after power-on, ice tray will be turned, if not, please replace the ice maker part.

Step 3.Touch and hold “Super Freeze” button and “Fridge” button at the same time for 3 seconds in 15 minutes after power-on, the ice valve will opened for 180S, if not, please replace the motorized valve.

Step 4.Touch and hold “Super Freeze” button and “Super Fridge” button at the same time for 3 seconds in 15 minutes after power-on, the water and ice valve will opened for 180S, if not, please replace the motorized valve.

6.11.2 Disassemble the ice maker part

Step 1. Remove two lines from buckle in the direction of arrow one by one.

Step 2. Remove the screw holding the ice checking pole with a cross screwdriver (+).

Step 3. Pull out in the direction of arrow A, and push down in the direction of arrow B; then take the electronic motor out.

Step 4. Remove the white line from buckle in the direction of arrow.

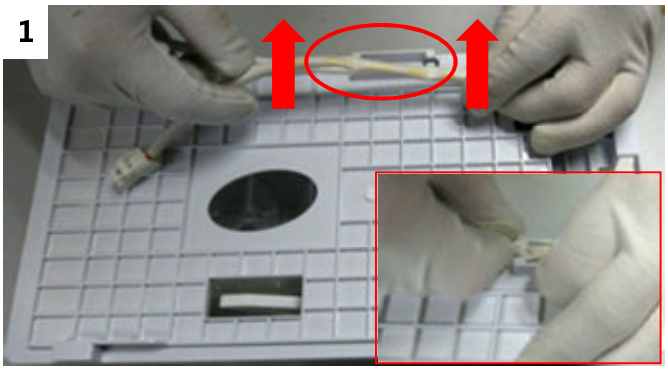
Step 5. Push out in the direction of arrow C, and pull up in the direction of arrow D; then take the combine part out.

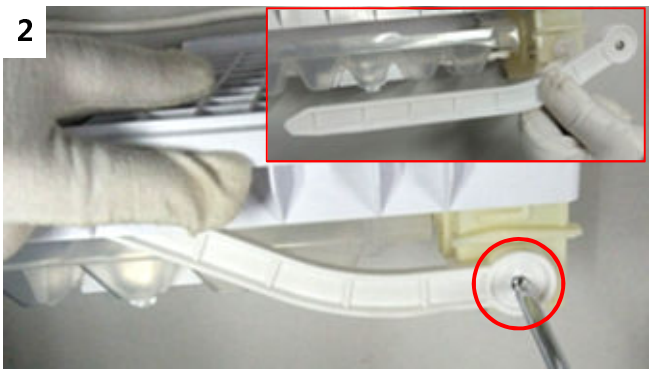
Step 6. Remove the white line from buckle of ice tray in the direction of arrow.

Step 7. Peel off the aluminum foil then take the temperature head out.

Step 8. Take the insulation foam out.

Step 9. All parts of the ice maker part show in picture 9.





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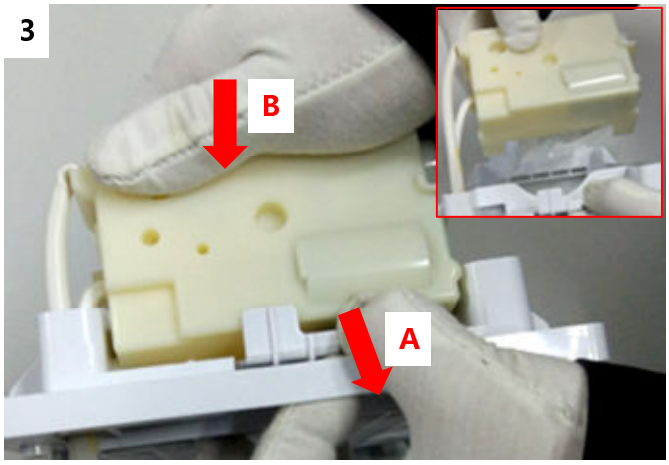
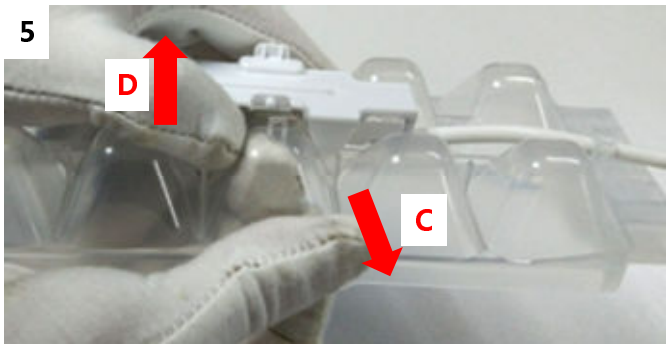


4

5



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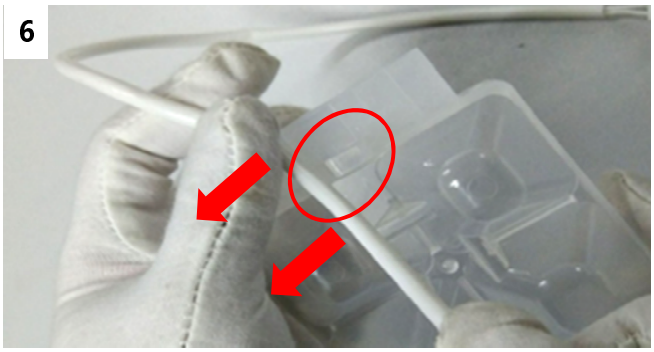

7

8

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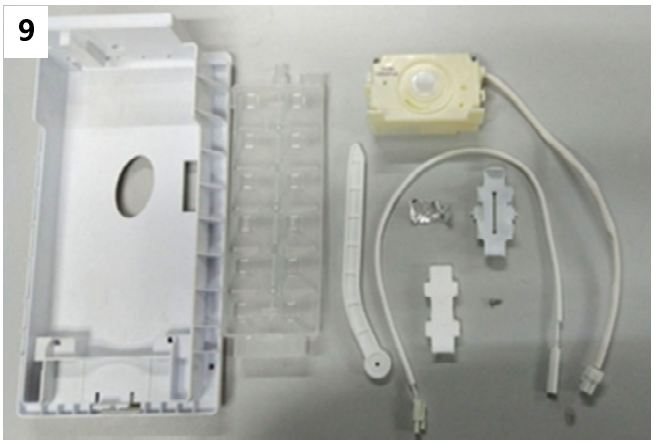
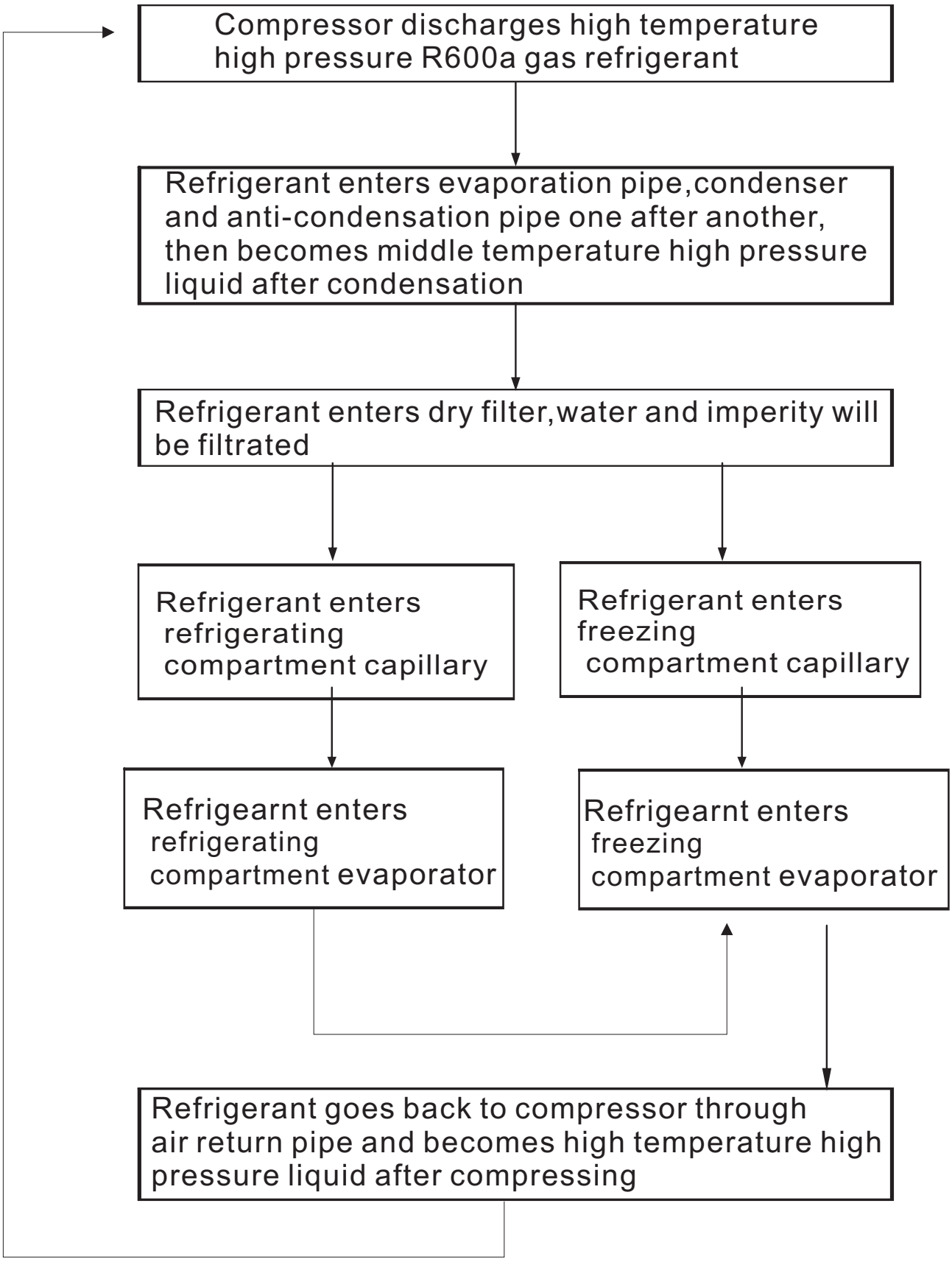
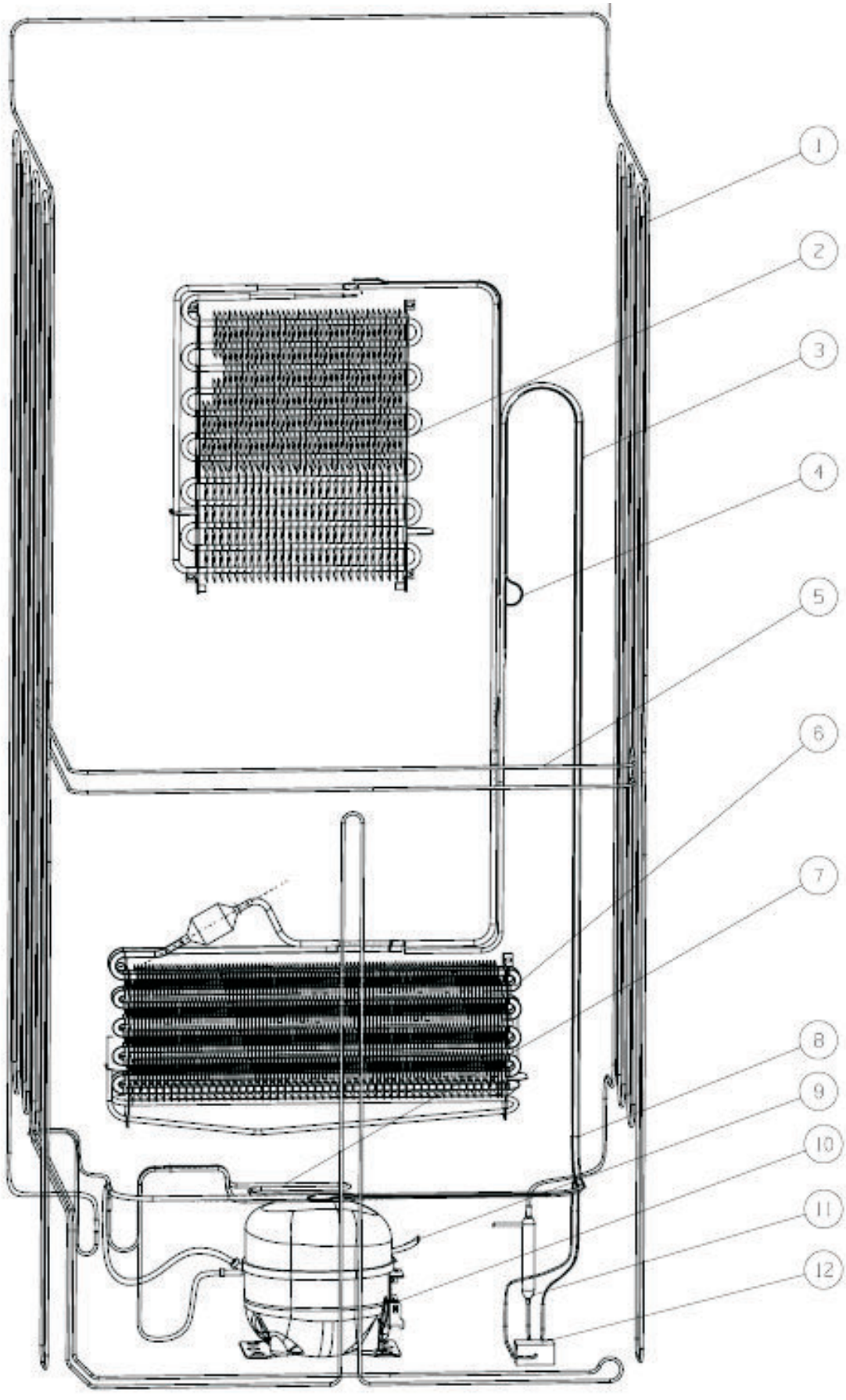


7.1 Refrigeration system

The refrigerator system is double cycle wind cooling system:



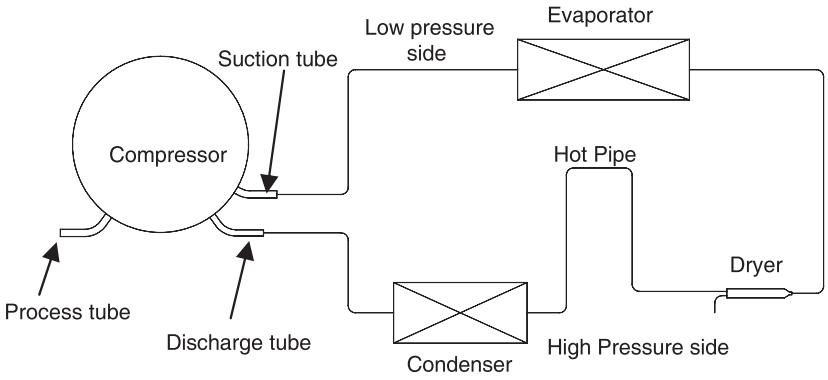
7.1 Refrigeration system



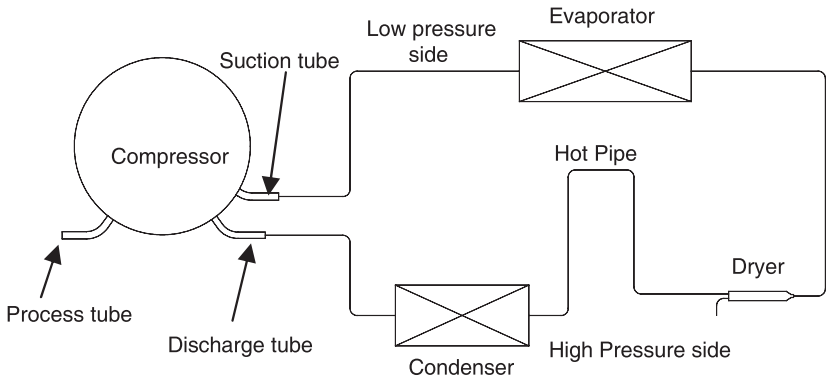
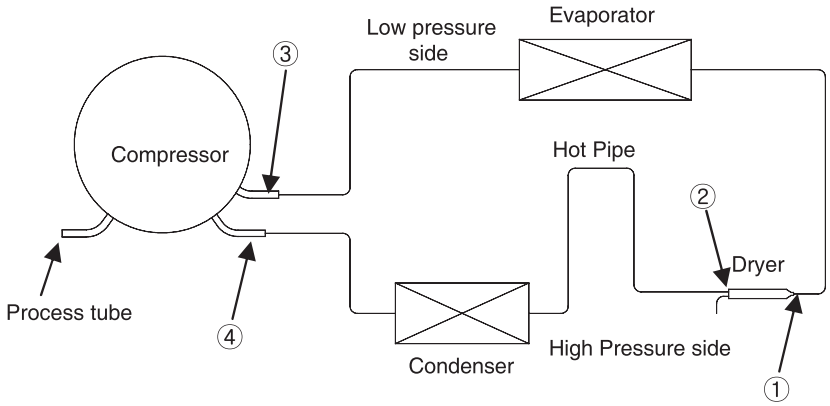
7.2 Summary of repair

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.)	

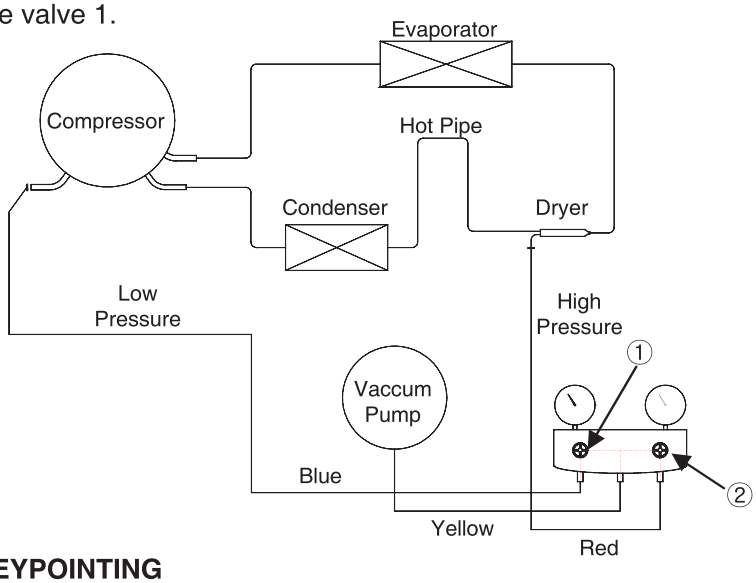
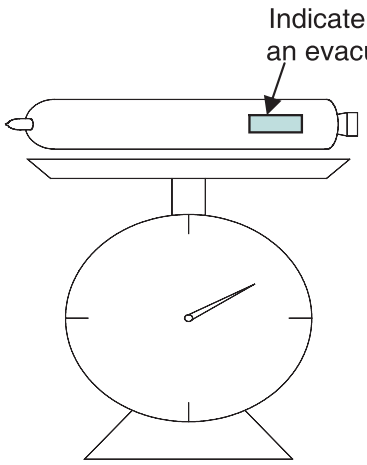
7.3 Regualation for repair

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.

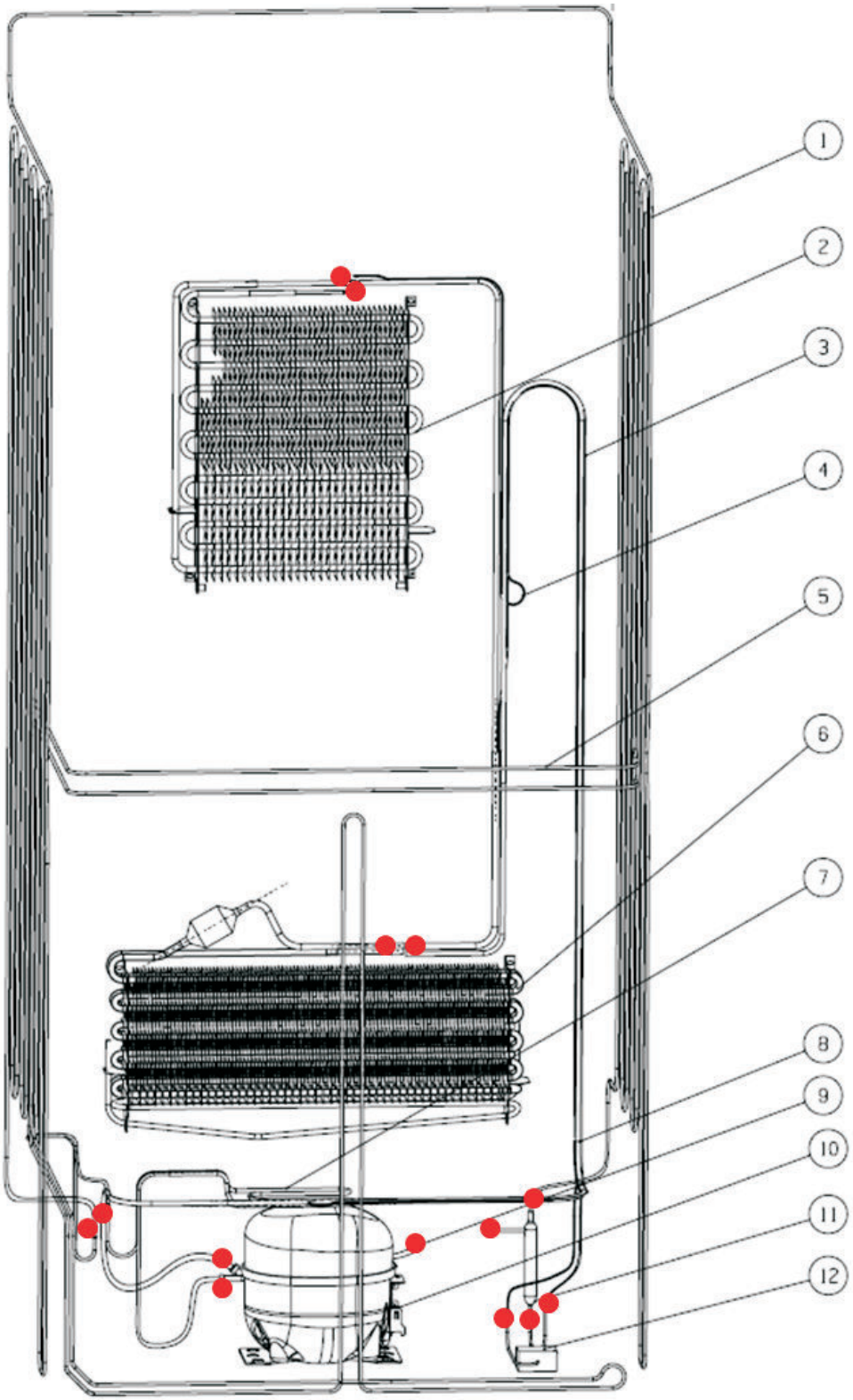
7.4 Practical work for repair

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.

7.4 Practical work for repair

Items	Precautions
3.Vacuum degassing.	*** 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.)
4.Refrigerant charging.	*** 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)

7.5 Brazing reference drawing



→ Refrigearnt flowing direction

● Welding points