Refrigerator

Service Manual

Model:HRF3603F

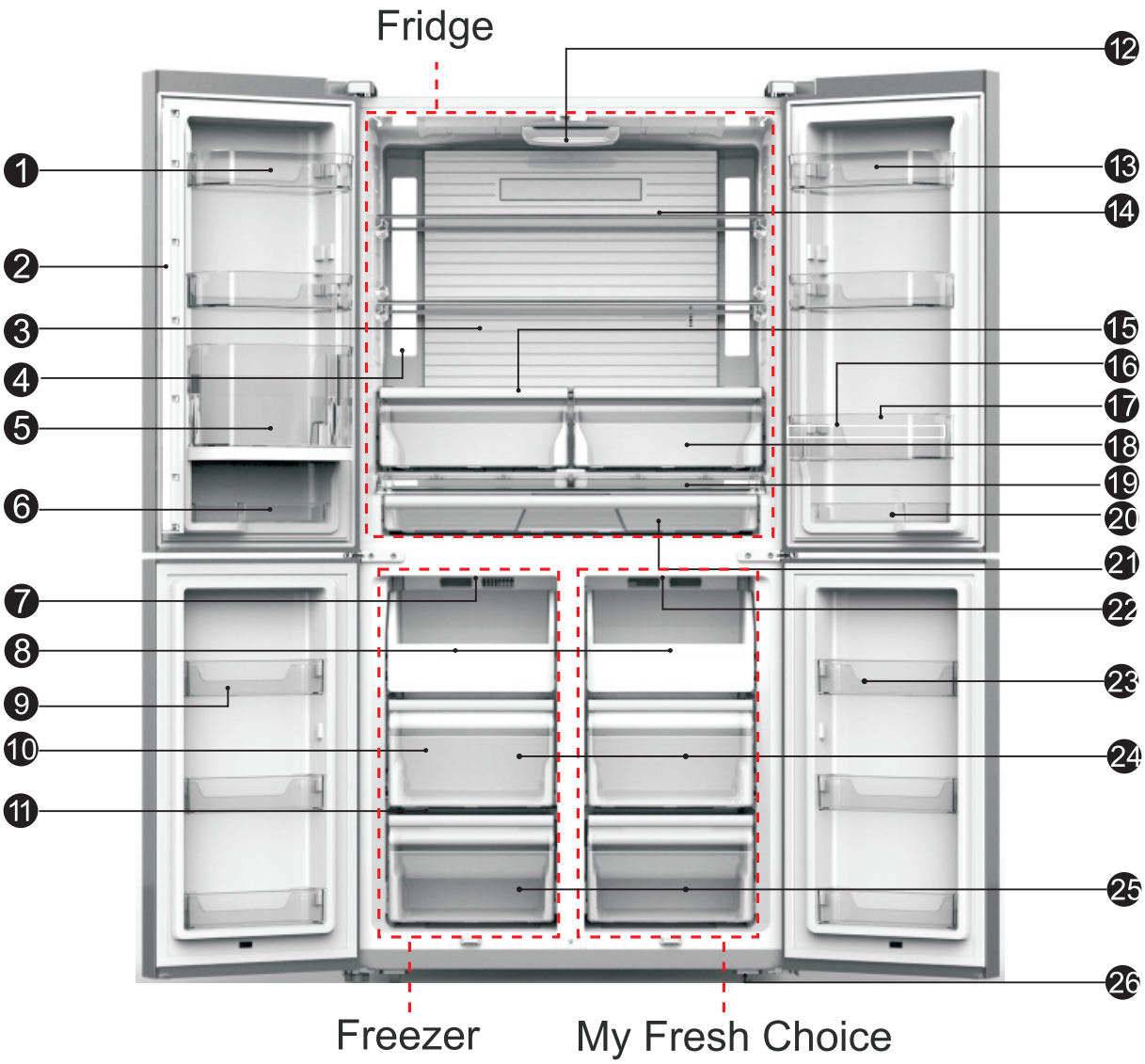
1 Warning and precautions for safety

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

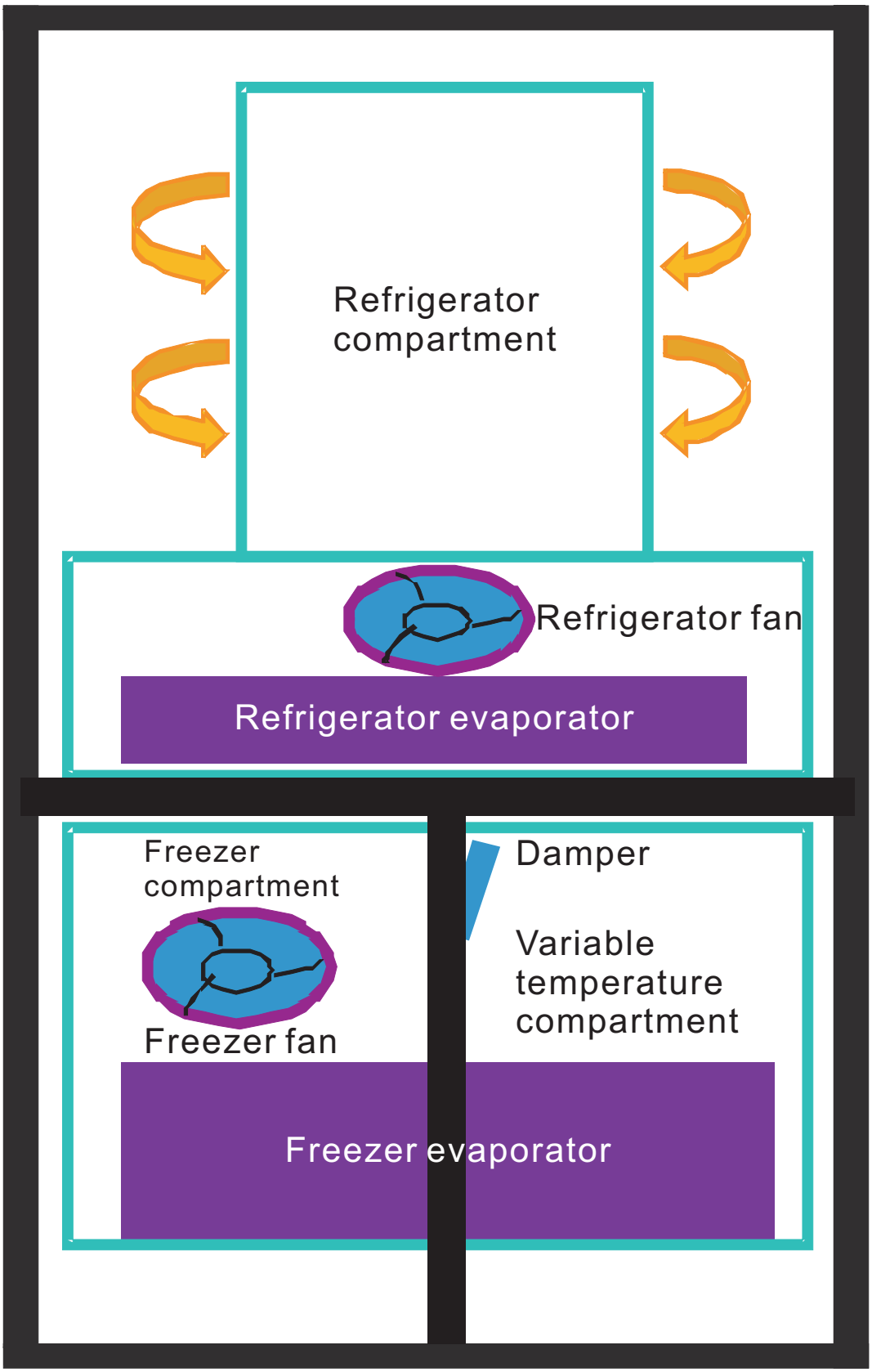
2.1 View of the appliance



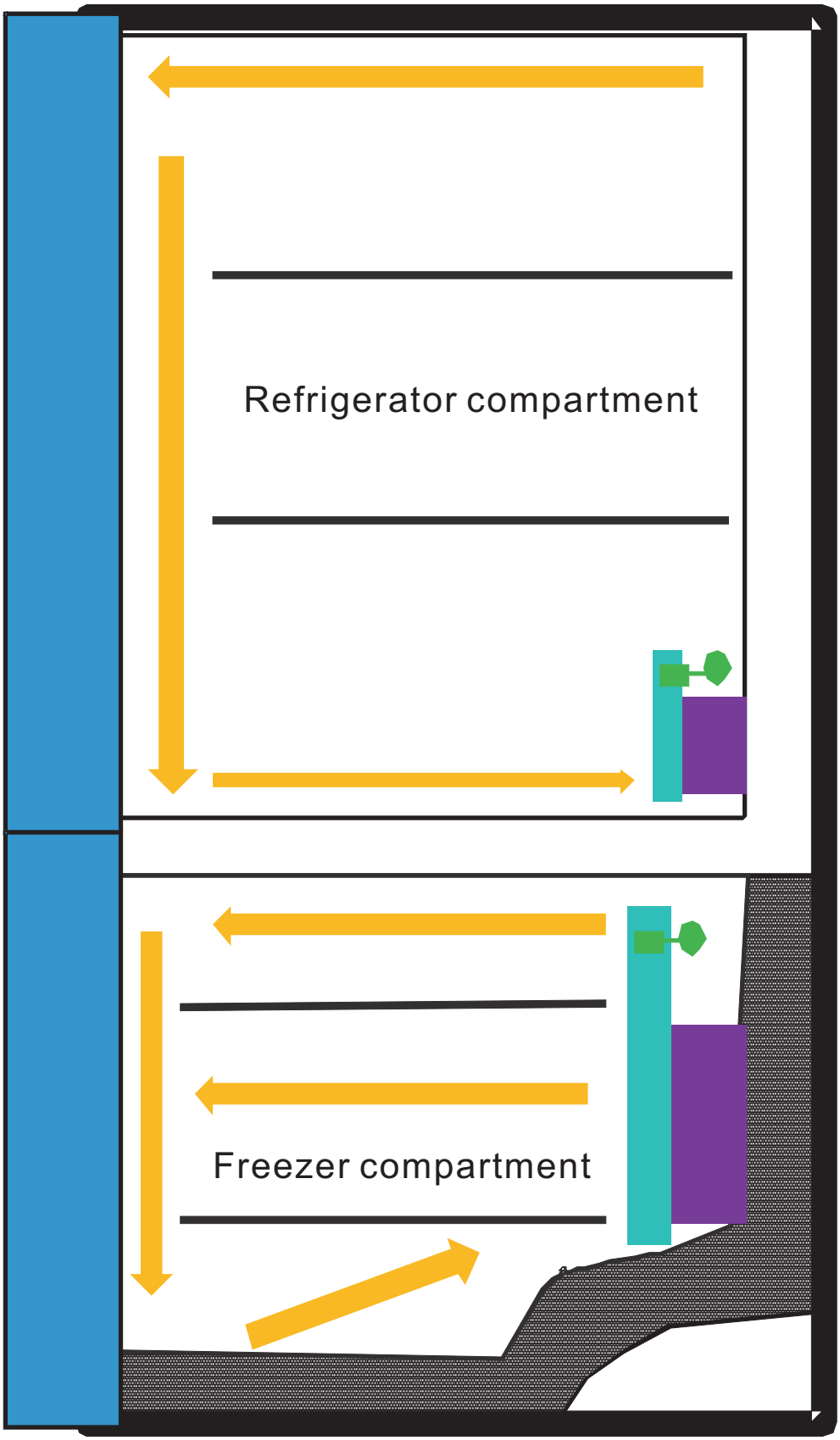
1. Left fridge upper rack
2. Rotary separator
3. Refrigerator air duct cover
4. Fridge LED light
5. Movable rack
6. Left fridge small rack
7. Freezer LED light
8. Serving tray
9. Freezer rack
10. Twistable ice tray (inside)
11. Freezer glass shelves
12. Nano negative ion preservation technology system
13. Right fridge upper rack
14. Fridge glass shelf
15. Upper crisper box cover
16. Bottles block stripe
17. Right fridge middle rack
18. Upper crisper box
19. Lower crisper box cover
20. Right fridge small rack
21. Lower crisper box
22. My Fresh Choice LED light
23. My Fresh Choice rack
24. Middle drawer
25. Lower drawer
26. Adjustable bottom feet
27. Egg tray(located in the plastic bag)

Note:Due to unceasing modification of our products,your refrigerator may be slightly differant from this Services Manual,but its functions and using methods remain the same.

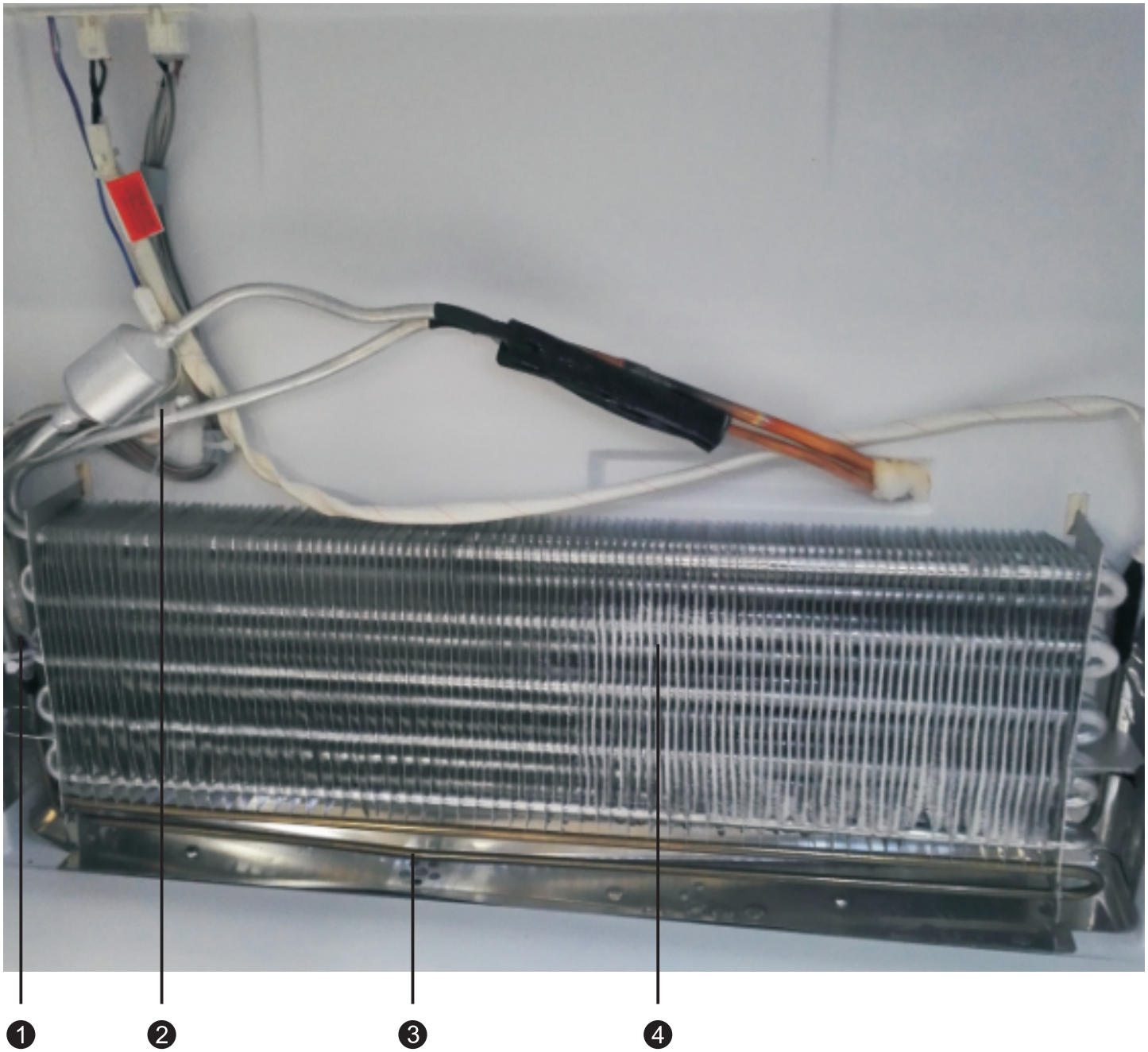
2.2 Wind channel structure



2.2 Wind channel structure

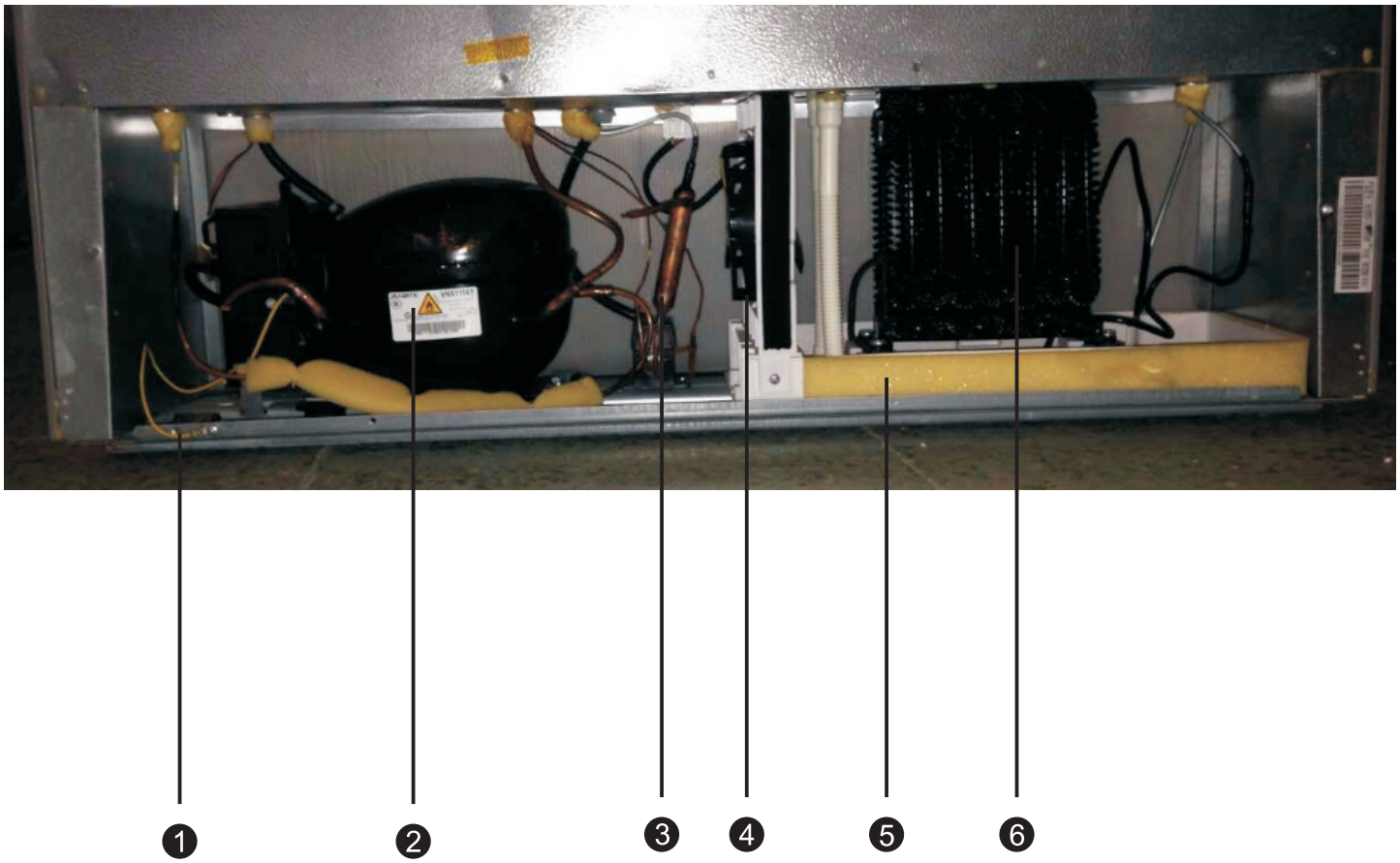


2.3 Evaporator structure



1. Fuse
2. Sensor
3. Heater
4. Evaporator

2.4 Compressor room structure



1. Ground wire
2. Compressor
3. Dry filter
4. Bottom fan
5. Evaporation dish
6. Bottom condenser

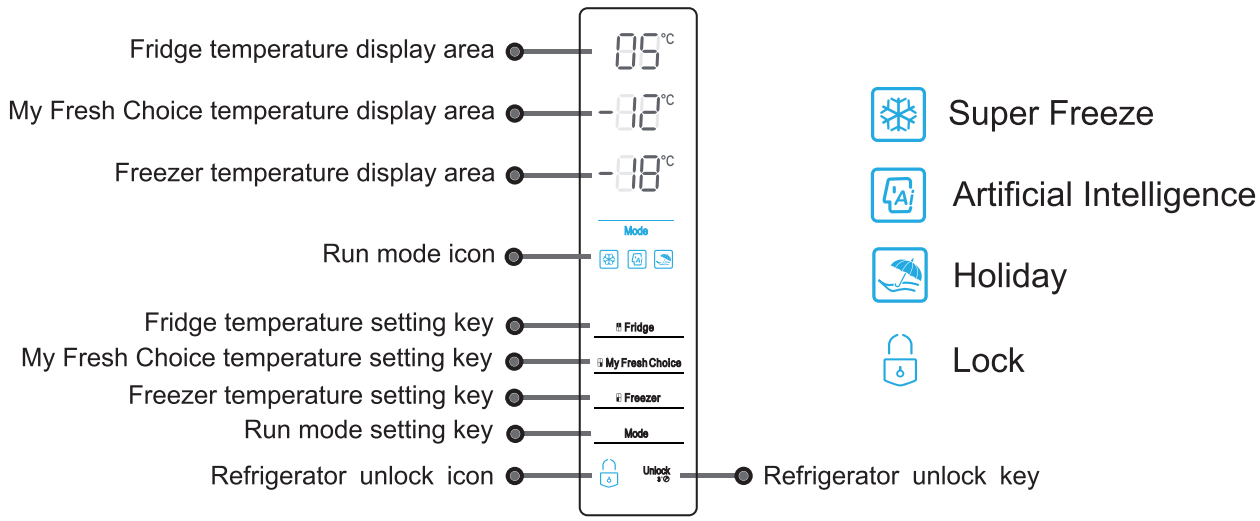
3 Basic parameters

Content	Unit	Value
Voltage / frequency	V/Hz	220-240/50
Rated current	A	1.8
Rated input power	W	220
Defrost power	W	250
Net capacity	L	610
Net capacity fridge compartmen (Fridge/Chill)	L	396/107
Net capacity freezer compartment	L	107
Energy efficiency class		A+
Climate class (SN=10~32°C, N=16~32°C, ST=16~38°C, T=16~43°C)		SN N ST S
Refigerator room temperature	°C	2~8
Freezer room temperature	°C	-24~-14
Freezer compartment star rating		4 Star
Energy consumption / 24 hours	kWh/24h	1.301
Freezing capacity / 24 hours	kg/24 h	10
Max noise level	dB(A)	43
Kind of coolant / Charge (R134a/R600a) / grammes	R / g	R600a/68

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 display panel starts working. If no buttons have been pressed and the doors are closed, the backlighting will turn off.



Controlling the temperature

We recommend that when you start your refrigerator for the first time, the temperature for the refrigerator is set to 5°C ,my fresh choice to -12°C and the freezer to -18°C. If you want to change the temperature, follow the instructions below.

Caution! When you set a temperature, you set an average temperature for the whole refrigerator cabinet. Temperatures inside each compartment may vary from the temperature values displayed on the panel, depending on how much food you store and where you place them. Ambient temperature may also affect the actual temperature inside the appliance.

1. Fridge

Press ″Fridge″ button repeatedly to set your desired fridge temperature between 8 °C and 2 °C, the temperature will decrease 1 °C degrees with each press and the fridge temperature indicator will display corresponding value according to the following sequence.

5°C — 4°C — 3°C — 2°C
6°C — 7°C — 8 °C

2. My Fresh Choice

Press "My Fresh Choice" button to set the two-star compartment temperature between -5°C and -20°C to suit your desired temperature, and the two-star compartment temperature indicator will display corresponding value according to the following sequence.

-12°C — -13°C — -14°C — -15°C — ····· — -20°C
-11°C — -10°C — -9°C — -8°C — -5°C

4.1 Display controls

3. Freezer

Press "Freezer" button to set the freezer temperature between -14°C and -24°C to suit your desired temperature, and the freezer temperature indicator will display corresponding value according to the following sequence.

-18°C — -19°C — -20°C — -21°C — -22°C — -23°C
-17°C — -16°C — -15°C — -14°C — -24°C

4. Super Freeze

Super Freeze can rapidly lower frozen temperature and freeze you food substantially faster than usual

This feature also helps to keep vitamins and nutrition of fresh food for longer period.

- Press "Mode" button to activate the super freeze function. The super freeze light will be illuminated and the freezer temperature setting will display -24°C.
- Super freeze automatically switches off after 26 hours .
- When super freeze function is on, you can switch off super freeze or freezer function by pressing "Mode" button and the freezer temperature setting will revert back to the previous setting.

Note: When selecting the Super Freeze function, ensure there are no bottled or canned drinks (especially carbonated drinks) in the freezer compartment. Bottles and cans may explode.

5.Artificial intelligence

When the function is activated, the temperature of the refrigerator is automatically switched to 5°C ,the temperature of freezer is automatically switched to -18°C.

6. Holiday

When the holiday function is activated, the temperature of the refrigerator is automatically switched to 15°C to minimise the energy consumption.

The temperature of the freezer is automatically switched to -18°C.

- **Important !** Do not store any food in the fridge during this time.

When the holiday function is on, you can switch it off by pressing any button of "Holiday", "Fridge" and "Super Cool" button. The fridge temperature setting will revert back to the previous setting.

7. Dual ion sterilization preservation technology system

Dual ion sterilization preservation technology system has the function of sterilization preservation.

- In the unlock state, press "Unlock" and “Mode” button for 3 seconds, and than beep twice, to enter the sterilization mode. This mode will last for 30 hours. Enter the sterilization mode, the “Fridge temperature display area” flashing display “℃”.

4.1 Display controls

● Enter the sterilization mode after 60 minutes, if you open the fridge door, then exit sterilization mode, and the “Fridge temperature display area” is normal, no longer flashing display “℃

● You can also exit sterilization mode manually. In the unlock state, press "Unlock" and “Mode” button for 3 seconds, and than beep twice, to exit the sterilization mode.

8. Mode

You can select different modes by pressing the “Mode ” button when " " .When certain mode is selected, wait for the corresponding icon flashing for 10 seconds.

9. Unlock

All the buttons are locked if the icon “ ” is illuminated, press the “Unlock” button for 3 seconds to unlock them. And it will be locked itself after 20 seconds no pressing any button.

10. Door alarm

If the door of fridge or freezer is open for over 2 minutes, the door alarm will sound. The buzzer will automatically stop alarming 10 minutes later.

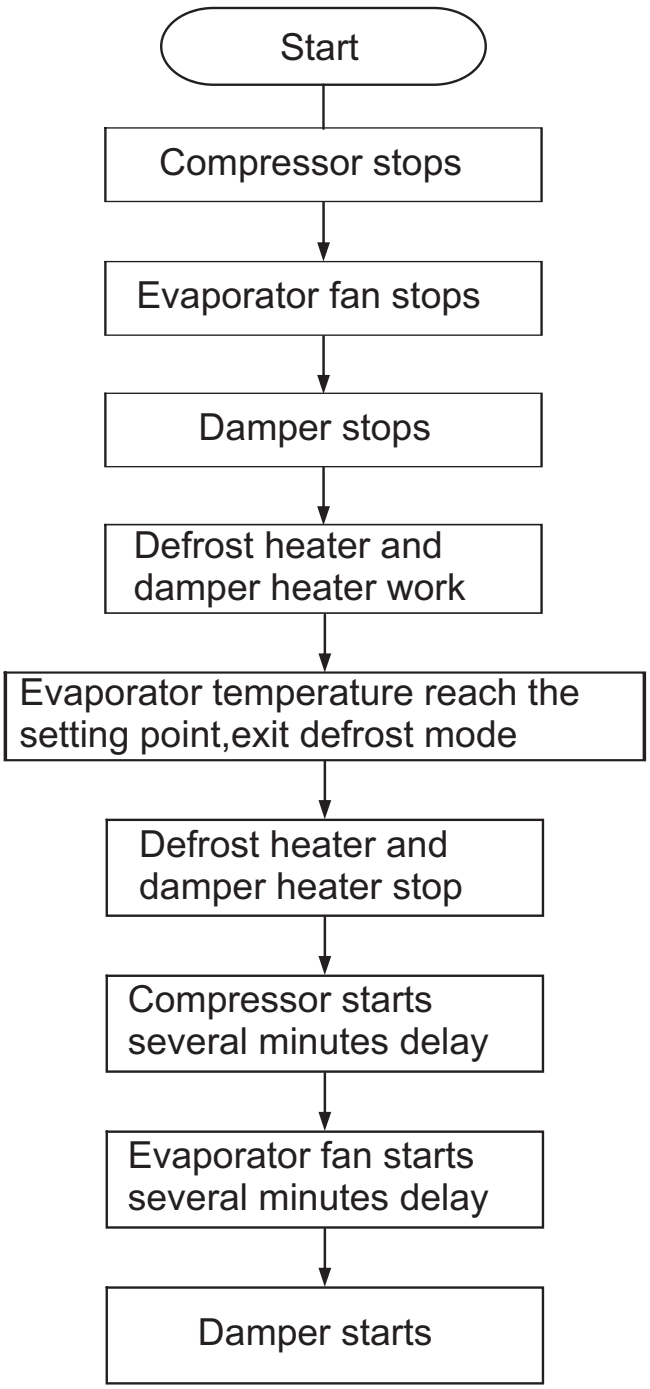
To save energy, please avoid keeping the door open for a long time when using the appliance. The door alarm can be cleared by closing the door.

4.2 Defrost mode

4.2.1 Start condition

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

4.2.2 Defrost flow

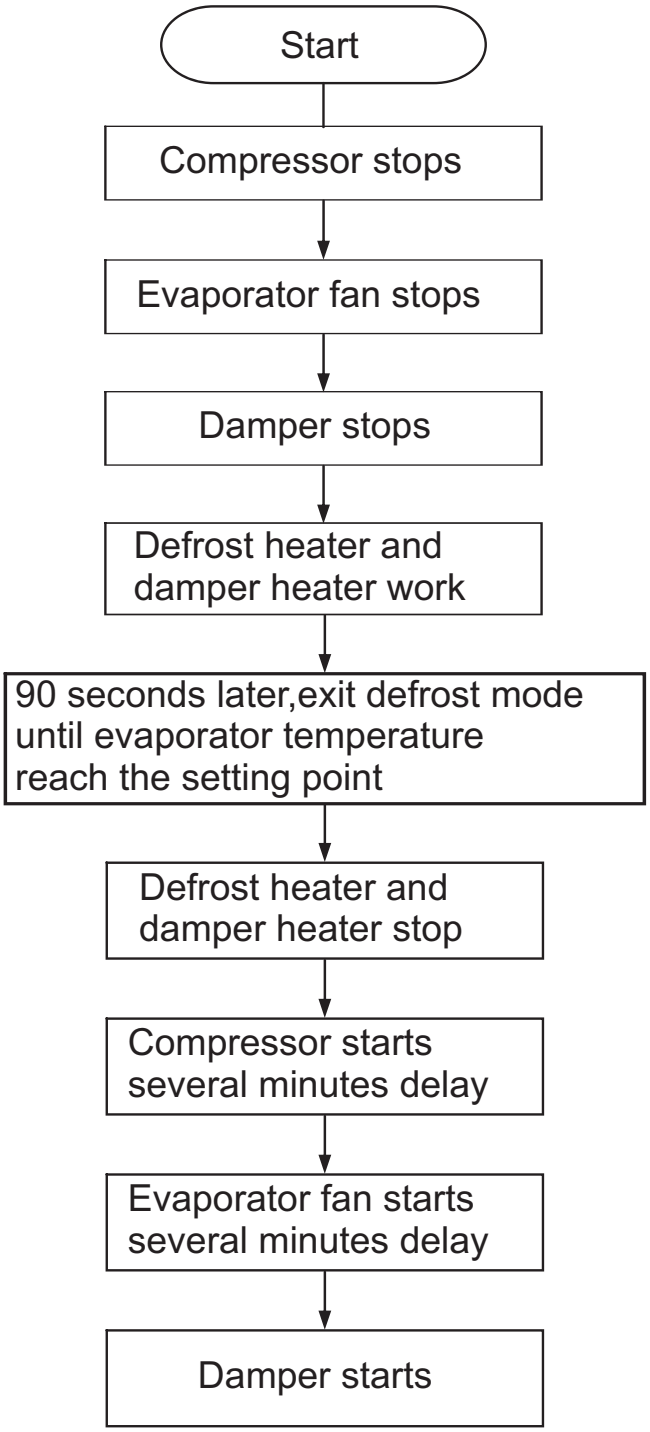


4.3 Compulsory Defrost mode

4.3.1 Start condition

Keep the refrigerator door closed,press the “Fridge” button and “My Fresh Choice” button for more than 3 seconds in 10 minutes after power-on,then it will enter compulsory defrost mode.

4.3.2 Compulsory defrost flow



4.4 Error display

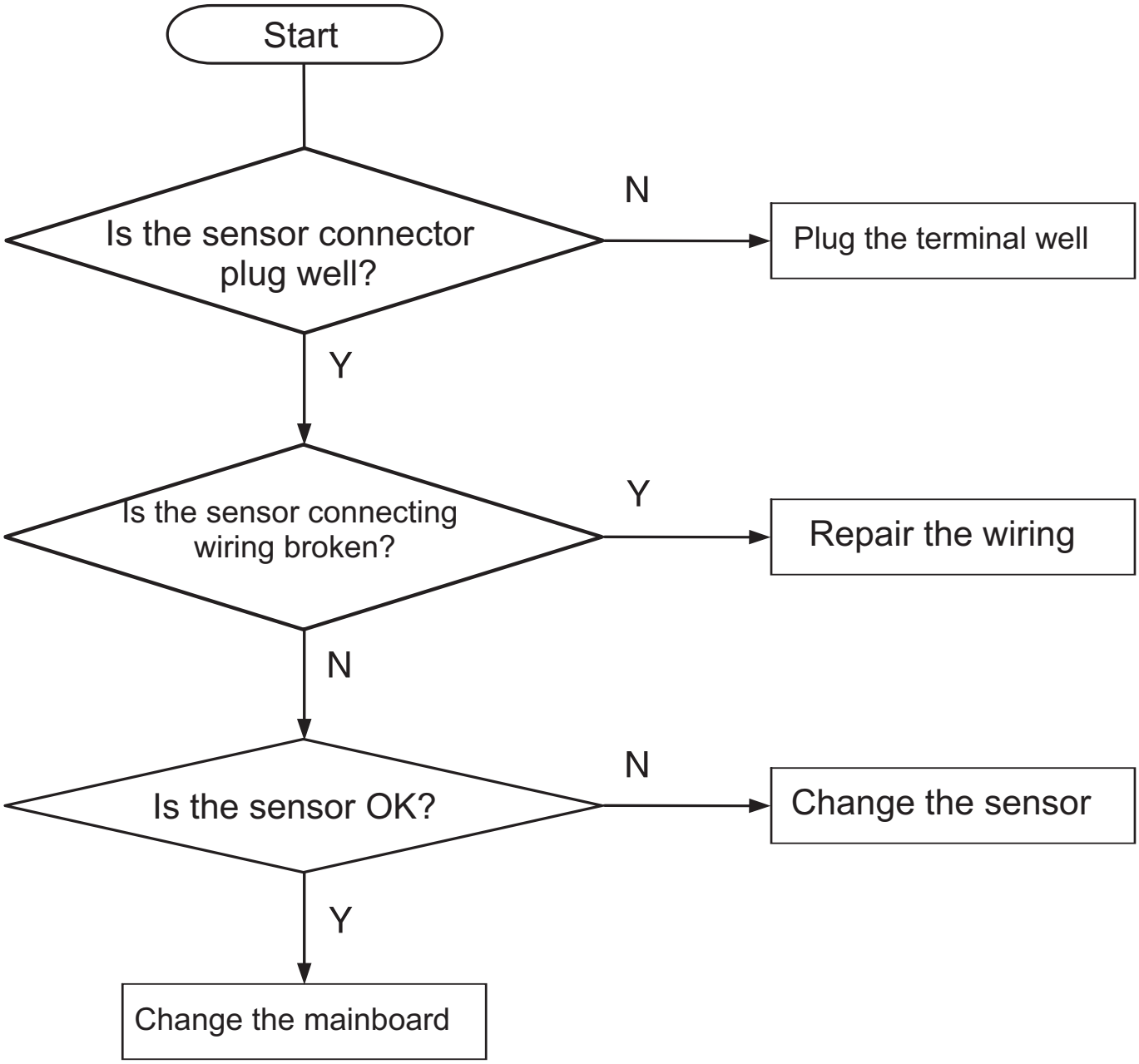
4.4.1 Error code

Code	Display	Problem
E1	Refrigerator temperature display area	Refrigerator sensorerror
E2	Refrigerator temperature display area	Refrigerator defrost sensor error
E3	Freezer temperature display area	Freezer sensor error
E4	Freezer temperature display area	Freezer defrost sensor error
E5	My fresh choice temperature display area	My fresh choice temperature sensor error
E8	Freezer temperature display area	Humidity sensor error
E0	Freezer temperature display area	Environment sensor error
Ec	Refrigerator temperature display area	Communication sending error
Er	Refrigerator temperature display area	Communication receiving error
F1	Freezer temperature display area	F Fan motor failure
F2	Refrigerator temperature display area	R Fan motor failure

4.4 Error display

4.4.2 Checking method

4.4.2.1 Humidity sensor error



4.4 Error display

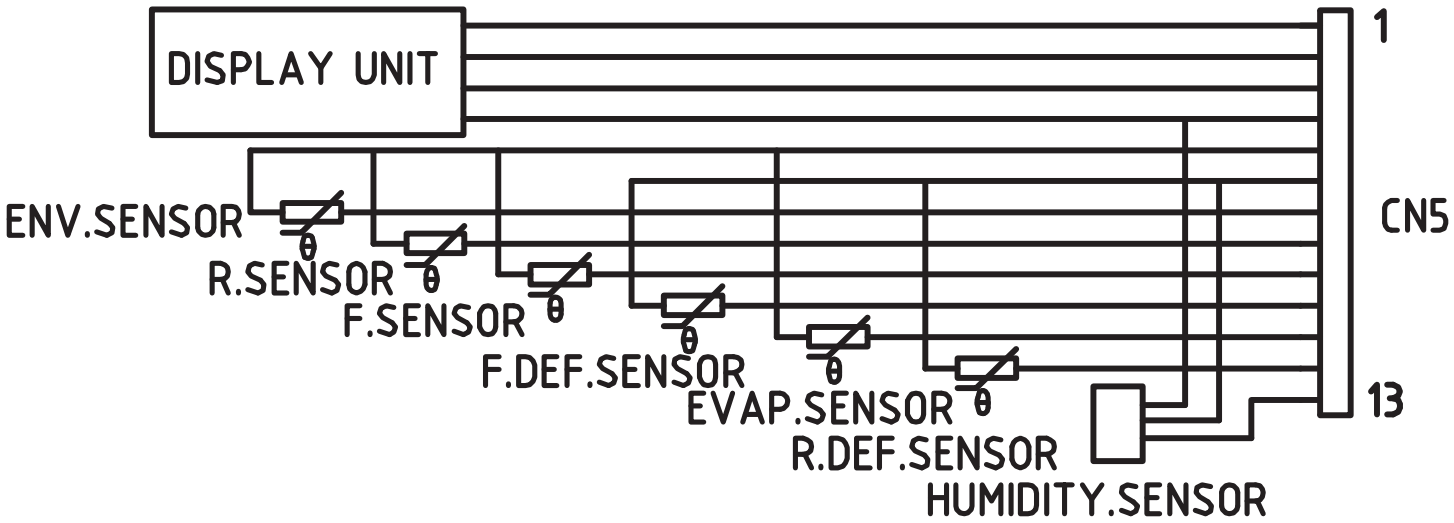
4.4.2 Checking method

4.4.2.1 Humidity sensor error

Note:

1.The humidity sensor corresponding pin No.13,No.6 and No.4 on CN5 connector of mainboard.

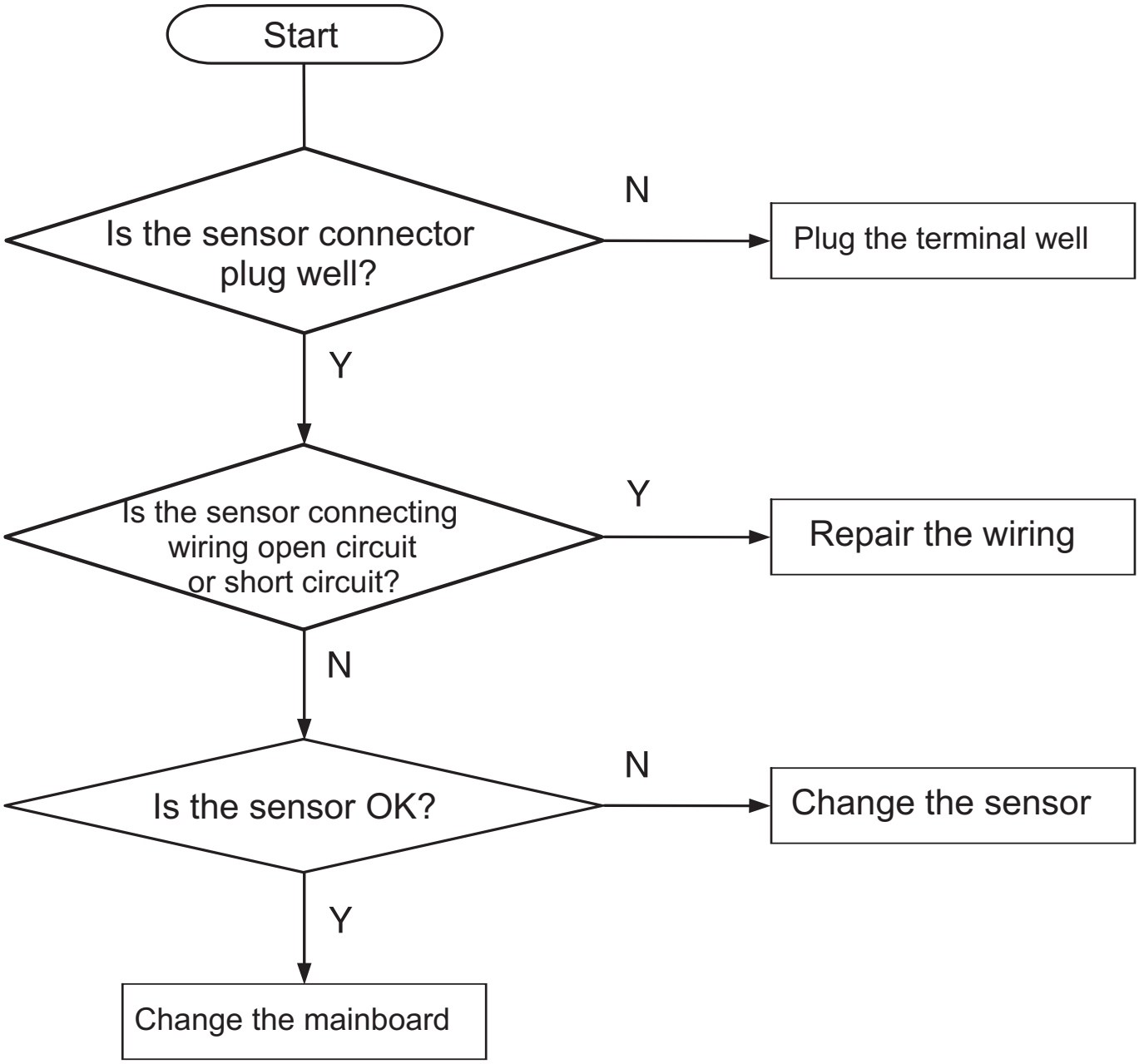
2.Use a multimeter to check the voltage of pin No.4 and No.6 is 5V or not and the voltage of pin No.13 is 1.2-3.5V or not(the value will change along with the change of environment temperature and humidity).If the result is abnormal,it means the humidity sensor is broken.



4.4 Error display

4.4.2 Checking method

4.4.2.2 Other sensor error

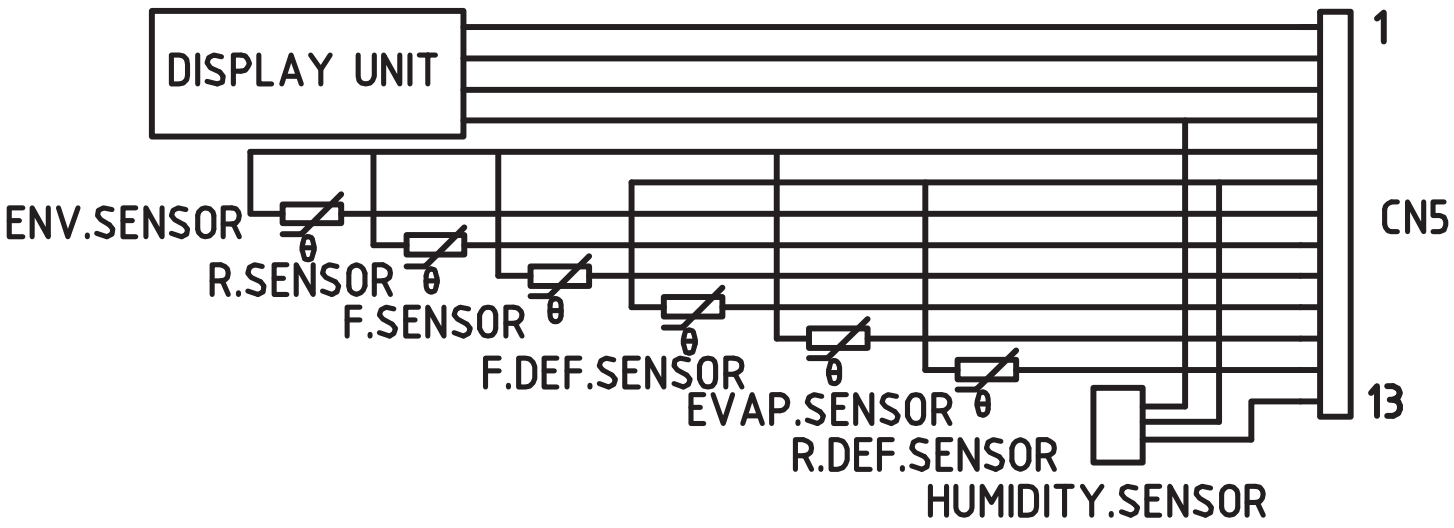


4.4 Error display

4.4.2 Checking method

4.4.2.2 Other sensor error

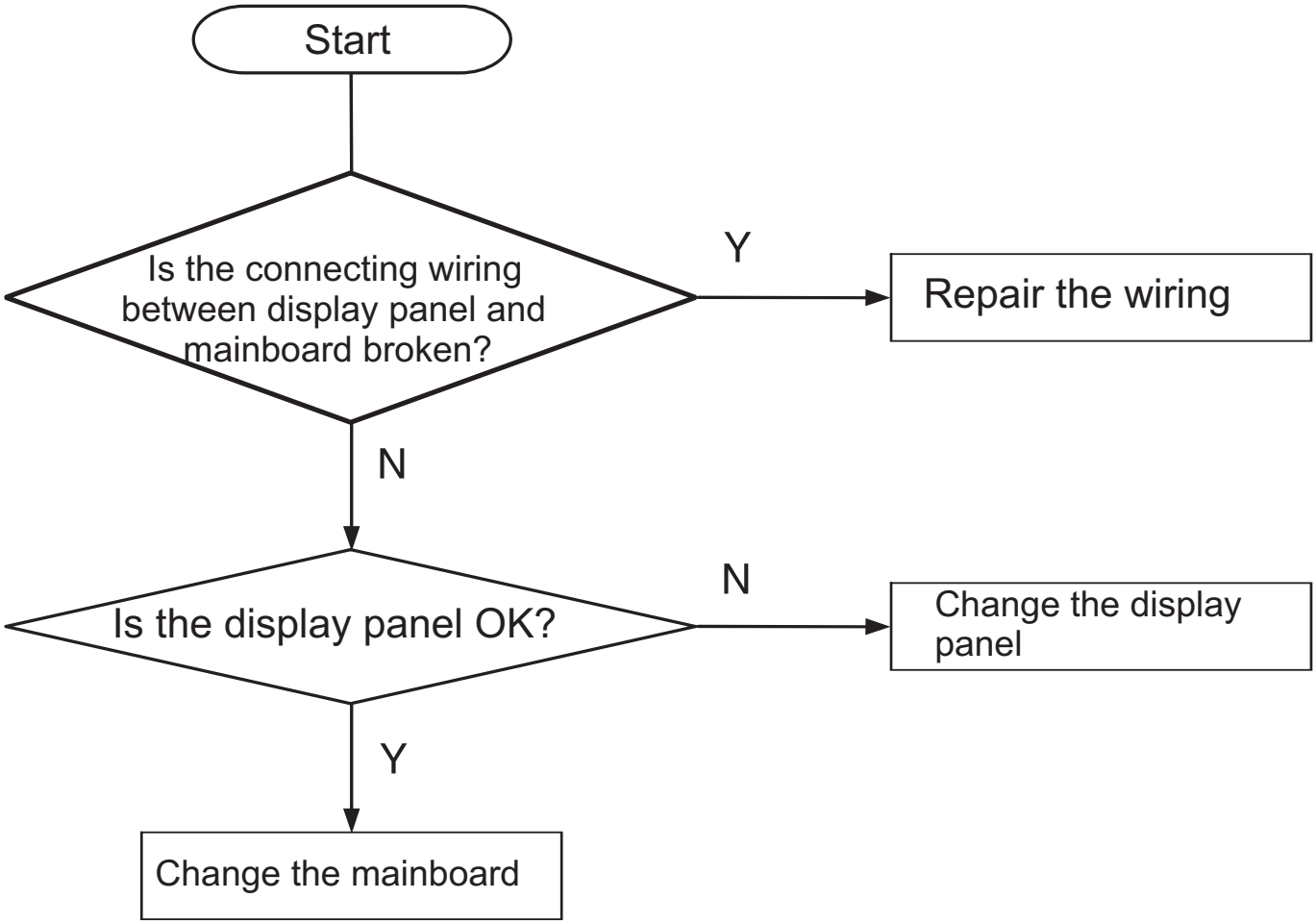
Note:
1.The refrigerator sensor corresponding pin No.8 and No.5 on CN5 connector of mainboard.
2.The refrigerator sensor corresponding pin No.12 and No.6 on CN5 connector of mainboard.
3.The freezer sensor corresponding pin No.9 and No.5 on CN5 connector of mainboard.
4.The defrost sensor corresponding pin No.10 and No.6 on CN5 connector of mainboard.
5.The environment sensor corresponding pin No.7 and No.5 on CN5 connector of mainboard.
6.The my fresh choice temperature sensor corresponding pin No.11 and No.5 on CN5 connector of mainboard.
7.Use a multimeter to measure the resistance of the sensor,if it is open circuit or short circuit,it means the sensor is broken.



4.4 Error display

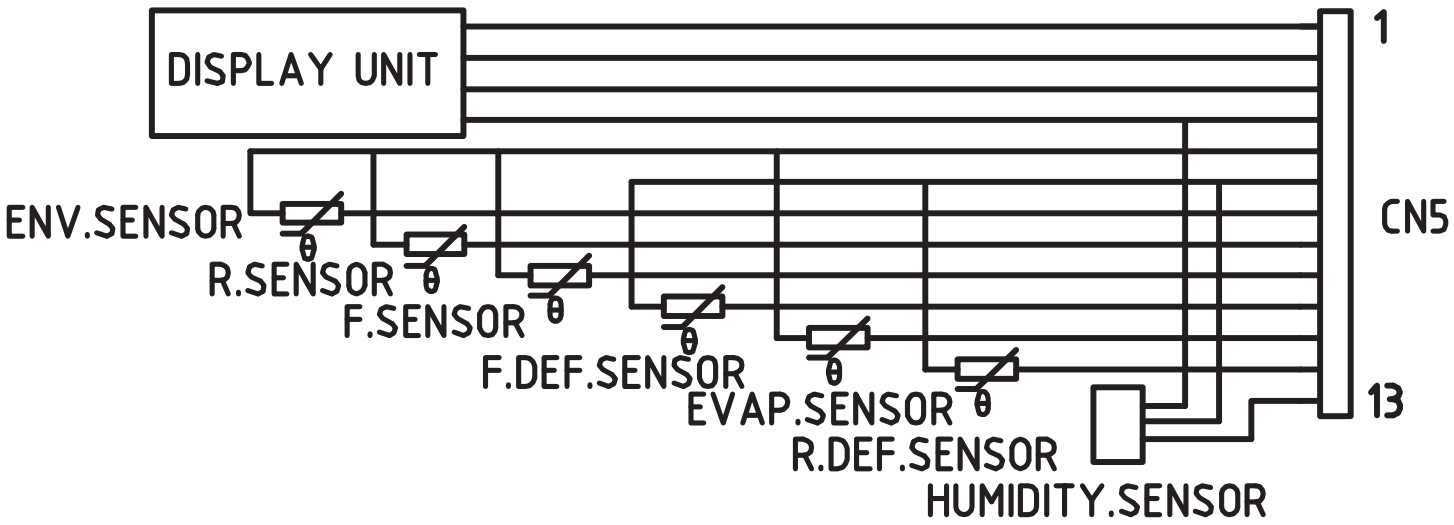
4.4.2 Checking method

4.4.2.3 Communication error



Note:

Communication sensor corresponding pin No.1~4 on CN5 connector of mainboard.

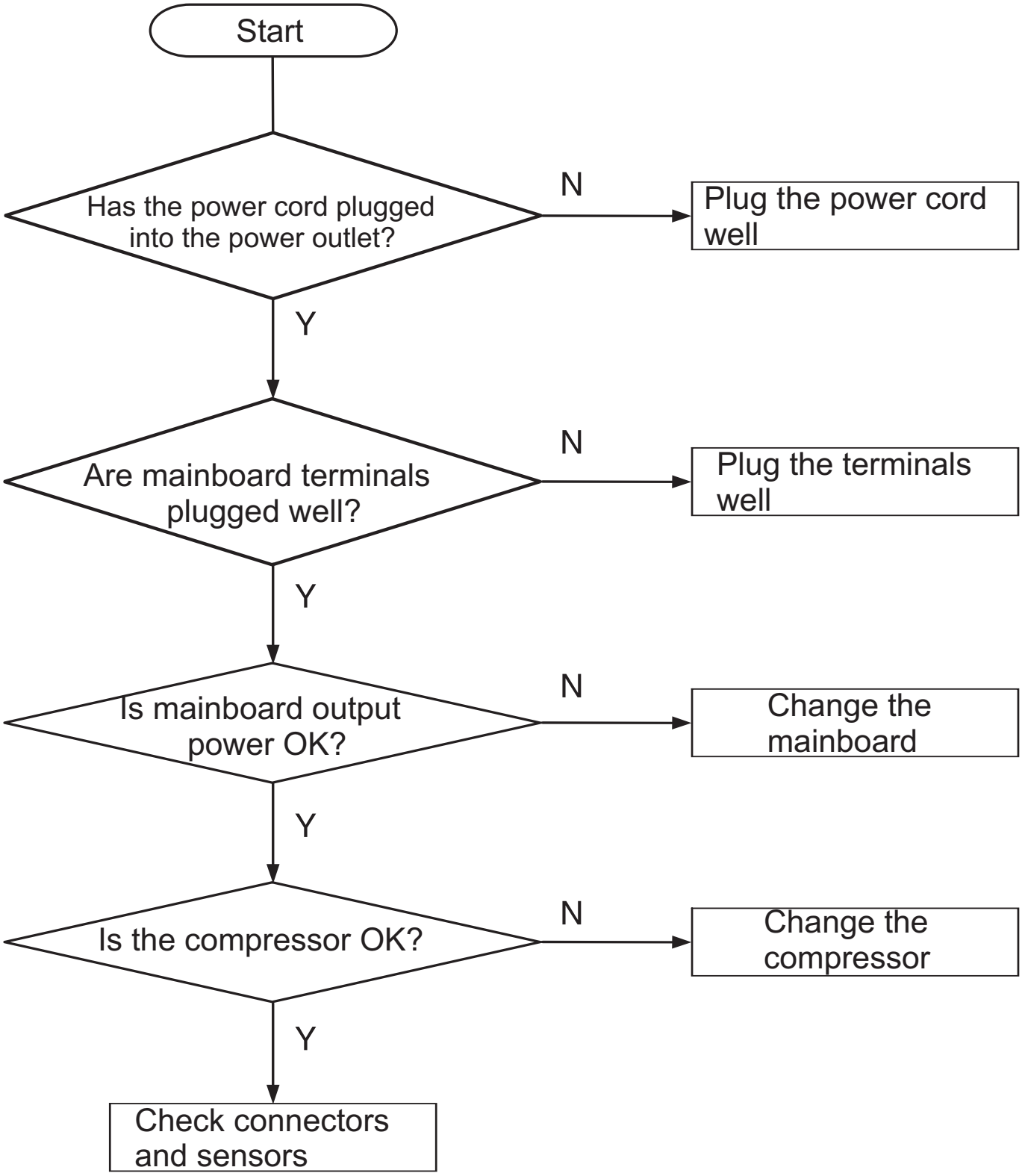


5.1 Common problem and checking

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 temperature to a colder level to solve this problem.
	It is normal that the freezer is not operating during the automatic 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 t he 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 not level. The back of appliance touches the wall. Bottles or containers fallen or rolling.
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. hedof ●Doors are kept open too long or too often. ●After your installing the appliance or it has been swicthed off for a long time.

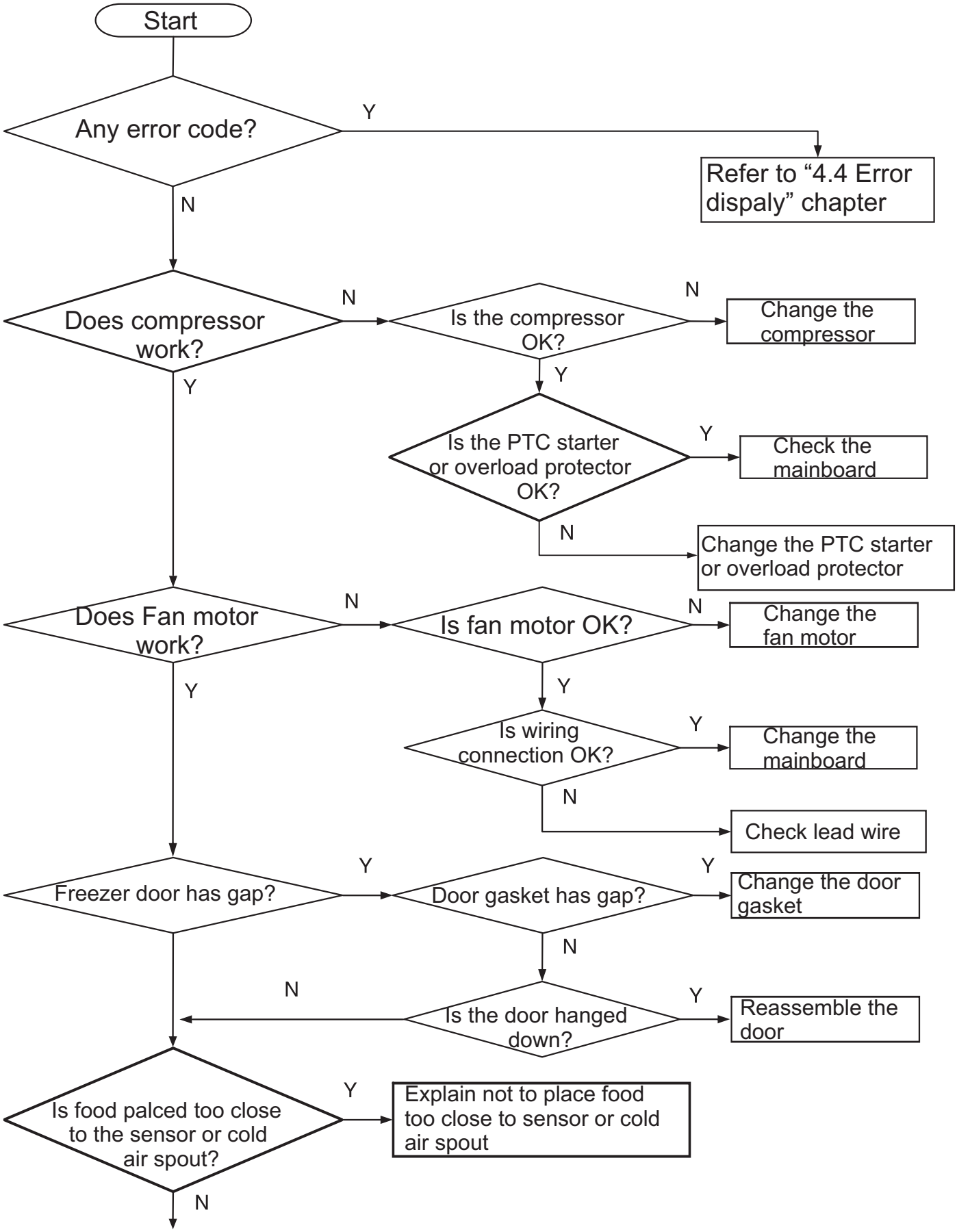
A layer of frost occurs in the compartment	Check that the air outlets are not blocked by food and ensure food is placed within the appliance to allow sufficient ventilation. Ensure that door is fully closed. To remove the forst, please refer to cleaning and care chapter.
Temperature inside is too warm	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 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 prevening the doors from closing.
Water drips on the floor	The water pan (located at the rear bottom of the cabinet) may not be properly leveled, or the draining spout （located underneath the top of the compressor depot） may not be properly positioned to direct water into this pan, or the water spout is blocked. You may need to pull the refrigerator away from the wall to check the pan and spout.
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



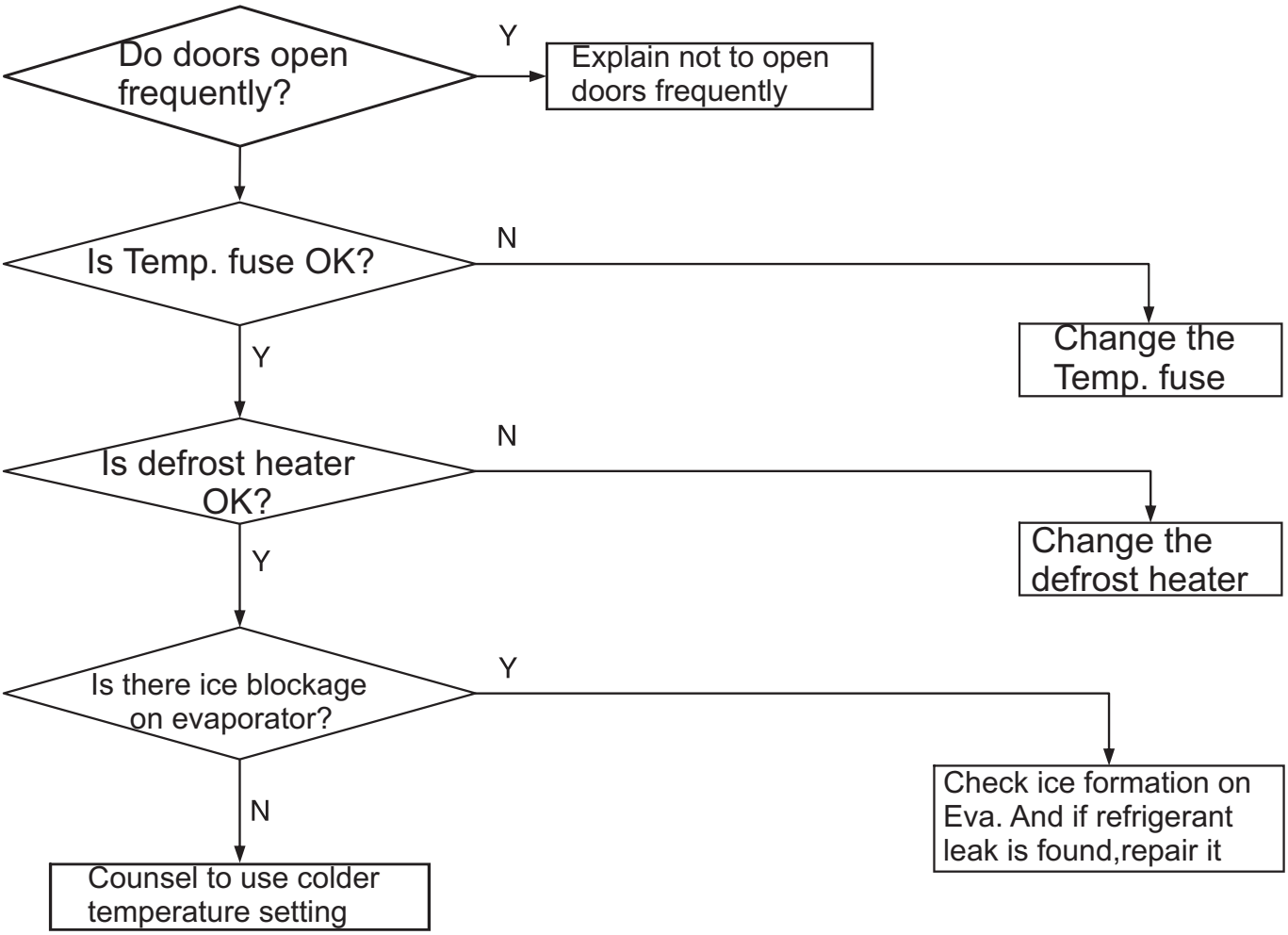
5.3 Refrigeration failure

5.3.1 Freezer compartment



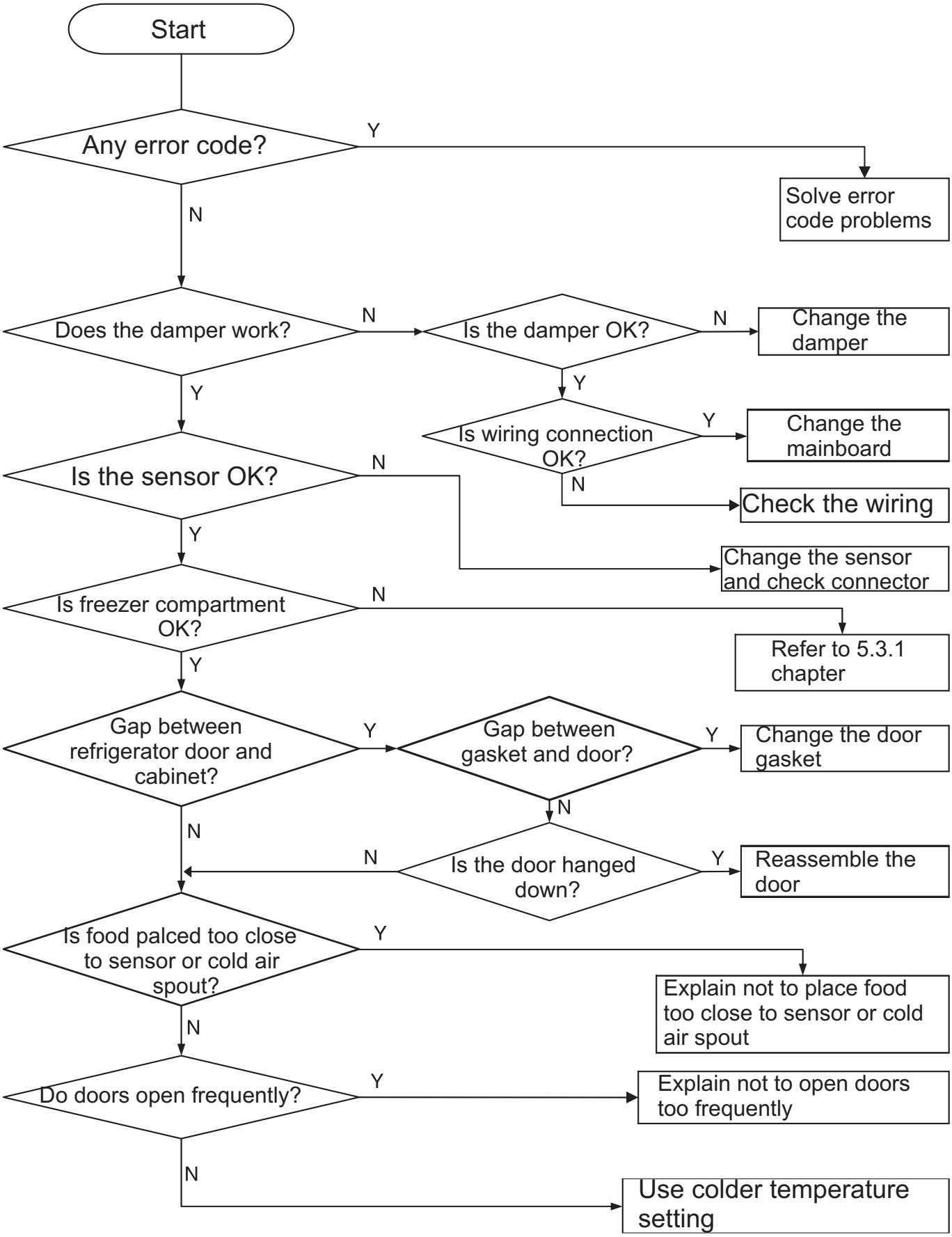
5.3 Refrigeration failure

5.3.1 Freezer compartment

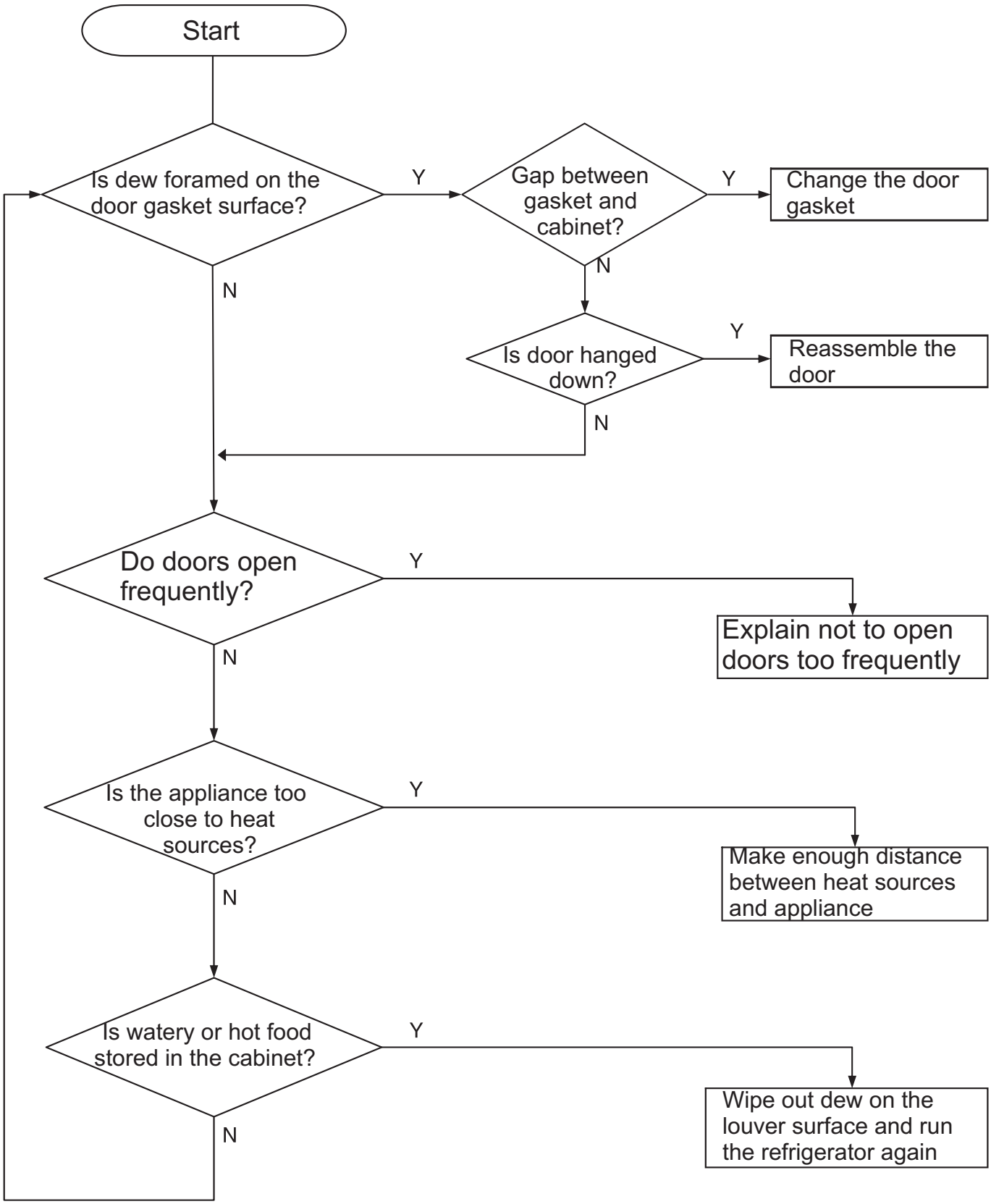


5.3 Refrigeration failure

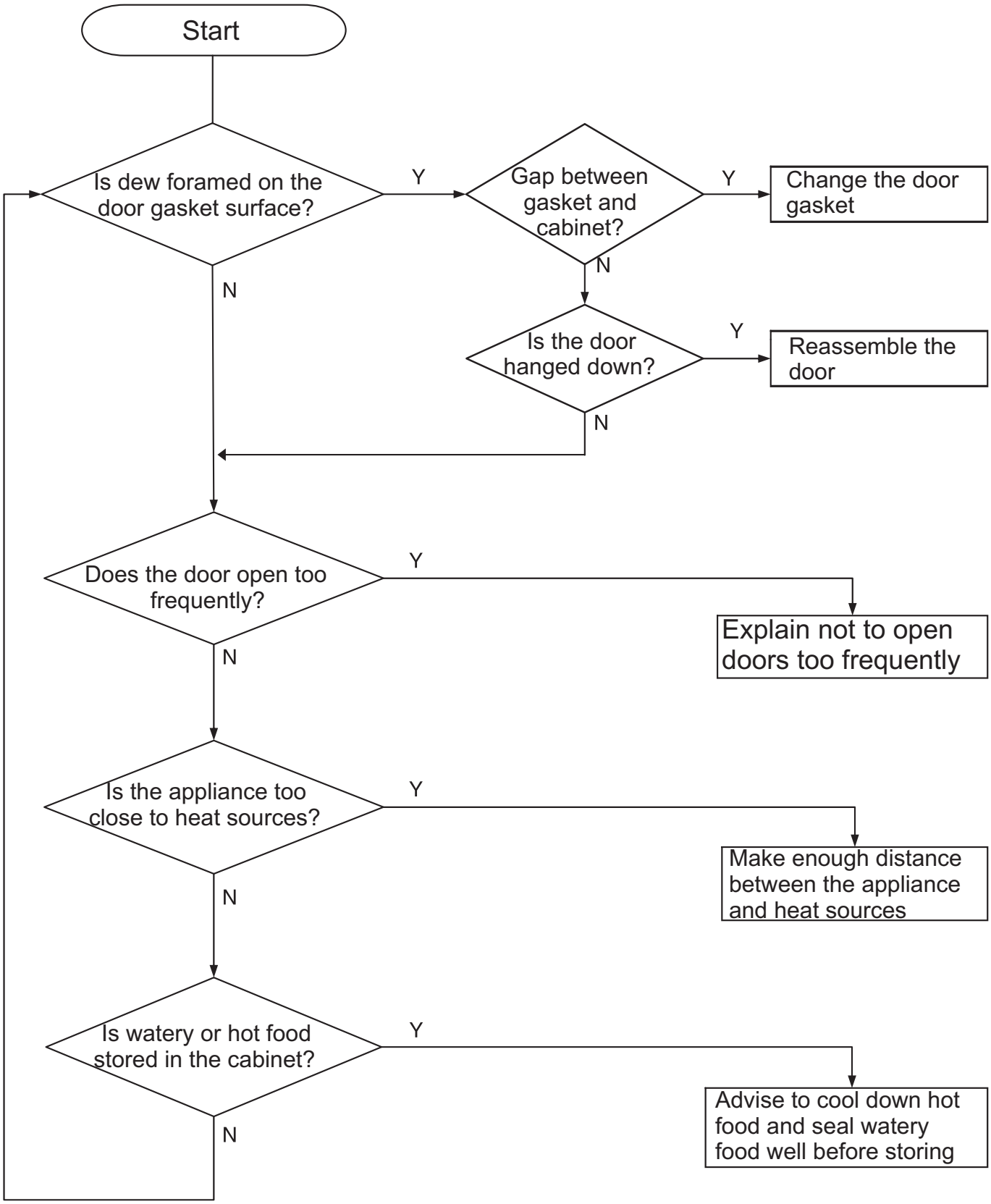
5.3.2 Refrigerator compartment



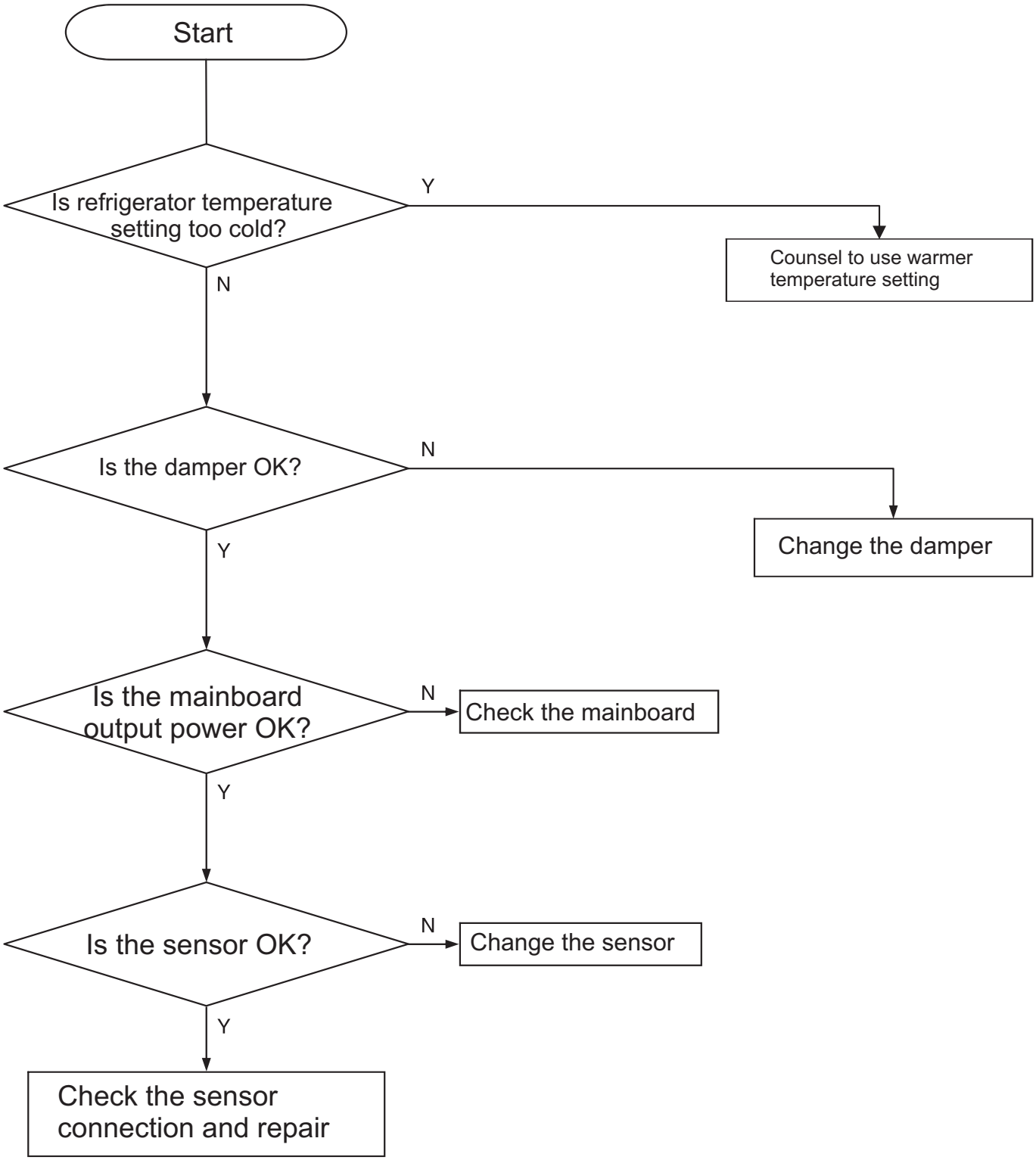
5.4 Thick frost in freezer compartment



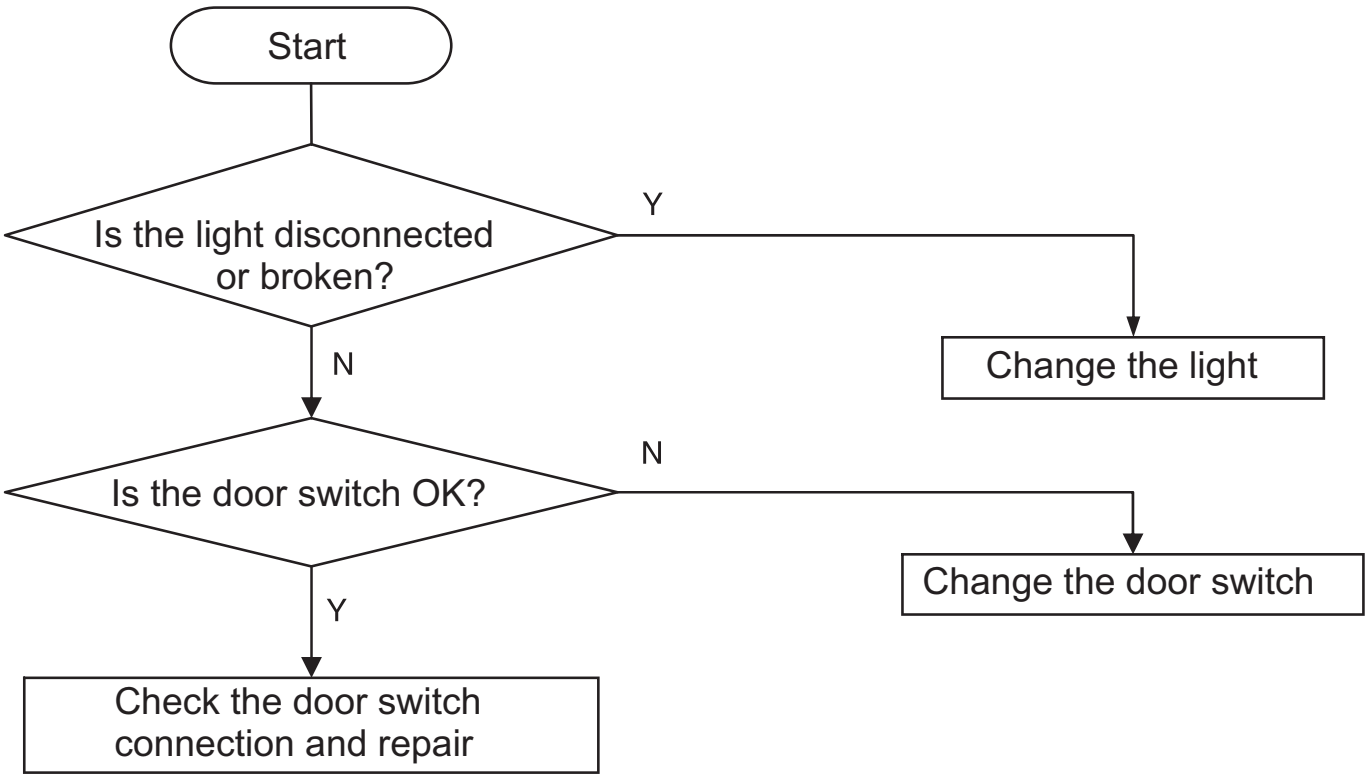
5.5 Dew in refrigerator compartment



5.6 Low temperature of vegetable vase

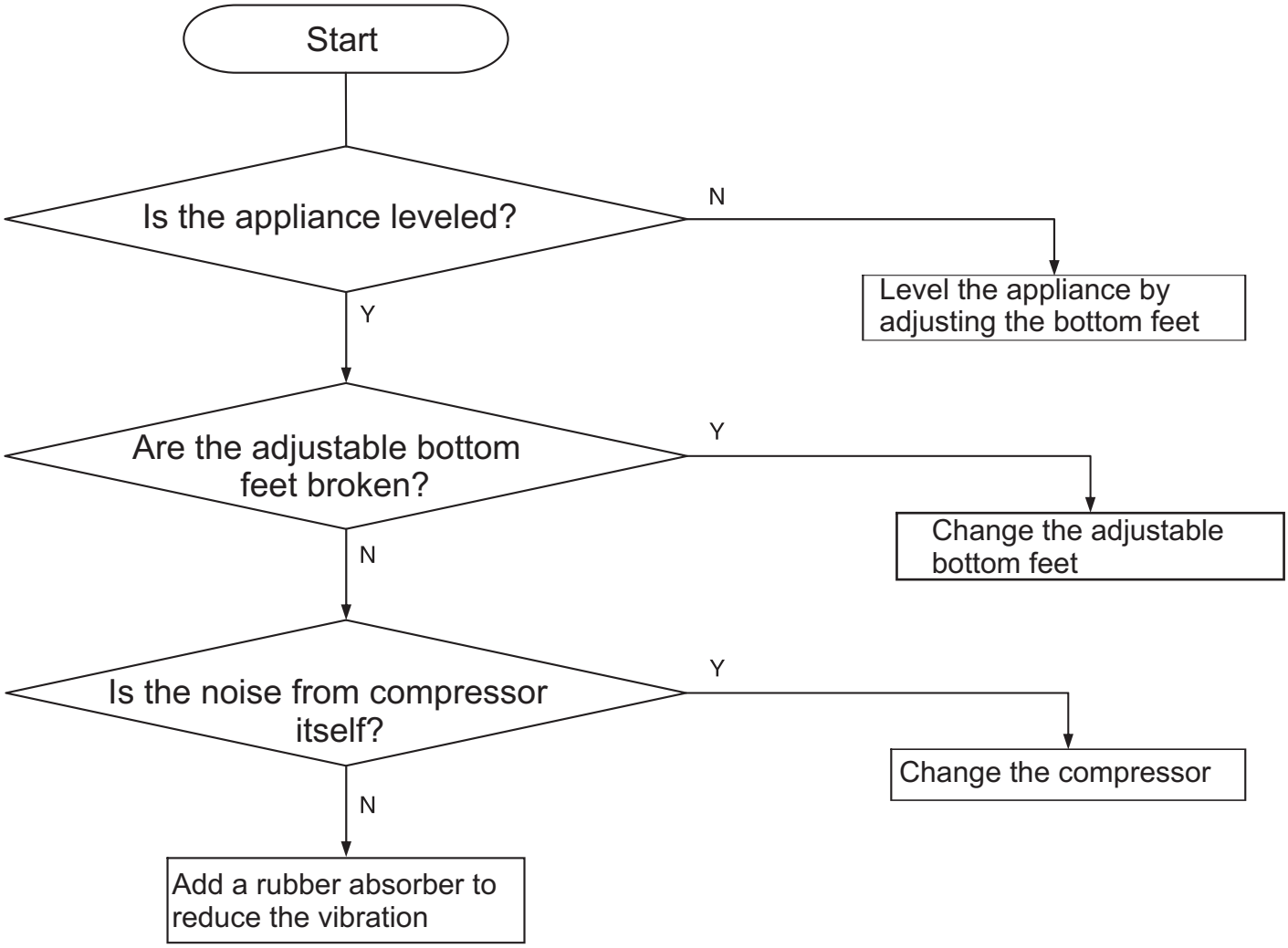


5.7 Breaking of light



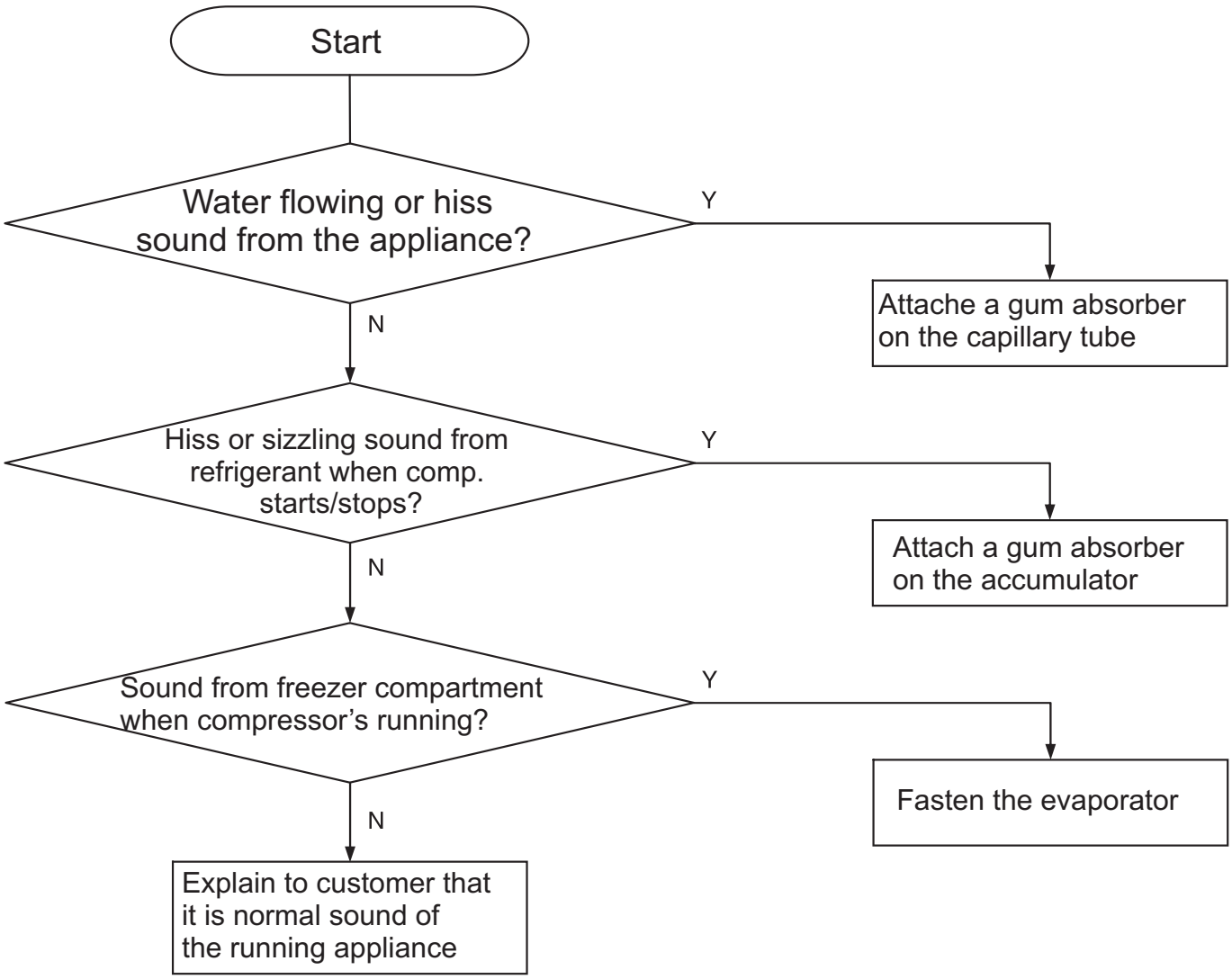
5.8 Noise

5.8.1 Compressor noise



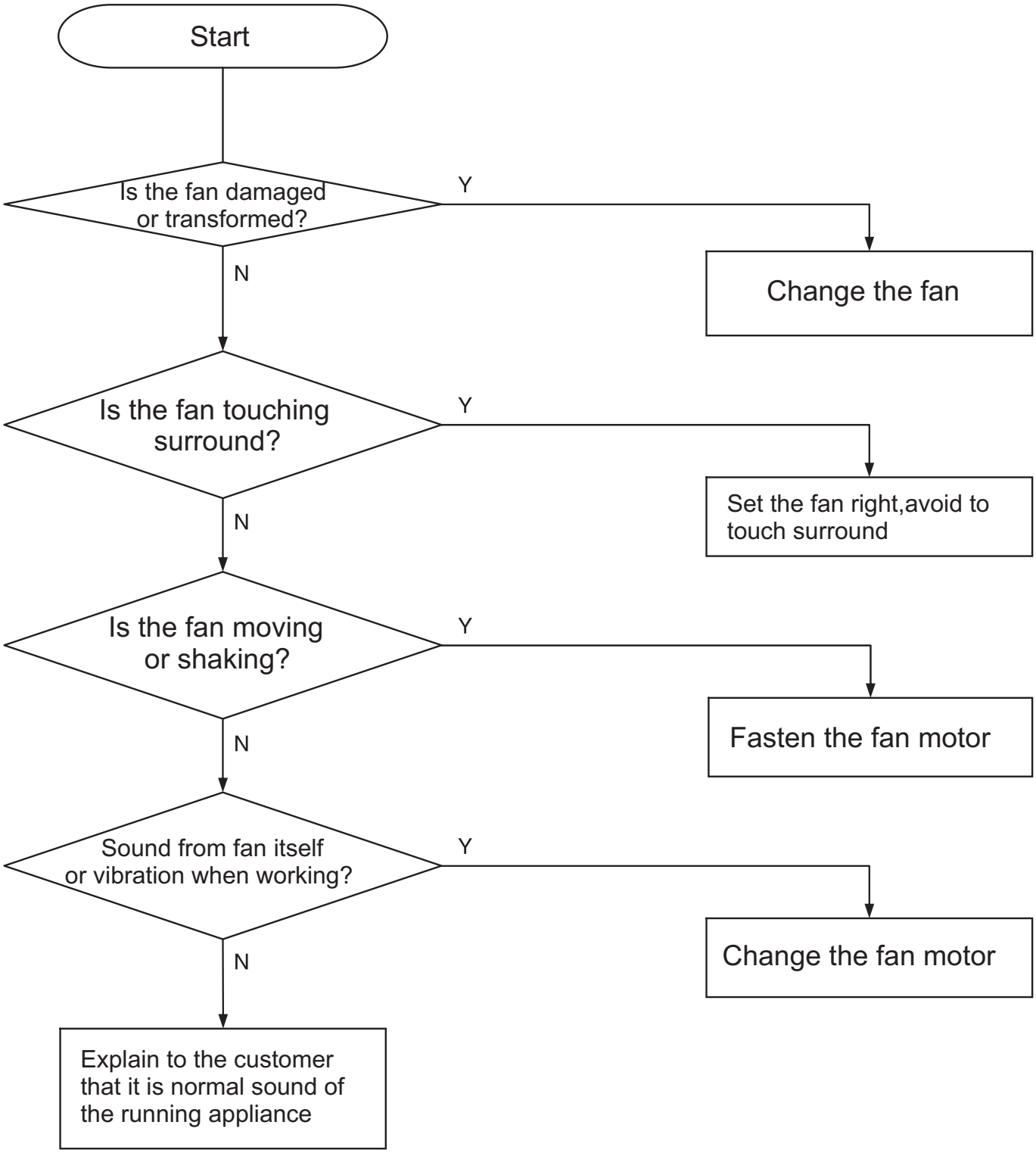
5.8 Noise

5.8.2 Refrigerator flowing noise



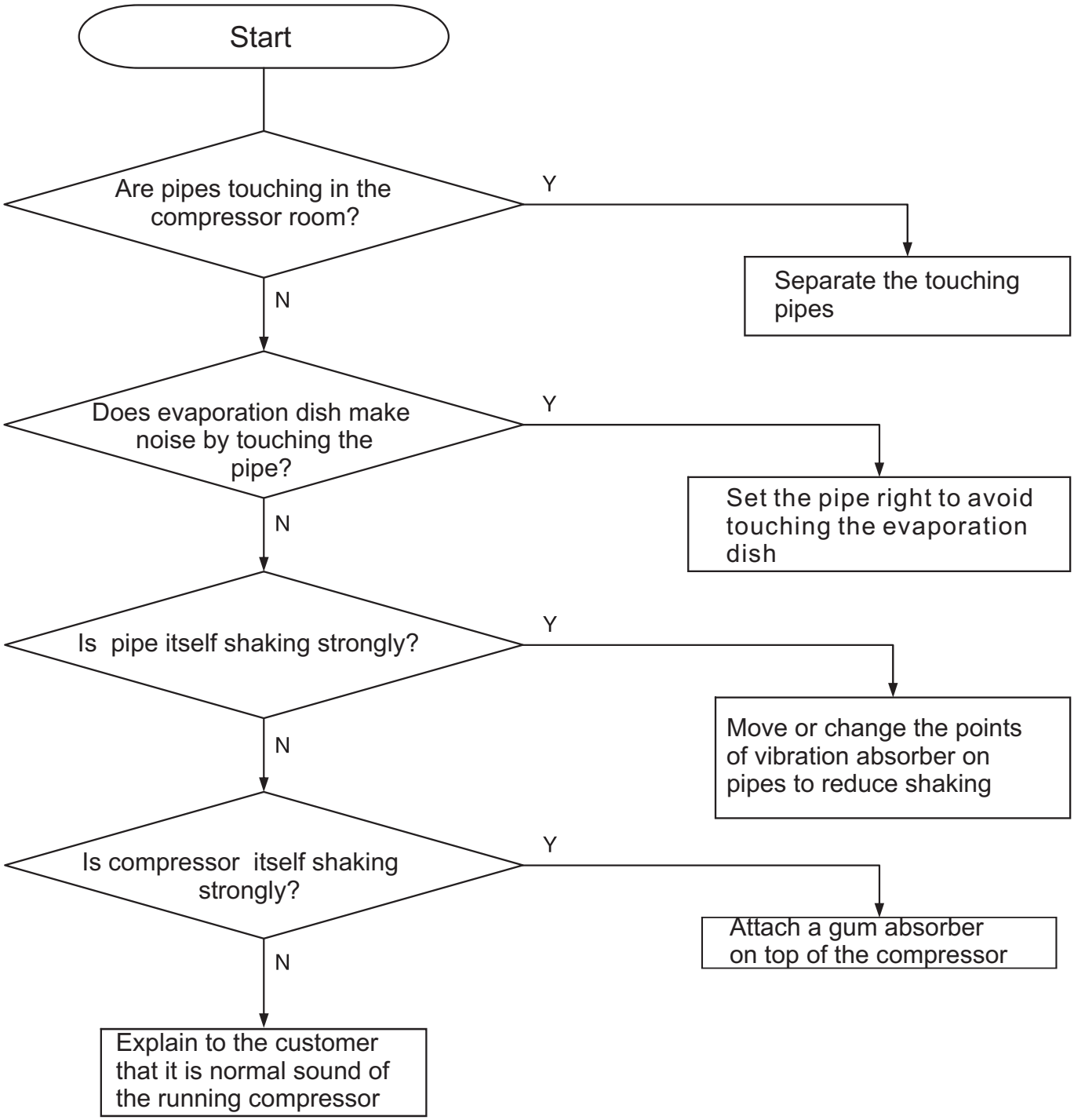
5.8 Noise

5.8.3 Fan motor noise



5.8 Noise

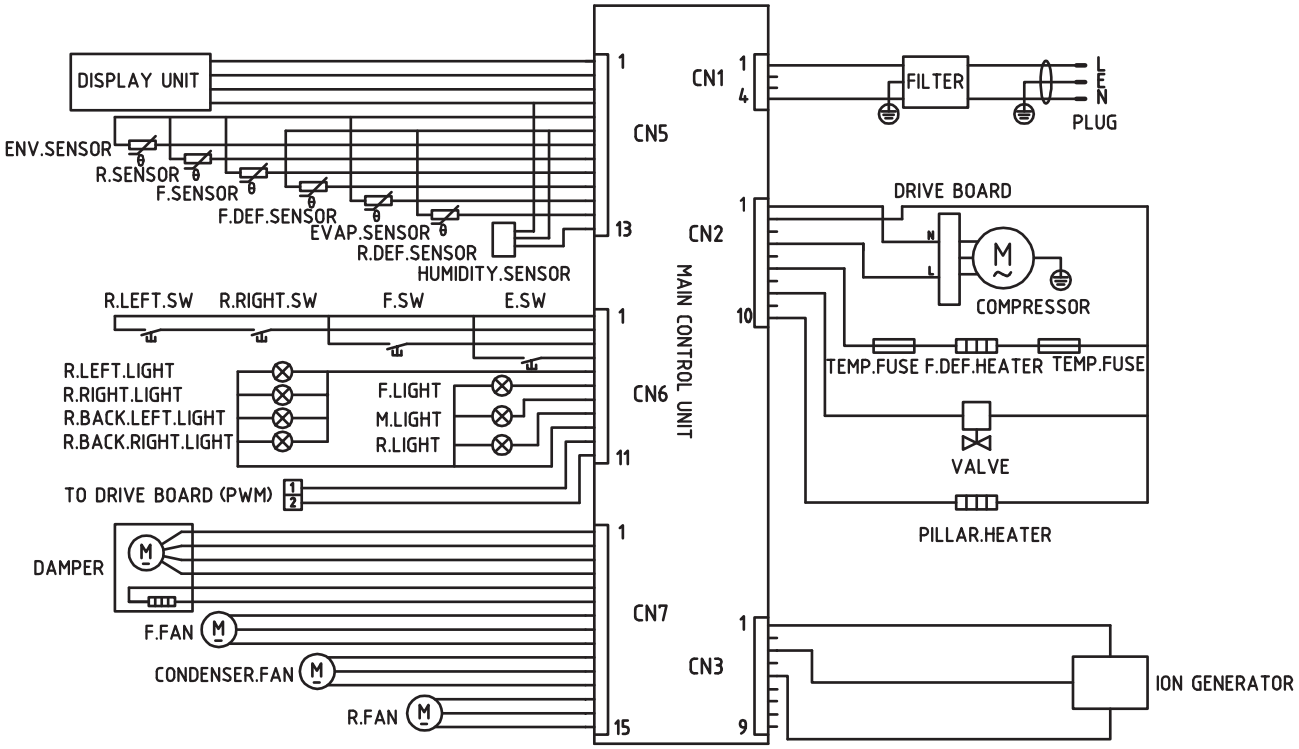
5.8.4 Pipe noise



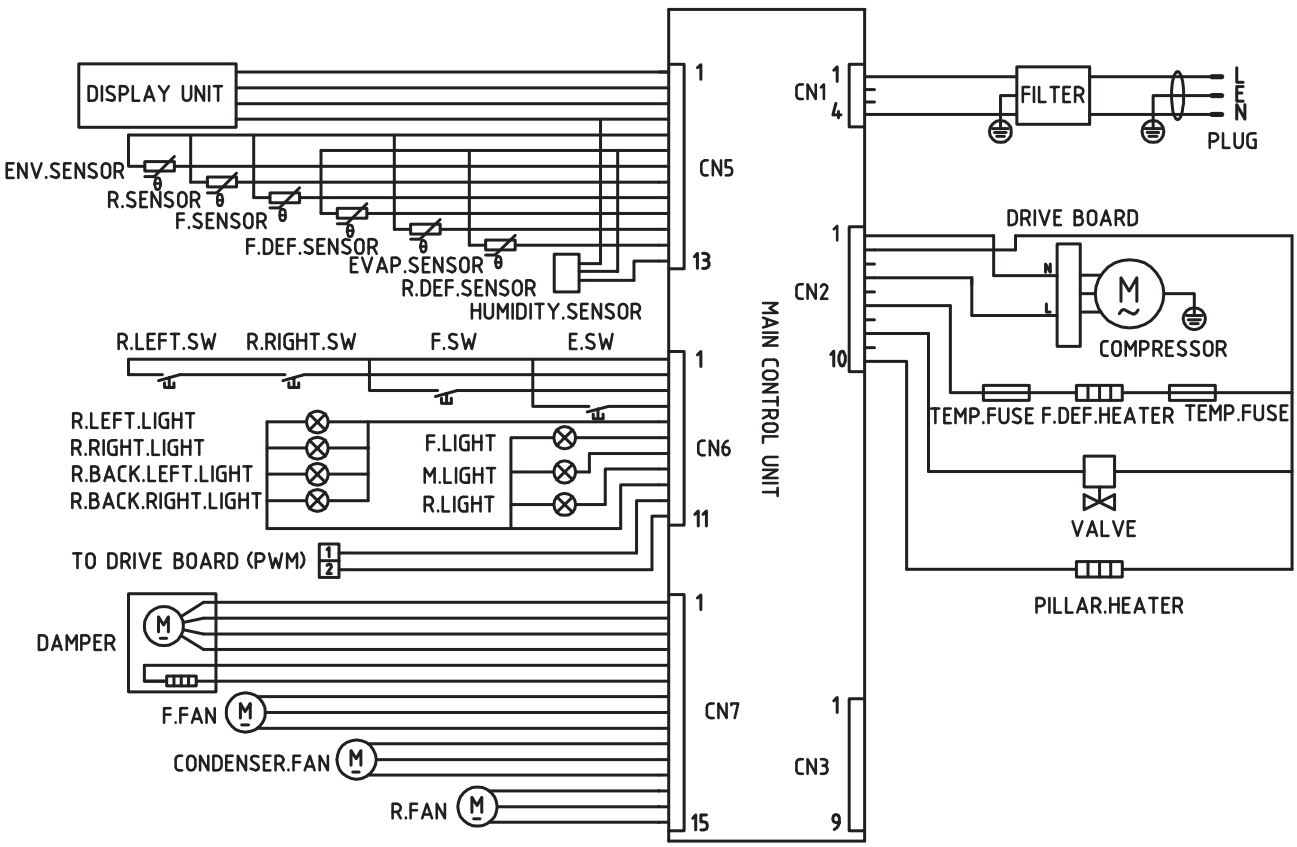
6 Circuit and checking

6.1 Circuit diagram

6.1.1 Appliance with ion generator



6.1.2 Appliance without ion generator



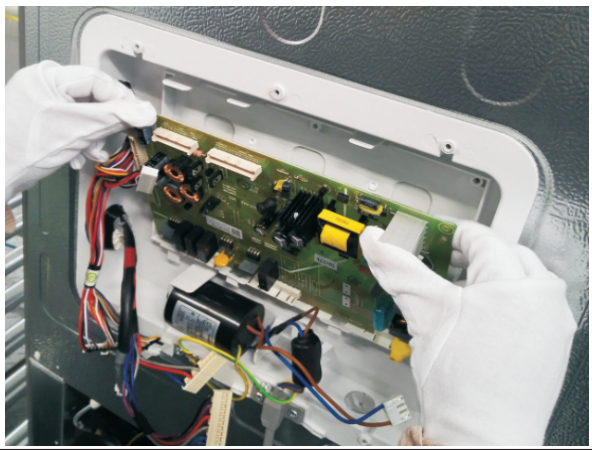
6.2 Mainboard

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.

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Picture1</td><td>Picture2</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Picture3</td><td>Picture4</td></tr>
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6.3 Compressor

6.3.1 Basic parameters

Input voltage:220-240V

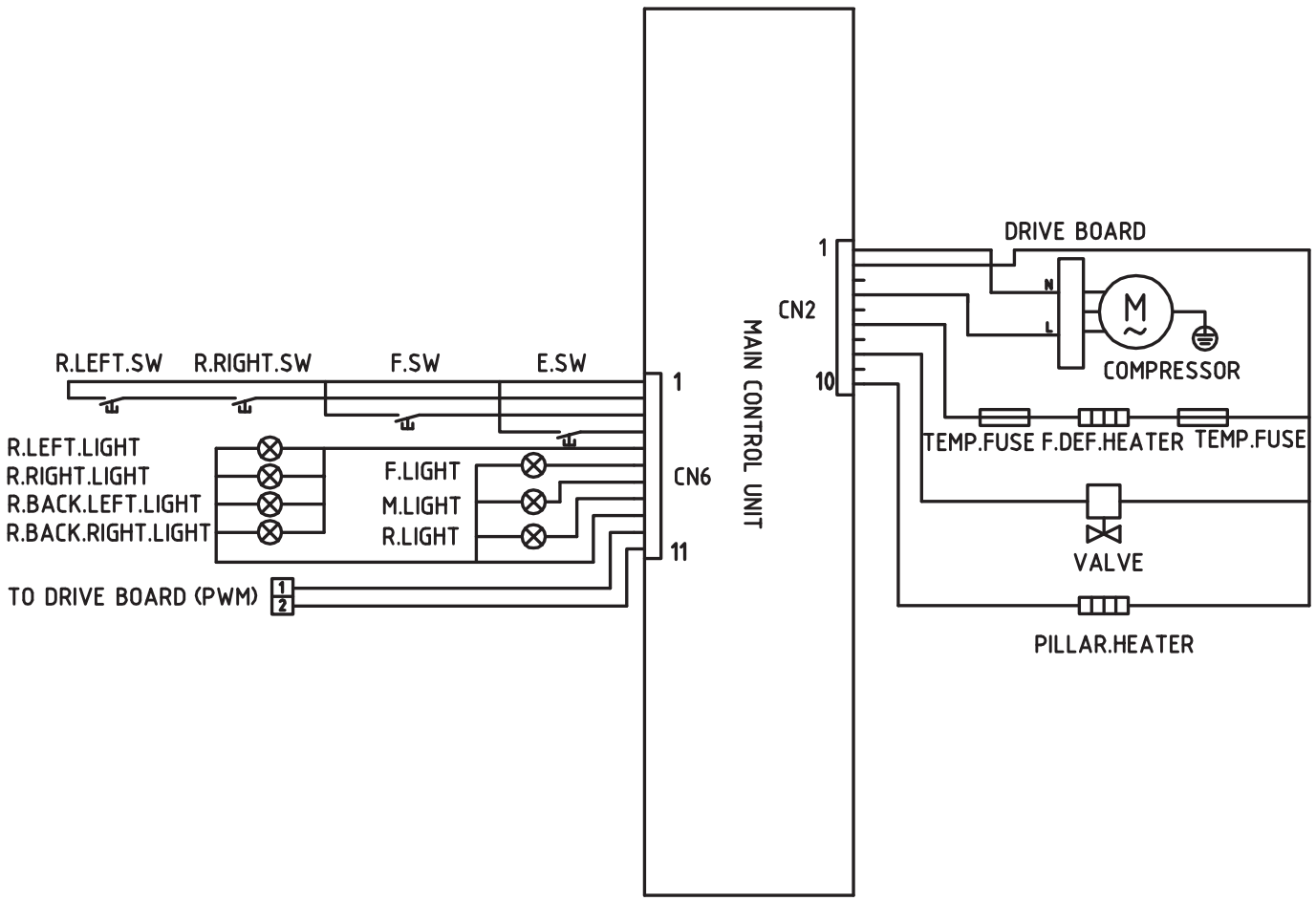
Input frequency:50Hz

6.3.2 Checking method

1.Compressor will start in one minute 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 the voltage between lable N and lable COMP on CN2 connector of mainboard and measure frequency between pin No.10 and N0.11 on CN6 connector.If the voltage is equal to electric supply power and there is stable output frequency,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

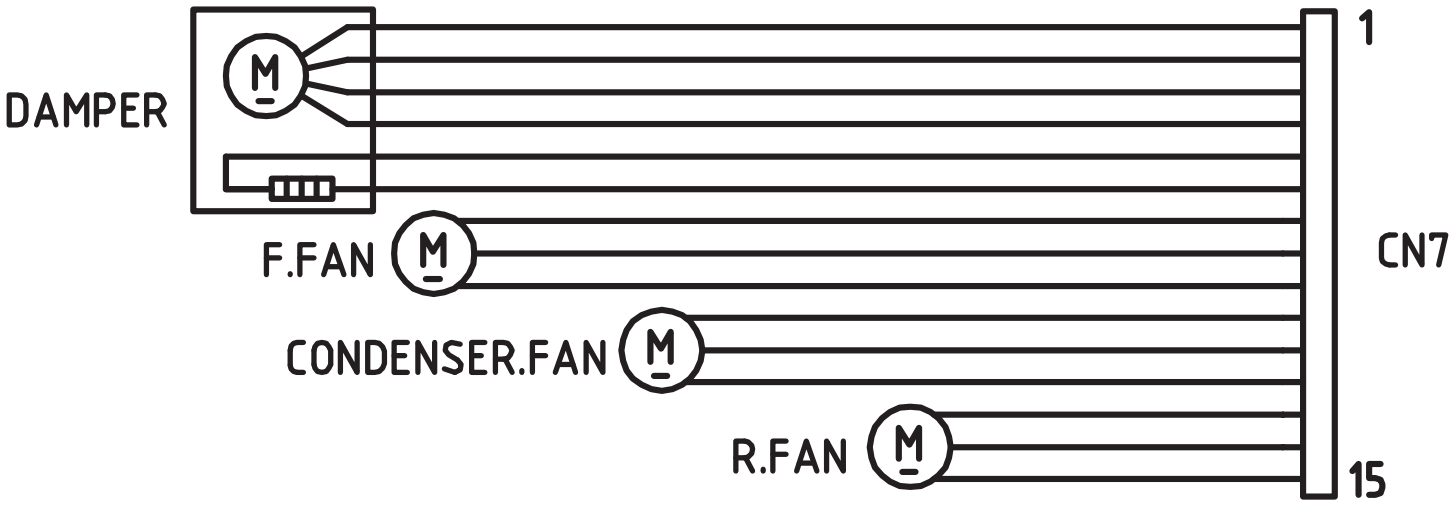
Rated voltage:6-15V

Rated input power:2.5W

6.4.2 Checking method

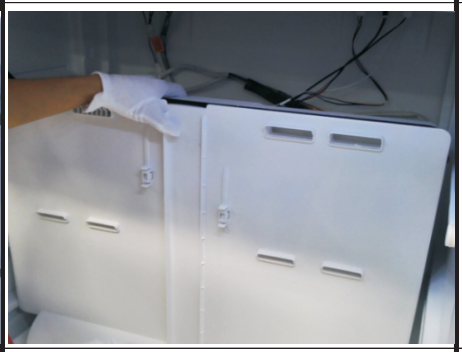
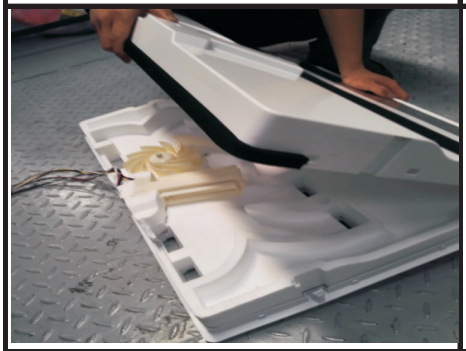
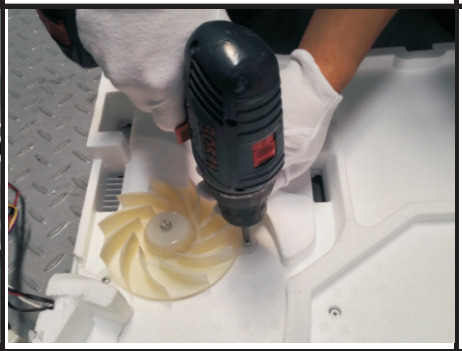
1.Check the connecting wiring of fan motor is well or not,repair if it is broken.The fan motor corresponding pin No.7~15 on CN7 connector of mainboard,as the drawing below.

2.Pin No.8,No.11 and N0.14 connect 12V power and pin No.15 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 screw of the clapboard beam by screwdriver,as picture 2.
3.Pry up the clapboard beam and remove it,as picture 2.
4.Remove the front clapboard part,as picture 3.
5.Pry up the back clapboard part at the buckles by screwdriver,and then remove it,as picture 4.
6.Take out the freezer wind channel component,as picture 5.
7.Unplug the terminals of the wind channel component,as picture 6.
8.Separate the wind channel cover and foam,as picture 7.
9.Remove the screws of the fan by screwdriver and then remove the fan,as picture 8.

		
Picture1	Picture2	Picture3
		
Picture4	Picture5	Picture6
		
Picture7	Picture 8	

6.5 Damper

6.5.1 Basic parameters

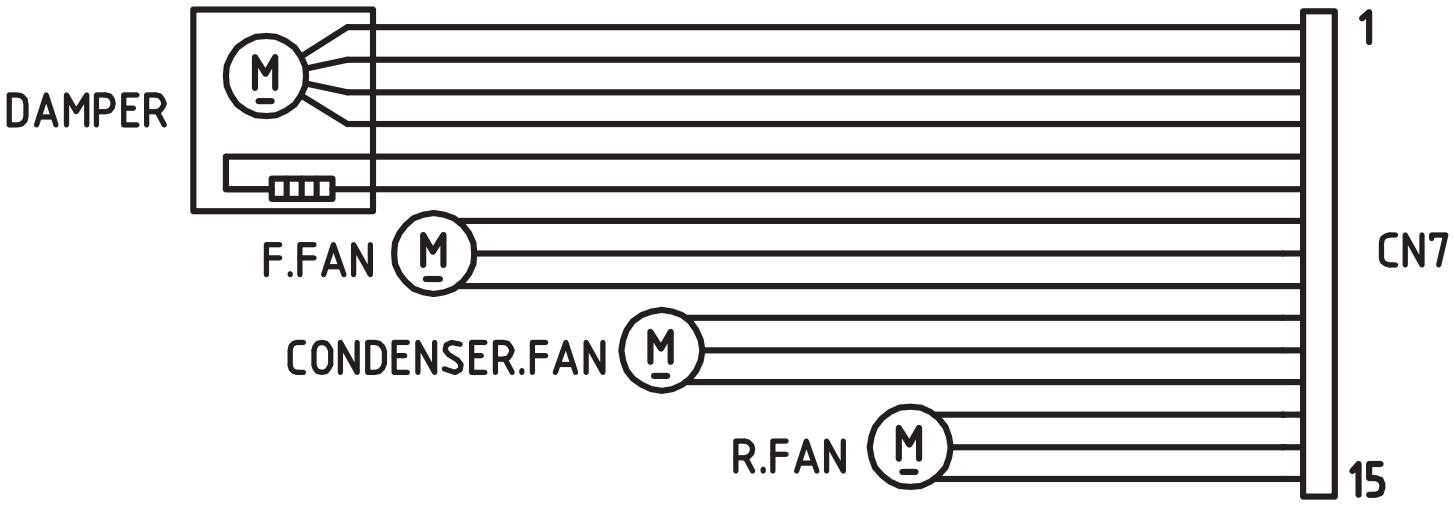
Rated voltage:DC12V

Rated current:60mA

6.5.2 Checking method

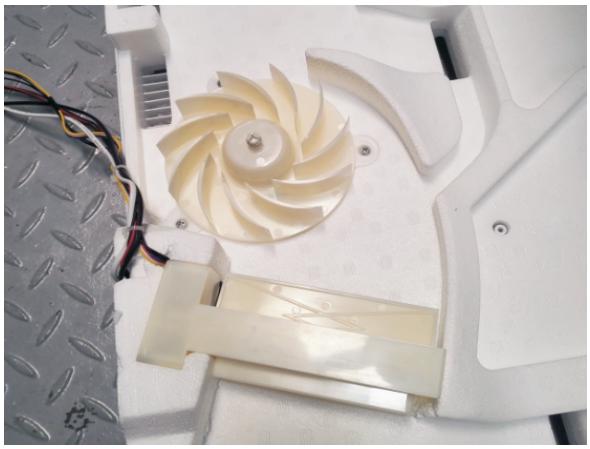
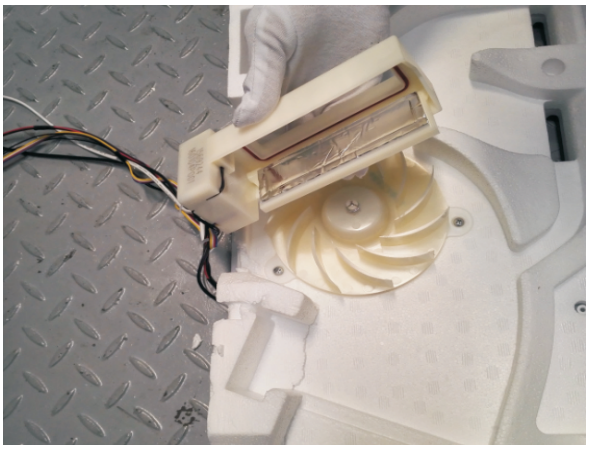
1.Check the connecting wiring of damper is well or not,repair if it is broken.The damper corresponding pin No.1~6 on CN7 connector of mainboard,as the drawing below.

2.The damper will turn on and off for one time after power-on,if not, change the mainboard first and change the damper if problem remains.



6.5.3 Removing the damper

1.After removing the freezer wind channel component,seperate the wind channel cover and foam,as picture 1.
2.Remove the damper,as picture 2.

	
Picture 1	Picture 2

6.6 Light

6.6.1 Basic parameters

Rated voltage:DC12V

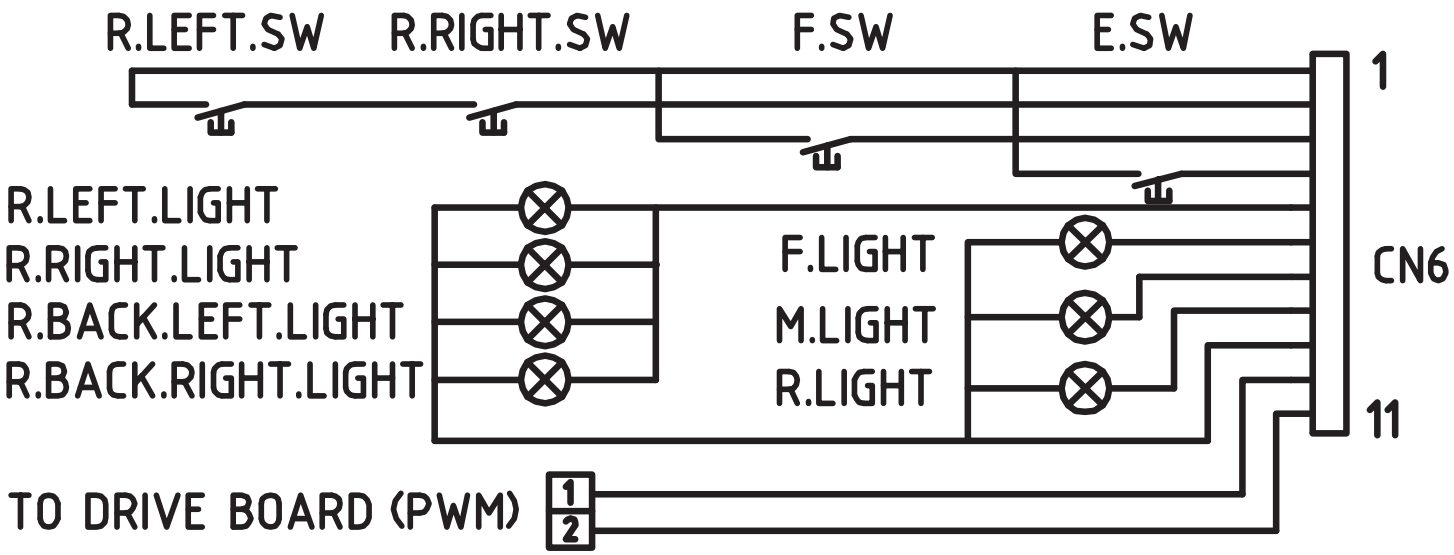
Rated power:

Light	Rated power(W)
Refrigerator	1.44
Freezer	0.6
Variable temperature	1

6.6.2 Checking method

1.Check the connecting wiring between light and mainboard is well or not,repair if it is broken.One of the refrigerator light corresponding pin No.8 and No.9 on CN6 connector of mainboard,another corresponding pin No.5 and No.9,freezer light corresponding pin No.6 and No.9,variable temperature light corresponding pin No.7 and No.9,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.Take out the light and unplug the terminal,as picture 4.

	
Picture1	Picture2
	
Picture3	Picture4

6.7 Door switch

6.7.1 Basic parameters

Input voltage:DC24V

Rated current:DC0.05A

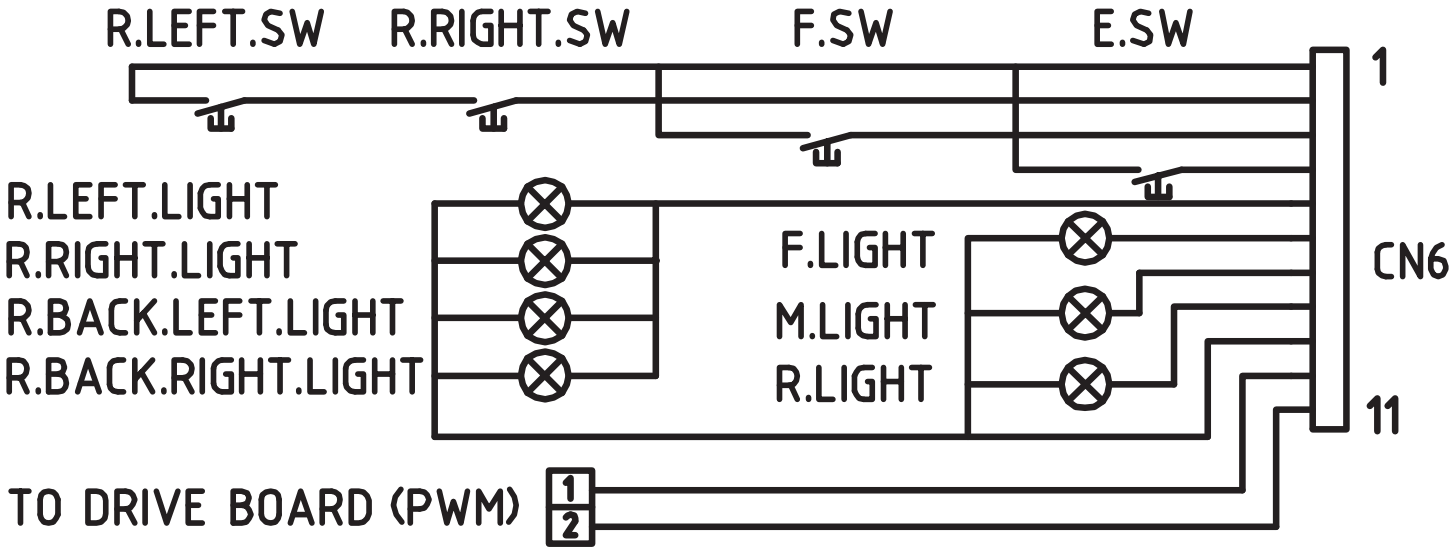
6.7.2 Checking method

1.Check the connecting wiring of door switch is well or not,repair if it is broken.Refrigerator door switch corresponding pin No.1 and No.2 on CN6 connector of mainboard,freezer door switch corresponding pin No.1 and No.3 and variable temperature door switch corresponding pin No.1 and No.4,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

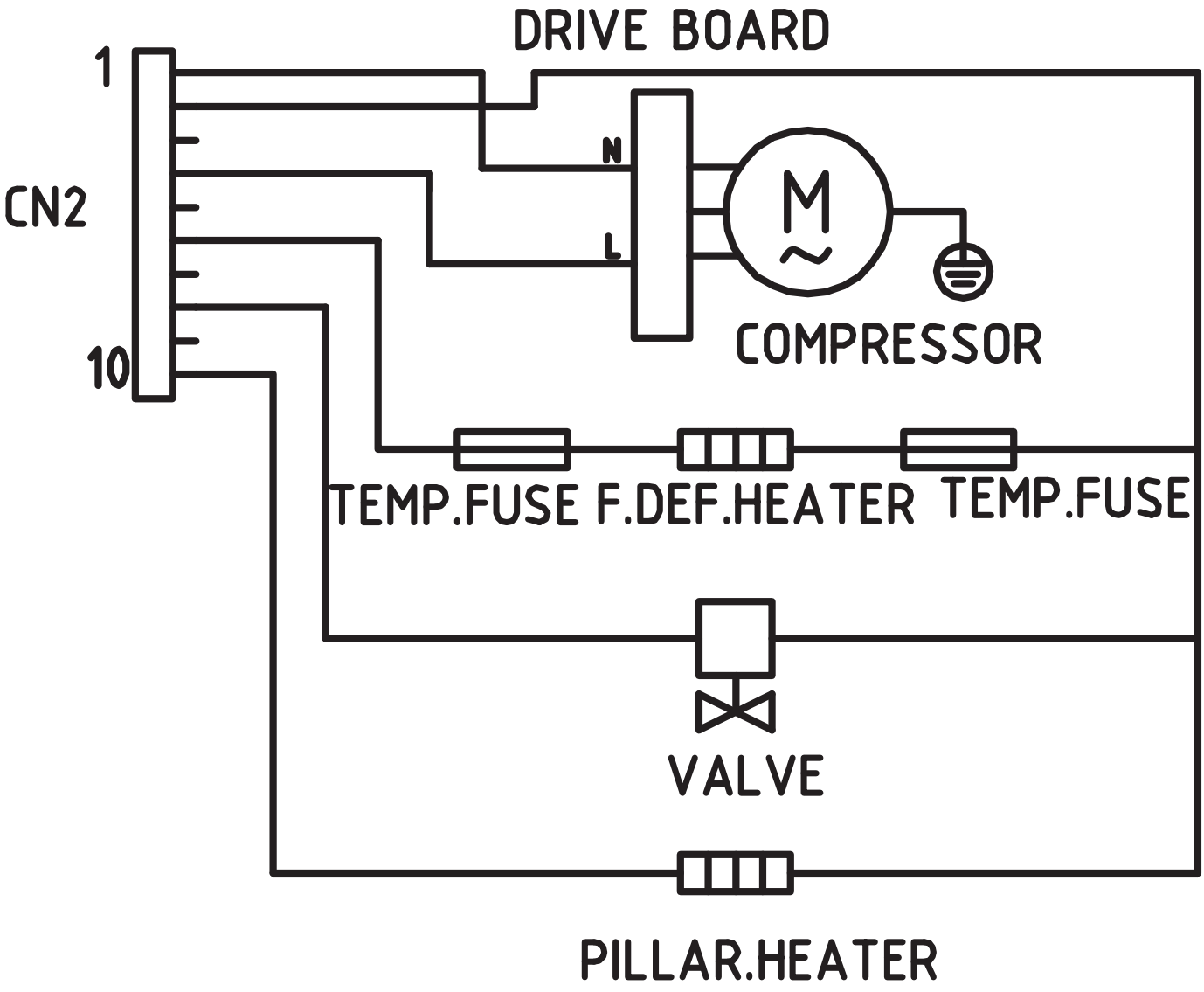
Max fusing-off temperature:72℃

Load voltage:AC250V

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 terminal of the fuse,as picture 1.
2.Separate the fuse wire and then remove the fuse,as picture 2.

	
Picture 1	Picture 2

6.9 Defrost heater

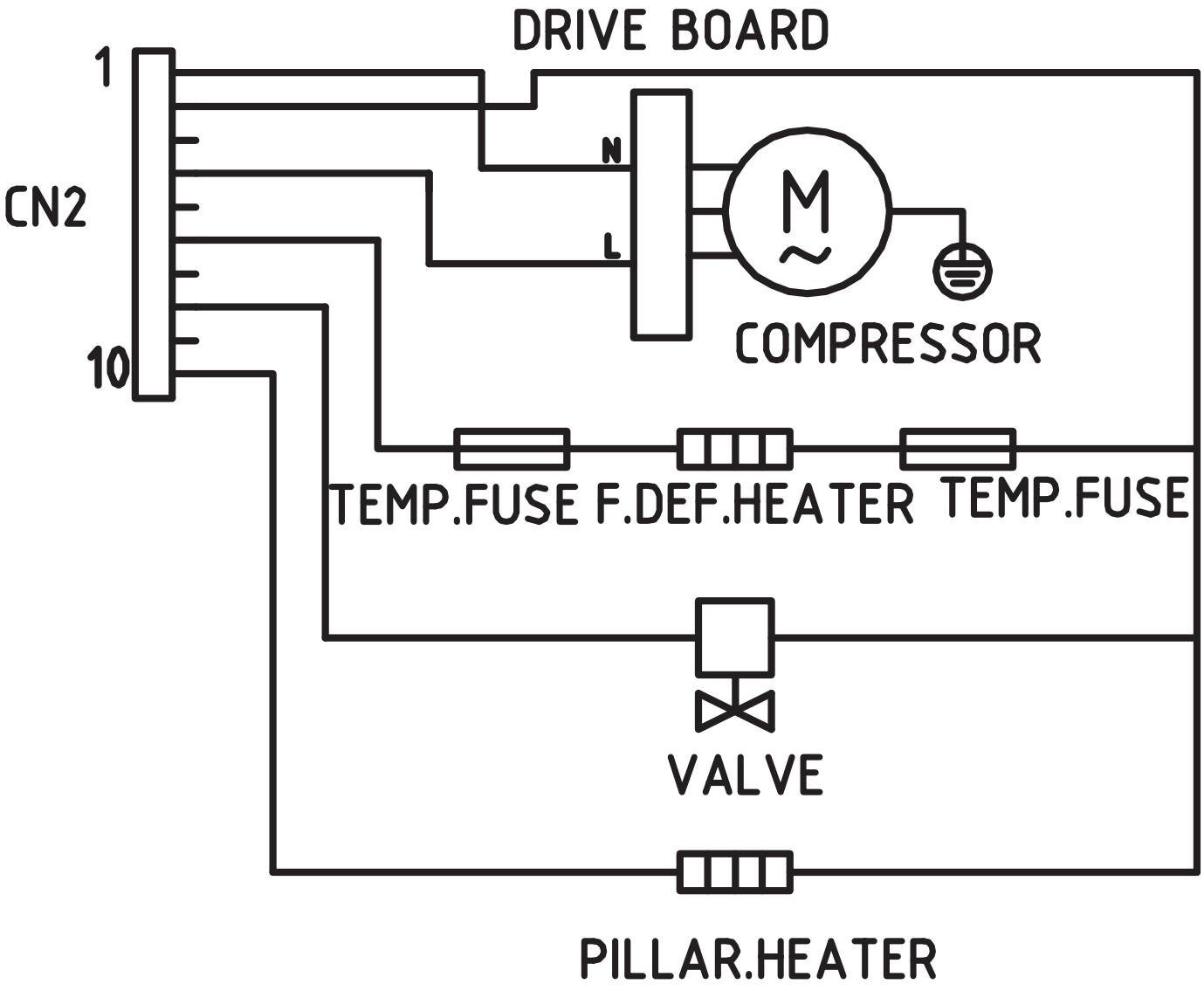
6.9.1 Basic parameters

Rated voltage:AC220-240V

Rated power:250W

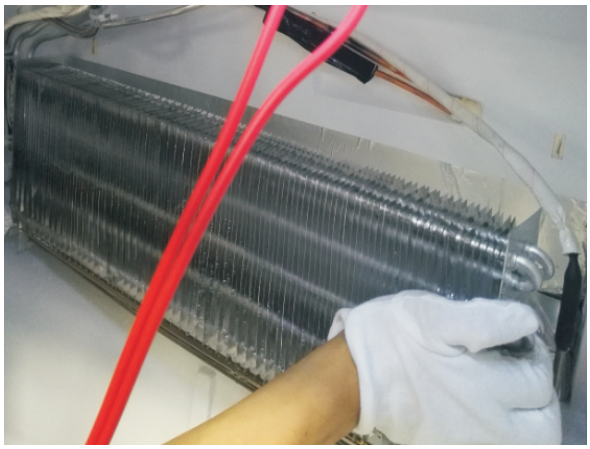
6.9.2 Checking method

1.Enter compulsory defrost mode,use a multimeter to measure voltage between label N and label DEF HT on CN2 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 212Ω ±5%, it is broken,change the heater.



6.9.3 Removing the defrost heater

1.After removing the freezer wind channel component,unplug the terminal of the heater,as picture 1.
2.Pry up the buckles that fastening the heater and then remove the heater,as picture 2.

	
Picture 1	Picture 2

6.10 Checking the electromagnetic valve

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 187－220V, 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.

Electromagnetic valve fault the judgement of the process

Doubt electromagnetic valve failure

Because the coil with protection device, when long time to electromagnetic valve, electromagnetic valve will be automatic protection, this time the electromagnetic valve can't continue to work. This is a normal phenomenon, do not belong to failure.

Coil resistance normal range：2.2±0.2KΩ

electromagnetic valve direct input 220 Vac Ac power, the time is no more than 3 seconds

Electromagnetic valve have action(shake)

Meaning the electromagnetic valve is good, check the other parts.

Electromagnetic valve without action(no shaking)

Not in the normal range

Measuring electromagnetic valve resistance of the coil is in the normal range

According to the maintenance plan to change electromagnetic valve coil

Electromagnetic valve coil resistance in the normal range

Electromagnetic valve without action(no shaking)

ok

Replacing the Electromagnetic valve

Input 220 V to electromagnetic to check if it is normal or not

Electromagnetic valve have action(shake)

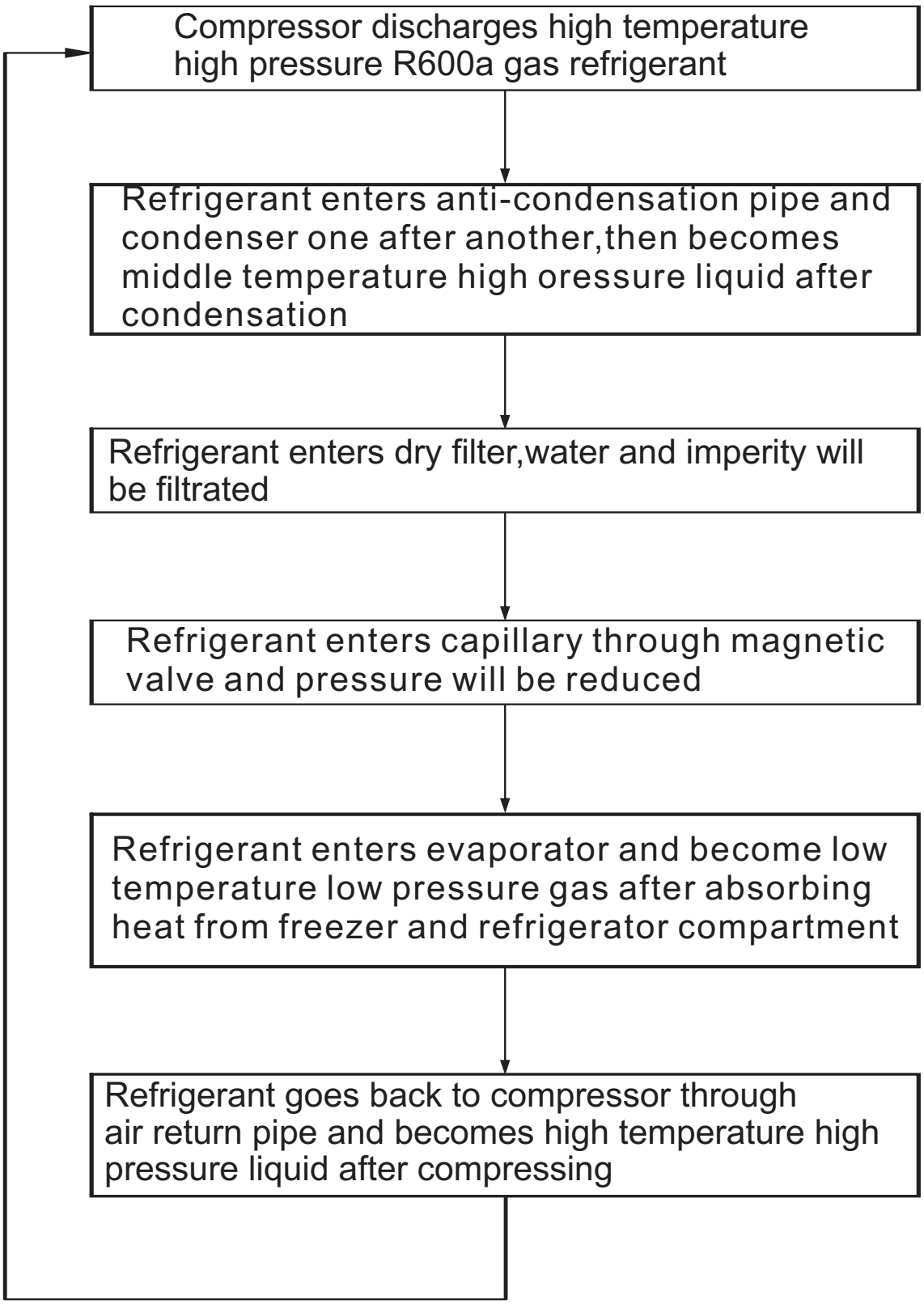
Note：

When assembly the electromagnetic valve, pay attention to mark the pipeline, avoid connection error；

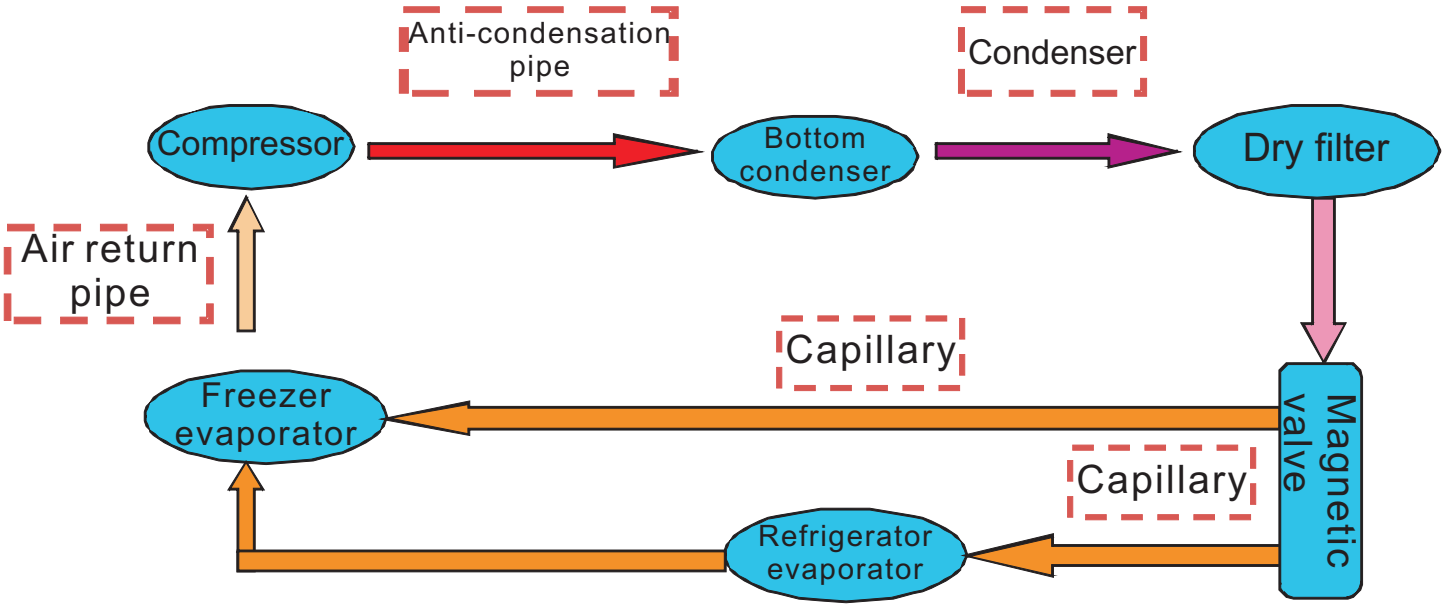
Due to the electromagnetic valve internal seal uses rubber material , so when welding the electromagnetic valve , the time should be not more than 5S. Long time to weld will lead to high temperature and will be transfer to electromagnetic valve internal rubber, causes the change of rubber, and may lead to electromagnetic valve abnormal work. (when welding, winding some wet cloth on pipe and drench it at the same time).

7.1 Refrigeration system

The refrigerator system is single cycle wind cooling system:



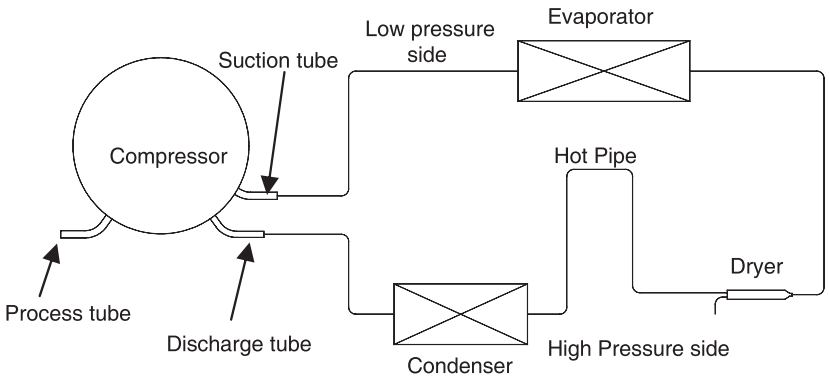
7.1 Refrigeration system



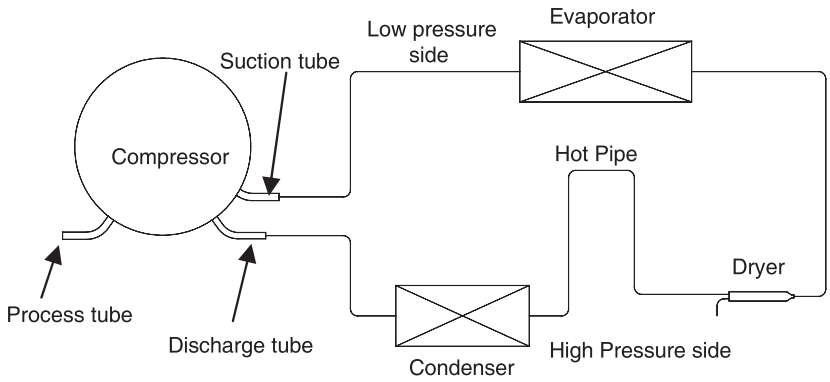
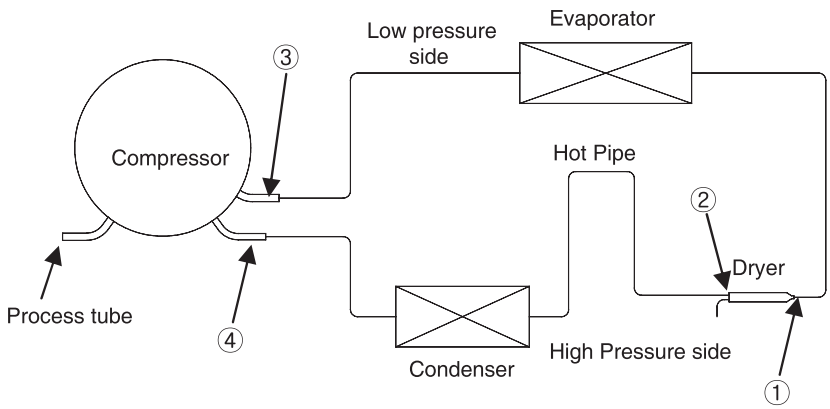
7.2 Summary of repair

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.)	

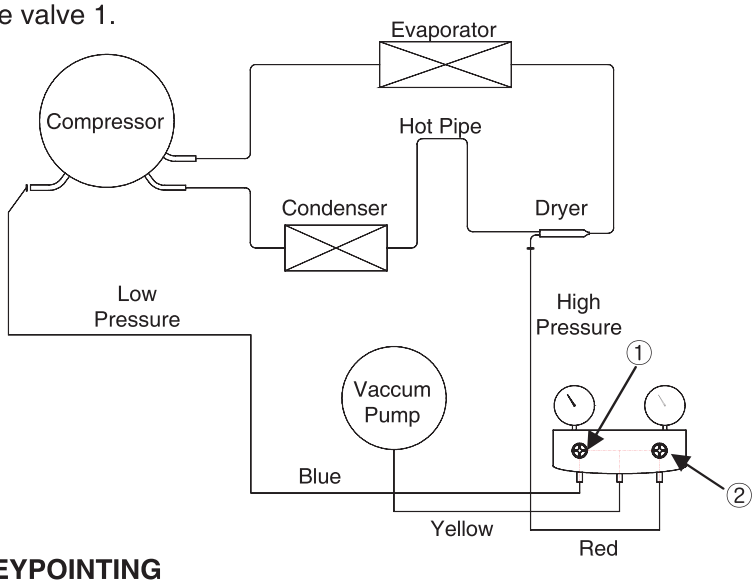
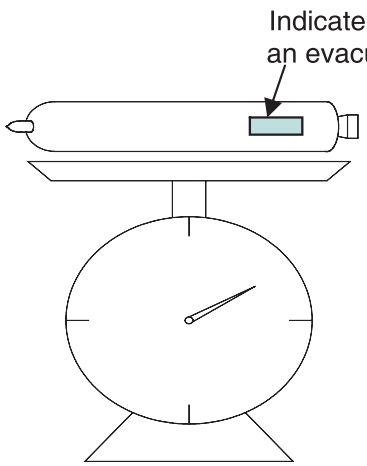
7.3 Regualation for repair

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)