			重 要 度	

	产 品 名称:	冷藏冷冻箱
	产 品 型号：	BCD-516WY/HC1(H)
	文 件 名称：	售后服务技术资料
	文 件 编号：	
	编 制 日期：	2021 年 4 月 1 日

借(通)用件登记

						冰箱开发中心
旧底图总号						
底图总号	A					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		审核			
	标准化				共 张	第 张
日 期	批准					

Hisense

Refrigerator Service Manual

Model:

HRT180N6ABD
HRT180N6AWD
HRT180N6AVD

Contents

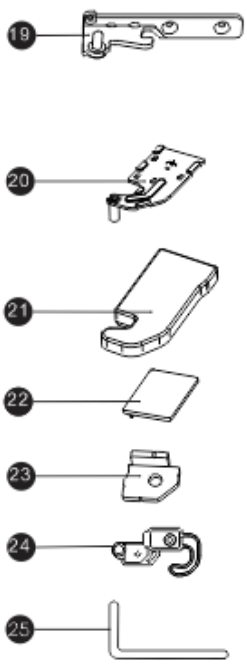
1. Warning and precautions for safety

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



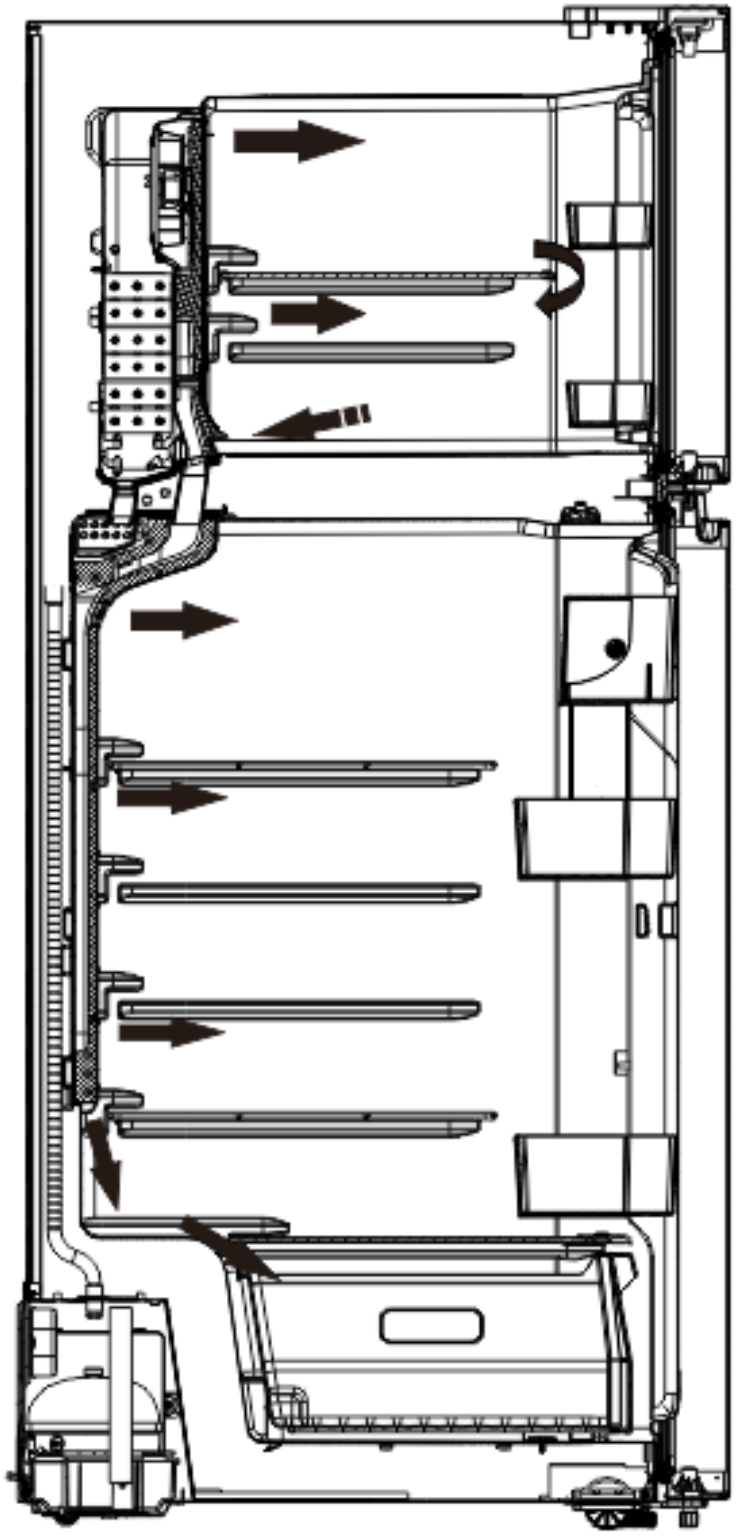
1 Automatic Icemaker (Optional)
2 Ice Container (Optional)
3 Glass Shelf
4 Freezer Air Duct
5 LED Light
6 Fridge Air Duct
7 Wire shelves
8 Crisper Cover
9 Crisper Drawers
10 Ajustable bottom feet
11 Freezer Door Gasket
12 Freezer Door
13 Freezer Door Bins
14 Dairy Bin Cover
15 Dairy Bin
16 Gallon Door Bins
17 Fridge Door Gasket
18 Fridge Door

Package Contents
19 Middle left hinge (x1)
20 Upper left hinge (x1)
21 Left hinge cover
22 Screw hole cover

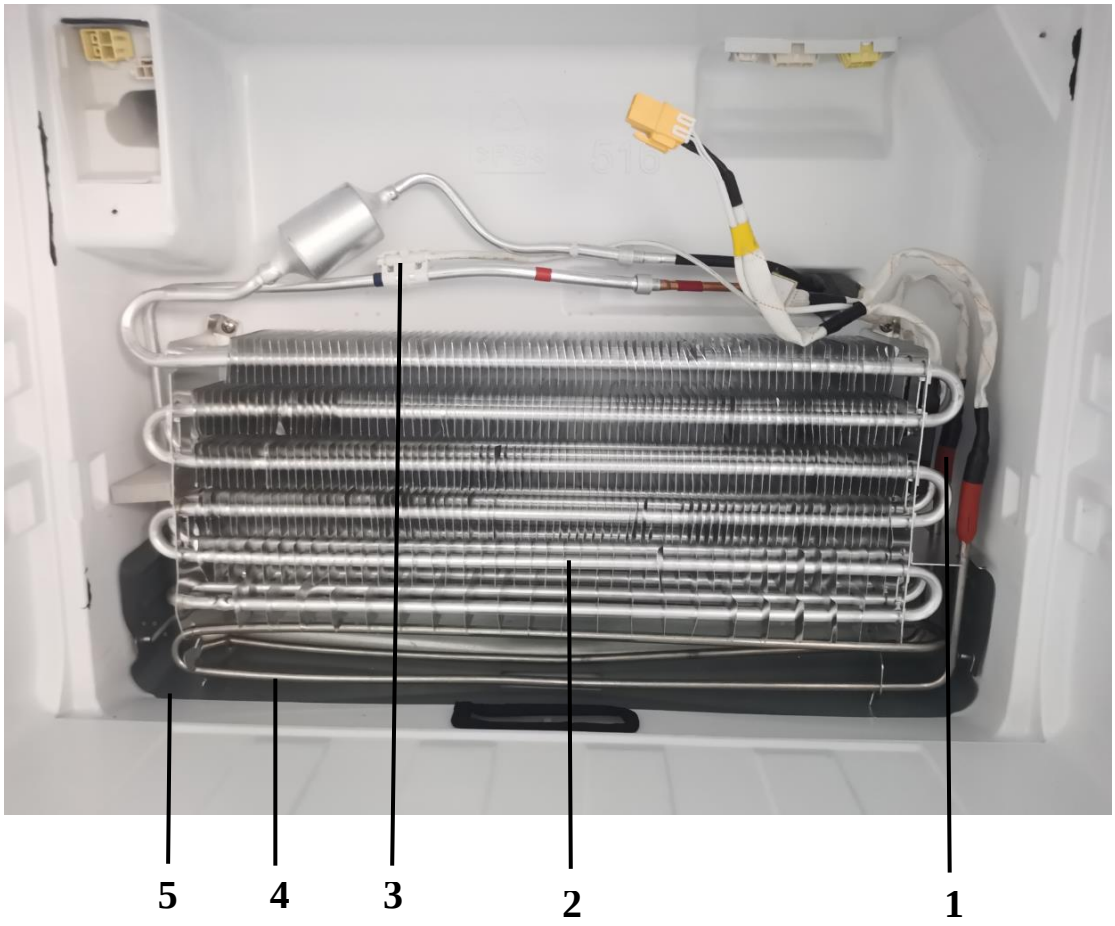
Spare parts for reversing the door
23 Stopper block (×2)
24 Door stopper (×2)
25 Allen wrench

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 (except lower freezer drawer), ice tray.

2.2 Wind channel structure

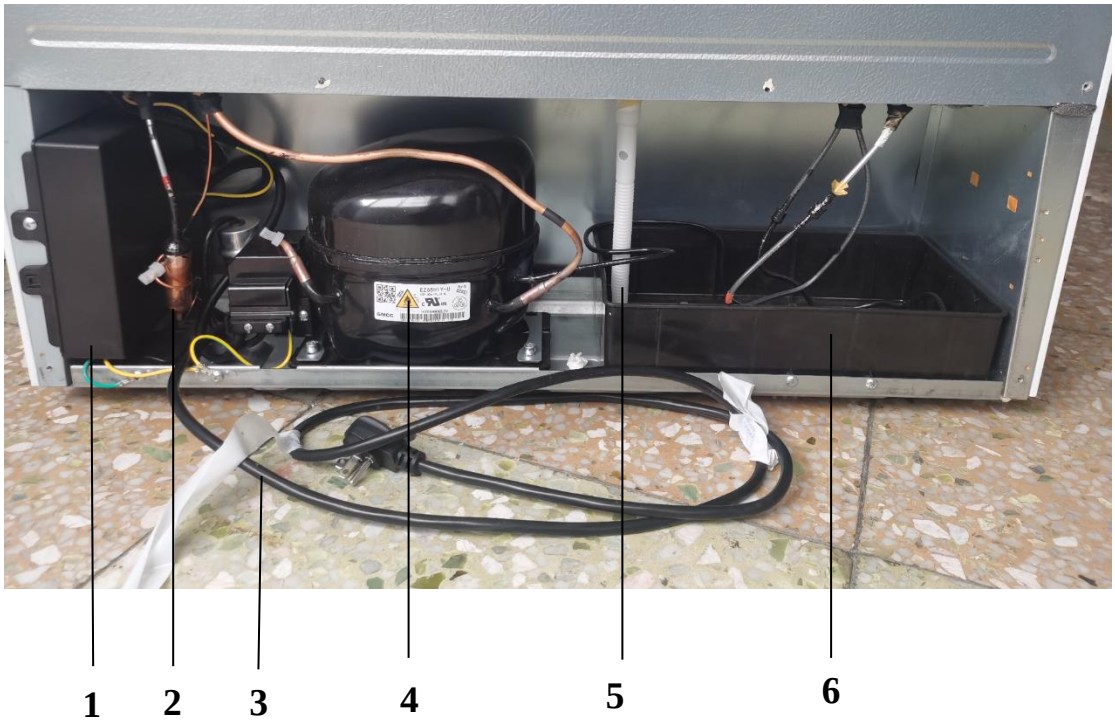


2.3 Freezer evaporator structure



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

2.4 Compressor room structure



1. Electric controller parts
2. Dry filter
3. Power line
4. Compressor
5. Drain connecting pipe
6. Evaporator dish

3. Basic parameters

Content	Unit	Value
Voltage/frequency		115 / 60Hz
Capacity (fridge/freezer)	L	510(397/113)
Climate class(SN=10~32℃,N=16~32℃,ST=16~38℃,T=16~43 ℃)	℃	10~43
Freezer compartment star rating		DOE
Energy consumption / year	kWh/year	403
Energy consumption (EN153) per 24 h (A/A+)	kWh/24h	1.103
Max noise level	dB(A)	42
Max storage time by power failure Freezer	h	
Kind of coolant /Charge (134 /R600a) / grammes	R / g	R600a/58g
Foaming components (R141b/C-P）	PU/	C-P
Certifications (CE / ISO 9001/2 / LGA etc.)		UL+CUL

4. Operation and functions

4.1 Display controls

Controlling the Temperature

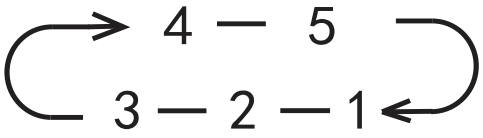
We recommend that when you start your refrigerator for the first time, the temperature for the refrigerator is set to “3" and the freezer is set to the middle position. If you want to change the temperature, follow the instructions below.

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 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.

4.1.1 Fridge

You can press the “ SET / Hold 3sec Standby ” button to select a temperature setting. When you press the button continuously, the temperature will be set in the following sequence.



Important!

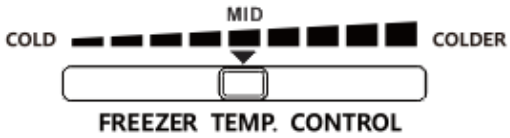
High ambient temperatures (e.g. on hot summer days) and a colder setting on the temperature regulator can cause the compressor to run continuously or

even non-stop!
We do not advise the user set the temperature at “5”or “1”in normal.

Demo mode

Demo mode is for store display, and it prevents the refrigerator from generating cool air. In this of Cooling Off Mode, the refrigerator may seem like it is working but it will not make cool air. Press the“ SET Hold 3sec Standby ” button for 3 seconds, and the refrigerator will be set into demo mode. Then all of the figures on the control panel will lighten. To cancel this mode, press“ SET Hold 3sec Standby ” for 3 seconds and the refrigerator begins cooling again.

4.1.2 Freezer



When using the refrigerator in normal conditions, please set the temperature regulator at the middle position.

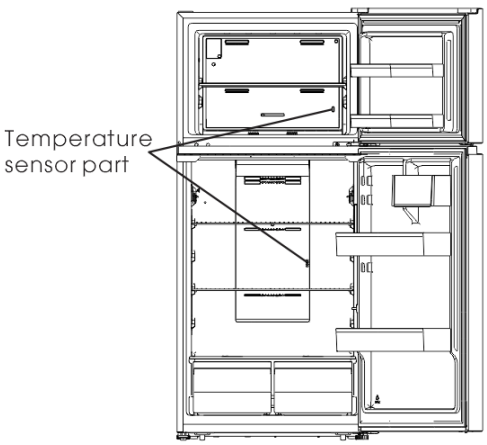
Important!

We do not advise the user set the temperature control knob at “COLDER” for too long. Doing so the temperature drops fastest in the freezer, and the temperature in refrigerator will rise. If there is food in the refrigerator, don’t keep it in this mode for too long.

If the user set the temperature controller at “COLD” position, the temperature in the freezer is higher than that in normal mode. This mode is only recommended when there is no food in the freezer.

Important!

Don’t place too much food directly against the air outlet of the temperature sensor part in the air channel cover of the refrigerator compartment, as it will affect the proper operation of the appliance.



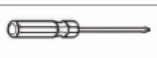
4.2 Reversing the door

The side at which the door opens can be changed, from the right side (as supplied) to the left side, if the installation site requires.

Warning!

When reversing the door, the appliance must not be connected to the mains. Ensure that the plug is removed from the mains socket..

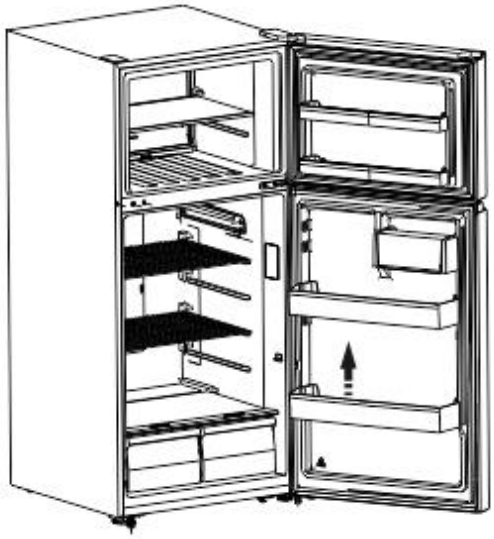
Tools you may need

Not provided		
	Philips Screwdriver	Socket Wrench (5/16", 8mm)
		
	Slotted Screwdriver	Putty Knife
Provided		
	Allen Wrench (5/32", 4mm)	

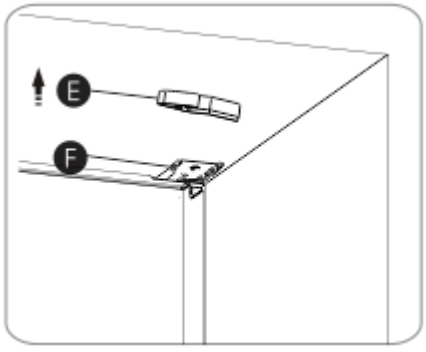
Note:

•When required, tilt the refrigerator back in order to gain access to the base, you should rest the appliance on soft foam packaging or similar material to avoid damaging the backboard of the refrigerator. To reverse the door, the following steps are generally recommended. Different models may correspond to different pictures. Models will be written in the picture. If some parts are not shown in the picture, please ignore the relevant description.

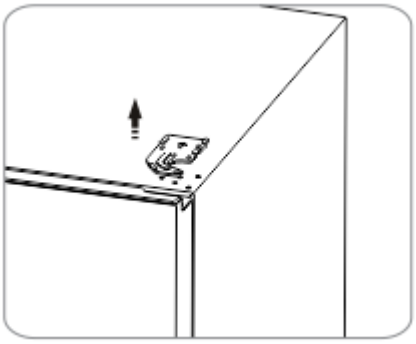
1. Stand the refrigerator upright. Open the upper door to take out all door racks (to avoid racks damaged) and then close the door.



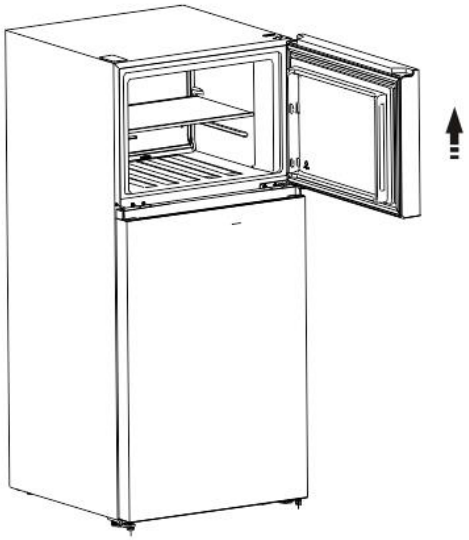
2. With the door closed, remove the upper hinge cover (E) (you can pry it up with a Slotted Screw driver) on the top right side of appliance and remove 3 special flange screws (F) with a Socket Wrench. Keep the upper hinge cover for future reference.



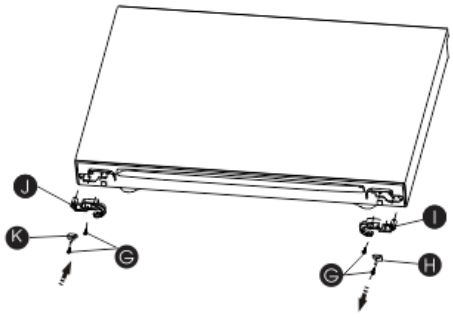
3. Remove the upper hinge (Please hold upper door by hand when installing). Keep it for future use.



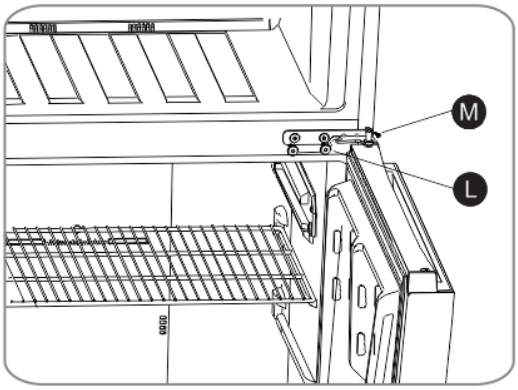
4. Use both hands to open the door more than 90° . Lift it up and take it off.

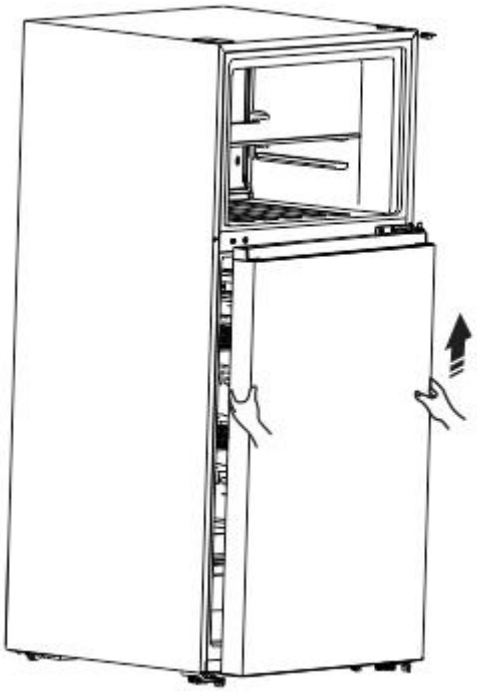


5. Loosen the two screws (G) on the right bottom of the freezer door, then take out the right stopper block (H) and the right door stopper (I). Then install the left stopper block (K) and the left door stopper (J) (provided in the plastic bag).

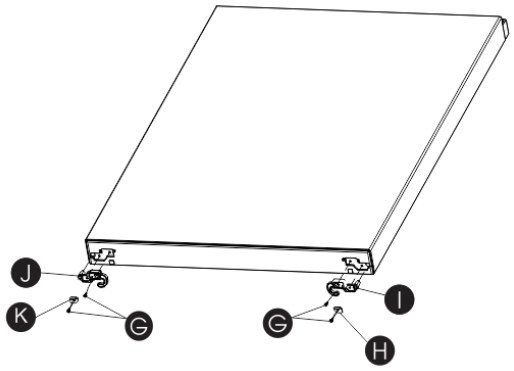


6. Open the fridge door, then loosen 2 screws (L) with a 4mm Allen Wrench (provided in plastic) and remove middle hinge (M). Keep the middle hinge (M) for future use. Remove the fridge door from the lower hinge.

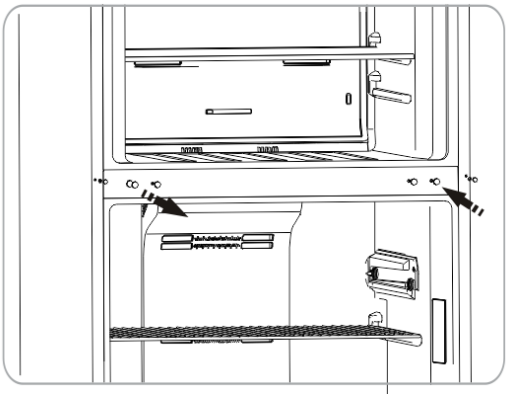




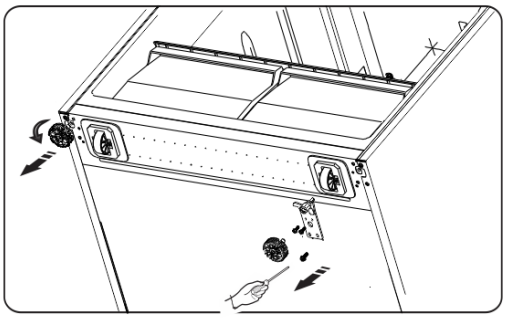
7. Place the fridge door on a smooth surface with its panel upward. Loosen the two screws (G) on the right bottom of the fridge door, then take out the right stopper block (H) and the right door stopper block (I). Then install the left stopper block (K) and the left door stopper (J).

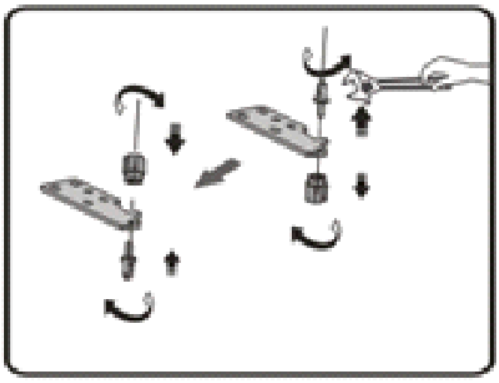


8. Change the screw hole covers and the screws on the middle cover from left to right.

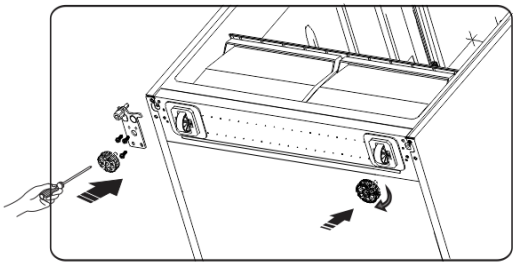


9. Lay the refrigerator on soft foam packaging or similar material. Remove both adjustable bottom feet parts, and the lower hinge part by unscrewing the special flange self-tapping screws. Loosen the lower hinge axis then install it on the reverse hole site.

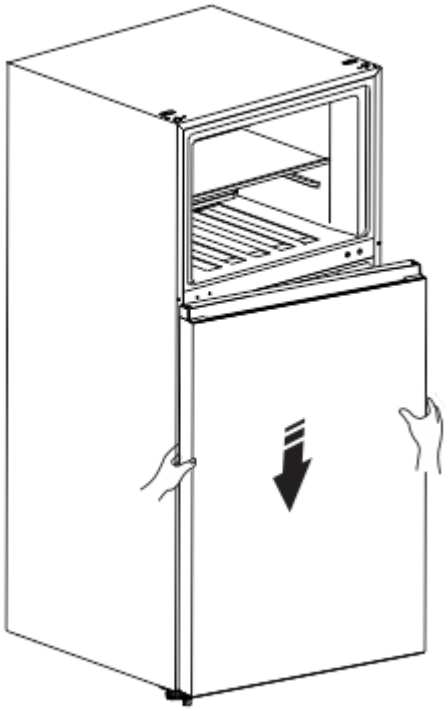




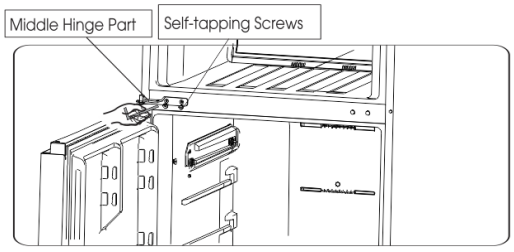
10. Move the lower hinge part to the left side and screw it on with the special flange self-tapping screws. Move the adjustable bottom feet parts to the other side and screw them.



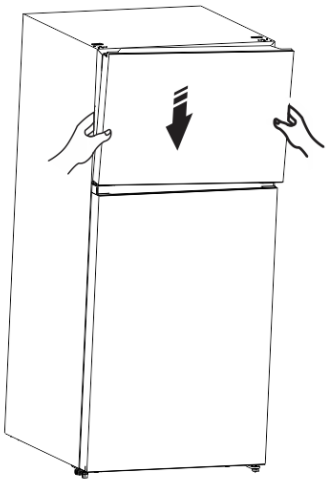
11. Stand the refrigerator upright and carefully slot the fridge door onto the lower hinge pin and hold it in position.



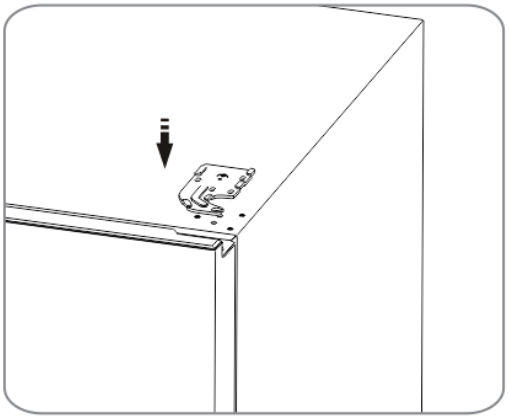
12. Turn the middle hinge part 180 degrees, insert the middle hinge axis into the hole in the upper left side of the fridge door and tighten the bolts.



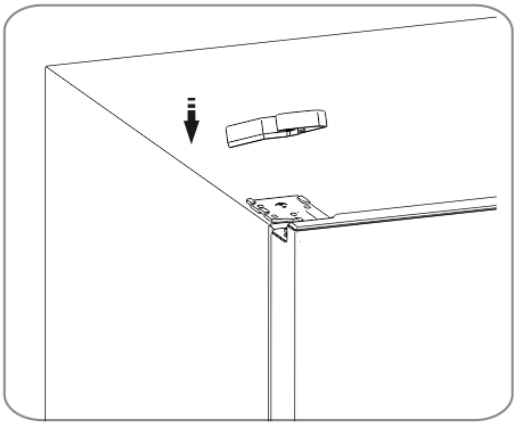
13. Hold the freezer door in the appropriate position. Make sure the door is level and insert the middle hinge axis into the lower hole of the freezer door.



14. Remove the left upper hinge from plastic bag provided. Then attach it on the top left side.



15. Remove the upper hinge cover from the plastic bag provided, and install it.



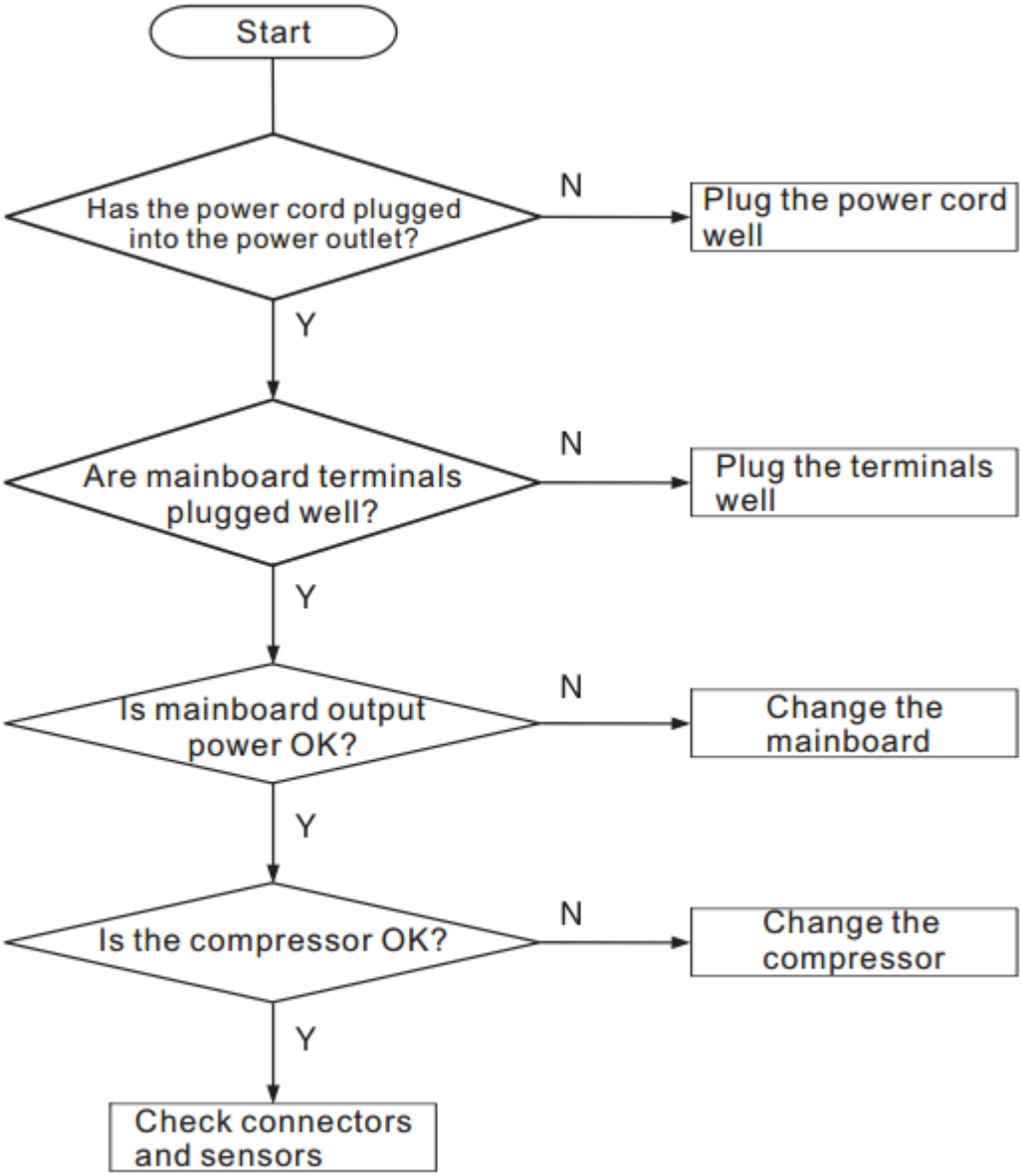
5. Troubleshooting

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.
Odors from the compartments	The interior may need to be cleaned
	Some food, containers or wrapping cause odors.
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. •The motor running noises when you get ice.
	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.
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 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 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

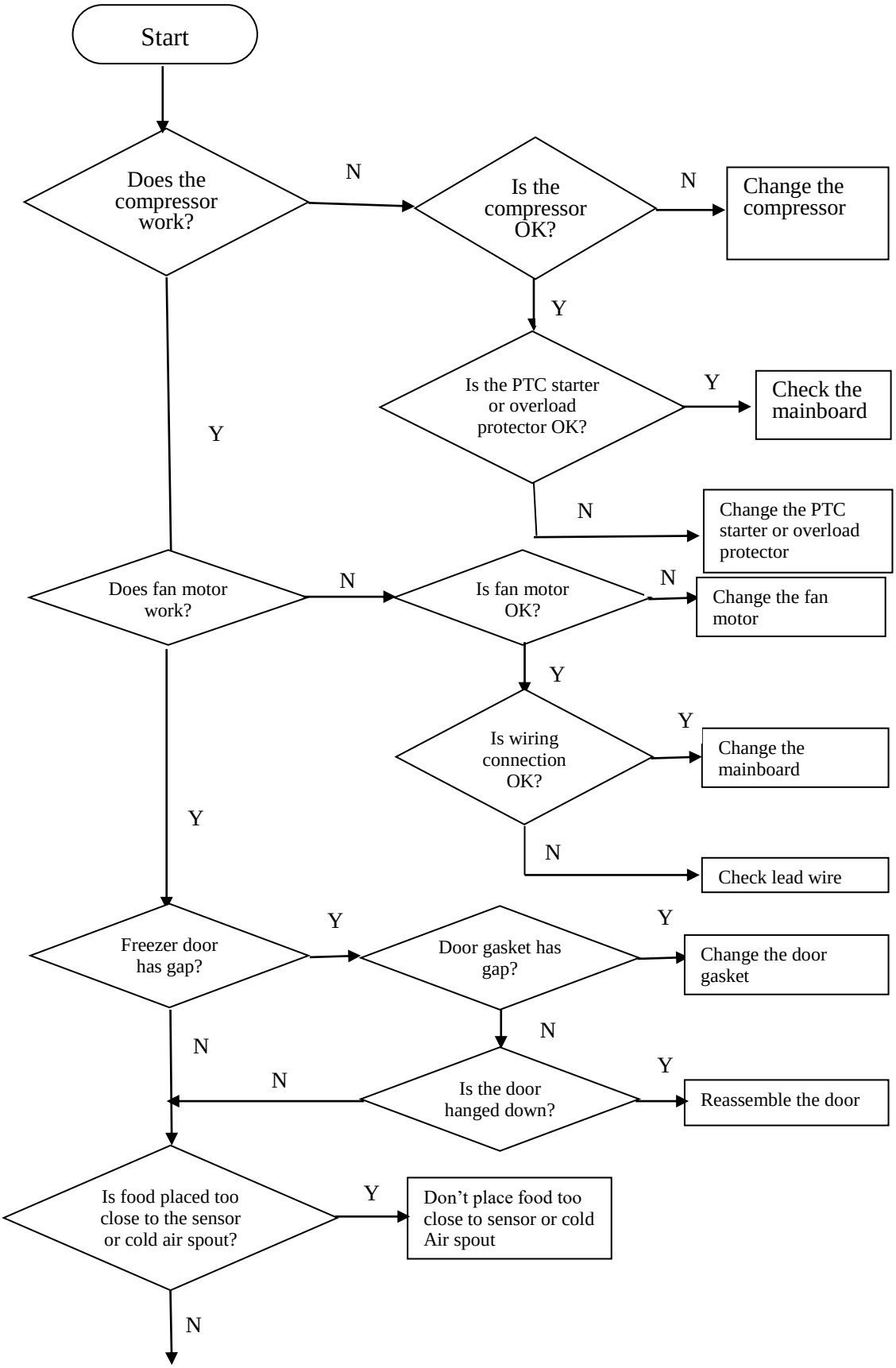
Temperature inside is too cold	Increase the temperature by following the “Display controls” chapter.
Doors can’t be closed easily	Check whether the top of the refrigerator is tilted back by 10-15mm to allow the doors to self close, or if something inside is preventing the doors from closing.
Hear water bubbling in the refrigerator	This is normal. The bubbling comes from the refrigerant coolant liquid circulating through the refrigerator.
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

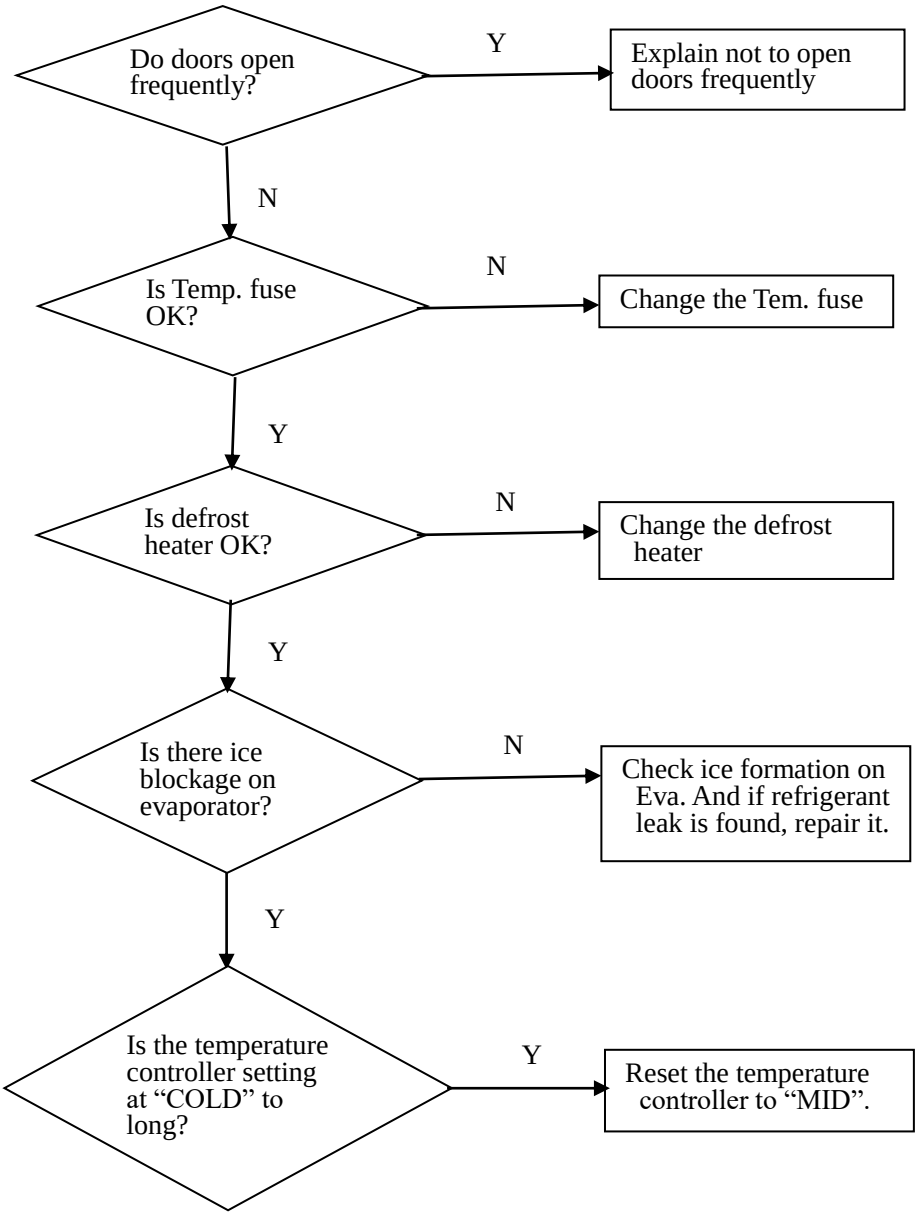


5.3 Refrigeration failure

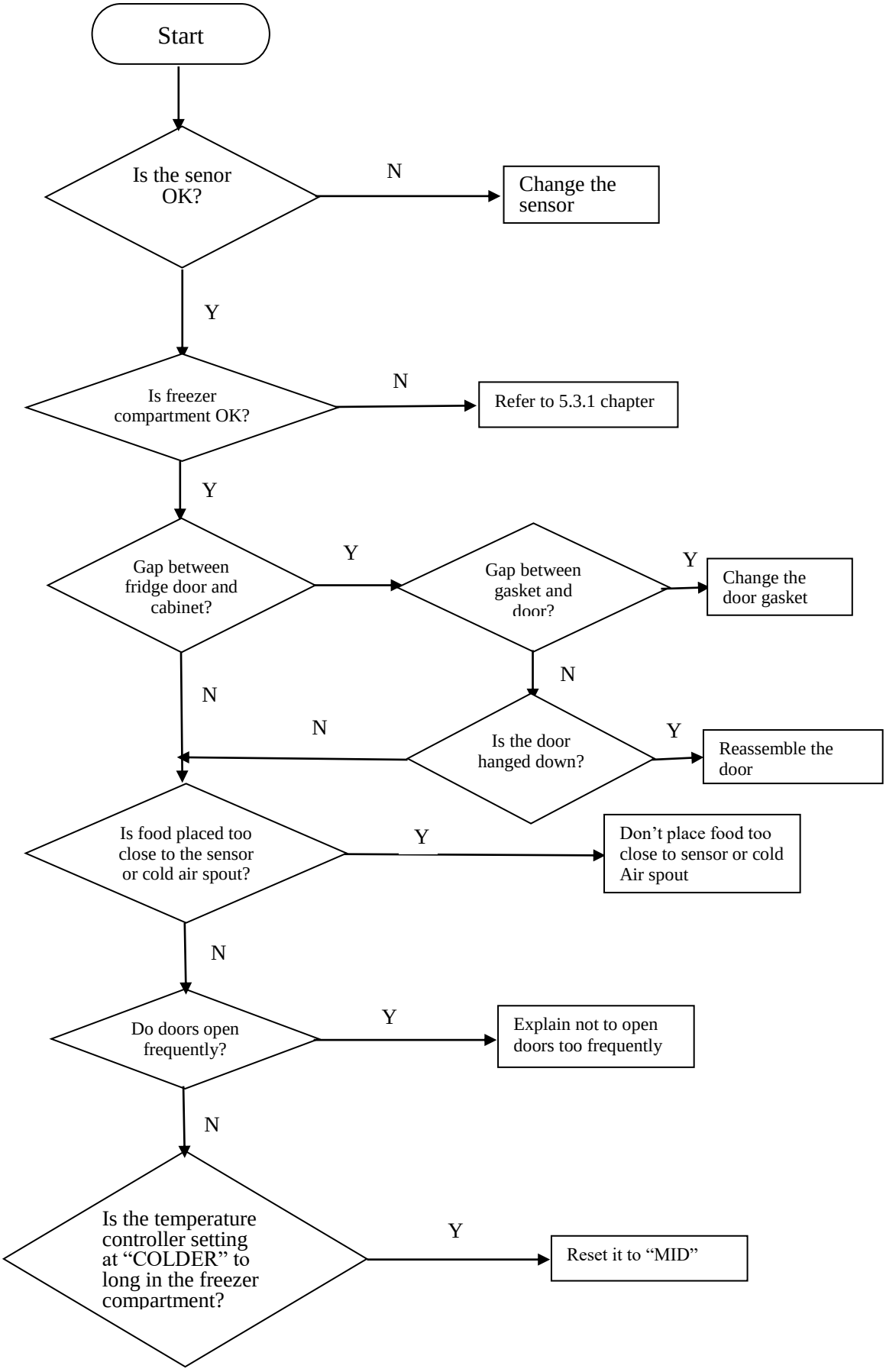
5.3.1 Freezer compartment



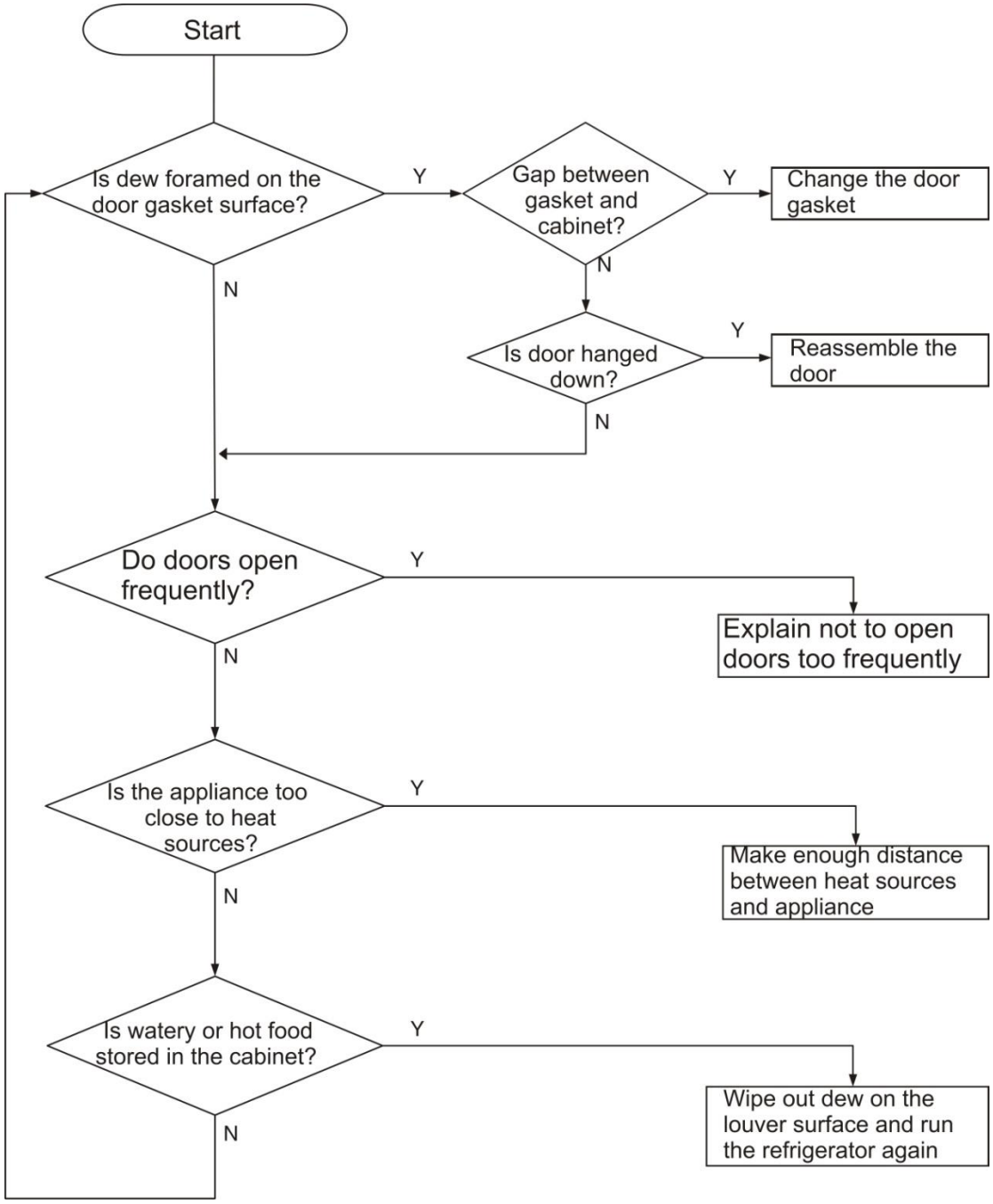
5.3.1 Freezer compartment



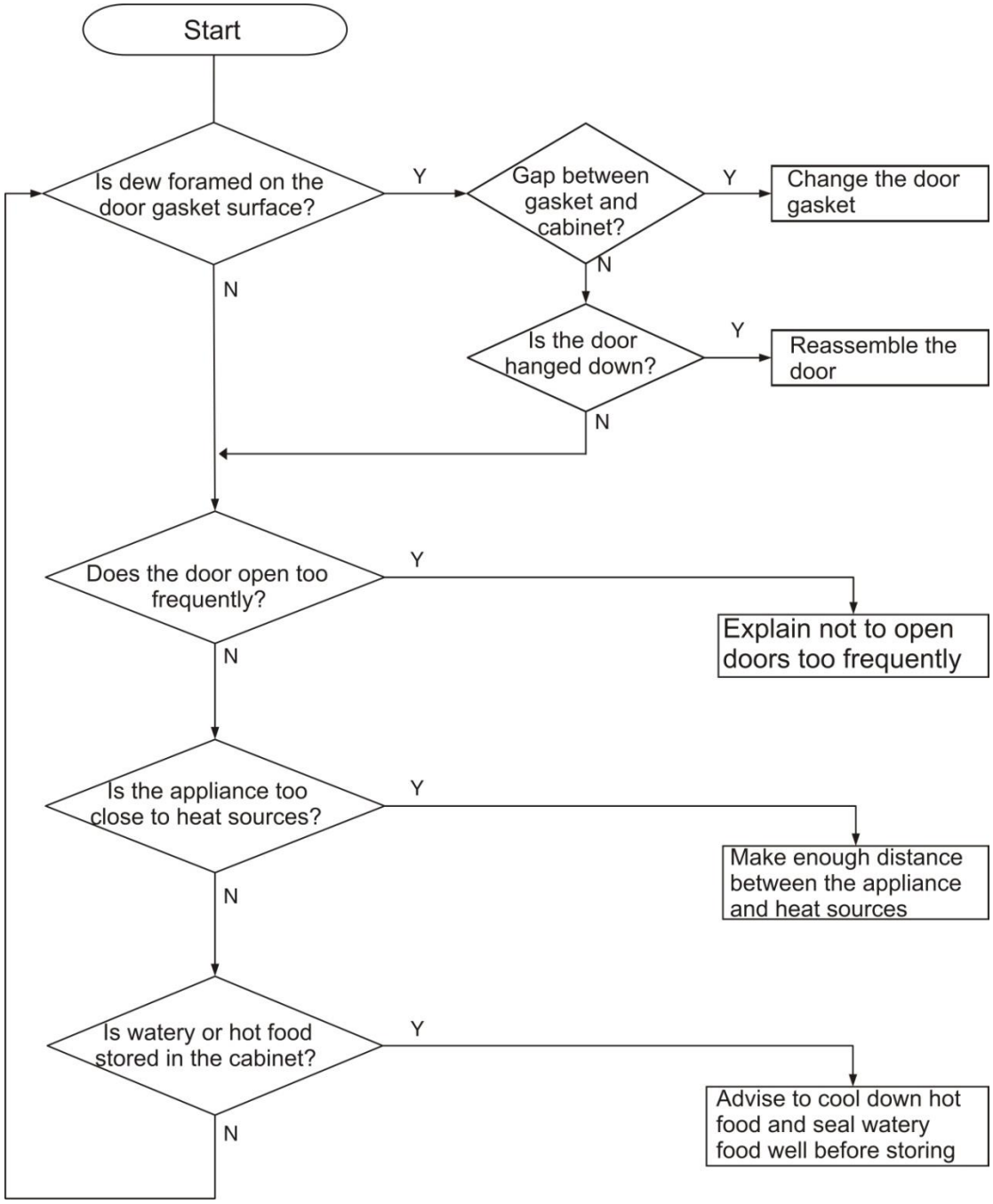
5.3.2 Fridge compartment



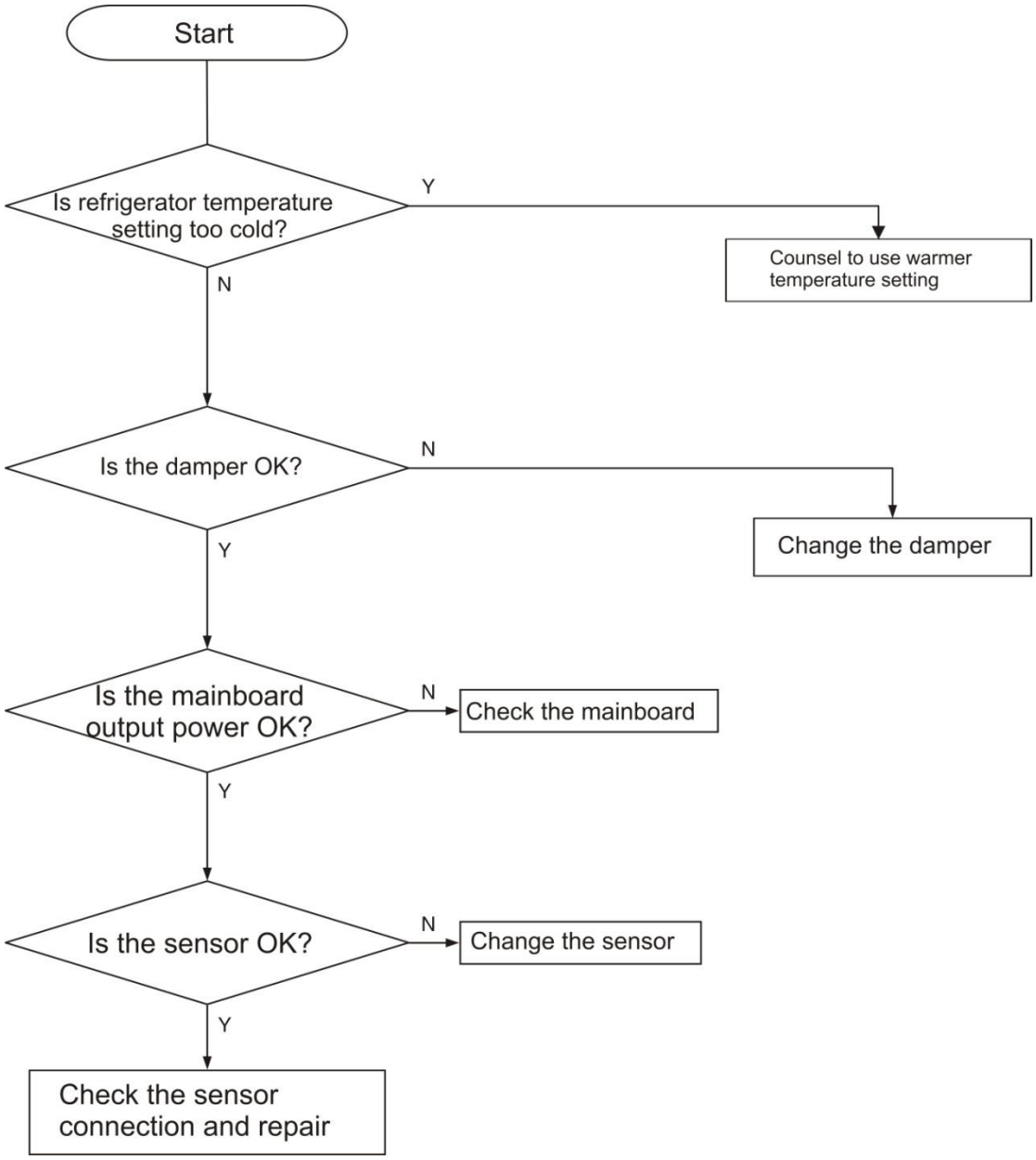
5.4 Thick frost in freezer compartment



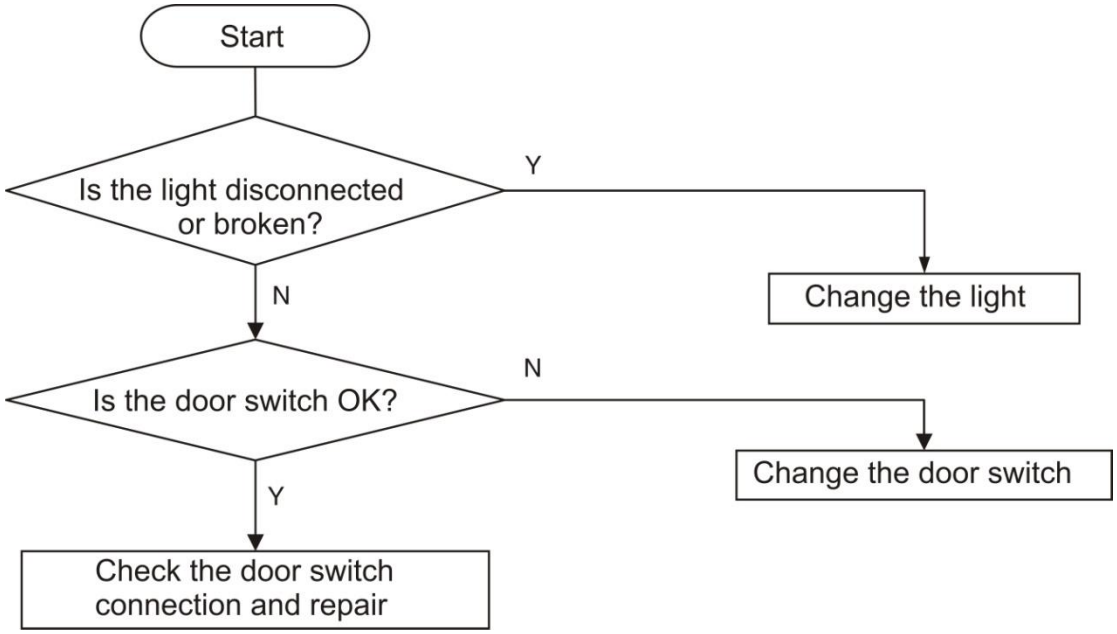
5.5 Dew in fridge compartment



5.6 Low temperature of vegetable case

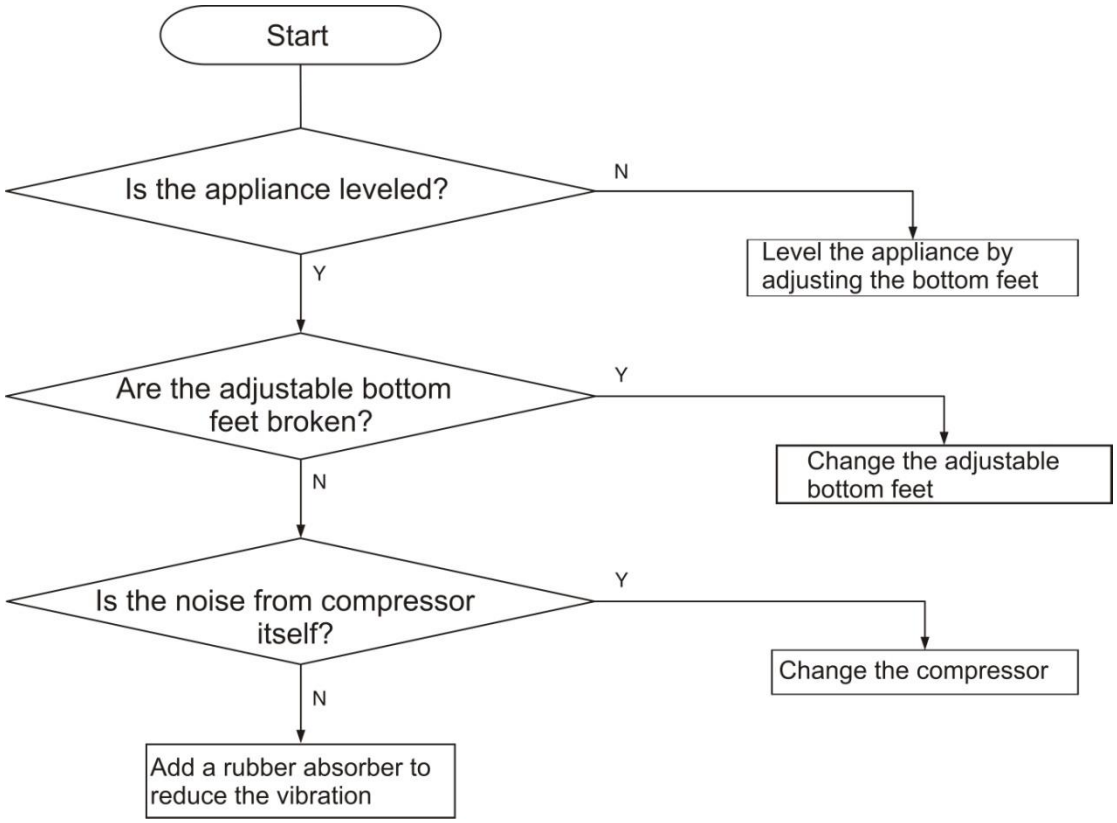


5.7 Breaking of light

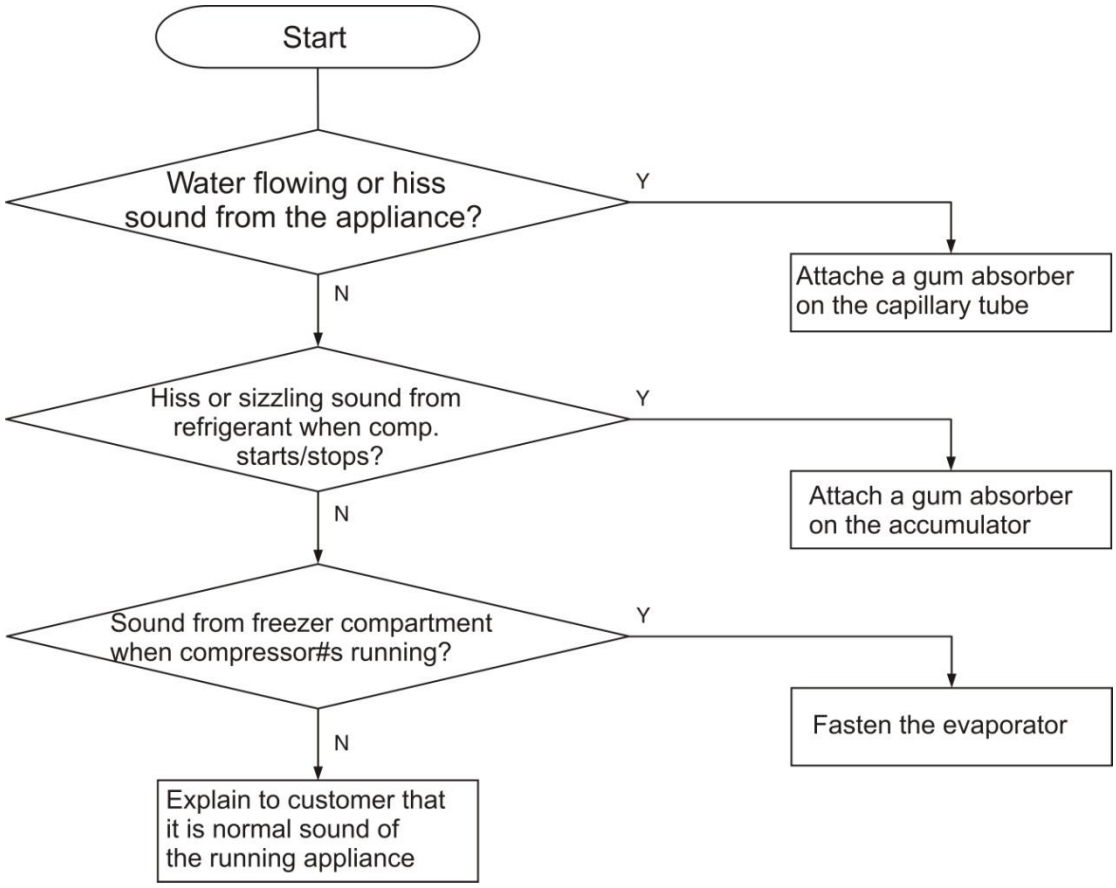


5.8 Noise

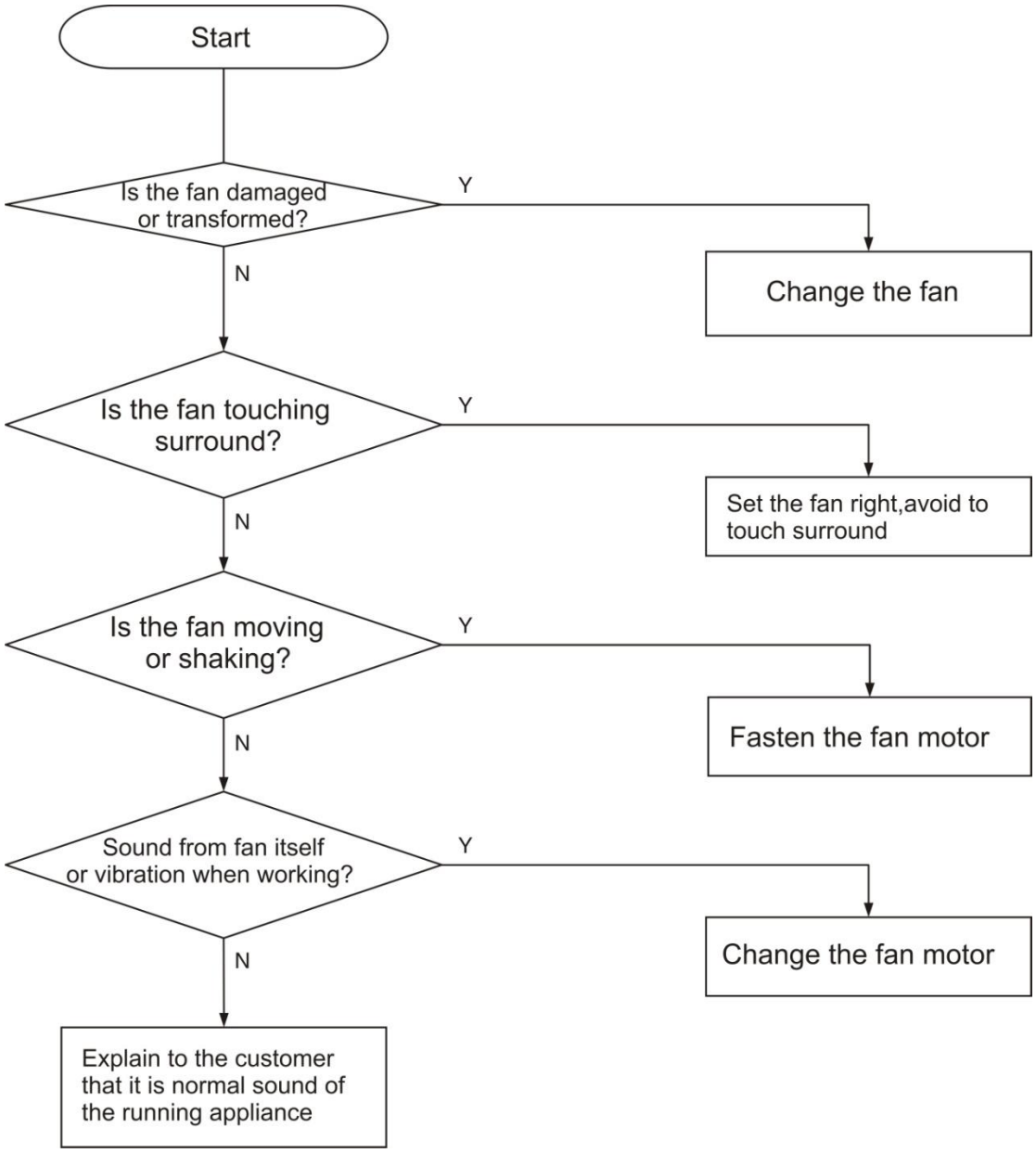
5.8.1 Compressor noise



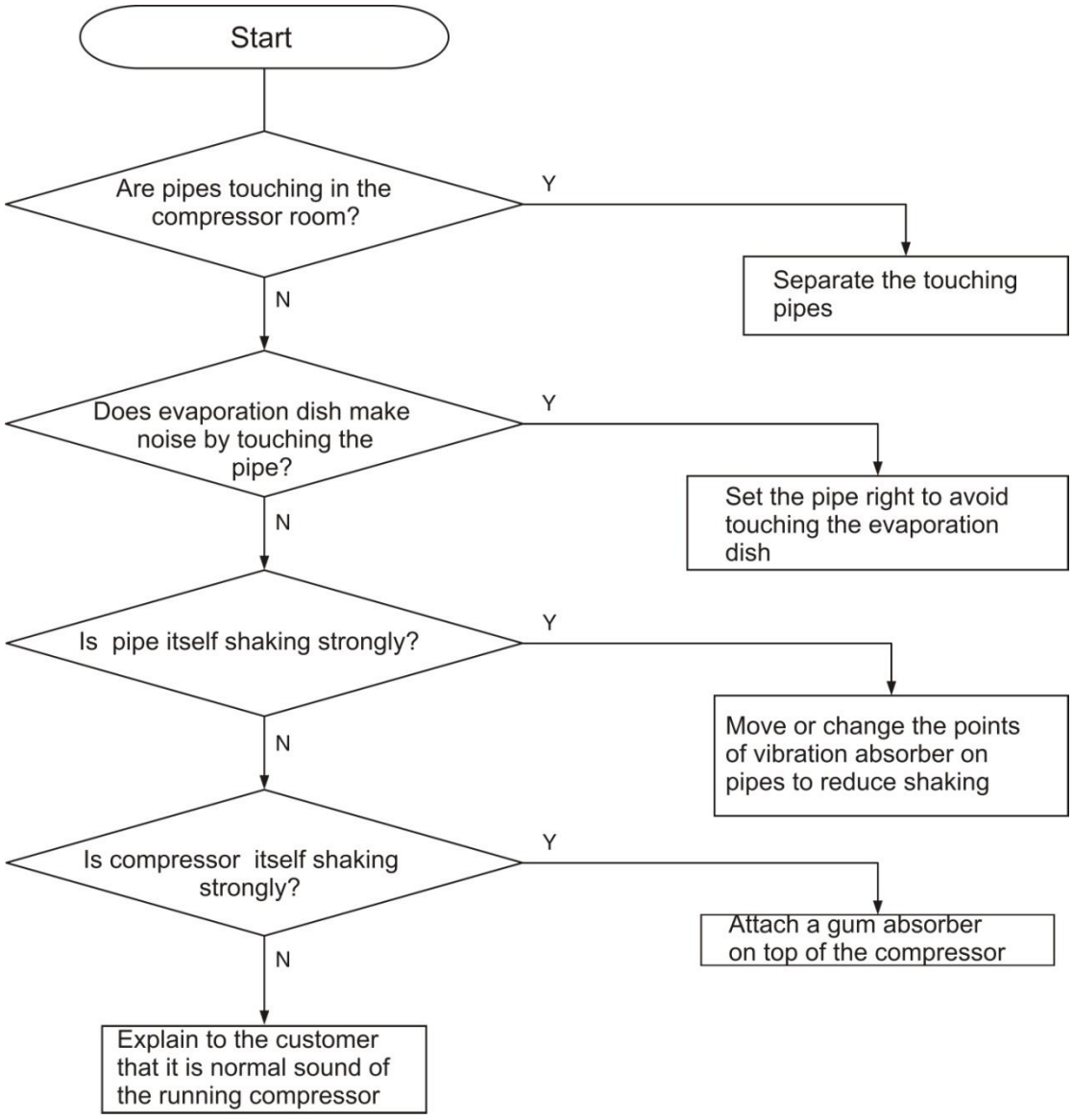
5.8.2 Refrigerator flowing noise



5.8.3 Fan motor noise

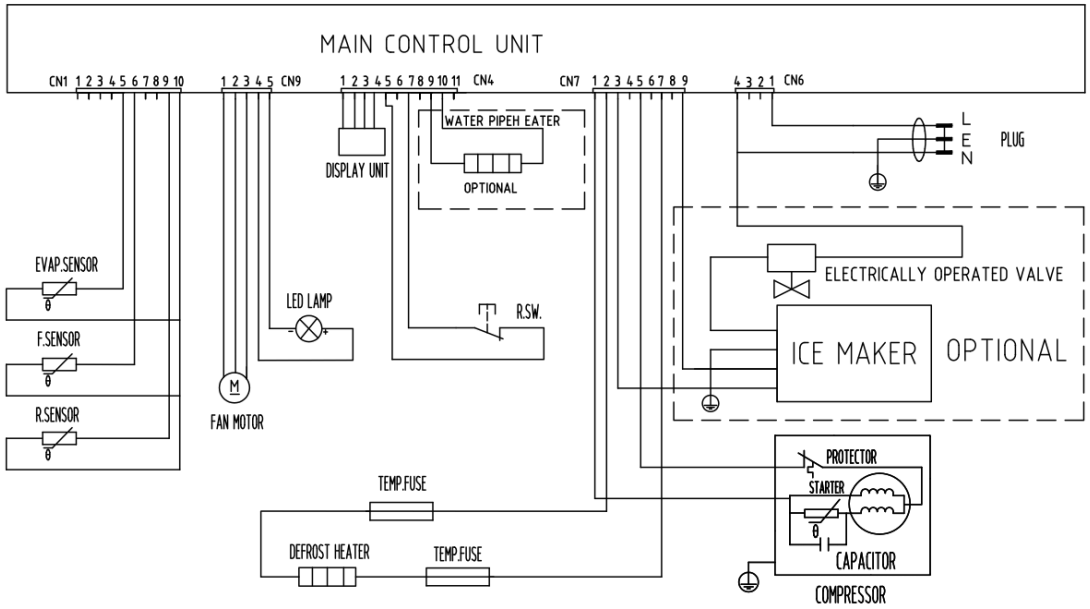


5.8.4 Pipe noise



6. Circuit and checking

6.1 Circuit diagram



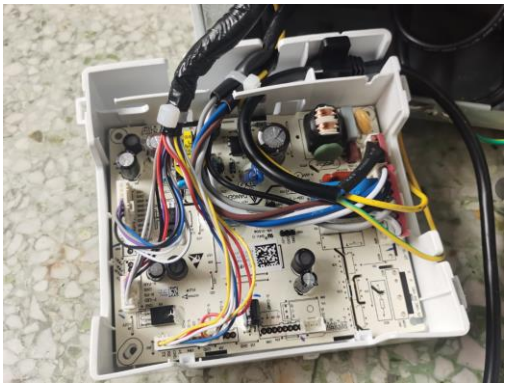
6.2 Mainboard

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 by screwdriver and remove the compressor back guard, as picture 1. Remove the electric controller part, as picture 2 and picture3.
3. Remove the Main control panel part, as picture 4

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

6.3 Compressor

6.3.1 Basic parameters

Input voltage: 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.4（No.6）on CN1 connector of mainboard, if the voltage equal to electric supply power, it means the compressor is broken, change it; If not, change the mainboard.

6.3.2.1 Compressor checking

Use a multi-meter to test the resistance between C & S, M&S and M&C :
Normal range of C&S : About 23.5±7%Ω
Normal range of M&S : About 45±7%Ω
Normal range of M&C : About 20±7%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.

6.3.2.2 Compressor protector test

Use a multi-meter to test the resistance between the two end as the picture show:
If there show 000 or almost 0 then it is OK.
If there is no response then it is broken.

6.3.2.3 Compressor PTC starter test

Use a multi-meter to test the resistance between the two end as the picture show:
If there show the number is between About 15±5Ω then it is OK.
If there show 000 or no response then it is broken.

6.3.3 Removing the PTC starter and overload protector

1. Unplug the appliance
2. Use a screwdriver to pry up the jump ring on protector cover as picture 1.
3. Remove the protector cover as picture 2.
4. Hold the overload protector and pull it out as picture 3.
5. Hold the PTC starter and pull it out as picture 4.

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

6.4 Fan motor

6.4.1 Basic parameters

Rated voltage: DC12V
Rated input power: 2.51W

6.4.2 Checking method

1. Check the connecting wiring of fan motor is well or not, repair if it is broken. The freezer fan motor corresponding pin No.1~3 on CN9 connector of mainboard.
2. Pin No.2 connect 12V power and pin No.1connect GND, if the freezer 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 covers by a small awl, as picture 1.
3. Remove the screw by screwdriver as picture 2.
3. Unplug the fan terminals and take out the wind channel part, as picture 3.
4. Remove the screw in the back of the wind channel part by a screwdriver, as picture 4.
5. Remove the back cover by squeezing the buckle, as picture 5.
6. Remove the three screws by screwdriver as picture 6.

 	 	 
Picture1	**Picture2**	**Picture3**

		
Picture4	**Picture5**	**Picture6**

6.5 Light

6.5.1 Basic parameters

Rated voltage: DC12V
Rated power: 3W

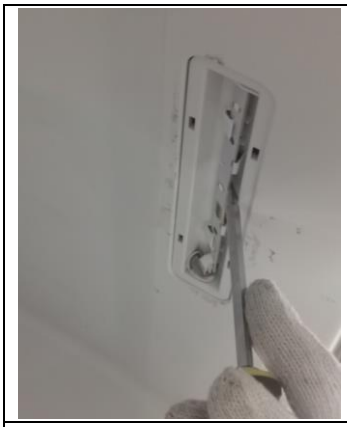
6.5.2 Checking method

1. Check the connecting wiring between light and mainboard is well or not, repair if it is broken. Refrigerator light corresponding pin No.4 and No.5 on CN9 connector of mainboard.
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.

6.5.3 Removing the light

1. Unplug the appliance
2. Remove the light cover by a small awl, as picture 1 and picture 2.
3. Pry the LED light with a screwdriver and remove it by hand, as picture 3.
4. Unplug the terminal of the light as picture 4.

	
Picture1	**Picture2**

	
Picture3	**Picture4**

6.6 Defrost heater & Fuse

6.6.1 Basic parameters

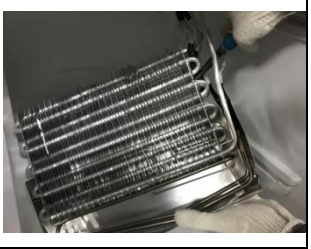
Input voltage: 110-127V
Rated power: 210W

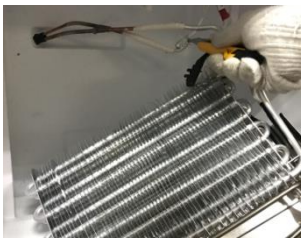
6.6.2 Checking method

1. Enter compulsory defrost mode, use a multimeter to measure the voltage between pin No.2 and No.7 on CN7 connector of the mainboard, if the voltage doesn't equal to electric supply power, it means the mainboard is broken, change it.
2. Unplug the appliance, then use a multimeter to measure resistance of the heater, if the value isn't 63Ω ± 5%, it is broken, change the heater.

6.6.3 Removing the defrost heater and fuse

1. Unplug the appliance.
2. After removing the freezer wind channel component, unplug the terminals as picture 1.
3. Remove the two screws of evaporator by screwdriver as picture 2.
4. Remove the aluminum and the defrost stick as picture 3 and picture 4.
5. Take out the evaporator as picture 5 and be careful of the connected wires.
6. Remove the fuses and sensor from the evaporator as picture 6 and picture
7. Pry up the buckles that fastening the heater by screwdriver and remove the heater as picture 8.

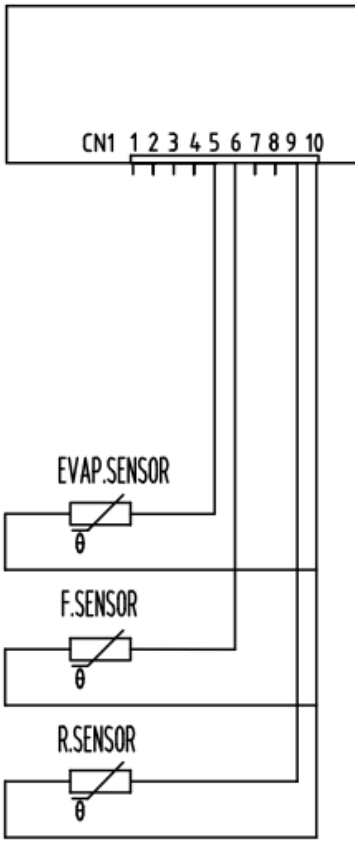
		
Picture1	**Picture2**	**Picture3**
		
Picture4	**Picture5**	**Picture6**

	
Picture7	**Picture8**

6.7 Sensor

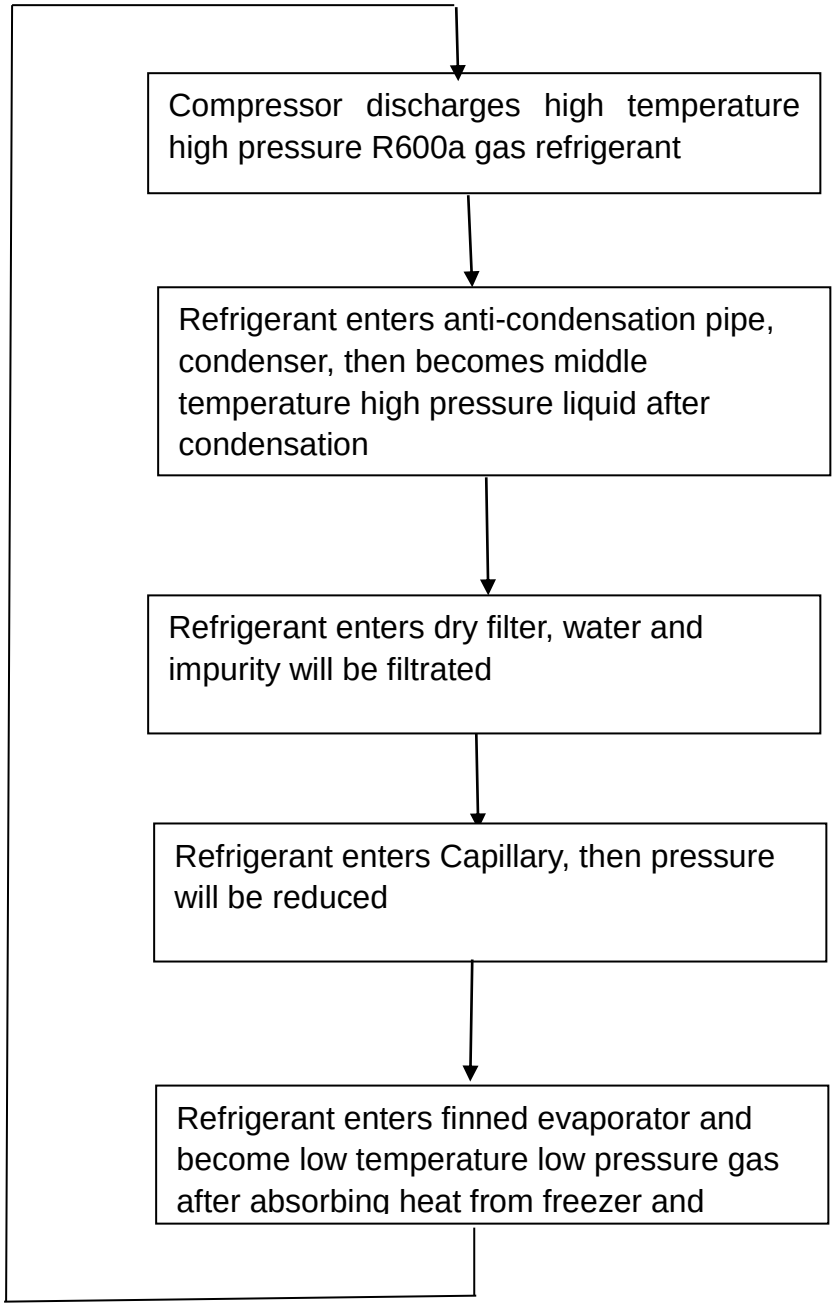
6.7.1 Measuring the sensor resistance

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

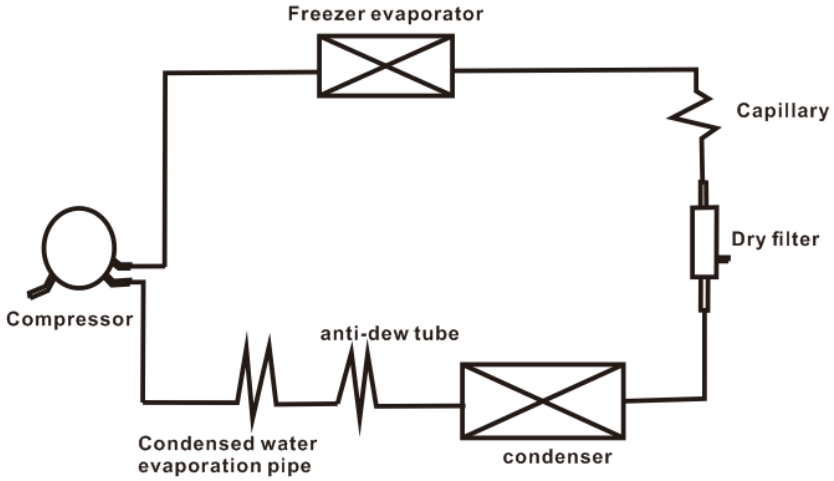
7.1 Refrigeration system



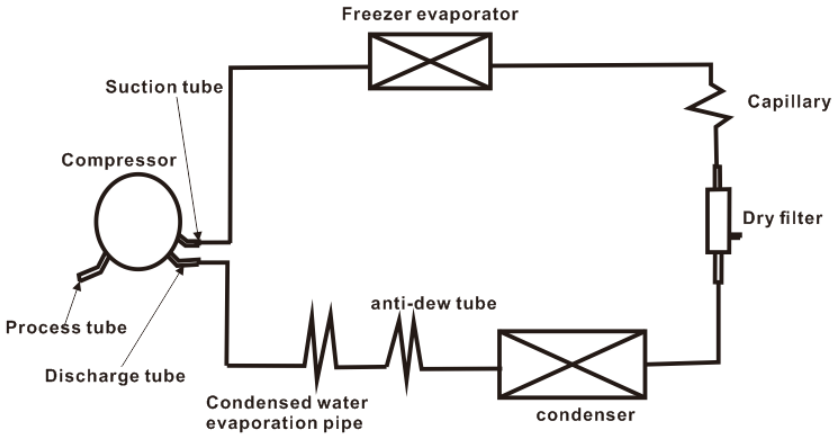
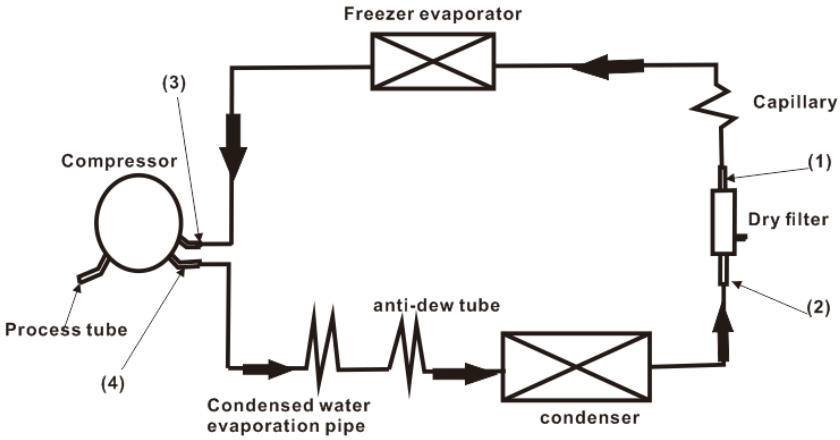
7.2 Summary of repair

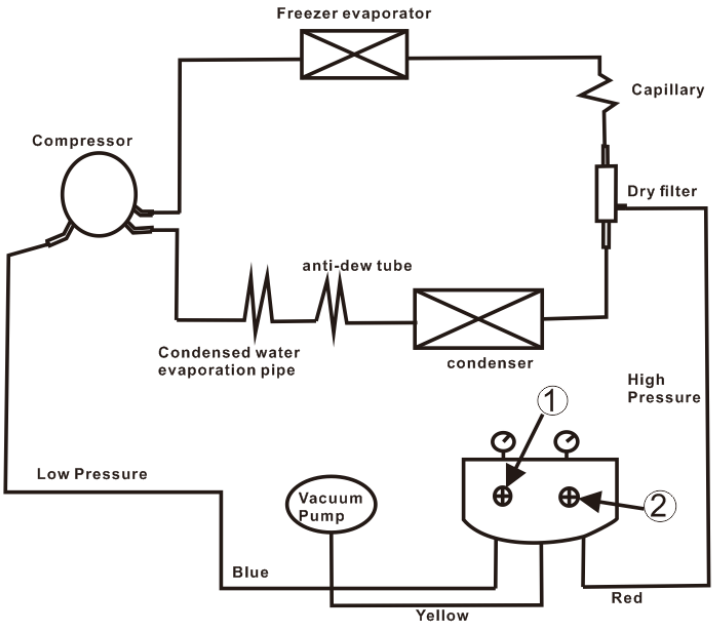
Process	Contents	Tools
Remove refrigerant Residuals	* Cut charging pipe ends (Comp. & Dryer) and discharge refrigerant from drier and compressor.	* Nipper, side cutters
Parts replacement and welding	* Confirm refrigerant (R-134a or R-600a) and oil for compressor and drier. * Confirm N2 sealing and packing 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.)	

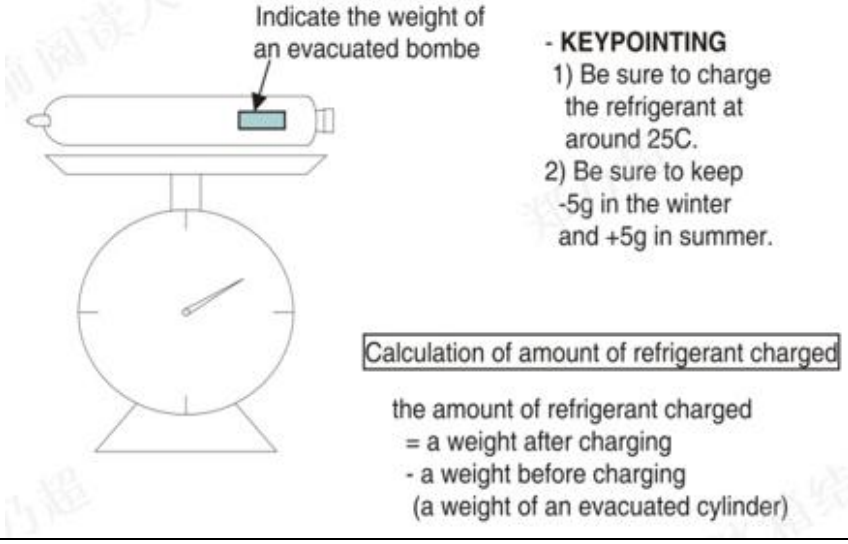
7.3 Regulation of repair :

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.	 1) When replacing a drier: When 1 and 2 parts by blowing nitrogen (0.1~0.2kg/cm2) to high pressure side after assembling a drier. 2) When replacing a compressor: Weld 2 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 in side 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.

3. Vacuum degassing.	1) Pipe Connection Connect a red hose to the high pressure side and a blue hose to the low pressure side. 2) 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.

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. 

7.5 Brazing reference drawing