French Door Service Manual

BCD-586WI

(The first version)

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Description of the upgraded version

CONTENTS

Chapter 1 Product functions and features

1.The refrigerant and foaming agent of R600a are hydrocarbons, which will not damage the ozone layer and cause the greenhouse effect；

2.Freezer can defrost automatically, avoid the trouble of manual defrost；

3.It integrates quick-freezing, energy saving, noise reduction and other technologies, and achieves energy saving by optimizing the refrigeration system to meet the Estar energy efficiency level and minimize noise；

4.Mouldproof and antibacterial removable door seal is clean and convenient to clean；

5.Metal hinge system, firm and beautiful, can realize automatic door closing and door opening limit;

6.the refrigerator set height adjustable glass shelf, easy to use;

7. Double layer fruit and vegetable box, large storage space, good use experience.

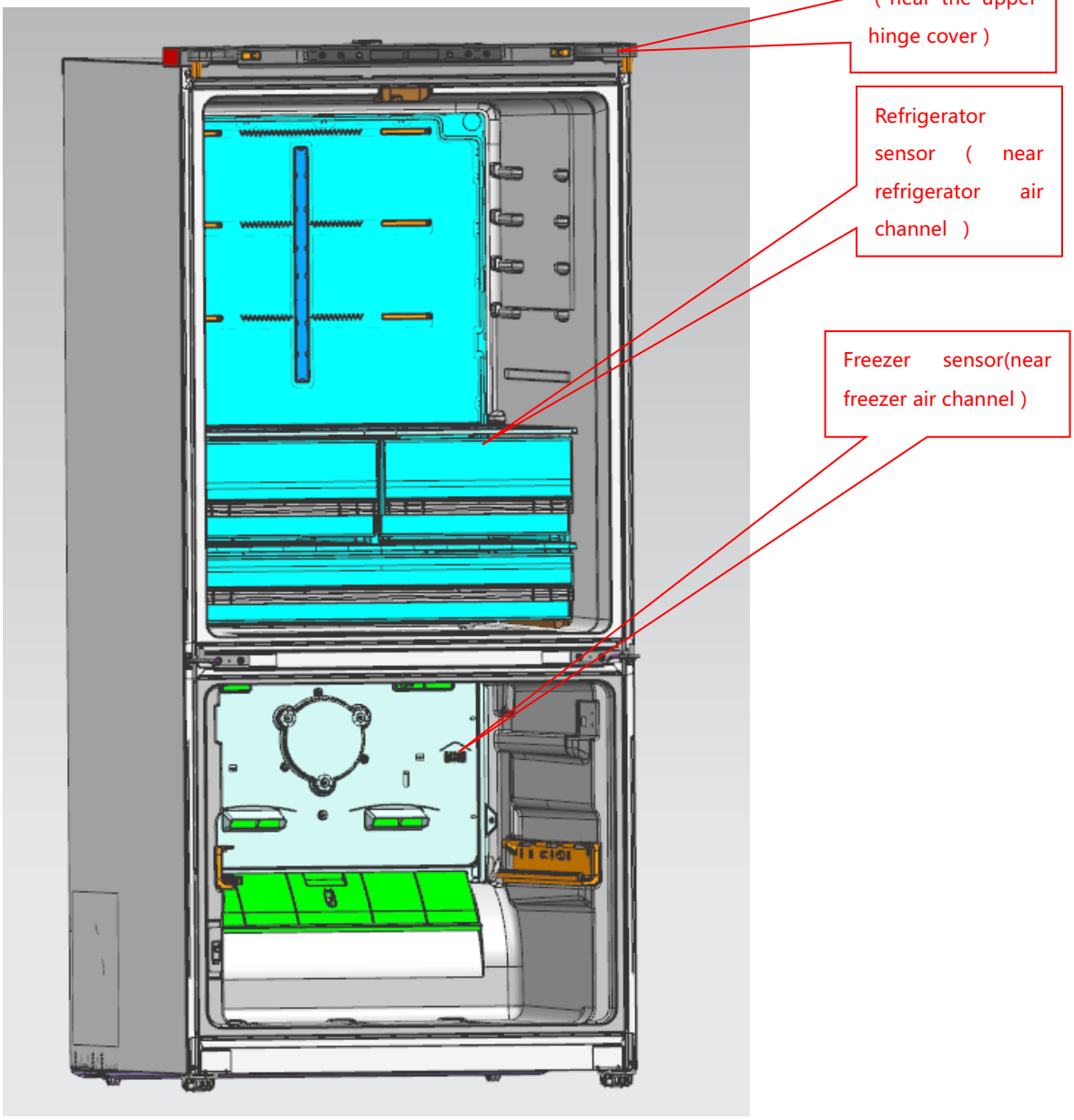
Chapter 2 Product appearance structure

From the front (closed the door) From the front (open the door)

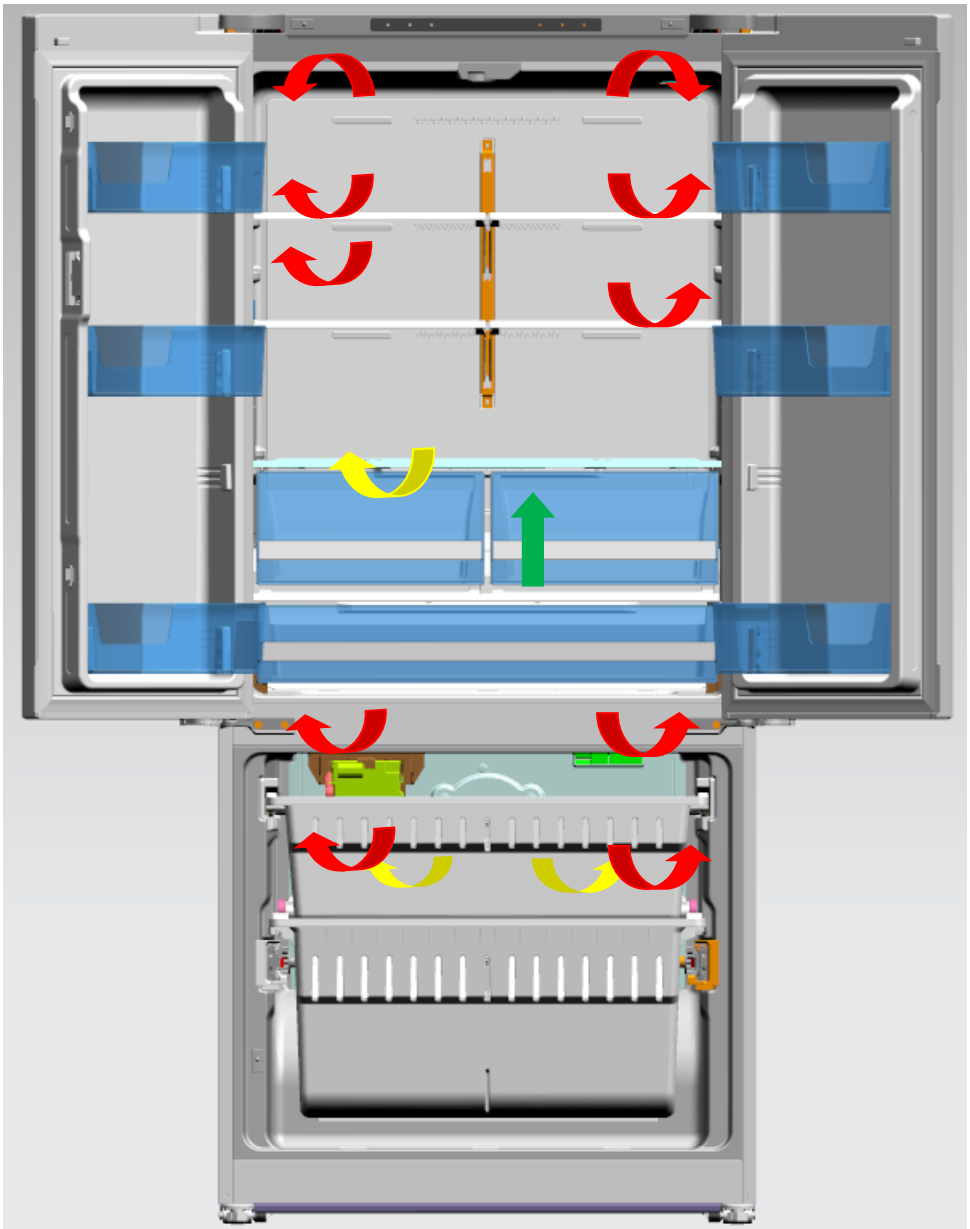
The body of removing the accessory From the back

Picture of compressor room

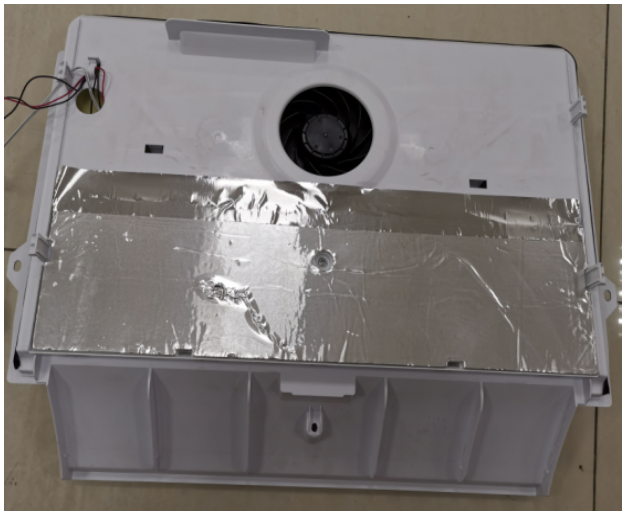
The position of refrigerator/freezer/temperature and humidity sensor



Each room wind path direction

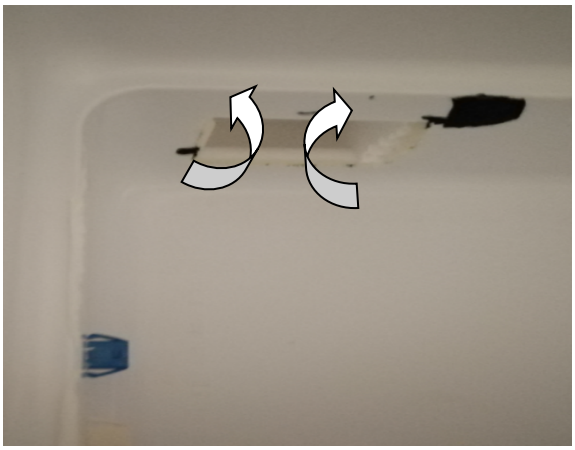


Rear cover of freezer airchannel& front cover of freezer air channel



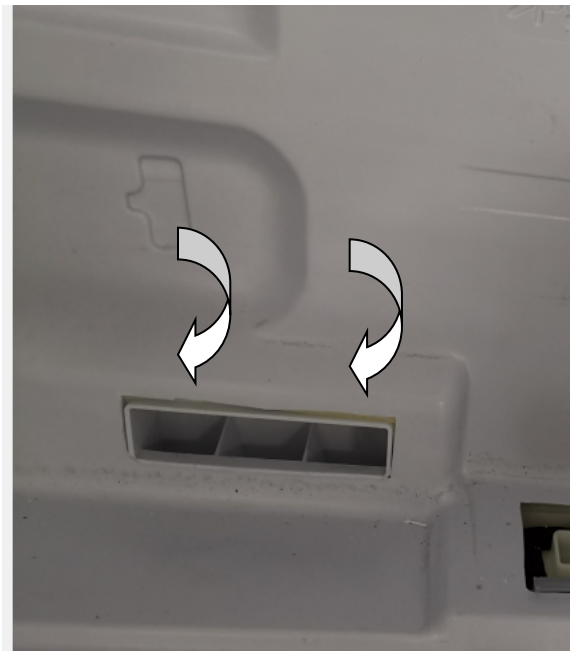
Freezer fan motor

Chilled air inlet

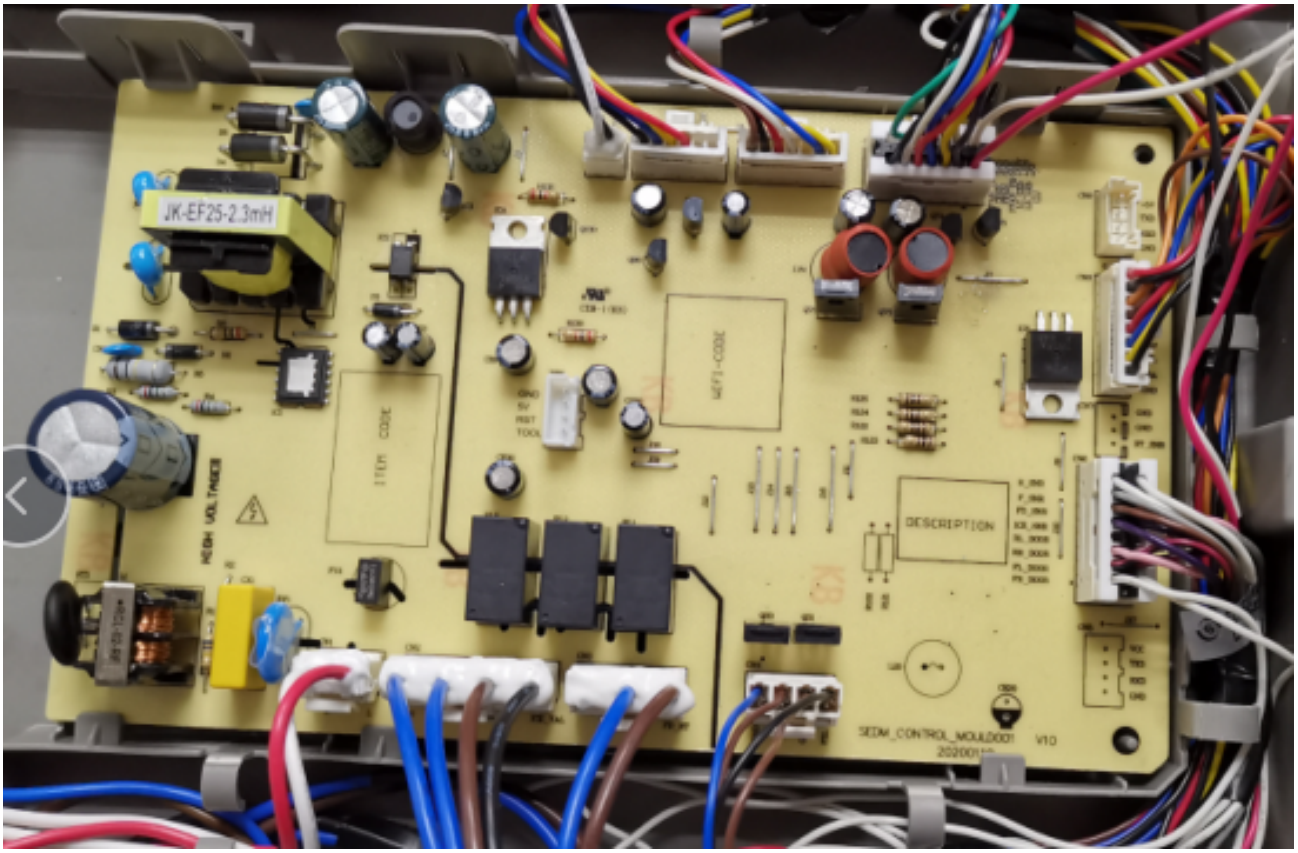


Refrigerator air channel foam

Refrigerator room air return port (covered with refrigerator air channel cover)

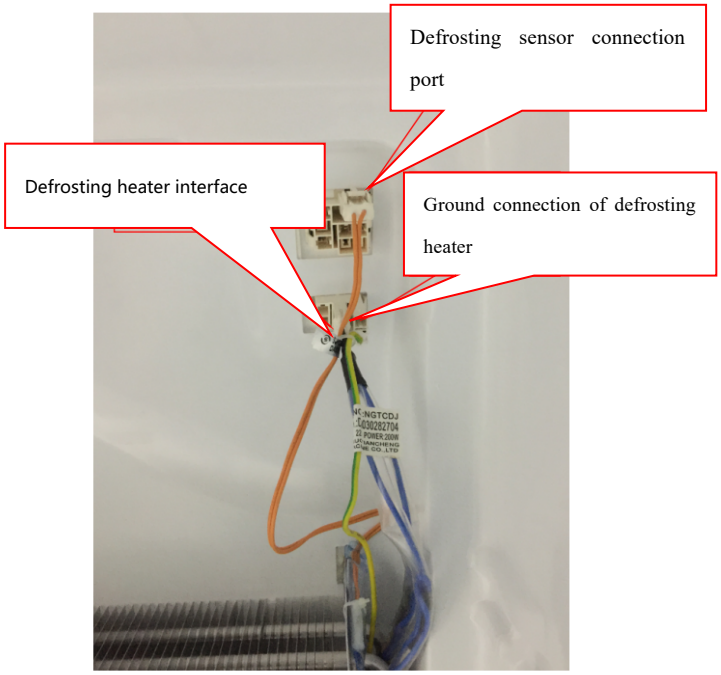


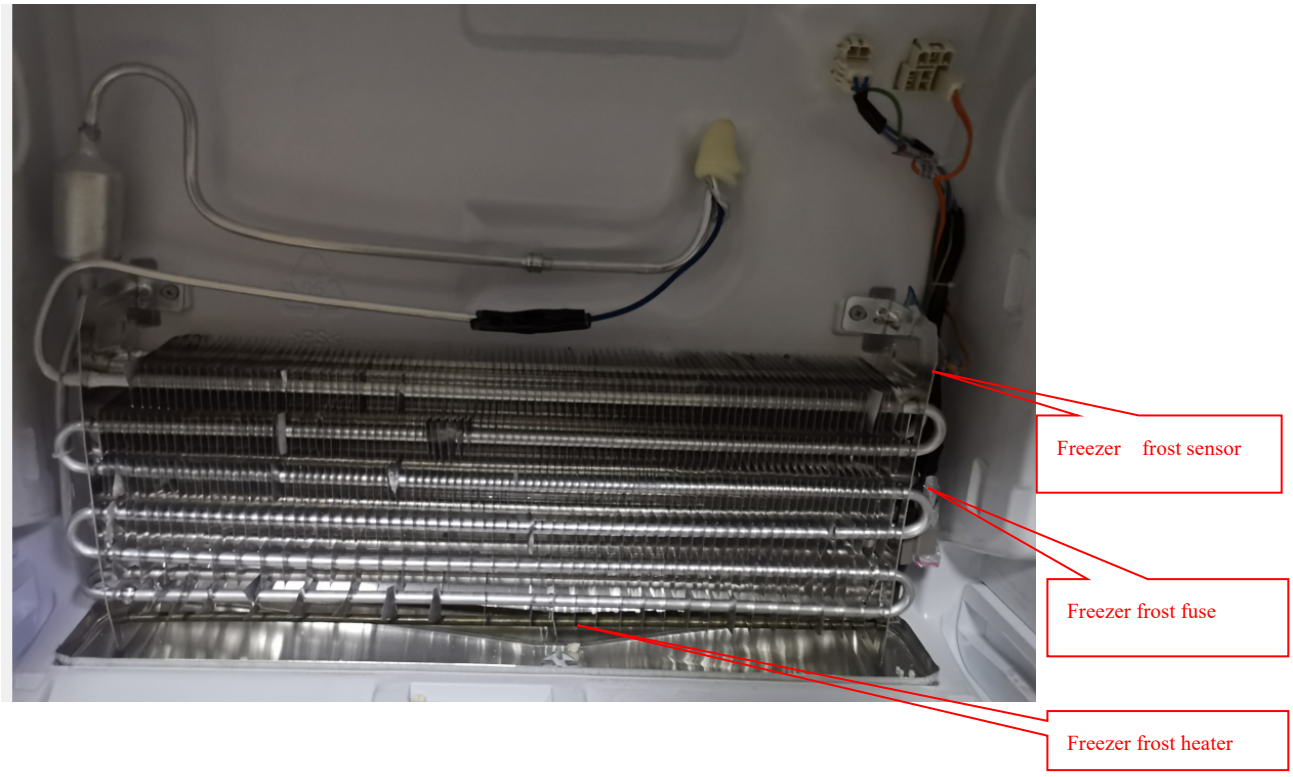
PCB



Display control board and surface display

Composition of freezer evaporator





Chapter 3 Main technical parameters of the product

Product information					
Total volume(L)	587	Origin	Hisense	Production time	/
Freezer room(L)	195.7	Platform code	W756	Number of containers (sets)	40
Refrigerator room(L)	391.3	ERP code	/	Dimension W*D*H(mm)	759*862*1700
Variable room(L)	/	Color	Stainless steel	Packing Dimension W*D*H(mm)	820*905*1760
Door structure					
Door material	Steel doors	Handle	Sheet metal recessed handle	Star symbol	****
The door end cover	Changjiang gray	Color of door (film no.)	H90Stainless steel	Door shelf	GPPS
Body structure					
Case liner / door liner	HIPS	Floodlight	LED	Fruit and vegetable box	Component (GPPS+PP)
Fruit and vegetable box cover board	HIPS+Toughened glass	Freezer drawer	PP，Plastic	Evaporator structure	Finned evaporator
Transparent color	New blue	Glass shelf	Plastic+Metal rack	Net Weight(kg)	101
Wine rack material	/	Type of crisper	/	Gross Weight(kg)	110
Performance					
Climate	SN/N/ST/T	Nominal Voltage(V)	115V	Freezing capacity(kg/12h)	/
Automatic compensation	NO	Rated frequency(Hz)	60HZ	Variable room temperature range(℃)	/
Standard power consumption/rating	480kWh/year，Estar	Current(A)	2.2A	Refrigerant	R600a

Chapter 4 Product function operation instruction

For the layout of the buttons and LED display in the man-machine interface, see the figure below (the button icons may not match the actual situation)：

1.Display

●When the power is turned on for the first time, there will be a ringing tone, the icon will be displayed for 3S, and then it will enter the normal operation display;

●Normal operation display digital display area: long press "Fridge + freezer" for 1S, all icons on the display will light up in the case of no failure; in case of failure, the current failure Code will be displayed;

●When the display is working under normal conditions, the display will go out after 20 seconds without opening the door and no key operation; each time there is an opening of the refrigerator, the display will return to normal display.

2. Cold room temperature setting and cold room switch function

●Fridge room temperature setting

Touch the "Fridge" button, and the temperature will be set in the following order:

Celsius（℃）： 4→ 3 →2→8 → 7 → 6 →5

Fahrenheit(℉) 39 → 37 →35 →46 →44 →42 →41

Default temperature 39℉（4℃）

●Fridge room closed/opened

When the fridge is on, press and hold the "Fridge" button until you hear a beep and enter the refrigeration off state. At this time, the temperature display area of the refrigerator compartment displays "OF"; when the fridge is off, press and hold the "Fridge" button until you hear a beep to exit the refrigeration off state. The fridge temperature setting value returns to the temperature before fridge closed and enters the normal operation mode.

4.Freezer temperature setting

Touch the "Freezer" button, and the temperature will be set in the following order:

Celsius(℃): -18 → -19 → -20 →-21 →-22 → -23 →-15 →-16 →-17

Fahrenheit(℉): 0 → -2 → -4 → -8 → -10 → 5 → 4 →2

Default temperature 0℉（-18℃）

5. Super Freeze

Touch the "Super Freeze" button, the corresponding "Super Freeze" icon " " will light up , and the freezing display area is forced to display -10°F (-23°C);

When "Super Freeze" is lit, touch the "Super Freeze" button to exit the Quick Freeze mode, the quick freeze icon will be off, and the freezing display area will return to the set temperature before the quick freeze; or when the Quick Freeze " " is shown, adjust the temperature of the freezer and exit Quick cooling mode;

When "Quick Freeze" lights up, run continuously for 24H or the temperature of the freezer compartment sensor is lower than -28°C, exit the Quick Freeze;

6. Super cool

Touch the "Super cool" button, the corresponding "Super cool" icon " " will light up, the fridge display area is forced to display 35℉ (2℃), and the fridge room will be controlled according to 35℉ (2℃); when the super cool " " is on , Touch the "Super cool" button to exit the super cool mode, the super cool icon will go out, and the fridge display area will return to the set temperature before entering the super cool; when super cool is on, adjust the temperature of the fridge compartment and exit the super cool Cooling mode; when the quick cooling " " is on, it will run continuously for 150 minutes, and it will automatically exit the quick cooling;

7. Energy saving

Touch the “Energy Save” button, the corresponding “Energy Save” will light up, and the fridge zone will be forced to display 46℉/5℉ (8°C/-15°C); when the “Energy Save” button is lit, touch “Energy Save” button to exit the energy saving mode, the energy saving icon goes out, and the fridge and freezer display area returns to the set temperature before energy saving; when the energy saving " 节能 " lights up, adjust the temperature of the fridge/freezer compartment, automatically exit the energy saving mode, and adjust the room according to Adjust the temperature setting, the unadjusted room temperature is set according to the set temperature before entering the energy saving;

8. Ice making switch

Press the ice on / off switch to turn on or off the ice making function;

9. Celsius and Fahrenheit conversion

Long press "Energy Save (Energy Save) + touch "Super cool" for about 3S, and the display can be converted to ℃/℉;

10. Fridge door open reminder and door open alarm

When the fridge door is opened for 1 minute without closing the door, the buzzer will alarm (three beeps), and then three beeps every 30 seconds until the refrigerator and freezer compartment doors are closed.

11. Power off memory

After the refrigerator is powered off, it will still work according to the set state before the power off.

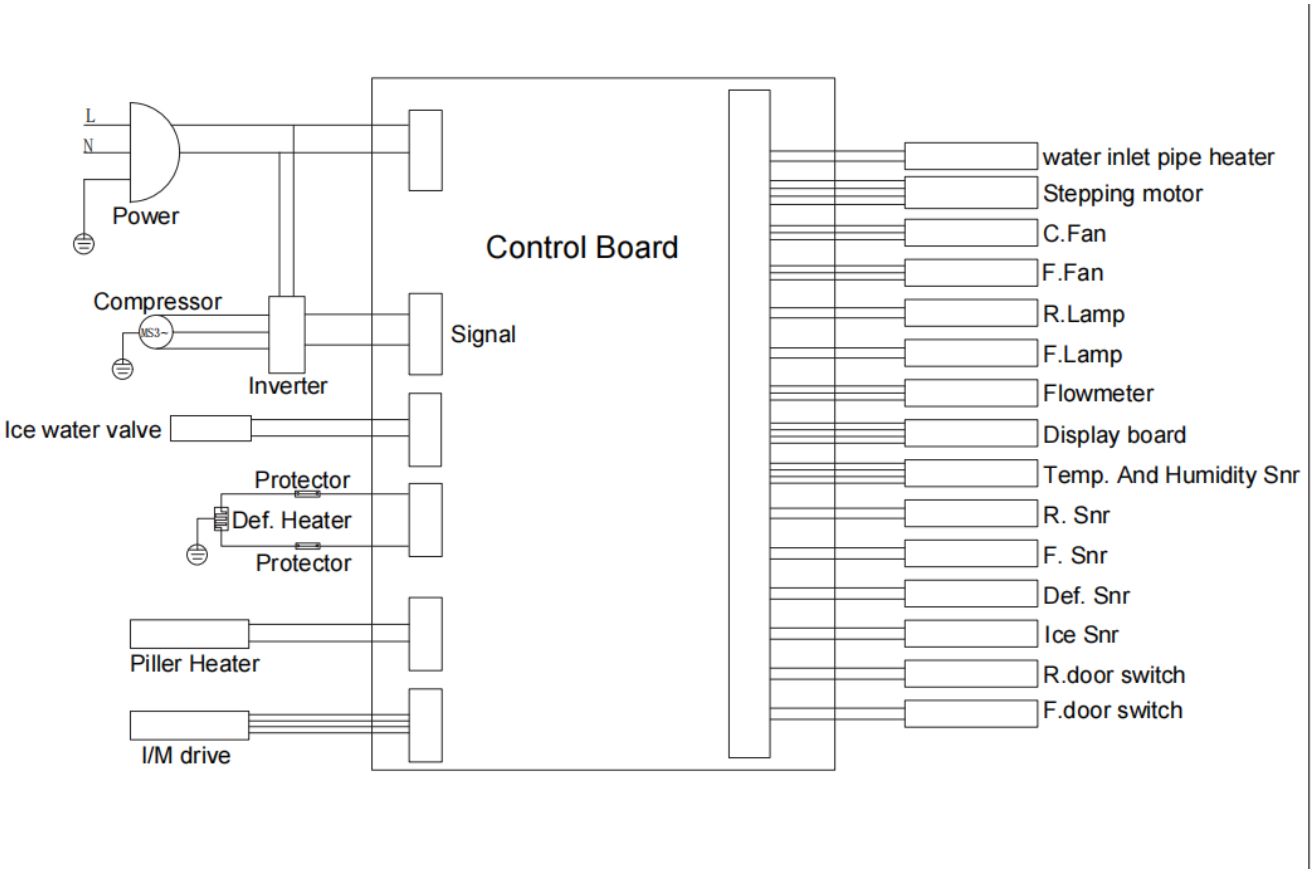
10. Fault prompt

When the following failures appear on the display, it means that the refrigerator has failed. In some failures, the refrigerator can still be cooled, but you should contact for maintenance as soon as possible to realize the optimal operation of the refrigerator.

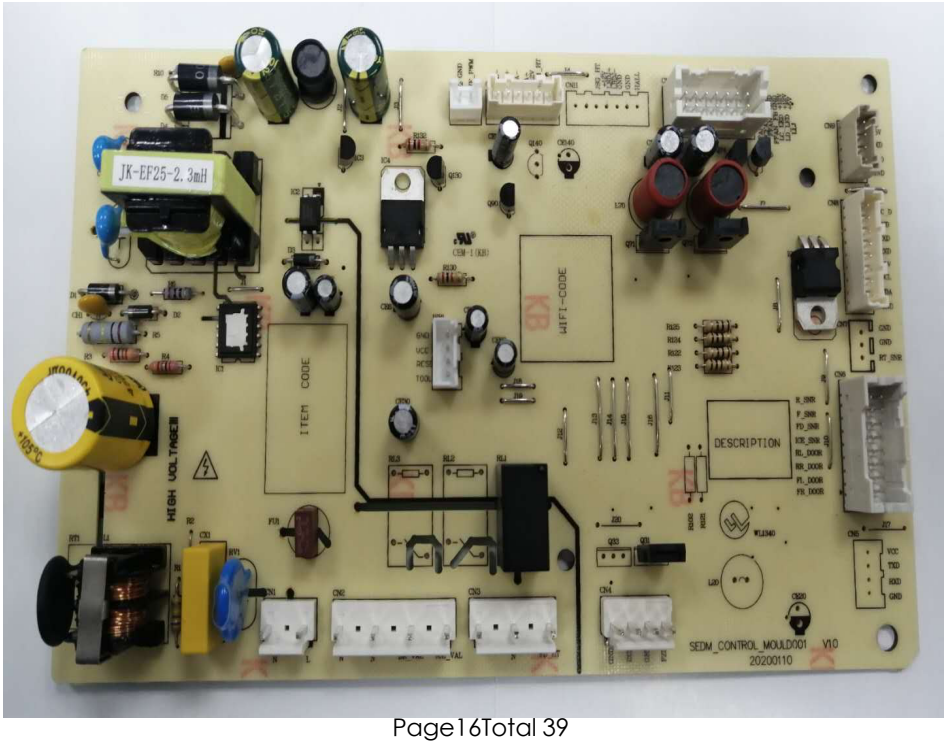
Error type	Error code		Remark
	Freezer	Fridge	
Ambient temperature sensor	Er	E0	
Fridge sensor	Er	E1	
Fridge defrost sensor	Er	E2	
Freezer sensor	Er	E3	
Freezer defrost sensor	Er	E4	
Temperature and humidity sensor	Er	E8	
Ice machine malfunction	Er	Eb	
Main display board communication failure TX	Er	Ec	
Main display board communication failure RX	Er	Er	
Condensing fan failure	Er	CF	
Refrigerator fan failure	Er	F1	
Freezing and defrosting overtime failure	Er	dH	

Chapter 5 Electrical schematic and wiring diagram

1、Electrical schematic diagram



2、PCB



Chapter 6 Control principle, parameters and detection method

1) Fridge control: When the fridge is on, press and hold the "Fridge" button for 5 seconds until you hear a buzzer and enter the refrigeration off state. At this time, the temperature display area displays "OF";

When the fridge is off, press and hold "Fridge" for 5 seconds until you hear a beep to exit the refrigeration off state.

2) Freezer control: press "Freeze" to adjust the temperature of the freezer;

3) Super freeze control: touch the "Super Freeze" button, the quick freezing icon will light up, and no key operation will take effect for 10 seconds.

4) Super cool control: touch the "Super Cool" button, the quick-cooling icon will light up, and the refrigerating force will be displayed for 10 seconds after no key operation.

5) Energy-saving control: touch the "Energy Save" button, the energy-saving icon will light up, and it will take effect 10 seconds after no key operation.

6) Door opening alarm: When the refrigerator door is opened for 60 seconds, the buzzer on the display panel will beep three times every 30 seconds.

7) Refrigeration lighting control: when the refrigerator door is open, the refrigerator lighting lamp is on; when the refrigerator door is closed, the refrigerator lighting lamp is off, and the freezing lamp is controlled in the same way.

8) Fan control:

8.1 When one of the following conditions is met, the freezer fan motor is turned on:

a. (When the compressor is turned on in the non-defrosting state) AND (the refrigerator and freezer doors are closed);

b. (When the compressor is turned off in the non-defrosting state and the refrigeration requests refrigeration) AND (the refrigerating compartment and freezing compartment doors are closed)

Note: After the door of the freezer compartment is closed, the fan meets the opening conditions, and the opening is delayed for 10 seconds.

8.2 If one of the following conditions is met, the freezer fan motor stops:

The compressor is stopped and the refrigeration is not refrigerated;

Defrosting state of the freezer compartment;

The freezer compartment door or the refrigerator compartment door is opened within 4 hours (the door will be restored to its original state if the door is opened for more than 4 hours)

9) Throttle control:

9.1 When one of the following conditions is met, the air door of the refrigerator compartment is closed:

Refrigeration sensor temperature Tra ≤ refrigeration stop temperature Trt

During defrost

c. The refrigerated compartment is closed.

9.2 When the following conditions are met, the air door of the refrigerator compartment is opened:

a. (Non-defrosting process) AND (non-refrigerated shutdown mode) AND (refrigerating room sensor temperature Tra≥refrigerating room starting point temperature Trk);

b. After 17 minutes after the defrosting exit, the compressor meets the start-up conditions or the refrigeration request refrigeration;

9.3 Abnormal Throttle Status Control

a. The damper is continuously opened for 60 minutes and the damper is reset once.

b. The damper is closed for 60 minutes and the damper is reset once.

10) Display control: No button operation (the last operation shall prevail), the display will go out for 20 seconds, and the display will light up when the refrigerator or freezer door is opened (only one door signal is detected at a time).

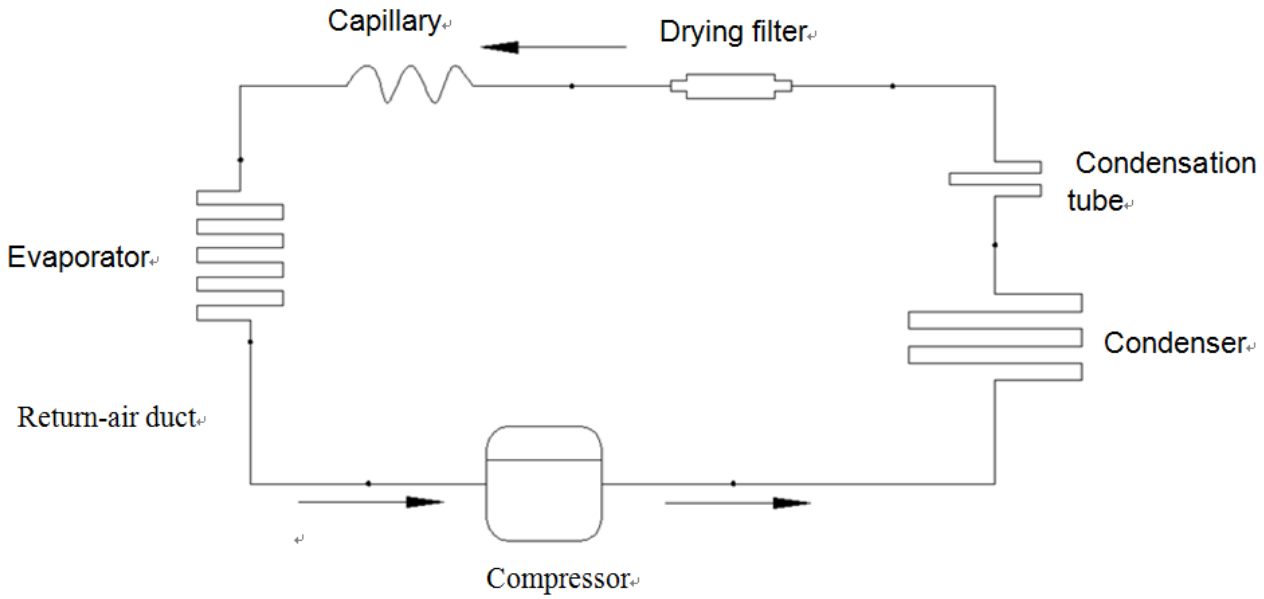
11) Compressor protection: The Compressor can be turned on again every 7 minutes after it is stopped, and the normal control of the Compressor can only be entered after the 7-min delay is over.

12)Compressor model and main parameters

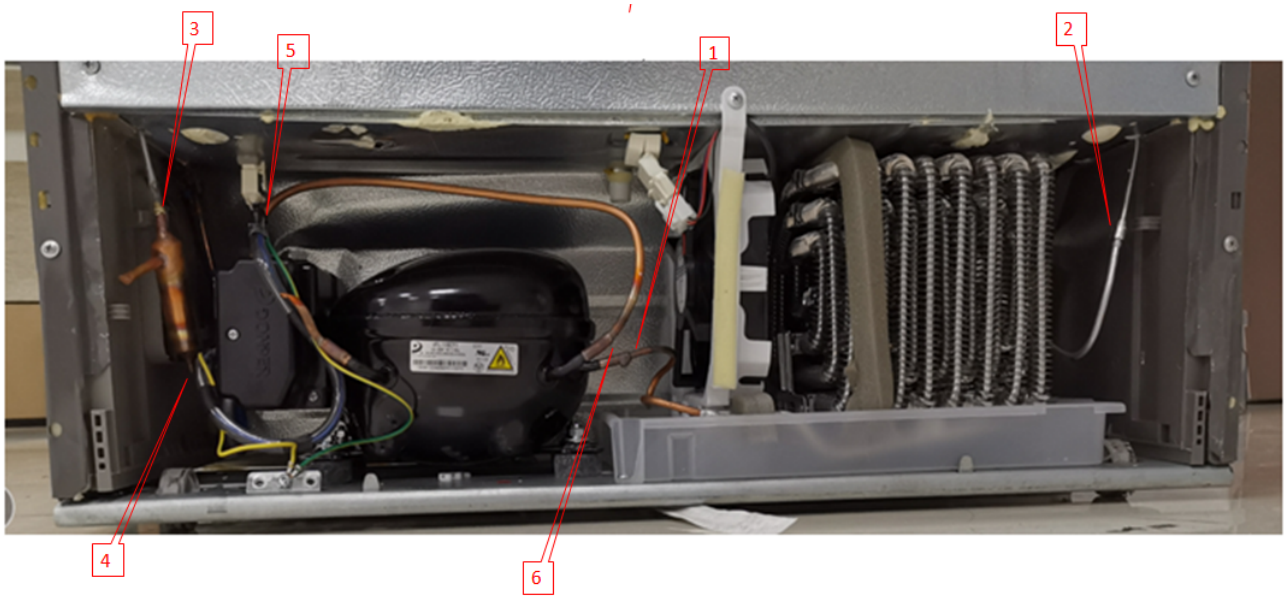
Model	Supplier	Power	COP	Cooling capacity	Current	Max Current
VTH1113YA	Jiaxipera	36.4—131.1W	1.65—1.73	60—215W	0.35—1.10A	1.60A

Chapter7 Refrigeration principle&pipeline circulation diagram

1、Schematic diagram of system refrigeration



2、Pipeline circulation diagram：Spot distribution



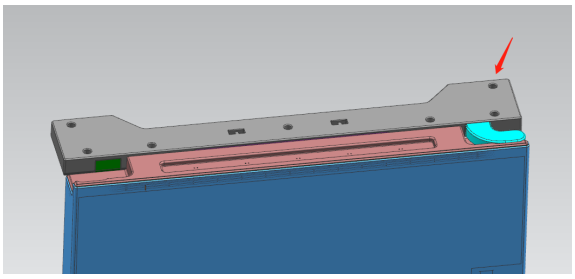
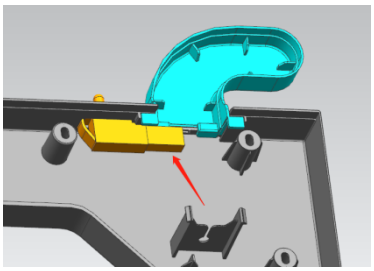
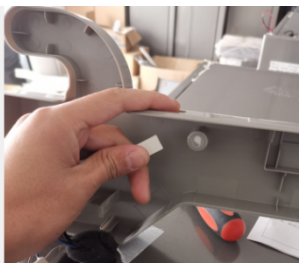
Compressor--Spot1（brazing）----Rotary wing condenser -- Spot 2（ring welding）---Condensation tube -- Spot 3（brazing）----Drying filter ---- Spot 4（brazing）---- Capillary -----Return-air duct --- Spot

5（ring welding）--- Suction tube ---- Spot 6（brazing）----Compress

Chapter 8 Disassembly instructions for main components

I、Door removal

【1】 Remove the top hinger cover

1、Use a torx screwdriver to remove the upper hinge cover screw（7 screws in total）；

2、Unplug the door light switch terminal（Pinch the terminal head by hand as pic 3）

【2】 Remove the top hinger

1、Remove screws of top hinger by plum blossom gun / socket wrench；

2、Separate top hinger and door body；

3、Lift up refrigerator door body to finish the removal.



【2】 Remove the middle hinger

1、Remove screws of middle hinger by plum blossom gun / socket wrench；

2、Use a torx screwdriver to remove the middle hinger cover screw（2 screws in total）

3、The left middle hinger & the right middle hinger removal same as step 1 and 2.

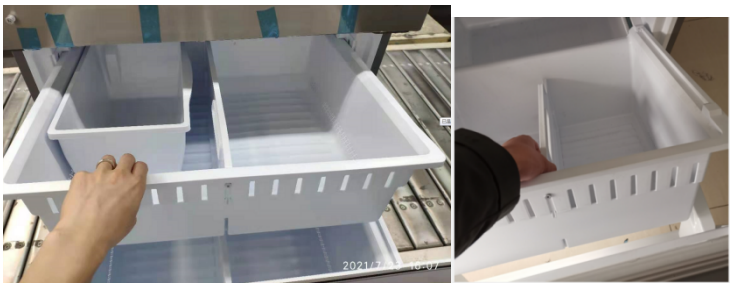
【3】 Remove freezer door body

1、Pull the freezer drawer completely, grab both sides of upper drawer and lift up；

2、Grab both sides of lower drawer and lift up；

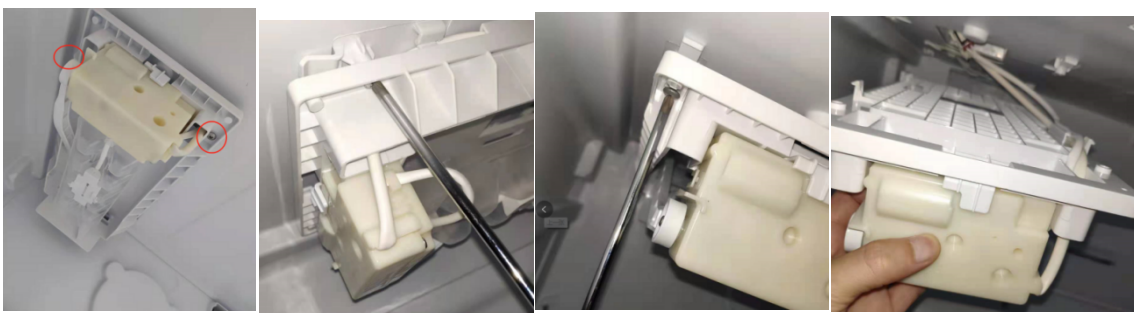
3、Use a torx screwdriver to remove rail bracket and cover screws of rail；

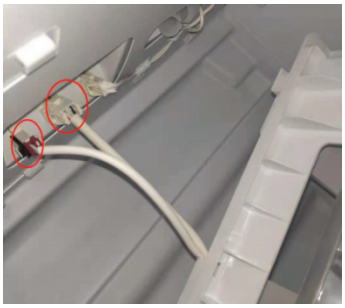
4、Grab the top of freezer door and lift up to finish



【4】Disassembly of ice maker components

1. Use a Phillips screwdriver to remove the ice maker assembly screws (2 pcs)
2. Pull out the ice maker components backwards
3. Remove the rear temperature sensor terminal and motor terminal



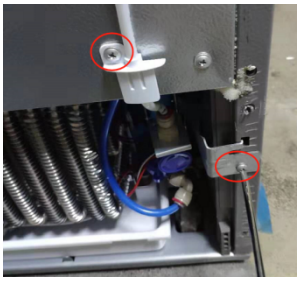


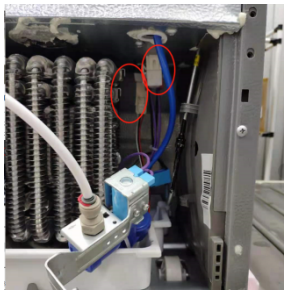
[5] Disassembly of the water inlet pipe assembly of the ice maker

1. Disassemble the heating wire terminal of the water inlet pipe of the ice maker
2. Use a Phillips screwdriver to remove the fixing screws (2 pcs) of the water inlet pipe sealing cover on the back of the refrigerator
3. Use a screwdriver to remove the fixing screws of the water inlet pipe of the ice maker
4. Remove the water inlet pipe buckle and water inlet pipe
5. Pull out the water inlet pipe assembly of the ice maker

【6】Disassembly of the water valve assembly of the ice maker

1. Use a Phillips screwdriver to remove the water valve assembly and water pipe fixing screws
2. Remove the water valve terminal
3. Take out the water valve assembly





II、Removal of display module

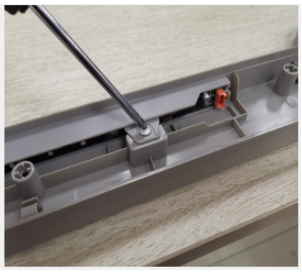
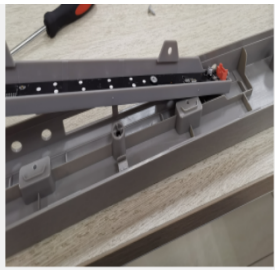
1、Wearing Anti-static gloves；

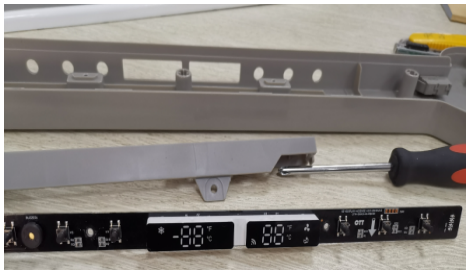
2、Turn over the upper hinger and unplug the terminal fitting and the display jaws and remove the display mount screws；

3、Remove the display fixed screws；

4、Separate the display holder and display module to finish



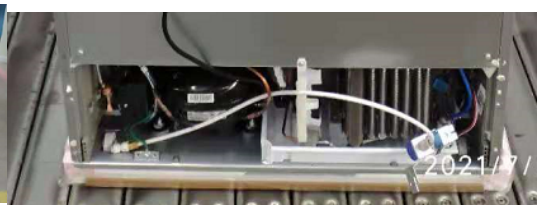



III、Removal of compressor complete

【1】Remove the compressor cover

1、Use a plum screwdriver to remove the screws（7 screws in total）；

2、Grab the compressor back cover and lift up



【2】Remove the compressor：

1、Cut down the channel（Do use pipe cutter.the use of flame welding is strictly prohibited）；

2、After the free-flowing refrigerant is cut off for 30 minutes, the vacuuming parameter is satisfied and the charging is satisfied after 10 Pa or less；

3、The third step is to use a sealing pliers to clamp the pipe and then use a simple welding torch for welding.（The clamp must be clamped without refrigerant leakage.）；

4、Separate the terminal from the blade to replace the starter/protector；

5、Lay down the refrigerator and use a screwdriver to remove cover screws（to prevent cover drop to do damage to the ground or operator）；

6、Place compressor bottom cover horizontally on workbench, use wrench to remove fixed screws（4 in total)

Warning： Refrigerants R600 is flammable explosive gas,professional refrigerator maintenance personnel are required to perform maintenance procedures. In the condition that it is determined that the refrigerator can be effectively ventilated and the maintenance space meets 10 ㎡ or more

【3】Remove the starter / protector

1、Place the compressor flat on the work surface and use a screwdriver to pry the shield off；
2、Unplug the starter/protector outwards by hand；
3、Use a flat-blade screwdriver to separate the terminal from the blade to replace the starter/protector.

IV、Removal of refrigerator attachment and air channel cover cooler

1、Open the fridge door, lift up and pull out the glass shelf;

2、Pull out fruit&vegetable box and lift up；

3、Use a blade to remove the air duct cover decorative cover and use a screwdriver to remove the

two fixing screws behind the air duct cover decorative cover;

4、As pic4, separate the clip from inner liner and pull out to remove fruit&vegetable frame；

5、After removing frame, pull out fruit&vegetable box and lift up；

6、Use a screwdriver（pic 5）to unplug the fixed 2 screws；

7、Grab the top of upper air channel cover and pull out；

8、Grab the top of lower air channel cover and pull out；

9、Grab the air duct bubble and pull out；

10、Use a screwdriver to remove the screws of left&right rail（1 each）and grab rail to move forward.

V、Removal of light board

【1】Remove refrigerated light board

1、Use utility knife to separate light cover from inner liner；

2、Use the rocker to remove from the back side of the lamp cover

【2】Remove freezer light board

Same as above step

Ⅵ、Removal of bottle box

Hold the edge of the bottle frame with one hand, hold the bottom with another hand, and squeeze the bottle box.

Ⅶ、Removal of freezer air channel

1、Use a screwdriver to unplug the side and bottom fixed 3 screws ;

2、Grab the air channel cover, lift up and pull out to separate from inner liner ;

3、Remove the terminal which is fixed on top of freezer air channel

Ⅷ、Removal of main control module

1、Use the torx screwdriver to remove the main control board power cover screw and wear anti-static measures to remove the main control board;

2、Wear anti-static measures, pull up the wiring harness terminal inside the box and separate the

terminal from the main control board；

3、Turn outward the power switch limit claw to finish removal

Chapter 9 Typical fault diagnosis and elimination

Common faults and elimination of refrigeration systems :

Phenomenon	Failure analysis
Refrigerator is not cooling	Reason one: The compressor does not start: Check if the PTC starter is damaged, and the power supply voltage of the main control board is normal.
	Reason two: The compressor frequently trips: Check whether the overload protector is damaged;
	Reason three: The compressor frequently trips: Check whether the overload protector is damaged;
	Reason four: Is the refrigeration system blocked?
A room is not cooling	Reason one: Check whether the connectors on the main control board are loose or have poor contact;
	Reason two: If the refrigerating compartment is not refrigerated, check whether the refrigerating fan is running. When checking the refrigerating fan, press the door light switch and check it after 5 seconds.
Insufficient refrigerator cooling	Reason one: Check the refrigerant for leaks;
	Reason two: Check whether each fan is running: After opening the door, observe whether the air outlet is out of the air. When checking the refrigerating fan, press the door light switch and check after 5 seconds.
	Reason three: Check if the freezer evaporator is frosted and block the air duct, and the defrosting is normal.
Abnormal noise	Reason one: Check if the pipelines collide and whether the compressor has resonance;
	Reason two: Check if the exhaust temperature is too high. If the exhaust pipe temperature is too high (the temperature should not exceed 60 °C under the condition of 25 °C), there may be air in the system, causing noise abnormality;
	Reason three: Free sound of the freezer compartment or the refrigerating fan.Check if the fan blade interferes with other components.

Electronic control system

Fault phenomenon	Possible reason	Maintenance method
The display is not displayed and the illumination is not lit	Whether the power supply connected, the plug is securely inserted, and the power plug is in good contact	Plug in the power
	The fuse on the main control board is blown	Replace the fuse
	Poor contact of power supply connector of main control board	Plug in the connector
The display is not displayed and the illumination is on	Poor contact between the display panel and the connector on the signal harness of the main control board	Plug in the connector
	Signal connection harness has broken wire	Repair or replace the harness
	Display board is damaged	Repair or replace

The display shows normally but compressor is not working	Poor contact of the compressor plug	Plug in the connector
	Main control board is damaged	Repair or replace
	The two compressors are damaged	Repair or replace
	Compressor damage	Repair or replace
Refrigeration room is not cooled	Electrical control board damage	Repair or replace
Freezer compartment is not cooling	Freezer fan motor fan blades fall off	Reinstall and tighten the fan blades
	Freezer fan motor does not turn	Check connector or replace
Cold room frosting	Refrigerator fan motor does not turn	Check connector or replace
	Return air duct blockage	Clean up the air duct
	Defrost heater or sensor is bad	Replace
Frosty frost in the freezer	Defrost circuit connector off	Plug in the connector
	Defrost heater or sensor is broken	Replace
The compressor works for a while and then loses power.	Refrigeration system failure	Follow the previous system instructions
The compressor is not working	Check if the compressor harness is properly connected	Reconnect
	Electrical control board damage	Replace the main control board
Button failure	Improper assembly of buttons (springs)	Reinstall and adjust position
	Touch capacitor is broken	Repair or replace
	Display board damage	Repair or replace

Main electrical device failure

Electrical device	Fault phenomenon	Detection method	Maintenance method
Defrost heater/fuse	There is defrosting action but no defrosting	The multimeter tests the defrosting heater resistance, the resistance is about 252 ohms; test whether the defrosting fuse is on (the multimeter diode is connected)	If heater is damaged then replace; If fuse is damaged then replace
Electric damper	Refrigeration room is not cooled	In the non-commercial inspection mode, set the greenhouse temperature to -18 °C, and check	Check whether the damper harness interface is normal. Replace the main control board. Otherwise, replace the damper.

		whether there is any wind in the greenhouse wind tunnel by hand.	
Flashlight	Light is not on	1. Check if the connector is well connected 2. Check if the excuse of the lamp on the main board is powered normally. 3. All are not lit, check the door light switch and communication line 4. Some of the lamp beads are not lit, change the light board	
Fan motor	The freezing room is slow to cool down, and the greenhouse temperature cannot be lowered.	Check if the mainboard freezer fan terminal is powered, check if the fan is blocked.	If main rboard is broken then replace it,if the fan is blocked then reinstalled.

Fault code guide

F : Freezer compartment

R : Refrigerator compartment

NO	Items	Error code		Error details	Remark
		Freezer	Fridge		
1	normal	As setting		-	show normally
2	Freezing sensor abnormal	Er	FS	Freezing sensor open circuit or short circuit	Sensor wiring check
3	Ambient temperature sensor is abnormal	Er	rH	Ambient temperature sensor open circuit or short circuit	
4	Cold storage sensor 1 is abnormal	Er	rS	Cold storage sensor 1 open circuit or short circuit	
5	Cold storage sensor 2 is abnormal	Er	r2	Cold storage sensor 2 open or short circuit	
6	Defrost sensor abnormal	Er	dS	Defrost sensor open circuit or short circuit	
7	Poor defrosting	Er	dH	After 90 minutes from the start of defrosting, the defrosting sensor is below 6°C	The temperature protector is disconnected, the heater is disconnected, the drain pipe is blocked, and the heater relay is defective
9	Communication abnormal	Er	CO	Control board processor	Abnormal communication transmission
10	Abnormal freezing motor	Er	FF	And display board processor	Defects in motor wiring, Drive IC, TR, etc.
11	Condensing motor abnormal	Er	CF		