Repair Manual

for Side by Side refrigerator with water dispenser

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Website:http://www.gracefridge.com

Contents

1. Product functions and features

1. The refrigerant R600a and foaming agent are hydrocarbons, which will not destroy the ozone layer and produce greenhouse effect. Automatic defrosting in freezer can save the trouble of manual defrosting.

2. Integrating quick freezing, energy saving, noise reduction and other technologies, the refrigeration system is optimized to achieve the purpose of energy saving and minimize noise.

3. Mould proof and antibacterial removable door seal, clean and sanitary, easy to clean.

4. Hidden hinge system, firm and beautiful, can realize automatic door closing and door opening limit.

Chapter 2: product appearance structure

Front open, inside open

Remove the accessories from the rear box

product back

Picture of compressor chamber

Sensor and LED lamp position introduction

Air path direction of each room

On the cover plate of refrigeration air duct

Under the cover plate of refrigeration air duct

Refrigeration fan motor

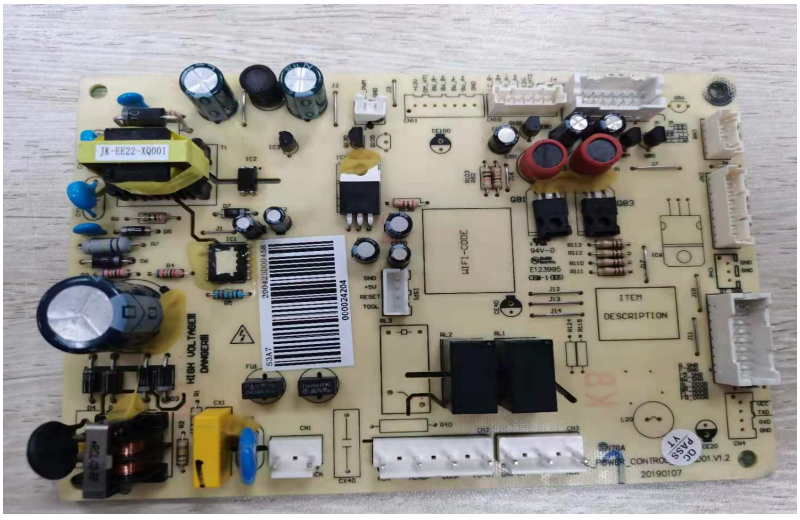
Air supply outlet of refrigeration room

Refrigerated duct foam

Cover plate of refrigeration air duct

Return air outlet of refrigerating chamber

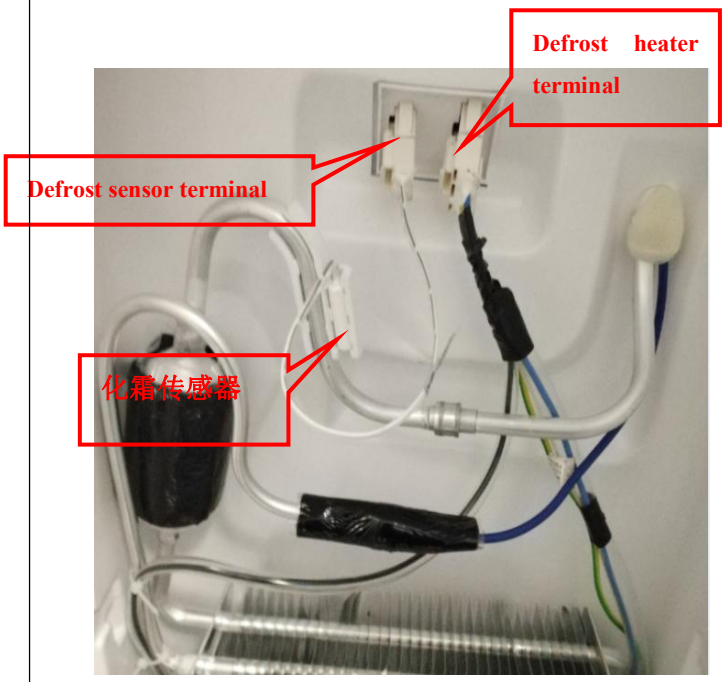
Main control board

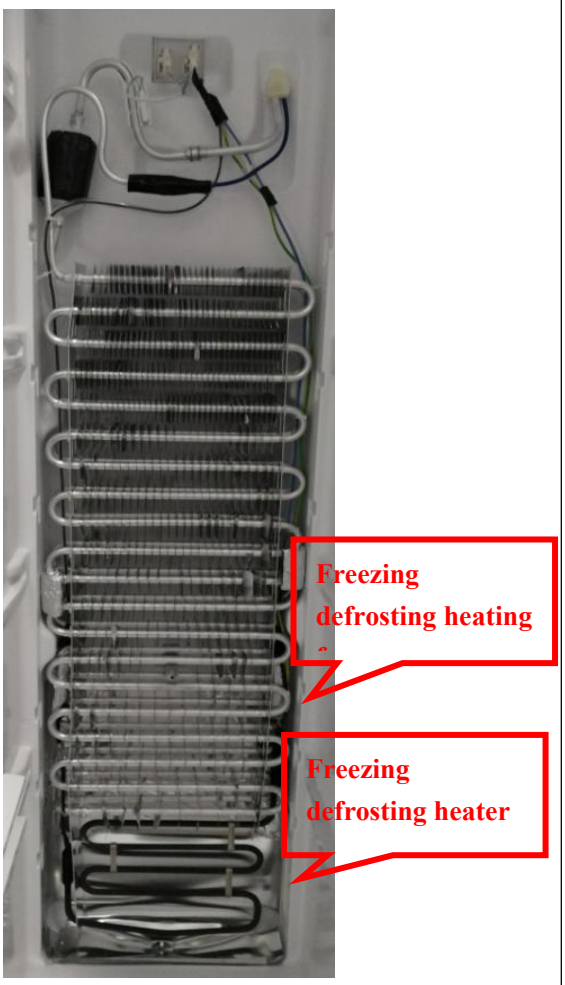


Inverter board

Display and control board

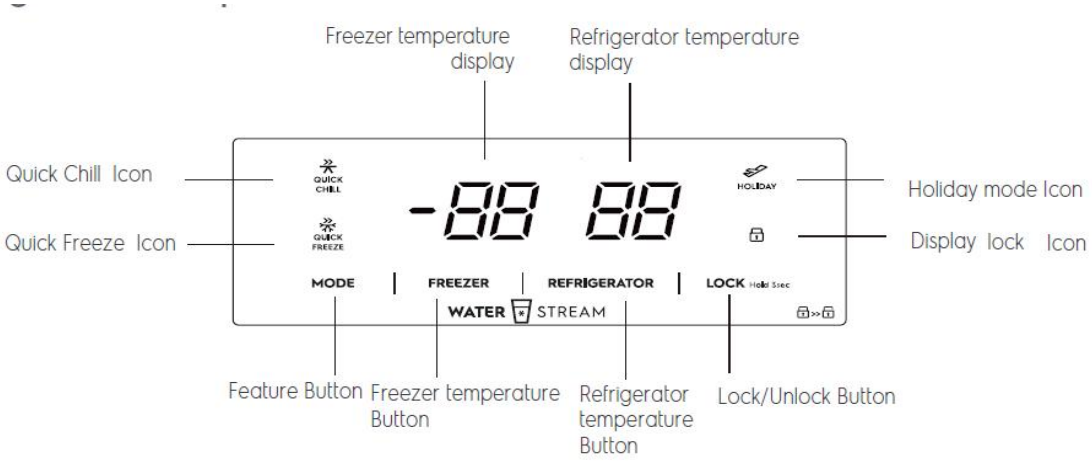
Composition of refrigeration evaporator





Chapter 3: product function operation instructions

The layout of buttons and LED display in the human-machine interface is shown in the figure



below:

1. Display

● when the power is first on, ring the start-up bell and then enter the normal operation display

● digital display area of normal operation display: if there is any fault, the fault code (communication fault for 1min) will not affect the temperature setting operation; if there is no fault, the set temperature of corresponding refrigeration room will be displayed.

● when the display control works normally, the display will go out and enter the locked state after no opening action or no key operation for 20 seconds; when there is open door action or key operation, the display will return to normal display.

2. lock and unlock

● under the non lock state, press and hold the lock key for 3 seconds to enter the locking state, and sound the lock beep, and the lock icon is displayed as the locking state;

● under the locked state, press and hold the lock key for 3 seconds to enter the non lock state, and sound the unlocking beep, and the lock icon will be displayed as unlocking state.

The following key operations must be performed in a non locked state. If you operate in the locked state, the lock icon flashes to prompt.

3. temperature setting and switch function of refrigeration room

● temperature setting of refrigeration room

The temperature setting range of the refrigeration room is 2-8 ℃; press the "cold regulating" button to adjust the temperature of the cold storage room. Press the "cold regulating" button once, and the temperature drops by 1 ℃; cycle the setting between 2-8 ℃ and stop the operation of the key for 10 seconds.

● cold storage closed / open

When the refrigeration is on, press the "cold regulating" button for 5 seconds until a beep is heard and enter the refrigeration off state. At this time, the temperature display area of the refrigeration room displays "-"; when the refrigeration is closed, press the "cold regulating" button for 5 seconds until a beep is heard and the refrigeration shutdown state is exited. The temperature setting of the refrigerator is returned to the temperature between the refrigeration closing and enters the normal operation mode.

4. temperature setting of freezer

The temperature setting range of the freezer is -23-15 ℃; press the "freezing temperature adjustment" button to adjust the temperature of the freezer. Press the "freezing temperature adjustment" button once, and the temperature drops by 1 ℃; cycle the setting, and the setting will take effect after 10 seconds of stop operation.

5. holiday, quick freezing and quick cooling mode

Press the "mode setting" button once, and if any mode is set or cancelled, the icon will be on / off to select / cancel the mode. When setting holiday mode, the refrigeration system will automatically set 8 ℃, and the freezer will be set to -15 ℃; when the holiday mode is exited, the set temperature of the refrigeration room and the freezer will automatically return to the setting temperature before the holiday mode; when setting the quick cooling mode, the refrigeration will automatically set 2 ℃, and when the quick cooling mode is exited, the set temperature of the refrigeration room will automatically return to the setting temperature before the quick cooling mode; set the quick freezing mode In mode, the set temperature of refrigeration and freezing room is constant, and the compressor and refrigeration fan are forced to operate for 24 hours or the sensor in the freezer reaches below -28 ℃.

6. opening prompt and alarm of refrigerator

When the door of the refrigeration room is open; if it is not closed for 1 minute, the push display interface displays the alarm door opening alarm information until the door of the refrigeration room is closed.

7. power off memory

After the refrigerator is powered off, the power on again is still in the set state before power off.

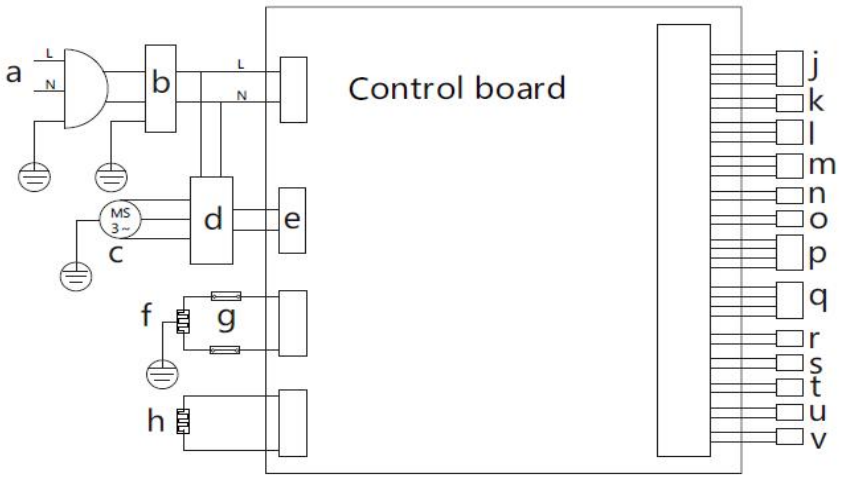
8. fault prompt

When the following faults occur on the display screen, the refrigerator will be in failure, and the refrigerator can still be cooled in some cases. However, contact maintenance as soon as possible to realize the optimal operation of the refrigerator

NO	item	fault indication		fault content	remark
		freezing Temperature	refrigeration temperature		
1	Normal	setting temperature indication		-	display normal
2	abnormal refrigeration sensor	FS	Er	refrigeration sensor disconnection or short circuit	sensor wiring inspection
3	abnormal ambient temperature sensor	rH	Er	disconnection or short circuit of ambient temperature sensor	
4	refrigeration sensor abnormal	rS	Er	refrigeration sensor 1 broken or short circuit	
6	Defrost sensor is abnormal	dS	Er	defrost sensor is broken or short circuited	
7	Poor defrosting	dH	Er	After 70 minutes of defrosting, the defrost sensor is less than 5 ℃	the temperature protector is disconnected, the heater is disconnected, the drain pipe is blocked, and the heater relay is defective
9	Abnormal communication	CO	Er	control board processor And display board processor	Abnormal communication transmission
10	refrigeration motor abnormal	FF	Er	motor running more than 30 seconds without feedback signal	motor wiring and drive IC, TR and other poor
11	Abnormality of condensing motor	CF	Er	when the motor runs for more than 30 seconds without feedback signal	Failure of motor wiring, drive IC, TR, etc.

Chapter 4: electrical schematic diagram and wiring diagram

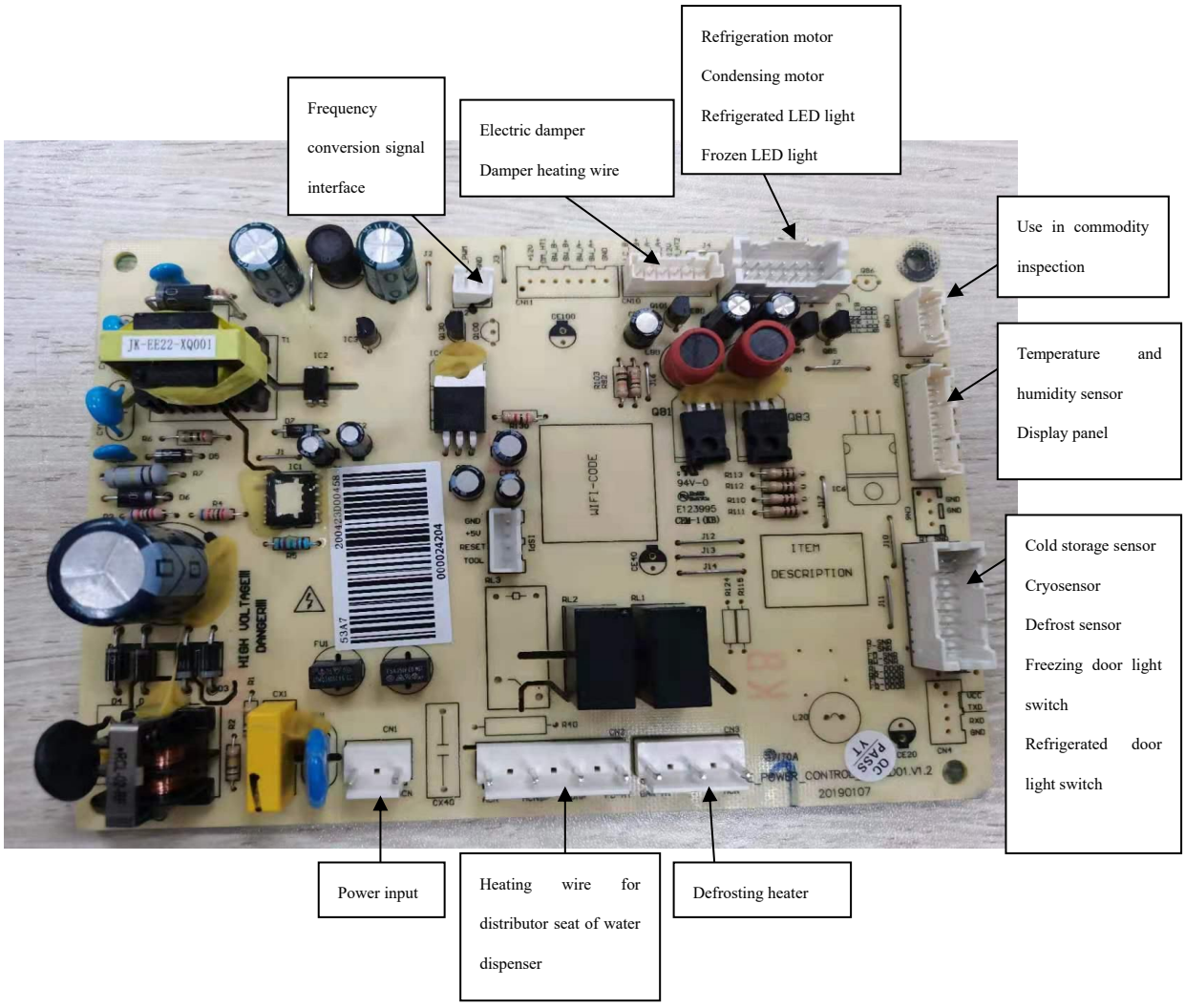
1、 Electrical schematic diagram



a: Power
b: Filter
c: Comp
d: Inverter
e: Signal
f: DEF-heater
g: Protector
h: BAR-heater
j: Stepping motor
k: DAM-heater
l: C.fan
m: F.fan
n: R.lamp
o: F.lamp
p: Display board
q: Temp and humidity snr
r: R.snr
s: F.snr
t: DEF.snr
u: R.door switch
v: F.door switch

Electrical schematic diagram

2、 Physical diagram of main control board and definition of interface terminal



Chapter 5: control principle, parameters and detection methods

1、 Introduction of refrigerator control

1) Refrigerated room control: when the refrigerated room is on, long press the refrigerated temperature control key for 5 seconds until a beep is heard and the refrigerated room is off. At this time, the temperature display area displays "---";

When the cold storage is closed, long press the cold storage key for 5 seconds until a beep is heard to exit the cold storage closed state.

2) Freezer control: press the freezing temperature control key to adjust the temperature of the freezer; press the freezing temperature control key for the first time, and the temperature drops by 1 ℃ every time you press the freezing temperature control key (key B); when the temperature reaches - 23 ℃, press the freezing temperature control key again, and the freezer is set at - 15 ℃, and the setting range is - 23 ℃ ～ - 15 ℃; the setting takes effect after 10s of stopping the temperature control.

3) Quick freezing control: press the mode key to cycle select holiday, quick freezing, quick freezing / quick cooling, quick cooling, no mode, no key operation takes effect for 10s.

4) Quick cooling control: press the mode key to cycle select holiday, quick freezing, quick freezing / quick cooling, quick cooling and no mode, which will take effect 10 seconds after no key operation.

5) Holiday control: press the mode button to cycle select holiday, quick freezing, quick freezing / quick cooling, quick cooling and no mode, which will take effect 10 seconds after no key operation. (holiday mode, refrigeration set temperature is 8 ℃, freezing set temperature is - 15 ℃);

6) Door opening alarm: when the refrigerator door is opened for 60s, the display panel buzzer will ring three times every 30s.

7) Refrigeration lamp control: when the refrigerator door is open, the refrigerator lamp will be on; when

the refrigerator door is closed, the refrigerator lamp will be off, and the refrigeration lamp will be under the same control.

8) Fan control:

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

a. (when the compressor is in non defrosting state) and (the doors of the refrigerator and freezer are closed);

b. (when the compressor is shut down in non defrosting state and refrigeration is requested) and (the doors of refrigeration room and freezer are closed).

Note: if the fan meets the opening condition after the door of the freezer is closed, it will be delayed for 10s.

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

Compressor shut down and refrigeration uncooled state;

Defrosting state of freezer;

Freezer door or freezer door open within 4 hours (return to original state if open more than 4 hours)

9) Damper control:

9.1 if one of the following conditions is met, the air door of the cold storage room shall be closed:

a. Refrigeration sensor temperature tra ≤ refrigeration stop temperature TRT;

b. During defrosting;

c. The cold storage room is closed.

9.2 when the following conditions are met, the air door of the cold storage room shall be opened:

a. (non defrosting process) and (non refrigerated closing mode) and (refrigerated room sensor temperature tra ≥ refrigerated room starting point temperature Trk);

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

9.3 abnormal control of damper state

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

b. The damper is closed continuously for 60min and reset once.

10) Display control: no key operation (the last operation is subject to) 20 seconds, the display screen goes out, and the display screen lights up when the refrigerator or freezer door is opened (only one door signal is detected at a time).

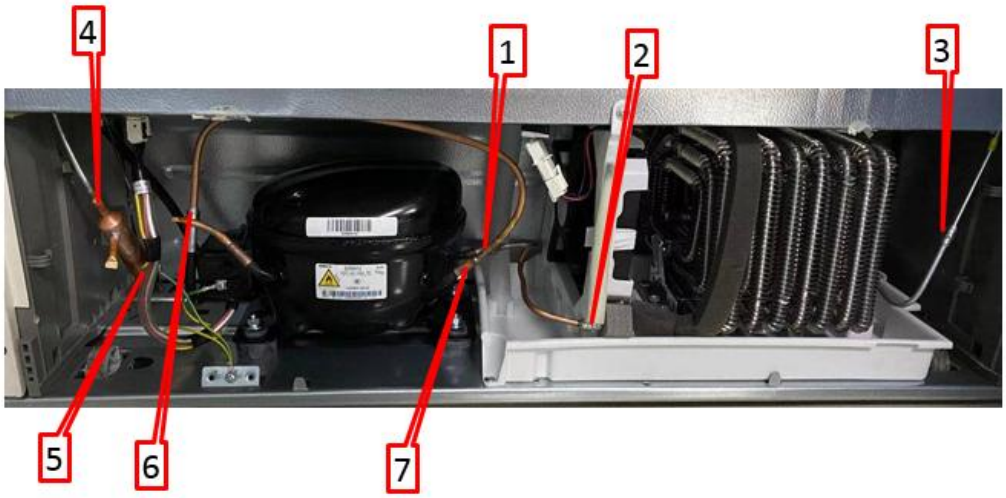
11) Press protection: the press can be started up again every 7 minutes after shutdown, and the normal control of the press can only be started after 7 minutes delay.

Chapter 6: refrigeration principle and pipeline circulation diagram

1. System refrigeration schematic diagram:

capillary
Drying filter
Dew proof pipe
condenser
compressor
Refrigerant direction
Ileal trachea
evaporator

2. Pipeline circulation diagram: solder joint distribution



Compressor --- solder joint 1 (brazing) --- exhaust connecting pipe --- solder joint 2 (ring welding) --- rotary fin condenser --- solder joint 3 (ring welding) --- anti exposure pipe --- solder joint 4 (brazing) --- dry filter --- solder joint 5 (brazing) --- capillary --- return pipe --- solder joint 6 (ring welding) --- compressor suction pipe --- solder joint 7 (brazing) --- compressor

Chapter 7: disassembly instructions of main components

1、 Disassembly method of door body

1. Remove the upper hinge cover

1. Use a simple quincunx screwdriver to remove the upper hinge cover screws;
2. Pull out the door lamp switch terminal (hold the terminal head by hand and pull it out, Fig. 2);
3. If the upper right hinge cover is removed, pull the ambient temperature sensor out of the buckle.

2、Remove the upper hinge

1. Remove the upper hinge screw and use a simple box end gun / wrench / 6-point internal diameter 8mm socket wrench;

2. Separate the upper hinge from the door body;
3. Lift up the door body to complete the disassembly of the door body.

二、Disassembly method of compressor components

（1）

（2）

1. Remove the rear cover plate of the compressor: remove the screws with a quincunx screwdriver

2. Remove the compressor assembly:

Warning: refrigerant R600 is inflammable and explosive gas, which needs professional refrigerator maintenance personnel to operate during the maintenance process. Under the two conditions that the refrigerator can be effectively ventilated and the maintenance space is more than 10 m2, the first step is to cut the pipeline short (use pipe cutter to operate, flame welding is prohibited), and the second step is to extract the refrigerant after 30 minutes of free volatilization When the empty parameter is below 10Pa, charge. In the third step, clamp the pipe with sealing pliers and then weld with simple welding gun (note that there must be no refrigerant leakage when clamping with locking pliers).

Remove the compressor / capacitor

1. Place the compressor assembly flat on the workbench, remove the fixing screws with a wrench, and remove the remaining 4 screws in turn

2. Press the capacitor buckle at the bottom of the compressor assembly to the inside, push it out and remove it

Remove the starter / protector

1. Place the compressor flat on the worktable and pry off the protective cover with a screwdriver;
2. Pull the starter / protector out by hand;
3. Use a slotted screw driver to separate the terminal from the insert to replace the starter / protector.

三、Remove the cover plate of the air duct of the refrigeration door

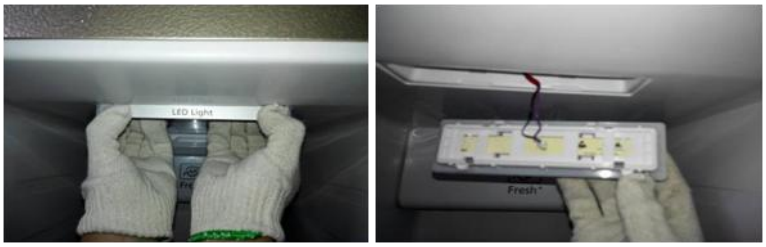
（1） （2）

1. As shown in the figure, there are positioning claws
2. As shown in Figure 2, straighten the positioning claw downward and pull the air duct cover plate outward to complete the removal of the cover plate

四、Removal of glass partition

1. As shown by the arrow in the figure, pull out the clapboard by hand in the direction of the arrow.

五、Remove the refrigeration / freezing lamp panel



Use hands to buckle into the gap between the rear side of the lampshade and the tank, and pull it outwards to complete the disassembly of the lampshade assembly. Insert the small-sized one into the square hole under the lampshade from the use of small-sized one, and pry it inwards and outwards to complete the disassembly of the lampshade.

六、Bottle frame removal


Hold both ends of the bottle frame with one hand, hold the bottle frame still with one hand, and squeeze the other hand to one side to remove the bottle frame.

七、Drawer guide removal

1、For drawer guide rail disassembly, use a quincunx screwdriver to remove the fixed screw of the guide rail, pull out the end of the guide rail with roller from the box, and pull out the guide rail to complete the disassembly.

八、Removal of cover plate of refrigeration air duct


1. A suction cup with a larger diameter is used to adsorb on the middle plane of the cover plate of the upper air duct.

2. Pull out the terminal of the cover plate of the refrigeration air duct to complete the disassembly

九、Disassembly method of main control board

1. Remove the screws of the power box cover of the main control board with a quincunx screwdriver, and then wear anti-static measures to remove the main control board;

2. After wearing anti-static measures, pull up the wiring harness terminal in the box and separate the terminal from the main control board;

3. Break the limit claw of the power switch outward, and remove the main control board along the broken side.

Parts replacement of frequency conversion products:

1. There are five interfaces in the filter interface, of which l2\n4 is the input terminal to plug in the power cord terminal. U1\u3 is the output end, and the plug-in filter connecting wire is used to supply power to the main control board.

2. Among them, L2 is the live wire, U1 is the live wire, N4 and U3 are sporadic. Please note that the plug-in wiring should not be confused, and the matching terminals must be plugged according to the color, otherwise the power line will be burned due to short circuit.

3. The plug diagram is shown on the left

一、 Chapter 8: typical fault diagnosis and troubleshooting

Common faults and troubleshooting of refrigeration system:

phenomenon	fault analysis
Refrigerator does not cool	reason 1: the compressor does not start: check whether the PTC starter is damaged and whether the power supply voltage of the main control board is normal
	Reason 2: frequent tripping of compressor: check whether the overload protector is damaged;
	Reason 3: frequent tripping of compressor: check whether the overload protector is damaged;
	Reason 4: is the refrigeration system blocked

There is no refrigeration in one room of the refrigerator	Reason 1: check the connectors of the main control board for looseness and poor contact;
	Reason 2: if the refrigeration room is not refrigerated, check whether the refrigeration fan is running. When checking the refrigeration fan, press the door light switch, and check after 5S;
Insufficient refrigeration in refrigerator	Reason 1: check whether there is leakage of refrigerant;
	Reason 2: check whether the fans are running: open the door and observe whether the air outlet is blowing. When checking the refrigeration fan, press the door light switch, and check after 5S.
	Reason 3: check whether the evaporator in the freezer is frosted, seriously blocking the air duct, and whether the defrosting is normal.
Abnormal noise	Reason 1: check whether the pipelines collide and whether the compressor has resonance;
	The second reason: check whether the exhaust temperature is too high. If the exhaust pipe temperature is too high (the ambient temperature should not exceed 60 ℃ under 25 ℃), air may be mixed into the system, causing abnormal noise;
	Reason 3: abnormal sound of freezer or refrigeration fan, check whether the fan blade interferes with other parts.

二、 About electronic control system:

Fault phenomenon	Possible causes	Maintenance method
The display screen has no display and the lamp is not on	Whether the power supply is connected, whether the plug is firmly inserted, and whether the power plug-in is in good contact	Turn on the power or plug in the plug or plug in the power plug
	The fuse (fuse) on the main control panel is burnt out.	Replace the fuse
	Poor contact of power supply connector of main control board	Plug in the connector
The display screen has no display and the lamp is on	The connector on the signal harness connecting the display panel and the main control panel has poor contact	Plug in the connector
	The signal connection harness is broken	Repair or replace wiring harness
	Display and control board damaged	Repair or replace
The display shows that the compressor is not working	Poor contact of compressor plug-in	Plug in the connector
	Main control board damaged	Repair or replace
	Two compressors are damaged	Repair or replace
	Compressor damaged	Repair or replace

The cold room is not cooled	The electric control board is damaged	Repair or replace
The freezer is not cooled	The fan blade of fan motor in freezer falls off	Re install and tighten the fan blade
	Freezer fan motor does not work	Check or replace the connector
Frosting in cold room	Refrigerator fan motor does not work	Check or replace the connector
	Return air duct blocked	Clean the return air duct
	Defrosting heater or sensor is damaged	please replace it
Severe frosting in freezer	Defrosting circuit connector falling off	Plug in the connector
	Defrosting heater or sensor failure	replace
The compressor was powered off after a while	Refrigeration system failure	Check according to the previous system component instructions
Compressor does not work	Check whether the compressor harness is connected normally	Show reconnection
	The electric control board is damaged	Replace the main control board
Key failure	Improper assembly of key (spring)	Re install and adjust the position
	Touch capacitor failure	Repair or replace
	The display and control board is damaged	Repair or replace

三、 Main electrical components:

Electrical components	fault phenomenon	detection method	maintenance method
The defrosting heater / fuse	has defrosting action, and the resistance of the defrosting	heater is about 252 ohm when it is not defrosting. Test whether the defrosting fuse is on (the diode of the multi-meter is on)	the heater is damaged. Replace the heater; If the fuse is damaged, replace it;
Electric damper	The cold room is not cooled	In the non commodity inspection mode, set the temperature of the greenhouse to - 18 ℃, and manually check whether there is air outlet at the air duct of the greenhouse	Check whether the wire harness interface of the air door is normal; replace the main control board, otherwise replace the air door

Floodlight	The light is not bright	1. Check whether the connector is well connected 2. Check whether the power supply of the lamp on the main board is normal 3. All lights are not on, check the door light switch and communication line 4. Some lamp beads are not on, change the lamp plate	
Fan motor	The temperature in the freezer is slow, but the temperature in the greenhouse can't be lowered	Check whether the main board refrigeration fan terminal is powered, and check whether the fan is blocked	If the main board is broken, replace the main board and install the fan again