Refrigerator Service Manual

TRF-545W

TCL Home Appliances (HeFei) Co., Ltd.

Contents

1.Product introduction

2.Exploded View of Product Structure

3.Product operation rules

4.Refrigeration system and electrical control

5.Instructions for Disassembly of Components and Parts

6.Maintenance instructions

1.Product introduction



Product front



Front opening



Product front

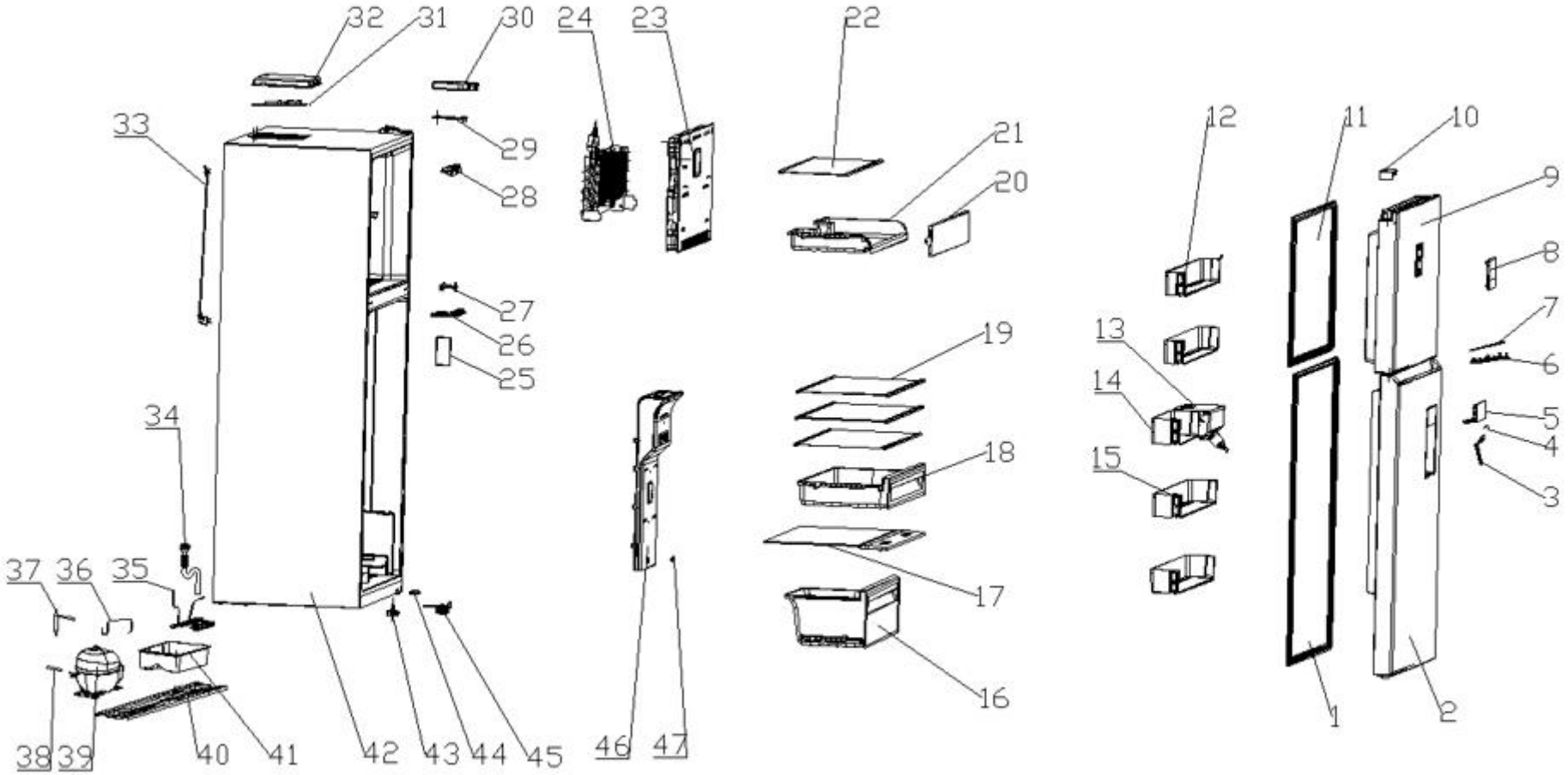


Front opening

Remarks ：The diagram above shows two of these products.

2. Exploded View of Product Structure

2.1 Exploded view of TRF-545W hidden handle refrigerator



Exploded view details of TRF-545W hidden handle refrigerator

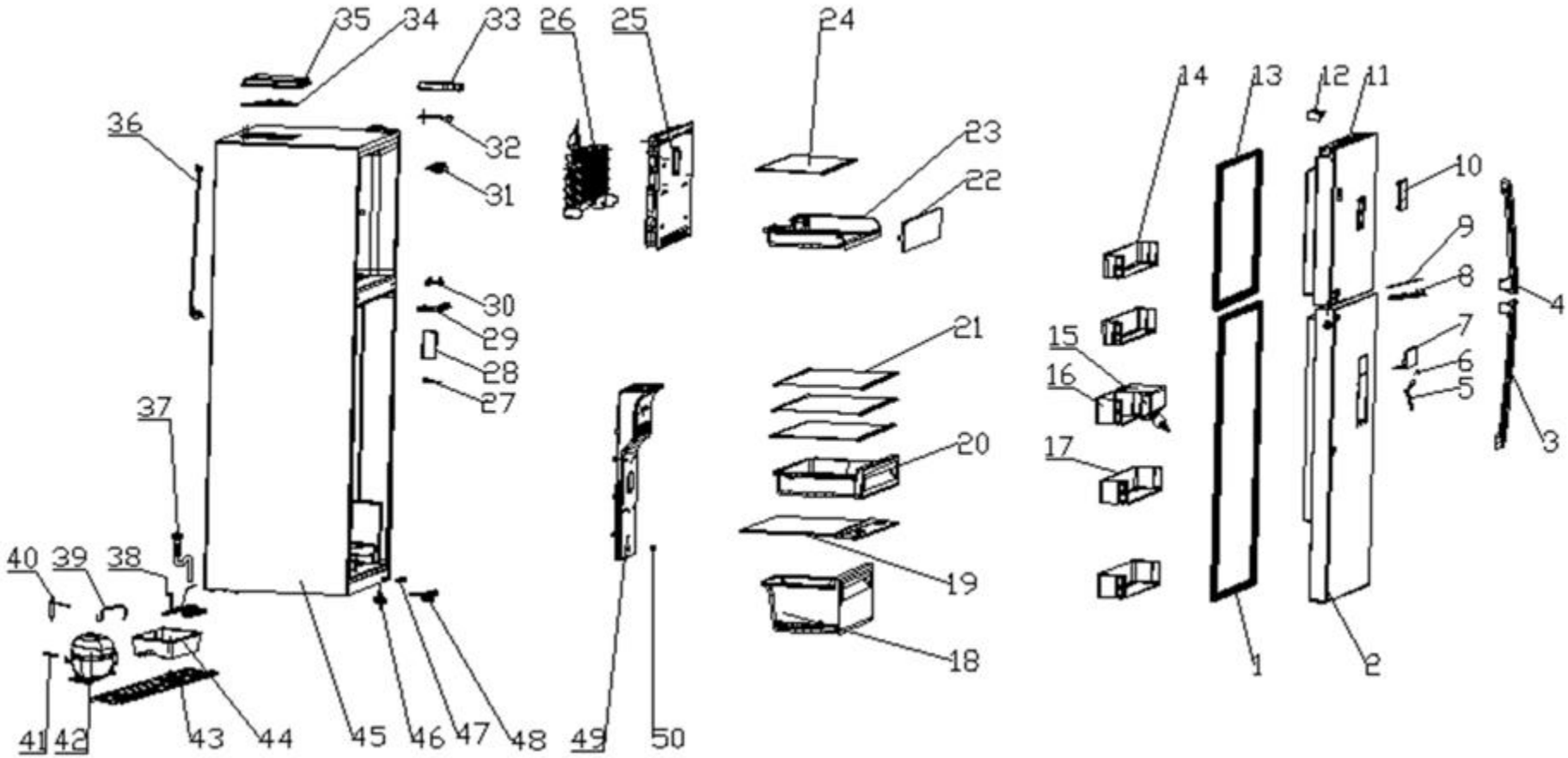
Serial number	English name	Quantity used per unit	Remark
1	The refrigerating chamber door seal	1	
2	Freezer foaming door body	1	
3	Handle	1	For the water dispenser products
4	Torsional spring	1	
5	Panel assembly	1	
6	lamp cover	1	For the products of the display on the door
7	LED	1	
8	Display Board Component	1	
9	Freeze foaming door body	1	
10	End cap decorative pieces	1	
11	Cold door seal assembly	1	
12	Bottle holder	2	
13	Water storage box assembly	1	For the water dispenser products
14	Bottle holder	1	
15	Bottle holder	2	
16	Drawer	1	
17	Shelf assembly	1	
18	Drawer	1	optional
19	Refrigerated glass shelf assembly	3	
20	Pallet flip components	1	optional
21	Tray	1	optional
22	Freezing shelf	1	
23	Air duct components	1	
24	evaporator component	1	
25	Display Board Component	1	For the products of the display in the refrigerating room

Exploded view details of TRF-545W hidden handle refrigerator

Serial number	English name	Quantity used per unit	Remark
26	Return air cover assembly	1	
27	middle higne	1	
28	Lighting fixtures	1	
29	upper higne	1	
30	Upper hinge assembly	1	
31	Main Board	1	
32	main controller mounting cover	1	
33	power line	1	
34	compressor drainage tube	1	
35	evaporation tube	1	
36	transition tube	1	
37	drier-filter	1	
38	process tube	1	
39	Compressor assembly	1	
40	Compressor mounting plate	1	
41	drainage box	1	
42	Foam box	1	
43	Support column	1	
44	Door switch	1	
45	R-Bottom hinge	1	
46	Air duct components	1	
47	R screw cover	3	

Exploded View of Product Structure

2.2 Exploded view of TRF-545W external handle refrigerator



Exploded view details of TRF-545W external handle refrigerator

Serial number	English name	Quantity used per unit	Remark
1	The refrigerating chamber door seal	1	
2	Freezer foaming door body	1	
3	Handle components	1	
4	Handle components	1	
5	Handle	1	For the water dispenser products
6	Torsional spring	1	
7	Panel assembly	1	
8	lamp cover	1	For the products of the display on the door
9	LED	1	
10	Display Board Component	1	
11	Freeze foaming door body	1	
12	End cap decorative pieces	1	
13	Cold door seal assembly	1	
14	Bottle holder	2	
15	Water storage box assembly	1	For the water dispenser products
16	Bottle holder	1	
17	Bottle holder	2	
18	Drawer	1	
19	Shelf assembly	1	
20	Drawer	1	optional
21	Refrigerated glass shelf assembly	3	
22	Pallet flip components	1	optional
23	Tray	1	optional
24	Freezing shelf	1	
25	Air duct components	1	

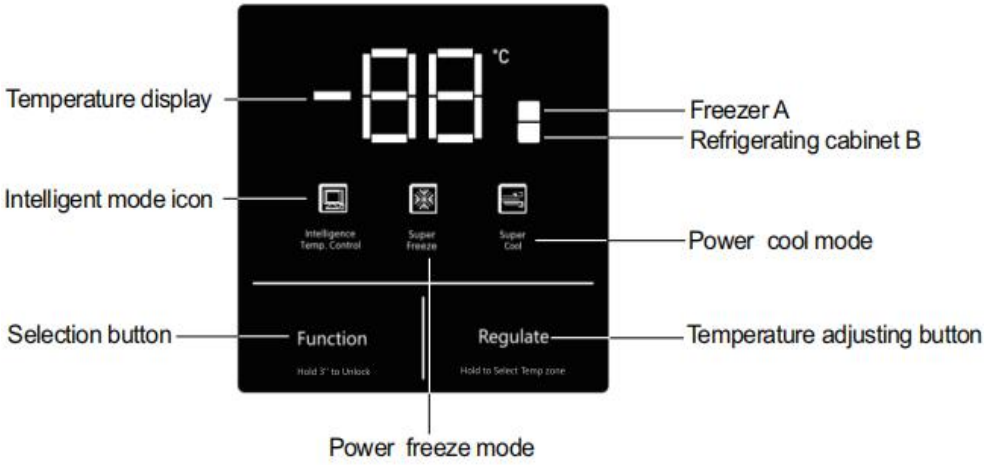
Exploded view details of TRF-545W external handle refrigerator

Serial number	English name	Quantity used per unit	Remark
26	evaporator component	1	
27	Door lock holder	1	optional
28	Display Board Component	1	For the products of the display in the refrigerating room
29	Return air cover assembly	1	
30	middle higne	1	
31	Lighting fixtures	1	
32	upper higne	1	
33	Upper hinge assembly	1	
34	Main Board	1	
35	main controller mounting cover	1	
36	power line	1	
37	compressor drainage tube	1	
38	evaporation tube	1	
39	transition tube	1	
40	drier-filter	1	
41	process tube	1	
42	Compressor assembly	1	
43	Compressor mounting plate	1	
44	drainage box	1	
45	Foam box	1	
46	Support column	1	
47	Door switch	1	
48	R-Bottom hinge	1	
49	Air duct components	1	
50	R screw cover	3	

3. Product operation rules

The TRF-545W series has two different displays , one on the door and one in a freezer.

3.1 the display on the door



IPowered on for the first time

When the refrigerator is powered on for the first time, refrigerating chamber shall run when the temperature of refrigerating chamber and freezer chamber is set as 5℃ and at - 18℃, respectively.

Operation of the temperature of display panel key

Regulation of refrigerating chamber

In the unlocking state, press and hold the “temperature regulation” key for 3 seconds, after the icon of the temperature zone is switched to that of the refrigerating chamber, press the “temperature regulation” key to regulate the temperature of the refrigerating chamber. After that, press the “temperature regulation” key once, the temperature will drop by 1℃, and the gear of refrigerating chamber will cycle among “08” – “07” – “06” – “05” – “04” – “03” – “02” – “OF” – “08”. Select the appropriate temperature, stop the key operation and wait for 5 seconds, then the setting of the temperature gear is confirmed.

Regulation of the temperature of freezer chamber

In the unlocking state, press and hold the “temperature regulation” key for 3 seconds, after the icon of the temperature zone is switched to that of the freezer chamber, press the “temperature regulation” key to regulate the temperature of the freezer. Then press the “temperature regulation” key once, the temperature will drop by 1℃, and the gear of the freezer chamber will cycle among “- 15” – “- 16” – “- 17” – “- 18” – “- 19” – “- 20” – “- 21” - “- 22” – “- 15”. Select the appropriate temperature, stop the key operation and wait for 5 seconds, then the setting of the temperature gear is confirmed.

Quick cooling

In the unlocking state, press the “function” key repeatedly until the “quick cooling” icon flashes, stop pressing the key and wait for 5 seconds, then the refrigerating chamber will enter the quick cooling function. The quick cooling function can be exited manually by the same operation. The quick cooling mode will be exited automatically 2 hours later from entering quick cooling. When the "quick cooling" function is on, the temperature control of the refrigerating chamber is set at 2℃ until the function exits. (in the quick cooling state, the refrigerating chamber will automatically exit the quick cooling function by regulating the set temperature. Under the quick cooling state, the quick cooling function will be exited automatically when the refrigerating door is opened for more than 3 minutes.)

Quick freezing

In the unlocking state, press the “temperature” key repeatedly until the “quick freezing” icon flashes, stop pressing the key and wait for 5 seconds, then the refrigerator will enter the quick-freezing function. The quick-freezing function can be exited manually by the same operation. The quick-freezing function will be exited automatically 4 hours later from entering high cooling mode. When the “quick freezing” function is on, the temperature will display - 24℃ until the function exits. (in the quick-freezing state, the freezer chamber will automatically exit the quick-freezing function by regulating the set temperature. Under the quick-freezing state, the quick-freezing function will be automatically exited when the freezing door is opened for more than 3 minutes.)

Smart

In the unlocking state, press the “function” key repeatedly until the “smart” icon flashes, stop pressing the key and wait for 5 seconds, then the refrigerator will enter the smart function. The smart function will be exited manually by the same operation. When the “smart” function is on, the refrigerator can detect the state of each chamber by itself to run in the most efficient way. Under the smart state, the refrigerator may automatically enter the quick cooling function or quick-freezing function according to the temperature rise of the refrigerating and freezer chambers (under the smart function, when setting other functions, the smart function may be automatically exited.)

Child lock

In the unlocking state, enter the “child lock” function: automatic startup: there is no key for this operation on the display panel, 30 seconds later, the child lock function will be automatically started, the “child lock” icon will be on, and the keyboard locked; exit the child lock: when the “child lock” icon is on, press and hold the “child lock” key for 3 seconds to unlock.

Refrigeration off

In the unlocking state, press and hold the “temperature regulation” key for 3 seconds, after the icon of the temperature zone is switched to that of the refrigerating chamber, press the “temperature regulation” key to regulate the temperature of the refrigerating chamber. After the gear of refrigerating chamber is selected to “OF”, stop pressing the key and wait for 5 seconds, then enter the refrigeration off function. When the set temperature of refrigerating chamber is set to “OF”, the refrigeration function is shut down. (in the refrigeration off state, when setting other functions, the refrigerator may automatically exit the refrigeration off function. Note: please take out the food in the refrigerating chamber before the cold refrigeration off function is started.) When the “cold refrigeration off” function is on, the refrigerating chamber enters the closed state.

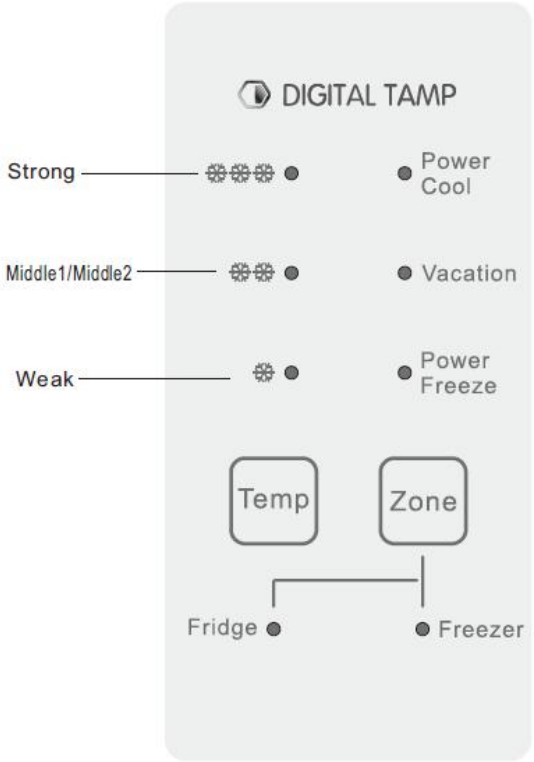
Power off memory

When power goes off, the instantaneous working state at the time of power off will be locked. After power on, it will still work according to the setting before power off.

Over temperature warning of freezer chamber

When the power is switched on, the temperature of the freezer chamber is higher than -12℃, the schematic box corresponding to the temperature zone of the freezer chamber is on, and the digital zone flashes. Press any key to display the temperature of the freezer chamber when it is powered on, press the key again or 10s later, it will return to the normal display state.

3.2 the display in the refrigerating room



First time to electricity

For the initial power on, the refrigerator should operate in accordance with the middle 2 for the freezing chamber and middle 2 for the chilling chamber.

The function of adjusting the temperature manually.

Temperature adjustment in cooling room

Repeatedly press the button of " zone" until the indicator at the temperature zone of refrigeration is on, press the button of "temp" to conduct the temperature adjustment for the refrigerator. The grades for the refrigerator are cycling between "strong" - "middle 1" - "middle 2"- "weak" -"power cool" - "vacation" - "strong".

Temperature adjustment of freezer compartment

Repeatedly press the button of "Zone" until the indicator at the temperature zone of freezing is on,press the button of "Temp" to conduct the temperature adjustment for the freezing chamber. The grades for the freezing chamber are cycling between "strong" - "middle 1" - "middle 2" - "weak"- "power freeze" - "strong".

Quick refrigerating function

Under the status with the indicator at the temperature zone of refrigeration being on, repeatedly press the button of "Temp" until the "power cool" function indicator is on, and then enter the power cool function for the refrigerator. After you enter the "power cool" for 2 hours,you will automatically exit the quick-cooling function.

After you exit the quick-cooling function, the set temperature inside the refrigerator will automatically return to middle 2 .

Under the status of the quick-cooling function being on, after the time of opening for the refrigerating door is over 3 minutes, it will automatically exit power cool function.

Quick freezing function

Under the status with the indictor at the temperature zone of freezing being on, repeatedly press the button of "Temp" until the "power freeze" function indicator is on, and then enter the quick-freezing function for the freezing chamber. After the refrigerator enters the "power freeze", it will enter the status of strong cooling, and will automatically exit after 4 hours. After you exit the quick-freezing function, the set temperature inside the freezing chamber will automatically return to middle 2 . Under the status of the fast freezer function being on, after the time of opening for the freezer door is over 3 minutes ,it will automatically exit power fast freezer.

Vacation function

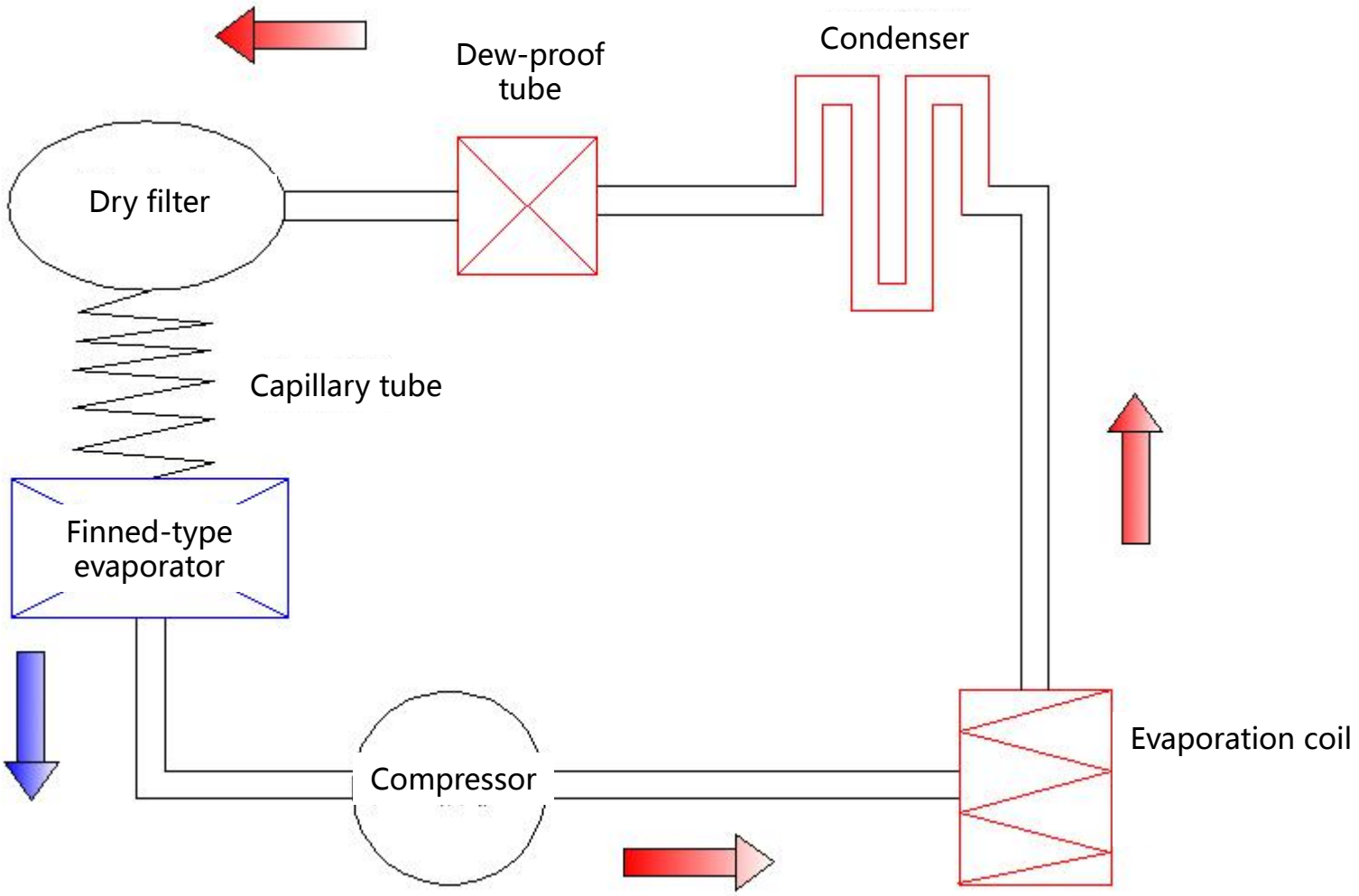
Under the status of the indicator at the temperature zone of refrigeration being on, repeatedly press the button of "Temp" until the "vacation" function indicator is on, after the "vacation" indicator is on, it will enter the vacation function.

(Note: under the status of the "vacation" function being open, the refrigerator will enter the off status; Before the initiation of the vacation function, please take out the food in the refrigerator.)

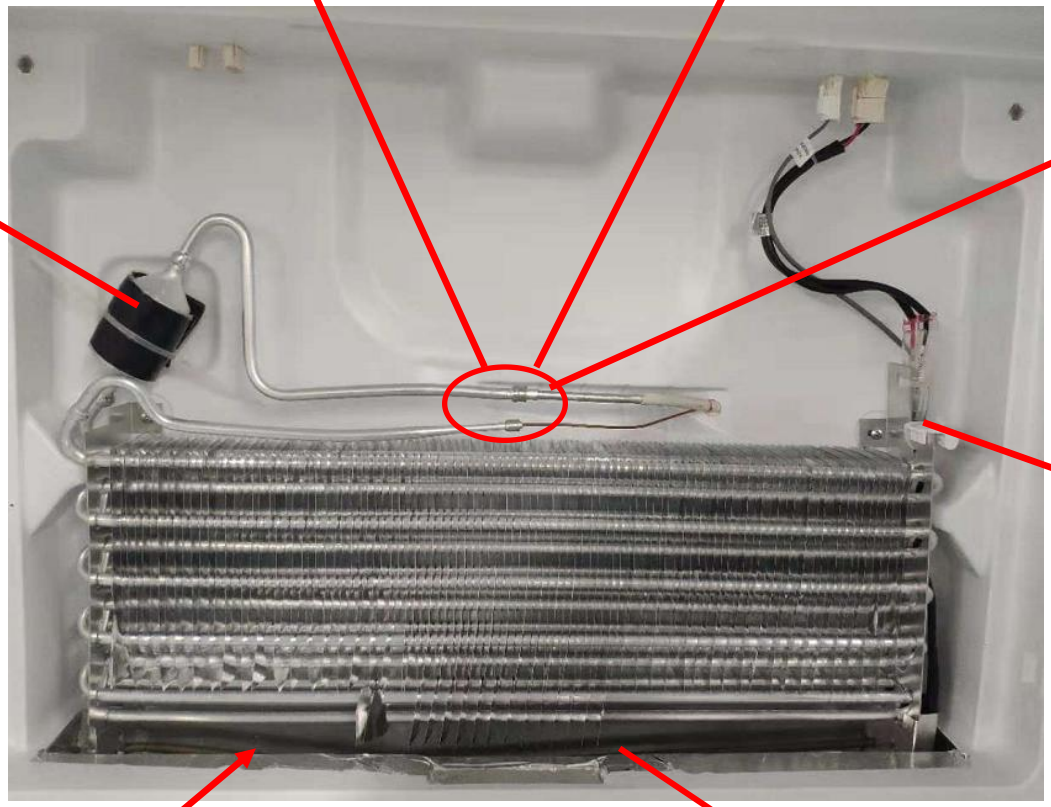
Power-off memory

When the power is cut off, the instantaneous working state of blackout will be locked and resume the state after power on.

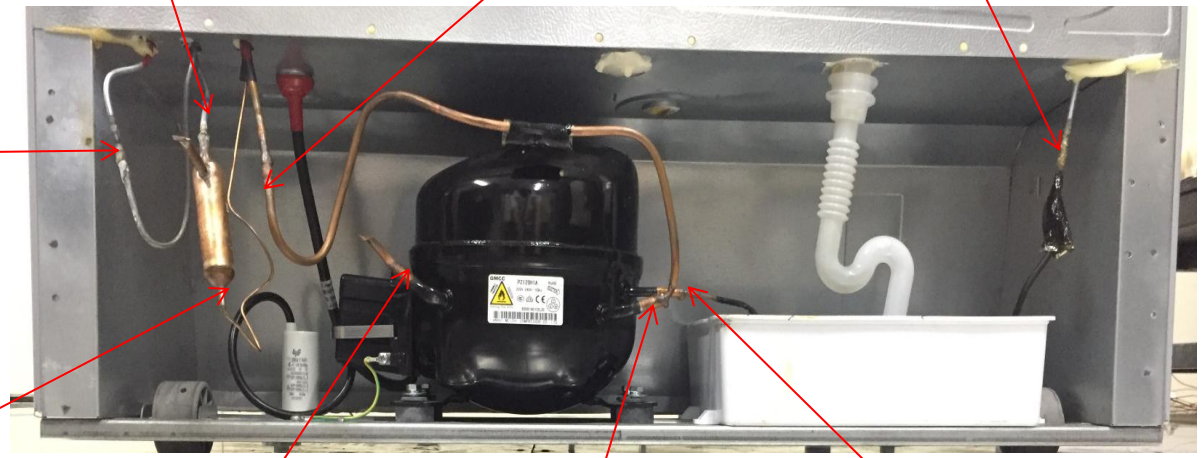
4. Refrigeration system and electrical control



Schematic diagram of freezer chamber



Schematic diagram of welding the pipeline for compressor chamber



Connection of dew removable tube and dry filter(steel and copper)

Connection of return pipe outlet and return transition pipe (copper and copper)

Connection of evaporation coil outlet and condenser inlet (steel and steel)

Connection between condenser outlet and the inlet of dew removable tube (steel and steel)

Connection of dry filter outlet and capillary tube (copper and copper)

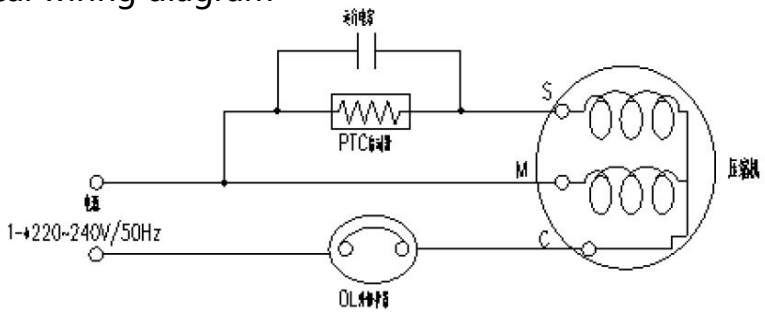
Intubation of process pipe (copper and copper)

Connection of return transition pipe and compressor suction pipe (copper and copper)

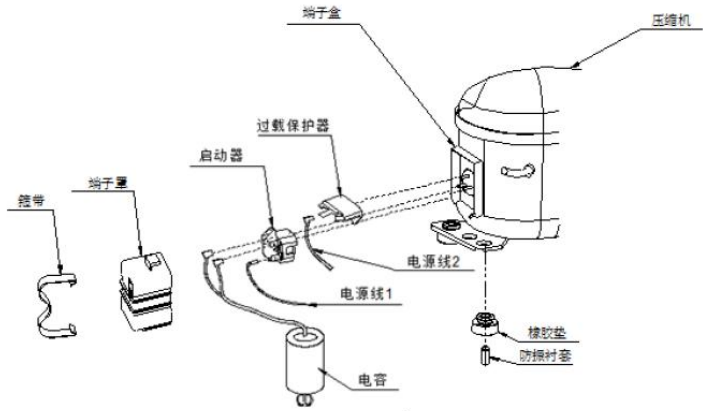
Connection of compressor exhaust pipe and evaporation coil inlet (copper and steel)

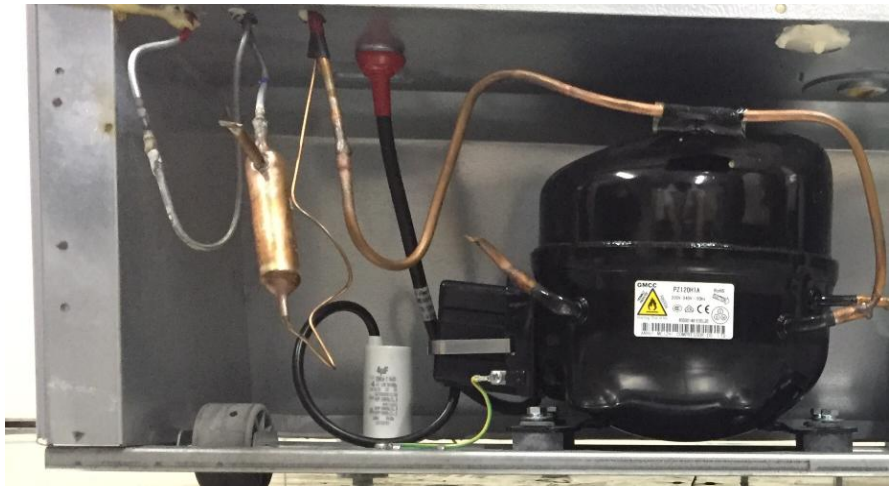
Diagram of compressor wiring

Electrical wiring diagram

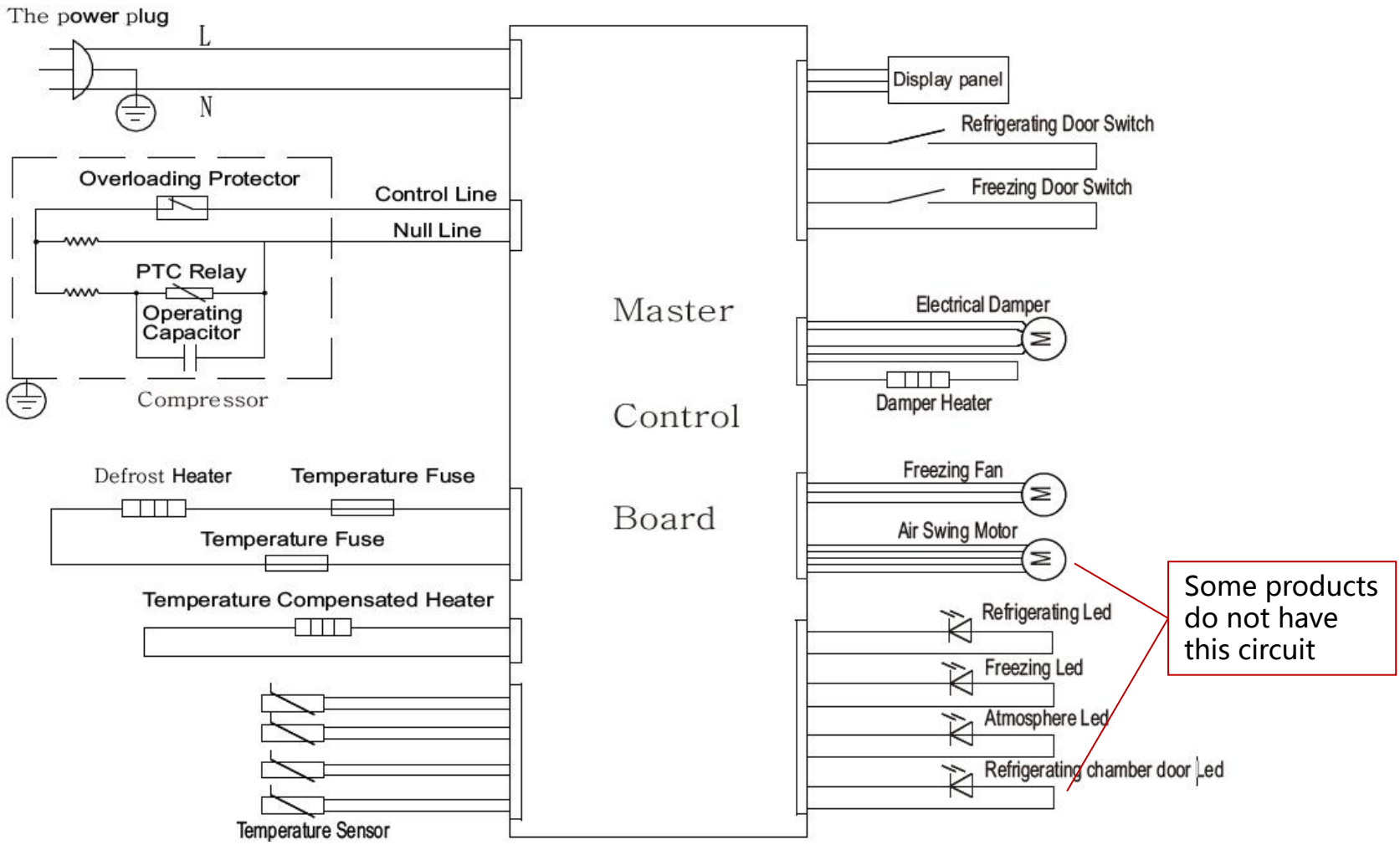


The wiring mode of two devices





Electrical Control Circuit Diagram



The diagram above is for reference only.please refer to the object.

Control of components:

(1) Compressor

If the refrigerator has refrigeration request, turn on the compressor;

If the refrigerator has no refrigeration request, turn off the compressor;

The shutdown time must be more than 8 minutes before it can be started again;

(2) Light

Turn on the switch of the refrigerating chamber door and turn on the refrigerating floodlight;

The switch of the refrigerating chamber door is closed, and the refrigerating floodlight is closed;

The freezer door switch is on, and the freezer floodlight is on;

The freezer door switch is closed, and the freezer floodlight is closed;

The light will go out if it is continuously on for more than 5 minutes.

(3) Fan

In normal refrigeration process, every time the compressor is turned on, the freezer fan will be turned on.

When the compressor stops, the freezing fan will be turned off.

During the freezing and defrosting process, the freezing fan will be turned off;

If the refrigerating door is detected to be open, the freezing fan remains off;

(4) Damper

During the refrigeration of refrigerating chamber, the damper is opened;

When the refrigeration stops, the damper is closed

(5) Air swing motor

When the temperature of the refrigerating chamber is high, the air swing motor is turned on, and it is controlled that the start-up time last 10 minutes every 5-minutes shutdown;

When the temperature of the cold refrigerating chamber is low, the air swing motor shall be closed after the fan blade returns to the middle position;

When the refrigerating chamber door is detected to be open, the air swing motor is opened once, and it is closed after the fan blades of the air swing motor return to the middle position;

(6) Heating wire for steel tube

When the refrigerator defrosts, the heating wire of the steel tube is on; when the refrigerator is not in defrosting state, the heater of the steel tube is off

5.Instructions for Disassembly of Components and Parts

1) Disassembly of display panel:







1. Wear anti-static gloves and pull out the display panel with a suction cup.
2. Then remove the connecting terminal and replace it.
3. Install it in reverse order during assembly.

2) Disassembly of refrigerator floodlight and freezer floodlight





1) pry the lamp cover up and remove it from the largest fitting clearance between the lamp cover and the cabinet liner with a 0.5mm steel ruler or similar flat tool (preferably the inner side of the assembly shown in the figure, even if the disassembly damage occurs in the area, it is hardly visible). When disassembling, note that the force shall be proper to prevent damage to the liner or lamp cover.

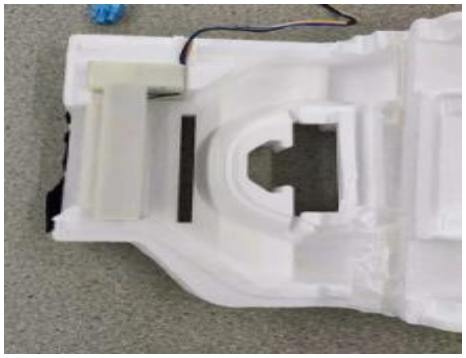
2) After the lamp cover is removed, the butt terminal of the lamp strip can be removed to replace the lamp.

3) During assembly, assemble and install it in reverse order.

3) Disassembly of refrigerator air duct cover plate:









1. First, use a flat screwdriver to pry open the cover of screw hole, and then use a cross screwdriver to dismantle the screw;

2. Pull out the connector of air duct cover with hands and take out the air duct assembly and remove the duct foam with hands.

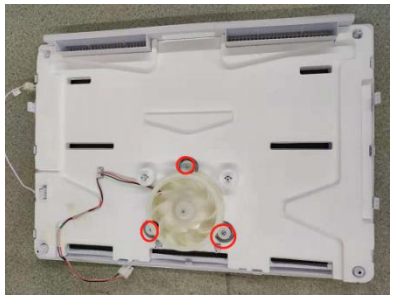
3. Remove the two screws of the air swing motor with a cross screwdriver and replace the motor;

4. Tear off the foam pattern masking taper with hands, separate the upper and lower parts of the air duct foam assembly and take out the damper for replacement.

6. During installation, please see to it that the air duct assembly are pasted with adhesive tape, with buckle inserted and screws tightened to prevent air leakage.

4) Disassembly of freezer air duct cover plate:



1. First, use a flat screwdriver to pry open the cover of screw hole, and then use a cross screwdriver to remove the screw;
2. Pull out the connector of air duct cover plate by hand;
3. Use the cross screwdriver to remove the two screws of the hood and the two screws below the air duct, take down the hood and separate the upper and lower parts of the foam assembly;
4. Use a cross screwdriver to remove the three screws of the fan and replace the fan;
5. During installation, please see to it that the air duct assembly are pasted with adhesive tape, with buckle inserted and screws tightened to prevent air leakage.

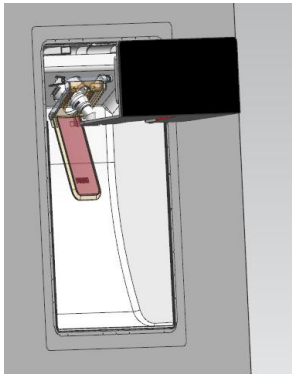
5) Instructions for Disassembly of Parts

Disassembly of water dispenser display panel:







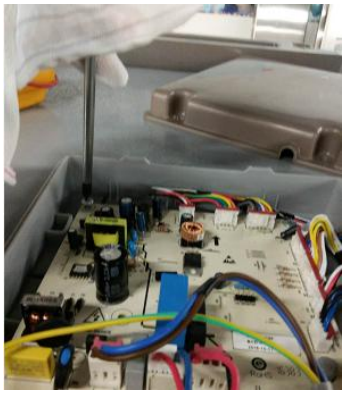


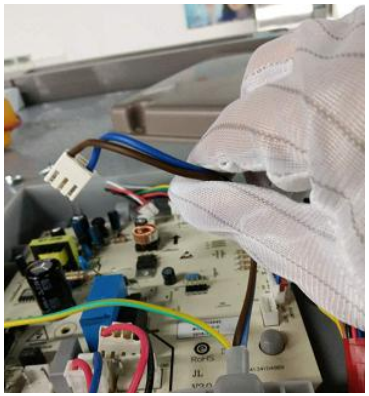


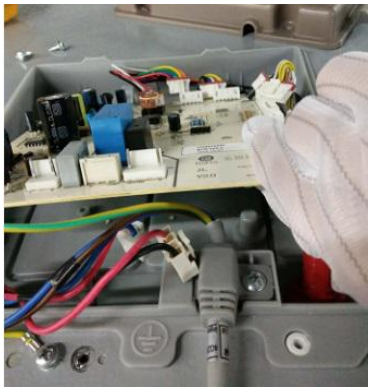
First, use a straight line or other tools to reach the panel. It is best to wear anti-static gloves in your hands. Use the other end to gently push up the other end. Wait until the buckle is loose. Drag your hands up and wait for the buckle to loose That is, the two buckles above and the bottom two buckles are all detached, the panel can be disassembled, the disassembly process can not be too strong, too much force to remove the buckle is easy to break. Press the buckle again to remove the display panel from the panel. Take care not to break the buckle, gently remove the back cover, and then pull out the connection terminal to replace。

6) Disassembly of master control board:









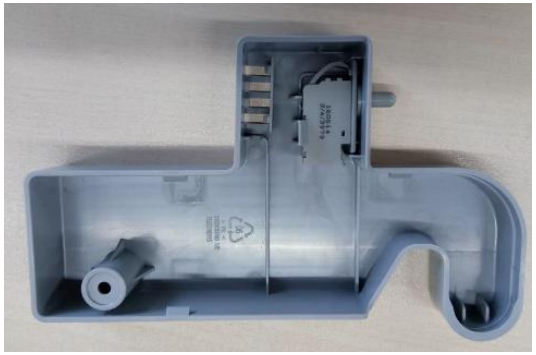
1. Use a cross screwdriver to remove the screws of air duct assembly and remove the master control board cover;

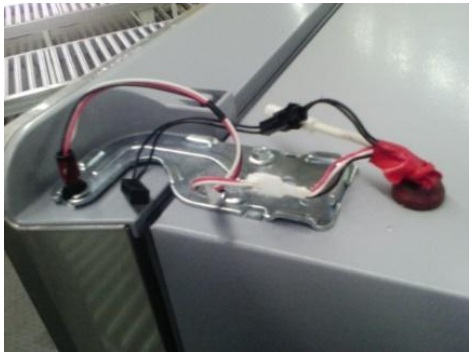
2. Wear anti-static gloves, unplug the connector by hand, take out the master control board and replace it;

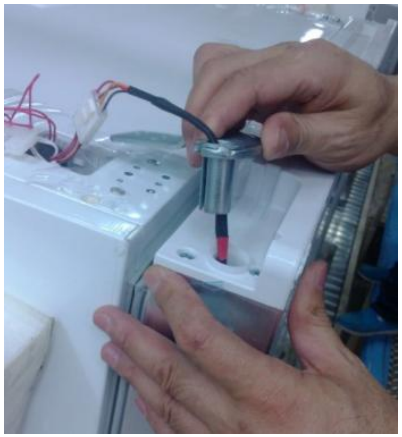
3. During assembly, please install it in reverse order.

7) Disassembly of hinge cover and door body:









1. Remove the screws of hinge cover with a cross screwdriver, then remove the hinge cover and replace the door lamp switch;
2. Remove the bolts of hinge cover with a M6 sleeve and remove the top hinge;
3. Lift up the door body to complete the removal of the door body;
4. During assembly, please install it in reverse order.

8) Disassembly of compressor assembly:









1. Use a cross screwdriver to remove the screws of compressor cover plate

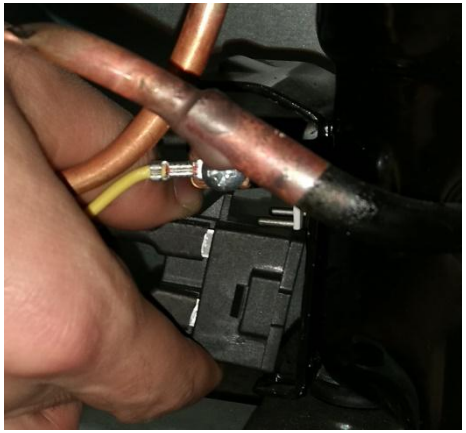
2. Place the compressor assembly on the workbench, remove the fixing screw with a spanner, and remove the remaining 4 screws in turn;

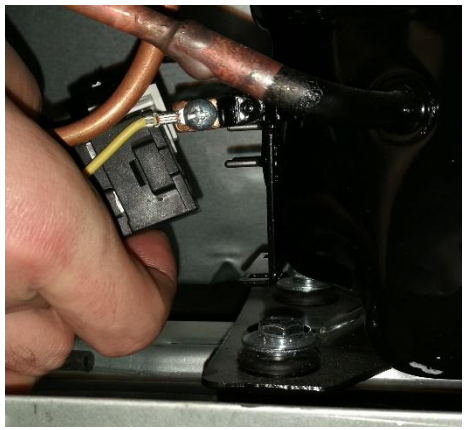
3. Clamp the capacitance “M” at the bottom of the compressor assembly to the middle and remove the capacitance

Warning: refrigerant R600 is inflammable and explosive gas, the maintenance operation shall be made by professional refrigerator maintenance personnel. When it is confirmed that the refrigerator can be effectively ventilated around and the maintenance space can meet the two conditions of more than 10㎡: the first step is to cut the pipeline short (operate with a pipe cutter, and prohibit the use of flame welding), the second step is to fill it when the vacuum parameters meet the requirements of less than 10 Pa 30 minutes after the free volatilizing refrigerant in the pipeline is cut off. The third step is to weld with a simple welding gun after the pipeline is clamped with a seal clamp (note that there shall be free of refrigerant leakage after the clamp with locking pliers)

9) Disassembly of starter/protector:









1. Place the compressor flat on the workbench and use a screwdriver to pry off the protective cover;
2. Pull the starter/protector out by hand;
3. Use a slotted screwdriver to separate the terminal from the plug to replace the starter/protector.

6. Maintenance guide

Before maintenance, it is necessary to know the actual usage of the user before taking corresponding measures

User usage		Guidance and handling
1. Installation environment	No clearance around	Surrounding clearance: more than 10 cm at the back and more than 30 cm at the top, keep it ventilated.
	Unstable installation	Install on flat ground and adjust the adjustable feet.
	Inappropriate installation site	Change the installation site or maintain surrounding ventilation.
2. Usage	Too much food is stored	It will affect the circulation of cold air in the refrigerator. Please explain the relevant contents in the Operation Instructions to the user clearly.
	There is too much water in the stored food	
	The cold air source is blocked during food storage	
	The refrigerator door is opened many times	Open the door of the refrigerator as little as possible.
	The setting position of the temperature regulator is inappropriate	Set the temperature regulator in the appropriate position.

6.1 Failure of electric control program

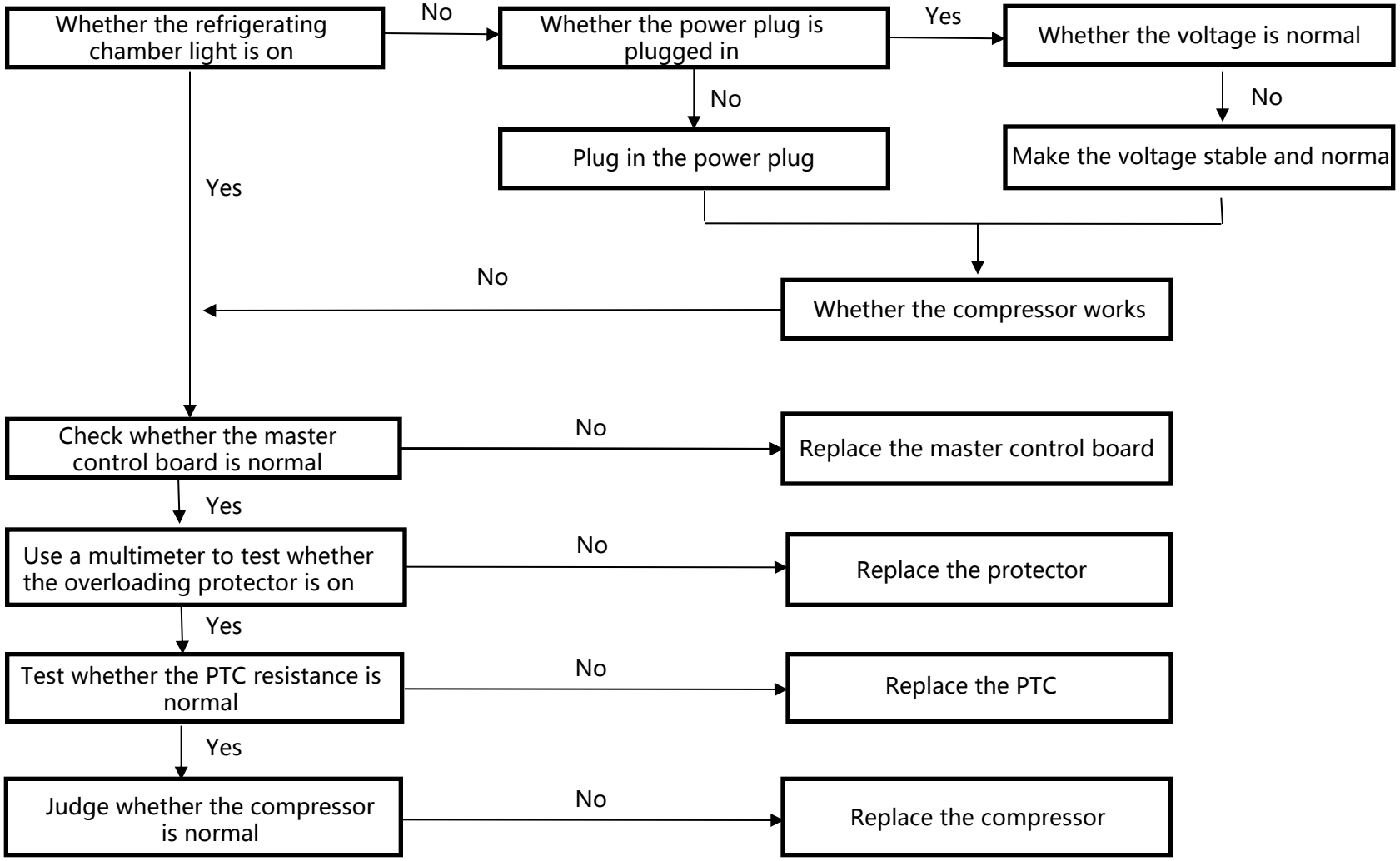
Access to maintenance

Access method	In case of unlocking, press and hold the “temperature regulation” key, and then press the “function” key for more than 5 seconds to enter the maintenance procedure;
Function introduction	Check the current temperature of each chamber temperature sensor; Check the current operating status of each load of the refrigerator; Check the communication status of current computer board; Control the load switch and debug the refrigerator function;
Exit method	① Disconnect the power supply and be energized again, and immediately exit the maintenance procedure; ② The maximum running time of the maintenance procedure is 3 hours, then the procedure will automatically exit after 3 hours and return to the normal refrigeration process;

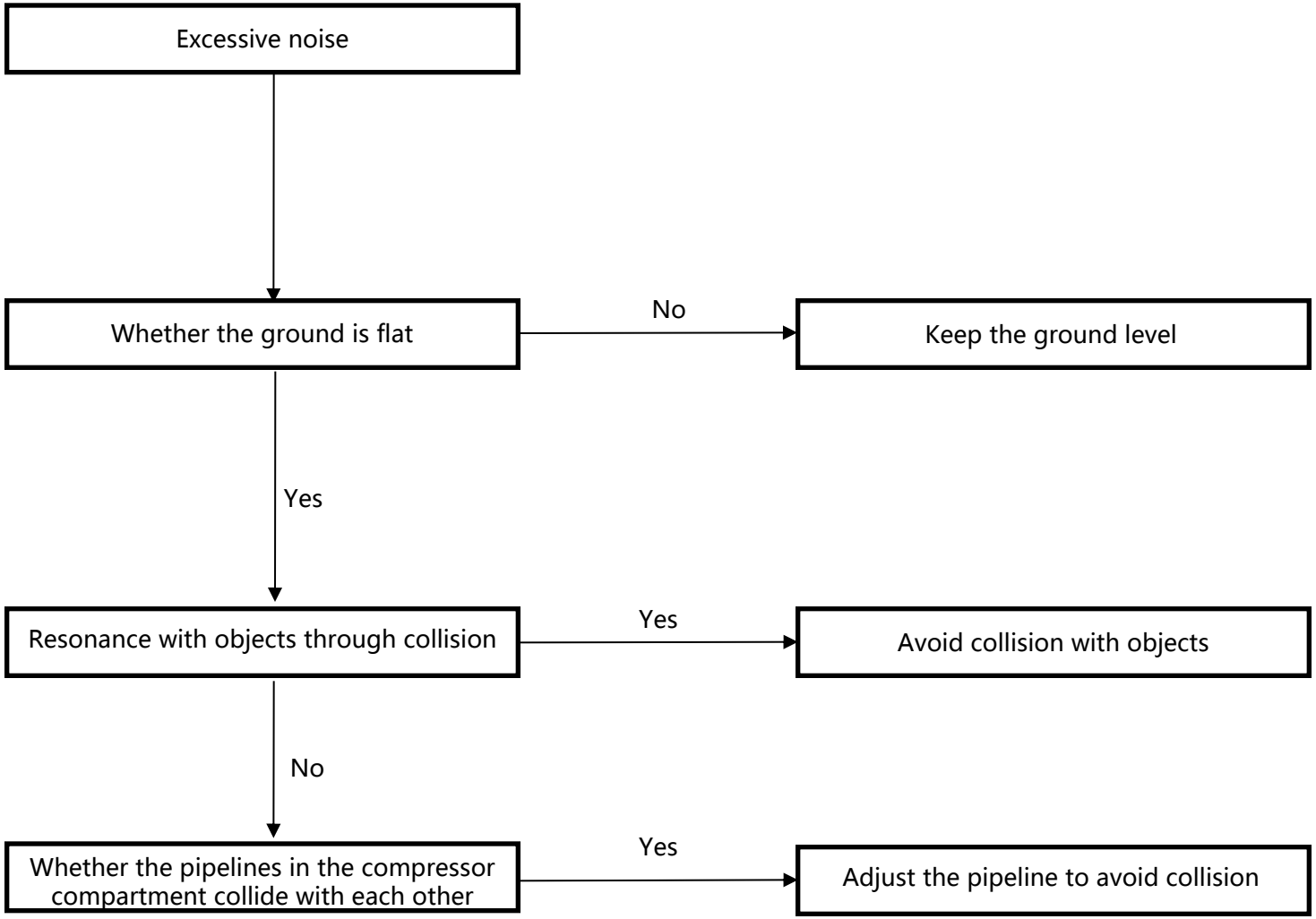
Fault code prompt and maintenance plan:

Fault	Fault display	Cause of failure	Handling method
Abnormal freezing sensor	E4	Freezing sensor; open circuit or short circuit	Check whether there is open circuit or short circuit between the output end of the master control board and the freezing sensor.
Abnormal ambient temperature sensor	E6	Ambient temperature sensor; open circuit or short circuit	Check whether there is open circuit or short circuit between the output end of the master control board and the ambient temperature sensor.
Abnormal refrigerating sensor	E0	Refrigerating sensor; open circuit or short circuit	Check whether there is open circuit or short circuit between the output end of the master control board and the refrigerating sensor.
Abnormal evaporator temperature sensor	E5	Defrosting sensor; open circuit or short circuit	Check whether there is open circuit or short circuit between output end of main control panel and defrosting sensor.
Abnormal communication	EC	Open circuit of communication connection	Check the connecting lines between the display control board and the master control board and between the display board and the master control board
Abnormal freezing fan	EF	Open circuit or short circuit of line or damage of fan	Check whether there is open circuit or short circuit in the connecting line of the motor and whether the motor rotates normally

The compressor does not work:



Excessive noise:



The compressor does not stop for a long time:

