Repair manual - Fridge-freezer

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Concerning this document

1.1 Important information

Read and observe chapter 2 "Safety" before performing any work!

1.1.1 Purpose

These repair instructions form the basis for a systematic and safety conscious procedure for the repair of domestic appliances.

These repair instructions include information about troubleshooting and repair.

1.1.2 Target group

These repair instructions are intended for persons who are familiar with equipment technology and were instructed by BSH or an authorised body:

- Service technicians for the repair of domestic appliances
- Pre-assemblers in the spare part stockroom when determining required spare parts
- Call centre employees during order acceptance

1.1.3 Other applicable documents

The following documents include additional relevant repair information:

- General repair instructions
- Error codes and service programs
- Circuit diagrams
- Exploded drawings
- Parts lists
- Repair videos

1.2 Explanation of symbols

1.2.1 Danger levels

The warning levels consist of a symbol and a signal word. The signal word indicates the severity of the danger.

Warning level	Meaning
Danger	Non-observance of the warning message will result in death or serious injuries.
Warning	Non-observance of the warning message could result in death or serious injuries.
Caution	Non-observance of the warning message could result in minor injuries.
Notice	Non-observance of the warning message could result in damage to property.

Table 1: Danger levels

1.2.2 Hazard symbols

Hazard symbols are symbolic representations which give an indication of the kind of danger.

The following hazard symbols are used in this document:

Hazard symbol	Meaning
	General warning message
	Danger from electrical voltage
	Risk of explosion
	Danger of cuts
	Danger of crushing

Hazard symbol	Meaning
	Danger from hot surfaces
	Danger from strong magnetic field
	Danger from non-ionizing radiation

Table 2: Hazard symbols

1.2.3 Structure of the warnings

Warnings in this document have a standardised appearance and a standardised structure.

⚠ Danger

Type and source of danger!
Possible consequences of ignoring the danger / warning.
- ▶ Measures and prohibitions for preventing the danger.

The following example shows a warning that warns against electric shock due to live parts. The measure for avoiding the danger is mentioned.

⚠ Danger

Risk of electric shock due to live parts!
Death by electrocution
- ▶ Disconnect appliances from electrical supply at least 60 seconds before starting repairs.

1.2.4 General symbols

The following general symbols are used in this document:

Gen. symbol	Meaning
	Identification of a special tip (text and/or graphic)
	Identification of a simple tip (only text)
	Identification of a link to a video tutorial

Gen. symbol	Meaning
	Identification of required tools
	Identification of required preconditions
	Identification of a condition (if ..., then ...)
	Identification of a result
Start	Identification of a key or button
[00123456]	Identification of a material number
Status	Identification of displayed text / window (in the appliance's display)

Table 3: General symbols

2.1 Qualification

In Germany, only qualified electricians trained by BSH or an authorised body may perform any repair work.

In other countries, only similarly trained qualified personnel is permitted to perform the repair work.

Appliances must only be repaired by persons that are qualified, **approved** and trained by BSH or an authorised body as instructed.

2.2 General safety instructions

2.2.1 All domestic appliances

Risk of electric shock due to live parts!

- Disconnect the appliance from the mains for at least 60 seconds before starting work.
- Do not touch the housing, components and cables.
- For tests on an energised system, use a residual current circuit breaker.
- Discharge high-voltage capacitors.

Risk of injury from sharp edges!

- Wear protective gloves.

Risk of crushing during repair, maintenance, troubleshooting and service due to heavy and moving components

- Wear protective shoes.
- Secure heavy components from falling down.
- Do not stick body parts into moving components.

Risk of injury when dealing with harmful substances!

- Observe the associated safety data sheet!

Risk to the appliance's safety / function!

- Only use original spare parts.

Risk of damage to electrostatically sensitive components (ESDs)!

- Before touching ESDs, use an electrostatic protection system (wristband with earth safe plug).
- Do not touch connections and conductor paths of the modules.
- Only transport ESDs in conductive materials or original packaging.
- Keep ESDs clear of electrostatically chargeable materials (i.e. plastic).

2.3 Product-specific safety information

2.3.1 Microwave appliances

Risk of scalding due to explosive escape of liquids in case of delayed boiling!

- Before heating place a metal spoon in the liquid.

Health hazard due to non-ionising radiation!

- After any work on the appliance, check the tightness with leak rate measurement.

2.3.2 Induction appliances

Induction appliances fulfil the relevant regulations for safety and electromagnetic compatibility (EN 50366).

Danger to life due to magnetic fields!

- People with pacemakers should stay clear during repairs on an open appliance!

Health hazard due to magnetic fields!

- People with medical devices (for example insulin pump / hearing aid) should stay clear of the opened appliance!

2.3.3 Gas appliances

Explosion hazard due to escaping gas!

- Cut off the gas supply before working on gas carrying connections.
- Check tightness following work on connections carrying gas.
- Only repair gas appliances with original parts that were tested and released for such use.

If you smell gas!

- Do not press any electrical switches.Do not press any electrical switches.
- Extinguish / keep clear of open flames.
- Ensure that room is well ventilated.
- Close the gas isolating equipment.

2.3.4 Refrigeration and freezer appliances

Risk of burns caused by refrigerants!

- Wear protective gloves and goggles.

Explosion hazard due to refrigerants!

- Do not solder pipe connections, only use Lokring connections.
- Do not press any electrical switches.Do not press any electrical switches.
- Keep clear of thermal appliances.
- Extinguish / keep clear of open flames.
- Ensure that room is well ventilated.

2.3.5 Dryer with heat pump

Risk of burns caused by refrigerants!

- Wear protective gloves and goggles.

Explosion hazard due to refrigerants!

- Do not solder pipe connections, only use Lokring connections.
- Do not press any electrical switches.Do not press any electrical switches.
- Keep clear of thermal appliances.
- Extinguish / keep clear of open flames.
- Ensure that room is well ventilated.

2.4 Measures after each repair

If the appliance is functional:

- Check according to VDE 0701 or country-specific regulations.
- Check external appearance, function and tightness.
- Document repair work, measured values and functional reliability.

If the appliance is **not** functional:

- Identify the appliance as “not functionally reliable”.
- Warn customers of commissioning and notify them in writing .

3.1 Electronic board

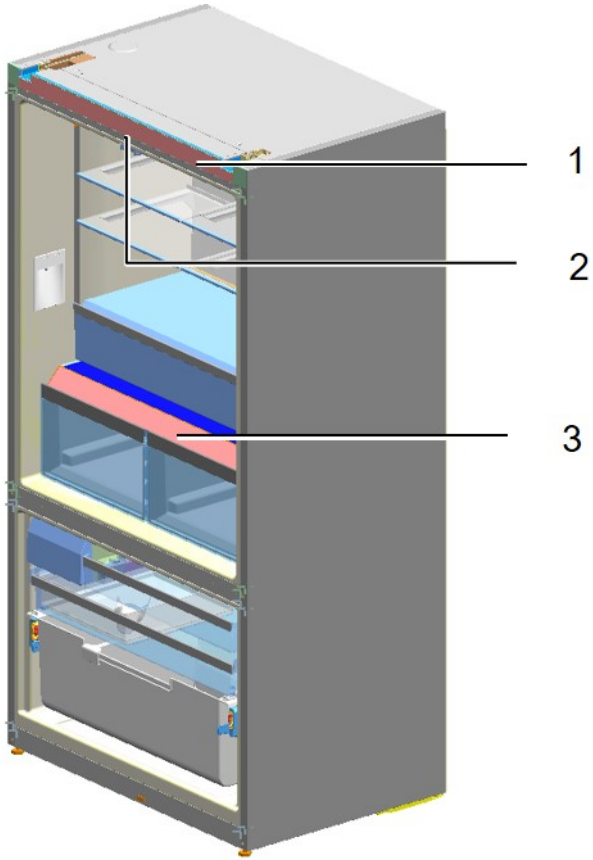


Fig. 1: Front side(AV1)

1 Main display module
2 Com module
3 VF display module

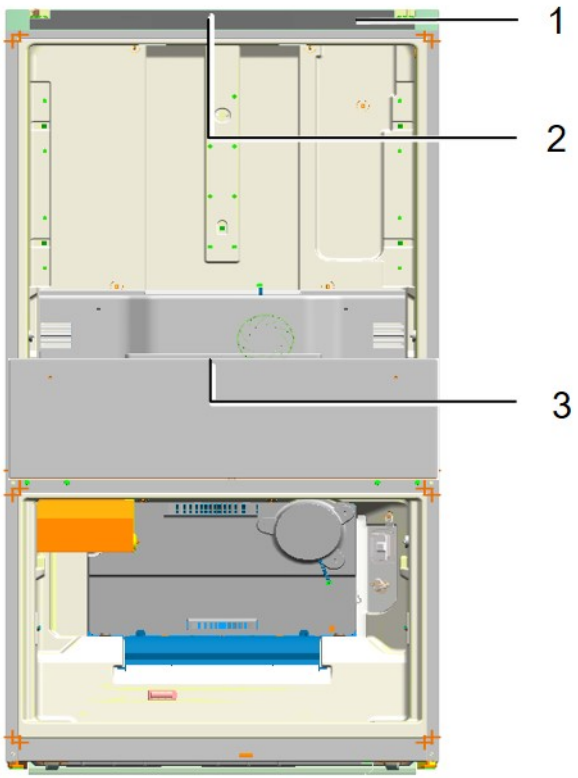


Fig. 2: Front side(AV2)

1 Main display module
2 Com module
3 VF display module

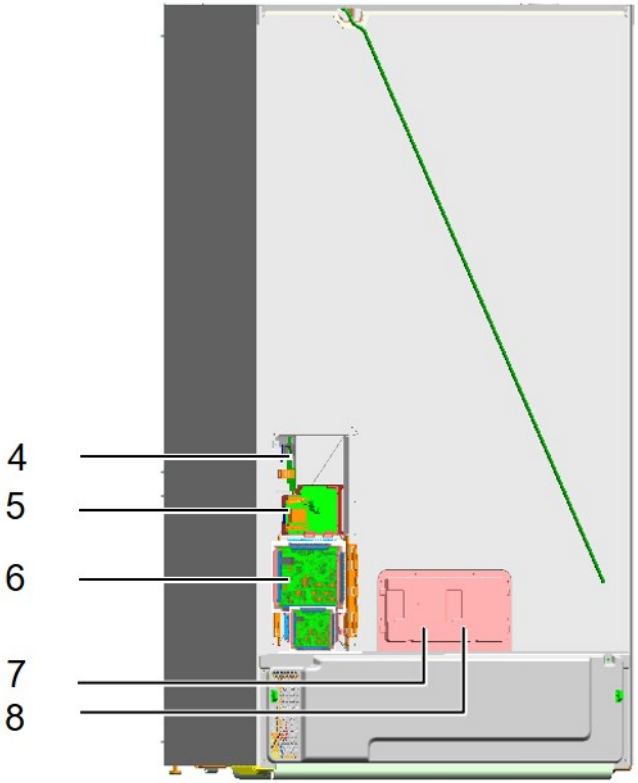


Fig. 3: Back side

4 Power input module
5 Power module
6 Control module
7 FC inverter
8 RC inverter

3.2 Temperature and humidity sensors

Temperature and humidity sensors: The ambient temperature and humidity are sent to the main control board every 1 minute, and the main control board controls the operation of the flap heating element based on the current temperature and humidity values

Temperature and humidity sensors: the appliance incorporates a capacitive humidity sensor and bandgap temperature sensor, which detect the ambient temperature and humidity and then send the digital signals to the control panel via the D-bus

Capacitive humidity sensor: capacitance changes based on humidity. The microprocessor on the PCB uses this change to calculate the ambient humidity

Bandgap temperature sensor: the PN junction incremental voltage changes based on the temperature. The microprocessor on the PCB uses this change to calculate the ambient temperature

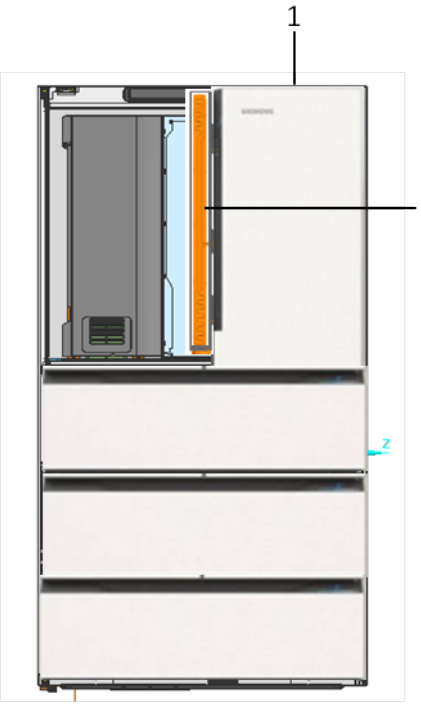


Fig. 4: Position of temperature and humidity sensors and flap heating element

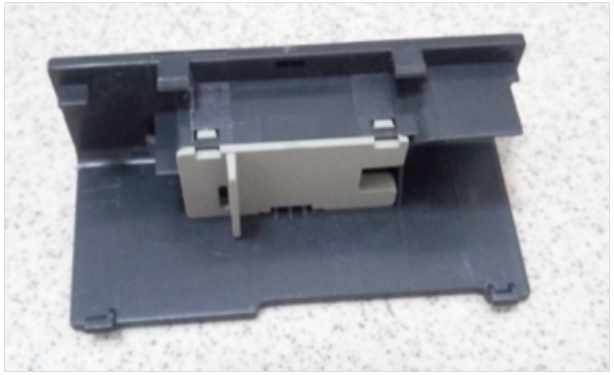


Fig. 5: Temperature and humidity sensors

1 Temperature and humidity sensors
2 Flap heating element

Temperature and humidity sensor: **12 V (DC)**

3.3 Fan

The new refrigerators have 3 fans: VF evaporator fan and Freezer evaporator fan and condenser fan.

3.3.1 Evaporator Fan

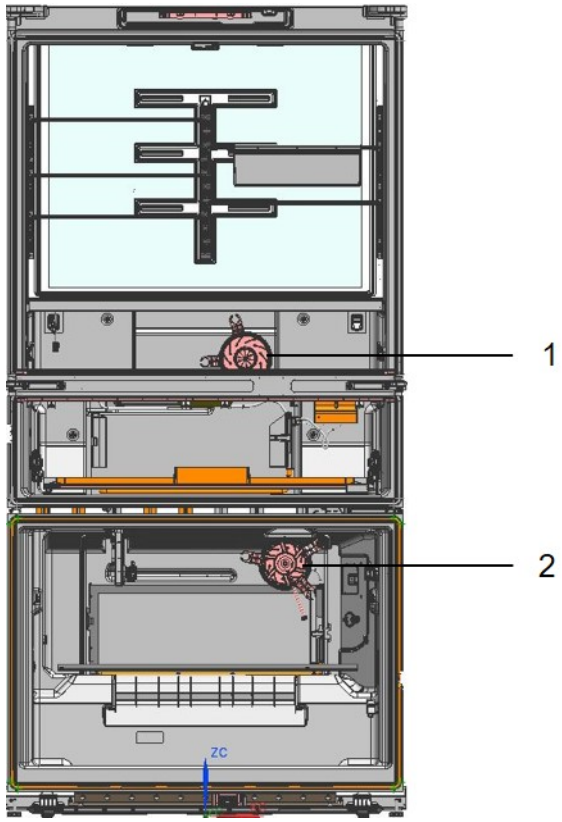


Fig. 6: Evaporator Fan

1 Fridge Evaporator Fan
2 Freezer Evaporator Fan

Evaporator fan operating mode

- The evaporator fan stops when the refrigerator door is opened
- 5 seconds after the door is closed, the evaporator fan is forced to run for 30 seconds (the fan stops when the door is opened)
- In normal mode, all compartment refrigeration evaporator fans will run
- When the compartment's set temperature is lower than the parameter set value, the evaporator fan accelerates
- The evaporator fan has five speeds. The evaporator fan accelerates when the difference between the compartment temperature and the set temperature is greater than or equal to the parameter set value
- After the compressor has been running for 120 minutes, the evaporator fan accelerates and after a further 30 minutes, it accelerates again

3.3.2 Condenser fan

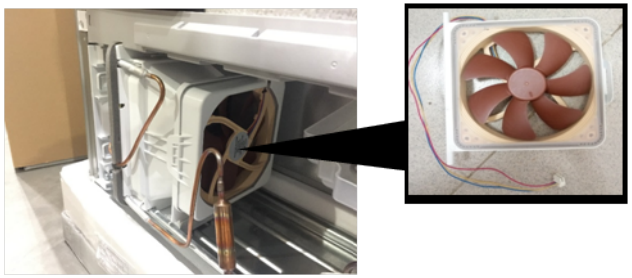


Fig. 7: Condenser fan

Operation

- In normal mode, the condenser fan starts running 1 minute after the compressor switches on, and stops running 1 minute after the compressor switches off
- The initial speed of the condenser fan is determined by the ambient temperature
- The condenser fan has five speeds and the speed changes as the compressor speed changes

3.4 Damper

The new product has two air ducts on the fridge / VF evaporator to distribute the cold air to the VF compartment , fridge compartment .

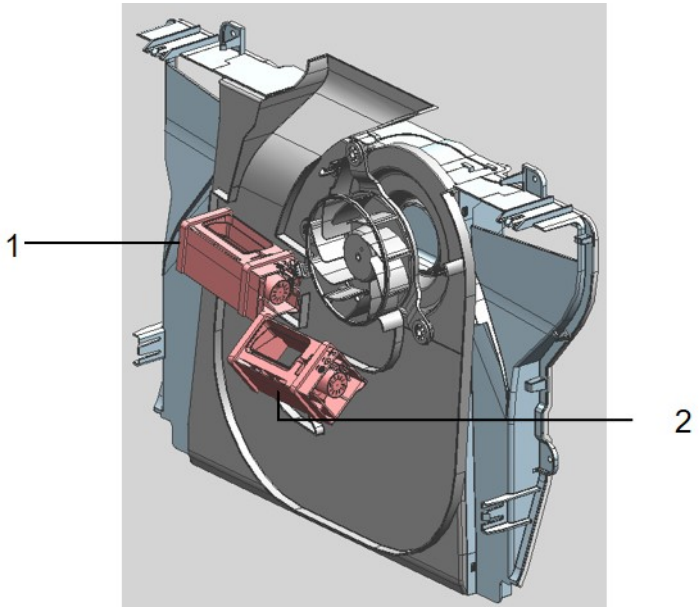


Fig. 8: Damper

1	VF compartment damper
2	Fridge compartment damper

Operation: when fridge or VF compartment needs cooling , damper cooperates with evaporator fan make cooling

3.5 Overheating fuses

Possibility of overheating can occur due to:

- A temperature sensor malfunction
- A breakdown in the actual control system of the unit
- A temperature sensor has become covered in ice, preventing it from detecting the actual temperature of the surrounding environment.

Overheating protection principles:

When the temperature sensed by the overheating fuse is 72 □ the overheating fuse will break automatically to cut the heater element's main power and protect the whole refrigerator.

Characteristics:

The overheating fuse is a non-repairable component; once this protective breakage has occurred, please replace it with a new fuse.

3.6 Door Switch

The new product is equipped with 5 door switches for sensing the door switch. The specific position is as follows:

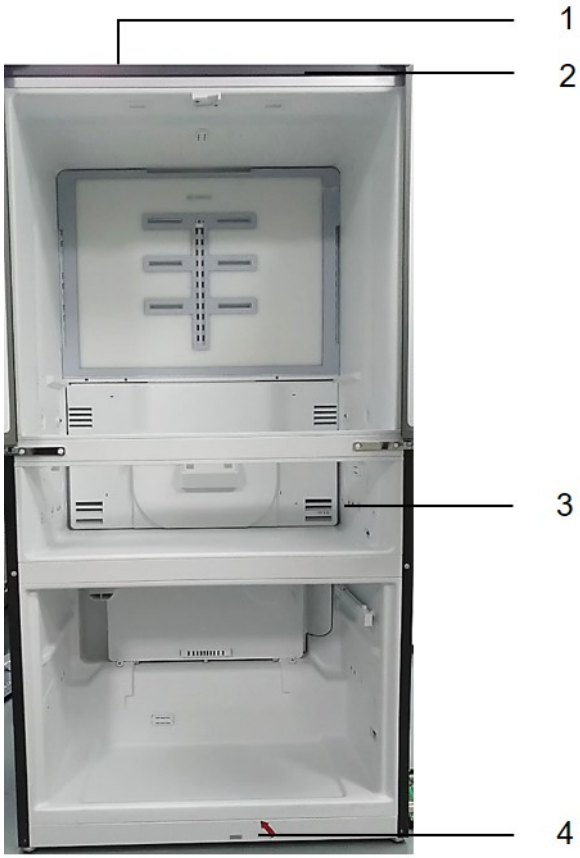


Fig. 9: Door switch

1 Left refrigerator door switch(Located behind the front panel)
2 Right refrigerator door switch(Located back of the front panel)
3 VF door switch (located behind the cover plate of VF chamber air duct)
4 FC door sensor

3.7 Temperature sensor

The new product has five temperature sensors, which are respectively located in three compartments, freezing compartment and VF compartment evaporator:

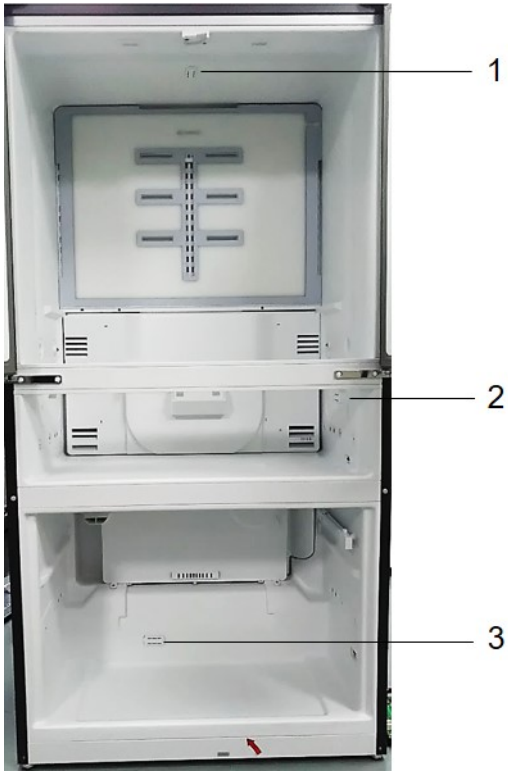


Fig. 10: Compartment sensor

1 Refrigeration compartment temperature sensor
2 VF compartment temperature sensor
3 Freezer compartment temperature sensor

Fig. 11: VF compartment evaporator

4 VF evaporator sensor

Fig. 12: Freezer compartment evaporator

5 Freezer compartment evaporator temperature sensor

3.8 Light system

The new product equipped with 4 light in RC, VF, FC compartment, below you can find the position in the appliance

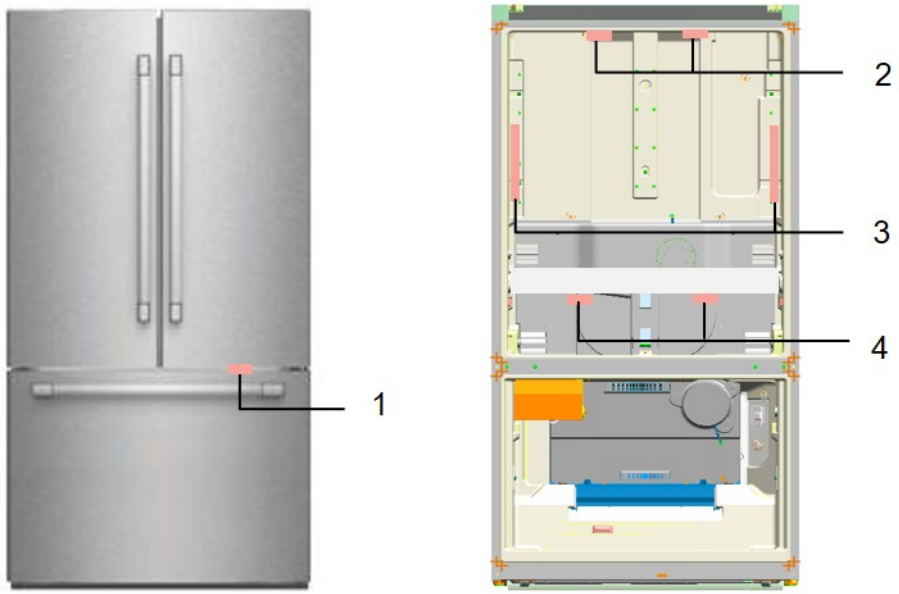


Fig. 13: Light system

No.	Part name	Technical parameters
1	FC light	350mA(Max) ; 1.3W
2	RC top light	350mA(Max) ; 1.3W
3	RC side light	350mA(Max) ; 2.9W
4	VF light	350mA(Max) ; 1.3W

3.9 Alarm function

3.9.1 Temperature alarm

Activated if:

- Freezer compartment temperature is detected when defrosting ≥ -2 ºC
- Freezer compartment temperature is detected over 90 minutes on Super mode ≥ -5 ºC
- Freezer compartment temperature is detected over 90 minutes within normal working conditions ≥ -7 ºC

The alarm is shown on the display. After activation, the Alarm display for the affected compartment flashes.

Temperature display shows the highest recorded temperature for the compartment. Only display of premium and added value appliances shows the highest recorded temperature. This function is not valid for display of value appliances.

Deactivated if:

- Freezer compartment temperature is detected ≤ -10 ºC
- The lock/alarm off button is pressed

After deactivation of the temperature alarm with lock/alarm off button, the temperature setting for the compartment is shown again in the display.

3.9.2 Door alarm

Activated if:

- An audible signal is activated when freezer door is open for more than 60 seconds.
- An audible signal is activated when fridge door is open for more than 120 seconds.

The signal can be deactivated by pressing the lock/alarm off button.

3.10 Defrost mode

Common factors influencing defrost activation:

- Ambient temperature
- Unit operating time
- Door opening frequency and duration for all compartments
- Evaporator continuous cooling time

Conditions for exiting defrost mode:

- When the evaporator temperature sensor fails, the defrost heating element will run for 25 minutes before exiting defrost mode
- When the evaporator temperature sensor is functioning normally and the evaporator temperature is higher than 30 °C, defrost mode will be cancelled
- The evaporator temperature sensor is functioning normally and the defrost heating element running time is longer than the minimum defrost time (determined by the ambient temperature). When the evaporator temperature reaches the set temperature or the maximum defrost time of 70 minutes, defrost mode will be cancelled

3.11 Cooling component

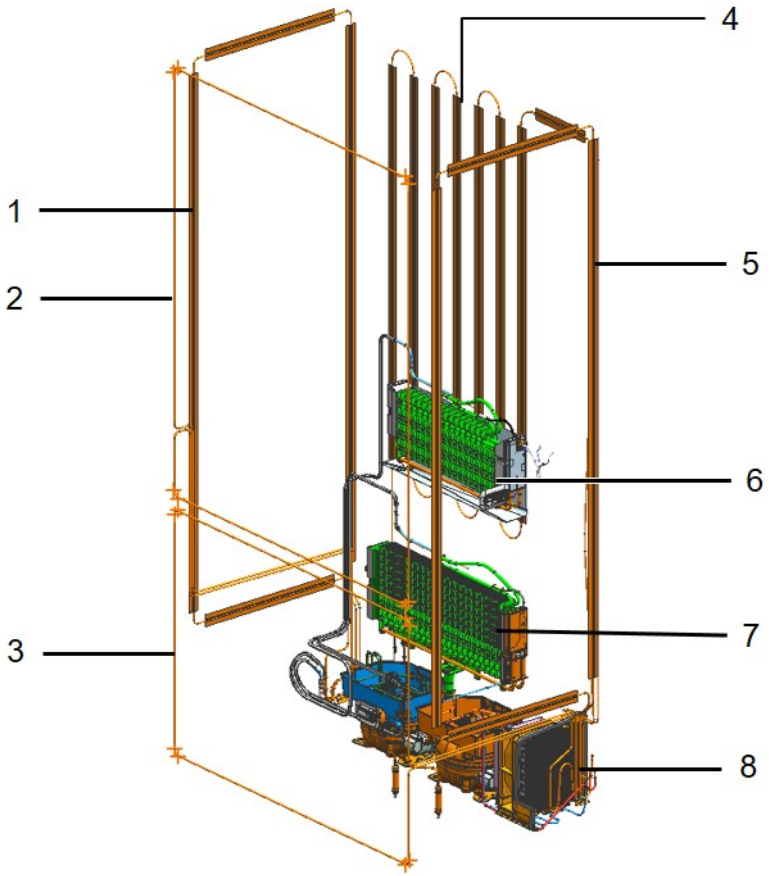


Fig. 14: Cooling component position

1 **Side wall condenser(left)** : Radiating the heat of refrigerant

2 **Fridge frame heater** : The high temperature refrigerant flows through the tube, the less condensate water attached on the freezer frame

3 **Freezer frame heater** : The high temperature refrigerant flows through the tube, the less condensate water attached on the freezer frame

4 **Back condenser** : Radiating the heat of refrigerant

5 **Side wall condenser(right)** : Radiating the heat of refrigerant

6 **Fridge evaporator** : Heat exchange with the outside air, gasification heat absorption, to achieve the effect of refrigeration

7 **Freezer evaporator** : Heat exchange with the outside air, gasification heat absorption, to achieve the effect of refrigeration

8 **Compressor room**

3.12 Cooling system

The new product has double-cycle refrigeration system, each cycle has a separate compressor to control the freezer and refrigeration/zero room respectively:

- Freezer compartment cooling system use micro-channel condenser
- Fridge / VF compartment cooling system use skin condenser, the part located in the foam is not replaceable

3.12.1 Freezer cooling system

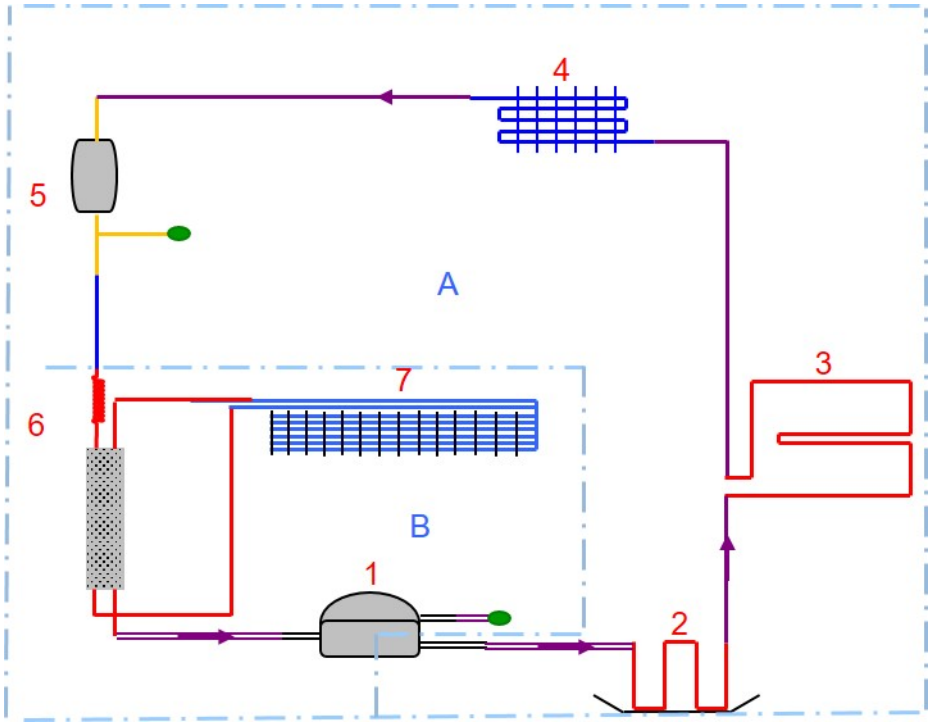


Fig. 15: Freezer cooling system

1 Freezer Compressor
2 Evaporating dish
3 Freezer frame tube
4 Microchannel condenser
5 Drying filter
6 Capillary tube
7 Freezer compartment evaporator

3.12.2 Fridge/VF cooling system

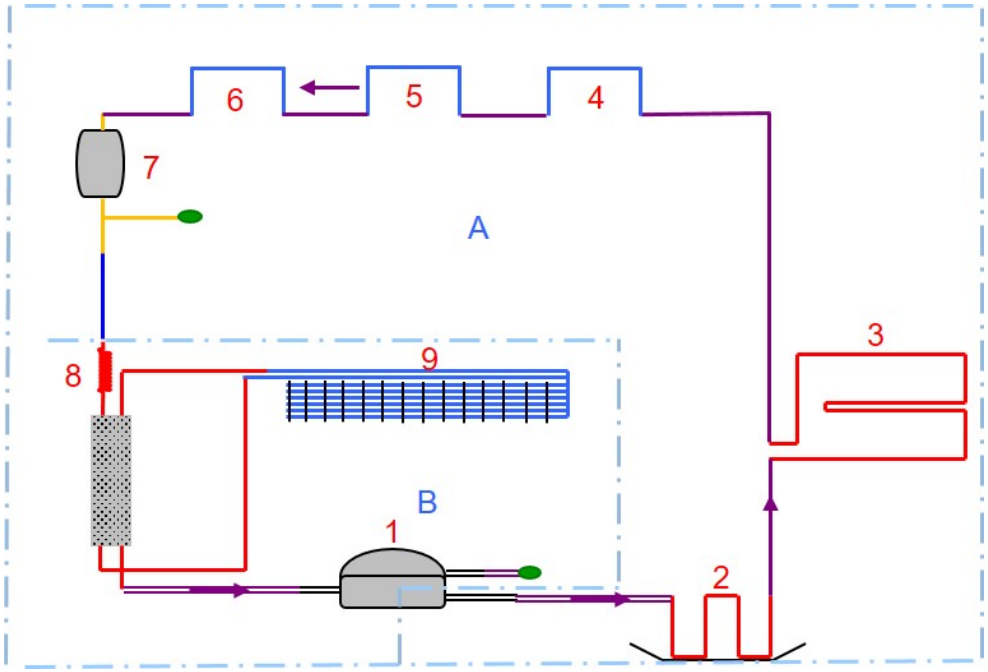


Fig. 16: Fridge/VF cooling system

1	Fridge Compressor
2	Evaporating dish
3	Fridge frame tube
4	Right skin condenser
5	Back skin condenser
6	Left skin condenser
7	Drying filter
8	Capillary tube
9	Fridge evaporator

3.13 Compressor room

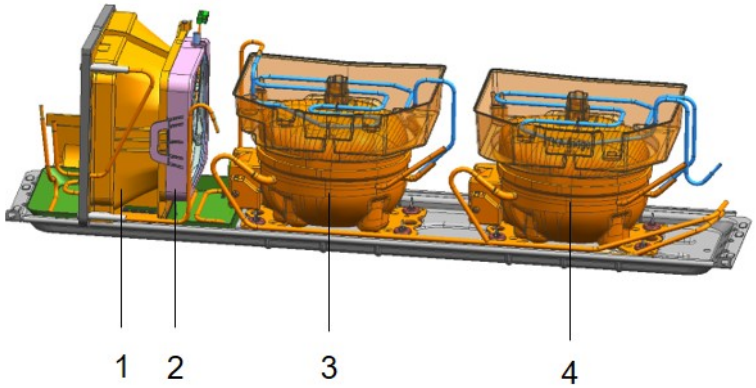


Fig. 17: Compressor room

1 Condenser
2 Condenser fan
3 Freezer Compressor
4 Fridge Compressor

3.14 Compressor room only for attached inverter

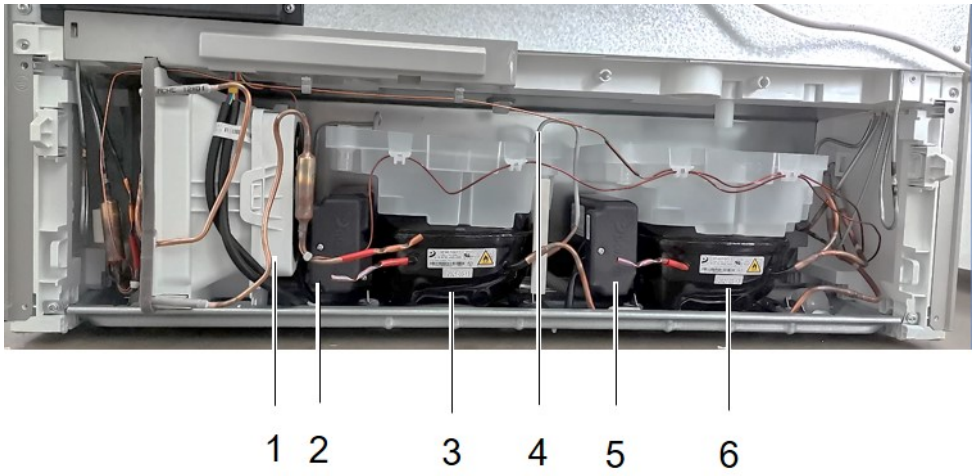
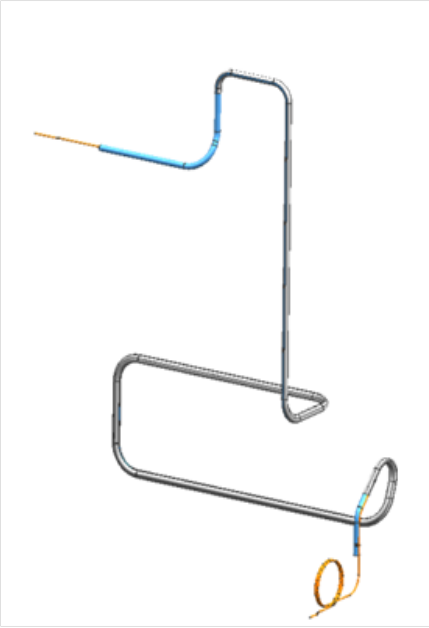


Fig. 18: Compressor room for attached inverter

1 Condenser fan
2 Freezer chamber inverter
3 Freezer chamber compressor
4 Evaporation tube (only for freezer chamber compressor)
5 Fridge chamber inverter
6 Fridge chamber compressor

3.15 Heat exchange tube

Heat exchange tube: positioned at the end of the evaporator and connected to the compressor suction pipe, its main function is to lower the temperature of the high-temperature refrigerant in the capillary tube in order to facilitate evaporation by the circulating evaporator.



3.16 Condenser

The new appliances have three condensers: a rear condenser, a side panel condenser and a microchannel condenser

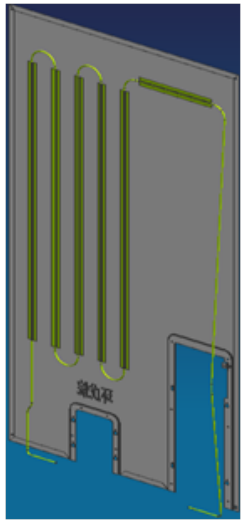


Fig. 19: Rear condenser

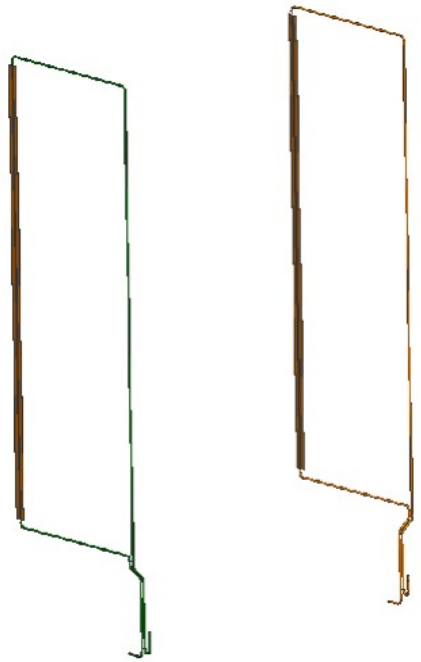


Fig. 20: Side panel condenser

Rear condenser: attached to the rear of the appliance, used for auxiliary cooling

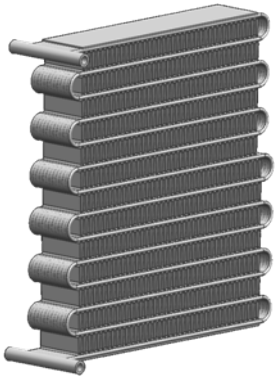


Fig. 21: Microchannel condenser

Design and function

Microchannel condenser: located in the compressor compartment, used for condensation heat dissipation in the refrigerator, works in conjunction with the condenser air duct. At the same time, the condenser fan assembly is located at the front end of the air duct and is used for forced convection heat exchange.

3.17 Ice water system

The new appliance with ice water system, we can find water circulation in below picture

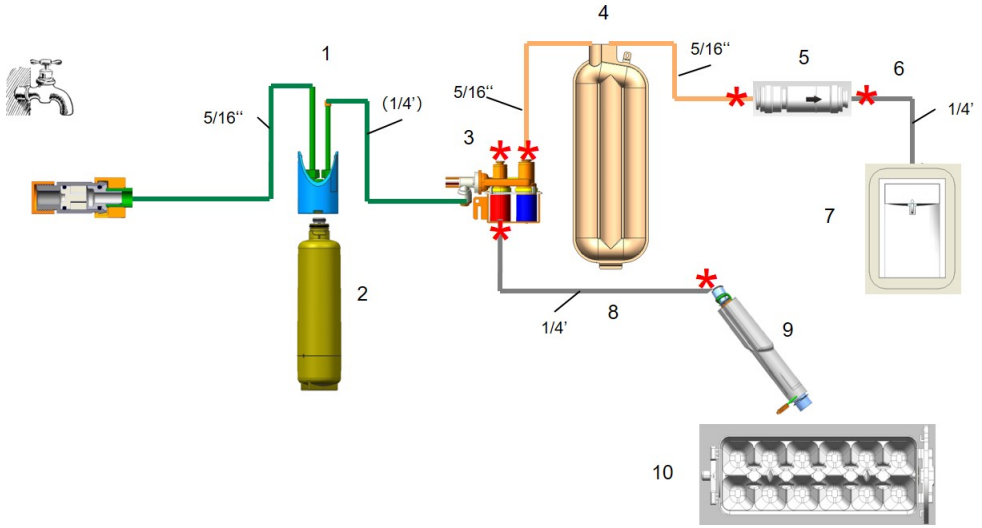


Fig. 22: Ice water system

1 Filter head
2 Water filter
3 Water valve
4 Water tank
5 Quick connector(1/4”-5/16”)
6 Water tube to dispenser(1/4”)
7 Internal water dispenser
8 Water tube to nozzle(1/4”)
9 Water nozzle with 12V heater
10 Ice tray

*** The tube could disconnect**

Fault Diagnosis

Malfunction

Fault	Possible cause	Troubleshooting
Display panel not illuminated	Display panel defective	▸ Replace the display panel
	Main control board defective	▸ Replace the main control board
	Poor connection between display panel and main control board	▸ Check the connection of the terminals
The zero-degree compartment cannot be adjusted to high humidity mode	Zero-degree compartment temperature is set below 0 °C	▸ Adjust the zero-degree compartment temperature to above 0 °C
	Zero-temperature compartment display panel is defective	▸ Replace the zero-temperature compartment display panel
	Humidity adjustment motor defective	▸ Replace the humidity adjustment motor
Refrigerator/freezer/zero-degree compartment is too cold	Set temperature too low	▸ Adjust the set temperature
	Defective sensor	▸ Replace the sensor
Refrigerator/freezer is too cold	Damper defective	▸ Replace the damper
No ice production *No water dispensing*	Water filter is clogged	▸ Exchange water filter
	Water tap closed	▸ Open water tap
	Water tube kinked	▸ Exchange kinked water tube
	Water valve fault	▸ Dispenser water, open fridge door, if no sound from water valve, exchange water valve

Fault	Possible cause	Troubleshooting
No water or ice in the ice tray	Water nozzle is blocked	▸ Run test cycle by pressing test button less than 3s  ▸ Check the ice tray twisted and water valve actived ▸ Exchange water nozzle

Fault	Possible cause	Troubleshooting
Water dispensing function is avaliable	Detection lever is frozen	▸ Run test cycle by pressing test button less than 3s  ▸ Check the ice tray not twisted and water valve not active ▸ Dissemble the ice maker and remove the blockage of the detection lever 

Fault Diagnosis

Fault	Possible cause	Troubleshooting
	Ice maker unite or appliance electronic failture	▸ Switch on the ice maker, green LED light is on 
		▸ Check the power supply ice maker connector pin 3 and 11, if the voltage is 110V -127V exchange ice maker, the voltage incorrect check appliance electronic
	Temperature in freezer compartment is warm	▸ Check the temperature in freezer chamber via service program, if higher than -12°C, please check cooling system

Condensation / Humidity / Leakage

Fault	Possible cause	Troubleshooting
Water dripping from dispenser *Continuous dripping / Flooding in appliance*	Defect / leaky water valve / Dirt in water valve	▸ Exchange the water valve and vent water system
Stops after a while	Air bubbles in the water line / New water filter installed / Water tank is not proper vented	▸ Vent the water system/ water tank / water filter by dispensing 3 gallons of water
		▸ **if no improvement** change water tank and vent the water system
	Air gets into the water system at fast connector	▸ Check all water line connections for proper fitting, if there is a suspicious connection, connect water tube and quick connector with silicone (Part # 422313)→ *Page 93* and vent the water system

5.1 Measurement of condenser fan

1. Operation fan test program;
2. Take the condenser fan as an example, the terminals shown in the diagram (X26.1 and X26.3) are measured on the main control board. The normal working voltage should be about 12V of direct current;

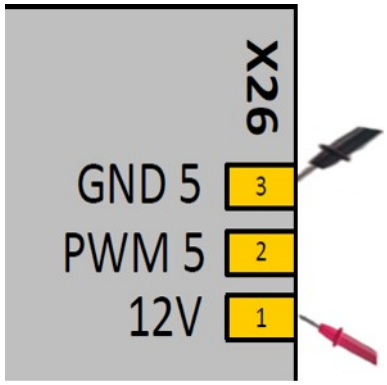


Fig. 23: Condenser fan terminal

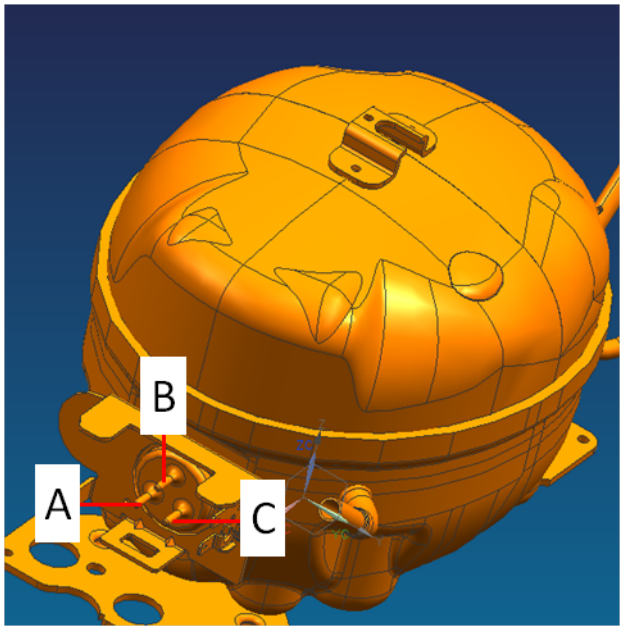
➥ Condenser fan voltage

Fig. 24: Condenser fan voltage

ℹ	If the red and black watch pen is connected inversely, the measured working voltage is about -12v (DC)

5.2 Measuring the compressor resistance

- The compressor is a three-phase coil with a total of 3 terminals (A, B, C), as shown in the figure opposite. Note that the resistance of the windings of any two terminals should be approximately 14 Ω. If any resistance measurements are abnormal, replace the compressor



5.3 Measurement of display panel

1. The display panel of the VF door is measured on the main control board (see figure 1 below) (X11.1 and X11.3);
2. Working voltage of main display panel (see figure 2 below) (X12.1 and X12.3);
3. Operating voltage of the display panel of the freezing door (see figure 3 below) (X13.1 and X13.3);

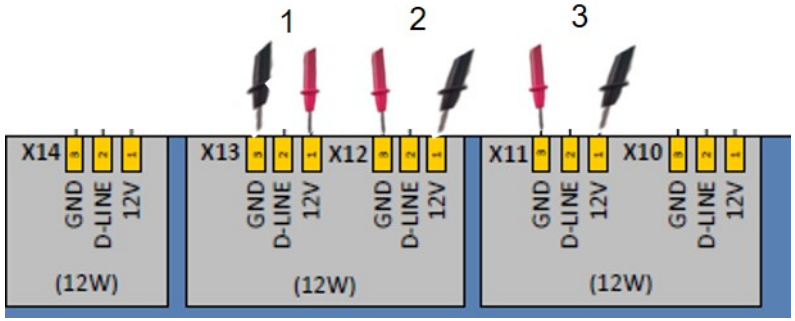


Fig. 25: Display panel terminal

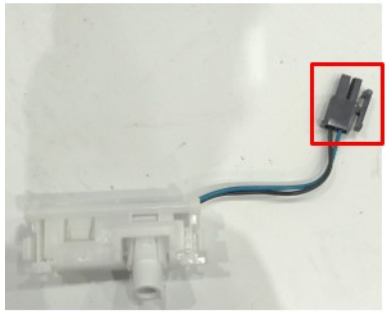
➔ Display panel working voltage

Fig. 26: Display panel working voltage

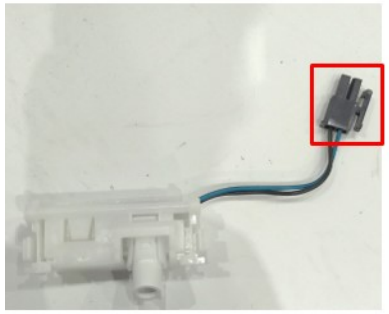
ℹ	If the red and black watch pen is connected inversely, the measured working voltage is about -12v (DC)

5.4 Measure resistance of water dispenser

1. Measure below 2 terminals of water dispenser with guide position, without pressing water outlet button, multimeter displays below value



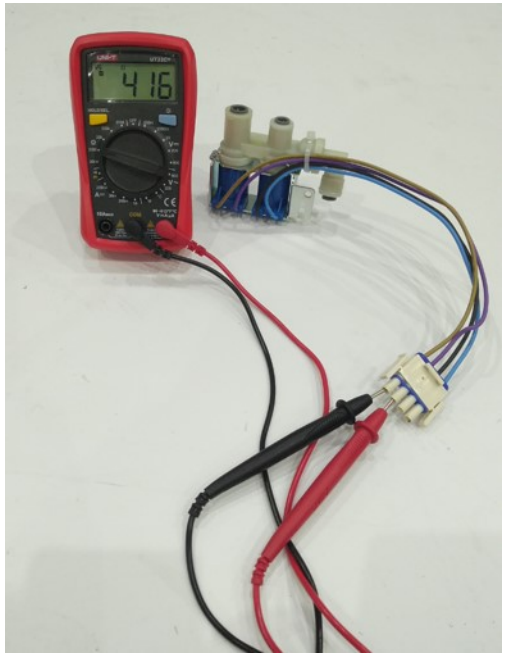
2. When water outlet button pressed, “bi” sounds from mutimeter



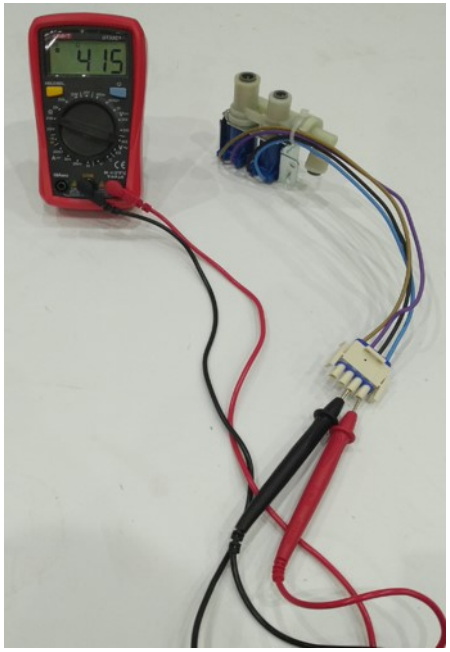
3. If multimeter displays abnormal, please consider to exchange water dispenser.

5.5 Measure resistance of water valve

1. Measure below 2 left terminals, the resistance should be about 416 Ohm



2. Measure below 2 right terminals, the resistance should be about 415 Ohm



3. If the resistance value is too big or small, please consider to exchange water valve.

5.6 Measure resistance of water nozzle

1. Measure below 2 terminals of water nozzle, the value should be around 76 Ohm

2. If the resistance value is too big or small, please consider to exchange water nozzle

6.1 Replacing the panel

Video tutorial

Required tools:

Special tool [00342180]

Use the correct side of the special tool depending on the appliance type.

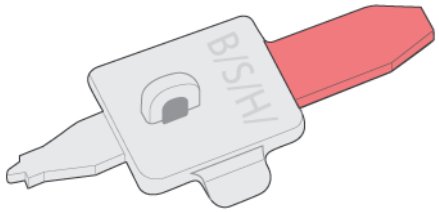


Fig. 27: Flat side of special tool for free standing appliances

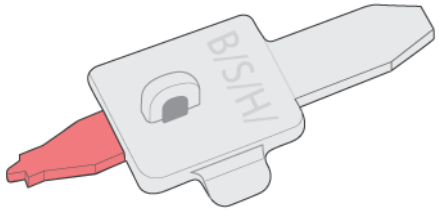
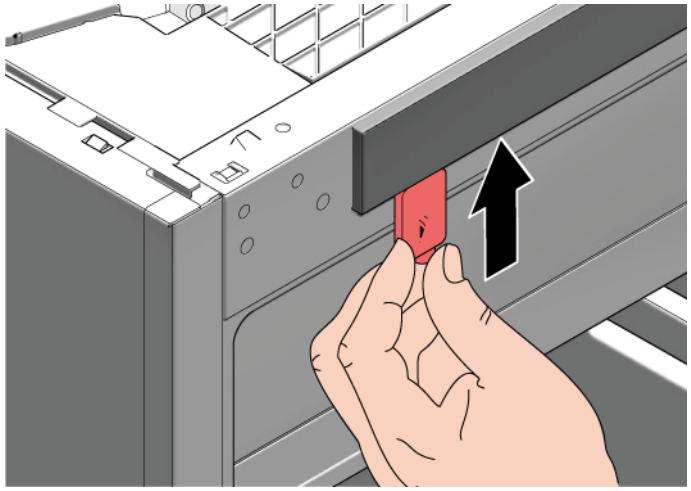


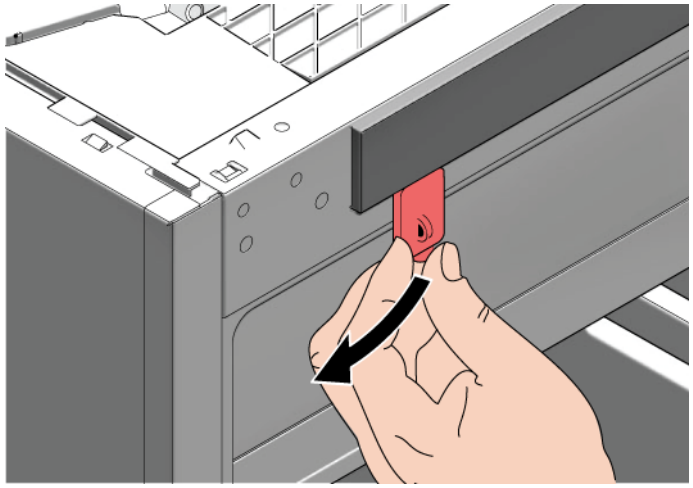
Fig. 28: Pointed side of special tool for built-in appliances

6.1.1 Replacing the panel

1. Slide the special tool into the underside of the panel.



2. Pull the special tool outwards.



➥ Panel is released.

3. 1. Slide the special tool in on the left and right sides of the panel.
   2. Remove the panel.

➥ Panel is removed.

6.1.2 Installing the panel

- Install in reverse order.

6.2 Replacing VF display module

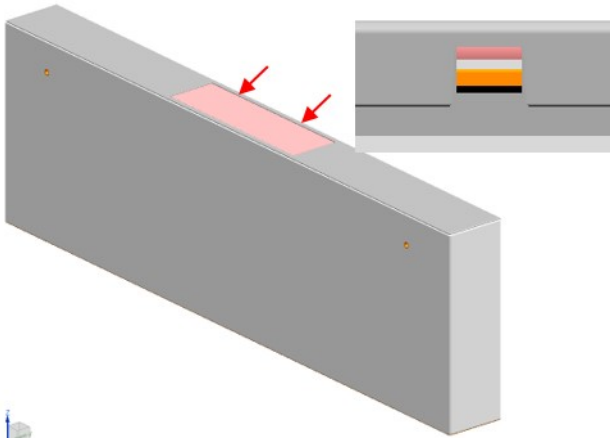
6.2.1 Replacing VF display module (external door handle)

Prerequisite:

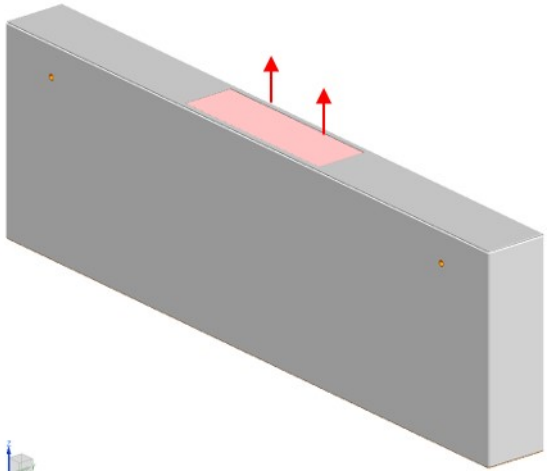
- The appliance is AV2 model
- Service engineer ordered display module(position number 0329) and glass in-lay(position number 0372)

6.2.1.1 Romoval VF display module(external door handle)

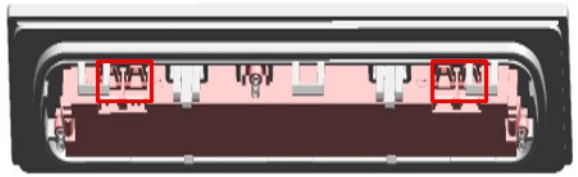
1. Release the clip with small straight screwdriver with following direction



2. Remove VF display module by the following direction

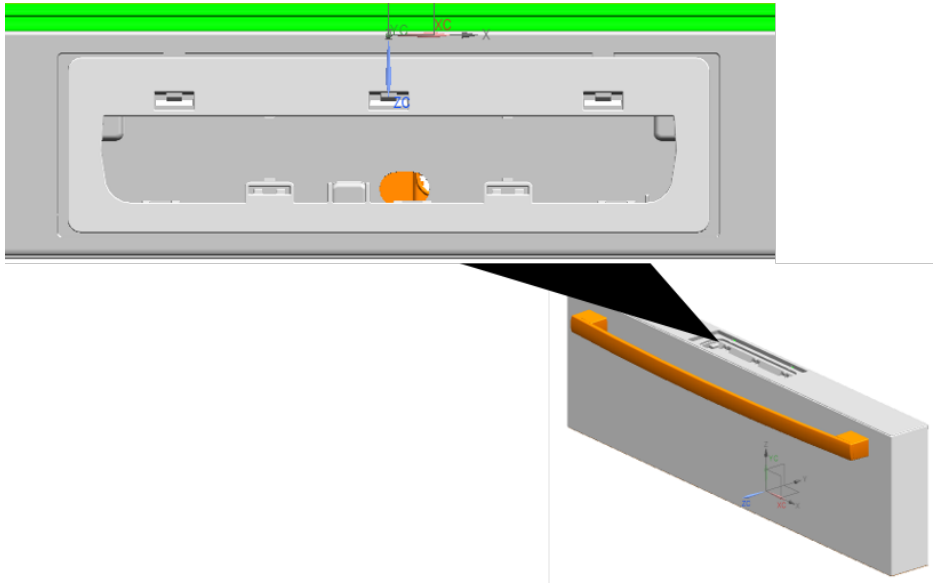


3. Disconnect display module cables

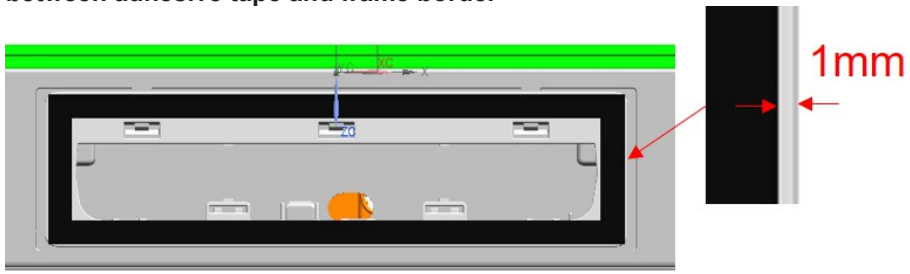


6.2.1.2 Installing VF display module(external door handle)

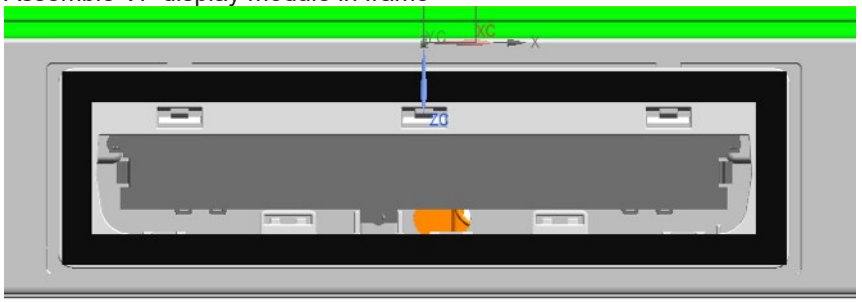
1. Assemble the frame on the VF door



2. Paste on side of black adhesive tape on the frame **keep 1mm distance between adhesive tape and frame border**



3. Assemble VF display module in frame



4. Press the glass inlay on the adhesive tape

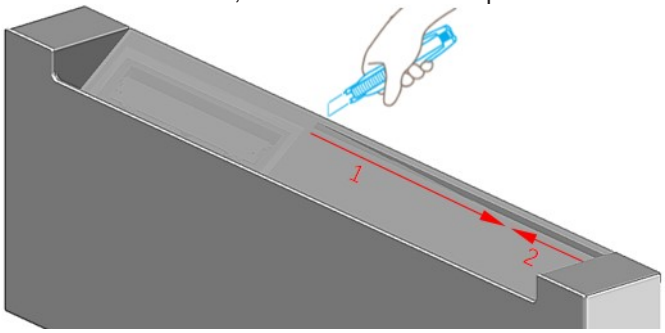
6.2.2 Replacing VF display module(internal door handle)

Prerequisite:

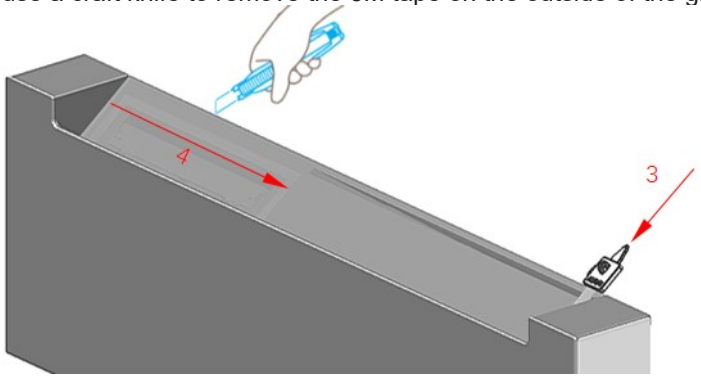
The appliance equipped with internal door handle

6.2.2.1 Removal VF display module(internal door handle)

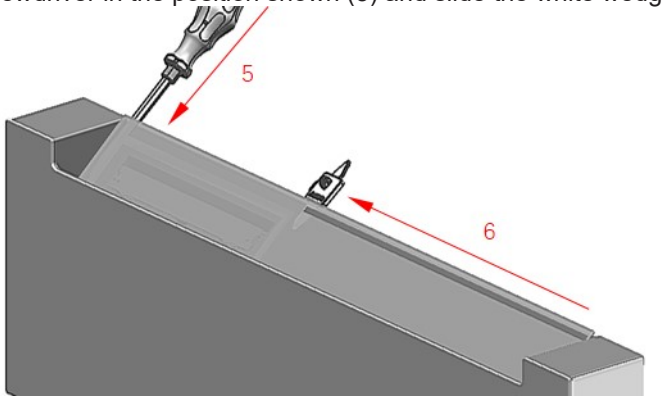
1. Use a craft knife to cut back and forth along the middle of the glass partition (1, 2) two or three times in the directions shown, then cut off the 3M tape on the outside of the glass partition



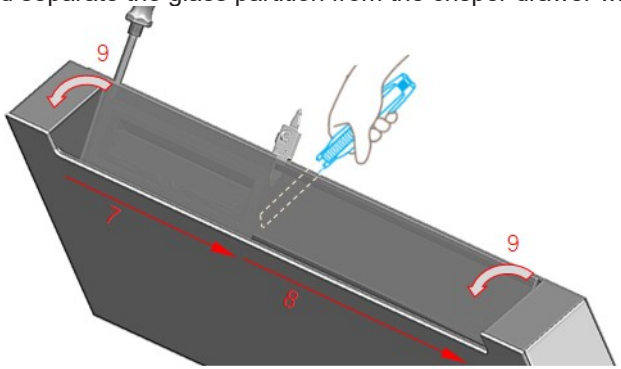
2. Insert the white wedge (3) at the position where the tape was just removed, and use a craft knife to remove the 3M tape on the outside of the glass partition (4)



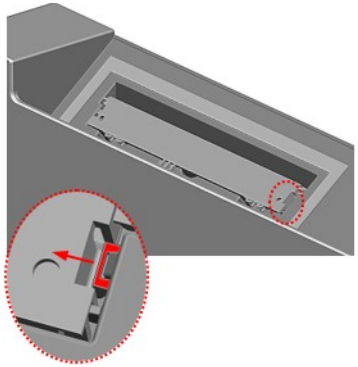
3. Insert a slotted screwdriver in the position shown (5) and slide the white wedge back and forth (6)

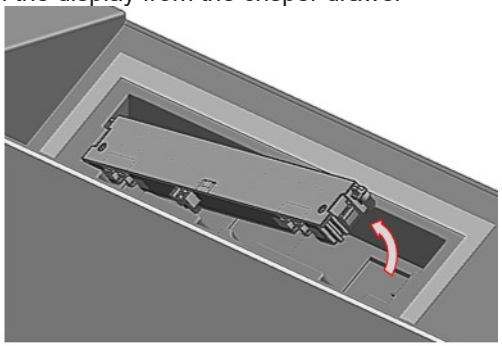


4. Use a craft knife to cut off the 3M tape (7, 8) on the inside of the glass partition and separate the glass partition from the crisper drawer with a slotted screwdriver (9)

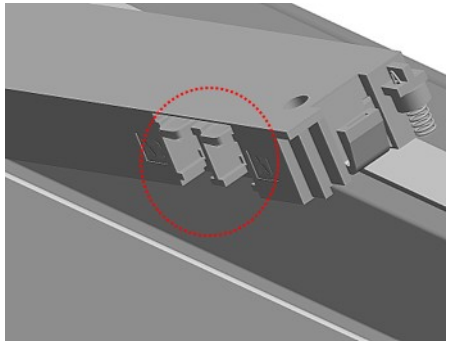


5. Use a slotted screwdriver to detach the display from the crisper drawer





6. Disconnect the terminals

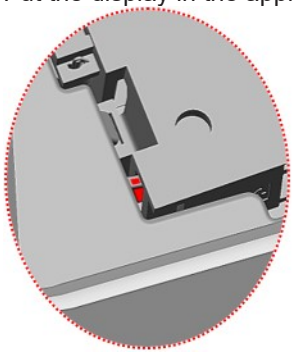


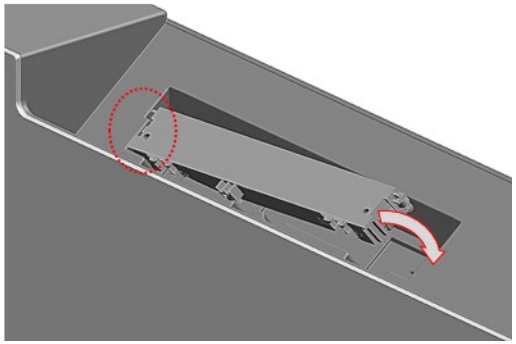
7. Remove any remaining tape from the drawer surface

6.2.2.2 Installing VF display module(internal door handle)

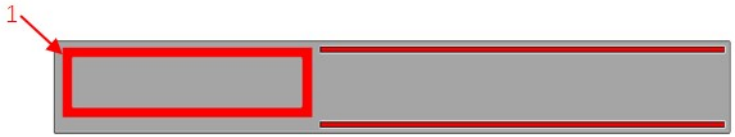
1. Connect the display terminal

2. Put the display in the appropriate position

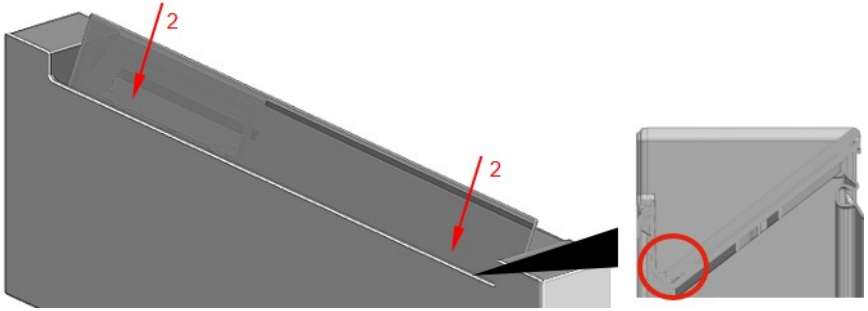




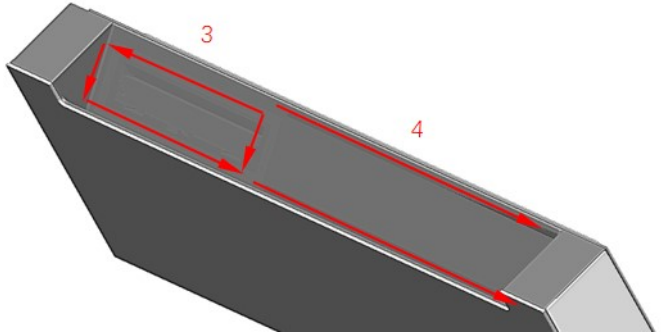
3. Remove the protective layer of the glass cover tape. Position 1 in the figure indicates the location of the display



4. Install the glass cover in the corresponding position (2), place the glass cover in the corresponding limiting groove on the inside of the crisper drawer



5. Press down the glass cover as shown below (for 10 seconds during each step)



6.3 Replacing flip mullion heating element

Required tools:

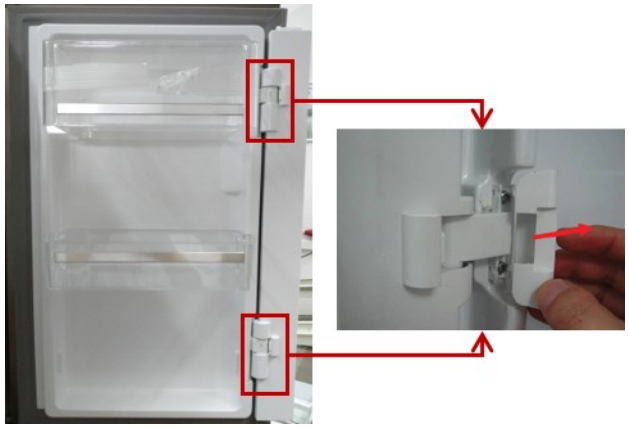
Torx T20 screwdriver [00341279]

Prerequisite:

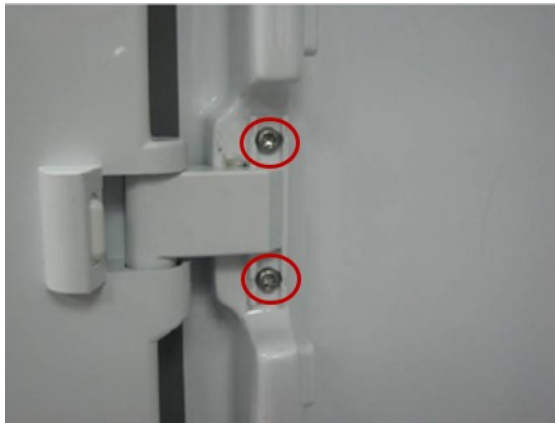
Appliance has been disconnected from the power supply

6.3.1 Removing the flap heating element

1. Remove the decorative cover



2. Unfasten the flap fixing screws using a T20 screwdriver



3. Pull the wire out of the slot

4. Disconnect the terminal

6.3.2 Installing the flap heating element

- Install in reverse order to removal

6.4 Replace door switches

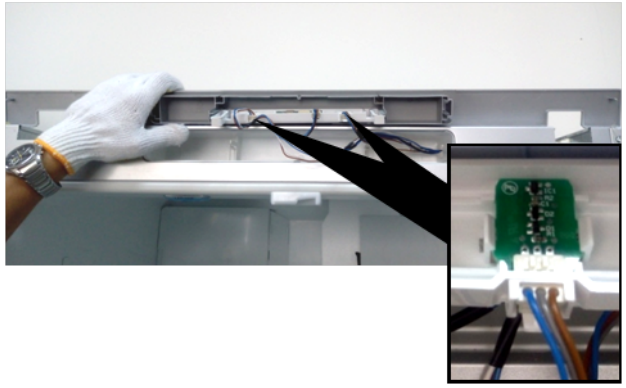
Prerequisite:

- Appliance is disconnected from the power supply

6.4.1 Removing the refrigerator door switch

1. There are two small holes under the front panel. Use a slotted screwdriver to carefully pry open the panel

2. Disconnect the magnetic switch terminals

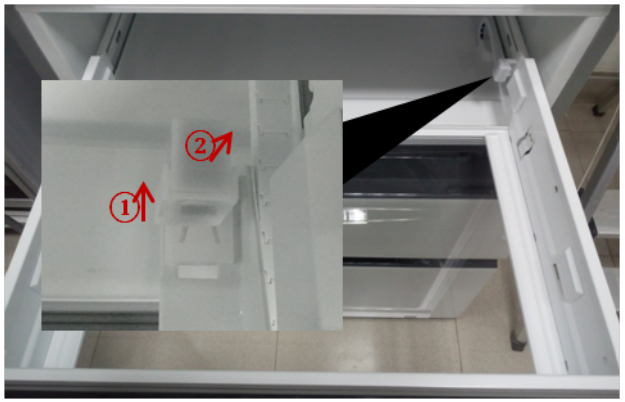


6.4.2 Installing the refrigerator door switch

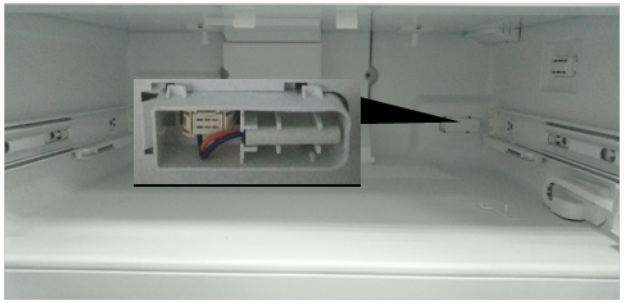
- Install the refrigerator door switch in reverse order to removal

6.4.3 Removing the zero-degree compartment and upper freezer drawer door switches

1. The zero-degree compartment door switch magnet is mounted on the right rail. Push the magnet forward to extract it



2. The door switch sensor is located inside the compartment, near the inner container. Simply open the enclosure, disconnect the terminal and extract it



3. Remove the upper freezer drawer door switch in the same way as for the zero-degree compartment door switch, door switch magnet and door switch sensor

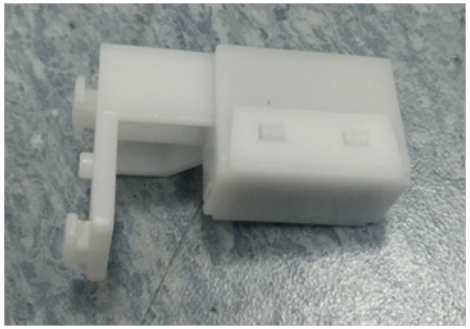


Fig. 29: Door switch magnet

Fig. 30: Door switch sensor

6.4.4 Installing the zero-degree compartment and upper freezer drawer door switches

- Install the zero-degree compartments and upper freezer drawer door switches in reverse order to removal

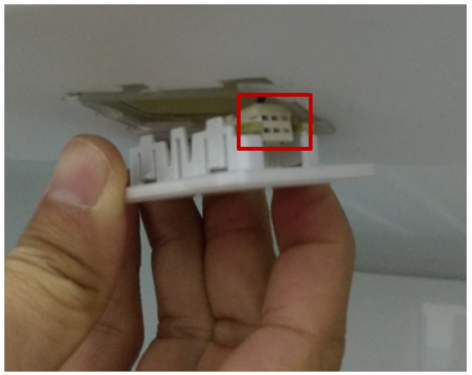
6.5 Removing/installing LED lamps

6.5.1 Removing the LED top lamp

1. Create a gap by working your finger around the rim of the LED lamp

2. Insert a slotted screwdriver into the gap and remove the LED top lamp in the direction shown

3. Disconnect the LED lamp terminal



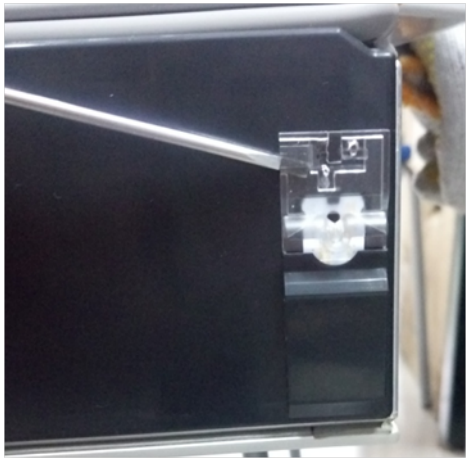
4. Refrigerator LED top lamp

6.5.2 Installing the LED top lamp

- Install the LED top lamp in reverse order to removal

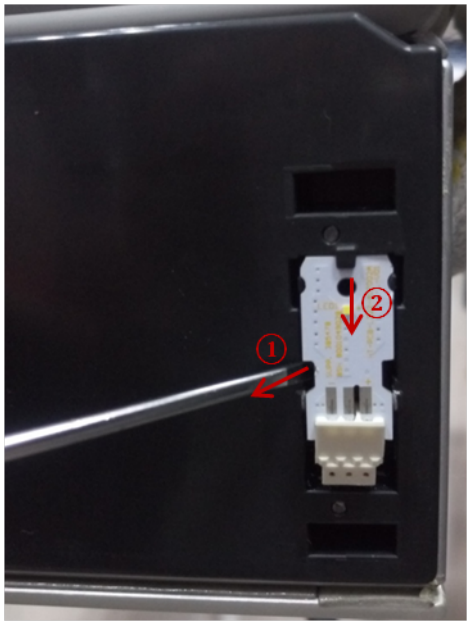
6.5.3 Removing the zero-degree compartment lamp

1. Remove the lamp cover by inserting a slotted screwdriver in the gap between the lamp cover and the door to pry them apart

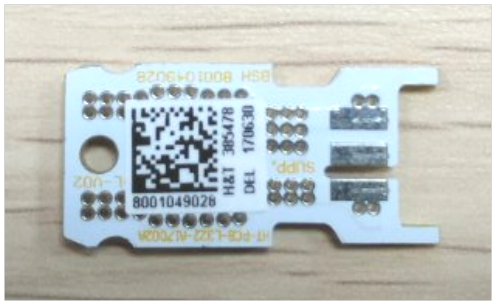


2. Disconnect the lamp terminal in the direction shown

3. Remove the lamp following the steps shown below



4. Zero-degree compartment lamp

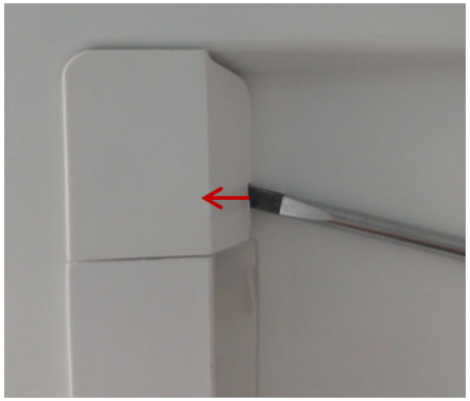


6.5.4 Installing the zero degree compartment lamp

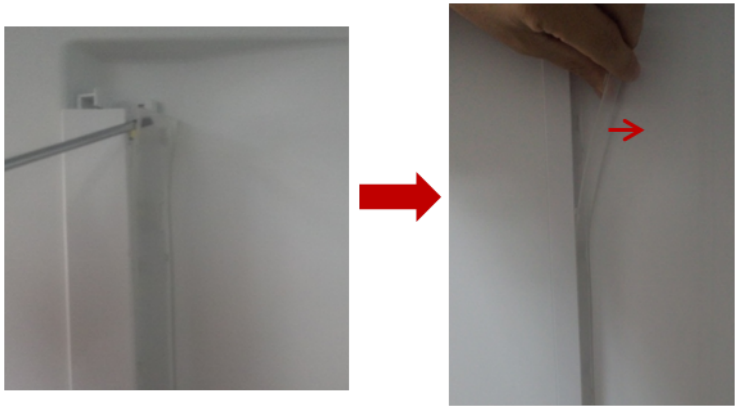
- Install the zero-degree compartment lamp in reverse order to removal

6.5.5 Removing the refrigerator side lamp

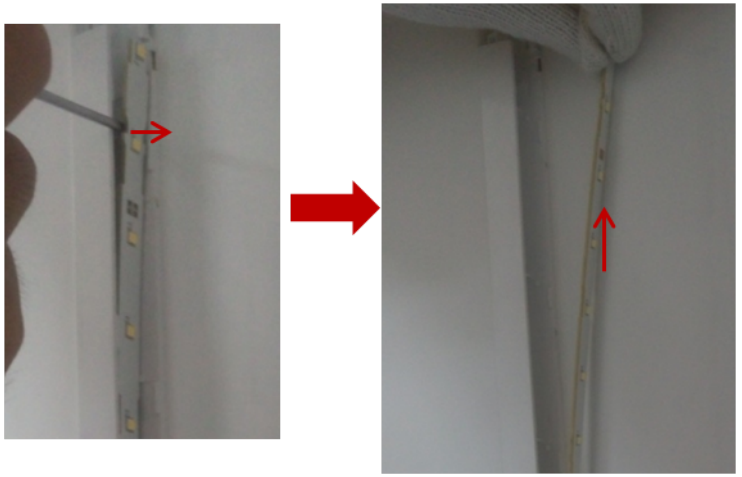
1. Use a slotted screwdriver to remove the side lamp upper retainer in the direction shown



2. Use a slotted screwdriver to create a gap on one side of the lamp cover and your other hand to remove the cover in the direction shown



3. Remove the side lamp panel in the same way



4. In contrast to removing/installing the lamp cover, the final step of removing/installing the LED lamp strip requires the lamp strip to be pulled out of its socket

6.5.6 Installing a refrigerator side lamp

- Install the refrigerator door side lamp in reverse order to removal

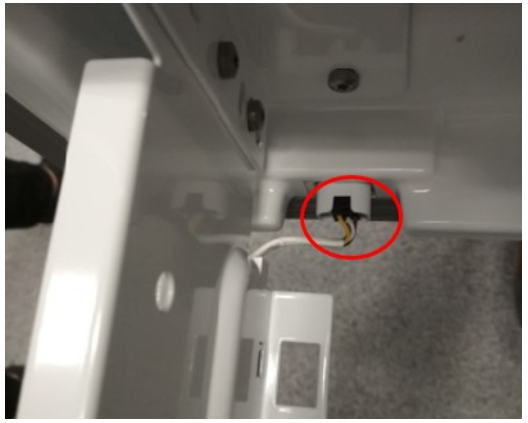
6.6 Removing/installing the tank chain assembly of the fresh food compartment

6.6.1 Removing the tank chain assembly of the fresh food compartment

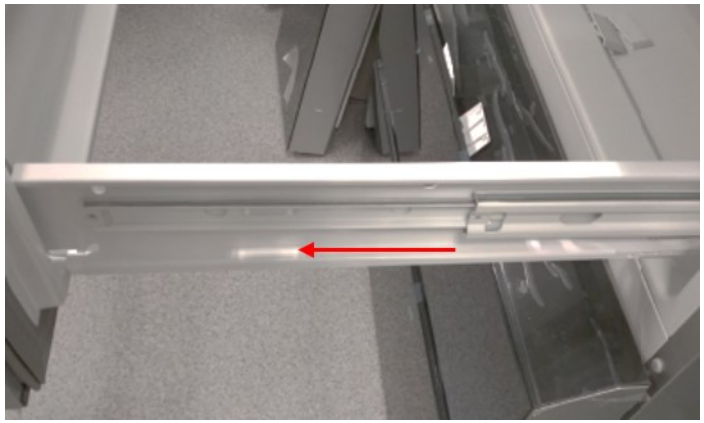
1. Remove the glass tray and 4 plastic tabs in each corner

2. Use a slotted screwdriver to remove the hook indicated by the arrow. You can then remove the plastic terminal cover on the door side

3. Unplug the connector terminal on the door side



4. Remove the rail protection strip as shown

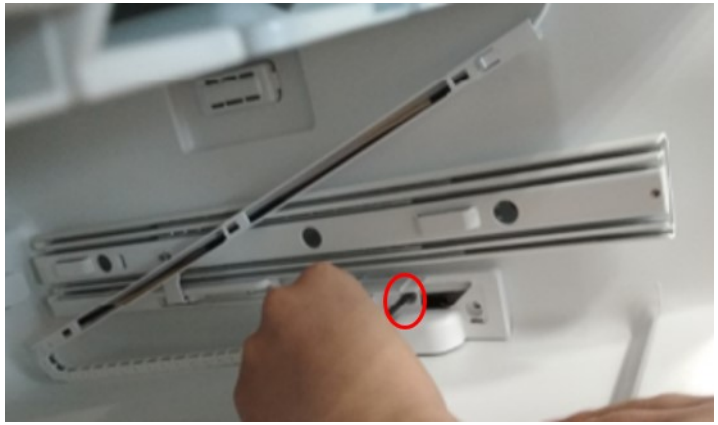


5. Remove the safety drawer

6. Use a small slotted screwdriver to pry open the screw cover as indicated below

7. Place the terminal shown below into the cover, to prevent the tank chain from twisting and deforming

8. Remove the tank chain fixing screw



9. Disconnect the terminal of the tank chain assembly and cabinet

6.6.2 Installing the tank chain assembly of the fresh food compartment

- Install the tank chain assembly in reverse order to removal

6.7 Replacing central partition 3 doors

Required tools:

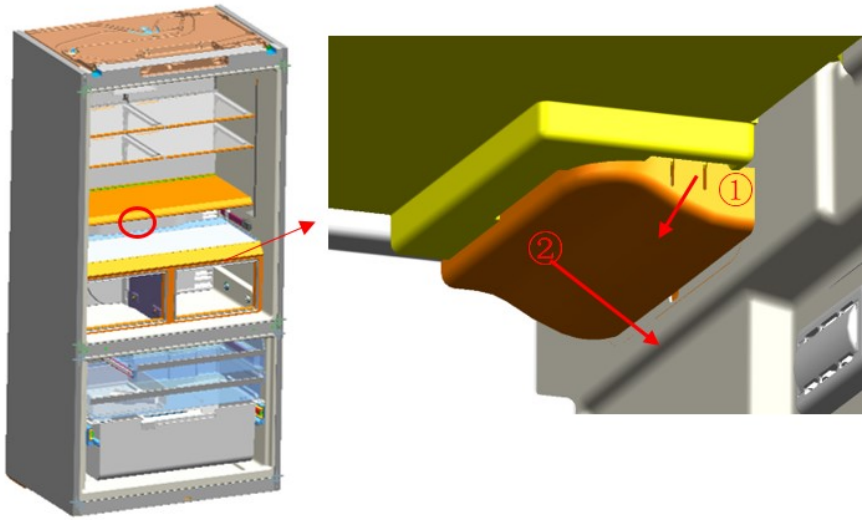
Slotted screwdriver Blade 5 mm x 0.8 mm x 100 mm [00340612]

Prerequisite:

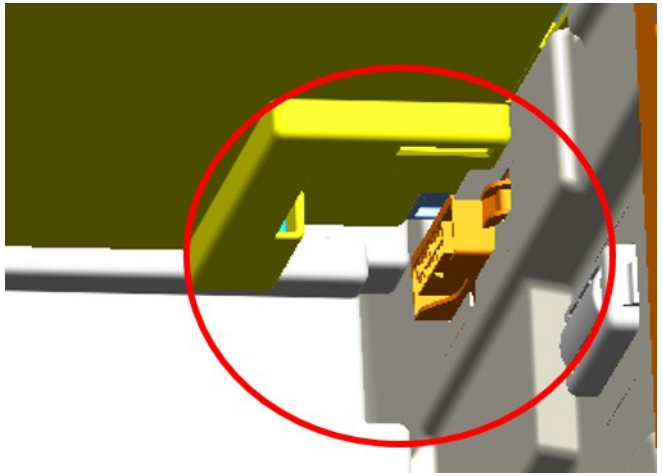
The appliance is AV1 model(3 doors)

6.7.1 Removal central partition

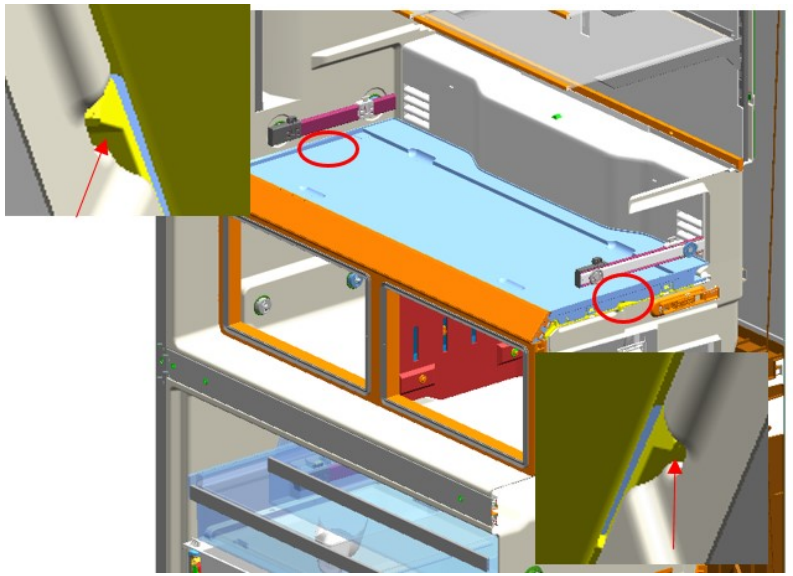
1. Remove cable cover of central partition, first support the cover mount using the screwdriver(1), then extract the cover towards the right(2).



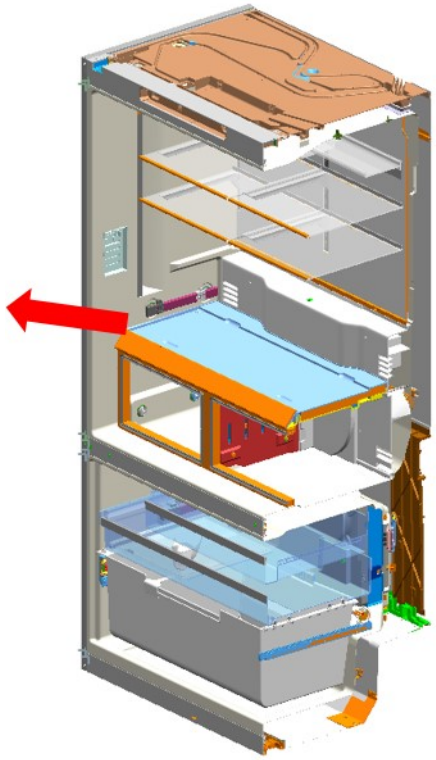
2. Disconnect cables



3. Dissemble the clips by following direction with straight screwdriver



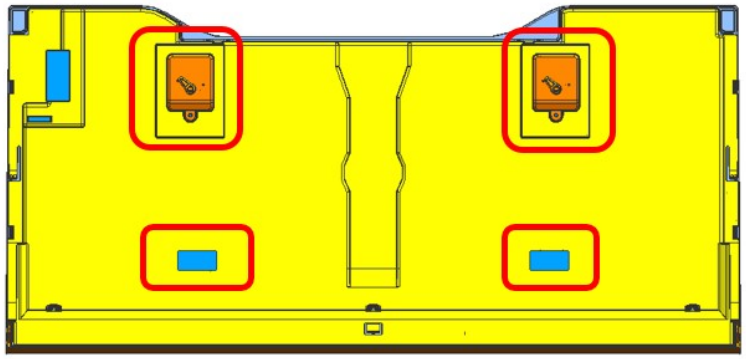
4. Remove the divider plate with following direction



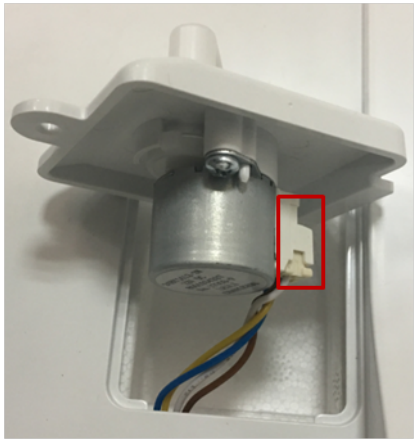
5. After remove the clips with small straight screwdriver, the display module can be dissembled.

6. Disconnect the terminals of display module

7. Dissemble the humidity motor with T20, VF light dissemble method is same as RC top light



8. Unplug the cable then the motor could be removal



6.7.2 Installing central partition

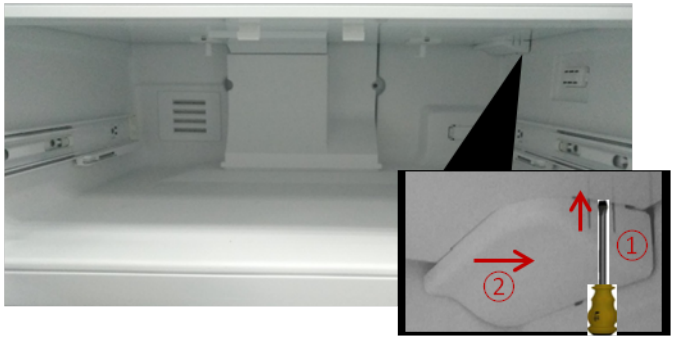
- Install central partition in reverse order

6.8 Replacing central partition and humitity adjustment motor 4 doors

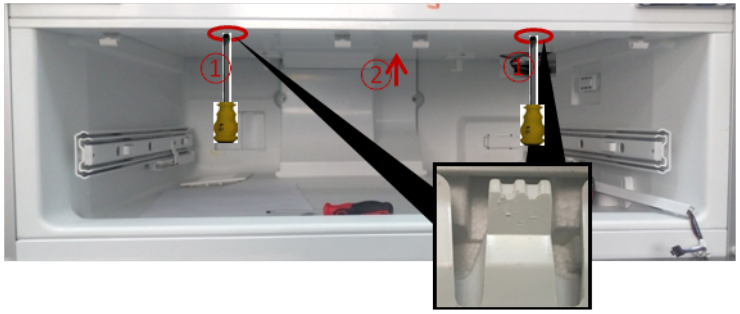
6.8.1 Removal central partition and humidity adjustment motor

1. Hold the rear of humidity adjustment cover with one hand and extract it with the other hand, remove another cover in the same way

2. Use a slotted screwdriver to remove the terminal cover, First support the cover mount using the screwdriver, then extract the cover towards the right, and finally unplug the terminals

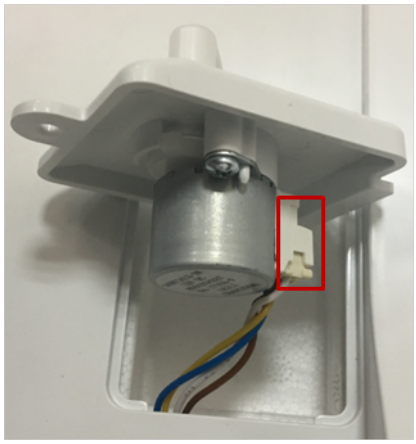


3. There are two mounts at the front of the central partition. First use a slotted screwdriver to support the two positions indicated in red and hold up the partition with the other hand in order to remove the central partition



4. Unscrew the fixing screws of the humidity adjustment motor using a T20 screwdriver

5. Unplug the terminals as shown in the figure below and take out the motor



6. Humidity adjustment motor

6.8.2 Installing central partition and humidity adjustment motor

- Install the central partition and humidity adjustment motor in reverse order to removal

6.9 Replacing damper

Required tools:

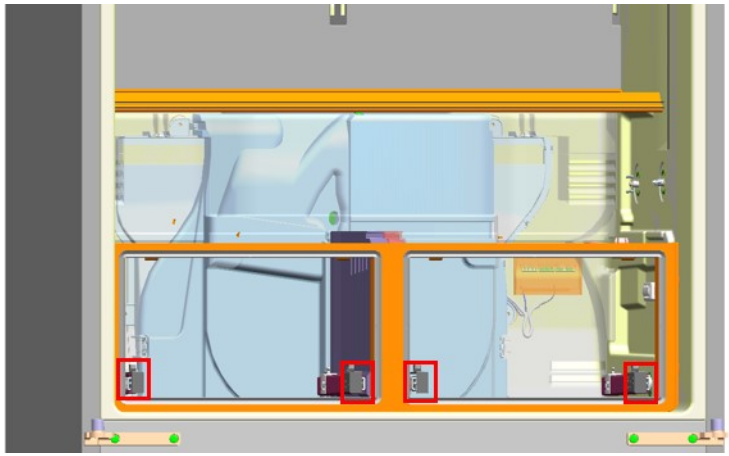
Slot screwdriver	Blade 3.5 mm x 0.6 mm x 100 mm, Protective Insulation 1000 V AC	[00340854]
Screwdriver Torx T20 with bore hole	100 mm, for screws with safety pin	[00340764]

Prerequisite:

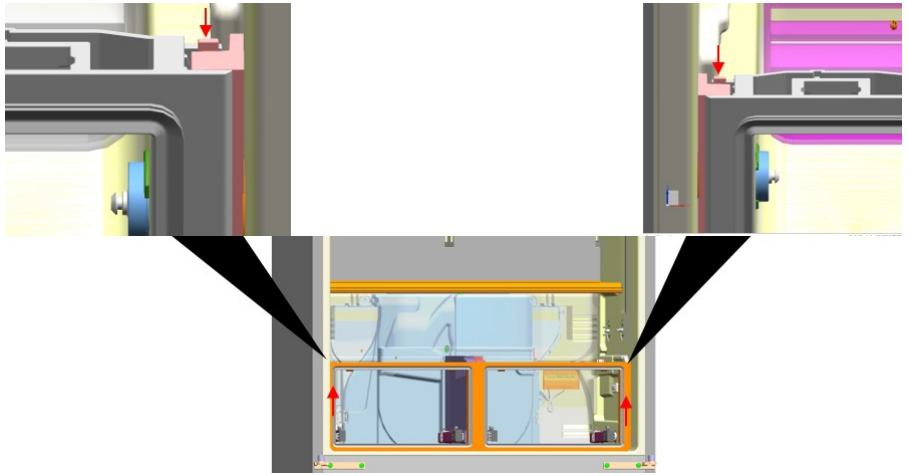
- Central partition has been removed
- The appliance is AV1 model(3 doors)

6.9.1 Removing damper

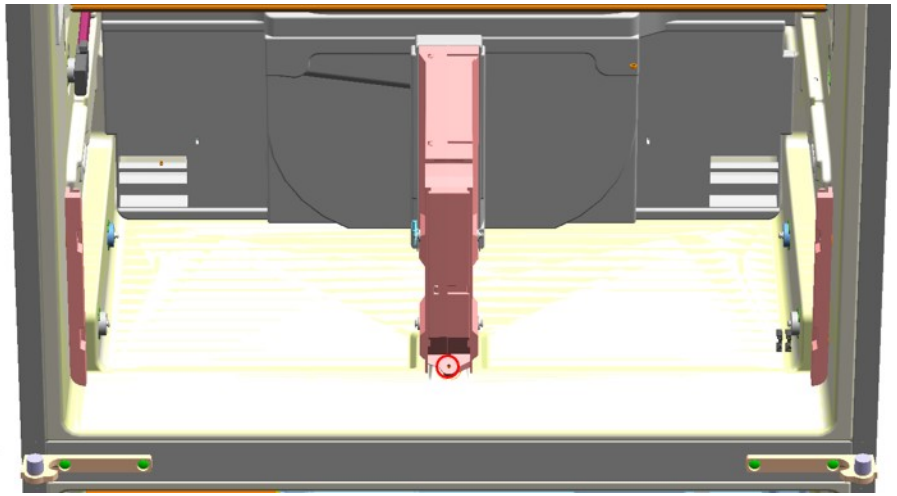
1. Dissemble below 4 rails with straight screwdriver



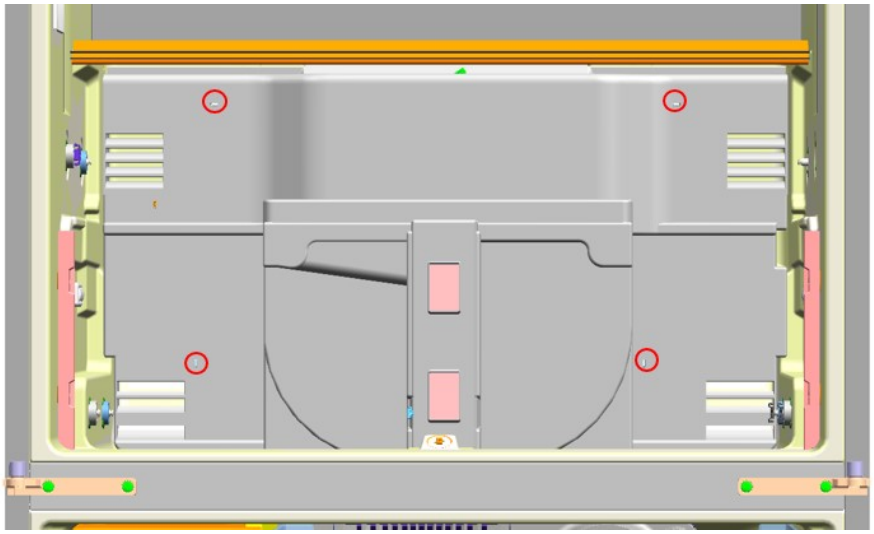
2. Release below 2 clips of frame, then remove the frame with following direction



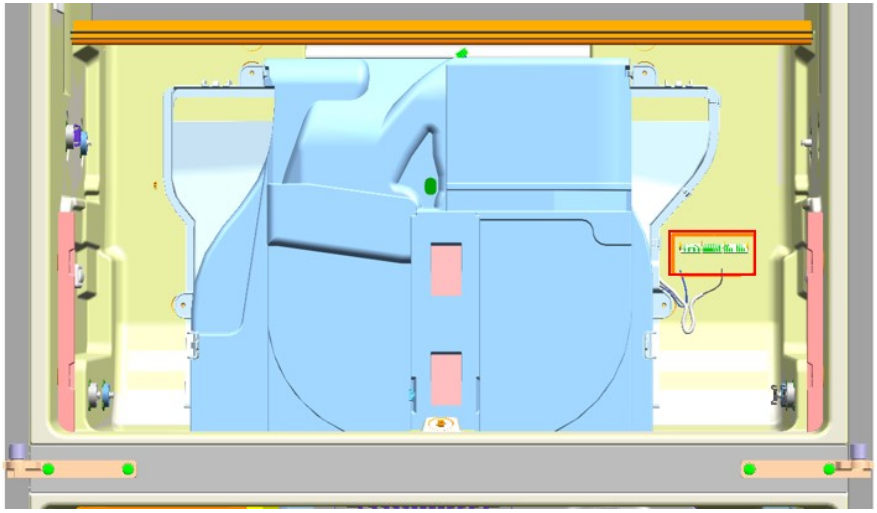
3. Remove division wall screw, the wall can be removal



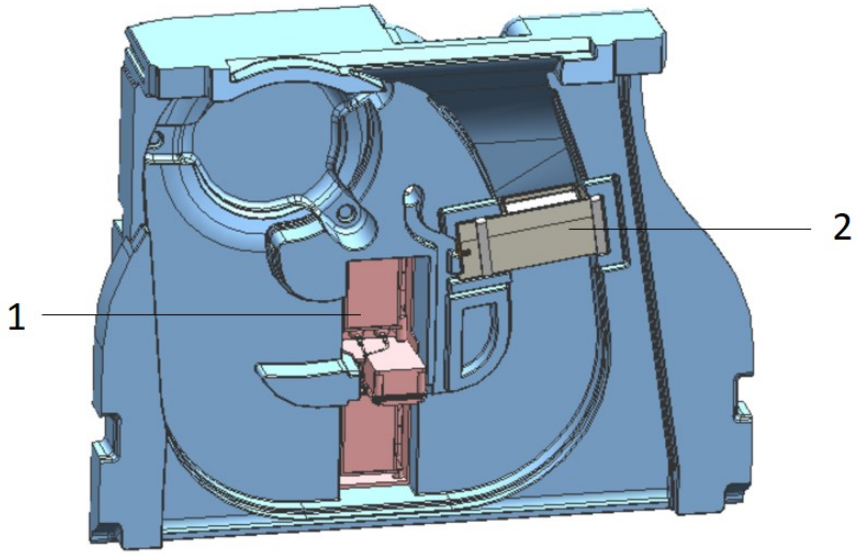
4. Release below 4 clips with small straight screwdriver, then pull the cover out of the appliance



5. Disconnect the cables(below marked red color)

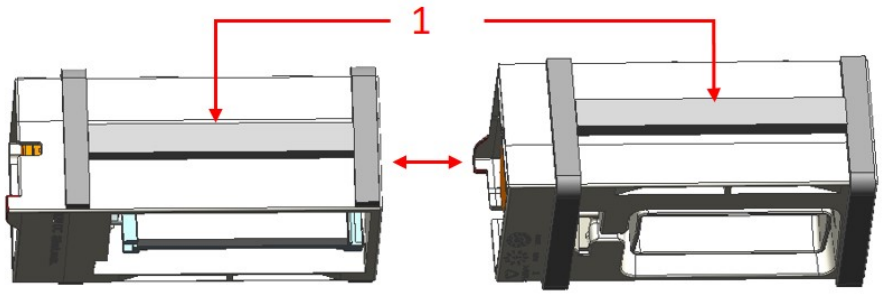


6. Then we can find the flaps below, 1 is double damper, 2 is single damper.

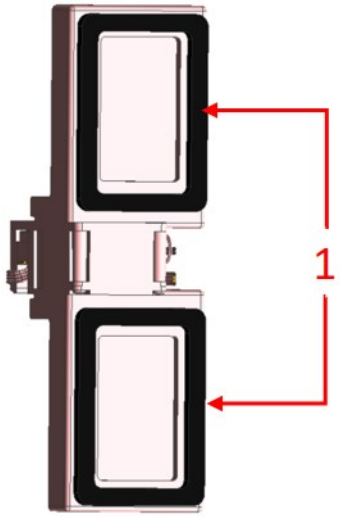


6.9.2 Installation damper

1. Install cover and division wall in reverse order, but when install dampers please follow below steps.
2. When assemble single damper, please order foam([10012271]) (below marked 1) to tape on both sides



3. When assemble double damper, please order foam [10012270](below marked 1)to tape on left/right sides



6.10 Replacing the evaporator cover

Required tools:

Slotted screwdriver	Blade 5 mm x 0.8 mm x 100 mm	[00340612]
Screwdriver Torx T20 with bore hole	100 mm, for screws with safety pin	[00340764]

Prerequisite:

- Central partition of the VF and freezer compartments has been removed

6.10.1 Removing VF evaporator cover

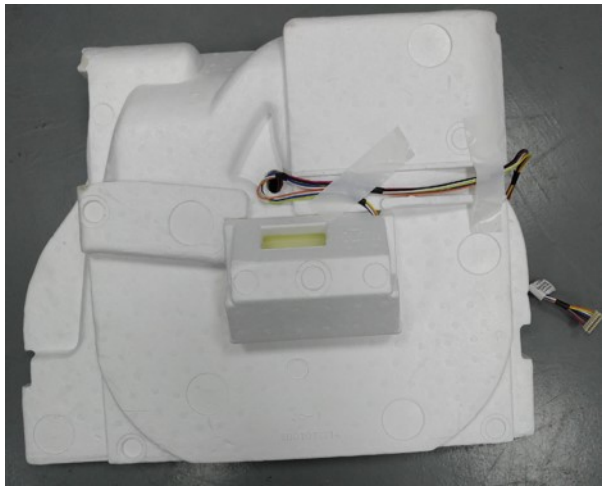
1. Pull the cover plate outward according to the position shown in the figure, you will hear the sound of "click", and then the cover plate can be removed

2. Disconnected VF temperature sensor

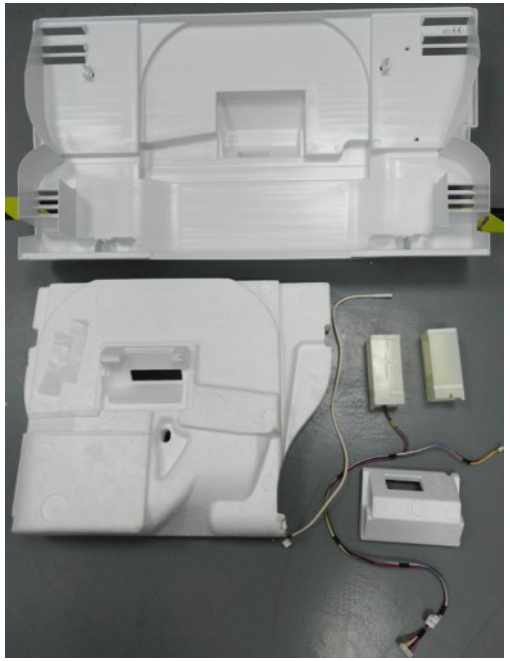
3. Disconnect cables of damper, fan, defrost heater and fuse, then VF rear cover and air channel can removed

4. Remove the door switch from the latch and remove the door switch in the direction shown

5. Remove the damper on both sides of the air channel



6. The picture below shows the damper, fan, defrost heater and fuse



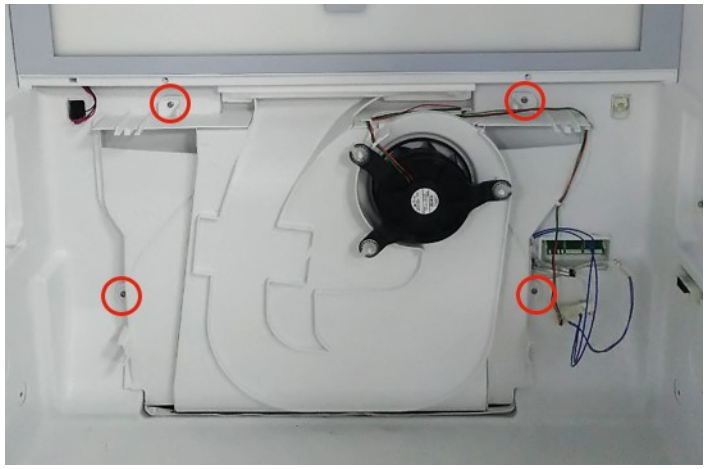
6.10.2 Installing VF evaporator cover

	Put the fan wire in harness clip, make sure the wire can not touch fan blade

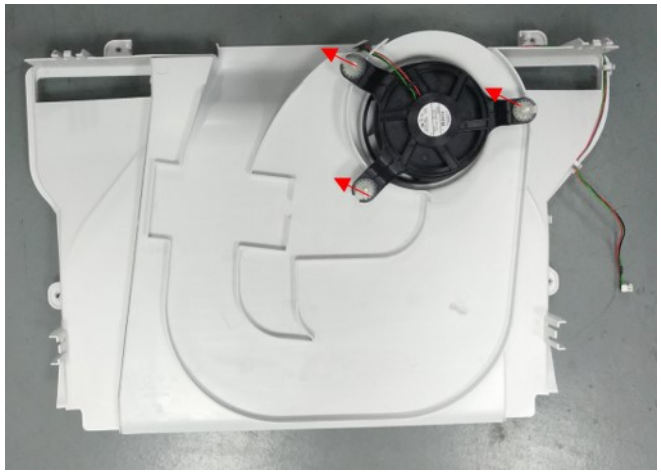
- ▸ Install the VF evaporator cover in reverse order

6.10.3 Removing VF evaporator fan

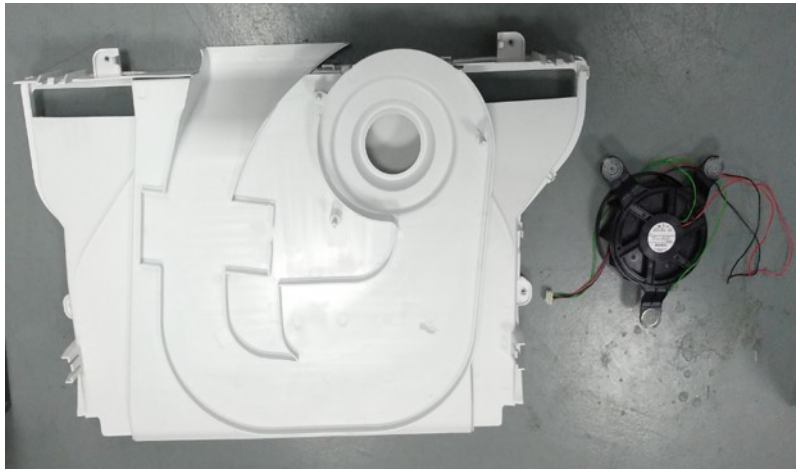
1. Removing 4 screws with T20 then pull evaporator cover out



2. Pull evaporator fan out as following direction



3. VF evaporator fan and air channel



6.10.4 Installing VF evaporator fan

	Put the fan wire in harness clip, make sure the wire can not touch fan blade

▸ Install VF evaporator fan in reverse order

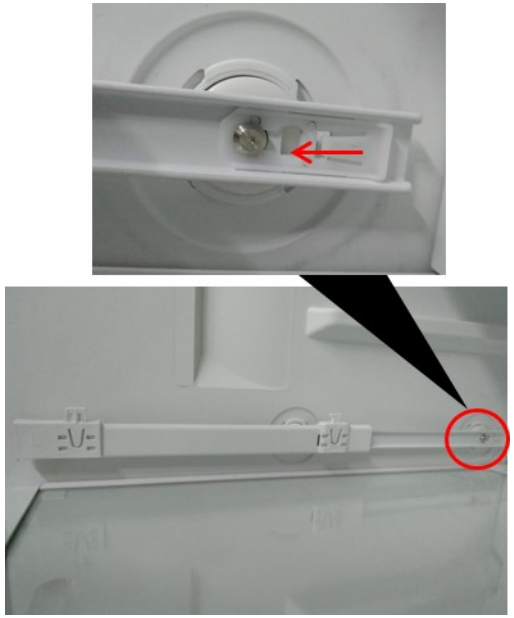
6.11 Replacing the refrigeration compartment rail fixing base

Required tools:

Side-cutting pliers	Total length 160 mm	[00340608]

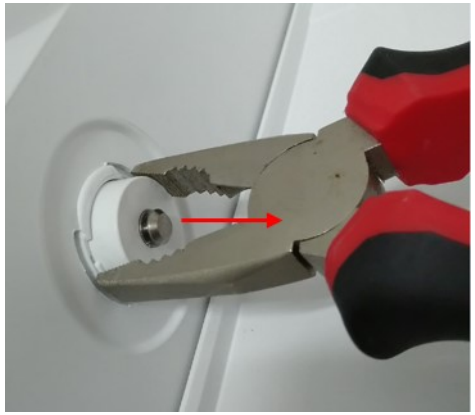
6.11.1 Removing the refrigeration compartment rail fixing base

1. Move the white mounting seat in the direction of the arrow. It is seated in position when you hear a click



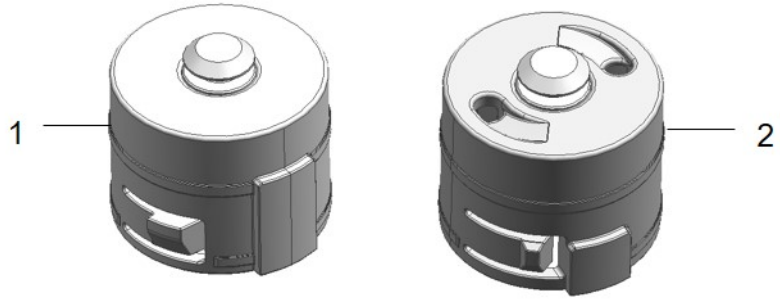
2. After loosening the fixing mount, move the entire rail forward slightly and shake it slightly to remove it. As shown in the figure, the rail fits on the mounting base by means of a keyhole-shaped hole

3. Use needle-nose pliers or wire cutters to remove the mounting base in the direction shown.

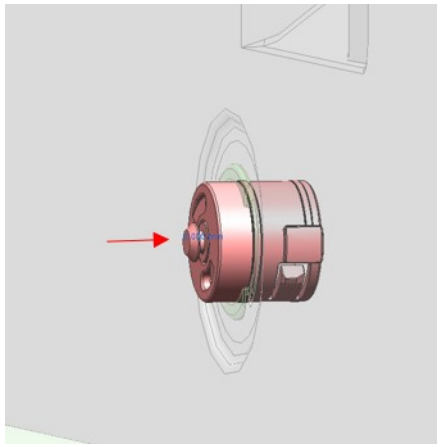


6.11.2 Installing the refrigerator compartment rail mounting base

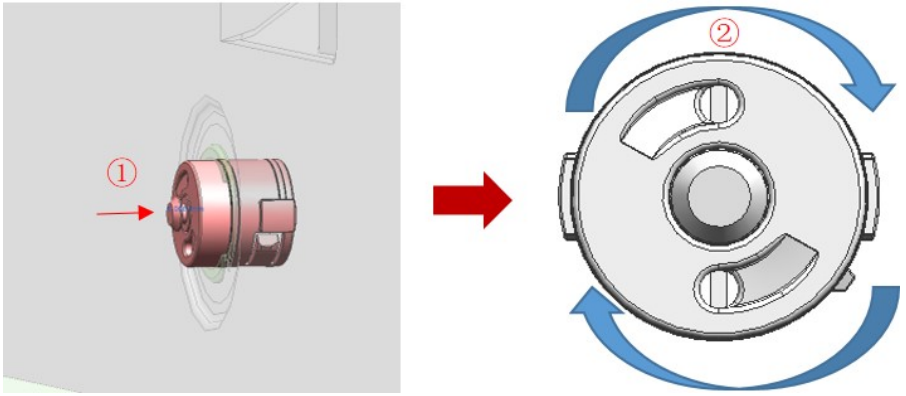
1. The fixed base outside the guide rail has been changed, and the installation method of old and new parts is different. In the figure below, 1 is the old base and 2 is the new base



2. When installing the old fixed base, install the base into the side wall of the refrigerator according to the direction shown in the diagram until you hear the sound of "pa" and the installation is successful



3. Installing a new base, in addition to install the base to the outside of the chamber wall in the direction shown by the graphic (1), still need to base clockwise rotate 90 °



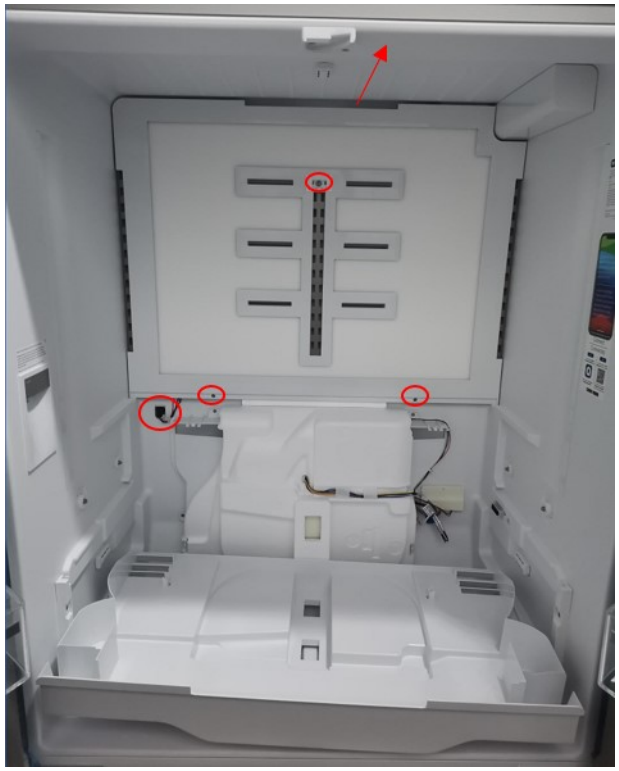
6.12 Replacing RC back light

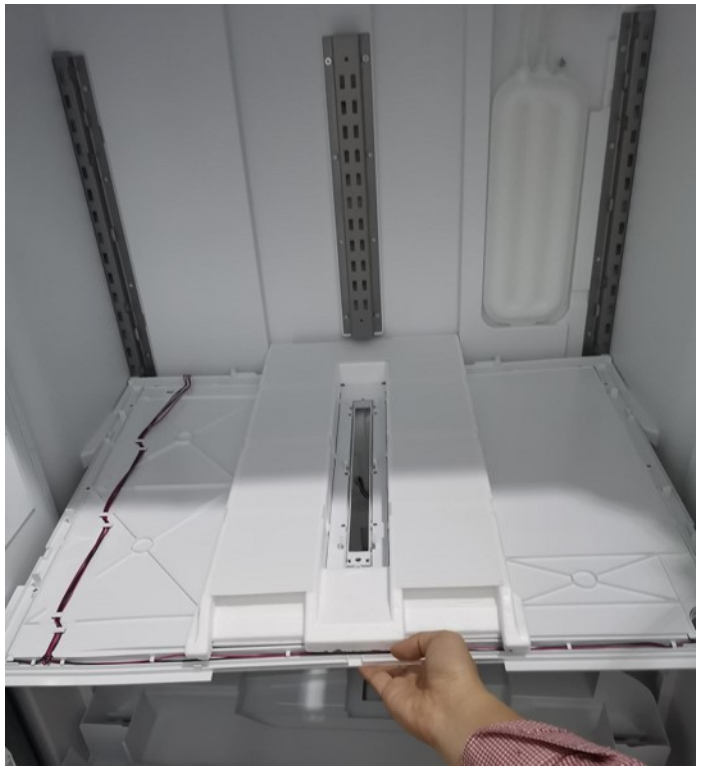
Prerequisite:

- Central partition removed
- Division wall removed
- Evaporator cover removed

6.12.1 Removing RC back light

- Disconnect RC back light cable, release 3 screws, then RC back light could be removable





6.12.2 Installing RC back light

- Installing the RC back light in reverse order

6.13 Replacing the motherboard

Required tools:

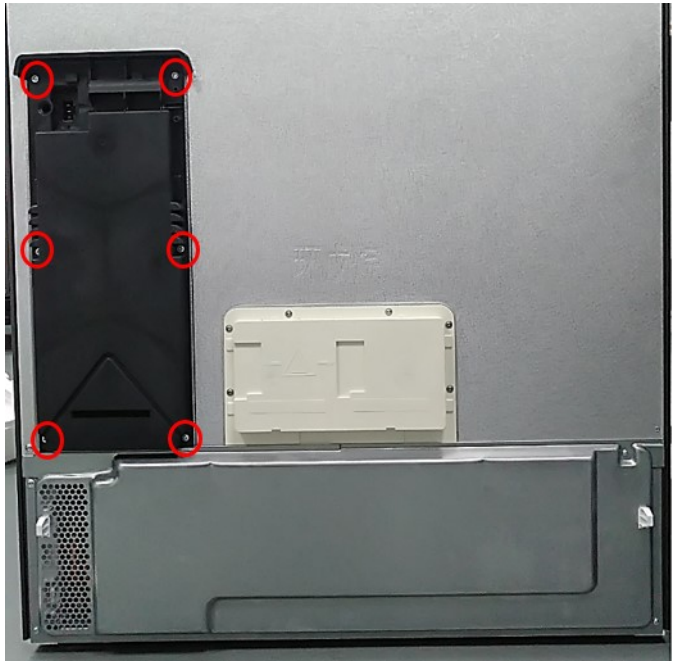
- Screwdriver Torx T20 with bore 100 mm, for screws with safety pin hole [00340764]

Prerequisite:

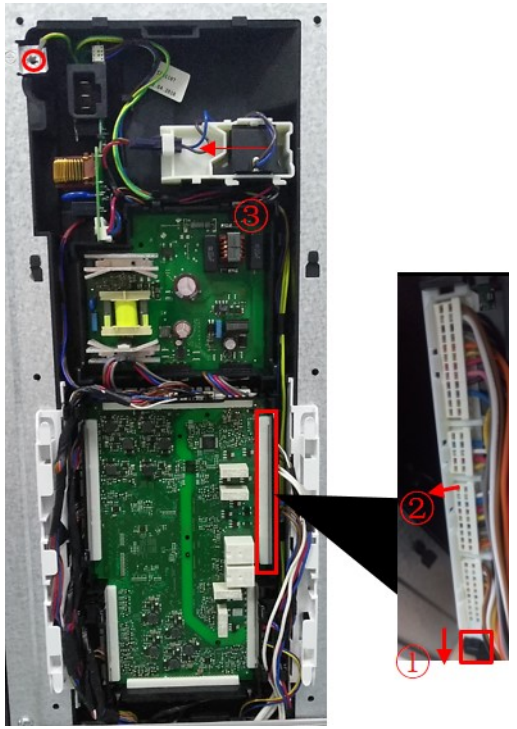
- Appliance is disconnected from the power supply

6.13.1 Removing the motherboard

1. Unfasten the flap fixing screws using a T20 screwdriver



2. Remove the ground wire and the terminals of the main board. When removing the terminals, first pull the black mount outwards (1), remove the terminal block (2) and extract the inductor component in the direction shown (3)



3. The following images respectively show the main control board, power board, power input module and inductor

Fig. 31: Main control board

Fig. 32: Power board

Fig. 33: Power supply input module

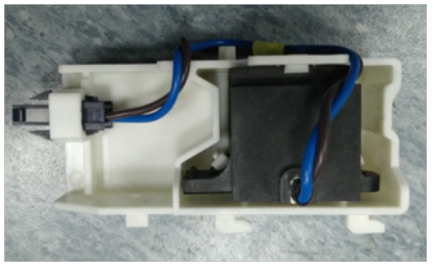


Fig. 34: Inductor

6.13.2 Installing the motherboard

- ▸ Install the motherboard in reverse order to removal

6.14 Replacing the inverter

Required tools:

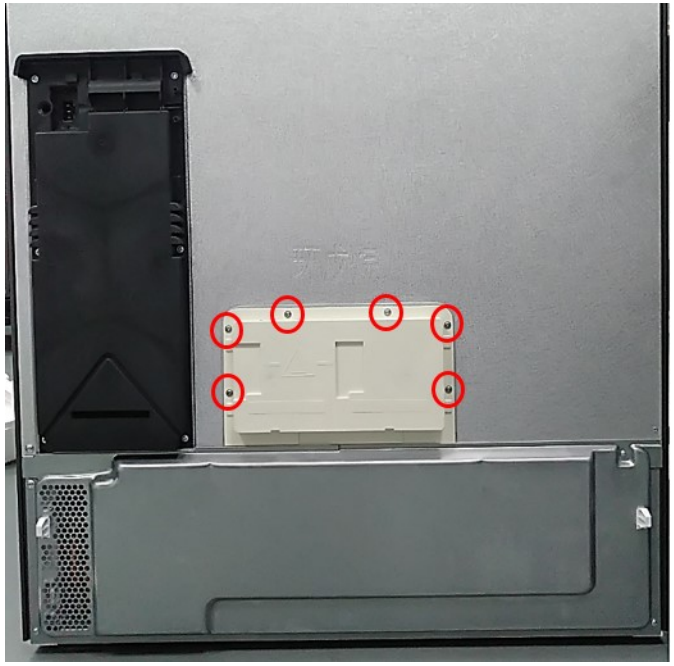
- Screwdriver Torx T20 with bore 100 mm, for screws with safety pin hole [00340764]

Prerequisite:

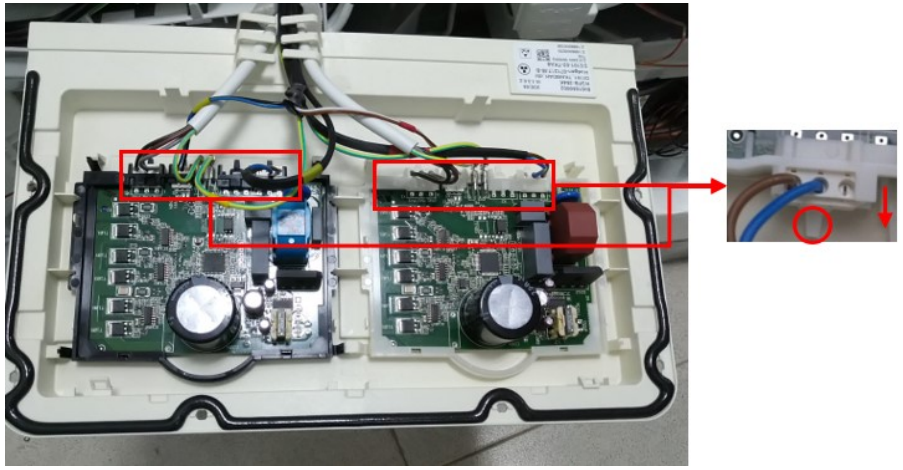
- Appliance powered off for 5 minutes
- Wear protective gloves

6.14.1 Removing the inverter

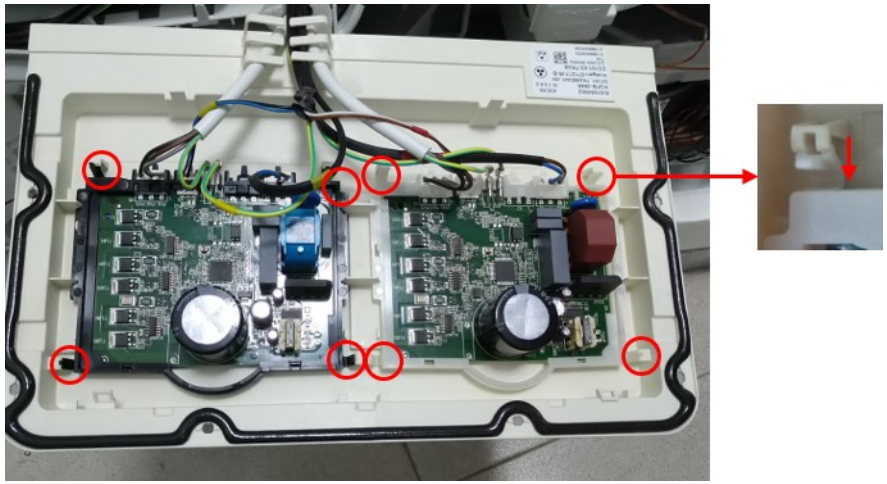
1. Unfasten the 6 screws on the inverter cover as shown, using a T20 screwdriver



2. Remove the three terminals and two ground wires on the inverter. When removing the terminals, you need to press down the baffle indicated in red in order to disconnect the terminals



3. After remove 8 clips from the cover, we can take out the inverter, left side is FC inverter, right side is RC inverter.
It is strictly prohibited to touch the inverter with bare hands during the replacement proce



6.14.2 Installing the inverter

	When installing the inverter, ensure the wires fixed in the right position

- Install the inverter in reverse order

6.15 Replace inverter(only for attached inverter)

Required tools:

- Flat-tipped screwdriver blade length max. 6 cm
- Phillips screwdriver PH4

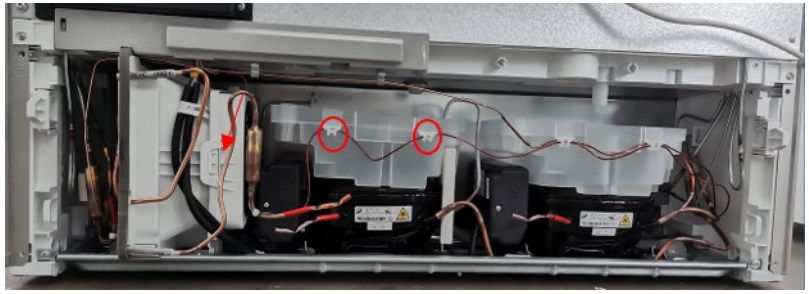
Prerequisite:

- Appliance powered off for 5 minutes
- The appliance assembled with attached inverter

6.15.1 Replace freezer chamber inverter

6.15.1.1 Dissemble freezer chamber inverter

1. Adjust the dryer tube to suitable position with following direction, release capillary tube from evaporation tray carefully



2. Dissemble condenser fan with following direction

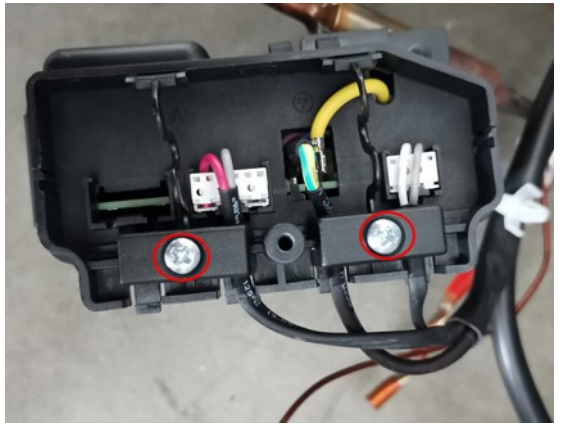
3. Release clips with evaporation tube and evaporation tray, then dissemble evaporation tray with upward direction

4. Remove the screw with phillips screwdriver, then dissemble inverter with upward direction

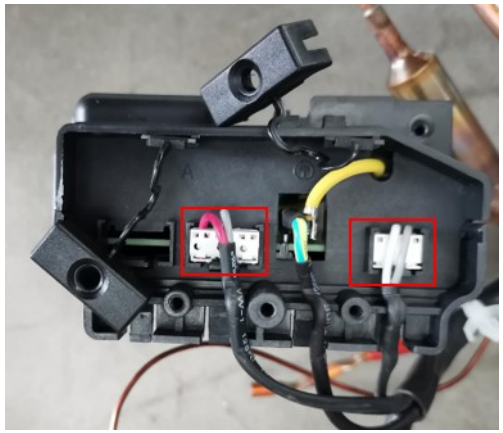
5. Disconnect cables between compressor and inverter with Flat tipped screwdriver

6. Remove the screw with Phillips screwdriver, then dissemble inverter cover

7. Remove wire fixation screws below with Phillips screwdriver



8. Disconnect the cables with Flat tipped screwdriver, then the inverter could be removed



6.15.1.2 Assemble freezer chamber inverter

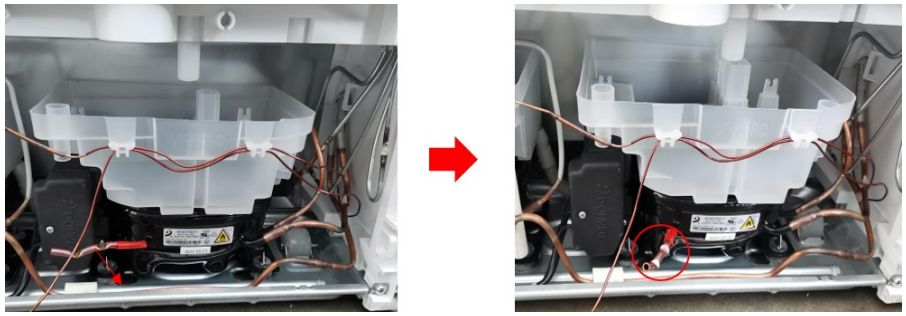
- Assembled the FC inverter with reverse order

6.15.2 Replace Fridge chamber inverter

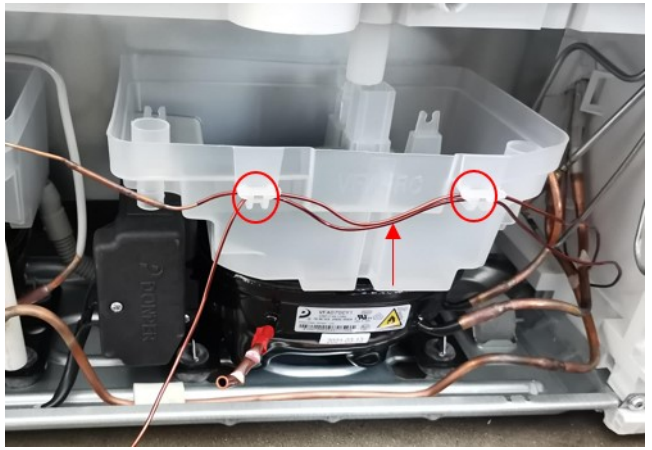
-

6.15.2.1 Dissemble fridge chamber inverter

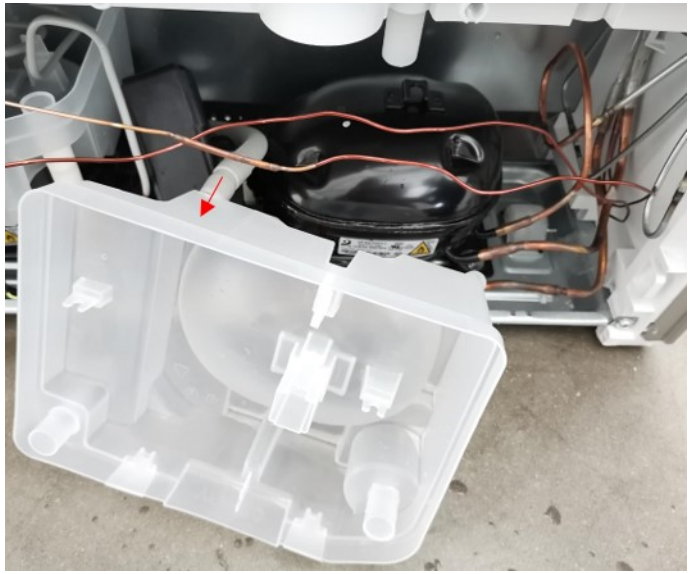
1. Adjust the cooling tube to suitable position with following direction



2. Release capillary tube from evaporation tray carefully, then dissemble evaporation tray with upward direction



3. Disconnect drain tube with following direction



4. Put drain tube in below position, then dissemble RC inverter, the dissemble method is same as FC inverter

6.15.2.2 Assemble fridge chamber inverter

Please make sure the drain tube in the below position, then assemble RC inverter with following steps:

- ▸ Assemble RC inverter with reverse order

6.16 Replacing the condenser fan

Required tools:

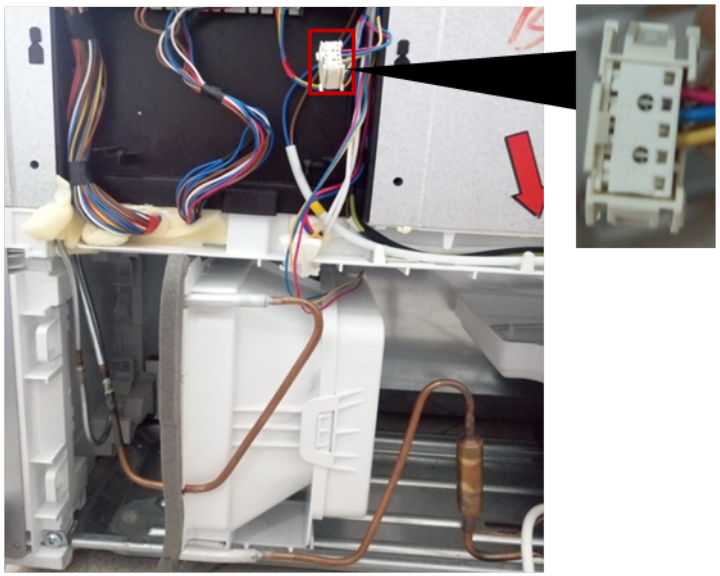
Slotted screwdriver	Blade 2.4 mm x 0.4 mm x 60 mm, in the kit [00341820]

Prerequisite:

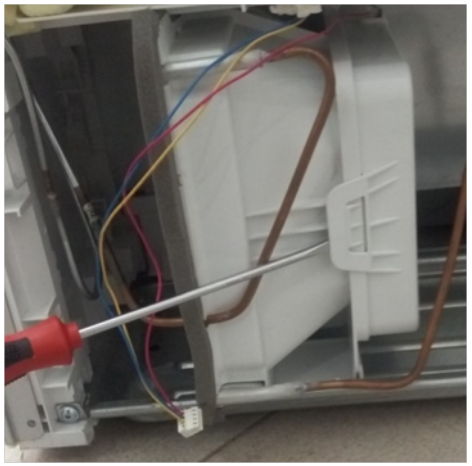
Appliance is disconnected from the power supply

6.16.1 Removing the condenser fan

1. Disconnect the condenser fan terminal

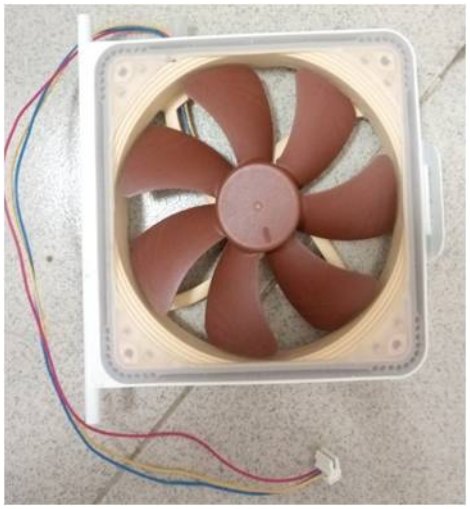


2. Use a slotted screwdriver to pry open the fan mounts



3. Remove the fan in the direction shown

4. Condenser fan



6.16.2 Installing the condenser fan

	Notes on installation ■ Fan wires fixed in the harness slot ■ Make sure the fan wire can not touch cooling tube ■ Make sure the fan wire can not touch fan blade

▸ Install the condenser fan in reverse order to removal

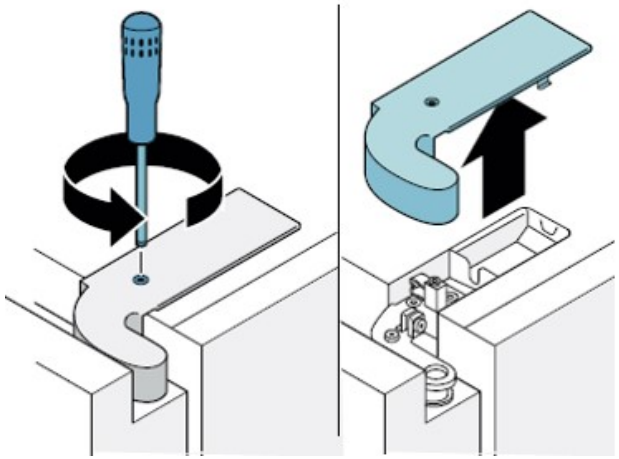
6.17 Adjusting the gap between the refrigerator doors

	The refrigerator doors have an adjustment range of +/-2 mm when the appliance leaves the factory

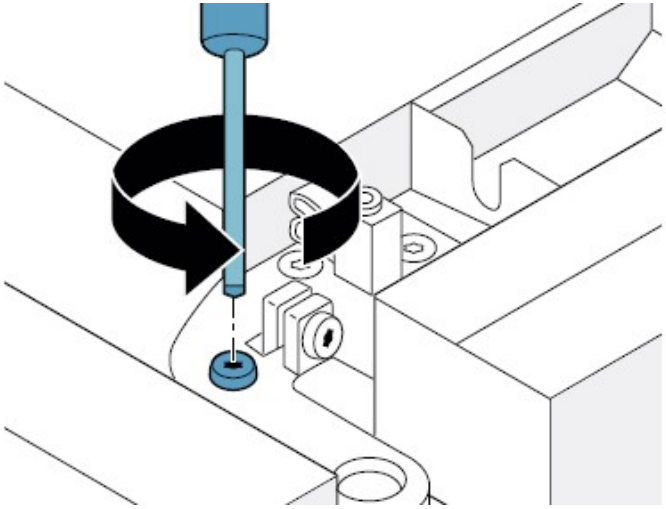
Prerequisite:

- The left and right refrigerator door gaps are not the same

1. Remove the screw T20 and cover cap on the door hinge



2. Loosen the safety screw.



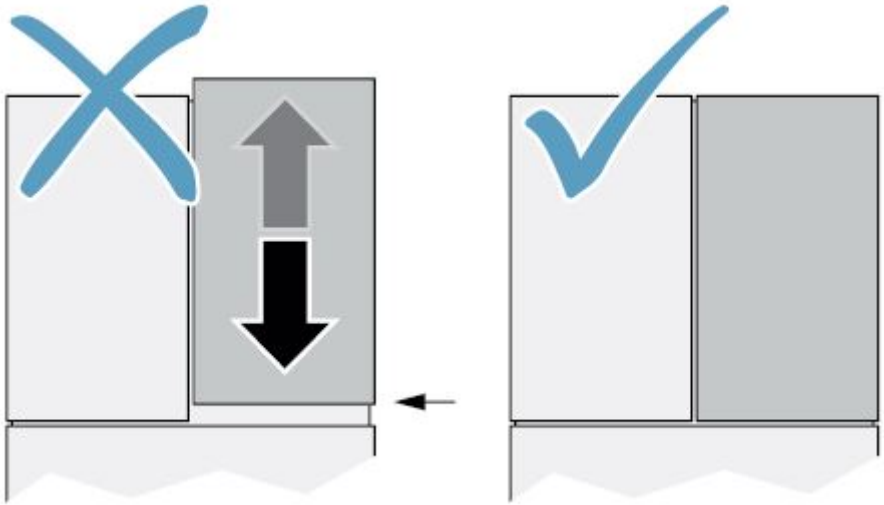
3. Turn the adjustment screw until the desired position is reached when the door is closed
   To move the upper end of the door outwards, turn clockwise.
   To move the upper end of the door inwards, turn anticlockwise.
4. To check the position, close the door and correct if necessary, tighten the safety screw again.
5. Fit the cover cap and screw in the screw T20 again

6.18 Adjusting fridge door height

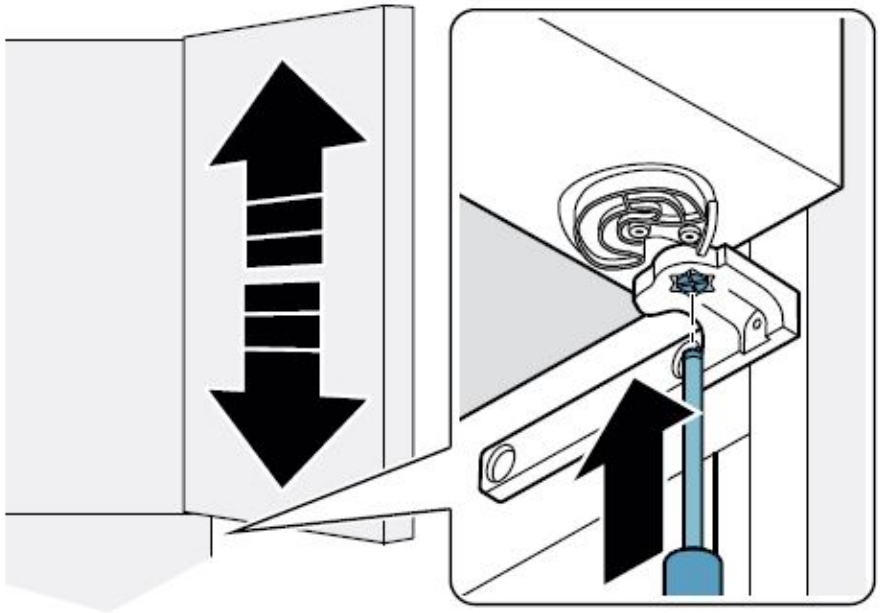
Required tools:

- Screwdriver Torx T20 with bore 100 mm, for screws with safety pin hole [00340764]

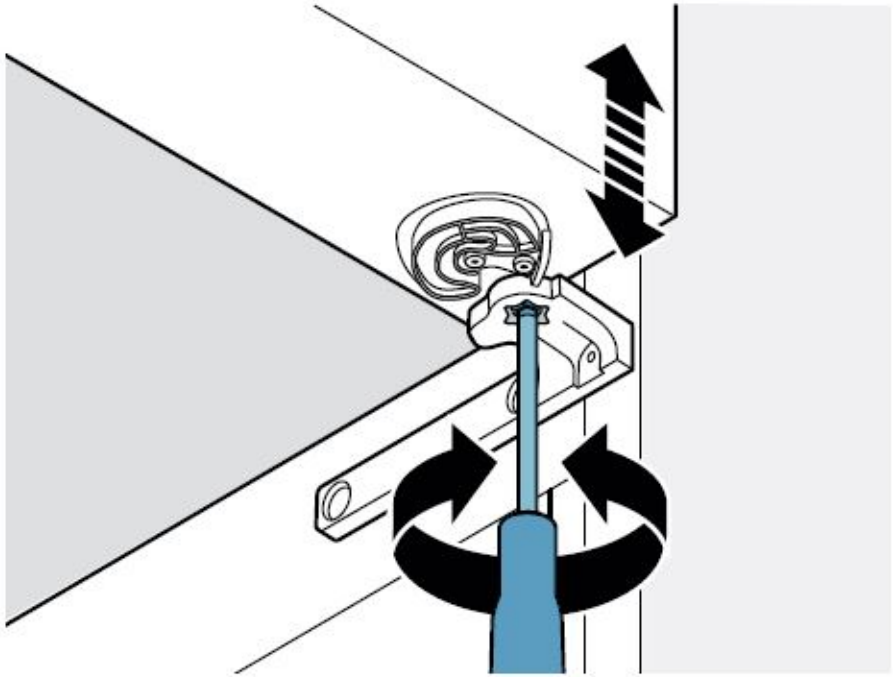
Fridge doors not in same height



1. Open the door and drawer.
2. Lift the door and insert a cross screwdriver into the door hinge from below.



3. Push up the adjustable part and turn by 60° until the desired position is reached.



The door height can be set at 2 levels, adjusted by 1/16" (1.5 mm) in each case. The higher level is followed by the lower. The adjustable part engages as soon as a position is reached.
To move the door up, turn clockwise.
To move the door down, turn counterclockwise.

4. To check the position, close the door and drawer

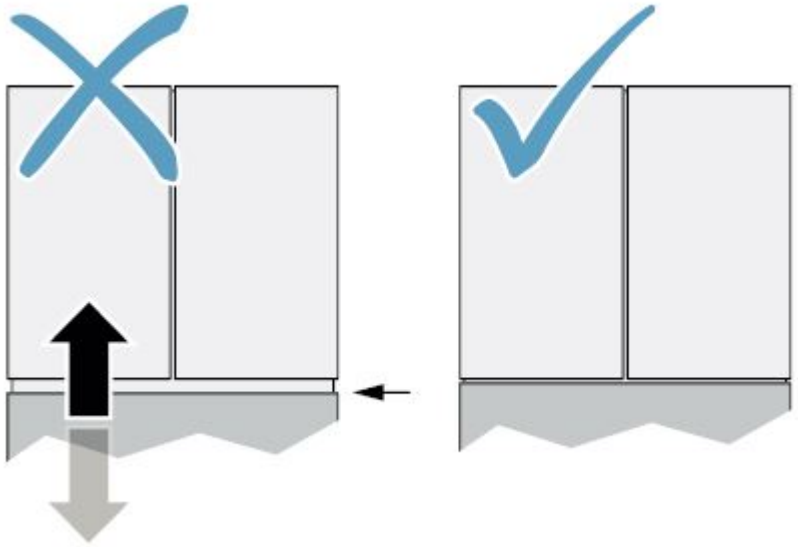
6.19 Aligning freezer/VF doors

Required tools:

- Screwdriver Torx T20 with bore 100 mm, for screws with safety pin hole [00340764]

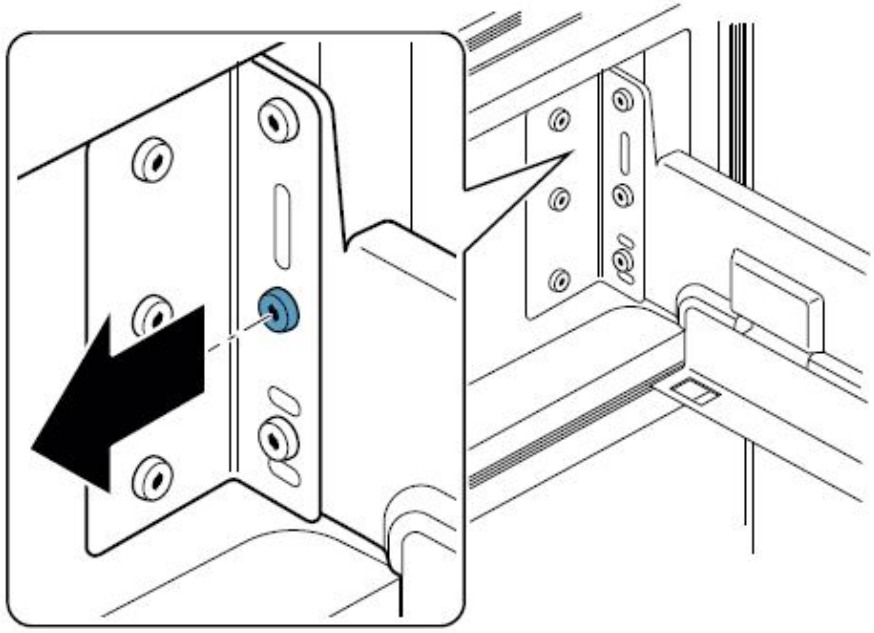
6.19.1 Aligning freezer/VF door height

You can align the drawer vertically:



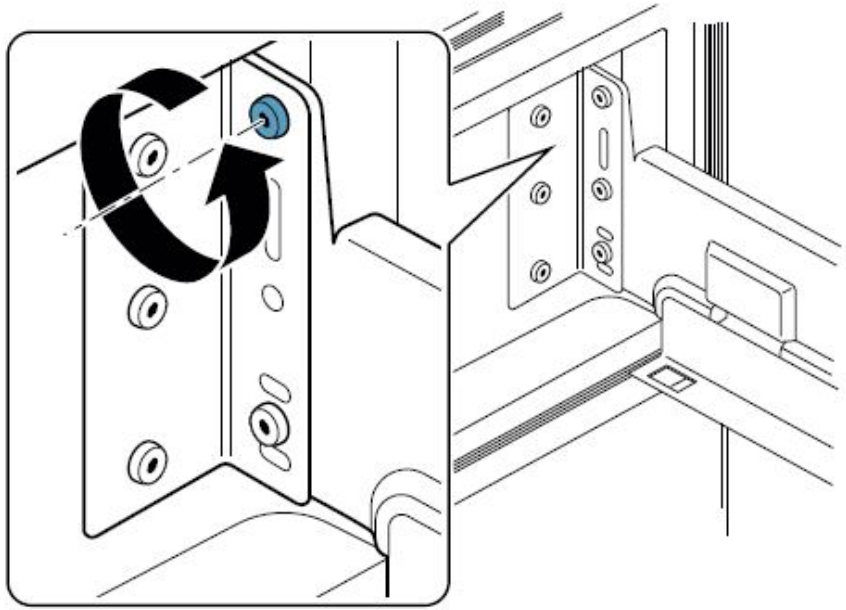
1. Open the drawer as far as it will go and remove the bin.
2. Remove the center screws on both sides.

- **Note:** If you want to reset the drawer to the factory settings, keep the screws.



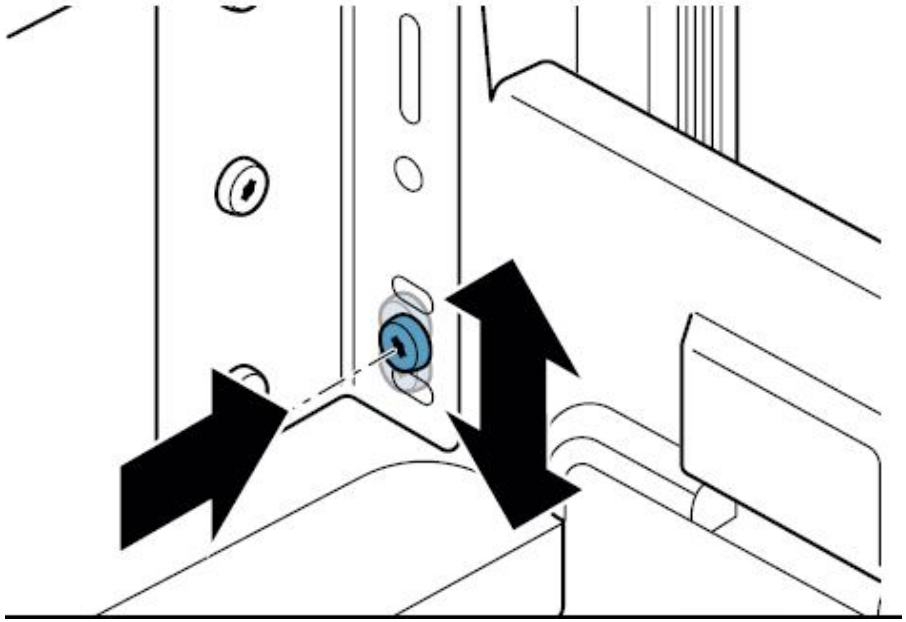
3. Loosen the upper screw on both sides.

- **Note:** Do not remove the screws.



4. Lift the drawer and remove the lower screws on both sides.
5. Move the drawer up or down to the required position and insert the lower screw in one of the available holes.

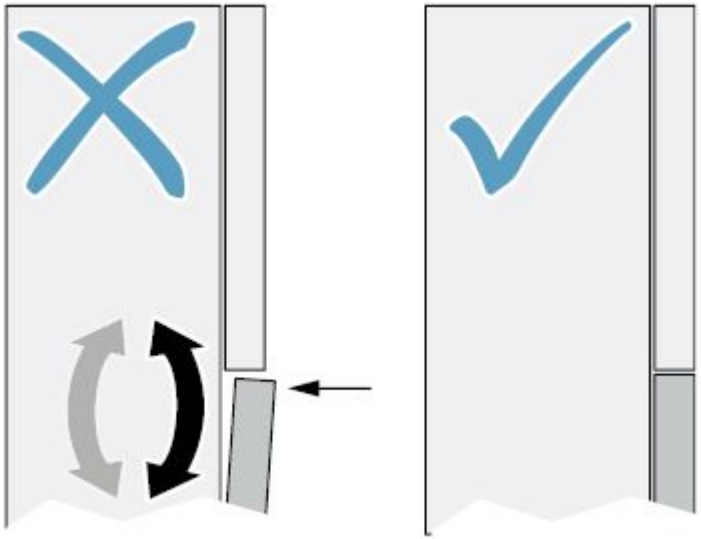
- **Note:** The drawer can be adjusted by 1/16" (2 mm) up and down.



6. Retighten all the screws.
7. To check the position, close the drawer and correct if necessary.

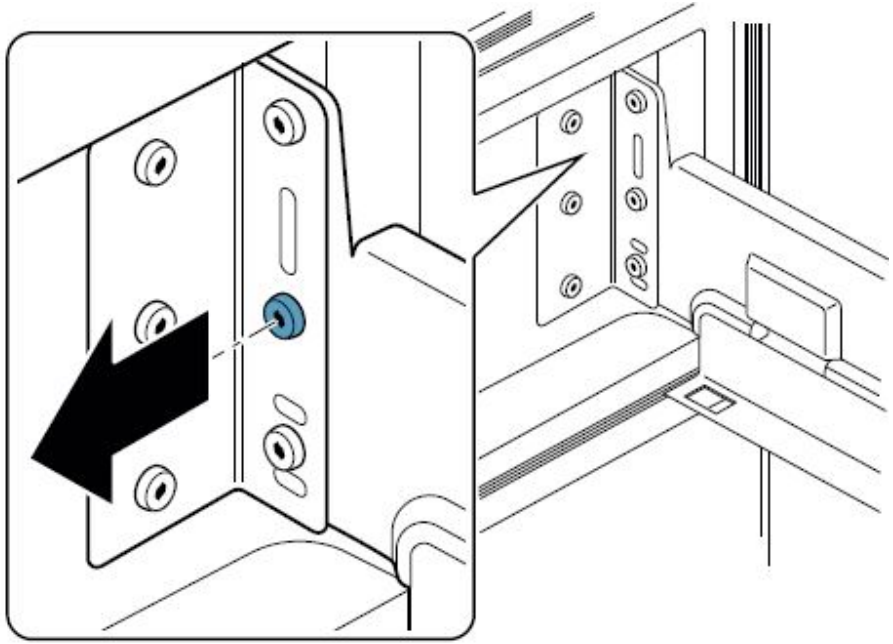
6.19.2 Aligning freezer/VF door angel

You can adjust the angle of the drawer:



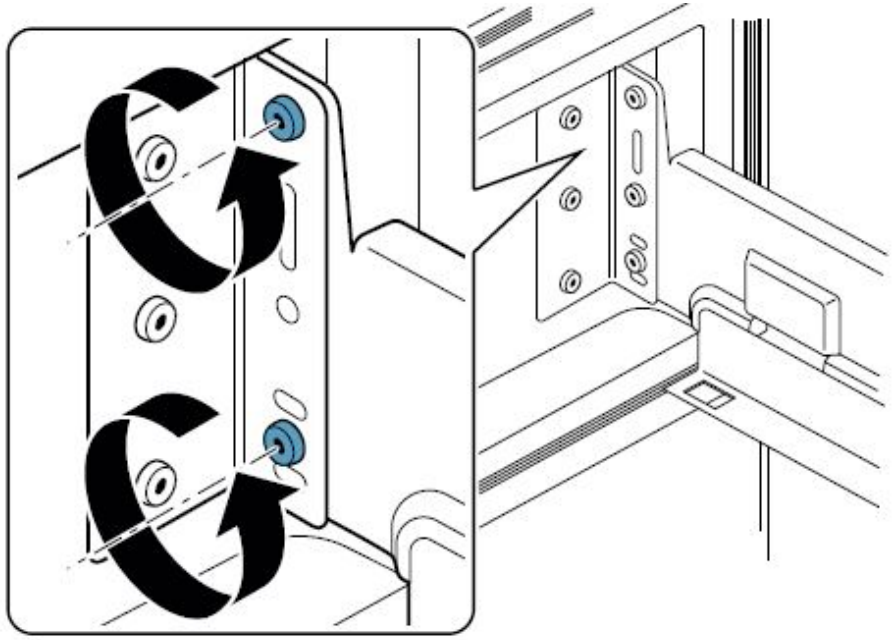
1. Open the drawer as far as it will go and remove the bin.
2. Remove the center screws on both sides.

- **Note:** If you want to reset the drawer to the factory settings, keep the screws.

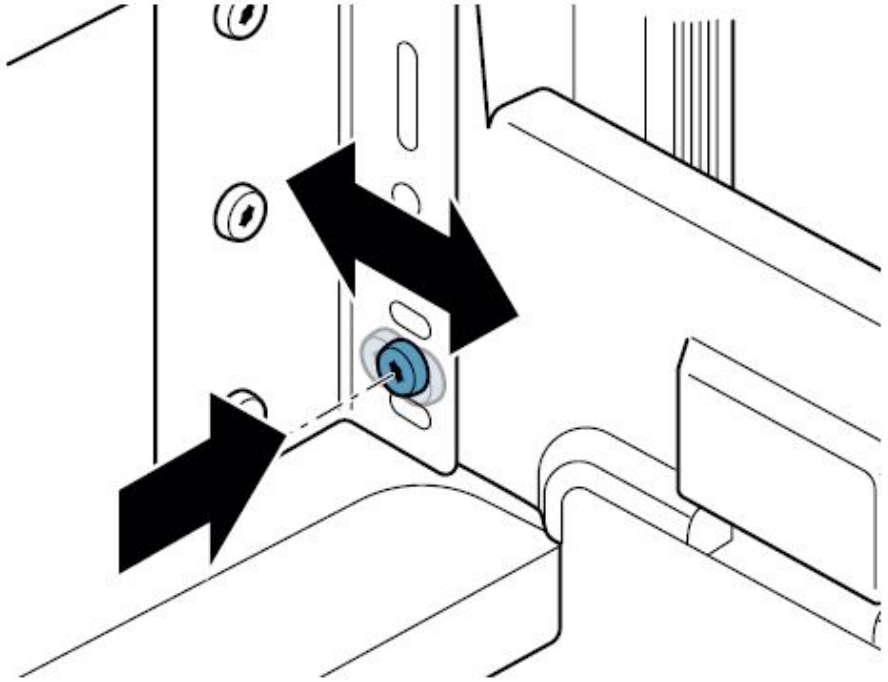


3. Loosen the upper and lower screw on both sides.

- **Note:** Do not remove the screws.



4. Move drawer on the lower screw to the left or right into the required position and tighten the screw.



5. Retighten all the screws.
6. To check the position, close the drawer and correct if necessary.

6.20 Fridge doors 90° open angle setting

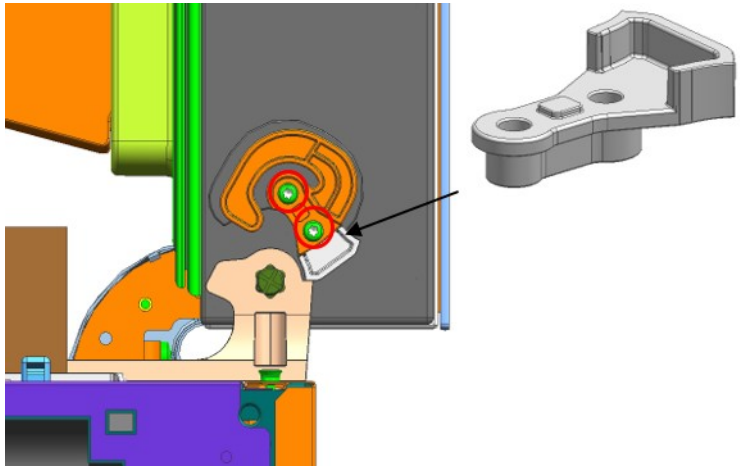
Required tools:

- Screwdriver Torx T20 with bore 100 mm, for screws with safety pin hole [00340764]

Due to space limited, if consumers want to open in 90°, please following below steps:

	90° door stopper not in the appliance , if consumer has requirement please order the spare part in Quick Finder

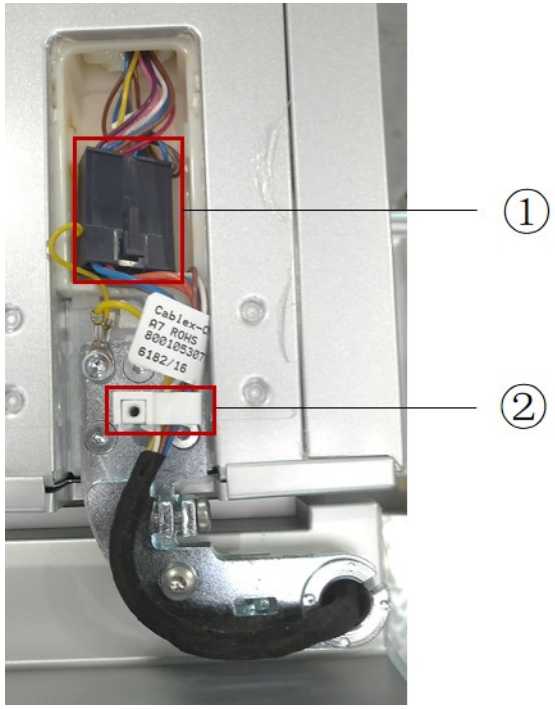
1. Open the fridge door at 90° and the drawer door
2. Remove the two screws from the door closer, dissemble original door stopper and install the 90° door stopper([10012733]) in the same position



6.21 Door hinge servicing precautions

	When removing/installing the refrigerator door during servicing, check each wiring harness when installing the hinge cover, in order to prevent the wires from being crushed or damaged

1. Make sure that connector □ is firmly connected



2. The wiring harness near the hinge must be placed under the harness clamp □.
   Make sure that the harness is not positioned over the screw holes.

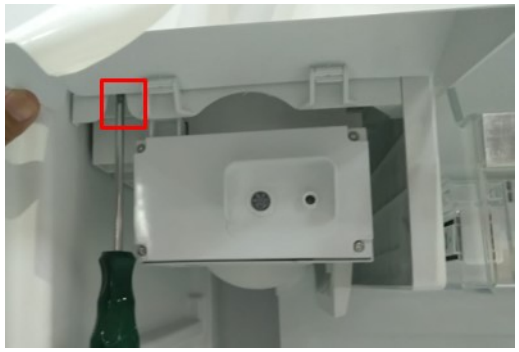
6.22 Replacing ice maker

Required tools:

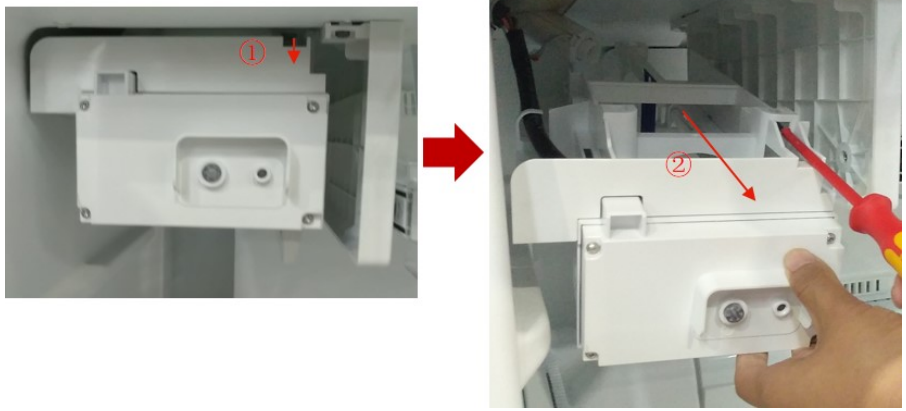
- Screwdriver Torx T20 with bore 100 mm, for screws with safety pin hole [00340764]

6.22.1 Removal ice maker

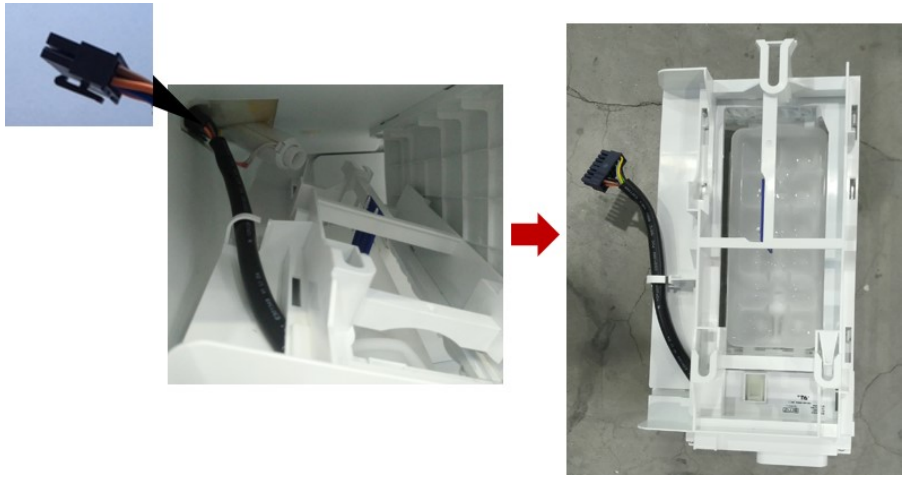
1. Release below screw with T20, remove the ice maker cover



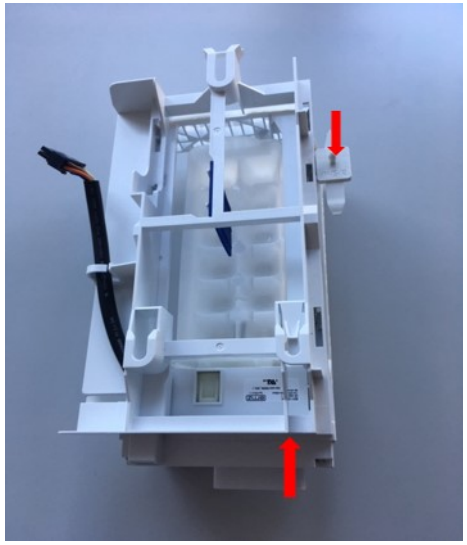
2. Press the hook with straight screwdriver(1) ,following below direction(2) pull the ice maker out



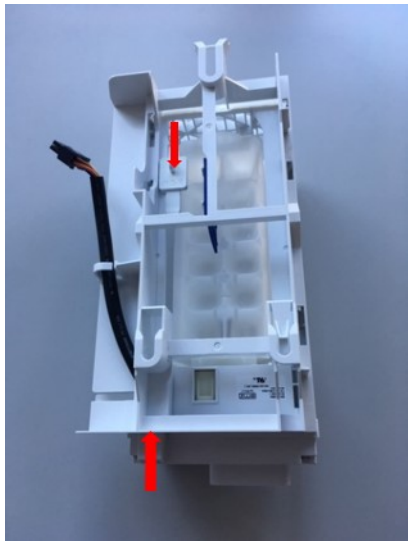
3. Disconnect the cable and remove the ice maker



4. Push the tool([00342180]) downwards to release the snap hook on one side and push the frame to the rear of the ice maker.

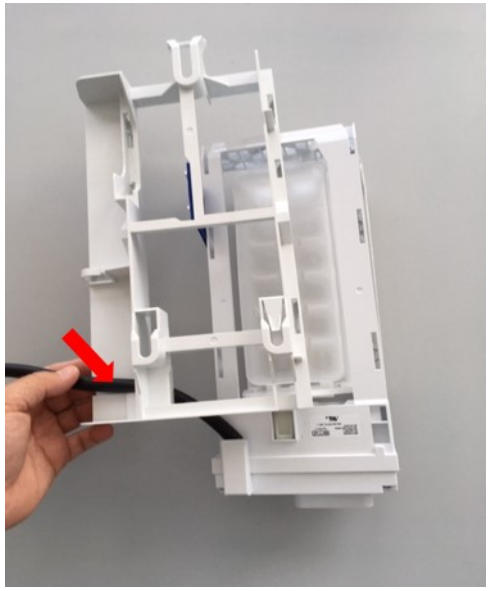


5. Do the same on another side, after both sides are released, push the complete frame to the rear side of the ice maker to separate the frame from the ice maker

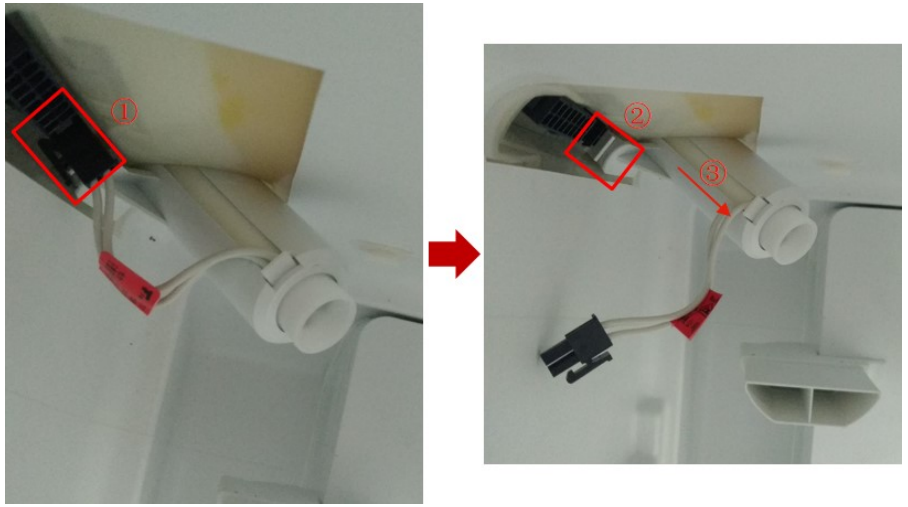


6. Pull out the connection wire of the snap hook

7. Guide the wires through the slot



8. Disconnect water nozzle cable(1), press snap ring(2) then pull the water nozzle out from appliance(3)



9. Disconnect water tube with water nozzle, remove the water nozzle from the appliance

6.22.2 Installing ice maker

- Install the ice maker in reverse order

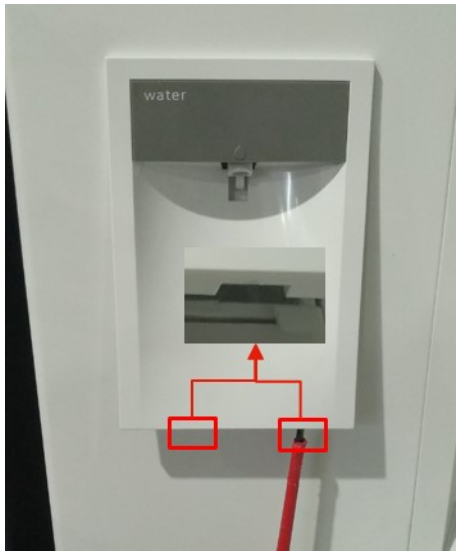
6.23 Replacing water dispenser

Required tools:

- Screwdriver Torx T20 with bore 100 mm, for screws with safety pin hole [00340764]

6.23.1 Removal water dispenser

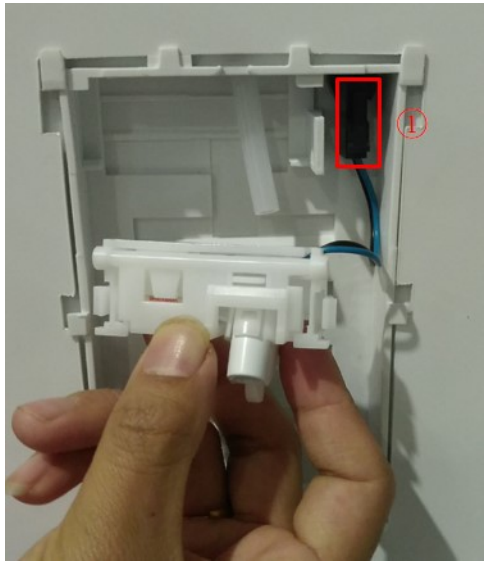
1. Use a screwdriver to remove the bottom of the lid from the appliance



2. Upward move the cover(1),then the cover could dissemble(2)

3. Hold the part in the picture to the left(1),remove the water dispenser as following direction(2)

4. Disconnect the cable(1),water dispenser could dissemble



6.23.2 Installing water dispenser

- Install the water dispenser in reverse order

6.24 Replacing quick connector

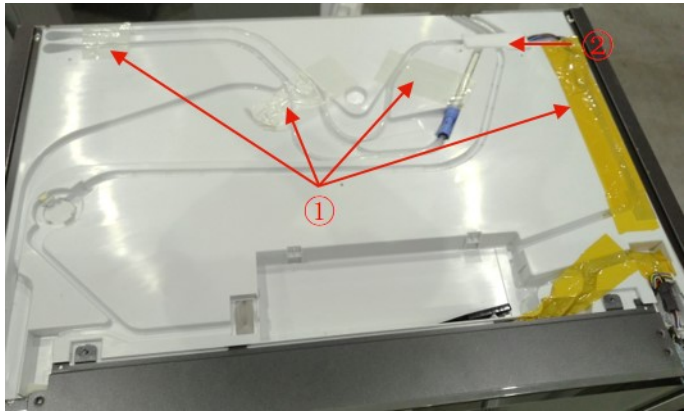
Required tools:

- Phillips screwdriver PH2

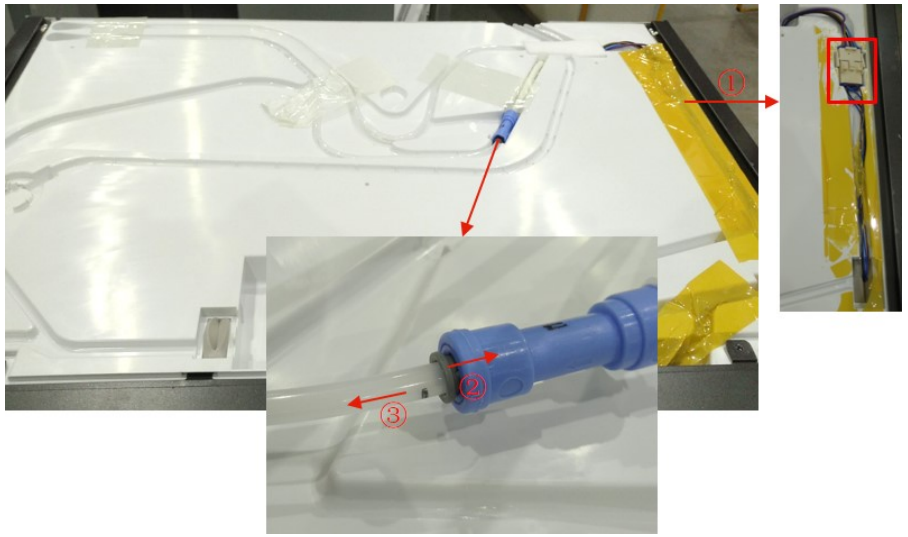
6.24.1 Remove quick connector

1. Remove the 5 screws from the top cover of the unit. Remove the top cover

2. Remove the tape(1), make water tube loose and remove the form (2)



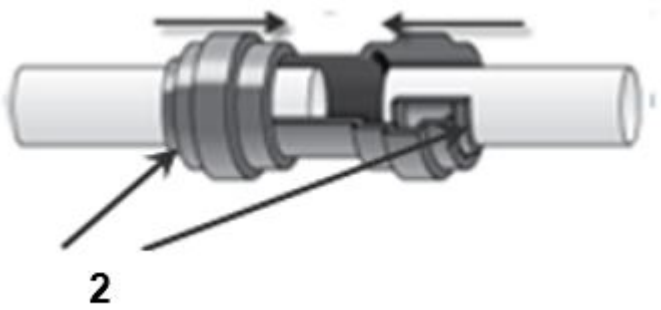
3. Remove the water tube from the connector by depressing the lock rings (2) pull both tubes out of the connector (3),Disconnect water valve connector(1)



6.24.2 Installing quick connector

1. Apply(1) “Food Grade” silicone (Part # 422313) to both exposed tubing ends

2. Depress locking rings(2) and re-Insert tubes, pull gently to insure sealing



3. Connect water valve connector and install top cover in reverse order.

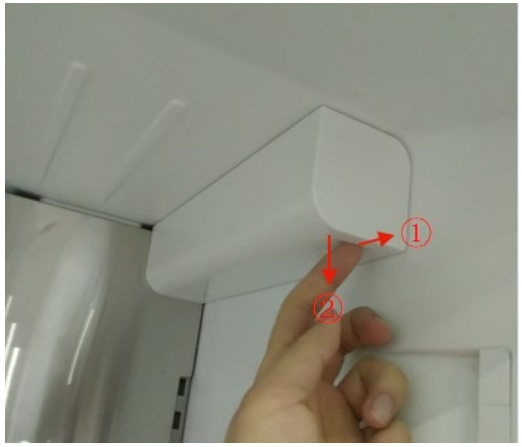
6.25 Replacing water tank and valve

Required tools:

- Screwdriver Torx T20 with bore 100 mm, for screws with safety pin hole [00340764]

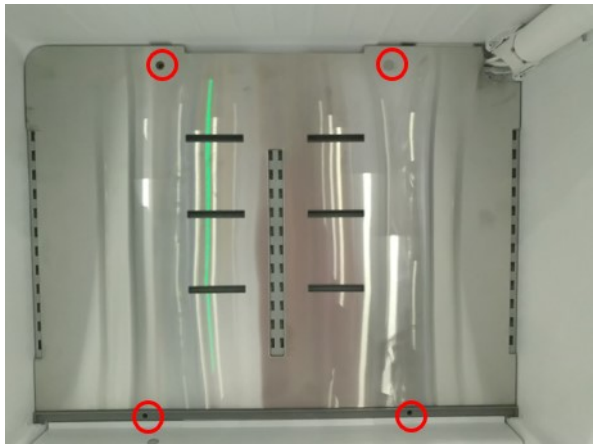
6.25.1 Removal water tank and valve

1. Remove the filter cover by below direction(1) with finger ,then follow the direction(2)

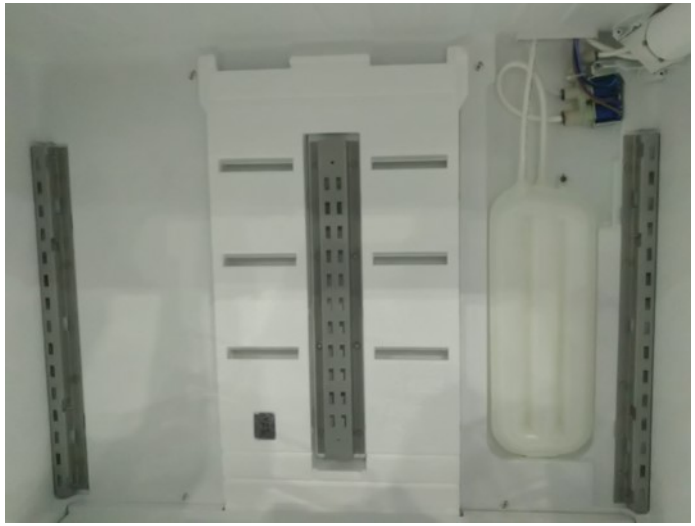


2. Dissemble below 2 screws with T20,then the filter cover could be removable

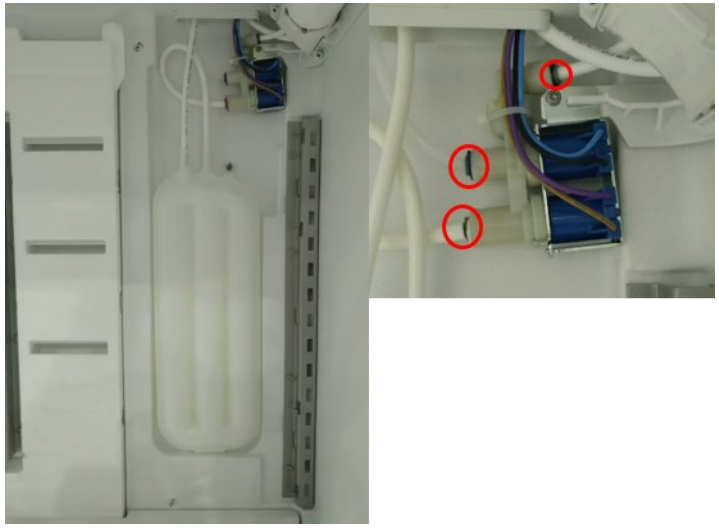
3. After dissemble below 4 screws with T20, remove the fridge compartment back-wall



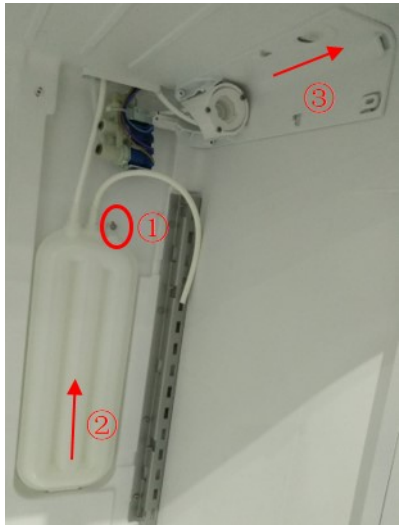
4. After remove the back wall, the water tank, valve are visible



5. . Disconnect below 3 tubes from water valve



6. 6.Remove water tank screw(1),the water tank can be removal(2) , finally the we can remove the filter head with below direction(3)



6.25.2 Installing water tank and valve

- Install water tank and valve in reverse order

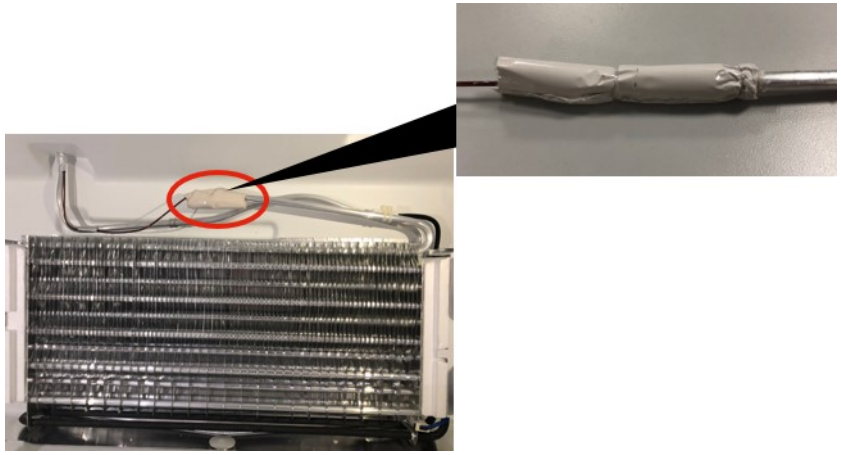
6.26 Installing evaporator notice

6.26.1 Installing FC evaporator notice

	Evaporators finished welding point connection

1. Choose 2pcs butyl from service kit [10012407]

2. Add 2pcs butyl in the point between capillary and FC evaporator

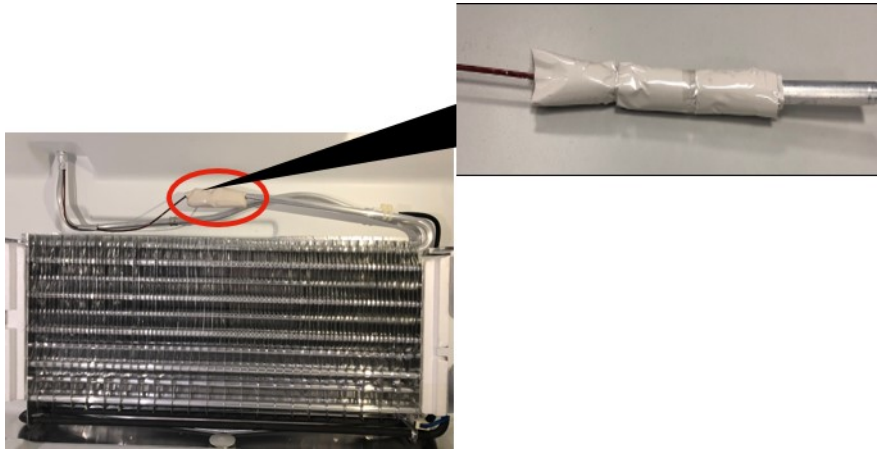


6.26.2 Installing FC evaporator notice only for cross door

	Evaporators finished welding point connection

1. Choose 3pcs butyl from service kit [10012407]

2. Add 3pcs butyl in the point between capillary and FC evaporator



6.26.3 Installing RC evaporator notice

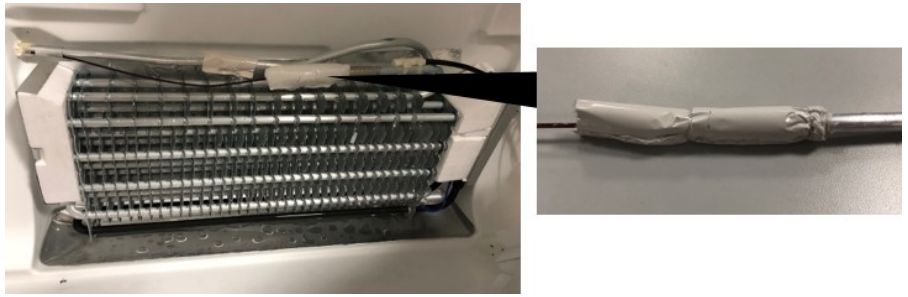
	Evaporators finished welding point connection

1. Choose 1pc butyl from service kit [10012406]

2. Add 1pc butyl in the point between RC evaporator and heating exchange tube

3. Choose 2pc butyl from service kit [10012406]

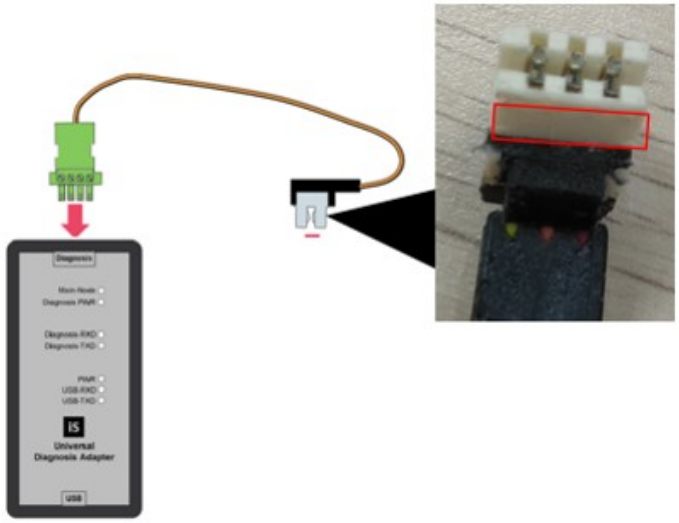
4. Add 2pcs butyl in the point between capillary and RC evaporator



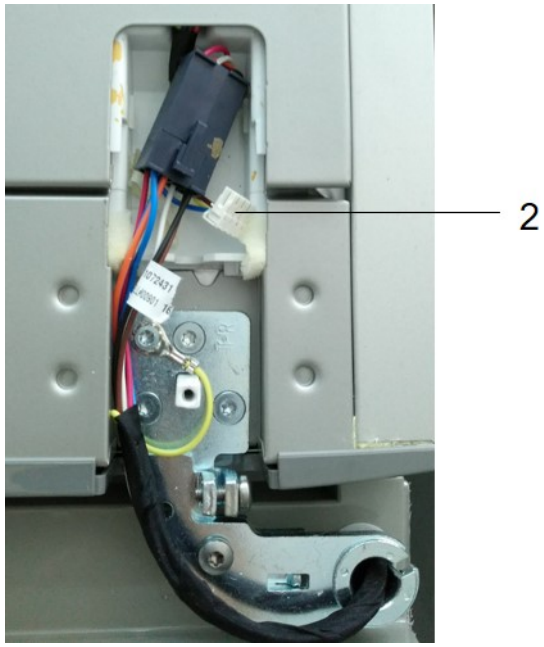
6.27 Service port connection notice

Right cooler door hinge cover removed

Due to plastic block cut off for IS port which belong to iService device, when connect service port to IS port please follow below steps

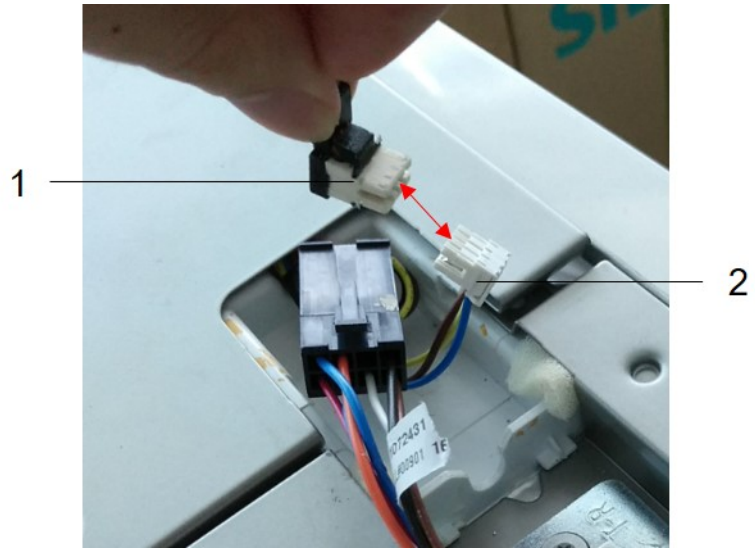


1. After remove right cooler door top hinge cover , pick up service port(2) from cooler door hinge house



2. **If ports connected in reverse direction, control module easily break down.**

Connected IS port(1 belong to iService) and service port(2 belong to appliance) with following direction



3. Check IS port and service port connected well