



LG

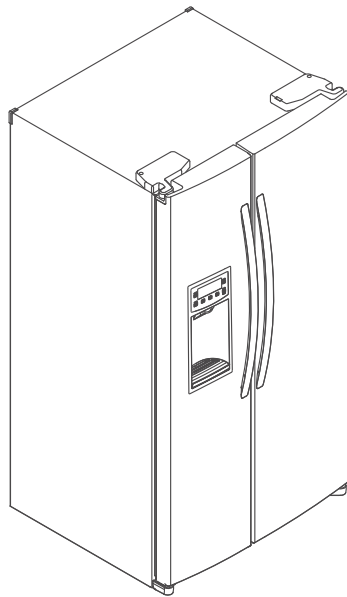
Life's Good

CONFIDENTIAL

SXS REFRIGERATOR **SERVICE MANUAL**

CAUTION

**PLEASE READ CAREFULLY THE SAFETY PRECAUTIONS OF THIS MANUAL
BEFORE CHECKING OR OPERATING THE REFRIGERATOR.**



MODELS:

LSXS22423W

LSXS22423B

LSXS22423S

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SAFETY PRECAUTIONS

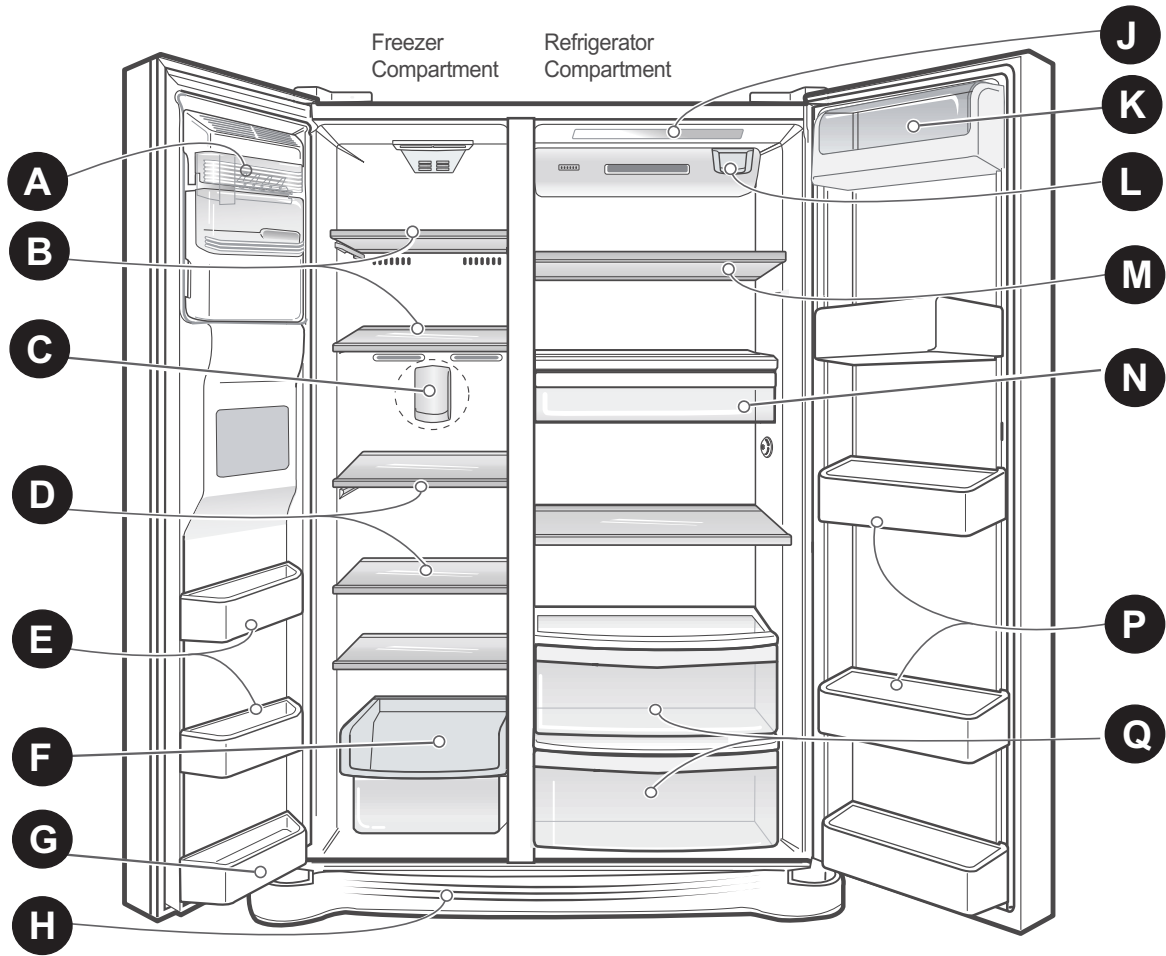
Please read the following instructions before servicing your refrigerator.

1. Check the refrigerator for current leakage.
2. To prevent electric shock, unplug before servicing.
3. Always check line voltage and amperage.
4. Use standard electrical components.
5. Don't touch metal products in the freezer with wet hands. This may cause frost bite.
6. Prevent water from spilling on to electric elements or the machine parts.
7. Before tilting the refrigerator, remove all materials from on or in the refrigerator.
8. When servicing the evaporator, wear gloves to prevent injuries from the sharp evaporator fins.
9. Service on the refrigerator should be performed by a qualified technician. Sealed system repair must be performed by a CFC certified technician.

1. SPECIFICATIONS

	SPECIFICATIONS	MODELS		
		LSXS22423W	LSXS22423B	LSXS22423S
GENERAL FEATURES	Color	SUPER WHITE	BLACK	STAINLESS
	Dimensions (in)	(37)(35 2/7)(70 1/2) in		
	Net Weight (lb)	284.17 Lb		
	Capacity	23cu.ft		
	Refrigerant	R134A		
	Climate Class	TEMPERATURE (N)		
	Rated Rating	115/60		
	Cooling System	FAN COOLING		
	Temperature Control	MICOM CONTROL		
	Defrosting System	FULL AUTOMATIC		
		HEATER DEFROST		
	Insulation	CYCLO PENTANANE		
	Compressor	FLB075LANA		
	Evaporator	FIN TUBE TYPE		
	Condenser	Al Spiral Condenser		
	Lubricating Oil	POLIYOL ESTER 310 +/- 10cc		
	Drier	MOLECULAR SIEVE XH-7		
	Capillary Tube	ID Ø 0.75		
	First Defrost	4 HOURS		
	Defrost Cycle	7 - 50 HOURS		
Defrosting Device	SHEATH HEATER			
Anti-freezing Heater	WATER TRANK HEATER			
REFRIGERATOR	Case Material	FLAT		
	Door material	PCM	PCM	STAINLESS
	Handle Type	B-VISTA		
	Guide, drawer	YES		
	Basket,Quantity	4 FULL		
	Ice Tray & Bank	AUTO ICE MAKER + SPACE PLUS		
	Cover T/V	T/GLASS		
	Tray,Drawer	YES		
	Lamp	YES(1 LED)		
	Shelf	3EA(Glass)		
	Tray, meat	YES		
	FREEZER	Basket,Quantity	3 PLASTIC	
Lamp		YES (1LED)		
Shelf		5EA(Glass)		

2. PARTS IDENTIFICATION



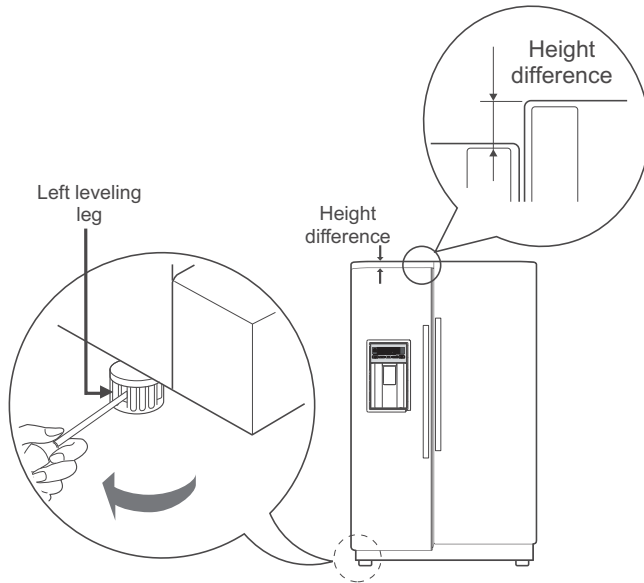
- | | |
|------------------------------|-----------------------------------|
| A Automatic Icemaker | J Refrigerator Light (LED) |
| B Freezer Shelves | K Dairy Corner |
| C Freezer Light (LED) | L Water Filter |
| D Freezer Shelves | M Refrigerator Shelf |
| E Freezer Door Bins | N Snack Pan |
| F Freezer Drawer | P Refrigerator Door Bins |
| G Freezer Door Bin | Q Vegetable Drawers |
| H Base Grille | |

3. DISASSEMBLY

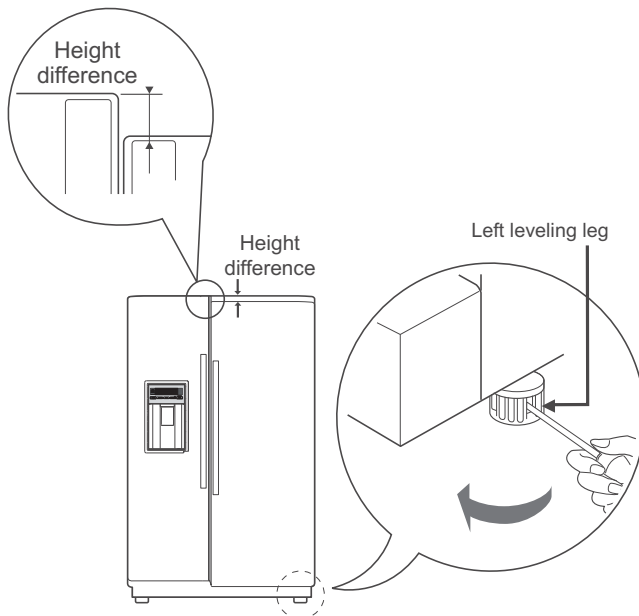
1. DOOR ALIGNMENT

Before adjusting the doors, remove the Base Grille.

If the freezer compartment door is lower than the refrigerator compartment door, make them level by inserting flat blade screwdriver into the groove of the left leveling leg and rotating it clockwise.



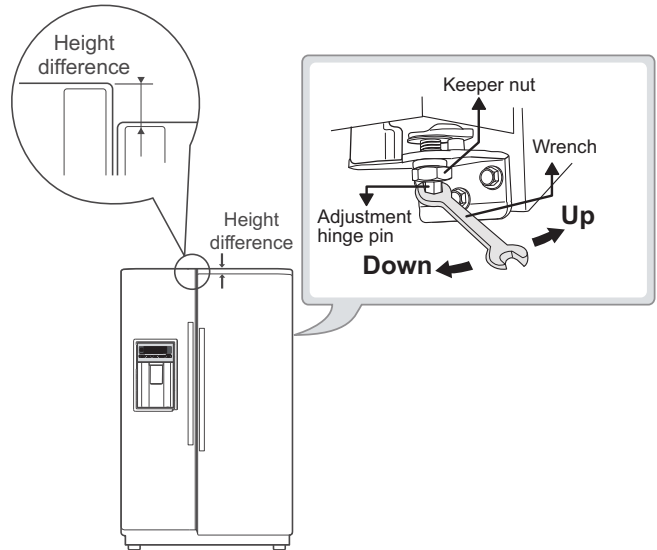
If the freezer compartment door is higher than the refrigerator compartment door, make them level by inserting flat blade screwdriver into the groove of the right leveling leg and rotating it clockwise.



Adjust the level when the refrigerator door is lower than the freezer door during the installation of the refrigerator.

Tools you need

- Wrench 5/16 in (8 mm)
- Wrench 3/4 in (19 mm)



Using a 3/4" (19 mm) wrench, turn the keeper nut clockwise to loosen the keeper nut.

Using a 5/16" (8 mm) wrench, turn the adjustment hinge pin clockwise or counterclockwise to level the refrigerator and freezer door.

After adjusting the level door, turn the keeper nut counterclockwise to tighten.

Do not over tighten the door adjustment screw. The hinge pin can be pulled out. (Adjustable range of height is a maximum of 1/2" (1.27 cm)).

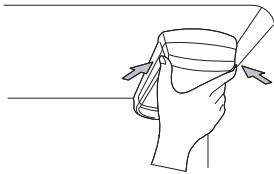
AFTER LEVELING THE DOOR HEIGHT

Make sure the front leveling legs are completely touching the floor.

2. INSTALL WATER FILTER

1. Remove the old water filter.

- Press the push button to open the water filter cover.



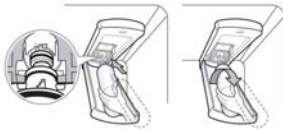
NOTE: Replacing the water filter causes a small amount of water (around 1 oz. or 25 cc) to drain. Place a cup under the front end of the water filter cover to collect any leaking water. Hold the water filter upright, once it is removed, to prevent any remaining water from spilling out of the water filter.

- Make sure to rotate the filter down completely before pulling it out of the manifold hole.
- Pull the water filter downward and turn to counter-clockwise.



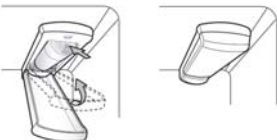
2. Replace with a new water filter.

- Take the new water filter out of its packing and remove the protective cover from the o-rings. With water filter tabs in the horizontal position.



- Push the new water filter into the manifold hold and turn to clockwise.

- Rotate the water filter up into position and close the cover. The cover will click when closed correctly.



3. After the water filter is replaced, dispense 2.5 gallons of water (flush for approximately 5 minutes) to remove trapped air and contaminants from the system. Do not dispense the entire 2.5 gallon amount continuously. Depress and release the dispenser pad for cycles of 30 seconds ON and 60 seconds OFF.

3. REFRIGERATOR/FREEZER SHELVES

The shelves in your refrigerator and freezer are adjustable to meet your individual storage needs.

Adjusting the shelves to fit items of different heights will make finding the exact item you want easier. Doing so will also reduce the amount of time the refrigerator and freezer doors are open which will save energy.

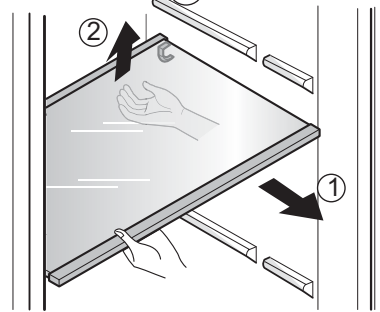
IMPORTANT: Do not clean glass shelves with warm water while they are cold. Shelves may break if exposed to sudden temperature changes or impact.

NOTE: Glass shelves are heavy. Use special care when removing them.

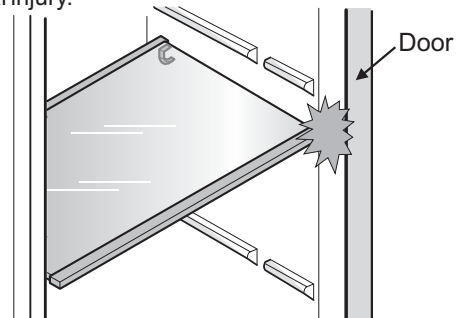
Slide-out Shelves

Remove shelves from the shipping position and replace shelves in the position you want.

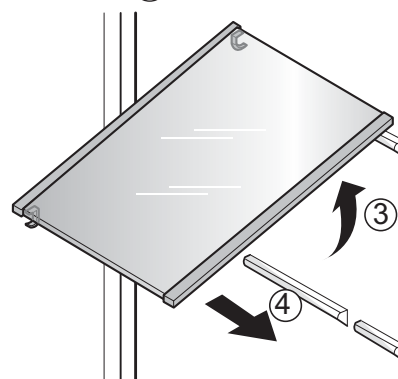
To remove a shelf—Pull the shelf toward you **1**, then lift from both front and rear **2**.



CAUTION: Do not apply too much force when pulling out the shelf. If the shelf hits the door, it may result in damage or personal injury.



Tilt the shelf **3** and pull forward to remove it **4**.



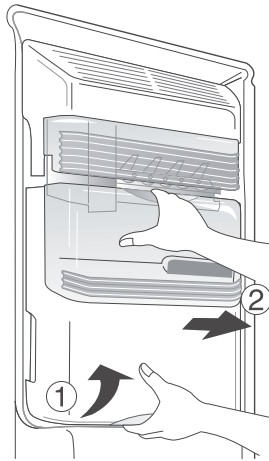
4. ICEMAKER

ICE STORAGE BIN

The ice bin stores the ice cubes made by the ice maker. If you need to remove the ice storage bin, do so as follows:

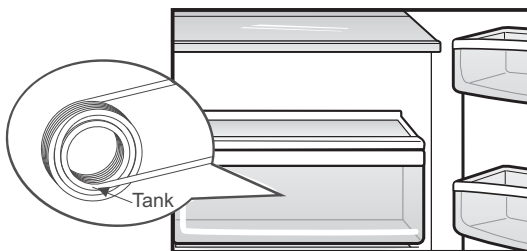
NOTE: Use both hands to remove the ice bin to avoid dropping it.

- Hold the ice storage bin as shown in the figure pull it out while slightly lifting it .



NOTE: Do not dismantle the ice storage bin unless it is necessary.

- ⚠ When removing the CRISPER compartment you will see the water tank. Do not remove it, you can produce water leakage. The water tank is not a removable part.



Crisper compartment

1) Confirm the amount of water supplied to the icemaker.

(1) Press the button (Figure 1) to select the level of water (Optimum level 'Large')

2) Icemaker Operation Test (Test mode)

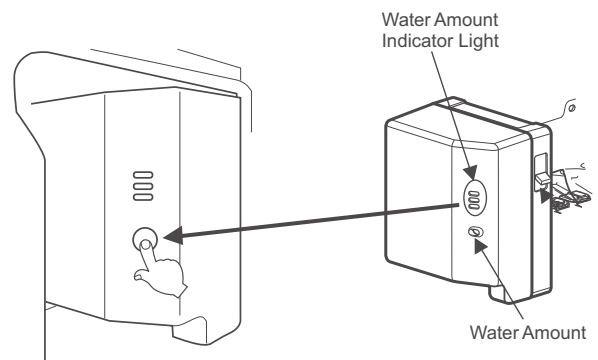
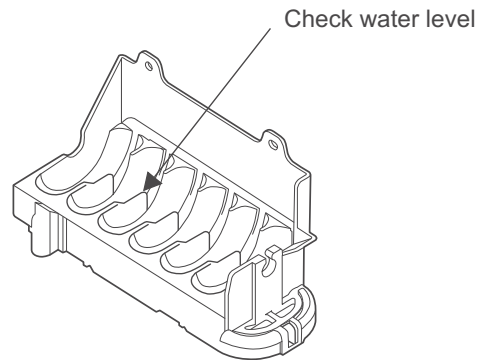
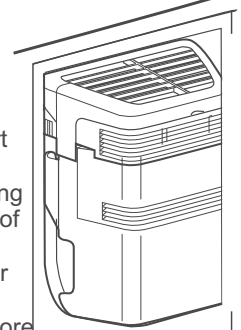
(1) Press the button (Figure 1) for more than 3 seconds and It will start the Test mode.

(2) Test the operation of the operating part of the icemaker. selected level of water).

(4) The test mode is completed after the water is supplied.

Note : When using the test mode more than twice consecutively, water can overflow.

When the water overflows, wipe the ice storage bin.

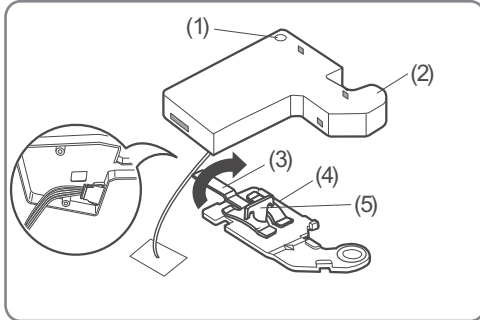


* It is acceptable if the adjusted level of water is a bit smaller than optimum level.

4. HOW TO DISASSEMBLY AND ASSEMBLE

1. REMOVING AND REPLACING REFRIGERATOR DOORS

Before removing the doors, remove the base grille.
To remove the right (refrigerator) door:



1. Open the door. Remove the top hinge cover screw (1).
2. Use a flat blade screwdriver to pry back the hooks (not shown) on the cabinet underside of the cover (2). Lift up the cover.
3. Rotate the hinge lever (3) clockwise. Lift the top hinge (4) free of the hinge lever latch (5).

NOTE: Regardless of hinge lever type, removal process is the same.

4. Lift the door from the lower hinge pin.

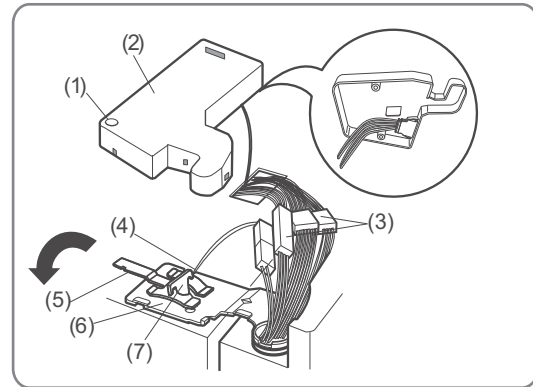
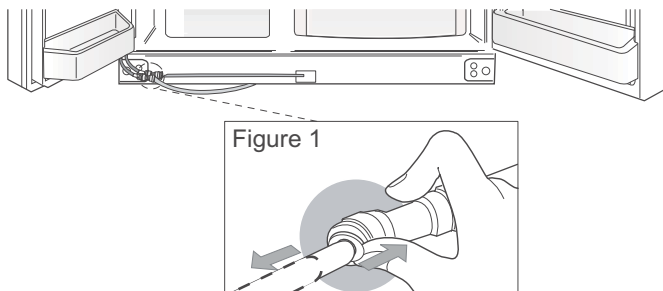
5. Place the door, inside facing up, on a nonscratching surface.

CAUTION: When lifting the hinge free of the latch, be careful that the door does not fall forward.

Removing the left (freezer) door with water line connection.

- Pull up the water feed tube while pressing area (Figure 1) as shown in the figure below.

NOTE: If a tube end is deformed or abraded, trim the part away. Disconnecting the tube under the door causes about 0.13 gallons (0.5 liters) water to flow out. Put a large container at end of tube to prevent water from draining onto the floor.



1. Open the door. Remove the top hinge cover screw (1).
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3. Rotate the hinge lever (3) clockwise. Lift the top hinge (4) free of the hinge lever latch (5).

NOTE: Regardless of hinge lever type, removal process is the same.

4. Lift the door from the lower hinge pin.

5. Place the door, inside facing up, on a nonscratching surface.

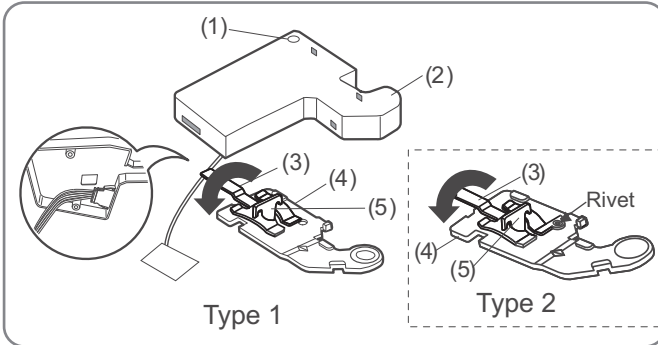
CAUTION: When lifting the hinge free of the latch, be careful that the door does not fall forward.

Removing the left (freezer) door with water line connection.

- Pull up the water feed tube while pressing area (Figure 1) as shown in the figure below.

NOTE: If a tube end is deformed or abraded, trim the part away. Disconnecting the tube under the door causes about 0.13 gallons (0.5 liters) water to flow out. Put a large container at end of tube to prevent water from draining onto the floor.

Reinstalling the right (Refrigerator) door

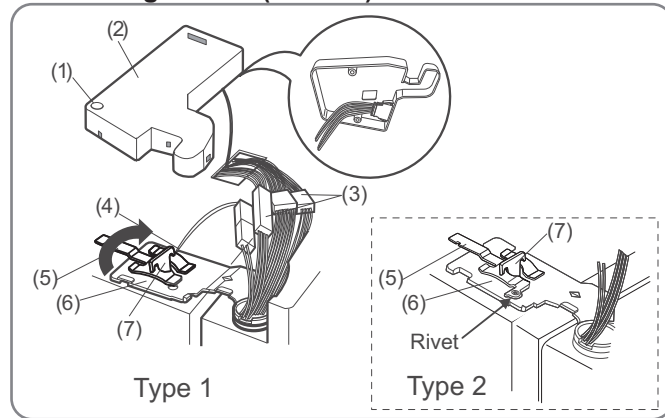


1. Place the door onto the lower hinge pin.
2. Fit top hinge (4) over hinge lever latch (5) into place. Rotate lever (3) counterclockwise to secure.

NO TE: Regardless the type of hinge lever (3); type1: without rivet or type 2: with rivet the removal process is the same.

3. Hook tab on switch side of corner under edge of wire opening in cabinet top. Position cover (2) into place. Insert and tighten cover screw (1). hinge

Reinstalling the left (Freezer) door



1. Feed the water tubes through the lower hinge pin and place the door onto the lower hinge pin.
2. Fit top hinge (6) over hinge lever latch (7) and into place. Rotate lever (5) clockwise to secure hinge.

NOTE: Regardless the type of hinge lever (5); type1: without rivet or type 2: with rivet the removal process is the same.

3. Install the grounding screw (4) and connect all the wire harnesses (3).
4. Hook tab on door switch side of cover (2) under edge of wire opening in cabinet top. Position cover into place. Insert and tighten cover screw (1).
5. Reconnect the water tubes by inserting the tubes into the connectors.

2. HANDLE REMOVAL

Identify you handle type

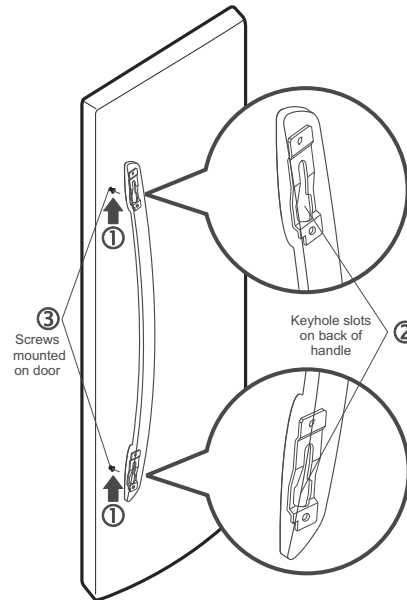
• Type 1

The Grasp the handle tightly with both hands and slide the handle up (1) (this may required some force).

The keyhole slots (2) on the back of the handle allow the handle to separate from the mounting screws (3).

CAUTION: It could be damaged and broken when you hit with hammer while you remove and attach the handle.

CAUTION: When you assemble or disassembly handle, you must push and pull with moment force.

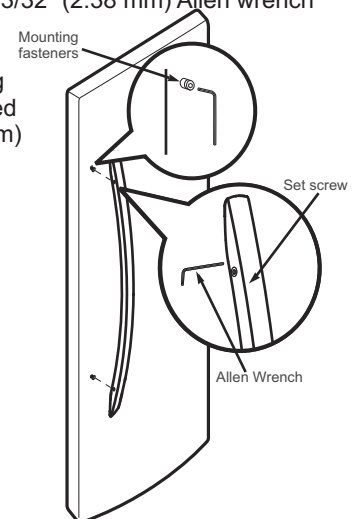


• Type 1

NOTE: It is ALWAYS recommended to remove the refrigerator doors when it is necessary to move the refrigerator through a narrow opening. If necessary, follow the directions below to remove the door handles.

Loosen the set screws with a 3/32" (2.38 mm) Allen wrench and remove the handle.

NOTE: If the handle mounting fasteners need to be tightened or moved, use a 1/4" (6.35 mm) Allen wrench.

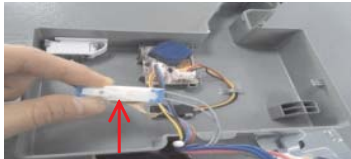


3. REED S/W

Remove screw



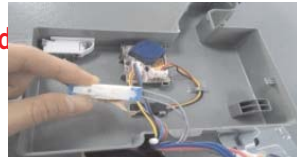
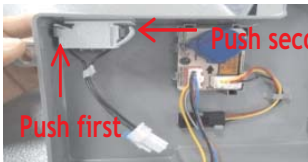
Disassemble Housing



Push Hook

Check Resistance of Reed S/W. if it is NG, change it (Number3)

Assemble Reed S/W to hinge cover and Assemble Reed S/W housing.



Assemble Screw to hinge cover.



4. REMOVING AND REPLACING REFRIGERATOR AND FREEZER LEDs

Unplug Refrigerator, or disconnect power at the circuit breaker. If necessary, remove top shelf or shelves.

• Upper LED Refrigerator

1. Use a flat blade screwdriver to release the 3 hooks of the cover LED under the direction of each hook (refer Fig. 1)

CAUTION: When removing the cover LED, be careful that the cover does not get broken.



2. Using a phillips screwdriver remove 2 screws from the case LED as shown in the pictures.



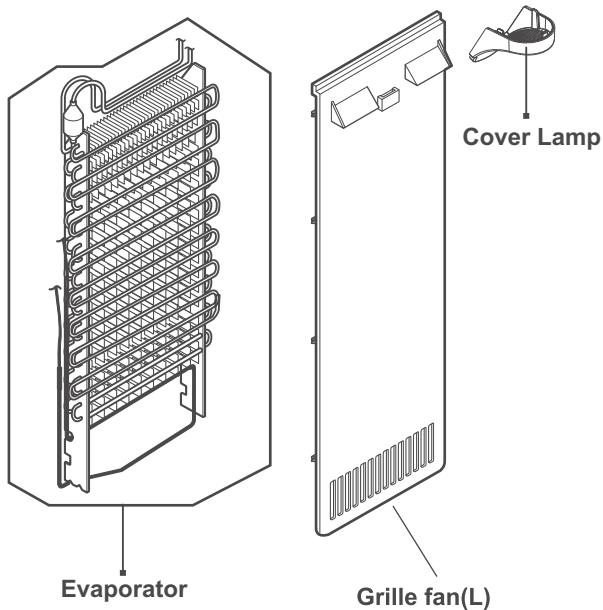
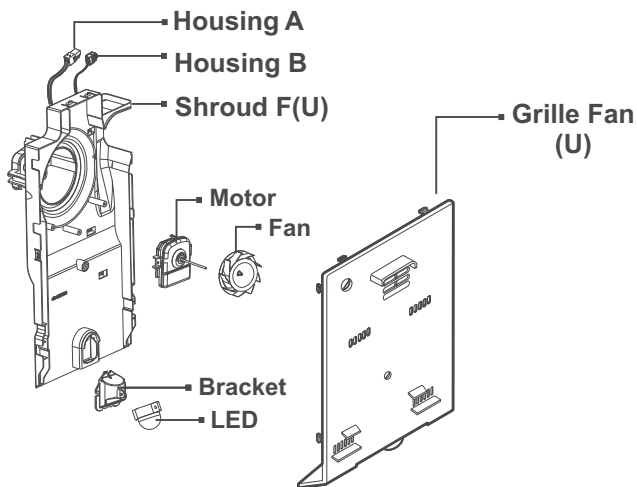
3. Disconnect the wire LED and remove it.



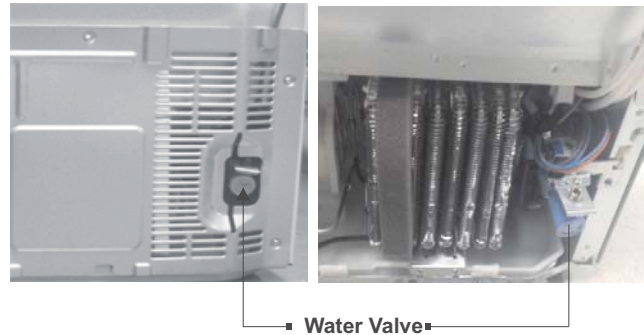
NOTE: To reinstall the LED repeat the same steps but in the opposite order.

5. FAN SHROUD GRILLE

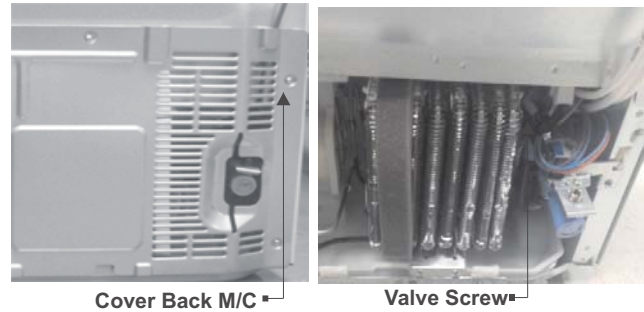
1. Loosen one screw with a screwdriver blade.
2. Disassembly of an upper grille fan: Hold upper part of an upper grille fan (U) and pull forward carefully.
3. Disassembly of a lower grille fan: Hold upper part of a lower grille fan and pull forward carefully.
4. Disassembly of an upper freezer shroud: Hold lower part, pull forward and disconnect housing A and B.
5. Check for foam sticking conditions around a shroud, upper freezer and lower freezer during assembling. If damaged, torn, or badly stuck, assemble with a new one after sealing well.



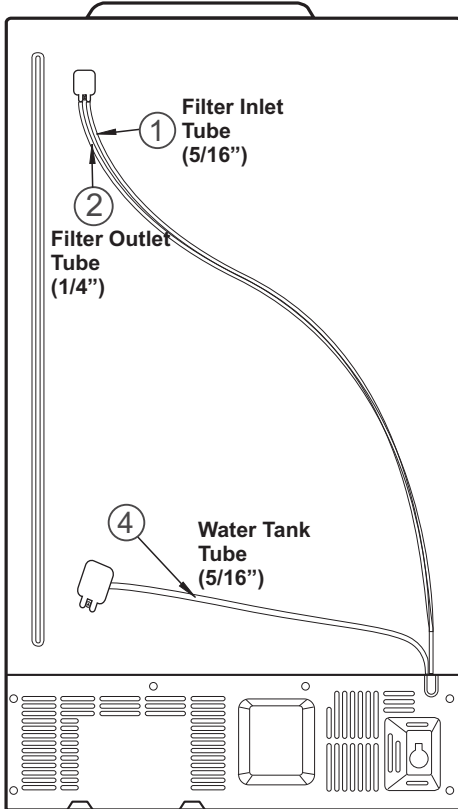
1. Lock the water being supplied. Then separate the water connection connected to the water valve.



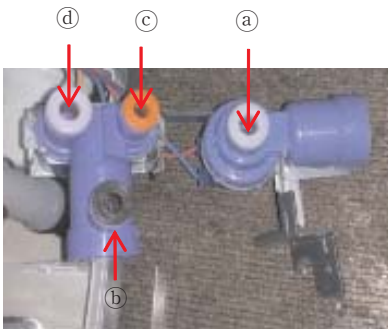
2. Separate the cover back MC and valve screw.



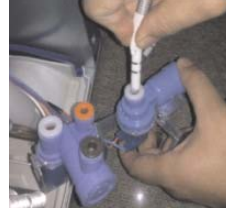
6. WATER VALVE TUBES ASSEMBLY METHOD



Water valve



1) Connect the Water filter tube(IN) ① to the Water valve(a).



2) Connect the Water filter tube(Out) ② to the Water valve(b).



3) Connect the Ice maker tube ③ to the Water valve(c).



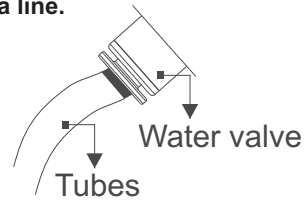
4) Connect the Water Tank tube ④ to the Water valve(d).



4) Insert Clip on the valve.(4EA)

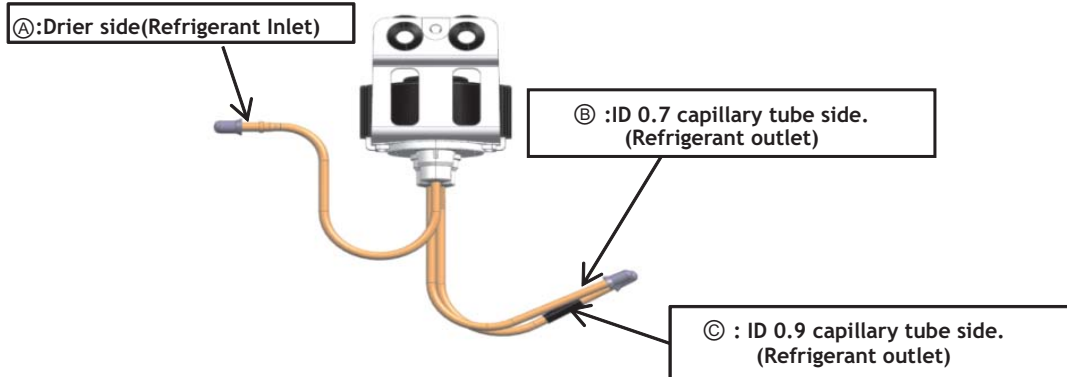


Note : For a successful connection. Insert the tubes to the water valve until you can see only a line.



7. WAY VALVE SERVICE

- The 3 Way valve has plastic parts inside, so always wrap it with a wet cloth before servicing when using a torch.
 - 1) Always replace the 3 way valve if there is a leak at any one of the 3 tubes coming from it.
 - 2) Service in replacement of valve (valve failure) Perform service in the same method as above.



1. Connect Ⓐ with drier.
2. Connect Ⓑ with ID 0.7 capillary tube.
3. Connect Ⓒ with ID 0.9 capillary tube.

※ ID 0.9 capillary tube is marked by sky blue tube.
 Ⓒ is marked by black tube.

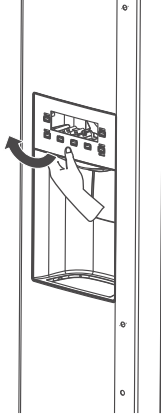
Connect Ⓒ with ID 0.9 capillary tube.

Note: Before processing the vacuum, the 3 way valve status should be “both-open”.
 You can make the 3 way valve “both-open” following as below.

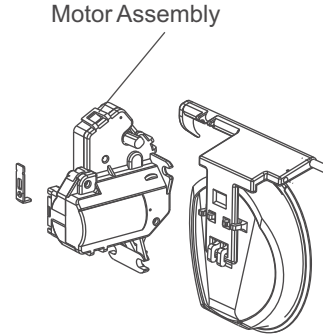
1. Turn the refrigerator on, and open the Fresh food door.(Ref Door).
2. Keep Opening the Fresh food door(Ref door), press 2 buttons “Ice plus(or Ultra Ice) and Ref. temp” on display for 3sec.
3. “OFF” will be shown on the display. (Demo mode : both-open status).
4. Disconnect 3 way valve housing.
5. Turn the refrigerator off and proceed the vacuum.
6. after recharging the gas, connect 3 way valve housing.

8. DISPENSER

1. Remove the display pulling out with tools such as Flat-tip screwdriver on one side and repeat the process on the other side while pulling it forward as shown in the picture.

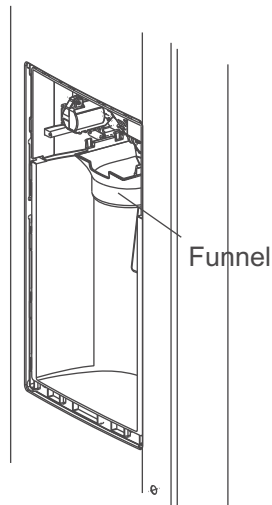
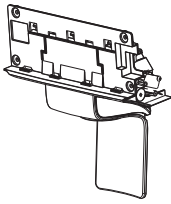


5. To install the duct cap assembly, insert one end of the spring into the right hole of the dispenser lever and insert the other end into the right hole in the top part of the dispenser. Then attach the holder at the solenoid switch.

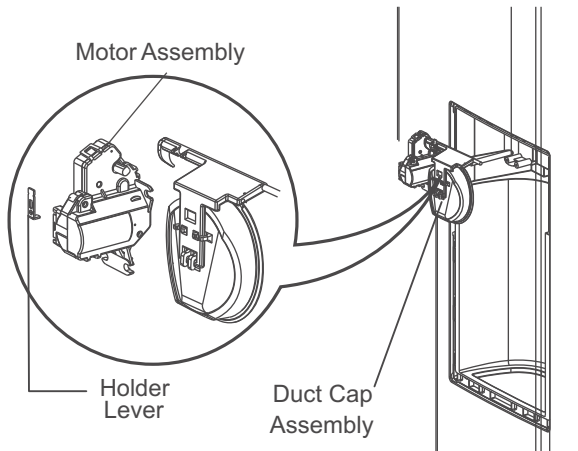


3. Loosen four screws with a phillips screwdriver and pull the funnel assembly to disconnect.

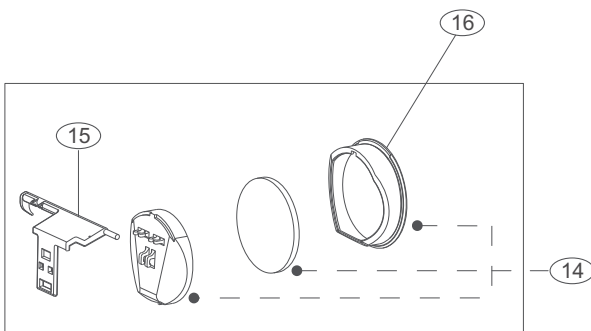
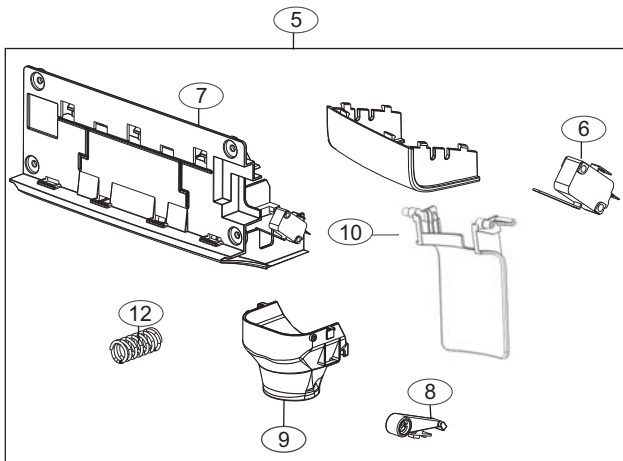
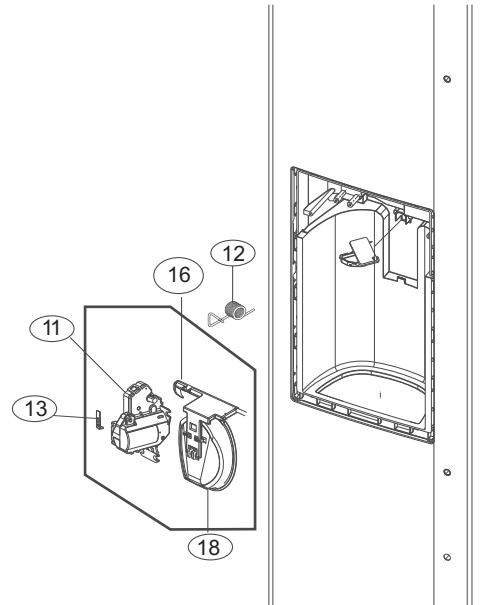
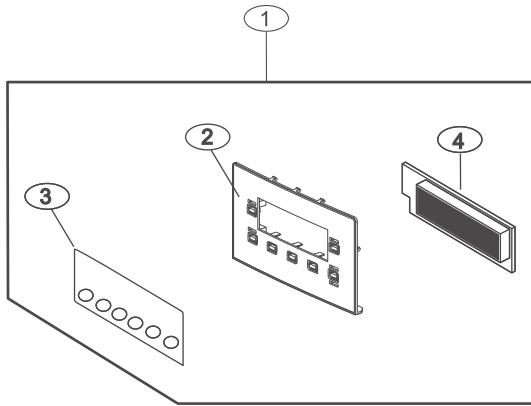
Funnel Assembly



4. The duct cap assembly can be disconnected if the hold lever connecting screws are loosened with a phillips driver.



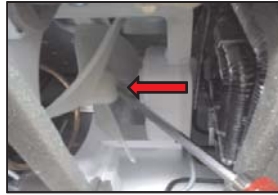
6) Dispenser related parts



1	COVER ASSEMBLY, DISPLAY
2	COVER, DISPLAY
3	DECO, DISPLAY
4	PCB ASSEMBLY, DISPLAY
5	FRAME FUNNEL ASSEMBLY
6	SWITCH
7	FRAME, FUNNEL
8	LEVER DISPENSER (BUTTON)
9	FUNNEL
10	BUTTON LEVER
11	MOTOR ASSEMBLY
12	SPRING
13	HOLDER LEVEL
14	CAP, DUCT
15	DISPENSER LEVER, (CAP DUCT)
16	RUBBER, CAP

9. DISASSEMBLE OF FAN MOTOR

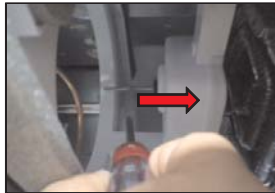
1. Remove by pushing fan in direction of the arrow.



2. Remove guide fan screw using a screwdriver.



3. Pushing guide fan hook using a flat head screwdriver, and then pushing guide fan in direction of the arrow.



4. Remove guide fan from tray drip, and then remove cover motor screws using a screwdriver.



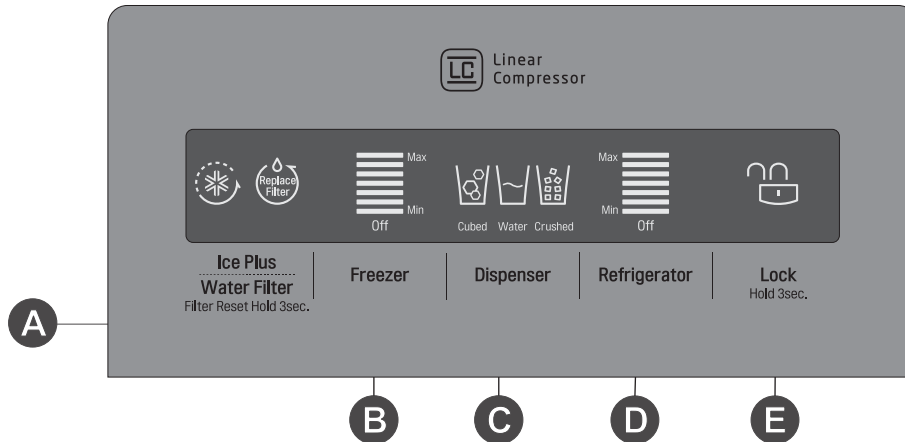
5. Unplug motor and take out it.



5. MICOM FUNCTION

1. MONITOR PANEL

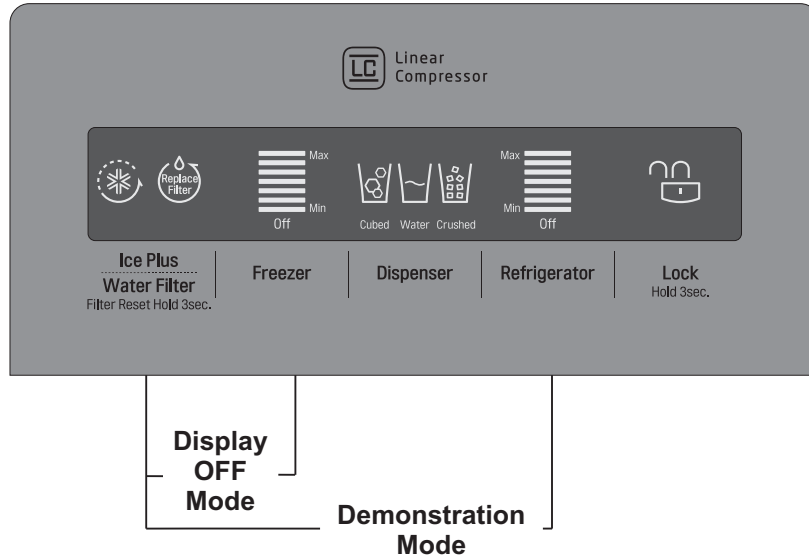
Identify your Control type



- A** Ice Plus/Water Filter function selection button
- B** Temperature adjustment button for Freezer section
- C** Dispensing selection button (Cubed/ Water/Crushed)
- D** Temperature adjustment button for Refrigerator section
- E** Key lock button

1-1. Display Function

- 1) When the appliance is plugged in, it is set to 37°F for refrigerator and 0°F for freezer. You can adjust the Refrigerator and the Freezer control temperature by pressing the Freezer/Refrigerator button.
- 2) When the power initially applied or restored after a power failure, it is set to the previously controlled temperature.



1-2. Display OFF Mode

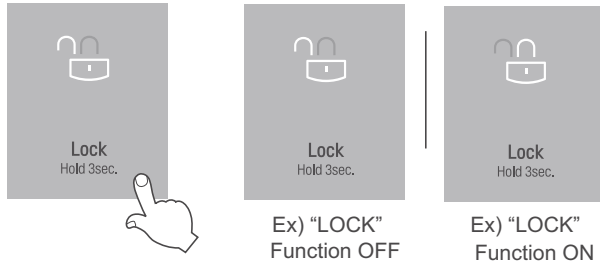
It places display in standby mode until any door is opened or any button is pressed. Press FREEZER and ICE PLUS buttons simultaneously to turn ON all leds and 5 seconds after, these will turn OFF with the recognition sound of "Ding~" (Be sure press both buttons for this to work). Once the mode activates, all leds are always OFF except to dispensing icon (This depends on last selection dispensed). To deactivate this mode, perform the same sequence used for activation.

1-3. Demonstration Mode (OFF Mode)

- 1) Any door must be opened to enter in this mode
- 2) To active this mode press and hold Ice Plus and Refrigerator button over 5 seconds.
- 3) The display will show "OFF".
- 4) In this mode all loads are turned off(Compressor, Heater , Fans ,etc)
- 5) Lamps and Dispenser Functions works normally
- 6) To exit Demonstration mode open any Door the press and hold Ice Plus and Refrigerator button over 5 seconds Display return to normal mode

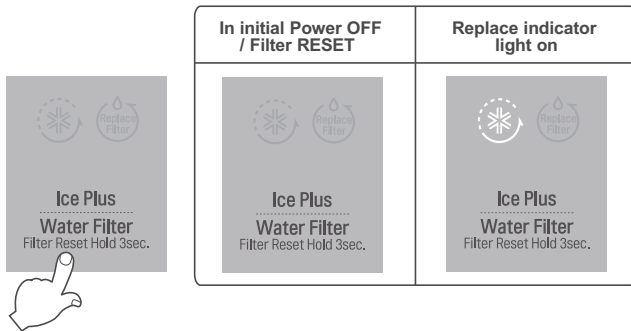
1-4. Key Lock Button (dispenser and display lock)

- 1) When the refrigerator is first turned on, the buttons are not locked. The display panel shows the padlock unlocked icon.
- 2) To lock the display, the dispenser, and the control panel, press, and hold the LOCK button for 3 seconds. The locked pad lock icon is displayed.
- 3) The LOCK button is the only control feature that remains active in the locked state. The buzzer sound, other control buttons, and the dispenser are deactivated.
- 4) To release from the locked state, press and hold the LOCK button again for 3 seconds.



1-5. Filter cartridge status reset button

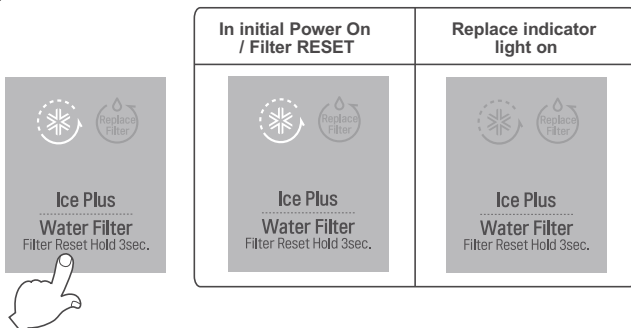
- 1) There is a replacement indicator for filter cartridge on the dispenser.
- 2) Water filter needs replacement once six months.
- 3) Initial filter icon condition is OFF.
- 4) After six months of use, change filter icon LED will be turned ON.
- 5) Once filter cartridge has been replaced, press and hold Ice Plus/Water Filter button for more than 3 seconds.
- 6) Icon LED will be turned OFF by a 6 months period.



1-6. Ice Plus selection

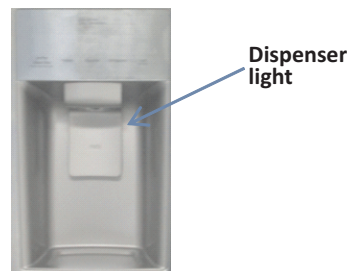
Please select this function for quick freezing.

- 1) Function is repeat Ice Plus icon whenever pressing Ice Plus button.
- 2) Ice Plus function automatically turns off after a fixed time passes.



1-7. Dispenser Light

- 1) When dispenser is operated, DISPENSER LIGHT is ON.



1-8. ICE PLUS button

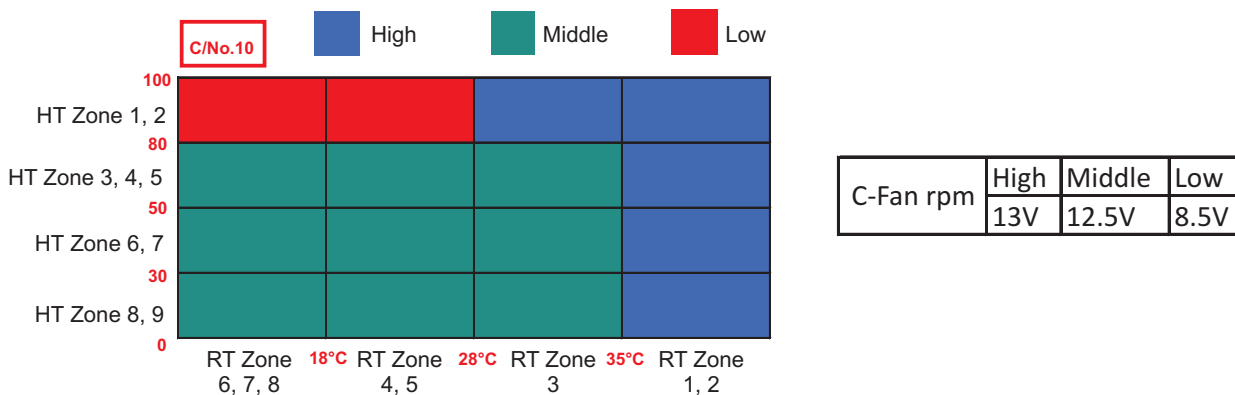
- 1) The purpose of this function is to intensify the cooling speed of freezer and to increase the amount of ice.
- 2) Whenever selection switch is pressed, selection/ release, the icon will turn ON or OFF.
- 3) If there is a power outage and the refrigerator is powered on again, Ice Plus will be canceled.
- 4) To activate this function, press the Ice Plus key and the icon will turn ON. This function will remain activated for the first three hours the compressor and Freezer Fan will be ON. The next 21 hours the freezer will be controlled at temperature. After 24 hours or if the Ice Plus key is pressed again, the freezer will return to its previous temperature.
- 5) During the first 3 hours:
 - (1) Compressor and freezer fan (HIGH RPM) run continuously.
 - (2) If a defrost cycle begins the first 90 minutes of Ice Plus, the Ice Plus cycle will run for remaining time after completed. If the defrost cycle begins when Ice Plus has run for more than 90 minutes, Ice Plus will run for two defrost is completed.
 - (3) If Ice Plus is pressed during defrost, Ice Plus icon is on but this function will start seven minutes after defrost and it shall operate for three hours
 - (4) If Ice Plus is selected within seven minutes after compressor has stopped, the compressor (compressor delay seven minutes) shall start after the balance of the delay time.
 - (5) The fan motor in the freezer compartment runs at high speed during Ice Plus
 - (6) For the rest of the 21 hours, the freezer will be controlled at the lowest temperature.

1-9. CONTROL OF VARIABLE TYPE OF FREEZING FAN

- 1) To increase cooling speed and load response speed, MICOM variably controls the freezer fan motor at the high RPM speed and standard RPM.
- 2) MICOM only operates in high RPM speed at the input of initial power, Ice Plus, First cycle after defrosting and Test mode 1 and operates in the standard RPM and low RPM in other general operation.
- 3) If opening doors of freezing / cold storage room while fan motor in the freezing room operates, the freezing room fan motor normally operates (If being operated in the high speed of RPM, it converts operation to the standard RPM). However, if opening doors or Refrigerator Room, the freezing room fan motor stops.
- 4) As for monitoring of BLDC fan motor error in the freezer, MICOM will immediately stop the fan motor by determining that the BLDC fan motor is locked or failed if the fan motor position does not change for more than 65seconds at the BLDC motor. Then a failure code will be displayed (refer to failure diagnosis function table) on the refrigerator, for BLDC motor failure. If you want to operate the BLDC motor, turn off and on at the power source.

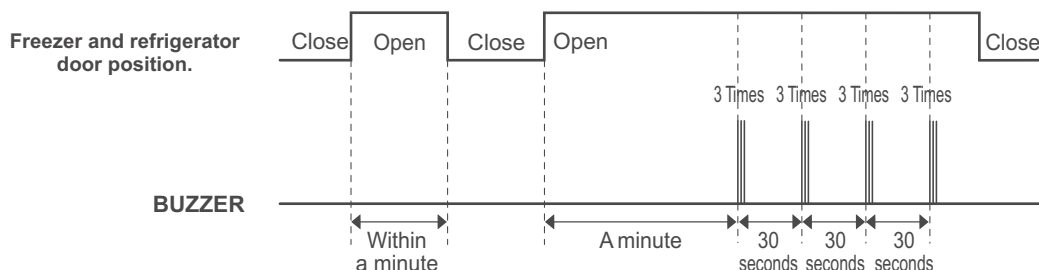
1-10. CONTROL OF COOLING FAN MOTOR

- 1) The cooling fan motor performs ON/OFF control by linking with the COMP.
- 2) Failure sensing method is same as in the freezer fan motor (refer to failure diagnosis function table for failure display).



1-11. DOOR OPENING ALARM

- 1) The buzzer will sound if the freezer or refrigerator doors have been left open for longer than one minute.
- 2) The buzzer will ring three times every 30 seconds if the doors have been left open for longer than 1 minute.
- 3) Closing all refrigerators doors will stop the Buzzer alarm function.
- 4) If all the doors of freezing / cold storage room or Refrigerator Room are closed during door open alarm, alarm is immediately released.



1-12. Ringing of compulsory operation, compulsory frost removal buzzer

- 1) If pressing the test button in the main PCB, "Phi ~" sound rings.
- 2) In selecting compulsory operation, alarm sound is repeated and completed in the cycle of On for 0.2 second and Off for 1.8 second three times.
- 3) In selecting compulsory frost removal, alarm sound is repeated and completed in the cycle of On for 0.2 second , Off for 0.2 second, On for 0.2 second and Off for 1.4 second three times.

1-13. Defrosting (Removing frost)

- 1) Defrosting starts each time the accumulated COMPRESSOR running time is between 7 and 50 hours. This time is determined by how often and how long the doors are opened.
- 2) For initial power on or for restoring power, defrosting starts when the compressor running time reaches 4 hours.
- 3) Defrosting stops if the sensor temperature reaches 41°F (5°C) or more. If the sensor doesn't reach 41°F (5°C) in 1 hours, the defrost mode is malfunctioning. (Refer to the defect diagnosis function, 8-1-15).
- 4) Defrosting won't function if its sensor is defective (wires are cut or short circuited).








1-14. Sequential operation of built-in product

Built-in components such as the compressor, defrost removal heater, freezer compartment fan, Cooling Fan and step motor damper are sequentially operated as follows to prevent noise and part damage from occurring during testing procedure.

Function	Load Operation Sequence	Remark
INITIAL POWER ON	<p>Above 45°C</p>	If error occurs during operation, initial operation is not done.
	<p>Lower than 45°C (In service)</p>	
TEST MODE	<p>TEST MODE1</p>	If pressing SW once more in the test mode 2 or temperature of defrost sensor is more than 5°C it returns to the test mode for initial operation (comp operates after 3 minutes).
	<p>TEST MODE 2</p> <p>:In case of the defrost sensor Temperature: +5°C ↓</p>	

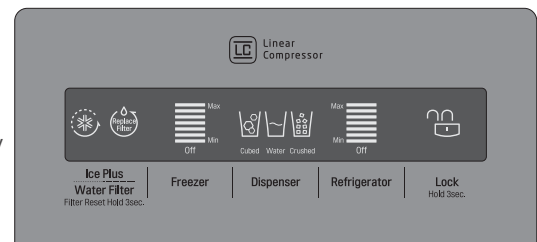
1-17. Failure Diagnosis Function ERROR CODE on display control panel

To display the error message, press and hold Ice Plus button and Freezer button. If no errors are displayed, all LEDs will be illuminated. If a primary or secondary error is present, certain LEDs will be illuminated indicating failure mode.

NO	Error Detection Category	Error Display		Error Generation Factors	Remarks
1	Normality			None	Normal Operation of Display.
2	Freezer Sensor Error			Short or Disconnection of Freezer Sensor	Check each sensor and its connector
3	Refrigerator Sensor 1 Error			Short or Disconnection of Refrigerator Sensor	
4	Defrosting Sensor Error			Short or Disconnection of Defrosting Sensor	
5	Refrigerator Sensor 2 Error	SEE SECONDARY ERROR INDICATOR LIGHT		Short or Disconnection of Refrigerator Sensor 2	
6	Room Temp Sensor Error	SEE SECONDARY ERROR INDICATOR LIGHT		Short or Disconnection of Room Temp. Sensor	
7	Poor Defrosting			Even though it is passed 1 hour since then Defrosting, if Defrosting sensor is not over +41°F (5°C), it is caused	Temperature Fuse Disconnection, Heater disconnection, DRAIN Jam, Poor Relay for Heater
8	Abnormality of BLDC FAN Motor for Freezer			It is caused when feedback signal isn't over 65 seconds during BLDC FAN motor operating	Poor BLDC Motor connection, DRIVE IC and TR
9	Abnormality of BLDC FAN Motor for Machinery Room			It is caused when feedback signal isn't over 65 seconds during BLDC FAN motor operating	Poor BLDC Motor connection, DRIVE IC and TR
10	Communication Error			Communication Error between Micom of Main PCB and Display Micom	Poor Communication connection, Poor TR of Thermistor and Receiver Tx/Rx between display and main board
11	Humidity Sensor Error	SEE SECONDARY ERROR INDICATOR LIGHT		Short or Disconnection of Humidity sensor	Poor connection of housing, missing Humidity sensor sensor defect itself, short or disconnection of harness

NOTE 1:

- Errors are divided in primary and secondary errors.
- Secondary errors only can be displayed by performing "DISPLAY LED CHECK" pressing ICE PLUS & FREEZER buttons simultaneously for more than 5 seconds, If all LED are turned ON, errors are not present.
- When a primary error occurs in the refrigerator, this error will be showed by display after 3 hours after first occurrence. Anyway, if you perform "DISPLAY CHECK LED" you can see the error present in the unit, regardless the time elapsed from the first occurrence.



SECONDARY ERROR INDICATOR LIGHT

REFRIGERATOR SENSOR (2) (LOWER SENSOR IN REFRIGERATOR COMPARTMENT)	"ICE PLUS" INDICATOR WILL NOT BE LIT
ROOM TEMPERATURE SENSOR	"FREEZER TEMPERATURE LOWER" INDICATOR
HUMIDITY SENSOR	"WATER" INDICATOR WILL NOT BE LIT

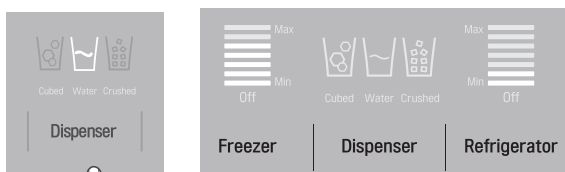
1-18. Test Function

- 1) The purpose of test function is to check function of the PCB and product and to search for the failure part at the failure status.
- 2) Test button is placed on the main PCB of refrigerator (test switch), and the test mode will be finished after maximum 2 hour for Test mode 1, 80minutes for Test mode 2.
- 3) Function adjustment button is not perceived during performance of test mode.
- 4) In finishing test mode, always pull the power cord out and then plug-in it again for the normal state.
- 5) If non conforming contents such as sensor failure are found during performance of test mode, release the test mode and display the failure code.
- 6) Even if pressing the test button during failure code display, test mode will not be performed.

MODE	OPERATION	CONTENTS	REMARKS
TEST MODE 1	Press once TEST S/W <Forced Freezing Mode>	1. COMP & C Fan ON 2. Freezer fan in high speed 3. Defrost Heater OFF 4. Stepping Motor OPEN 5. Display fully illuminated	Under TEST MODE 1, Compressor is ON, Stepping Motor is OPEN, Cooling Fan is ON (Standard RPM), Freezing Fan is ON (High RPM), all LEDs are illuminated.
TEST MODE 2	From Test 1 press again TEST S/W	1. COMP & C Fan OFF 2. Freezer fan OFF 3. Defrost Heater ON 4. Stepping Motor CLOSE 5. Only F & R notch are illuminated (first four bars from bottom to top)	Return to the normal mode when the defrost sensor is above +41°F (5°C).
NORMAL OPERATION	From Test 2 press again TEST S/W	Compressor will turn ON after a 3 min delay, Freezer Fan 8 min and Stepping Motor 13 min.	

1-19. Filter cartridge status reset button

- 1) While the Freezer Door is opened. Dispenser function can not be used.
- 2) There are one dispenser pad.
- 3) You can select 3 options to be dispensed (Cubed ice / crushed ice / water).



LED turn on to indicate option selected

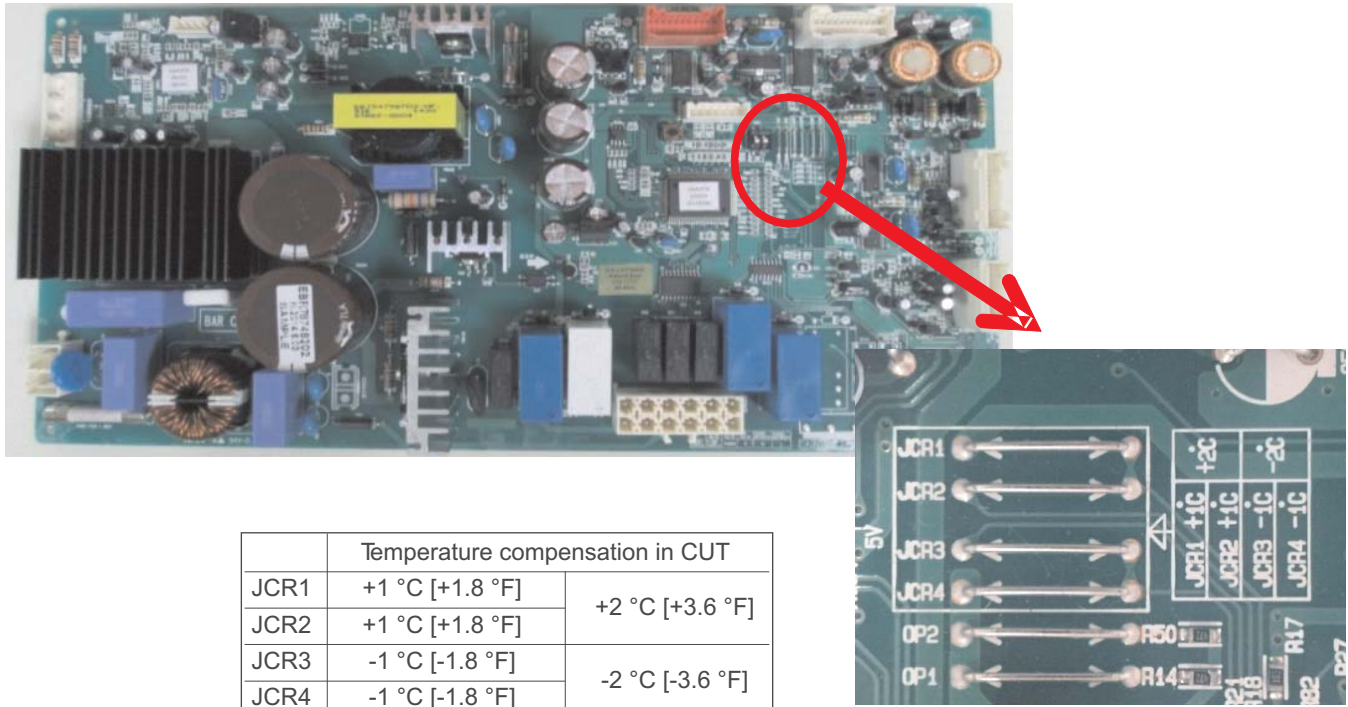
- 4) Push the dispensing pad, and the selected option will be dispensed.
- 5) Dispensing function won't work if LOCK mode is enabled.
- 6) When CUBED or CRUSHED ice is selected, at press the dispensing pad, a duct door motor will be opened, and this motor will close automatically after 5 seconds from you release the pad, during the operation of this function, the AUGER MOTOR will be working in two ways (CW or CCW) depending if you selected CUBED ICE or CRUSHED ICE, the AUGER MOTOR stops immediately after you release the pad.
- 7) When water dispensing option is enabled, WATER & PILOT VALVE will be activated, and this will stop immediately after you release the pad.

1-20. Smart Diagnosis system

- 1) Open the R door.
- 2) Lock the display (refer to 1-4. Key Lock Button).
- 3) To activate this mode press and hold FREEZER button over 5 seconds.
- 4) The buzzer will ring with the recognition sound of three "Ding~" and four tone sequence.
- 5) The display will start a countdown of 3 seconds.
- 6) At the end, the display will return to normal mode.

*NOTE: This function will be required only when the customer called to Service Center.

1-21. Compensation circuit for temperature at freezer



	Temperature compensation in CUT	
JCR1	+1 °C [+1.8 °F]	+2 °C [+3.6 °F]
JCR2	+1 °C [+1.8 °F]	
JCR3	-1 °C [-1.8 °F]	-2 °C [-3.6 °F]
JCR4	-1 °C [-1.8 °F]	

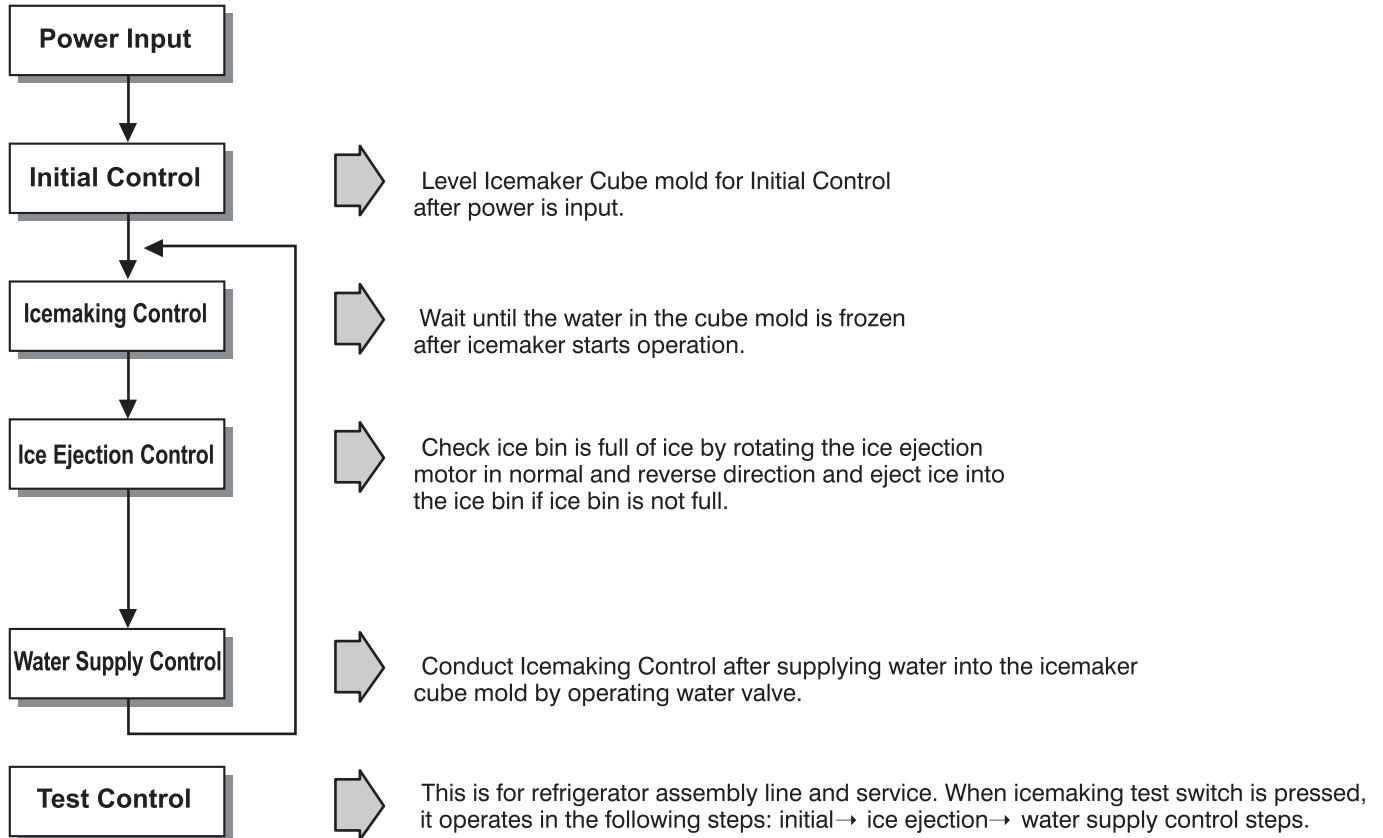
Compensation for weak-cold		Compensation for over-cold		Temperature compensation value at refrigerator	Remarks
JCR3	JCR4	JCR1	JCR2		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 °C (In shipment from factory)	
CUT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-1 °C [-1.8 °F]	
<input type="checkbox"/>	CUT	<input type="checkbox"/>	<input type="checkbox"/>	-1 °C [-1.8 °F]	
<input type="checkbox"/>	<input type="checkbox"/>	CUT	<input type="checkbox"/>	+1 °C [+1.8 °F]	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CUT	+1 °C [+1.8 °F]	
CUT	CUT	<input type="checkbox"/>	<input type="checkbox"/>	-2 °C [-3.6 °F]	
<input type="checkbox"/>	<input type="checkbox"/>	CUT	CUT	+2 °C [+3.6 °F]	
CUT	<input type="checkbox"/>	CUT	<input type="checkbox"/>	0 °C [0 °F]	
CUT	<input type="checkbox"/>	<input type="checkbox"/>	CUT	0 °C [0 °F]	
<input type="checkbox"/>	CUT	CUT	<input type="checkbox"/>	0 °C [0 °F]	
<input type="checkbox"/>	CUT	<input type="checkbox"/>	CUT	0 °C [0 °F]	
CUT	CUT	CUT	<input type="checkbox"/>	-1 °C [-1.8 °F]	
<input type="checkbox"/>	CUT	CUT	CUT	+1 °C [+1.8 °F]	
CUT	CUT	CUT	CUT	0 °C [0 °F]	

- This circuit allows adjustment of the set temperature for compensation by changing jumpers at locations JCR1~JCR4.

6. ICEMAKER AND DISPENSER OPERATION AND REPAIR

1. ICE MAKER OPERATION

1-1. Ice Maker Operation



1-2. Dispenser Operation

1. This function is available in Model where water and ice are available without opening freezer compartment door.
2. **Crushed Ice** is automatically selected when power is initially applied or reapplied after power cut.
3. When dispenser selection switch is continuously pressed, light is on in the following sequence:
Water ^a Cube Ice ^a Crushed Ice.
4. Lamp is on when dispenser button is pressed and vice versa.
5. When dispenser crushed ice rubber button is pressed, dispenser solenoid and geared motor work so that crushed ice can be dispensed if there is ice in the ice bin.
6. If there is ice in the bin, pushing the dispenser button will dispense it.
7. When dispenser water button is pressed, water valve opens and water is supplied if water valve is normally installed on the right side of the machine room.
8. Ice and water are not available when freezer door is open.

2. FUNCTION OF ICE MAKER

2-1. Initial Control Function

1. When power is initially applied or reapplied after power cut, it detects level of icemaker cube mold after completion of MICOM initialization. The detecting lever moves up and down.
2. The level of ice maker cube mold is judged by output signal, high and low signal, of Hall IC. Make the cube mold to be horizontal by rotating ice ejection motor in normal or reverse direction so that High/Low signal can be applied to MICOM No. 44.
3. If there is no change in signal one minute after the geared motor starts to operate, it stops icemaker operation and check the signal every hour. It resets initialization of icemaker when it becomes normal.
4. It judges that the initial control is completed when it judges the icemaker cube mold is horizontal.
5. Ice ejection conducts for 1 cycle regardless of ice in the ice bin when power is initially applied.

2-2. Water Supply Control Function

1. This is to supply water into the ice maker cube mold by operating water valve in the mechanical area when ice ejection control is completed and ice maker mould is even.
2. The quantity of water supplied is determined by DIP switch and time.

Water Supply Quantity Table

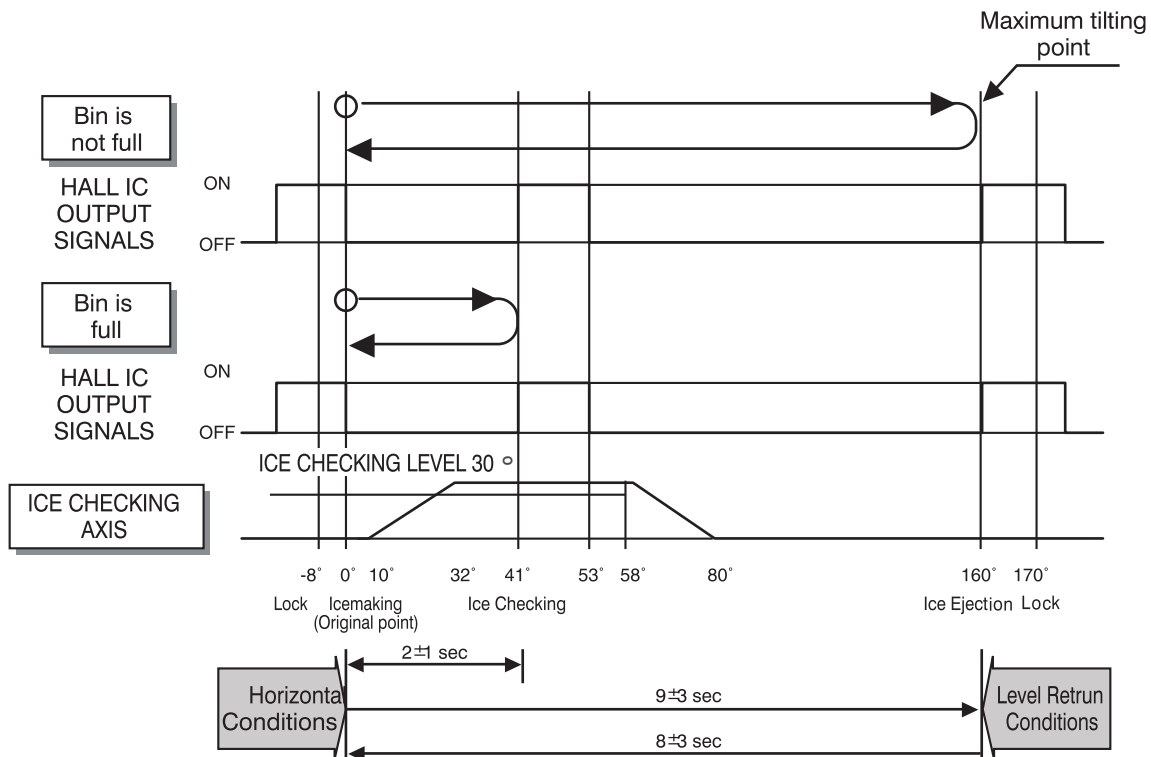
No	SWITCH		Water Supply Time
	S1	S2	
1	OFF	OFF	6.5s
2	ON	OFF	5.5s
3	OFF	ON	7.5s
4	ON	ON	8.5s

3. If the water supply quantity setting is changed while the power is on, the change will take effect immediately. If it is changed while the icemaker is filling the mold, the new setting will take effect the next time the icemaker cycles.
4. When water supply signal is applied to water and ice valves at the same time during water supply, water shall be supplied to water valve. If water supply signal is applied to ice valve during water supply, water shall be supplied to both water and ice valves.

2-3. Icemaking Control Function

1. Icemaking control is carried out from the completion of water supply to the completion of ice making in the cube mold. Icemaking sensor detects the temperature of cube mold and completes ice making. (ice making sensor is fixed below icemaker cube mold)
2. Icemaking control starts after completion of water supply control or initial control.
3. The icemaker determined it's cycle is completed when the Icemaking sensor reaches -8 °C (17.6°F) after 10 minutes have passes since water filled the mold.
4. It is judged that icemaking is completed when ice maker sensor temperature reaches below -12 °C after 20 minutes in condition 3.

1. This is to eject ice from ice maker cube mold after icemaking is completed.
2. If Hall IC signal is on within 3 6/10 seconds after ice ejection motor rotates in normal direction, it does not proceed ice ejection but waits. If the ice bank is full, ice ejection motor rotates in normal direction in every hour to check the condition of ice bank. If the ice bank is not full, the water supply control starts after completion of ice ejection control. If the icebin is full, ice ejection motor rotates in reverse direction and stops under icemaking or waiting conditions.
3. If ice bin is not full, ice ejection starts. The cube mold tilts to the maximum and ice is separated from the mold and ice checking lever raises.
4. Ice ejection motor stops for 1 second if Hall IC signal changes from OFF (low) to ON (high) after 3 6/10 seconds when ice ejection motor rotates in normal direction. If there is no change in Hall IC signals within 1 minute after ice ejection motor operates, ice ejection motor stops as ice ejection motor or hall IC is out of order.
5. If ice ejection motor or Hall IC is abnormal, ice ejection motor rotates in normal direction to exercise initial operation. It resets the ice maker if ice ejection motor or Hall IC is normal.
6. The mold stops for 1 second at maximum tilted conditions.
7. The mold returns to horizontal conditions as ice ejection motor rotates in reverse direction.
8. When the mold becomes horizontal, the cycle starts to repeat:
Water Supply → Ice Making → Ice Ejection → Mold Returns to Horizontal



2-5. Test Function

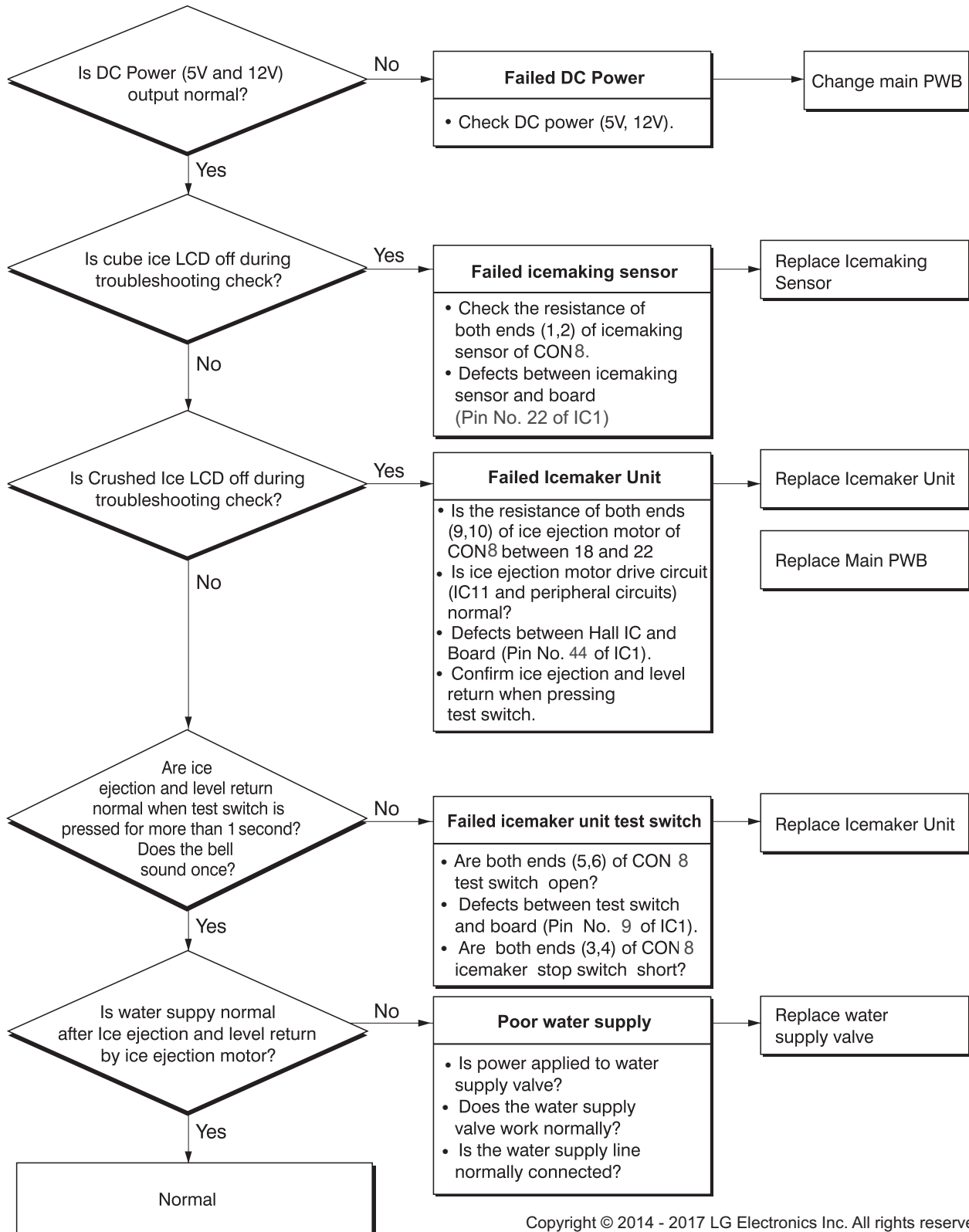
1. It is to force the operation during operation test, service, and cleaning. The test switch is mounted under the automatic icemaker. The test function starts when the test switch is pressed for more than 2 second.
2. Test button does not work during ice ejection and water supply. It works when it is in the horizontal conditions. If mold is full of ice during test function operation, ice ejection control and water supply control do not work.
3. If the mold is in the horizontal (normal) position and the TEST switch is pressed for more than 2 second, ice ejection will begin regardless of how frozen the water might be. When the ejection is completed, the icemaker will refill the mold with water. Consequently, problems related to filling, ejecting, and returning to the horizontal position can be checked using the test switch. When this test is performed, the buzzer will sound and water will fill the mold. Check the icemaker for repair if the buzzer does not sound.
4. When water supply is completed, the cycle operates normally as follows: Icemaking → Ice ejection → Returning to horizontal conditions → Water supply
5. Remove ice from the icemaker cube mold and press test switch when icemaker cube mold is full of ice as ice ejection and water supply control do not work when cube mold is full of ice.

2-6. Other functions relating to freezer compartment door opening

1. When freezer door is open, ice dispenser stops in order to reduce noise and ice drop.
2. When freezer door is open during ice ejection and cube mold returning to horizontal condition, ice ejection and cube mold level return proceed.
3. When freezer door is open, geared motor and cube ice solenoid immediately stop and duct door solenoid stops after 5 seconds.
4. Water dispenser stops in order to protect water drop when freezer door is open.
5. Test function operates normally regardless of refrigerator compartment door opening.

3. ICEMAKER TROUBLESHOOTING

* **Troubleshooting:** It is possible to confirm by pressing freezer and refrigerator temperature control buttons for more than 1 second (icemaker is normal if all LEDs are ON): refer to trouble diagnosis function in MICOM.



The above icemaker circuits are applied to **LSX22423**** and composed of icemaker unit in the freezer and icemaker driving part of main PWB. Water is supplied to the icemaker cube mold through the solenoid relay for ice valve of solenoid valve in the mechanical area by opening valve for the same time.

Water supply automatically stops when water supply time is elapsed. This circuit is to realize the functions such as ice ejection of icemaker cube mold, ice full detection, leveling, ice making test switch input detection is the same as the door switch input detection circuit of main PWB

8. TROUBLE DIAGNOSIS

1. TroubleShooting

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
<p>1. Faulty start</p>	<p>1) No power at outlet. 2) No power on cord.</p> <ul style="list-style-type: none"> └ Bad connection between adapter and outlet. (faulty adapter) <ul style="list-style-type: none"> └ The Inner diameter of adapter. └ The distance between holes. └ The distance between terminals. └ The thickness of terminal. └ Bad connection between plug and adapter (faulty plug). <ul style="list-style-type: none"> └ The distance between pins. └ Pin outer diameter. <p>3) Shorted start circuit.</p> <ul style="list-style-type: none"> └ No power on power cord. <ul style="list-style-type: none"> └ Disconnected copper wire. <ul style="list-style-type: none"> └ Power cord is disconnected. └ Faulty soldering. └ Internal electrical short. └ Faulty terminal contact. <ul style="list-style-type: none"> └ Loose contact. <ul style="list-style-type: none"> - Large distance between male terminal. - Thin female terminal. └ Terminal disconnected. └ Bad sleeve assembly. └ Disconnected. <ul style="list-style-type: none"> └ Weak connection. └ Short inserted cord length. └ Worn out tool blade. └ OLP is off. <ul style="list-style-type: none"> └ Specification of OLP is wrong. └ Defect in OLP. └ Bad connection. └ Power is disconnected. <ul style="list-style-type: none"> └ Inner Ni-Cr wire blows out. └ Bad internal connection. └ Faulty terminal caulking (Cu wire is cut). └ Bad soldering. └ No electric power on compressor. - Faulty compressor. └ Faulty PTC <ul style="list-style-type: none"> └ Power does not conduct. - Damage. └ Characteristics of PTC is wrong. └ Bad connection with compressor. <ul style="list-style-type: none"> └ Too loose. └ Assembly is not possible. └ Bad terminal connection. <p>4) During defrost.</p> <ul style="list-style-type: none"> └ Start automatic defrost. <ul style="list-style-type: none"> └ Cycle was set at defrost when the refrigerator was produced. 	<p>* Measuring instrument: Multi tester</p> <p>Check the voltage. If the voltage is within $\pm 85\%$ of the rated voltage, it is OK.</p> <p>Check the terminal movement.</p> <p>Check both terminals of power cord. Power conducts:OK. No power conducts:NG</p> <p>Check rating of OLP OLP: 4TM419TFBYY Temp. 140°C If rating different: change it If not: OK</p> <p>Check that PTC model it is ok, (6R8MB) then check continuity between terminals 2 and 5 of PTC.</p>

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
2. No cooling.	<p>2) Refrigeration system is clogged.</p> <ul style="list-style-type: none"> Moisture clogged. <ul style="list-style-type: none"> Residual moisture in the evaporator. <ul style="list-style-type: none"> Air Blowing. <ul style="list-style-type: none"> Not performed. Too short. Impossible moisture confirmation. Low air pressure. Leave it in the air. <ul style="list-style-type: none"> During rest time. After work. Caps are missed. Residual moisture. <ul style="list-style-type: none"> Not dried in the compressor. Elapsed more than 6 months after drying Caps are missed. No pressure when it is open. No electric power on thermostat. <ul style="list-style-type: none"> Insufficient drier capacity. <ul style="list-style-type: none"> Dry drier - Drier temperature. Leave it in the air. <ul style="list-style-type: none"> Check on package condition. Good storage after finishing. Residual moisture in pipes. <ul style="list-style-type: none"> Caps are missed. <ul style="list-style-type: none"> During transportation. During work. Air blowing. <ul style="list-style-type: none"> Not performed. Performed. <ul style="list-style-type: none"> Too short time. Low air pressure. Less dry air. Moisture penetration - Leave it in the air. - Moisture penetration into the refrigeration oil. Weld joint clogged. <ul style="list-style-type: none"> Short pipe insert. Pipe gaps. <ul style="list-style-type: none"> Too large. Damaged pipes. Too much solder. Drier clogging. <ul style="list-style-type: none"> The capillary tube inserted depth. - Too much. Capillary tube melts. - Over heat. Clogged with foreign materials. <ul style="list-style-type: none"> Desiccant powder. Weld oxides. Drier angle. Reduced cross section by cutting. - Squeezed. Foreign material clogging. <ul style="list-style-type: none"> Compressor cap is disconnected. Foreign materials are in the pipe. 	<ul style="list-style-type: none"> Heat a clogged evaporator to check it. As soon as the cracking sound starts, the evaporator will begin to freeze. The evaporator does not cool from the beginning (no evidence of moisture attached). The evaporator is the same as before even heat is applied.

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
<p>3. Refrigeration is weak.</p>	<p>1) Refrigerant Partly leaked. ┌ Weld joint leak. └ Parts leak.</p> <p>2) Poor defrosting capacity.</p> <p style="margin-left: 20px;">┌ Drain path (pipe) clogged. ┌ Inject adiabatics into drain hose. └ Foreign materials penetration. ┌ Adiabatics lump input. └ Damage by a screw or clamp. └ Other foreign materials input. └ Cap drain is not disconnected.</p> <p style="margin-left: 20px;">┌ Defrost heater does not generate heat. ┌ Parts disconnected. ┌ Plate heater ┌ Wire is cut. └ Heating wire. └ Contact point between heating and electric wire. └ Dent by fin evaporator. └ Poor terminal contacts. └ Cord heater ┌ Wire is cut. └ Lead wire. └ Heating wire. └ Contact point between heating and electric wire. └ Heating wire is corroded └ Water penetration. └ Bad terminal connection.</p>	<ul style="list-style-type: none"> • Check visually. • Check terminal Conduction: OK. No conduction: NG. If wire is not cut, refer to resistance. P=Power V=Voltage R=Resistance $P = \frac{V^2}{R}$ $R = \frac{V^2}{P}$

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
<p>3. Refrigeration is weak.</p>	<ul style="list-style-type: none"> - Residual frost. <ul style="list-style-type: none"> - Weak heat from heater. <ul style="list-style-type: none"> - Sheath Heater - rated. - Heater plate <ul style="list-style-type: none"> - No contact to drain. - Loosened stopper cord. - Heater cord-L <ul style="list-style-type: none"> - Not touching the evaporator pipe. - Location of assembly (top and middle). - Too short defrosting time. <ul style="list-style-type: none"> - Defrost Sensor. <ul style="list-style-type: none"> - Faulty characteristics. - Seat-D (missing, location, thickness). - Structural fault. <ul style="list-style-type: none"> - Gasket gap. - Air inflow through the fan motor. - Bad insulation of case door. - No automatic defrosting. - Defrost does not return. <p>3) Cooling air leak.</p> <ul style="list-style-type: none"> - Bad gasket adhesion <ul style="list-style-type: none"> - Gap. - Bad attachment. - Contraction. - Door sag. <ul style="list-style-type: none"> - Bad adhesion. - Weak binding force at hinge. <p>4) No cooling air circulation.</p> <ul style="list-style-type: none"> - Faulty fan motor. <ul style="list-style-type: none"> - Fan motor <ul style="list-style-type: none"> - Self locked. - Wire is cut. - Bad terminal contact. - Door switch. <ul style="list-style-type: none"> - Faults. <ul style="list-style-type: none"> - Contact distance. - Button pressure. - Melted contact. - Contact. - Refrigerator and freezer switch reversed. - Button is not pressed. <ul style="list-style-type: none"> - Poor door attachment. - Door liner (dimension). - Contraction inner liner. - Misalignment. - Bad terminal connection. - Adiabatics liquid leak. 	<ul style="list-style-type: none"> • Check the fan motor conduction: OK. No conduction: NG.

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
<p>3. Refrigeration is weak.</p>	<p>4) No cooling air circulation.</p> <ul style="list-style-type: none"> - Faulty fan motor. — Fan is constrained. <ul style="list-style-type: none"> - Fan shroud contact. - Clearance. - Damping evaporator contact. - Accumulated residual frost. - Small cooling air discharge. — Insufficient motor RPM <ul style="list-style-type: none"> - Fan overload. - Fan misuse. - Bad low temperature RPM characteristics. - Rated power misuse. - Low voltage. - Faulty fan. — <ul style="list-style-type: none"> - Fan misuse. - Bad shape. - Loose connection. - Not tightly connected. - Insert depth. - Shroud. — Bent. - Ice and foreign materials on rotating parts. <p>5) Compressor capacity. <ul style="list-style-type: none"> - Rating misuse. - Small capacity. - Low voltage. </p> <p>6) Refrigerant too much or too little. <ul style="list-style-type: none"> - Malfunction of charging cylinder. - Wrong setting of refrigerant. - Insufficient compressor. - Faulty compressor. </p> <p>7) Continuous operation <ul style="list-style-type: none"> - No contact of temperature controller. - Foreign materials. </p> <p>8) Damper opens continuously. <ul style="list-style-type: none"> - Foreign materials jammed. <ul style="list-style-type: none"> - Adiabatics liquid dump. - The EPS (styrofoam) drip tray has sediment in it. - A screw or other foreign material has fallen into the drip tray or damper. - Failed sensor. - Position of sensor. - Characteristics of damper. <ul style="list-style-type: none"> - Bad characteristics of its own temperatue. - Parts misuse. - Charge of temperature - Impact. characteristics. </p> <p>9) Food storing place. - Near the outlet of cooling air.</p>	<ul style="list-style-type: none"> • Check visually after disassembly. • Check visually after disassembly.

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
<p>4. Warm refrigerator compartment temperature.</p> <p>5. No automatic operation. (faulty contacts)</p>	<p>1) Colgged cooling path.</p> <ul style="list-style-type: none"> └ Adiabatics liquid leak. └ Foreign materials. — Adiabatics dump liquid. <p>2) Food storate.</p> <ul style="list-style-type: none"> └ Store hot food. └ Store too much at once. └ Door open. └ Packages block air flow. <p>1) Faulty temperature sensor in freezer or refrigerator compartment.</p> <ul style="list-style-type: none"> └ Faulty contact. └ Faulty temperature characteristics. <p>2) Refrigeration load is too much.</p> <ul style="list-style-type: none"> └ Food. <ul style="list-style-type: none"> └ Too much food. └ Hot food. └ Frequent opening and closing. └ Cool air leak. └ Poor door close. — Partly opens. <p>3) Poor insulation.</p> <p>4) Bad radiation.</p> <ul style="list-style-type: none"> └ High ambient temperature. └ Space is secluded. <p>5) Refrigerant leak.</p> <p>6) Inadequate of refrigerant.</p> <p>7) Weak compressor discharging power.</p> <ul style="list-style-type: none"> └ Different rating. └ Small capacity. <p>8) Fan does not work.</p> <p>9) Button is set at strong .</p>	<ul style="list-style-type: none"> • Inspect parts measurements and check visually.
<p>6. Condensation and ice formation.</p>	<p>1) Ice in freeezer compartment.</p> <ul style="list-style-type: none"> └ External air inflow.— Bushing installed incorrectly. └ Door opens but not closes. <ul style="list-style-type: none"> └ Weak door closing power. └ Stopper malfunction. └ Door sag. └ Food hinders door closing. └ Gap around gasket. — Contraction, distortion, loose, door twisted, corner not fully inserted. └ Food vapor. — Storing hot food. — Unsealed food. <p>2) Condensation in the refrigerator compartment.</p> <ul style="list-style-type: none"> └ Door opens but not closes. <ul style="list-style-type: none"> └ Insufficient closing. └ Door sag. └ Food hinders door closing. └ Gasket gap. <p>3) Condensation on liner foam.</p> <ul style="list-style-type: none"> └ Cool air leak and transmitted. <ul style="list-style-type: none"> └ Not fully filled. <ul style="list-style-type: none"> └ Top table part. └ Out plate Ref/Lower part. └ Flange gap. — Not sealed. └ Gasket gap. 	

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
6. Condensation and ice formation.	<p>4) Condensation on door.</p> <ul style="list-style-type: none"> Condensation on the duct door. - Duct door heater is cut. Condensation on the dispense recess. <ul style="list-style-type: none"> Recess Heater is cut. Duct door is open. / Foreign material clogging. Condensation on the door surface. <ul style="list-style-type: none"> Not fully filled. <ul style="list-style-type: none"> Surface. } Liquid shortage. Corner. } Liquid leak. Adiabatics liquid contraction. Condensation on the gasket surface. <ul style="list-style-type: none"> Bad wing adhesion. <ul style="list-style-type: none"> Wing sag(lower part). Door liner shape mismatch. Comer. <ul style="list-style-type: none"> Too much notch. Broken. Home Bar heater is cut. <p>5) Water on the floor.</p> <ul style="list-style-type: none"> Condensation in the refrigerator compartment. Defrosted water overflows. — Clogged discharging hose. Discharging hose — Evaporation tray located at wrong place. location. Tray drip. <ul style="list-style-type: none"> Damaged. Breaks, holes. Small Capacity. Position of drain. 	
7. Sounds	<p>1) Compressor compartment operating sounds.</p> <ul style="list-style-type: none"> Compressor sound inserted. <ul style="list-style-type: none"> Sound from machine itself. Sound from vibration. <ul style="list-style-type: none"> Restrainer. Bushing seat. <ul style="list-style-type: none"> Too hard. Distorted. Aged. Burnt. Stopper. — Bad Stopper assembly. <ul style="list-style-type: none"> Not fit (inner diameter of stopper). Tilted. Not Compressor base not connected. Bad welding compressor stand(fallen). Foreign materials in the compressor compartment. COMBO sound — Chattering sound. Capacitor noise. — Insulation paper vibration. Pipe sound. <ul style="list-style-type: none"> Pipe contacts each other. - Narrow interval. No vibration damper. <ul style="list-style-type: none"> Damping Bushing-Q. Damping Bushing-S. Capillary tube unattached. 	

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
7. Sounds	<p>1) Compressor compartment operating sounds.</p> <ul style="list-style-type: none"> Transformer sound. <ul style="list-style-type: none"> Its own fault. - Core gap. Bad connection. - Correct screw connection. Drip tray vibration sound. <ul style="list-style-type: none"> Bad assembly. Distortion. Foreign materials inside. Back cover machine sound. <ul style="list-style-type: none"> Bad connection. Partly damaged. Condenser drain sound. <ul style="list-style-type: none"> Not connected. Bad pipe caulking. <p>2) Freezer compartment sounds.</p> <ul style="list-style-type: none"> Fan motor sound. <ul style="list-style-type: none"> Normal operating sound. Vibration sound. <ul style="list-style-type: none"> Aged rubber seat. Bad torque for assembling motor bracket. Sounds from fan contact. <ul style="list-style-type: none"> Fan guide contact. Shroud burr contact. Damping evaporator contact. Residual frost contact. <ul style="list-style-type: none"> Damaged heater cord. Narrow evaporator interval. Unbalance fan sounds. <ul style="list-style-type: none"> Unbalance. <ul style="list-style-type: none"> Surface machining conditions. Fan distortion. Misshappen. Burr. Ice on the fan. - Air intake (opposite to motor bushing assembly.) Motor shaft contact sounds. <ul style="list-style-type: none"> Supporter disorted. Tilted during motor assembly. Resonance. Evaporator noise. <ul style="list-style-type: none"> Evaporator pipe contact. - No damping evaporator. Sound from refrigerant. - Stainless steel pipe shape in accumulator. Sound from fin evaporator and pipe during expansion and contraction. <p>3) Bowls and bottles make contact on top shelf.</p> <p>4) Refrigerator roof contact.</p> <p>5) Refrigerator side contact.</p> <p>6) Insufficient lubricants on door hinge.</p>	

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
<p>8. Faulty lamp (freezer and refrigerator compartment).</p>	<p>1) Lamp problem. — Filament blows out. — Glass is broken.</p> <p>2) Bad lamp assembly. — Not inserted. — Loosened by vibration.</p> <p>3) Bad lamp socket.</p> <p>— Disconnection. — Bad soldering. — Bad rivet contact.</p> <p>— Short. — Water penetration. — Low water level in tray.</p> <p>— Bad elasticity of contact.</p> <p>— Bad contact (corrosion).</p> <p>4) Door switch. — Defective. — Refrigerator and freezer switches are reversed. — Travel distance. — Bad connection. — Bad terminal contact. — Adiabatics liquid leak..</p>	
<p>9. Faulty internal voltage (short).</p>	<p>1) Lead wire is damaged.</p> <p>— Wire damage when assembling Bracket Cover. — Outlet burr in the bottom plate. — Pressed by cord heater. lead wire, evaporator pipe.</p> <p>2) Exposed terminal.</p> <p>— Compressor Compartment terminal. - Touching other components. — Freezer compartment terminal. - Touching evaporator pipe.</p> <p>3) Faulty parts.</p> <p>— Transformer. — Coil contacts cover. — Welded terminal parts contact cover.</p> <p>— Compressor. — Bad coil insulation.</p> <p>— Plate heater.</p> <p>— Melting fuse. — Sealing is broken. — Moisture penetration.</p> <p>— Cord heater. — Pipe damaged. — Moisture penetration. — Bad sealing.</p> <p>— Sheath heater.</p>	<p>• Connect conduction and non-conduction parts and check with tester. Conduction: NG. Resistance: OK.</p>


CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
<p>10. Structure, appearance, and others.</p>	<p>1) Door foam.</p> <ul style="list-style-type: none"> Sag. <ul style="list-style-type: none"> Hinge loose <ul style="list-style-type: none"> Bolt is loosened during transportation. Not tightly fastened. Screw worn out . Weak gasket adhesion. <ul style="list-style-type: none"> Adhesion surface. Fixed tape. <ul style="list-style-type: none"> Not well fixed. Noise during operation. <ul style="list-style-type: none"> Hinge interference. <ul style="list-style-type: none"> Bigger door foam. Hinge-Pin tilted-Poor flatness. No washer. No grease. Malfunction. <ul style="list-style-type: none"> Not closed Interference between door liner and inner liner. Refrigerator compartment is opened when freezer compartment is closed (faulty stopper). <ul style="list-style-type: none"> Stopper worn out. Bad freezer compartment door assembly. No stopper. <p>2) Odor.</p> <ul style="list-style-type: none"> Temperature of refrigerator compartment. <ul style="list-style-type: none"> High. <ul style="list-style-type: none"> Faulty damper control. Button is set atweak. Door is open (interference by food). Deodorizer. <ul style="list-style-type: none"> No deodorizer. Poor capacity. Food Storage. <ul style="list-style-type: none"> Seal condition. Storage of fragrant foods. Long term storage. Others. <ul style="list-style-type: none"> Odors from cleaners or items which shroud not be stored in a refrigerator. 	

2. FAULTS

2-1. Power

Problems	Causes	Checks	Measures	Remarks
No power on outlet.	<ul style="list-style-type: none"> - Power cord cut. - Faulty connector insertion. - Faulty connection between plug and adapter. 	<ul style="list-style-type: none"> - Check the voltage with tester. - Check visually. - Check visually. 	<ul style="list-style-type: none"> - Replace the components. - Reconnect the connecting parts. - Reconnect the connecting parts. 	
Fuse blows out.	<ul style="list-style-type: none"> - Short circuit by wrong connection - Low voltage products are connected to high voltage. - Short circuit by insects. - Electricity leakage. - High voltage. - Short circuit of components (tracking due to moisture and dust penetration). 	<ul style="list-style-type: none"> - Check the fuse with tester or visually. - Check the input volt are with tester (between power cord and products). - Check the resistance of powercord with tester (if it is 0 it is shorted). 	<ul style="list-style-type: none"> - Find and remove the cause of problem (ex. short, high voltage, low voltage). - Replace with rated fuse. 	<p>Replace with rated fuse after confirming its specification.</p> <p>If fuse blows out frequently, confirm the cause and prevent.</p>

2-2. Compressor

Problems	Causes	Checks	Measures	Remarks
Compressor doesn't operate	<ul style="list-style-type: none"> - Faulty PTC - Faulty OLP - Compressor doesn't work 	<ul style="list-style-type: none"> - Check that PTC model its ok, then check continuity between terminals 2 and 5 of PTC. - Check that OLP model its ok, then check continuity between terminals of OLP 	<ul style="list-style-type: none"> - If model its incorrect replace it. - If there isn't continuity replace it. 	<p>PTC Model: PHTTM 6R8MB</p> <p>OLP Model: 4TM419TFBYY</p>
		<ul style="list-style-type: none"> - If compressor assembly parts are normal (capacitor, PTC, OLP), apply power directly to the compressor to force operation.  <p>Apply nominal voltage between compressor pin.</p>	<ul style="list-style-type: none"> - During forced operation: - Operates: Check other parts. - Not operate: Replace the frozen compressor with new one, weld, evacuate and recharge refrigerant. 	*Refer to weld repair procedures.

2-3. Temperature

Problems	Causes	Checks	Measures	Remarks
High temperature in the freezer compartment.	Poor cool air circulation due to faulty fan motor.	<ul style="list-style-type: none"> - Lock — Check resistance with a tester. 0Ω: short. ∞Ω: cut. - Rotate rotor manually and check rotation. - Wire is cut. - Bad terminal contact: Check terminal visually. - Fan constraint. - Fan shroud contact: Confirm visually. - Fan icing: Confirm visually. 	<ul style="list-style-type: none"> - Replace fan motor. - Reconnect and reinsert. - Maintain clearance and remove ice (Repair and/or replace shroud if fan is constrained by shroud deformation). 	
	Faulty fan motor due to faulty door switch operation.	<ul style="list-style-type: none"> - Iced button (faulty) operation: Press button to check - Faulty button pressure and contact: Press button to check operation. - Door cannot press door switch button: Check visually. 	<ul style="list-style-type: none"> - Confirm icing causes and repair. - Replace door switch. - Door sag: fix door. - Door liner bent: replace door or attach sheets. 	
	Bad radiation conditions in compressor compartment.	<ul style="list-style-type: none"> - Check the clearance between the refrigerator and wall (50 mm in minimum). - Check dust on the grill in compressor compartment. - Check dust on the condenser coils. 	<ul style="list-style-type: none"> - Keep clearance between refrigerator and walls (minimum 50mm). - Remove dust and contaminants from grill for easy heat radiation. - Remove the dust with vacuum cleaner from the coils condenser while the refrigerator is off. 	<ul style="list-style-type: none"> - The fan may be broken if cleaning performs while the refrigerator is on.

2-4. Cooling

Problems	Causes	Checks	Measures	Remarks
High temperature in the freezer compartment.	Refrigerant leak.	<p><u>Check sequence</u></p> <ol style="list-style-type: none"> 1. Check the welded parts of the drier inlet and outlet and drier auxiliary in the compressor compartment (high pressure side). 2. Check the end of compressor sealing pipe (low pressure side). 3. Check silver soldered parts. (Cu + Fe / Fe + Fe). 4. Check bending area of wire condenser pipe in compressor compartment (cracks can happen during bending). 5. Check other parts (compressor compartment and evaporators in freezer compartment). 	Weld the leaking part, recharge the refrigerant.	Drier must be replaced.
	Shortage of refrigerant.	<p>Check frost formation on the surface of evaporator in the freezer compartment.</p> <ul style="list-style-type: none"> - If the frost forms evenly on the surface, it is OK. - If it does not, it is not good. 	<ul style="list-style-type: none"> - Find out the leaking area, repair, evacuate, and recharge the refrigerant. - No leaking, remove the remaining refrigerant, and recharge new refrigerant. 	Drier must be replaced.

Problems	Causes	Checks	Measures	Remarks
High temperature in the freezer compartment.	Cycle pipe is clogged.	<p>Check sequence.</p> <ol style="list-style-type: none"> 1. Check temperature of condenser manually. If it is warm, OK. If it is not, compressor discharging joints might be clogged. 2. Manually check whether hot line pipe is warm. If it is warm, OK. If it is not, condenser outlet weld joints might be clogged. 	<ul style="list-style-type: none"> - Heat up compressor discharging weld joints with touch, disconnect the pipes, and check the clogging. Remove the causes of clogging, weld, evacuate, and recharge the refrigerant. - If it's warm, OK. If it's not, condenser discharging line weld joints might be clogged. Disconnect with torch, remove the causes, evacuate, and recharge seal refrigerant. 	Drier must be replaced.
	Leak at loop pipe weld joint (discharge) in compressor.	<p>Check sequence.</p> <ol style="list-style-type: none"> 1. Manually check whether condenser is warm, it is not warm and the frost forms partly on the evaporator in the freezer compartment. 	<ul style="list-style-type: none"> Replace the compressor, weld, evacuate, and recharge refrigerant. 	Drier must be replaced.
	Faulty cooling fan in the compressor compartment.	<p>Check sequence.</p> <ol style="list-style-type: none"> 1. Check cooling fan operation. 2. Check that cooling fan is disconnected from the motor. 	<ul style="list-style-type: none"> - Replace if motor does not operate. - If fan is disconnected, check fan damage and reassemble it. Refer to fan motor disassembly and assembly sequence. 	

2-5. Defrosting failure

Problems	Causes	Checks	Measures	Remarks
No defrosting.	<p>Heater does not generate heat as the heating wire is cut or the circuit is shorted.</p> <ol style="list-style-type: none"> 1) Heating wire is damaged when inserting into the evaporator. 2) Lead wire of heater is cut. 3) Heating wire at lead wire contacts is cut. <p>Suction tube and discharge orifice:</p> <ol style="list-style-type: none"> 1. Impurities. 2. Ice. 	<ol style="list-style-type: none"> 1. Check the resistance of heater. 0Ω: Short. ∞Ω: Cut. Tens to thousands Ω : OK. 2. Check the resistance between housing terminal and heater surface. 0Ω: Short. ∞Ω: Cut. Tens to thousands Ω: Short. <ol style="list-style-type: none"> 1. Confirm foreign materials. In case of ice, insert the copper line through the hole to check. 2. Put hot water into the drain (check drains outside). 	<p>Heating wire is short and wire is lead wire.</p> <ul style="list-style-type: none"> • Parts replacement: Refer to parts explanations. 	<p>Heat the heater with the insulation tape and heat shrink tube if the cut lead wire is accessible to repair.</p>
Gap between Suction duct and Heater plate (Ice in the gap).		<ol style="list-style-type: none"> 1. Confirm in the Suction duct. 	<ol style="list-style-type: none"> 1) Push out impurities by inserting copper wire. (Turn off more than 3 hours and pour in hot water if frost is severe.) 2) Put in hot water to melt down frost. 3) Check the water outlet. 4) Push the heater plate to suction duct manually and assemble the disconnected parts. 	
Wrong heater rating (or wrong assembly).		<ol style="list-style-type: none"> 1. Check heater label. 2. Confirm the capacity after substituting the resistance value into the formula. $P = \frac{V^2}{R}$ (V: Rated voltage of user country) (R: Resistance of tester[?]) Compare P and lavel capacity. Tolerance: ±7% 	<ol style="list-style-type: none"> 1) Turn off the power, confirm impurities and ice in the gap, and supply hot water until the ice in the gap melts down. 2) Push the Heater plate to drain bottom with hand and assemble the disconnected parts. 	<p>Faults:replace. - How to replace : Refer to main parts.</p>

Problems	Causes	Checks	Measures	Remarks
No defrosting	<p>Melting fuse blows.</p> <p>1) Lead wire is cut.</p> <p>2) Bad soldering.</p> <p>Ice in the Suction duct.</p> <p>1) Icing by foreign materials in the duct.</p> <p>2) Icing by cool air inflow through the gap of heater plate.</p> <p>3) Icing by the gap of heater plate.</p>	<p>- Check melting fuse with tester. - If 0Ω: OK.</p> <p>If $\infty\Omega$: wire is cut.</p> <p>1. Check the inner duct with mirror.</p> <p>2. Check by inserting soft copper wire into the duct (soft and thin copper not to impair heating wire).</p>	<p>Faulty parts: parts replacement.</p> <p>- Check wire color when measuring resistance with a tester.</p> <p>1) Turn power off.</p> <p>2) Raise the front side (door side), support the front side legs, and let the ice melt naturally. (If power is on, melt the frost by forced defrosting.)</p> <p>3) Reassemble the heater plate.</p>	
	<p>Bad cool air inflow and discharge, and bad defrosting due to faulty contact and insertion (bad connector insertion into housing of heater, melting, fuse, and motor fan).</p>	<p>1. Turn on power, open or close the door, check that motor fan operates (If it operates, motor fan is OK).</p> <p>2. Disconnect parts in the refrigerator compartment, check the connection around the housing visually, defrost, and confirm heat generation on the heater. Do not put hands on the sheath heater.</p> <p>3. Check the parts which have faults described in 1 & 2 (mechanical model: disconnect thermostat from the assembly).</p>	<p>1) Check the faulty connector of housing and reassemble wrongly assembled parts.</p> <p>2) If the parts are damaged, remove the parts and replace it with a new one.</p>	

2-6. Icing

Problems	Causes	Checks	Measures	Remarks
Icing in the refrigerator compartment. - Damper icing. - Pipe icing. - Discharging pipe icing.	1) Bad circulation of cool air. - Clogged intake port in the refrigerator compartment. - Sealing is not good. - Too much food is stored and clogs the discharge port. - Bad defrosting.	- Check the food is stored properly (check discharge and intake port are clogged). - Check icing on the surface of baffle and cool air path (pipe) after disassembling the container box. - Check icing at intake ports of freezer and refrigerator compartment.	- Be acquainted with how to use. - Sealing on connecting partem - Check the damper and replace it if it has defects. - Check defrost. (After forced defrosting, check ice in the evaporator and pipes.)	- Check the defro related parts if probl is caused by faulty defrosting.
	2) Faulty door or refrigerator compartment. - Faulty gasket. - Faulty assembly.	- Check gasket attached conditions. - Check door assembly conditions.	- Correct the gasket attachment conditions and replace it. - Door assembly and replacement.	- Replacement should be done when it cannot be repaired.
	3) Overcooling in the refrigerator compartment. - Faulty damper in the refrigerator compartment. - Faulty MICOM (faulty sensor)	- Check refrigerator compartment is overcooled (when button pressed on weak). - Check parts are faulty.	- Replace faulty parts.	
	4) Bad defrosting - Heater wire is cut. - Defective defrost sensor. - Defrosting cycle.	- Check frost on the evaporator after dissembling shroud and fan grille. - Check ice on intake port of freezer and refrigerator compartment.	- Check parts related to defrosting. - Check defrosting. (Check ice on the evaporator and pipe.)	- Moisture does not freeze on the evaporator but can be sucked into the refrigerator, where it condenses and freezes. This interferes with cold air circulation and sublimation of the ice.
	5) Customers are not familiar with this machine. - Door opens. - High temperature, high moisture, and high load.	- Check food interferes with door closing. - Check ice on the ceilings.	- Be acquainted with how to use.	

Problem	Cause	Check	Measure	Remarks
Ice in the freezer compartment. - Surface of fan grille. - Wall of freezer compartment. - Cool air discharging port. - Basket(rack) area.	1) Bad cooling air circulation. - Intake port is clogged in the freezer compartment. - Discharging port is Clogged. - Too much food is stored. - Bad defrosting.	- Check food storage conditions visually.(Check clogging at intake and discharging port of cooling air.) - Check food occupation ratio in volume (Less than 75%). - Check frost on the evaporator after dissembling shroud and fan grille. - Check icing at intake port of refrigerator compartment.	- Be acquainted with how to use parts related to defrosting. - Check defrost (Check ice on evaporator and pipes after forced defrosting).	Check the problem is caused by the faulty defrosting.
- Food surface. - Icing in the shute.	2) Bad freezer compartment door - Faulty gasket - Faulty assembly	- Check gasket attachment conditions. - Check door assembly conditions.	- Correct the gasket attachment conditions and replace it. - Door assembly and replacement.	Replace when it can be repaired.
	3) Over freezing in the freezer compartment. - Faulty MICOM.	- Refrigerator operates pull down. (Check if it is operated intermittently) - The Temperature of freezer compartment is satisfactory, but over freezing happens in the refrigerator compartment even though the notch is set at weak .	- Replace defective parts.	
	4) Bad defrosting. - Heater wire is cut. - Faulty defrost sensor. - Defrosting cycle	- Check frost on the evaporator after dissembling shroud and grille. - Check ice on the intake port in the refrigerator compartment.	- Check parts related to defrosting. - Check defrosting. Check ice on the evaporator and pipes after forced defrosting.	
	5) User is not familiar with how to use. - Door opens. - High moisture food water is stored.	- Check food holds door open. - Check ice on the ice tray.	- Be acquainted with how to use.	

2-7. Sound

Problems	Causes	Checks	Measures	Remarks
Hisssound	1. Loud sound of compressor operation.	1.1 Check the level of the refrigerator. 1.2 Check the bushing seat conditions (sagging and aging).	1) Maintain horizontal level. 2) Replace bushing and seat if they are sagged and aged. 3) Touch the piping at various place along its route. Install a damper at the point where your touch reduces the noise. 4) Avoid pipe interference. 5) Replace defective fan and fan motor. 6) Adjust fan to be in the center of the fan guide. 7) Leave a clearance between interfering parts and seal gaps in the structures. 8) Reassemble the parts which make sound. 9) Leave a clearance if evaporator pipes and suction pipe touch freezer shroud.	
	2. Pipes resonate sound which is connected to the compressor.	2.1 Check the level of pipes connected to the compressor and their interference. 2.2 Check bushing inserting conditions in pipes. 2.3 Touch pipes with hands or screw -driver (check the change of sound).		
	3. Fan operation sound in the freezer compartment.	3.1 Check fan insertion depth and blade damage. 3.2 Check the interference with structures. 3.3 Check fan motor. 3.4 Check fan motor bushing insertion and aging conditions.		
	4. Fan operation sound in the compressor compartment.	4.1 Same as fan confirmation in the refrigerator. 4.2 Check drip tray leg insertion. 4.3 Check the screw fastening conditions at condenser and drip tray.		

Problems	Causes	Checks	Measures	Remarks
Vibration sound. Clack.	<ol style="list-style-type: none"> 1. Vibration of shelves and foods in the refrigerator. 2. Pipes interference and capillary tube touching in the compressor compartment. 3. Compressor stopper vibration. 4. Moving wheel vibration. 5. Other structure and parts vibration. 	<ol style="list-style-type: none"> 1-1. Remove and replace the shelves in the refrigerator 1-2. Check light food and container on the shelves. 2-1. Touch pipes in the compressor compartment with hands. 2-2. Check capillary tube touches cover back. 3-1. Check compressor stopper Vibration. 4-1. Check vibration of front and rear moving wheels. 5-1. Touch other structures and parts. 	<ol style="list-style-type: none"> 1) Reassemble the vibrating parts and insert foam or cushion where vibration is severe. 2) Leave a clearance where parts interfere with each other. 3) Reduce vibration with bushing and restrainer if it is severe. (especially compressor and pipe). 4) Replace compressor stopper if it vibrates severely. 	
Irregular sound. Click .	<ol style="list-style-type: none"> 1. It is caused by heat expansion and contraction of evaporator, shelves, and pipes in the refrigerator. 	<ol style="list-style-type: none"> 1-1 Check time and place of sound sources. 	<ol style="list-style-type: none"> 1) Explain the principles of refrigeration and that the temperature difference between operation and defrosting can make sounds. 2) If evaporator pipe contacts with other structures, leave a clearance between them (freezer shroud or inner case). 	

Problems	Causes	Checks	Measures	Remarks
Sound Popping (almost the same as animals crying sound).	It happens when refrigerant expands at the end of capillary tube.	<ul style="list-style-type: none"> - Check the sound of refrigerant at the initial installation. - Check the sound when the refrigerator starts operation after forced defrosting. - Check the restrainer attachment conditions on the evaporator and capillary tube weld joints. 	<ul style="list-style-type: none"> - Check the restrainer attached on the evaporator and capillary tube weld joints and attach another restrainer. - If it is continuous and severe, insert capillary tube again (depth 15±3mm) - Fasten the capillary tube to suction pipes or detach in the compressor compartment. - Explain the principles of freezing cycles. 	
Water boiling or flowing sound.	It happens when refrigerant passes orifice in accumulator internal pipes by the pressure difference between condenser and evaporator.	<ul style="list-style-type: none"> - Check the sound when compressor is turned on. - Check the sound when compressor is turned off. 	<ul style="list-style-type: none"> - Explain the principles of freezing cycles and refrigerant flowing phenomenon by internal pressure difference. - If sound is severe, wrap the accumulator with foam and restrainer. 	
Sound of whistle when door closes.	When door closes, the internal pressure of the refrigerator decreases sharply below atmosphere and sucks air into the refrigerator, making the whistle sound.	<ul style="list-style-type: none"> - Check the sound by opening and closing the refrigerator or freezer doors. 	<ul style="list-style-type: none"> - Broaden the cap of discharge hose for defrosting in the compressor compartment. - Seal the gap with sealant between out and inner cases of hinge in door. 	

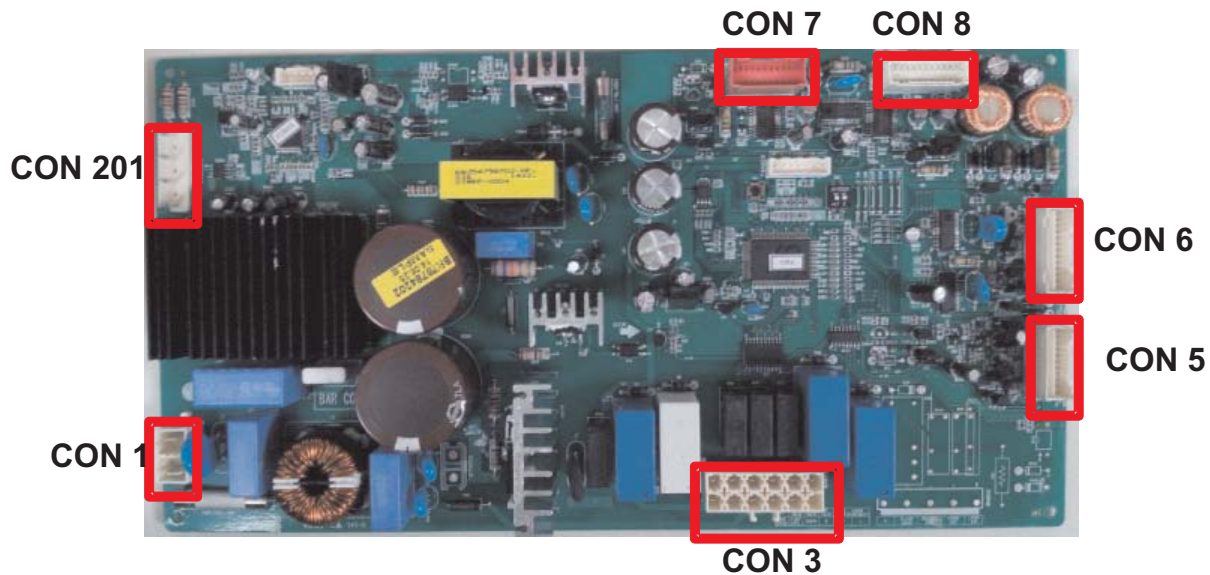
2-8. Odor

Problems	Causes	Checks	Measures	Remarks
Food Odor.	Food (garlic, kimchi, etc)	<ul style="list-style-type: none"> - Check the food is not wrapped. - Check the shelves or inner wall are stained with food juice. - Be sure food is securely covered with plastic wrap. - Check food cleanliness. 	<ul style="list-style-type: none"> - Dry the deodorizer in a sunny place with adequate ventilation. - Store the food in the closed container instead of vinyl wraps. - Clean the refrigerator and set strongly at 	
Plastic Odor.	Odors of mixed food and plastic odors.	<ul style="list-style-type: none"> - Check wet food is wrapped with plastic bowl and bag. - It happens in the new refrigerator. 	<ul style="list-style-type: none"> - Clean the refrigerator. - Persuade customers not to use plastic bag or wraps with wet food or odorous foods. 	
Odor from the deodorizer.	Odor from the old deodorizer.	<ul style="list-style-type: none"> - Check the deodorizer odors. 	<ul style="list-style-type: none"> - Dry the deodorizer with dryer and then in the shiny and windy place. - Remove and replace the deodorants. 	*Deodorizer : option

9. PCB

9-1. Main PCB

P/N:EBR787482**



9-2. Display PCB

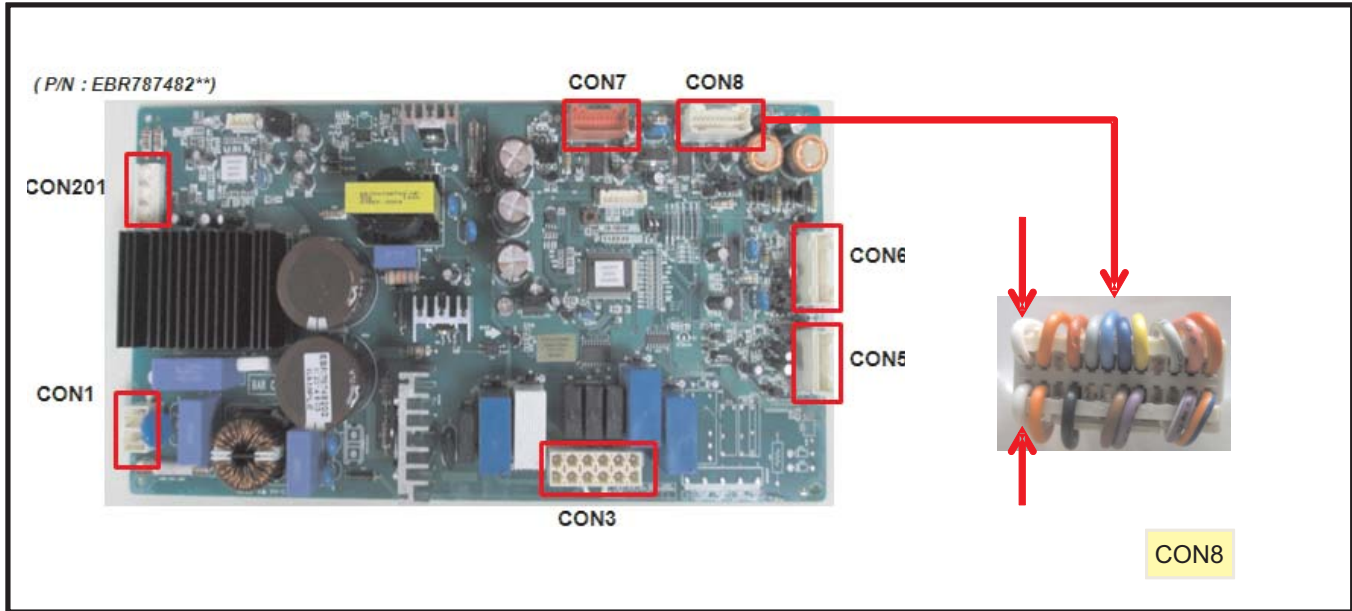
(P/N: EBR797498**)



10. TROUBLESHOOTING WITH ERROR DISPLAY

10-1. Freezer Sensor Error (Er FS)

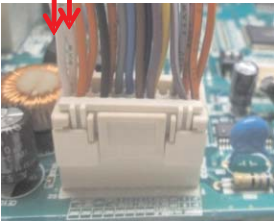
Symptom	Check Point
1. Er FS	1. Check for a loose connection 2. Check Sensor Resistance



<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">BK</td> <td rowspan="6" style="border: none;"> </td> <td style="text-align: center;">PK</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">BO</td> <td style="text-align: center;">BO/WH</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">/</td> <td style="text-align: center;">GY/WH</td> <td style="text-align: center;">6</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">GY</td> <td style="text-align: center;">RD/YL</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">5</td> <td style="text-align: center;">YL</td> <td style="text-align: center;">BO/BL</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">6</td> <td style="text-align: center;">BL</td> <td style="text-align: center;">/</td> <td style="text-align: center;">7</td> </tr> </table>	1	BK		PK	4	2	BO	BO/WH	3	3	/	GY/WH	6	4	GY	RD/YL	2	5	YL	BO/BL	1	6	BL	/	7	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">PR</td> <td style="text-align: center;">9</td> </tr> <tr> <td style="text-align: center;">YL</td> <td style="text-align: center;">10</td> </tr> <tr> <td style="text-align: center;">BL</td> <td style="text-align: center;">12</td> </tr> <tr> <td style="text-align: center;">BN</td> <td style="text-align: center;">11</td> </tr> <tr> <td style="text-align: center;">SB</td> <td style="text-align: center;">14</td> </tr> <tr> <td style="text-align: center;">GY</td> <td style="text-align: center;">16</td> </tr> <tr> <td style="text-align: center;">/</td> <td style="text-align: center;">13</td> </tr> <tr> <td style="text-align: center;">/</td> <td style="text-align: center;">15</td> </tr> <tr> <td style="text-align: center;">BK</td> <td style="text-align: center;">17</td> </tr> <tr> <td style="text-align: center;">RD</td> <td style="text-align: center;">18</td> </tr> <tr> <td style="text-align: center;">/</td> <td style="text-align: center;">19</td> </tr> <tr> <td style="text-align: center;">/</td> <td style="text-align: center;">20</td> </tr> <tr> <td style="text-align: center;">BO</td> <td style="text-align: center;">21</td> </tr> <tr> <td style="text-align: center;">BO</td> <td style="text-align: center;">22</td> </tr> <tr> <td style="text-align: center;">WH</td> <td style="text-align: center;">23</td> </tr> <tr> <td style="text-align: center;">WH</td> <td style="text-align: center;">24</td> </tr> </table>	PR	9	YL	10	BL	12	BN	11	SB	14	GY	16	/	13	/	15	BK	17	RD	18	/	19	/	20	BO	21	BO	22	WH	23	WH	24	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="3" style="text-align: left;">CON8 23th pin ~ 24th pin</th> <th colspan="2" style="text-align: center;">Resistance [Ω]</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Short</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;">Open</td> <td style="text-align: center;">OFF</td> </tr> <tr> <td></td> <td style="text-align: center;">Other</td> <td style="text-align: center;">Normal</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">CON8 23th pin ~ 24th pin</th> <th style="text-align: center;">Resistance [Ω]</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">-22°F / -30°C</td> <td style="text-align: center;">40k</td> </tr> <tr> <td style="text-align: center;">-13°F / -25°C</td> <td style="text-align: center;">30k</td> </tr> <tr> <td style="text-align: center;">-4°F / -20°C</td> <td style="text-align: center;">23k</td> </tr> <tr> <td style="text-align: center;">5°F / -15°C</td> <td style="text-align: center;">17k</td> </tr> <tr> <td style="text-align: center;">14°F / -10°C</td> <td style="text-align: center;">13k</td> </tr> <tr> <td style="text-align: center;">23°F / -5°C</td> <td style="text-align: center;">10k</td> </tr> <tr> <td style="text-align: center;">32°F / 0°C</td> <td style="text-align: center;">8k</td> </tr> </tbody> </table>	CON8 23 th pin ~ 24 th pin	Resistance [Ω]		Short	0	Open	OFF		Other	Normal	CON8 23 th pin ~ 24 th pin	Resistance [Ω]	-22°F / -30°C	40k	-13°F / -25°C	30k	-4°F / -20°C	23k	5°F / -15°C	17k	14°F / -10°C	13k	23°F / -5°C	10k	32°F / 0°C	8k
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Freezer Sensor Error (Er FS)

1
Is the Connector disconnected or loose between Main PCB and sensor?



CON8

Yes → Reconnect or repair the connector

No → [Next Step]

2
Check the Sensor resistance. Is resistance 0Ω (Sensor short)?

Yes → Change the Sensor

No → [Next Step]

3
Check the Sensor resistance. Is resistance OFF (Sensor open)?

Yes → Replace the refrigerator

No → [Next Step]

4
Check the Sensor resistance. Is resistance normal?

Yes → [Next Step]

5
Check the Temperature and resistance refer to the table. No problem?

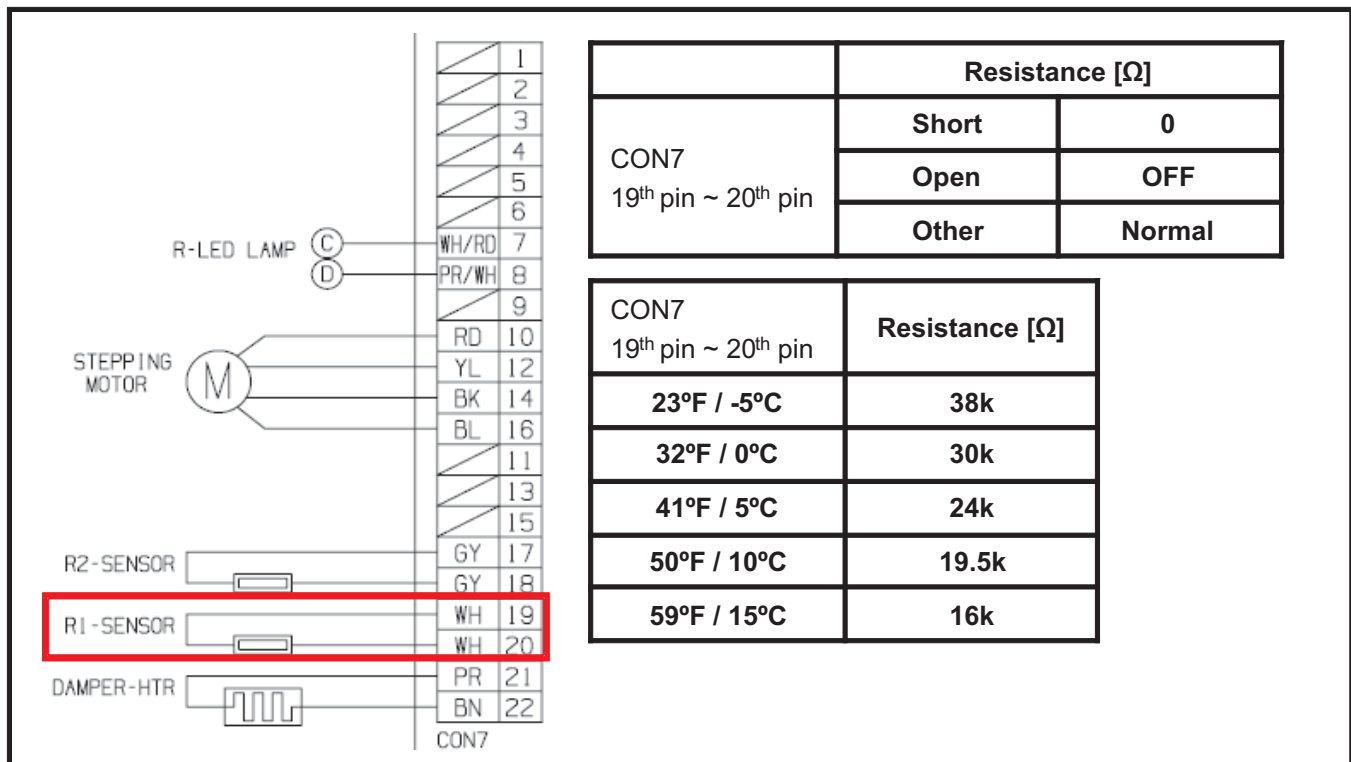
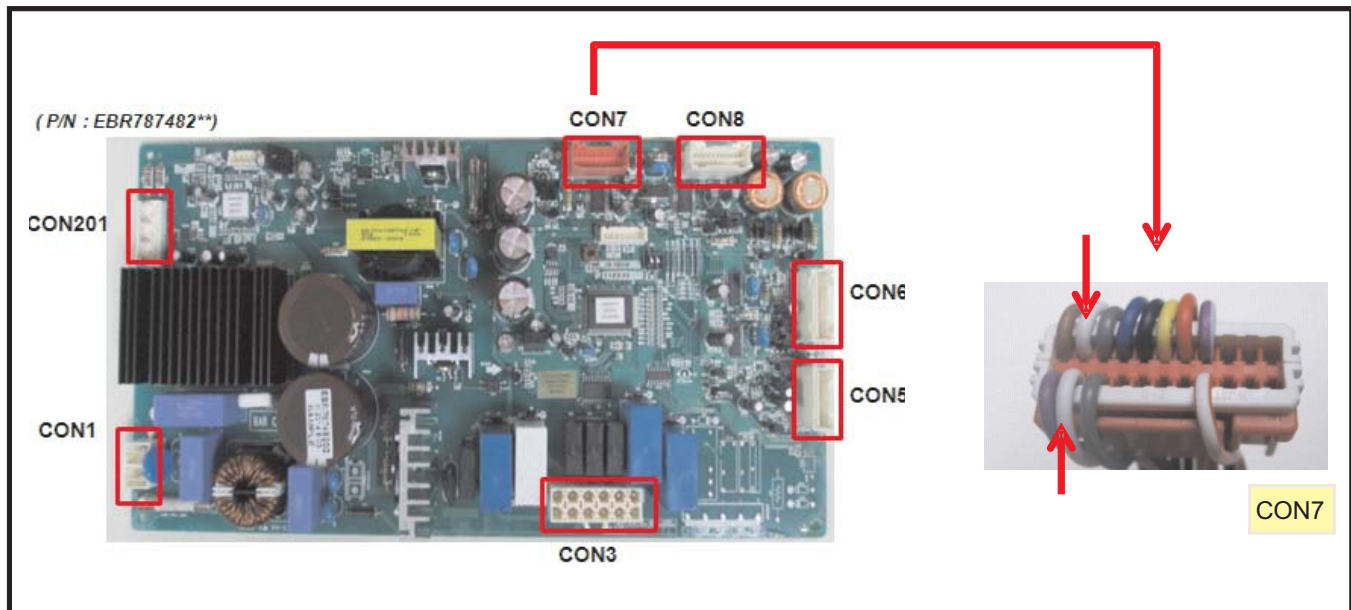
CON8 23 th pin ~ 24 th pin	Resistance [Ω]
-22°F / -30°C	40k
-13°F / -25°C	30k
-4°F / -20°C	23k
5°F / -15°C	17k
14°F / -10°C	13k
23°F / -5°C	10k
32°F / 0°C	8k

Yes → [Next Step]

6
Explain to customer


10-2. Refrigerator Sensor Error (Er rS)

Symptom	Check Point
1. Er rS	1. Check for a loose connection 2. Check Sensor Resistance



Refrigerator Sensor Error (Er rS)

1
Is the Connector disconnected or loose between Main PCB and sensor?



CON7

Yes → Reconnect or repair the connector

No →

2
Check the Sensor resistance. Is resistance 0Ω (Sensor short)?

Yes → Change the Sensor

No →

3
Check the Sensor resistance. Is resistance OFF (Sensor open)?

Yes → Replace the refrigerator

No →

4
Check the Sensor resistance. Is resistance normal?

Yes →

5
Check the Temperature and resistance refer to the table. No problem?

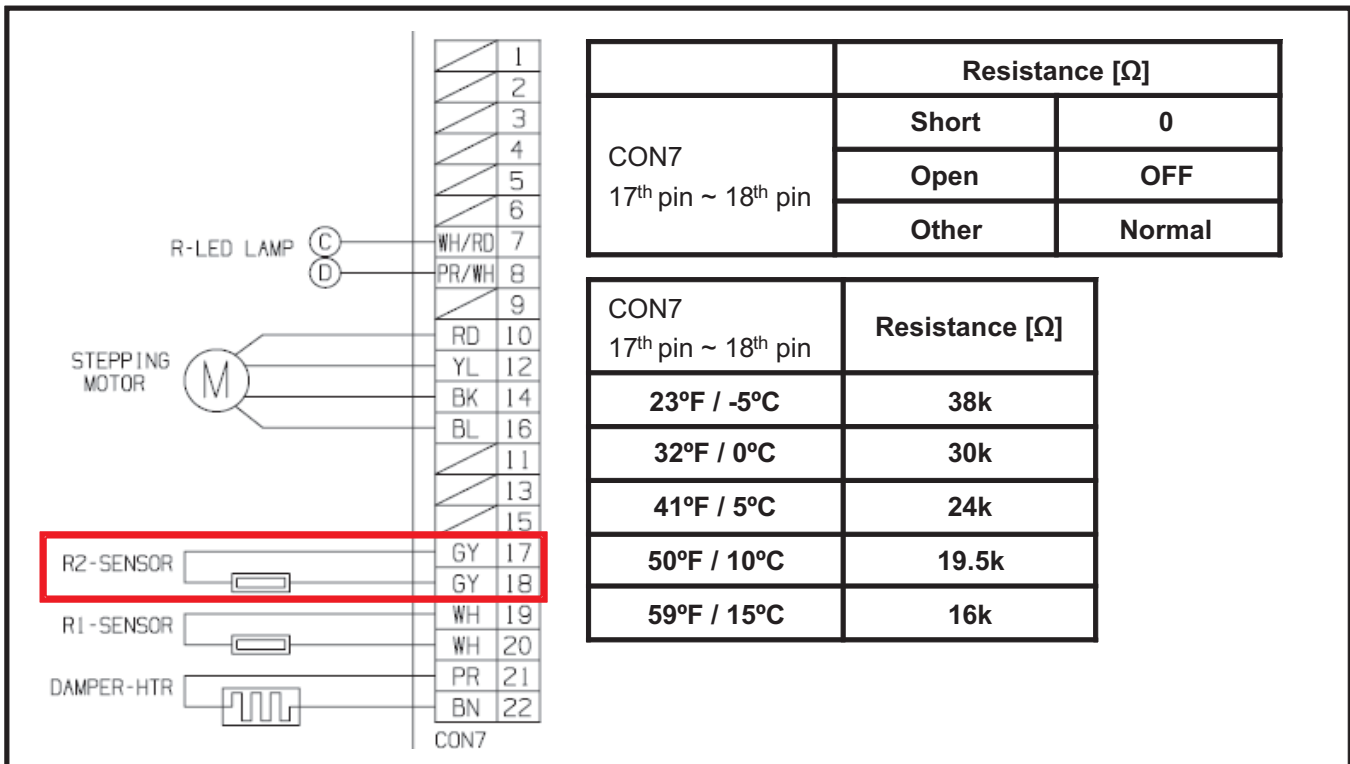
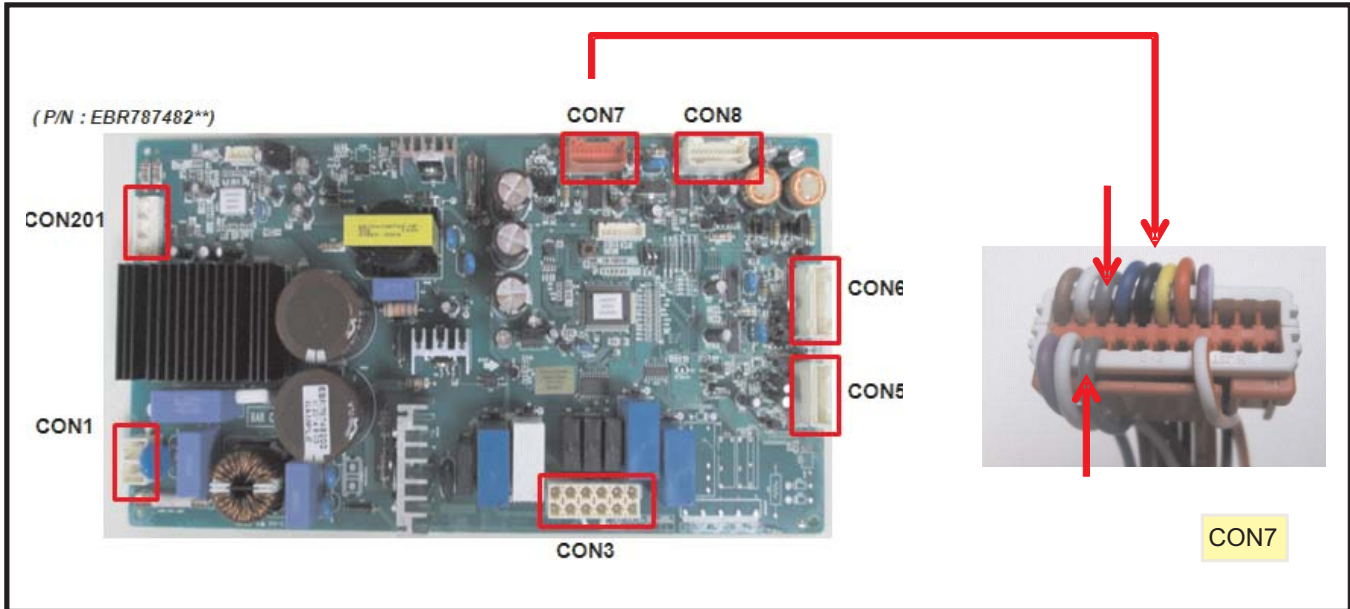
CON7 19 th pin ~ 20 th pin	Resistance [Ω]
23°F / -5°C	38k
32°F / 0°C	30k
41°F / 5°C	24k
50°F / 10°C	19.5k
59°F / 15°C	16k

Yes →

6
Explain to customer


10-3. Refrigerator Sensor Error (Er r2)

Symptom	Check Point
1. Er R2	1. Check for a loose connection 2. Check Sensor Resistance



Refrigerator Sensor Error (Er r2)

1
Is the Connector disconnected or loose between Main PCB and sensor?



Yes → Reconnect or repair the connector

No →

2
Check the Sensor resistance. Is resistance 0Ω (Sensor short)?

Yes → Change the Sensor

No →

3
Check the Sensor resistance. Is resistance OFF (Sensor open)?

Yes → Replace the refrigerator

No →

4
Check the Sensor resistance. Is resistance normal?

Yes →

5
Check the Temperature and resistance refer to the table. No problem?

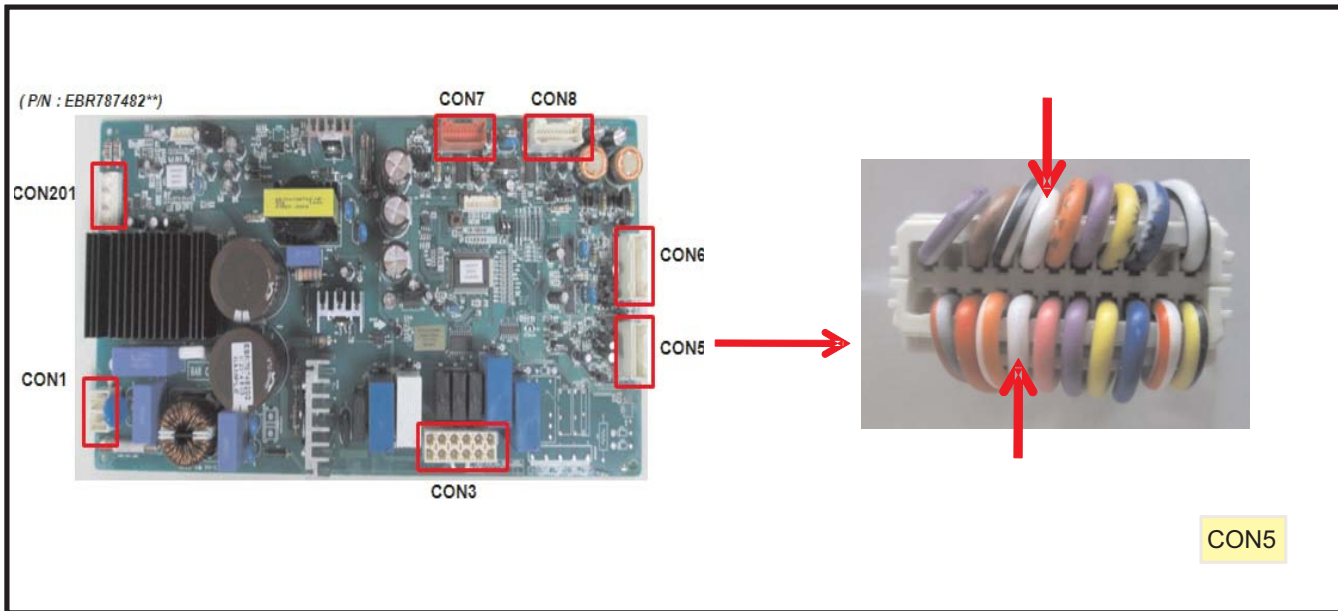
CON7 19 th pin ~ 20 th pin	Resistance [Ω]
23°F / -5°C	38k
32°F / 0°C	30k
41°F / 5°C	24k
50°F / 10°C	19.5k
59°F / 15°C	16k

Yes →

6
Explain to customer

10-4. Refrigerator Sensor Error (Er rT)

Symptom	Check Point
1. Er RT	1. Check for a loose connection 2. Check Sensor Resistance



		Resistance [Ω]	
CON5 13 th pin ~ 14 th pin	Short	0	
	Open	OFF	
	Other	Normal	

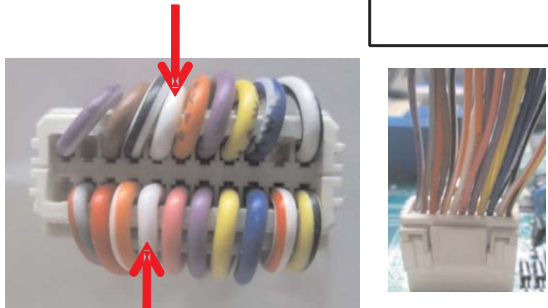
CON5 13 th pin ~ 14 th pin	Resistance [Ω]
23°F / -5°C	38k
32°F / 0°C	30k
41°F / 5°C	24k
50°F / 10°C	19.5k
59°F / 15°C	16k

7	YL	
8	YL	
3	WH/RD	
2	WH/BK	
1	YL/BK	
4		
5	BL	PIPE HEATER
22	PR/WH	
9	PR	F-DOOR S/W
10	PR	
11	PK	R-DOOR S/W
12	BO	
13	WH	RT-SENSOR
14	WH	
20		
16	BL/RD	
15	BO/WH	
18	BN	
17	RD	
19	GY/RD	
21		
6	BL/WH	(M)
CON5		(L) (K) (J)

Refrigerator Sensor Error (Er RT)

1
Is the Connector disconnected or loose between Main PCB and sensor?

Yes → Reconnect or repair the connector



CON5

No → [Next Step]

2
Check the Sensor resistance. Is resistance 0Ω (Sensor short)?

Yes → Change the Sensor

No → [Next Step]

3
Check the Sensor resistance. Is resistance OFF (Sensor open)?

Yes → Replace the refrigerator

No → [Next Step]

4
Check the Sensor resistance. Is resistance normal?

Yes → [Next Step]

5
Check the Temperature and resistance refer to the table. No problem?

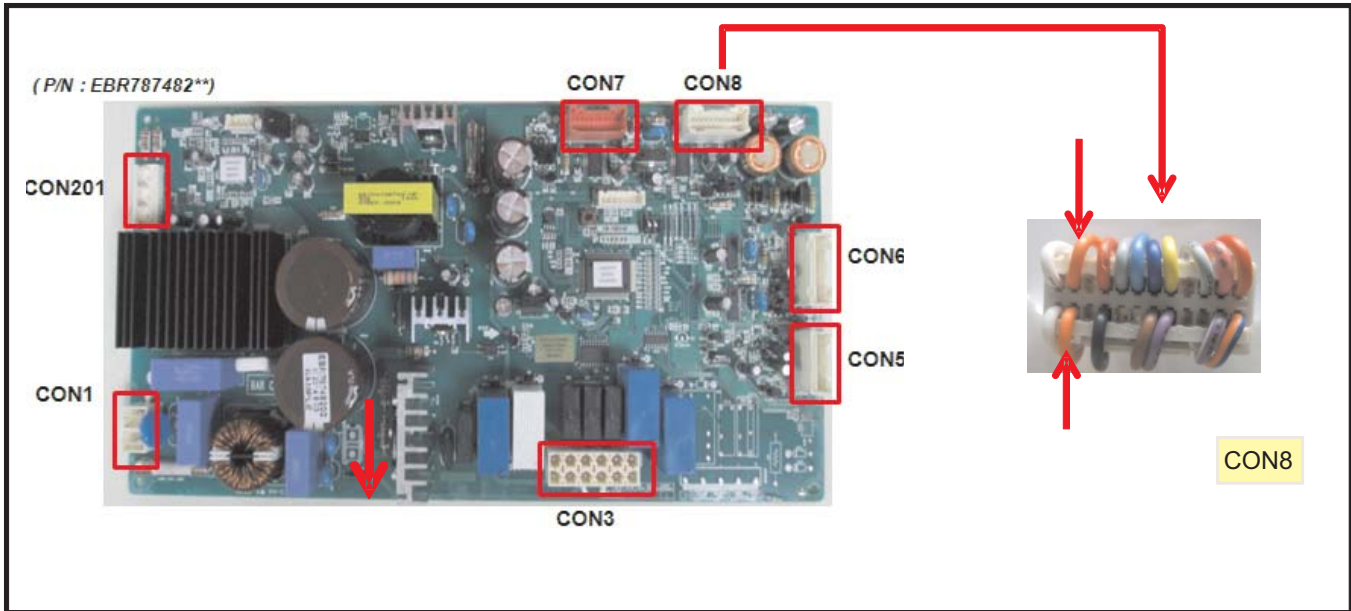
CON5 13 th pin ~ 14 th pin	Resistance [Ω]
23°F / -5°C	38k
32°F / 0°C	30k
41°F / 5°C	24k
50°F / 10°C	19.5k
59°F / 15°C	16k

Yes → [Next Step]

6
Explain to customer

10-5. Defrost Sensor Error (F dS)

Symptom	Check Point
1. F dS	1. Check for a loose connection 2. Check Sensor Resistance




		Resistance [Ω]	
CON8 21 th pin ~ 22 th pin	Short	0	
	Open	OFF	
	Other	Normal	

CON8 21 th pin ~ 22 th pin	Resistance [Ω]
23°F / -5°C	38k
32°F / 0°C	30k
41°F / 5°C	24k
50°F / 10°C	19.5k
59°F / 15°C	16k

Icing Sensor Error (F dS)

1
Is the Connector disconnected or loose between Main PCB and sensor?



CON8

Yes → Reconnect or repair the connector

No → [Proceeds to Step 2]

2
Check the Sensor resistance. Is resistance 0Ω (Sensor short)?

Yes → Change the Sensor

No → [Proceeds to Step 3]

3
Check the Sensor resistance. Is resistance OFF (Sensor open)?

Yes → Replace the refrigerator

No → [Proceeds to Step 4]

4
Check the Sensor resistance. Is resistance normal?

Yes → [Proceeds to Step 5]

5
Check the Temperature and resistance refer to the table. No problem?

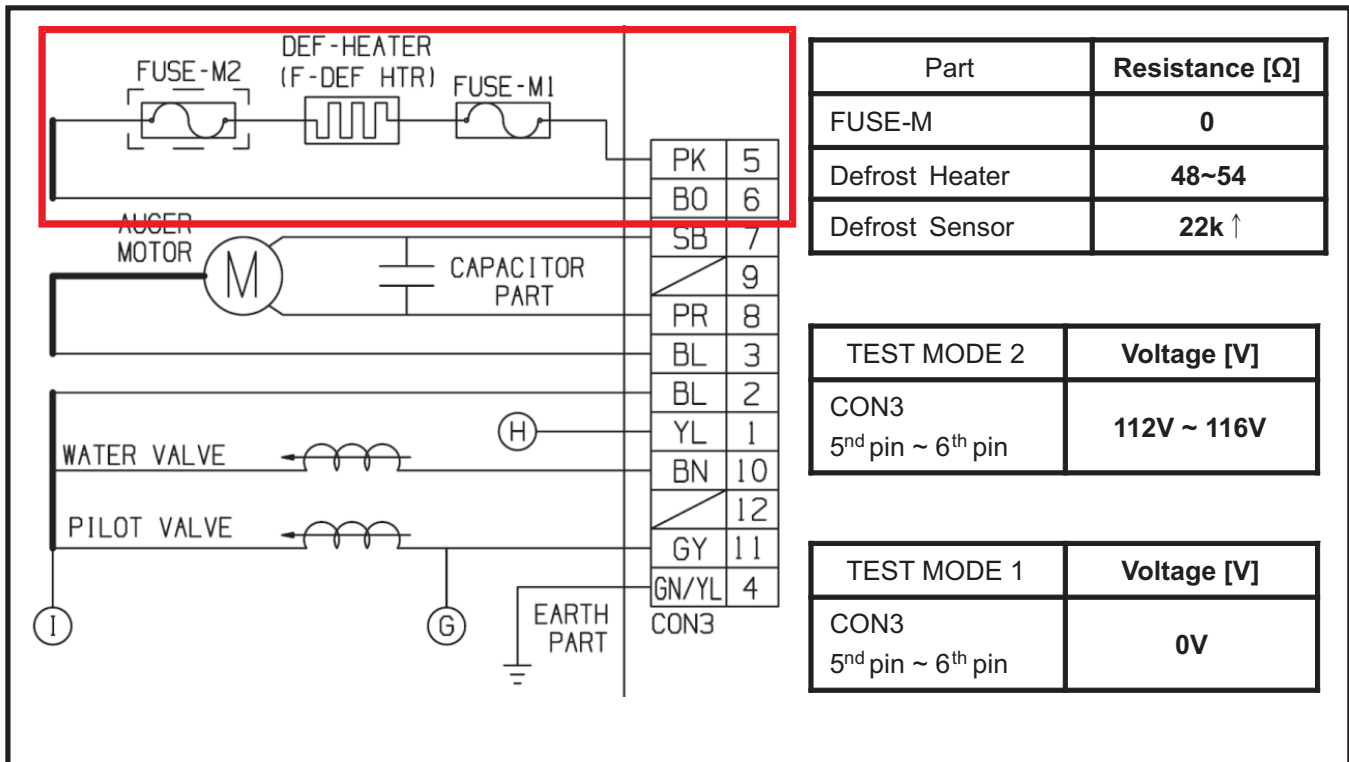
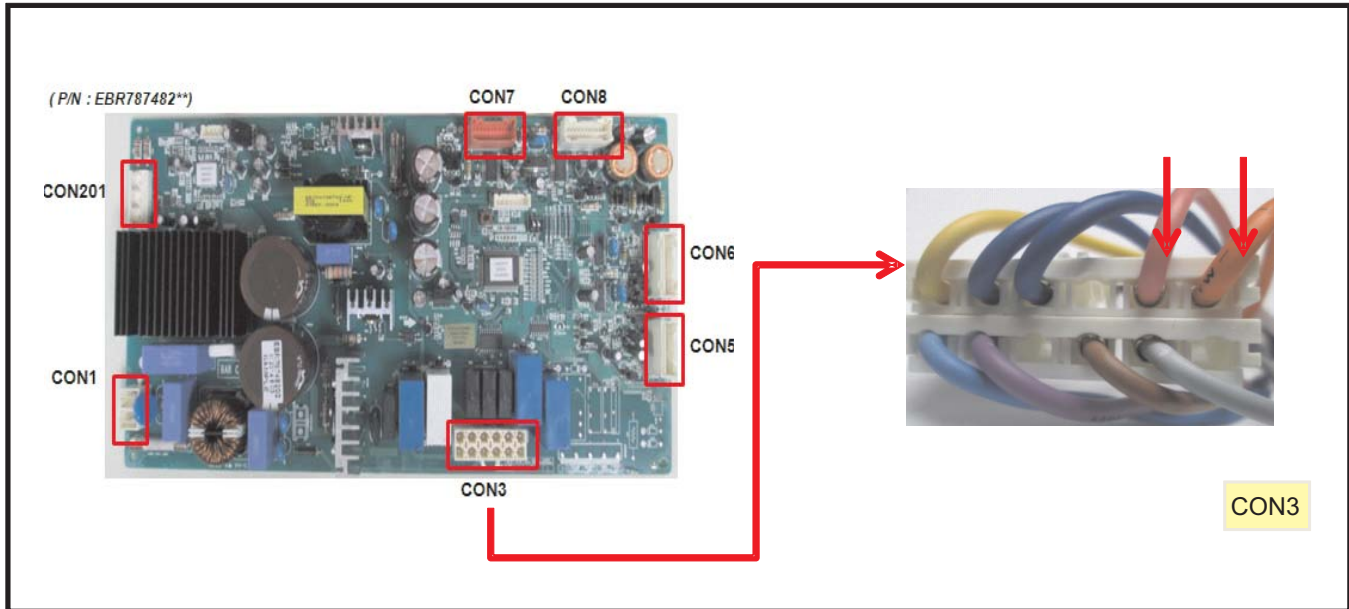
CON8 21 st pin ~ 22 nd pin	Resistance [Ω]
23°F / -5°C	38k
32°F / 0°C	30k
41°F / 5°C	24k
50°F / 10°C	19.5k
59°F / 15°C	16k

Yes → [Proceeds to Step 6]

6
Explain to customer

10-6. Defrost Heater Error (F dH)

Symptom	Check Point
1. F dH	<ol style="list-style-type: none"> 1. Check the door gasket 2. Check the Defrost control part 3. Check the PCB output voltage



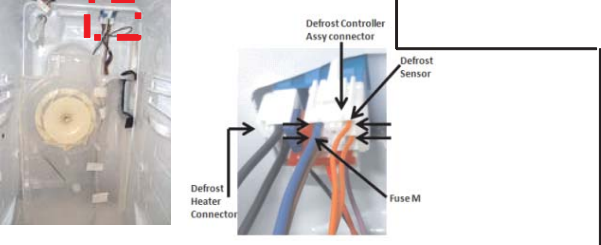
Defrost Heater Error (F dH)

1
Check the Door gasket .
Is door gasket damaged?

Yes → Replace the Door gasket

No →

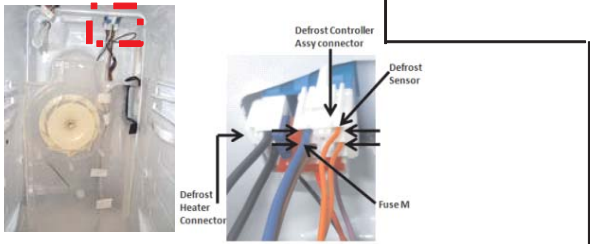
2
Check the Defrost control part.
(1) Is Fuse-M resistance 0 Ω?
(2) Is Defrost Heater resistance 48~54Ω?



No → Change Fuse-M

Yes →


3
Check the Defrost control part.
Is Defrost Sensor resistance 22kΩ ↑ or OFF?



OFF → Replace product

22kΩ ↑ →

4 Input Test 2 Mode (Push the button 3 times)
Check the Heater Voltage.
Is voltage 112~116V?



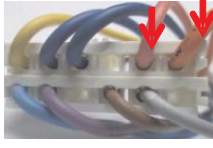
CON3

TEST MODE 2	Voltage [V]
CON3 5 nd pin ~ 6 th pin	112V ~ 116V

NO → Replace Main PCB

Yes →

5 Input Test 1 Mode (Push the button 1 times)
Check the Heater Voltage.
Is voltage 0V?



CON3

TEST MODE 1	Voltage [V]
CON3 5 nd pin ~ 6 th pin	0V

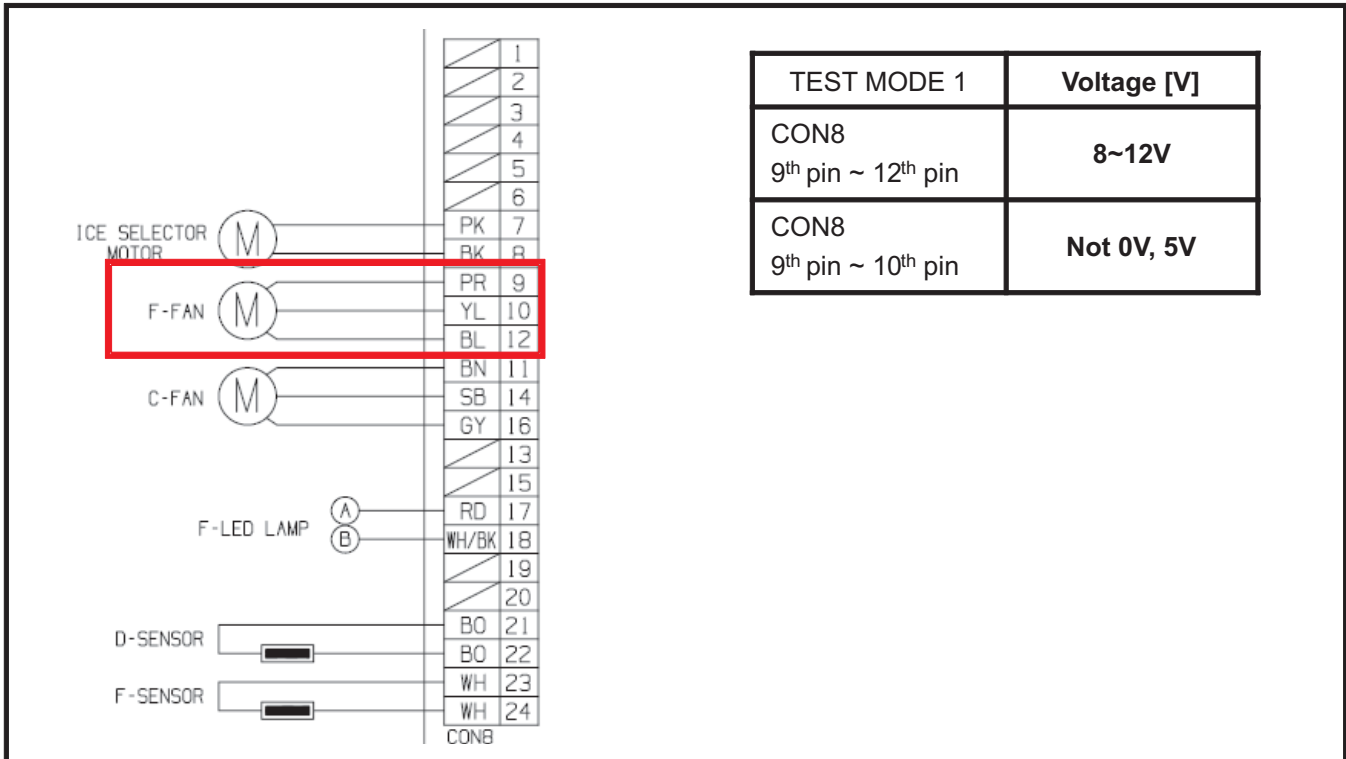
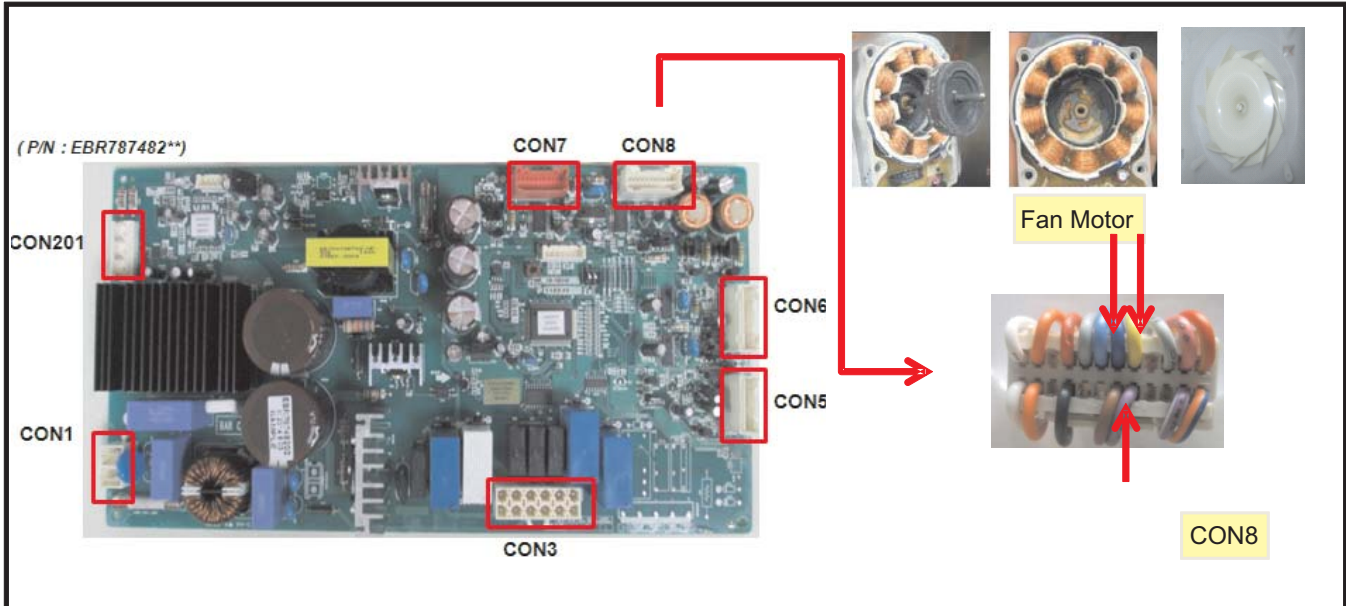
No → Replace Main PCB

Yes →

6
Explain to customer


10-7. Freezer Fan Error (Er FF)

Symptom	Check Point
1. Er FF	1. Check the air flow 2. Check the Fan Motor 2. Check the PCB Fan motor voltage




Freezer Fan Error (Er FF)

1 Reset the unit and Input Test1 Mode. (Push the button 1 time)



2 Open the freezer door and Check the air flow. Windy?




No → Go to 3

Yes → Go to 4


3 Check the Fan motor. Rotate fan using hand. It feel sticky?

Yes → Change the Fan motor



Fan Motor

4 Check the Fan Motor voltage
Is Fan Motor voltage 8~12V?

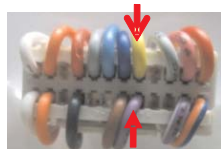


TEST MODE 1	Voltage [V]
CON8 9 th pin ~ 12 th pin	8~12V

No → Replace Main PCB

Yes → Go to 5

5 Check the Fan Motor voltage
Is Fan Feed Back voltage 0V, 5V?



TEST MODE 1	Voltage [V]
CON8 9 th pin ~ 10 th pin	Not 0V, 5V

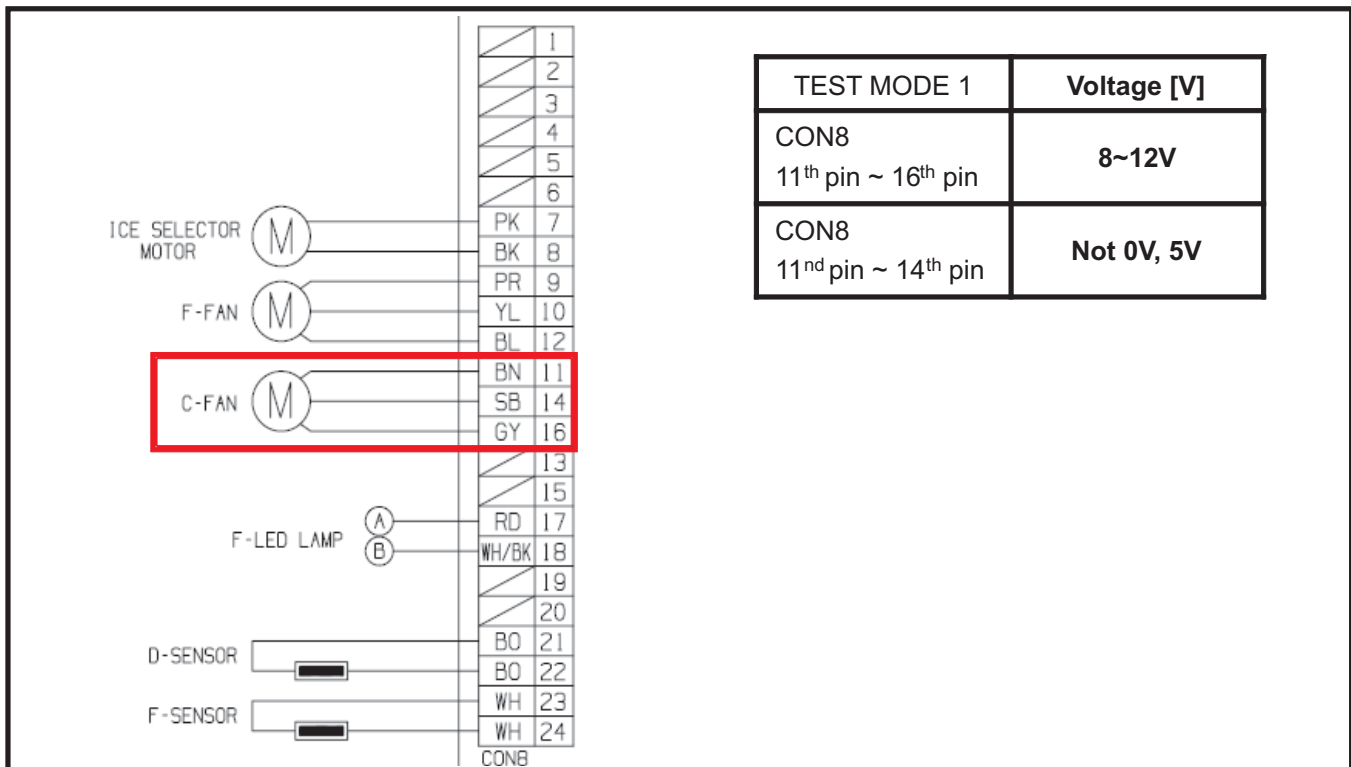
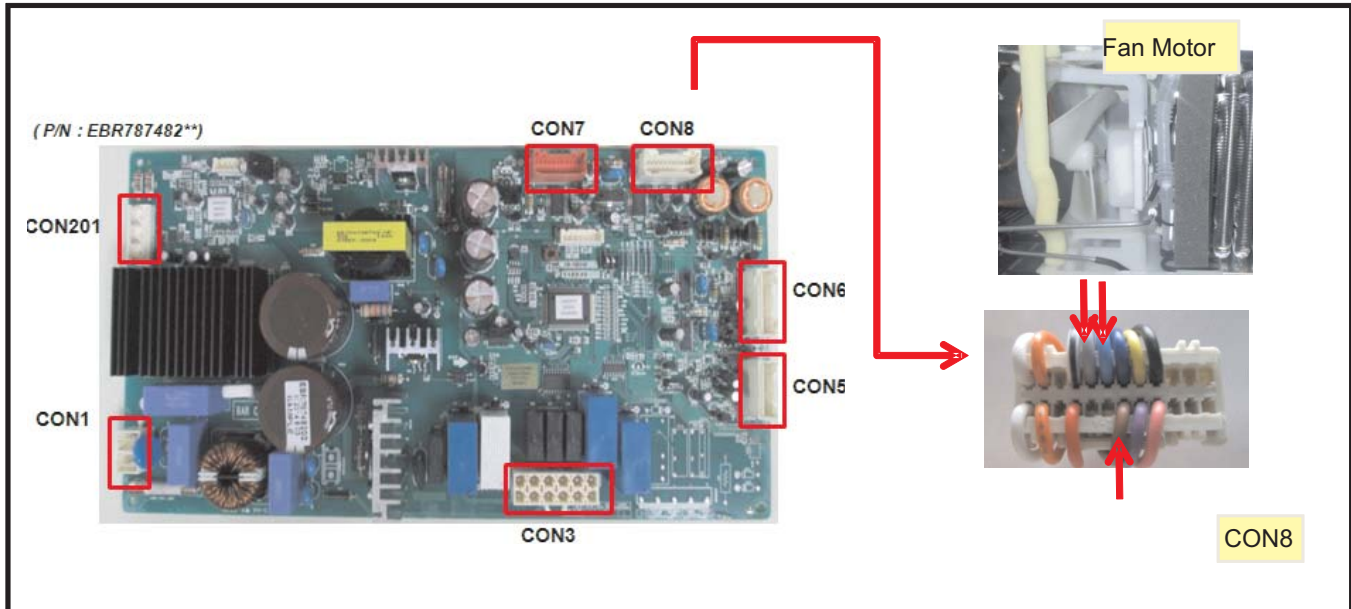
Yes → Change the motor

No → Go to 6

6 Explain to customer


10-8. Condenser Fan Error (Er CF)

Symptom	Check Point
1. Er CF	1. Check the air flow 2. Check the Connector 2. Check the PCB Fan motor voltage




Condenser Fan Error (Er CF)

1 Reset the unit and Input Test1 Mode. (Push the button 1 time)



2 Check the fan rotating. Does fan rotate?




Fan Motor

No → Go to 3

Yes → Go to 4

3 Check the Fan motor. Rotate fan using hand. It feel sticky?




Fan Motor

Yes → Change the Fan motor

No → Go to 4

4 Check the Fan Motor voltage Is Fan Motor voltage 8~12V?




CON8

TEST MODE 1	Voltage [V]
CON8 14 th pin ~ 16 th pin	8~12V

No → Replace Main PCB

Yes → Go to 5

5 Check the Fan Motor voltage Is Fan Feed Back voltage 0V, 5V?



CON8

TEST MODE 1	Voltage [V]
CON8 11 nd pin ~ 16 th pin	Not 0V, 5V

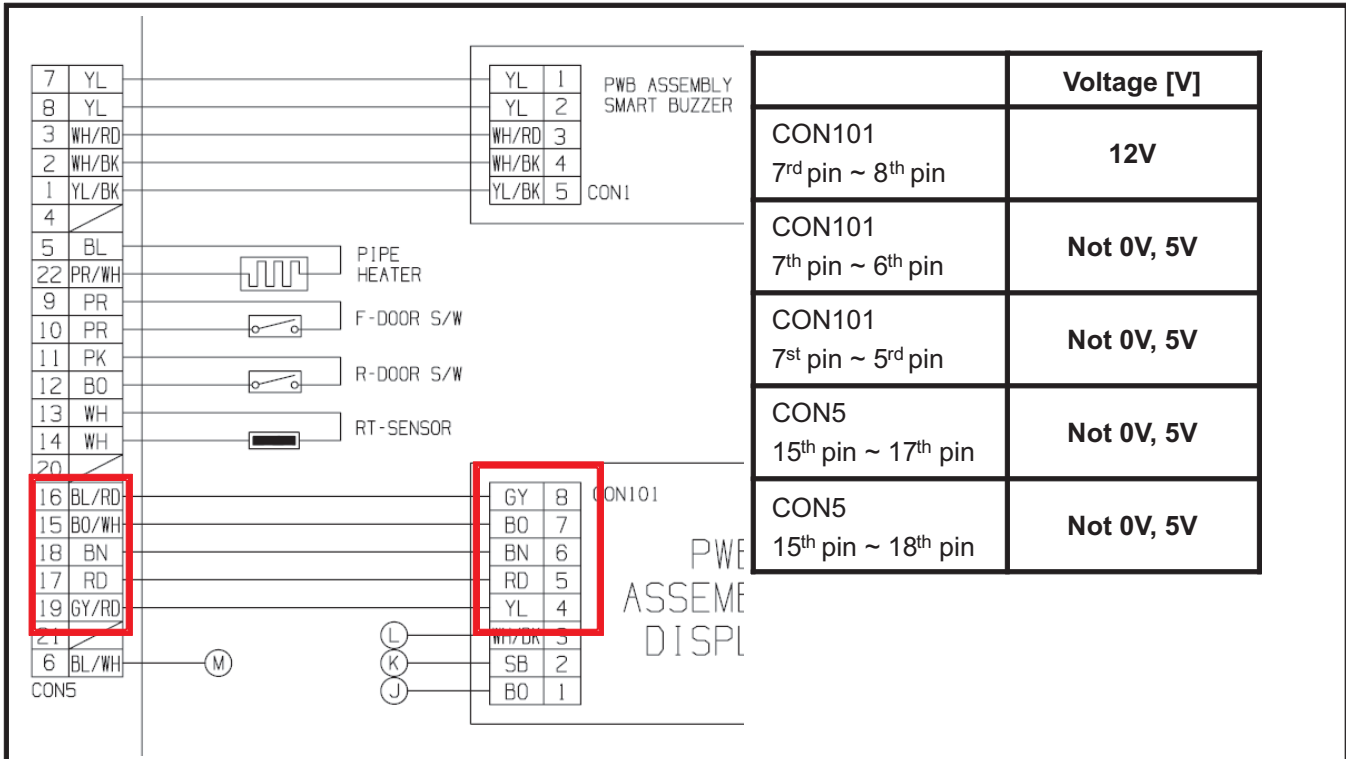
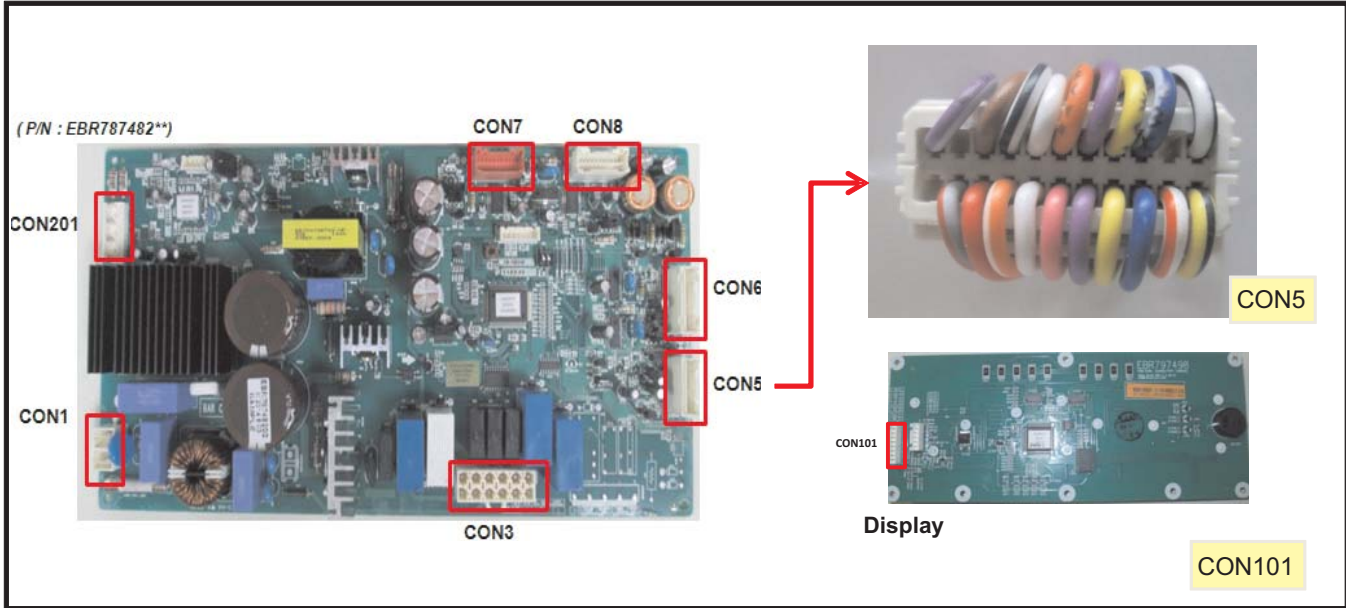
Yes → Change the motor

No → Go to 6

6 Explain to customer

10-9. Communication Error (Er CO)

Symptom	Check Point
1. Er CO	1. Check the loose connection 2. Check the Hinge connection




Communication Error (Er CO)

1
Check the loose connection

2
Check the voltage.
Is CON101 7rd pin ~ 8th pin voltage 12V?

Housing	Voltage [V]
CON101 7 rd pin ~ 8 th pin	12V

No → Check the Hinge (loose connection) Change the Main PCB




CON101

3
Check the voltage.
Is CON101 7rd pin ~ 6th pin voltage 0V or 5V?

Housing	Voltage [V]
CON101 7 th pin ~ 6 th pin	Not 0V, 5V

Yes → Change the Display PCB




CON101

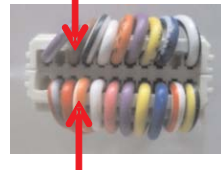
4
Check the voltage.
Is CON101 7st pin ~ 5rd pin voltage 0V or 5V?

Housing	Voltage [V]
CON101 7 th pin ~ 5 th pin	Not 0V, 5V

Yes → Change the Main PCB



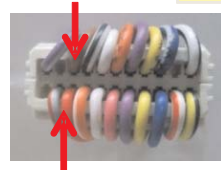
5
Check the voltage.
Is CON5 15th pin ~ 18th pin voltage 0V or 5V?



Housing	Voltage [V]
CON5 15 th pin ~ 18 th pin	Not 0V, 5V

Yes → Change the Display PCB

6
Check the voltage.
Is CON5 15th pin ~ 17th pin voltage 0V or 5V?



Housing	Voltage [V]
CON5 15 th pin ~ 17 th pin	Not 0V, 5V

Yes → Change the Main PCB

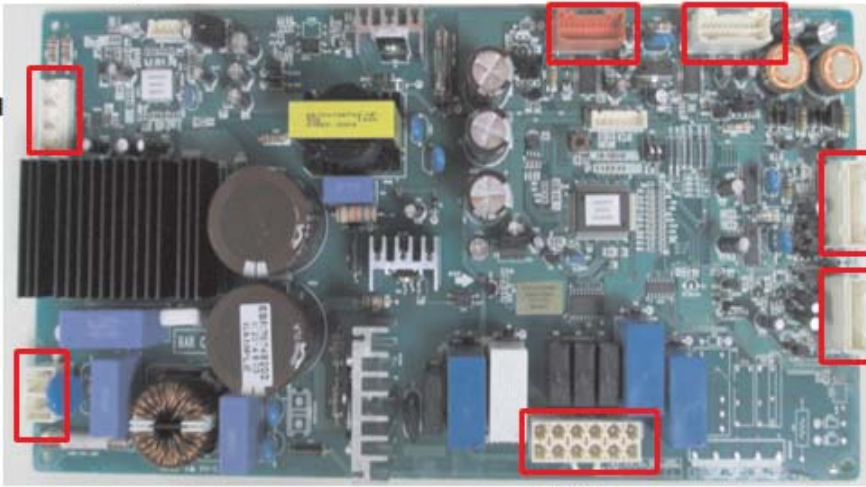
7
Explain to customer

11. TROUBLESHOOTING WITHOUT ERROR DISPLAY

11-1. Cube mode doesn't work

Symptom	Check Point
1. Cube mode doesn't work	1. Check the loose connection 2. Check the resistance

(P/N : EBR787482**)



CON201

CON1


CON7

CON8


CON6

CON5


CON3




Duc Motor



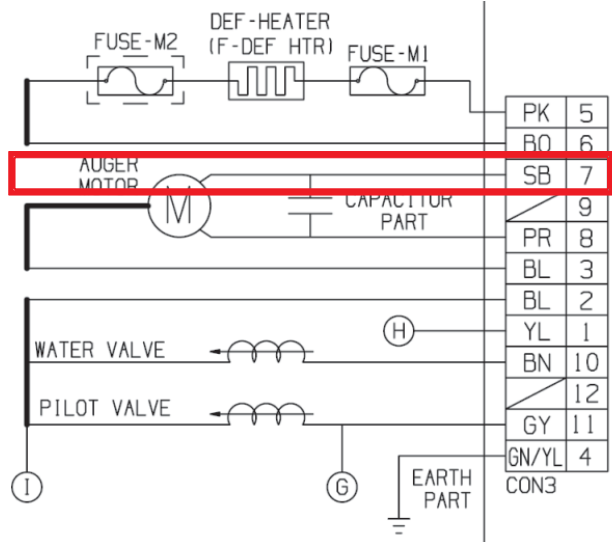
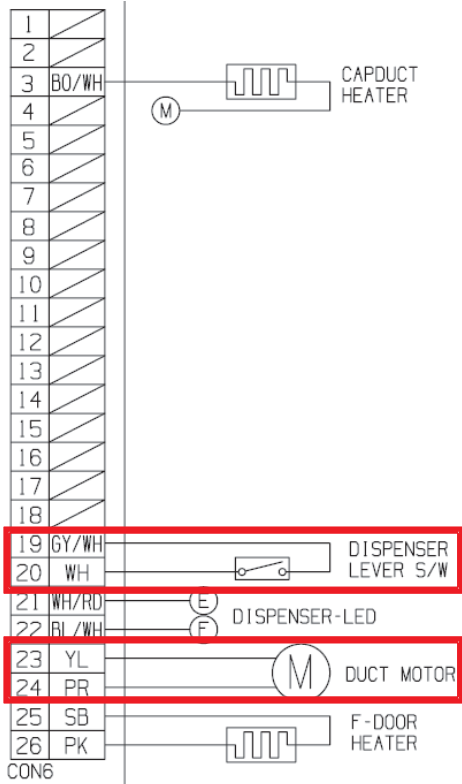
Ice Maker



Auger Motor



Dispenser SW



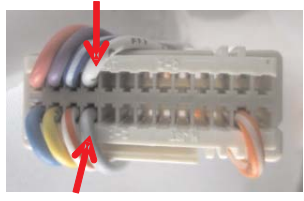
INSPECTION POINT	LEVER S/W	Result
Lever SW CON6 19 th pin ~ 20 th pin	Pushing	0~2V
	Not Pushing	3.5~5V
Duct Motor CON6 23 th pin ~ 24 th pin	Pushing	9~12V
	Not Pushing	0~2V
Auger Motor (CON6 3 th pin ~ 7 th pin	Pushing	112~115V
	Not Pushing	0~2V

Motor Type	Resistance [Ω]
Auger Motor	23.7 ~ 26.2
Duct Motor	9.9 ~ 12.1

Cube mode doesn't work

1
Check the loose connection

2
Check the voltage.
(while pushing the lever S/W)
Is voltage correct compared with table?

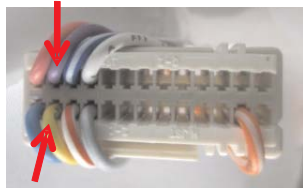


INSPECTION POINT	LEVER S/W	RESULT
Lever SW CON6 19 th pin ~ 20 th pin	Pushing	0~2V
	Not Pushing	3.5~5V

No
Change the PCB

Yes

3
Check the voltage.
Is Duct Motor voltage correct compared with table?

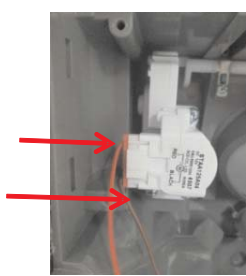


Duct Motor	Voltage [V]	
CON6 23 th pin ~ 24 th pin	Pushing	9~12V
	Not Pushing	0~2V

No
Change the PCB

Yes

4
Check the resistance value.
Is Dispenser Motor resistance
9.9 ~ 12.1Ω?

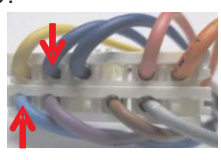


	Resistance [Ω]
Dispenser Motor	9.9 ~ 12.1

No
Replace Geared Motor

Yes

5
Check the voltage.
(while pushing the lever S/W)
Is voltage correct compared with table?

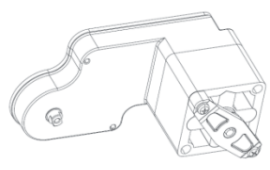


INSPECTION POINT	LEVER S/W	RESULT
Auger Motor CON3 3 rd pin ~ 7 th pin	Pushing	0~2V
	Not Pushing	3.5~5V

No
Change the PCB

Yes

4
Check the resistance value.
Is Auger Motor resistance
23.7 ~ 26.2Ω?



Geared Motor	Resistance [Ω]
Black / White Harness	23.7 ~ 26.2

No
Replace Geared Motor

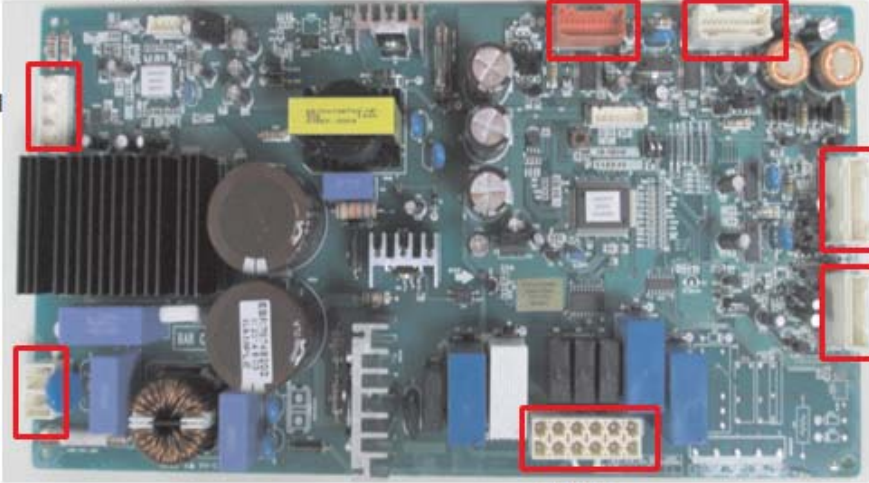
Yes

6
Explain to customer

11-2 Crush mode doesn't work

Symptom	Check Point
1. Crush mode doesn't work	1. Check the loose connection 2. Check the resistance

(P/N : EBR787482**)



CON201

CON1


CON7

CON8


CON6

CON5


CON3




Duc Motor



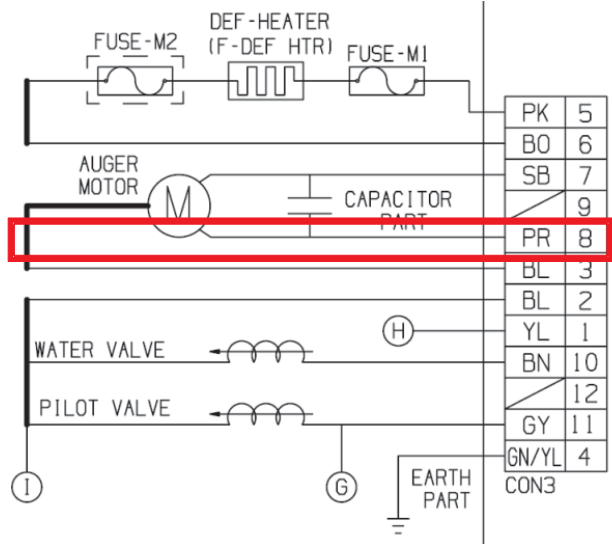
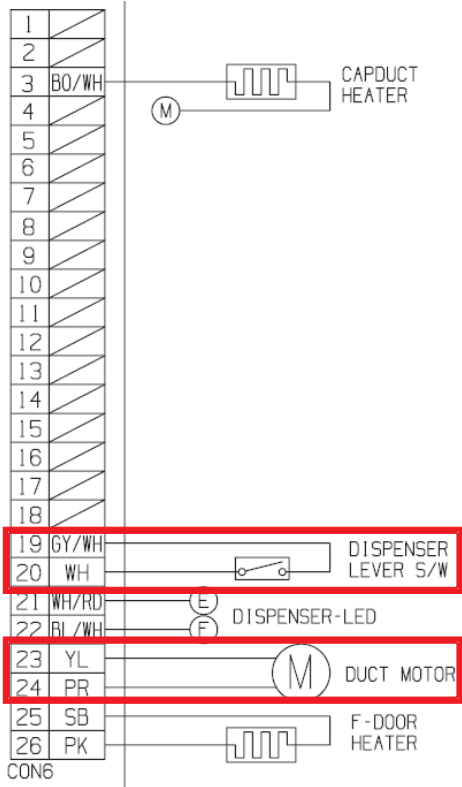
Ice Maker



Auger Motor



Dispenser SW



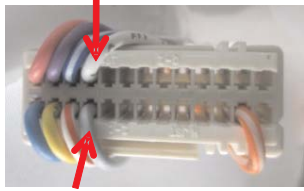
INSPECTION POINT	LEVER S/W	Result
Lever SW CON6 19 th pin ~ 20 th pin	Pushing	0~2V
	Not Pushing	3.5~5V
Duct Motor CON6 23 th pin ~ 24 th pin	Pushing	9~12V
	Not Pushing	0~2V
Auger Motor () CON6 3 th pin ~ 8 th pin	Pushing	112~115V
	Not Pushing	0~2V

Motor Type	Resistance [Ω]
Auger Motor	33.2 ~ 36.7
Duct Motor	9.9 ~ 12.1

Crush mode doesn't work

1
Check the loose connection

2
Check the voltage.
(while pushing the lever S/W)
Is voltage correct compared with table?



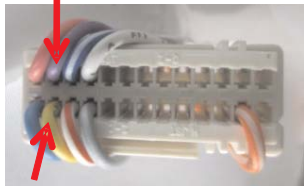
CON6

INSPECTION POINT	LEVER S/W	RESULT
Lever SW CON6 19 th pin ~ 20 th pin	Pushing	0~2V
	Not Pushing	3.5~5V

No
Change the PCB

Yes

3
Check the voltage.
Is Duct Motor voltage correct compared with table?



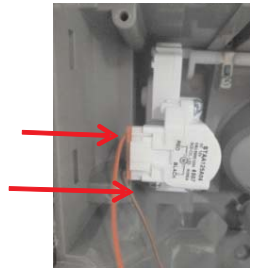
CON6

Duct Motor	Voltage [V]	
CON6 23 th pin ~ 24 th pin	Pushing	9~12V
	Not Pushing	0~2V

No
Change the PCB

Yes

4
Check the resistance value.
Is Dispenser Motor resistance 9.9 ~ 12.1Ω?



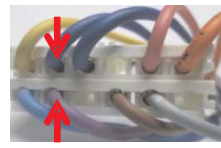
Dispenser Motor

	Resistance [Ω]
Dispenser Motor	9.9 ~ 12.1

No
Replace Geared Motor

Yes

5
Check the voltage.
(while pushing the lever S/W)
Is voltage correct compared with table?



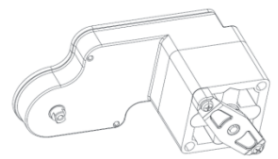
CON6

INSPECTION POINT	LEVER S/W	RESULT
Auger Motor CON3 3 rd pin ~ 8 th pin	Pushing	0~2V
	Not Pushing	3.5~5V

No
Change the PCB

Yes

4
Check the resistance value.
Is Auger Motor resistance 33.2 ~ 36.7Ω?



Auger Motor

Geared Motor	Resistance [Ω]
Black/Gray Harness	33.2 ~ 36.7

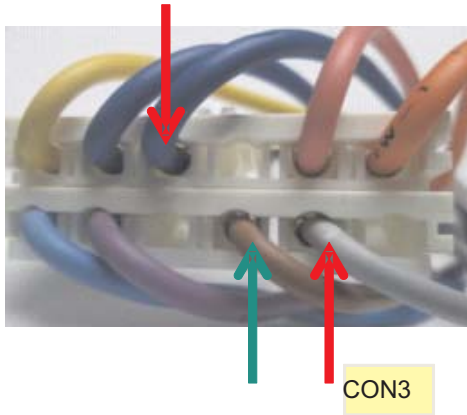
No
Replace Geared Motor

Yes

6
Explain to customer

11-3. Water mode doesn't work

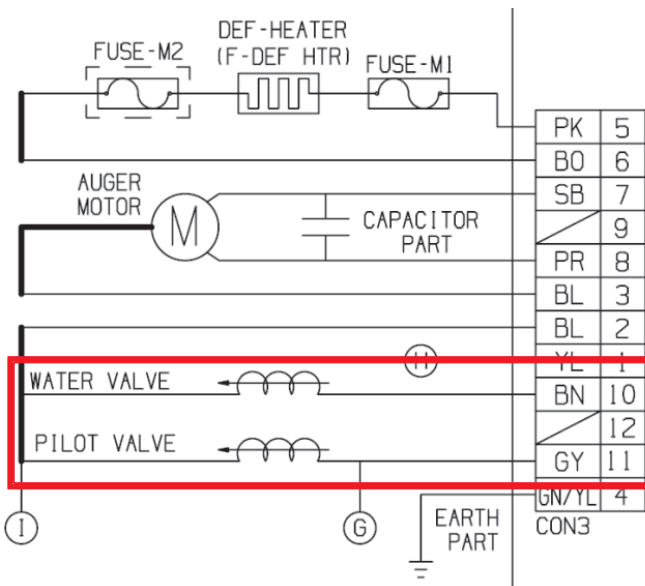
Symptom	Check Point
1. Water mode doesn't work	1. Check the loose connection 2. Check the resistance valve



Pilot Valve
Machine Room

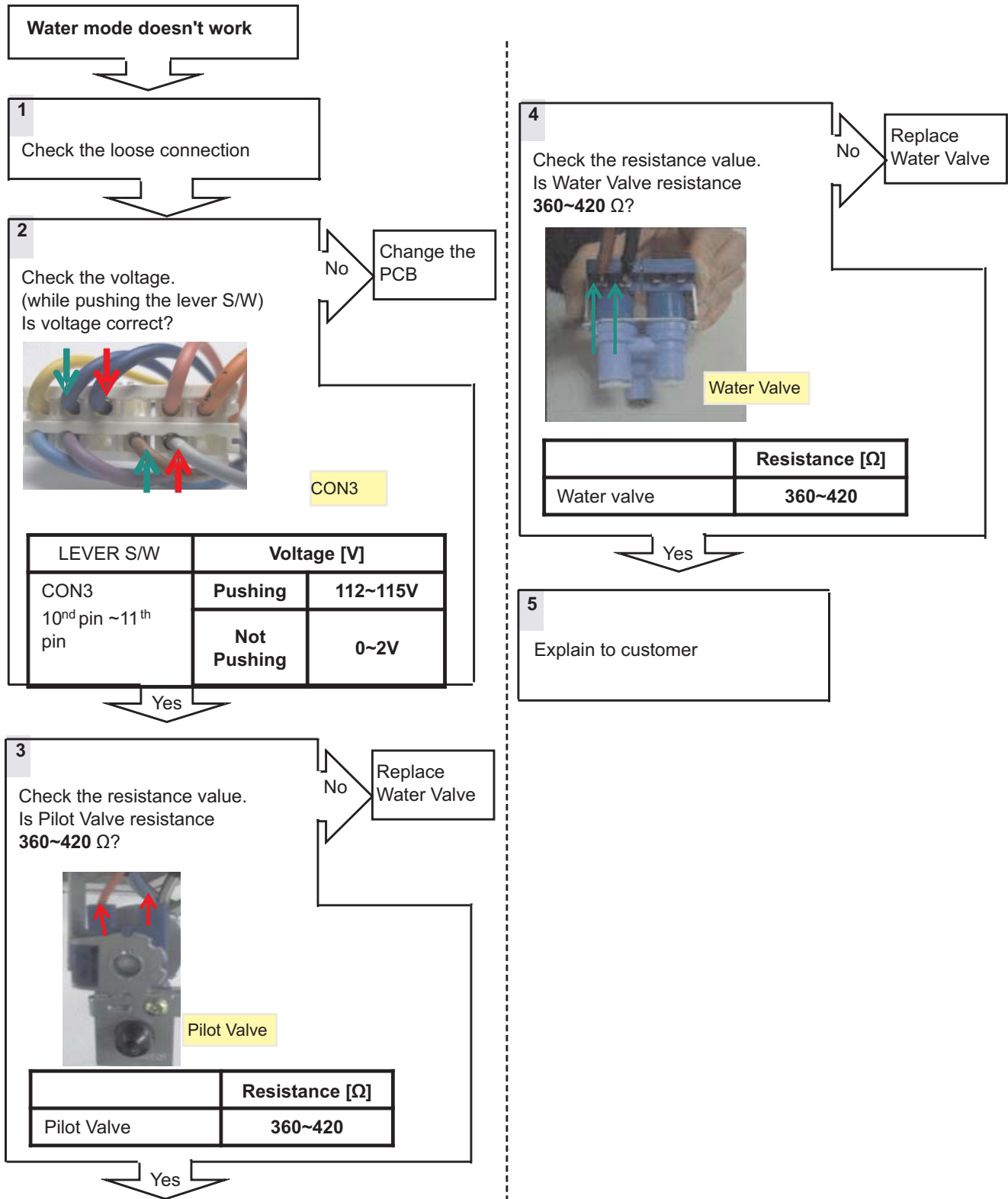


Water Valve
In door



LEVER S/W	Voltage [V]	
CON3 10 nd pin ~11 th pin	Pushing	112~115V
	Not Pushing	0~2V

	Resistance [Ω]
Pilot Valve	360~420
Water valve	360~420



11-4. Refrigerator room led doesn't work

Symptom	Check Point
1. Refrigerator room led doesn't work	1. Check the freezer door switch sticky 2. Check the door S/W resistance 3. Check the LED Lamp

(P/N : EBR787482**)

Door S/W

CON7

R Led Lamp

		Resistance [Ω]	
Door S/W	Open	Infinity	
	Closed	0	

		Voltage [V]
CON7	7 th pin ~ 8 th pin	12V

LED Lamp		Voltage [V]	
Blue~ Black	Closed	0~2V	
	Open	12V	

R-LED LAMP

WH/RD 7

PR/WH 8

R LED

BK 1

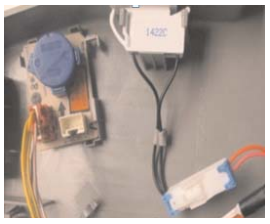
2

BL 3

R-ROOM LED MODULE

Refrigerator room lamp doesn't work


1
Check the Freezer door switch.
Does it feel sticky?



Yes → Change the Door S/W

No →

2
Check the door S/W resistance.
Is it correct compared with table?




Door S/W

		Resistance [Ω]	
Door S/W	Normal	Infinity	
	Push S/W	0	

No → Change the Door S/W

Yes →

3
Check the PCB Voltage.
Is CON7 7th pin ~ 8th pin voltage 12V?



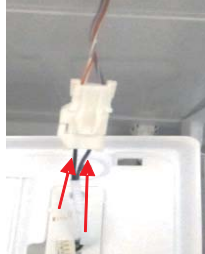
CON7

		Voltage [V]
CON7	7 th pin ~8 th pin	12V

No → Change the PCB

Yes →

4
Check the LED Lamp voltage.
Is it 0~2V? (While door closed)



No → Change the Door S/W

Yes →

5
Check the LED Lamp voltage.
Is it 12V? (While door open)

No → Change the LED Lamp

Yes →

6
Explain to customer

11-5. Freezer room lamp doesn't work

Symptom	Check Point
1. Freezer room lamp doesn't work	1. Check the Refrigerator door switch sticky 2. Check the door S/W resistance 3. Check the LED Lamp

(PIN : EBR707402**)

CON201

CON1

CON7

CON8

CONE

CONE

CON3

Door S/W

CON8

F room LED


		Resistance [Ω]	
Door S/W	Normal		Infinity
	Push S/W		0

		Voltage [V]
CON8	17 th pin ~ 18 th pin	12V

F-Switch	LED Lamp	Voltage [V]
Push	Red ~ WH	12V
No Push	Red ~ WH	0~2V

Freezer room lamp doesn't work


1
Check the Refrigerator door switch.
Does it feel sticky?



Yes → Change the Door S/W

No → [Next Step]

2
Check the door S/W resistance.
Is it correct compared with table?




Door S/W

		Resistance [Ω]	
Door S/W	Normal	Infinity	
	Push S/W	0	

No → Change the Door S/W

Yes → [Next Step]

3
Check the PCB Voltage.
Is CON8 17th pin ~ 18th pin
voltage 12V?




CON8

	Voltage [V]
CON8 17 th pin ~ 18 th pin	12V

No → Change the PCB

Yes → [Next Step]

4
Check the LED Lamp voltage
Is voltage 12V? (While door open)



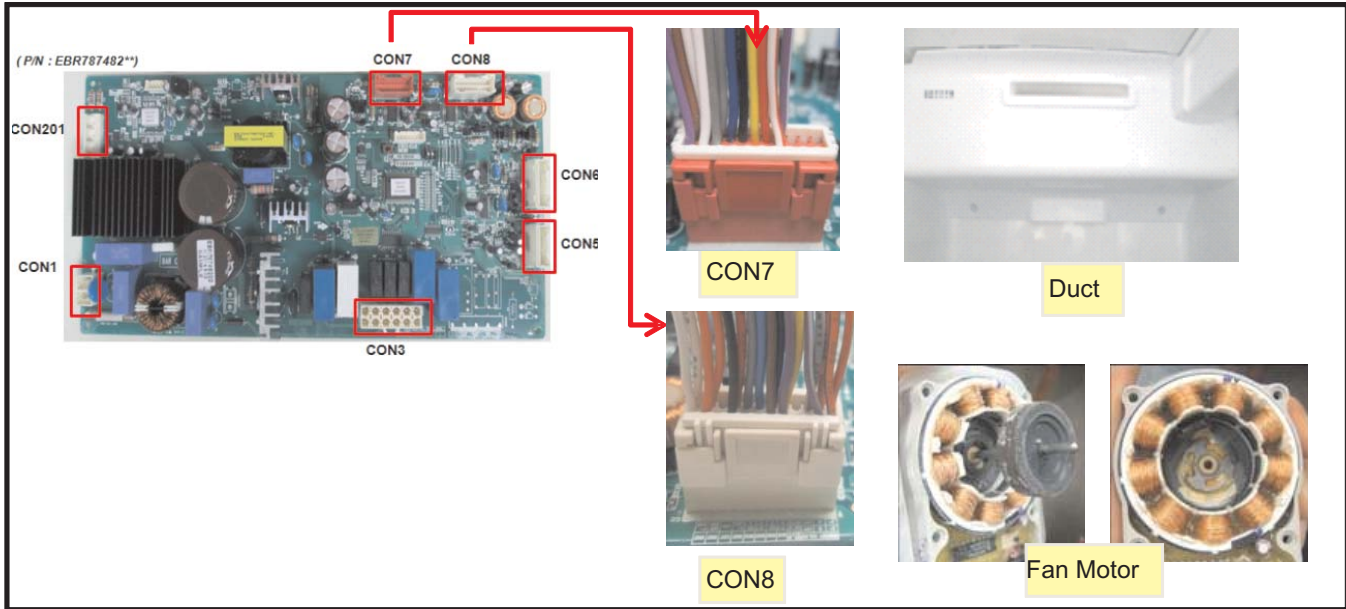
No → Change the LED Lamp

Yes → [Next Step]

7
Explain to customer

11-6. Poor/Over cooling in Fresh food section

Symptom	Check Point
1. Poor cooling in Fresh food section	1. Check the sensor resistance 2. Check the air flow 3. Check the air Temperature 4. Check the R-Damper motor voltage



CON7 R1SNR 19 th pin ~ 20 th pin	Resistance [Ω]
23°F / -5°C	38k
32°F / 0°C	30k
41°F / 5°C	24k
50°F / 10°C	19.5k
59°F / 15°C	16k

TEST MODE 1	Voltage [V]
CON8 9 th pin ~ 12 th pin	8~12V
CON8 9 th pin ~ 10 th pin	Not 0V, 5V

Duct	Status
Air Flow	Windy
Air Temperature	Cold

Poor cooling in Fresh food section

1 Check the sensor resistance.



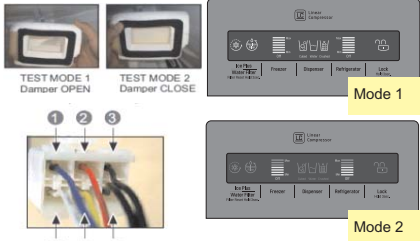
CON7

CON7 R1SNR 19 th pin ~ 20 th pin	Resistance [Ω]
23°F / -5°C	38k
32°F / 0°C	30k
41°F / 5°C	24k
50°F / 10°C	19.5k
59°F / 15°C	16k

2 Reset the unit and Input Test1 Mode (Push the button 1 time)



3 Open the fresh food door and Check the air flow D amper?



Test Mode	Damper state	SVC Action
1 Mode	Closed	Damper is normal. (Go to the 7)
2 Mode	Open	
1, 2 mode	Not working	Change the damper

Result	Service Action	
① - ⑥	369 ~ 451Ω	Change PCB
	Other	Change Damper
② - ⑤	369 ~ 451Ω	Change PCB
	Other	Change Damper
③ - ④	129.6 ~ 158.4Ω	Change PCB
	Other	Change Damper

No
Check the damper
Go to 5

Yes

4 Check the air temperature. Is it cold?

No

Check the Compressor and sealed system

Yes

Go to 7

5 Check the Fan Motor voltage Is Fan Motor voltage 8~12V?

No

Replace Main PCB



CON7

TEST MODE 1	Voltage [V]
CON7 9 th pin ~ 12 th pin	8~12V

Yes

6 Check the Fan Motor voltage Is Fan Feed Back voltage 0V, 5V?

Yes

Change the motor



CON7

TEST MODE 1	Voltage [V]
CON7 9 th pin ~ 10 th pin	Not 0V, 5V

No

7 Explain to customer

11-7. Poor cooling in Freezer compartment

Symptom	Check Point
1. Poor cooling in Freezer compartment	1. Check the sensor resistance 2. Check the air flow 3. Check the air Temperature 4. Check the Fan motor sticky 4. Check the Fan motor voltage

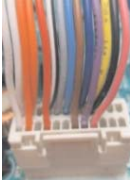
CON8	Resistance [Ω]
23 th pin ~ 24 th pin	
-22°F / -30°C	40k
-13°F / -25°C	30k
-4°F / -20°C	23k
5°F / -15°C	17k
14°F / -10°C	13k
23°F / -5°C	10k
32°F / 0°C	8k

TEST MODE 1	Voltage [V]
CON8 9 th pin ~ 12 th pin	8~12V
CON8 9 th pin ~ 10 th pin	Not 0V, 5V

Duct	Status
Air Flow	Windy
Air Temperature	Cold

Poor cooling in Freezer compartment



1 Check the sensor resistance.



CON8

CON8 23 th pin ~ 24 th pin	Resistance [Ω]
-22°F / -30°C	40k
-13°F / -25°C	30k
-4°F / -20°C	23k
5°F / -15°C	17k
14°F / -10°C	13k
23°F / -5°C	10k
32°F / 0°C	8k

2 Reset the unit and Input Test1 Mode.
(Push the button 1 time)





TEST MODE 1
Damper OPEN

TEST MODE 2
Damper CLOSE

Mode 1

3 Open the fresh food door and Check the air flow. Windy?



No → Check the F Fan Motor
Go to 5


Yes →

4 Check the air temperature. Is it cold?

No → Check the Compressor and sealed system

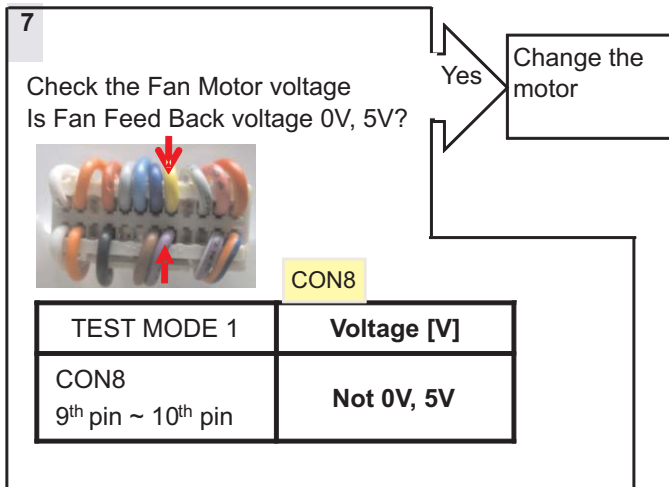
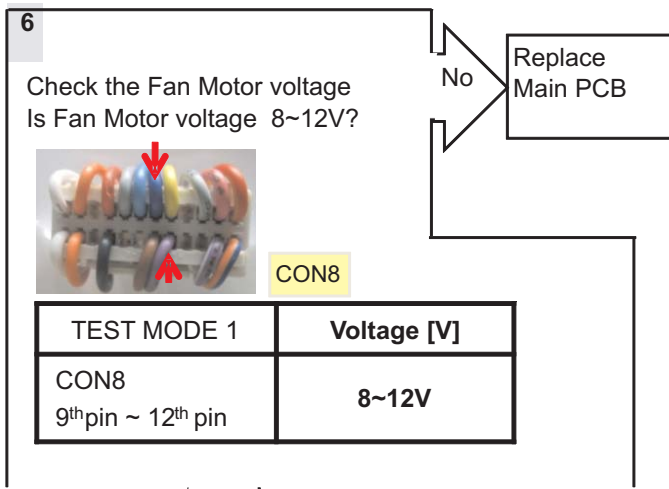
Yes →

5 Check the Fan motor. Rotate fan using hand. It feel sticky?



Yes → Change the Fan motor

No →



8

Explain to customer

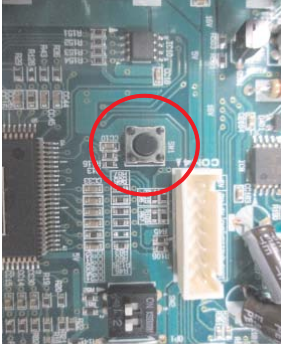
4. Appendix

19) Entering to the Test Mode

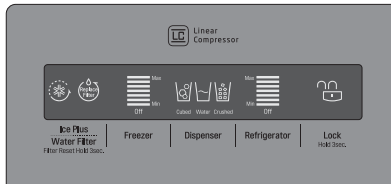
How to make TEST MODE

TEST MODE 1

If refrigerator is in NORMAL MODE, press once TEST S/W in Main PCB.



TEST 1

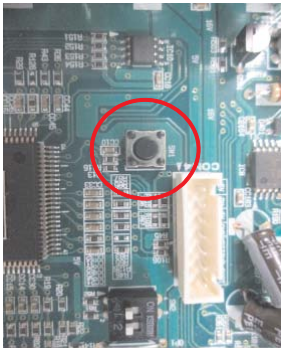


Display Response in TEST MODE 1

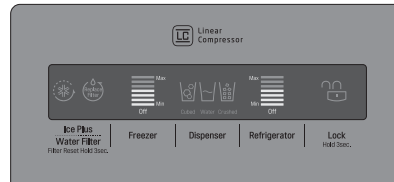
If any error is present, you can not enter to TEST MODE.

TEST MODE 2

If refrigerator is in NORMAL MODE, press twice TEST S/W in Main PCB, if you are in TEST MODE 1, press again.



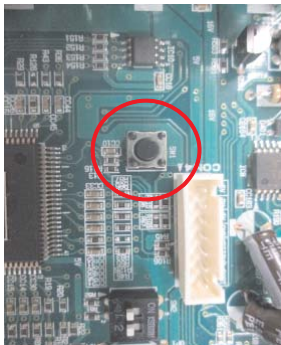
TEST 2



Display Response in TEST MODE 2

*Refrigerator must be cold to perform test mode 2.

To exit from TEST MODE 2, press TEST S/W once.

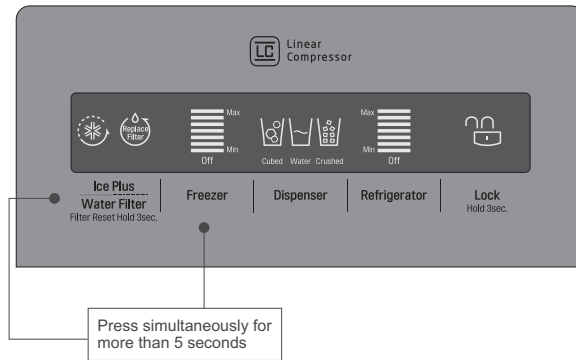


Display Returns to Normal Operation

How to make DISPLAY CHECK MODE

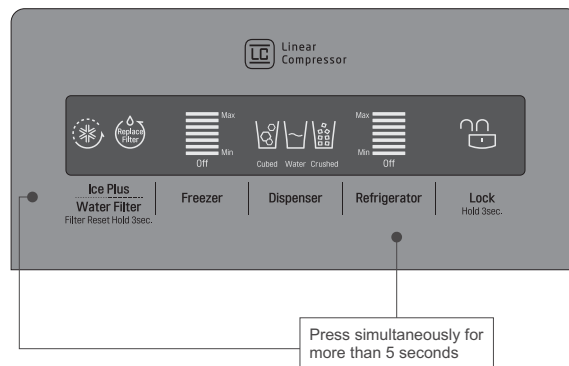
In order to check hidden error codes, or Display functionality.

To enter to this mode in Elite 3 press simultaneously ICE PLUS button and FREEZER button for more than 5 seconds.
If no are errors detected, all LED's will be turned ON, otherwise, error code will be displayed.



How to make DEMO MODE

- 1) Any door must be opened to enter in this mode.
- 2) To activate this mode press and hold ICE PLUS and FREEZER button over 5 seconds.
- 3) The display will show the word OFF
- 4) In this mode all loads are turned off (Compressor, Heater, Fans, etc)
- 5) Lamps and Dispenser Functions works normally (even in demonstration mode the refrigerator Lamp automatic off function works normally)
- 6) To exit Demonstration mode open any door, then press and hold ICE PLUS and REFRIGERATOR button over 5 seconds (Display return to normal mode)



20) Removing TPA's (Terminal Position Assurance)

How to remove Terminal Position Assurance (TPA)

<AC TPA>



<DC TPA>



After measure the values, you should put in the TPA again.

3. Wire Color

BL: Blue
WH: White
BO: Bright Orange
BK: Black
BN: Brown
PR: Purple
RD: Red

GN: Green
SB: Sky Blue
GY: Gray
BL/WH: Blue & White
WH/RD: White & Red
YL/BK: Yellow & Black

21) Temperature Charts

Temperature Chart #1

Temperature	Resistance KÙ	Voltage
-40°F / (-40°C)	73.29	4.10
-31°F / (-35°C)	53.63	3.84
-22°F / (-30°C)	39.66	3.55
-13°F / (-25°C)	29.62	3.23
-4°F / (-20°C)	22.33	2.90
5°F / (-15°C)	16.99	2.56
14°F / (-10°C)	13.05	2.23
-23°F / (-5 °C)	10.10	1.92
-32°F / (0 °C)	7.88	1.64
41°F / (5 °C)	6.20	1.38
50°F / (10°C)	4.91	1.16
59°F / (15°C)	3.92	0.97
68°F / (20°C)	3.15	0.81
77°F / (25°C)	2.55	0.68
86°F / (30°C)	2.07	0.57
95°F / (35°C)	1.70	0.47
104°F / (40°C)	1.40	0.40

*Apply only for Freezer Sensor

Temperature Chart #2

Temperature	Resistance KÙ	Voltage
-40°F / (-40°C)	225.10	4.48
-31°F / (-35°C)	169.80	4.33
-22°F / (-30°C)	129.30	4.16
-13°F / (-25°C)	99.30	3.96
-4°F / (-20°C)	76.96	3.73
5°F / (-15°C)	60.13	3.49
14°F / (-10°C)	47.34	3.22
-23°F / (-5 °C)	37.55	2.95
-32°F / (0 °C)	30.00	2.67
41°F / (5 °C)	24.13	2.40
50°F / (10°C)	19.53	2.14
59°F / (15°C)	15.91	1.89
68°F / (20°C)	13.03	1.67
77°F / (25°C)	10.74	1.46
86°F / (30°C)	8.90	1.27
95°F / (35°C)	7.41	1.11
104°F / (40°C)	6.20	0.96

*Apply for Refrigerator sensor (1 and 2),
Defrost sensor and Ice maker sensor









Temperature Chart #3

Temperature	Resistance KÙ	Voltage
-40°F / (-40°C)	225.10	4.79
-31°F / (-35°C)	169.80	4.72
-22°F / (-30°C)	129.30	4.64
-13°F / (-25°C)	99.30	4.54
-4°F / (-20°C)	76.96	4.43
5°F / (-15°C)	60.13	4.29
14°F / (-10°C)	47.34	4.13
-23°F / (-5 °C)	37.55	3.95
-32°F / (0 °C)	30.00	3.75
41°F / (5 °C)	24.13	3.54
50°F / (10°C)	19.53	3.31
59°F / (15°C)	15.91	3.07
68°F / (20°C)	13.03	2.83
77°F / (25°C)	10.74	2.59
86°F / (30°C)	8.90	2.35
95°F / (35°C)	7.41	2.13
104°F / (40°C)	6.20	1.91

*Apply for Room Temperature sensor

3. SEALED SYSTEM HEAVY REPAIR

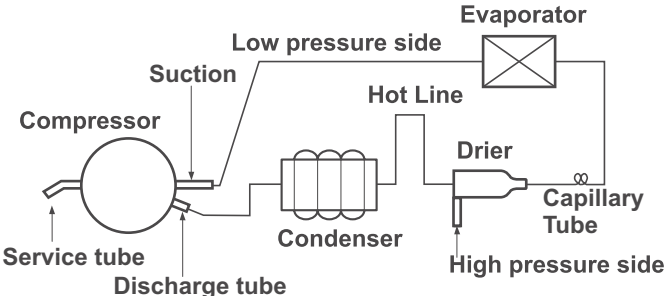
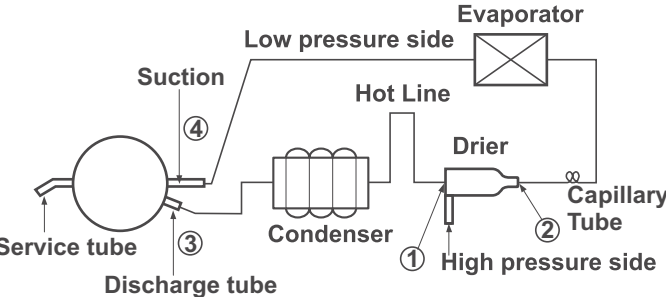
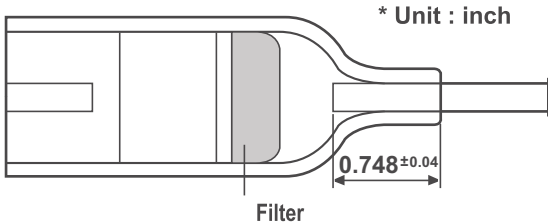
3-1. Summary of heavy repair

Process	Contents	Tools
 Trouble diagnosis		
 Remove refrigerant Residuals	- Cut charging pipe ends and discharge refrigerant from drier and compressor.	Filter, side cutters
 Parts replacement and welding	- Use R134a oil and refrigerant for compressor and drier - Confirm N ₂ sealing and packing conditions before use. Use good one for welding and assembly. - Weld under nitrogen gas atmosphere. (N ₂ gas pressure: 0.1-0.2kg/cm ²). - Repair in a clean and dry place.	Pipe Cutter, Gas welder, N ₂ gas
 Vacuum	- Evacuate for more than forty minutes after connecting manifold gauge hose and vacuum pump to high (drier) and low (compressor refrigerant discharging parts) pressure sides. - Evacuation Speed: 113 liters/minute.	Vacuum pump R134a exclusively, Manifold gauge.
 Refrigerant charging and charging inlet welding	- Weigh and control the allowance of R134a charging canister in a vacuum conditions to be ± 5 g with electronic scales and charge through compressor inlet (Charge while compressor operates). - Weld carefully after pinching off the inlet pipe.	R134a exclusive charging canister (mass cylinder), refrigerant R134a manifold gauge, electronic scales, pinch-off plier, gas welding machine
 Check refrigerant leak and cooling capacity	- Check leak at weld joints. <ul style="list-style-type: none"> □ Minute leak : Use electronic leak detector □ Big leak : Check visually. Note: Do not use soapy water for check. - Check cooling capacity 1. Check radiator manually to see if warm. 2. Check hot line pipe manually to see if warm. 3. Check frost formation on the whole surface of the evaporator.	Electronic Leak Detector, Driver (Ruler).
 Compressor compartment and tools arrangement	- Remove flux from the silver weld joints with soft brush or wet rag. Flux may be the cause of corrosion and leaks. - Clean R134a exclusive tools and store them in a clean tool box or in their place.	Copper brush, Rag, Tool box
 Transportation and installation	- Installation should be conducted in accordance with the standard installation procedure. Leave space of more than 5 cm (2 inches) from the wall for compressor compartment cooling fan mounted model.	

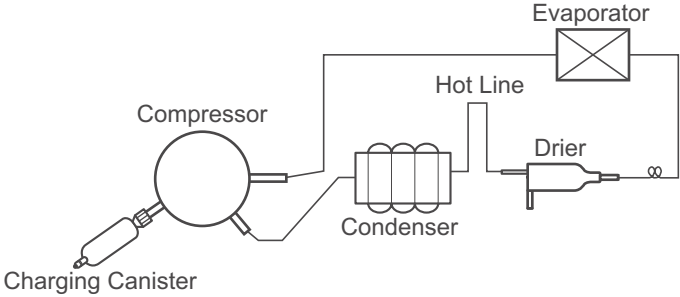
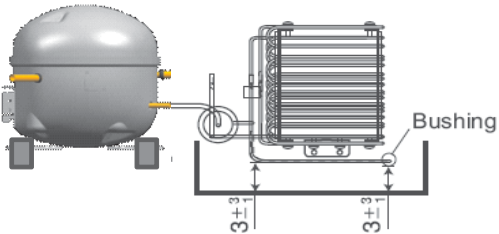
3-2. Precautions During Heavy Repair

Items	Precautions
1. Use of tools.	1) Use special parts and tools for R134a.
2. Recovery of refrigerant.	<p>1) Continue to recover the refrigerant for more than 5 minutes after turning the refrigerator off.</p> <p>2) Install a piercing type valve on the high pressure line (drier side). Then use the appropriate recovery equipment to recover the refrigerant from the system. When the refrigerant has been recovered, install a piercing type valve on the low pressure side. IT IS IMPORTANT TO OPEN THE SYSTEM IN THIS ORDER TO KEEP THE OIL FROM BEING FORCED OUT.</p> <p>The use of piercing type valves will allow future servicing and eliminates the possibility of a defective pinch off.</p> <div data-bbox="537 709 1422 1003" data-label="Diagram"> <p>The diagram illustrates a standard refrigeration cycle. On the left is the Compressor, with a 'Suction' line leading to the Condenser. The Condenser is connected to a 'Hot Line' which leads to the Drier. The Drier is connected to the Capillary Tube, which then leads to the Evaporator. The Evaporator is connected back to the Compressor. The 'Low Pressure side (compressor service tube) 2' is shown on the suction line. The 'High pressure side' is indicated between the condenser and the drier. A 'Discharge tube' is also shown on the compressor.</p> </div>
3. Replacement of drier.	1) Be sure to replace drier with R134a only when repairing pipes and injecting refrigerant.
4. Nitrogen blowing welding.	<p>1) Use pressurized nitrogen to prevent oxidation inside the piping. (Nitrogen pressure : 0.1~0.2 kg/cm².)</p>
5. Others.	<p>1) Only nitrogen or R134a should be used when cleaning the inside of piping of the sealed system.</p> <p>2) Check leakage with an electronic leakage tester.</p> <p>3) Be sure to use a pipe cutter when cutting pipes.</p> <p>4) Be careful not the water let intrude into the inside of the cycle.</p>

3-3. Practical Work For Heavy Repair

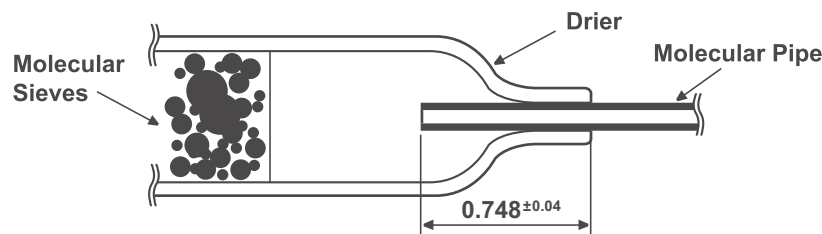
Items	Precautions
<p>1. Removal of residual refrigerant.</p>	<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="width: 20%;"> <p>KEY POINT Observe the sequence for removal of refrigerant. (If not, compressor oil may leak.)</p> </div> </div> <p>1) Continue to recover the refrigerant for more than 5 minutes after turning the refrigerator off.</p> <p>2) Install a piercing type valve on the high pressure line (drier side). Then use the appropriate recovery equipment to recover the refrigerant from the system. When the refrigerant has been recovered, install a piercing type valve on the low pressure side. IT IS IMPORTANT TO OPEN THE SYSTEM IN THIS ORDER TO KEEP THE OIL FROM BEING FORCED OUT. The use of piercing type valves will allow future servicing and eliminates the possibility of a defective pinch off.</p>
<p>2. Nitrogen blowing welding.</p>	<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="width: 20%;"> <p>KEY POINT Welding without nitrogen blowing produces oxidized scales inside a pipe, which affect performance and reliability of a product.</p> </div> </div> <p>When replacing a drier: After to be assembled drier (weld ① and ② parts) apply nitrogen to high pressure side (0.1~0.2 Kg/cm²)</p> <p>When replacing a compressor: Weld ③ and ④ parts and apply blowing nitrogen to the low pressure side.</p>
<p>3. Replacement of drier.</p>	<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;">  <p>* Unit : inch</p> <p>0.748±0.04</p> <p>Filter</p> </div> <div style="width: 20%;"> <p>KEY POINT Be sure to check the inserted length of capillary tube when it is inserted. (If inserted too far, the capillary tube will be blocked by the filter.)</p> </div> </div> <p>Inserting a capillary tube Measure distance with a ruler and put a mark(0.748 ± 0.04)on the capillary tube. Insert tube to the mark and weld it</p>

Items	Precautions
4. Vacuum degassing.	<div data-bbox="532 352 1380 1029" data-label="Diagram"> </div> <p data-bbox="477 1066 669 1096">Pipe Connection</p> <p data-bbox="477 1108 1237 1176">Connect the red hose to the high pressure side and the blue hose to the low pressure side.</p> <p data-bbox="477 1188 688 1218">Vacuum Sequence</p> <p data-bbox="477 1230 1198 1260">Open valves ① and ② and evacuate for 40 minutes. Close valve ①.</p> <p data-bbox="1230 907 1364 936">KEY POINT</p> <ul data-bbox="1230 940 1464 1205" style="list-style-type: none"> - If power is applied during vacuum degassing, vacuum degassing shall be more effective. - Run the compressor while charging the system. It is easier and works better.
5. Refrigerant charging.	<p data-bbox="477 1331 701 1360">Charging sequence</p> <ol data-bbox="477 1373 1364 1520" style="list-style-type: none"> 1) Check the amount of refrigerant supplied to each model after completing vacuum degassing. 2) Evacuate charging canister with a vacuum pump. 3) Measure the amount of refrigerant charged. <ul data-bbox="503 1528 1464 1680" style="list-style-type: none"> - Measure the weight of an evacuated charging canister with an electronic scale. - Charge refrigerant into a charging canister and measure the weight. Calculate the weight of refrigerant charged into the charging canister by subtracting the weight of an evacuated charging canister. <div data-bbox="477 1688 958 1982" data-label="Diagram"> </div> <p data-bbox="1218 1650 1351 1680">KEY POINT</p> <ul data-bbox="1218 1684 1451 1856" style="list-style-type: none"> - Be sure to charge the refrigerant at around 25°C [77°F]. - Be sure to keep -5g in the winter and +5g in summer. <div data-bbox="893 1873 1432 1911" data-label="Text" style="border: 1px solid black; padding: 2px;"> <p data-bbox="906 1877 1419 1906">Calculation of amount of refrigerant charged</p> </div> <p data-bbox="805 1919 1429 1978">the amount of refrigerant charged= weight after charging - weight before charging (weight of an evacuated cylinder)</p>

Items	Precautions
	 <p>4) Refrigerant Charging Charge refrigerant while operating a compressor as shown above.</p> <p>5) Pinch the charging pipe with a pinch-off plier after completion of charging.</p> <p>6) Braze the end of a pinched charging pipe with copper brazer and take a gas leakage test on the welded parts.</p>
6. Gas-leakage test	* Test for leaks on the welded or suspicious area with an electronic leakage tester.
7. Pipe arrangement in each cycle	<p>When replacing components, be sure each pipe is replaced in its original position before closing the cover of the mechanical area.</p> 

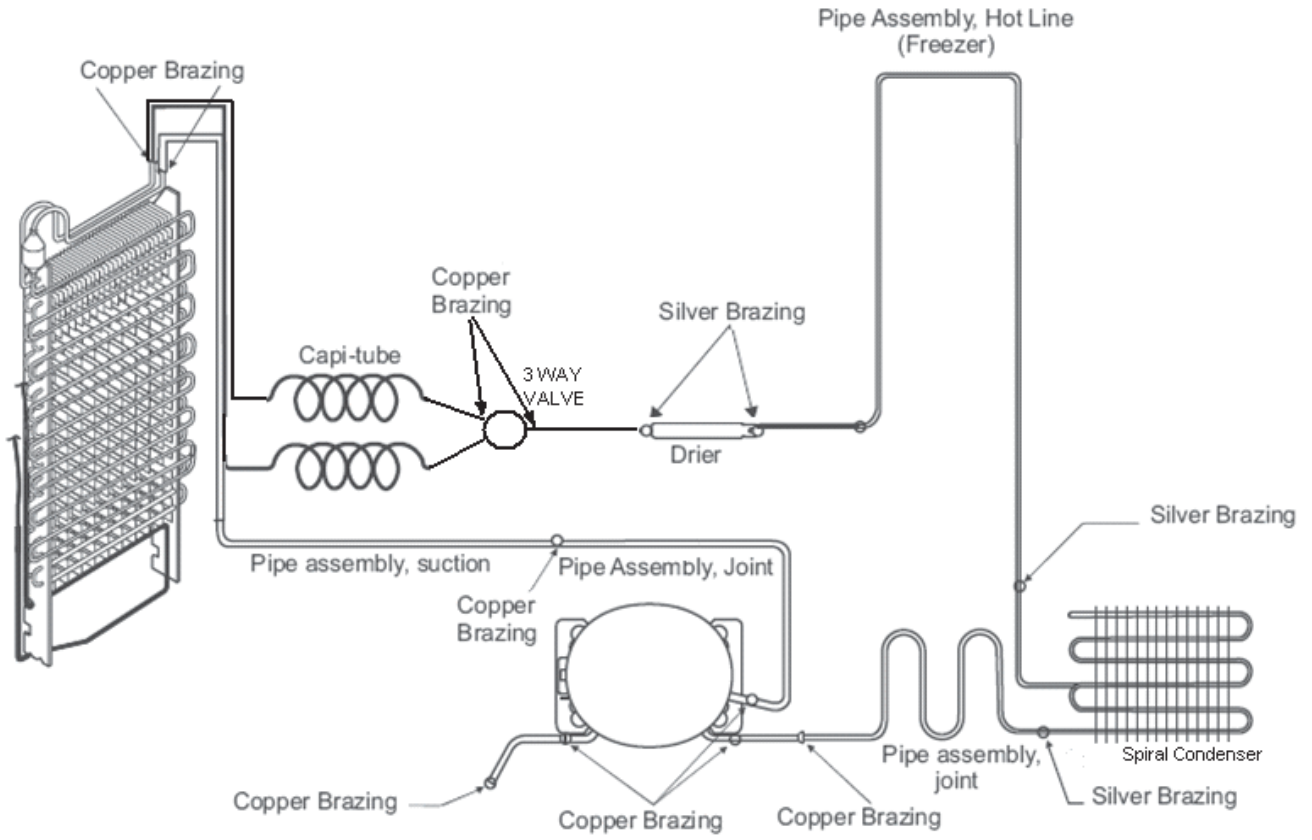
3-4. Standard Regulations For Heavy Repair

- 1) Observe the safety precautions for gas handling.
- 2) Use JIG (or a wet towel) in order to prevent electric wires from burning during welding. (In order to prevent insulation break and accident.)
- 3) The inner case will melt and the insulation will burn.
- 4) The copper piping will oxidize.
- 5) Do not allow aluminum and copper pipes to touch. (In order to prevent corrosion.)
- 6) Observe that the inserted length of a capillary tube into a drier should be 0.748 ± 0.04



- 7) Make sure that the inner diameter is not distorted while cutting a capillary tube.
- 8) Be sure that the suction pipe and the filling tube should not be substituted each other during welding. (High efficiency pump.)

3-5. Brazing Reference Drawings



4. HOW TO DEAL WITH CLAIMS

4-1. Sound

Problems	Checks and Measures
Hisssounds	<p>Explain general principles of sounds.</p> <ul style="list-style-type: none"> • All refrigerators make noises when they run. The compressor and fan produce sounds. There is a fan in the freezer compartment which blows cool air to freezer and refrigerator compartments. Hisssounds are heard when the air passes through the narrow holes into the freezer and refrigerator compartments. <p>Cooling Fan sound in the compressor compartment.</p> <ul style="list-style-type: none"> • There is a fan on the back of the refrigerator which cools the compressor compartment. If there is a small space between the refrigerator and the wall, the air circulation sounds may be noticeable. <p>Noise of Compressor.</p> <ul style="list-style-type: none"> • This operating sound happens when the compressor compresses the refrigerant. The compressor rotates at 3600 RPM. The sound of compressor Bigger refrigerators make more noise than small ones
Clicksounds	<p>Explain the principles of temperature change.</p> <ul style="list-style-type: none"> • The sounds happens when pipes and internal evaporator in the refrigerator compartment expand and contract as the temperature changes during the refrigerator operation. This sound also happens during defrosting, twice a day, when the ice on the evaporator melts.
Clunksound	<p>Explain that it comes from the compressor when the refrigerator starts.</p> <ul style="list-style-type: none"> • When the refrigerator operates, the piston and motor in the compressor rotate at 3600 RPM. This sound is caused by the vibration of motor and piston when they start and finish their operation. This phenomenon can be compared with that of cars. When an automobile engine starts, it is loud at first but quiets down quickly. When the engine stops, so does the vibration.
Vibration sound	<p>Check the sound whether it comes from the pipes vibration and friction.</p> <ul style="list-style-type: none"> • Insert bushing or leave a space between pipes to avoid the noise. • Fix the fan blade if it is hitting on the shroud • Fix the drip tray if it is loosened. <p>Sound depends on the installation location.</p> <ul style="list-style-type: none"> • Sound becomes louder if the refrigerator is installed on a wooden floor or near a wooden wall. Move it to the another location. • If the refrigerator is not leveled properly, a small vibration can make a loud sound. Please adjust the level of the refrigerator.

Problems	Checks and Measures
Sounds of water flowing	<p>Explain the flow of refrigerant.</p> <ul style="list-style-type: none"> • When the refrigerator stops, the water flowing sound happens. This sound happens when the liquid or vapor refrigerant flows from the evaporator to compressor.
Click sounds	<p>Explain the characteristics of moving parts.</p> <ul style="list-style-type: none"> • This noise comes from the MICOM controller's switch on the top of the refrigerator when it is turned on and off.
<p>Noise of Icemaker operation (applicable to model with Icemaker).</p> <ul style="list-style-type: none"> - Noise produced by ice dropping and hitting ice bin. - Noise from motor sounds Hiss . 	<p>Explain the procedure and principles of Icemaker operation.</p> <ul style="list-style-type: none"> • Automatic Icemaker repeats the cycle of water supplying → Icemaking → ice ejection. When water is supplied, the water supply valve in the machine room makes sounds like Hiss and water flowing also makes sound. When water freezes, clicking sounds are heard. When ice is being ejected, sounds like Hiss produced by a motor to rotate an ice tray and ice dropping and hitting ice bin sounds are also heard.
Noise when supplying water.	<p>Explain the principles of water supplied to dispenser.</p> <ul style="list-style-type: none"> • When the water supply button in the dispenser is pressed, the water supply valve in the compressor compartment opens and let the water flow to the water tank in the lower part of the refrigerator compartment. The water is dispensed by this pressure. When this happens, motor sound and water flowing sound are heard.
Noise when supplying ice.	<p>Explain the principles of ice supply and procedure of crushed icemaking in a dispenser.</p> <ul style="list-style-type: none"> • When ice cube button is pressed, ice stored in the ice bin is moved by an auger and dispensed. If crushed ice button is pressed, the ice cube is crushed. When this happens, ice crushing and hitting ice bin sounds are heard.

4-2. Measures for Symptoms on Temperature

Problems	Checks and Measures
Refrigeration is weak.	<p>Check temperature set in the temperature control knob.</p> <ul style="list-style-type: none"> • Refrigerator is generally delivered with the button set at normal use(MID). But customer can adjust the temperature set depending on their habit and taste. If you feel the refrigeration is weak, then set the temperature control button at strongposition. If you adjust the button in the freezer compartment as well, the refrigeration is stronger than adjusting refrigerator only.
The food in the chilled drawer is . not frozen but defrosted	<p>The chilled drawer does not freeze food.</p> <ul style="list-style-type: none"> • Use chilled drawer for storing fresh meat or fish for short periods. For storing for a long periods or freezing food, use a freezer compartment. It is normal that frozen foods thaw above the freezing temperature (in the chilled drawer).
Refrigerator water is not cool.	<p>Check the water storage location.</p> <ul style="list-style-type: none"> • If water is kept in the door rack, move it to a refrigerator shelf. It will then become cooler.
Ice cream softens.	<p>Explain the characteristics of ice cream.</p> <ul style="list-style-type: none"> • The freezing point of ice cream is below -15°C[5°F]. Therefore ice cream may melt if it is stored in the door rack. • Store ice cream in a cold place or set the temperature control button of a freezer at strongposition.
Refrigeration is too strong.	<p>Check the position of temperature control button.</p> <ul style="list-style-type: none"> • Check if refrigeration is strong in whole area of the refrigerator or partly near the outlet of the cooling air. If it is strong in whole area, set the control button at weak. If it is strong only near the outlet of cool air, keep food (especially damp foods and easily frozen foods) away from the outlet.
Vegetables are frozen.	<p>Check the vegetables storage.</p> <ul style="list-style-type: none"> • If vegetables are stored in the refrigerator shelf or chilled drawer instead of vegetable drawer, they will be frozen. Set the control button at weakif they are also frozen in the vegetable drawer.
The food stored at inside of the shelf freezes even the control button is set at MID .	<p>Check if food is stored near the outlet of the cooling air.</p> <ul style="list-style-type: none"> • The temperature at cooling air outlet is always below the freezing point. Do not store food near the outlet of the cooling air as it block the air circulation. Do not block the outlet. If the outlet of the cooling air is blocked, the refrigerator compartment will not be cooled.

4-3. Odor and Frost

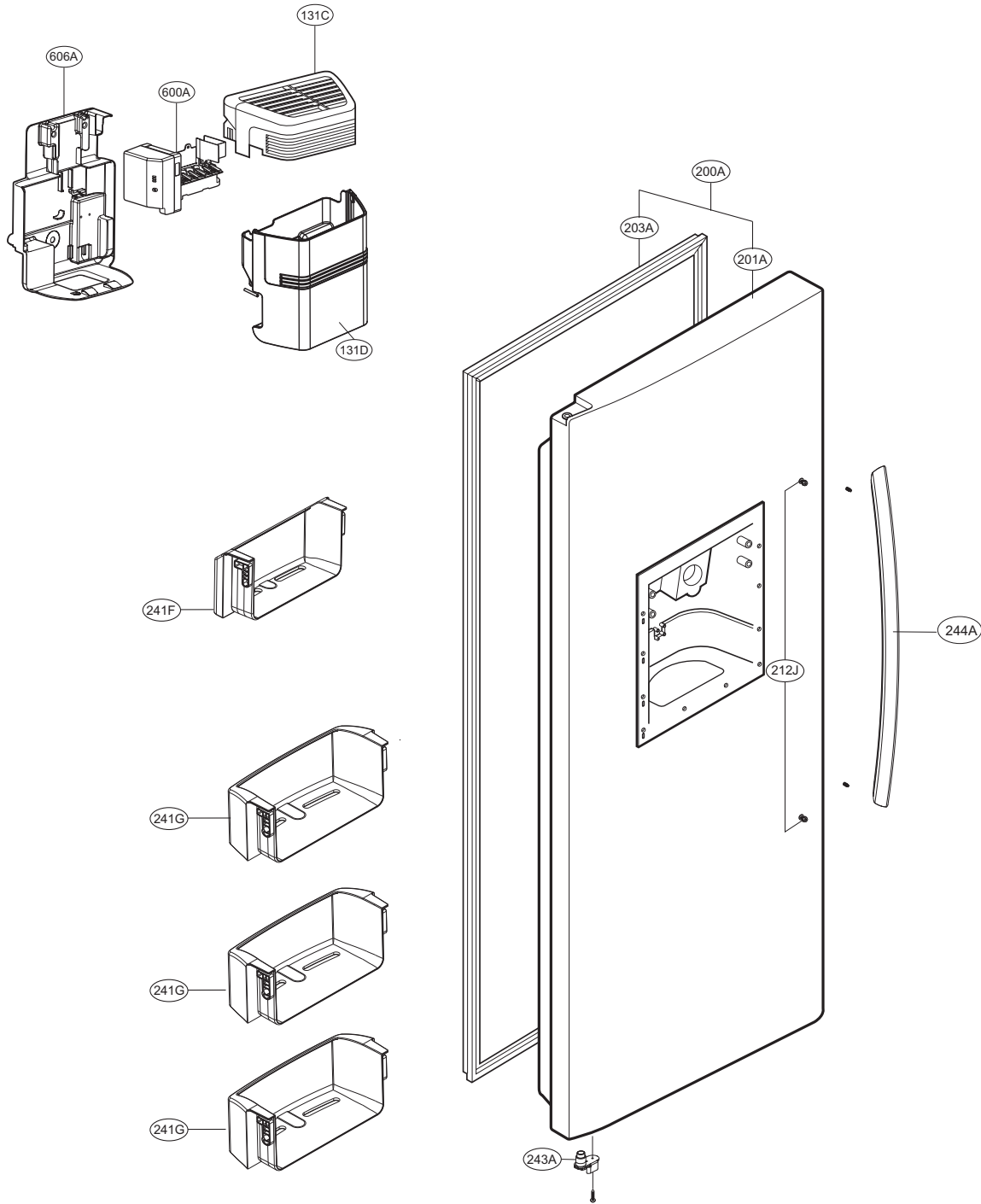
Problems	Checks and Measures
Odor in the refrigerator compartment.	<p>Explain the basic principles of food odor.</p> <ul style="list-style-type: none"> • Each food has its own particular odor. Therefore it is impossible to prevent or avoid food odor completely when food is stored in the completely sealed refrigerator compartment. The deodorizer can absorb some portions of the odor but not completely. The intensity of odor depends on refrigerator conditions and environments. <p>Check the temperature control button and set at strong.</p> <ul style="list-style-type: none"> • Clean inside of the refrigerator with detergent and remove moisture. Dry inside the refrigerator by opening the door for about 3 or 4 hours and then set the temperature control button at strong .
Frost in the freezer compartment	<p>Explain the basic principles of frost formation.</p> <ul style="list-style-type: none"> • The main causes for frosting: <ul style="list-style-type: none"> - Door was left open. - Air penetration through the gasket - Too frequent door opening. (parties. etc.) - Hot foods are stored before they are cooled down. The temperature of freezer is -19°C[-2.2°F]. if temperature is set at MID. If hot air comes into the refrigerator, fine frost forms as cold air mixes with hot air. If this happens quite often, much frost forms inside of the refrigerator. If the door is left open in Summer, ice may form inside of the refrigerator.
Frost in ice tray.	<p>Explain basic principles of frost formation.</p> <ul style="list-style-type: none"> • When ice tray with full of water is put into a freezer compartment, the water evaporates. If cool air fan operates, the moisture attached to the jaw (protruded part) of ice mold will freeze and form frost. If warm water was put into the ice mold, the situation will become worse.

4-4. Others

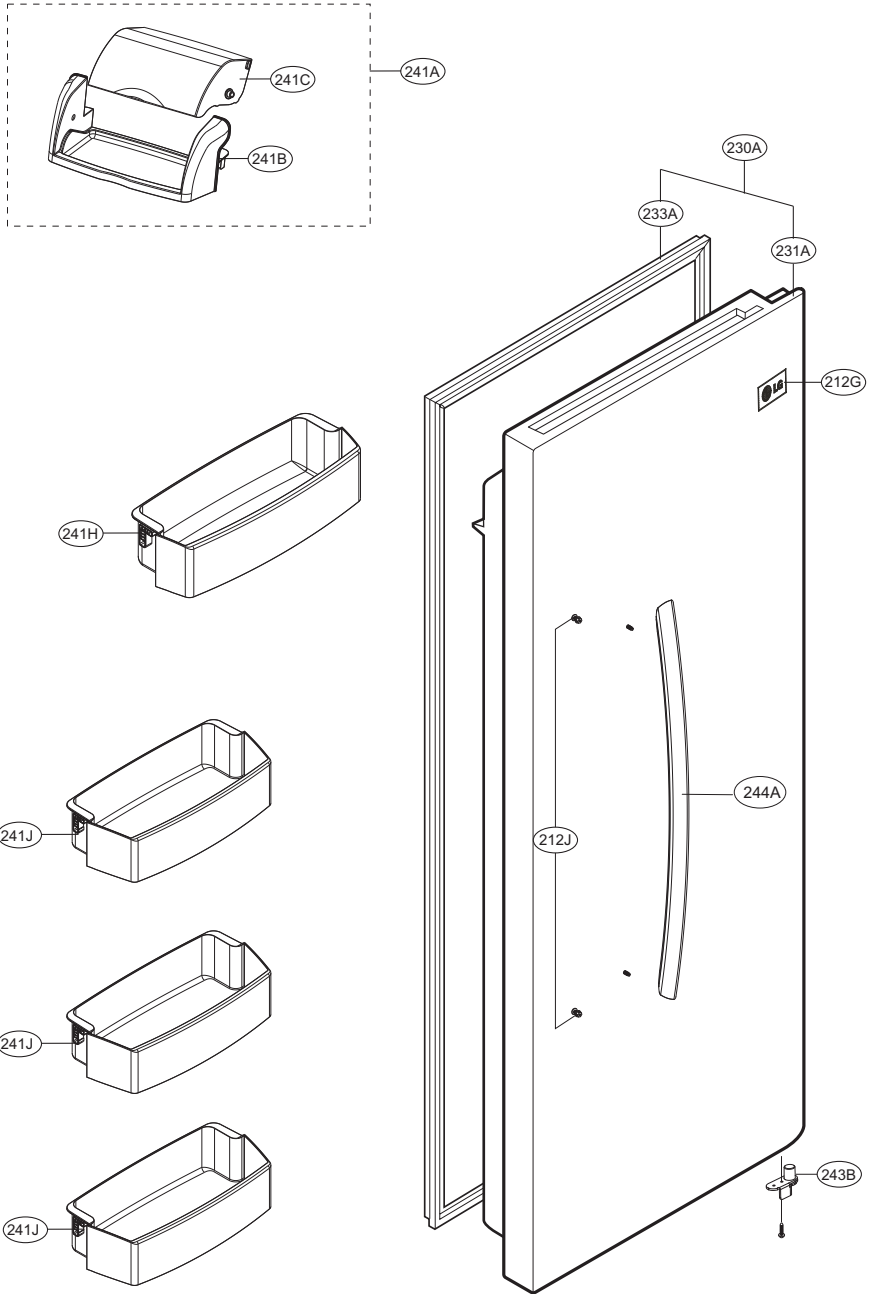
Problems	Checks and Measures
The refrigerator case is hot.	<p>Explain the principles of radiator.</p> <ul style="list-style-type: none"> The radiator pipes are installed in the refrigerator case and partition plate between the refrigerator and the freezer compartment in order to prevent condensation formation. Particularly in summer or after installation of refrigerator, it may feel hot but it is normal. If there is not enough space to dissipate heat, it can be hotter due to lack of heat radiation. Please install a refrigerator in a well-ventilated place and leave the clearance between refrigerator and wall:
Small holes in a door liner	<p>Explain that the hole is for releasing gas.</p> <ul style="list-style-type: none"> A small hole in the door liner is for releasing gas during insulation materials lining work. With a releasing hole, forming can be easily done .
Electric bills are too much.	<p>Explain that the hole is to allow the air to escape when vacuum forming plastic parts and pumping foam insulation into cavities.</p> <p>NOTE! Holes and releasing gas appear to be very crude and would not be acceptable in a manual.</p> <p>There are small holes in the plastic liner of some parts of the refrigerator. These holes allow plastic parts to be injection molded and vacuum formed by allowing air bubbles to be expelled. They also allow foam insulation to be pumped into cavities where air bubbles may build up.</p>
Condensation on the inside wall of the refrigerator compartment and the cover of properly vegetable drawer.	<p>Explain how to store foods</p> <ul style="list-style-type: none"> Condensation forms when refrigerator is installed at damp area, door is frequently opened, and wet foods are not stored in the air tight container or wrapped. Be sure to store wet foods in airtight containers or securely covered in plastic wrap.
When is the power connected?	<p>When should the power be connected ?</p> <ul style="list-style-type: none"> You can connect the power immediately after installation. However, if the refrigerator was laid flat before or during installation, you must stand it upright for 6 hours before plugging it in. This allows the refrigerant oils to return to the sump in the compressor. If you operate the refrigerator before the oil has had a chance to settle, you could damage the compressor.
Door does not open properly.	<p>Refrigerator compartment door does not open properly.</p> <ul style="list-style-type: none"> When the door is open, warm open air comes into the compartment and is mixed up with cool air. This mixed air shall be compressed and increase the internal pressure when door is closed. This causes the door stucked closely to the refrigerator in a moment. (If the refrigerator is used for a long time, it will open smoothly.) <p>When the refrigerator compartment door is opened and closed, the freezer compartment door moves up and down.</p> <ul style="list-style-type: none"> When the refrigerator compartment door is opened and closed, fresh air comes into the freezer compartment and moves up and down the freezer compartment door. <p>Door opens too easily.</p> <ul style="list-style-type: none"> There is a magnet in the gasket so it closes securely without a gap. It can be held open easily if something is in the way and obstructs the door's closing <p>A door does not close properly.</p> <ul style="list-style-type: none"> If the refrigerator is not properly leveled, the doors will not close easily. Adjust the level using the leveling screws under the front of the refrigerator.

12.EXPLODED VIEW

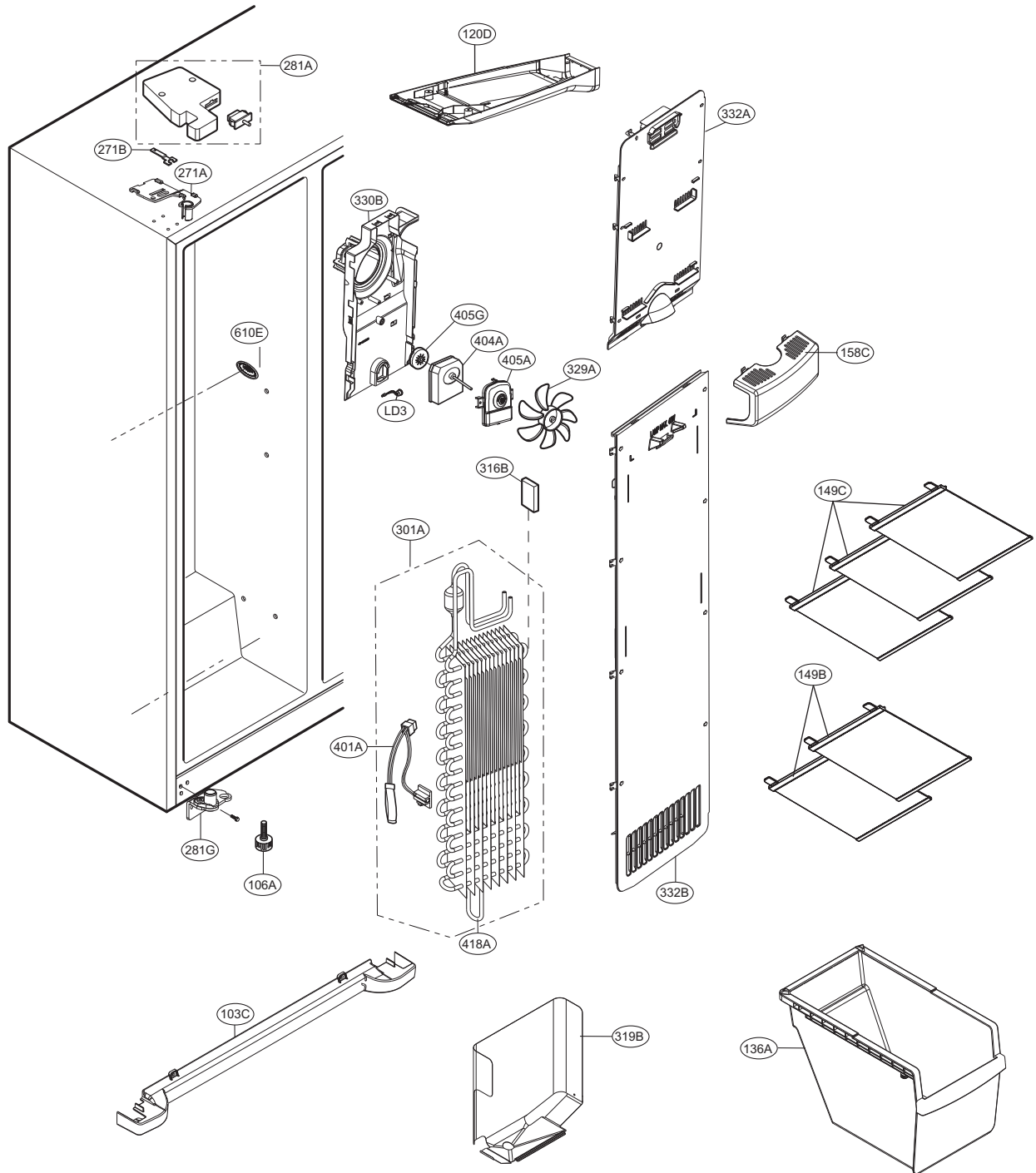
FREEZER DOOR



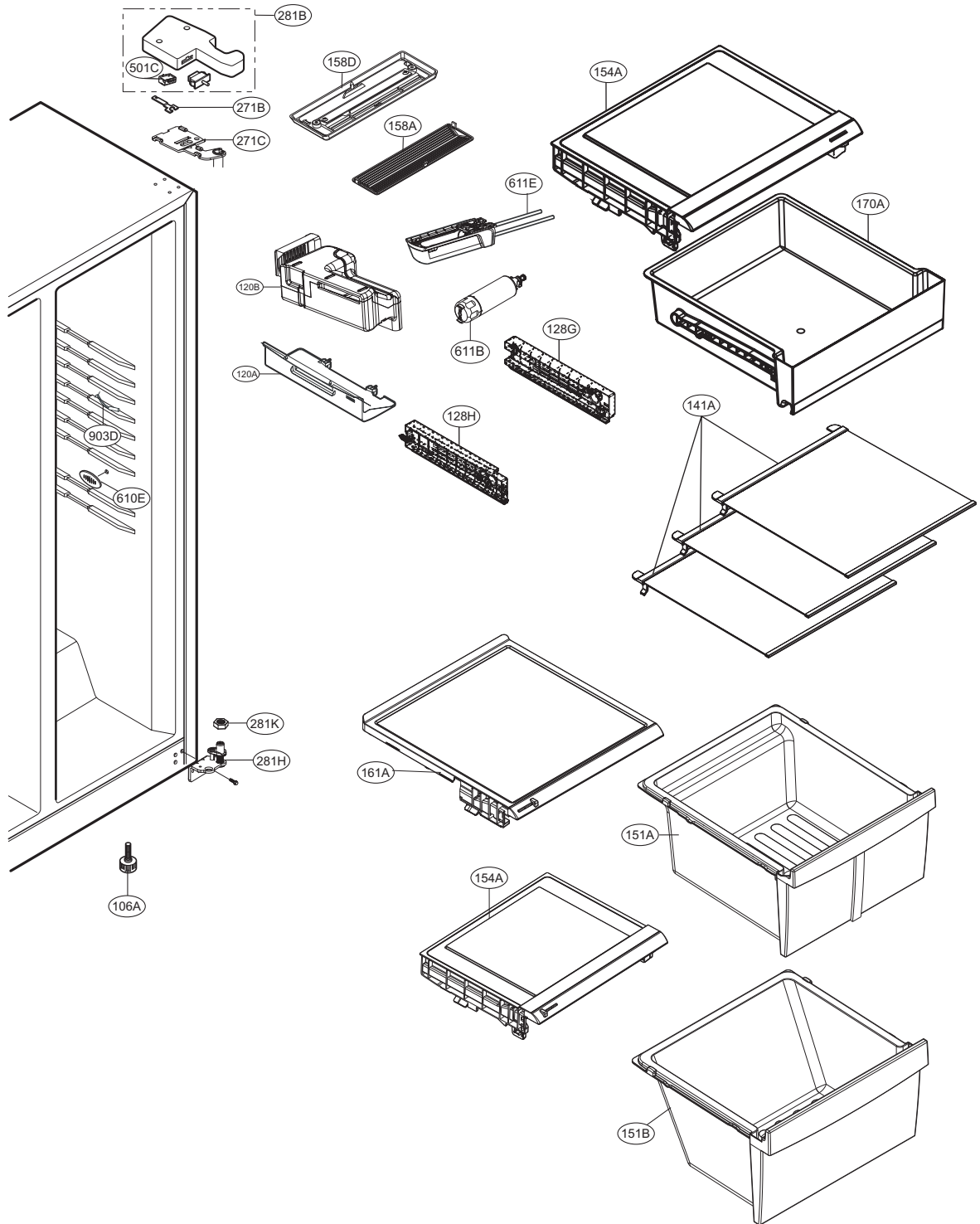
REFRIGERATOR DOOR



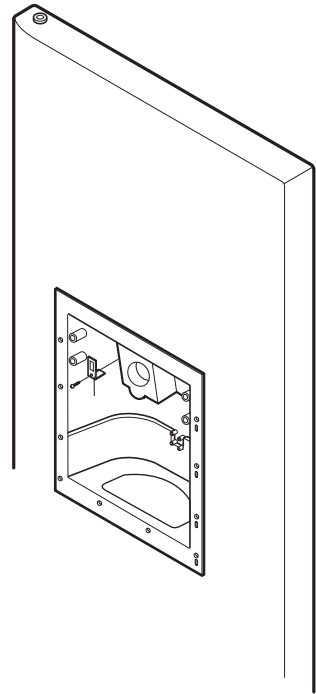
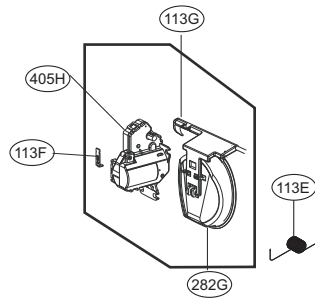
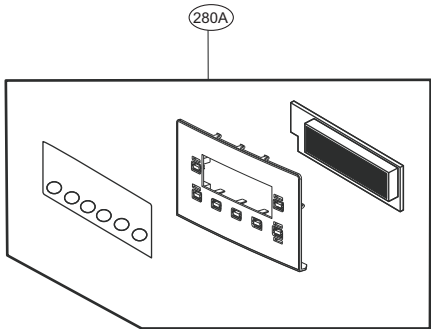
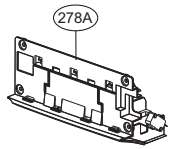
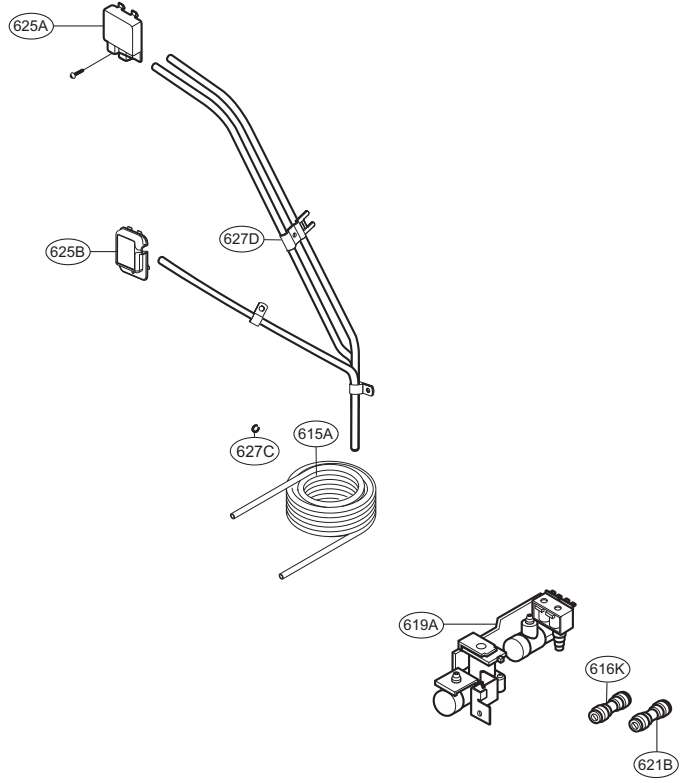
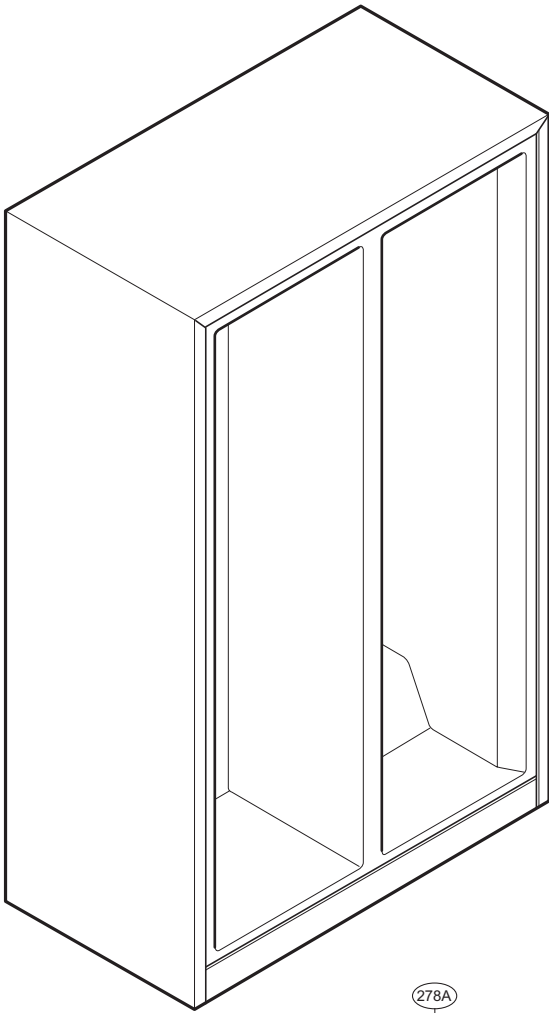
FREEZER COMPARTMENT



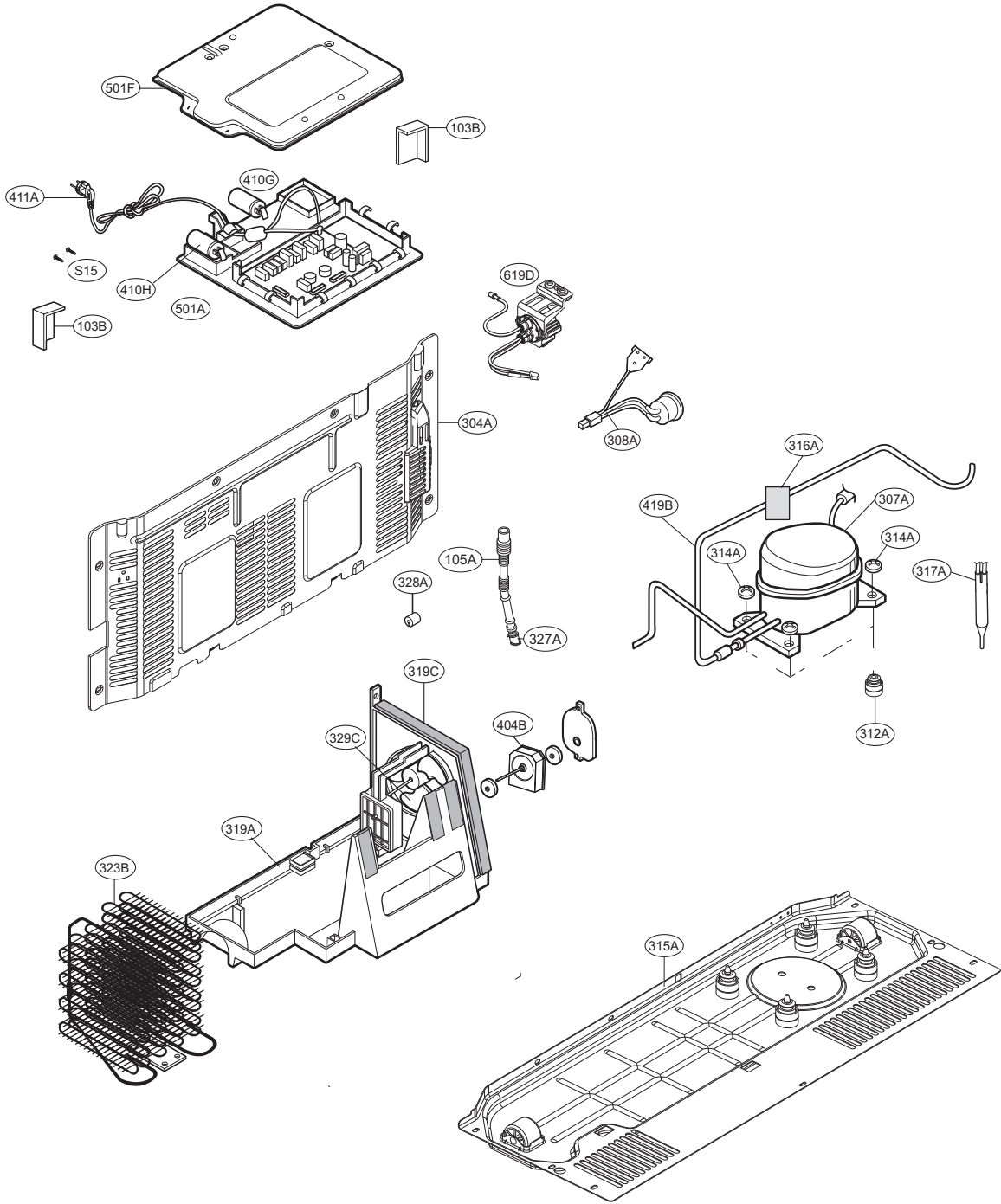
REFRIGERATOR COMPARTMENT



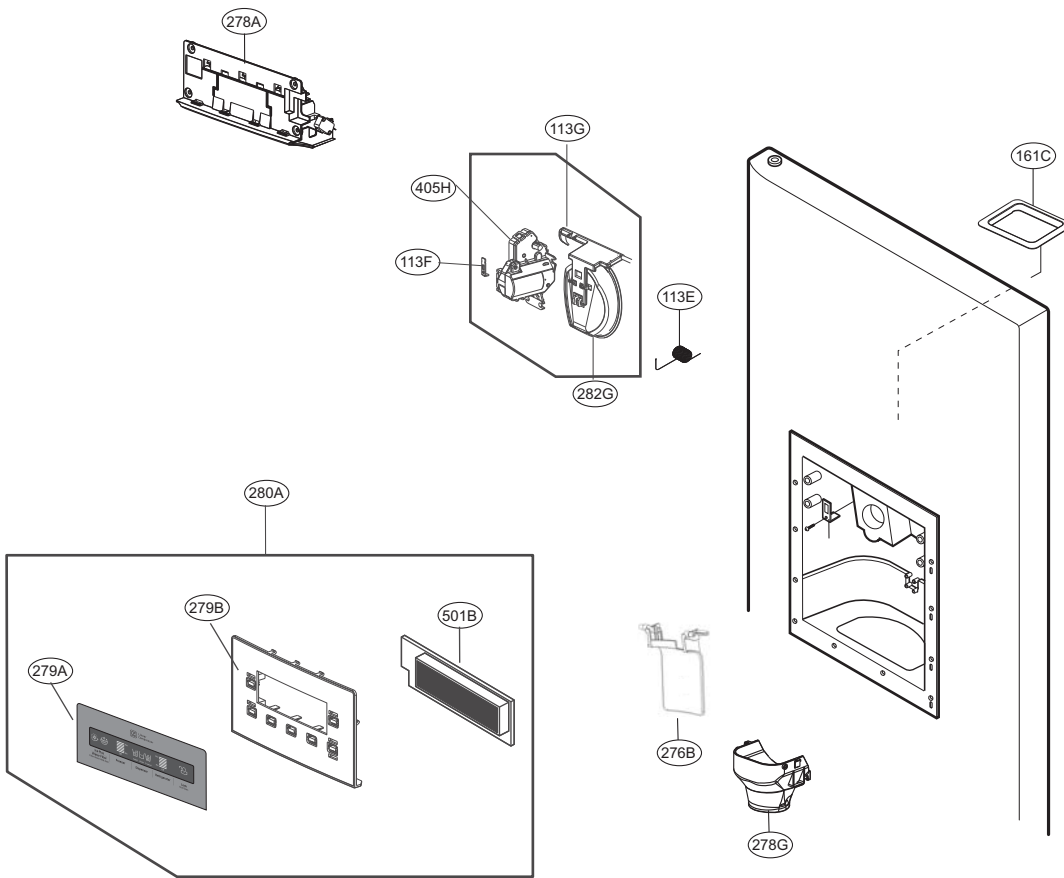
ICE & WATER PARTS



MECHANICAL COMPARTMENT



DISPENSER PARTS





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