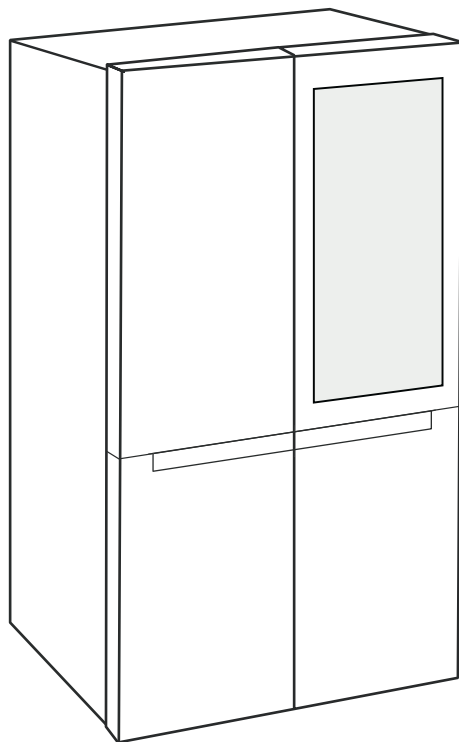


SXS REFRIGERATOR **SERVICE MANUAL**

CAUTION

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



MODELS:

LRSES2706V /01

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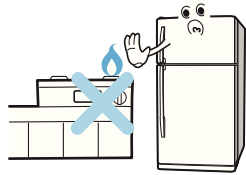
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METHOD OF REPAIR WITH REFRIGERANT R600a

Heavy repair method for refrigerant applied to refrigerator 1-1 Safety and precaution instructions before heavy repair

Do not place flammable products nearby.

This can cause fire.



Do not store materials easily flammable substances, such as ether, benzene, alcohol, chemicals, LP gas, etc., in the fridge.

This can cause an explosion or fire



If you repair the refrigeration cycle, take ventilation into account.

R600A refrigerant is flammable, so be sure to remove heat sources or flammable during the operation. (Smoking is strictly prohibited).



Note: The images are for reference.

1-2. Points to check before repair

Open the ASM cover and the rear cover of the refrigerator and check the type of refrigerant indicated on the compressor before to work Refrigerators that use R600a as a refrigerant have a yellow label on the compressor.

1-3. Characteristics of R600a refrigerant

It is a natural gas refrigerant (CH_3), and is not polar. R600a is from the same family as butane gas, so if it is discharged with a high concentration of air, it can cause fire (very careful handling is required during cycle repair).
Explosion concentration: 1.8% ~ 8.4% / vol. Ignition temperature: 494 °C

1-4. Characteristics of R600a refrigerant

It has about 60% of the amount of refrigerant in refrigerators that use R134a. In the suction pressure (low compression), it has a high degree of vacuum (1 bar or less). The volume of the refrigerator compressor using R600a is 1.7 times larger than the compressor volume of the refrigerator that uses R134a. The label as in the following figure is marked on the compressor and on the back cover of the refrigerator using R600a.

1-5 Place of repair and environment

Check if the workplace has good ventilation, and ventilation fluid before working (be sure to use the return bag of coolant inside the workplace). Check for any flammable source or heat source near the place of work, and eliminate them before starting work. Refrigerant R600a has a strong flammability, so never discharge within the workplace.

During work, be sure to follow the heavy repair procedure.

Safety Warning and Cautions

Chapter 1 Safety Warning and Cautions

- ▶ Observing cautions for safety can prevent accidents and dangers.
- ▶ Cautions are classified into Warning and Caution and the meanings are as follows

WARNING

WARNING indicates the possibility of serious injury or death if the instructions are not followed.

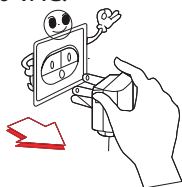
CAUTION

Caution indicates a hazardous situation with the possibility of product damage or personal injury if the instructions are not followed

WARNING

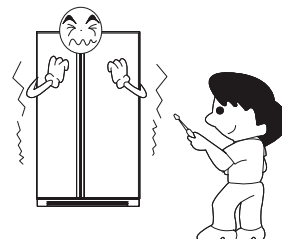
Be cautious of electric shock.

Control board (PWB Main and Sub)
uses power supply of about 120 VAC.



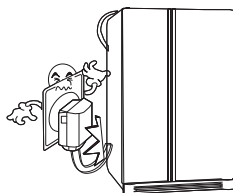
Do not allow consumers to directly
repair, disassemble, or modify the
refrigerator.

Harm, electric shock,
or fire could occur.



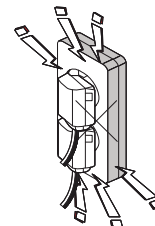
Be sure the plug and cord are not
pressed by the rear side of the
refrigerator.

Damage to power plugs
could result in fire or
electric shock.



Plug the refrigerator into a
dedicated circuit.

Plugging in too many appliances
can result in fire or problems with
the operation of your refrigerator.



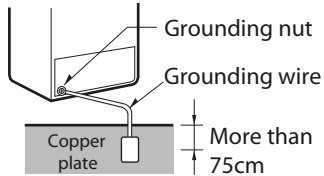
Note: The images are for reference.

Safety Warning and Cautions

WARNING

If grounding is required, be sure to consult an electrician.

The refrigerator must be plugged in to a properly rated and grounded outlet. If you are not sure of your voltage or ground, consult a qualified and licensed electrician.



Do not store poisonous, flammable, or explosive chemicals in the refrigerator.

There is danger of explosion and fire.



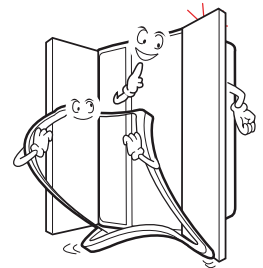
Do not store medications or biohazardous products requiring precise temperature control. Do not use the refrigerator to store papers, electronic storage media, or similar items.

The refrigerator is for storing food. This is a consumer household appliance and not a precision device.



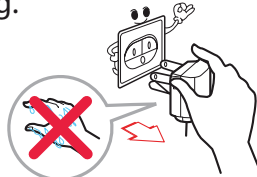
If storing or disposing of the refrigerator, remove the doors to eliminate the possibility of children playing in it.

Children may become entrapped in the refrigerator.



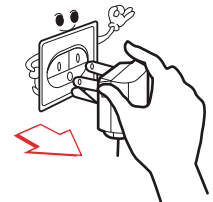
Unplug the refrigerator for cleaning or repair. Be sure your hands are dry when handling the power cord or plug.

Electric shock or harm may occur.



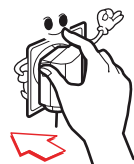
Firstly take power socket out for

Electric shock may occur.



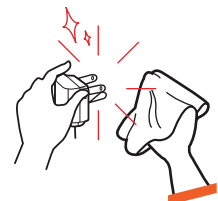
Be sure the plug and socket are clean and the connection is tight.

Dust or incomplete connection may result in fire.



When dusts etc are stained to the pin part of the power socket, cleanly wipe out them.

Fire may occur.

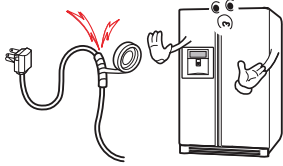


Safety Warning and Cautions

WARNING

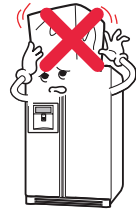
Do not alter the power cord.
Replace it only with an exact factory replacement part.

Electric shock or fire may occur due to electrical damage of power cables.



Do not place heavy objects on the refrigerator.

Falling objects when opening or closing doors may cause injury.



Do not hang or swing from the refrigerator doors.

Do not allow children to play with the refrigerator. The refrigerator may turn over. Hands and fingers may be pinched.



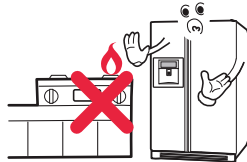
Do not use flammables near a refrigerator.

There is danger of fire.



Do not install the refrigerator next to a stove or other sources of heat.

There is danger of fire.



When a gas leak occurs, do not unplug the refrigerator. Open the doors for ventilation.

There is danger of burning due to explosion and sparking.



Do not clean the refrigerator by spraying water inside or outside.

It may result in product damage, fire, or electric shock.



This refrigerator is designed for use as a consumer home appliance only.

It is not a precision device for storing medication or valuables. Do not install the refrigerator in a vehicle, aircraft, maritime vessel, or other than in a home environment.



If the refrigerator is submerged or otherwise inundated with water, have it checked by an authorized servicer.

Electric shock or fire may occur.



Safety Warning and Cautions

WARNING

Do not put the vessel that flower base, cup, cosmetics or drugs, etc are contained on the refrigerator.

Fire or electric shock may occur, or injury due to dropping may occur.



Do not accumulate objects on a refrigerator or do not keep foods in random method.

Dropping of objects when opening or closing the door may cause physical injury.



Do not put glass bottles or other sealed containers in the freezer.

They may burst, leaving glass fragments in the food and possibly causing injury.

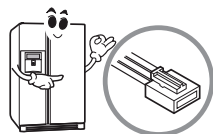


Be sure to use rated parts for replacement of electric parts.

Use factory replacement parts.

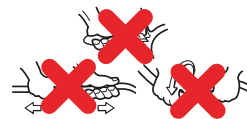
Secure the cord behind the refrigerator.

Do not allow the cord to hang where it can be pinched, damaged, or rolled over by the refrigerator.



Pull the plug out by the plug body; do not pull the wire to disconnect the cord.

Damage to power cords may cause fire or electric shock.



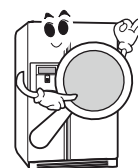
Keep electrical parts and connections free from dust and contamination.

There is danger of fire from shorting or arcing.



Be sure replacement parts are an exact fit.

Replacement parts should look and fit exactly like the original parts and have the same electric rating.

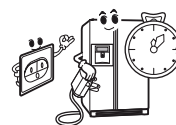


Do not let moisture drop onto electrical parts.

If there is a problem in this area, replace the parts or tape the wires to prevent contamination and degradation.

If you unplug the refrigerator or turn off the power, wait 5 minutes before plugging it back in or turning the power on.

Rapid cycling of the compressor could cause failure.



Note: The images are for reference.

Safety Warning and Cautions

WARNING

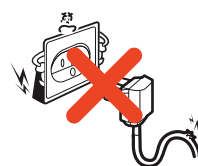
power plugs catching with the end of plugs without catching cords.

Fire may occur due to electric shock or short-circuit.



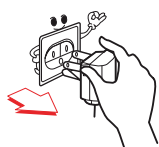
Do not use power cords or power plugs when they are damaged or holes of power plugs are loose.

Fire may occur due to electric shock or short-circuit.



Unplug the refrigerator if it is going to be unused for an extended period.

Remove all food items, wipe down the inside of the refrigerator, dry it thoroughly, and prop the doors open to allow air circulation.



Be sure the floor will support the weight of the refrigerator.

If the refrigerator is not installed at a firm, level location, the doors and icemaker may not operate properly.



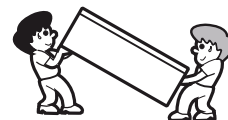
Do not install the refrigerator in a place where it is subject to splashing and excess moisture.

Deterioration of insulation may cause electrical leakage.



To carry the refrigerator, use the handles at the top of the back, and beneath the edge of the front.

Using these handles will ensure safety and reduce the possibility of injury.



Do not touch foods, containers, or the inside of the freezer compartment with wet hands.

Your hands may stick to the cold items. It could cause frost bite.



Be careful to avoid pinching hands or feet when opening the doors.



Do not stick your hands or fingers under the bottom of the refrigerator.

Watch out for sharp edges.



Do not put live animals in the refrigerator.



Product Standards

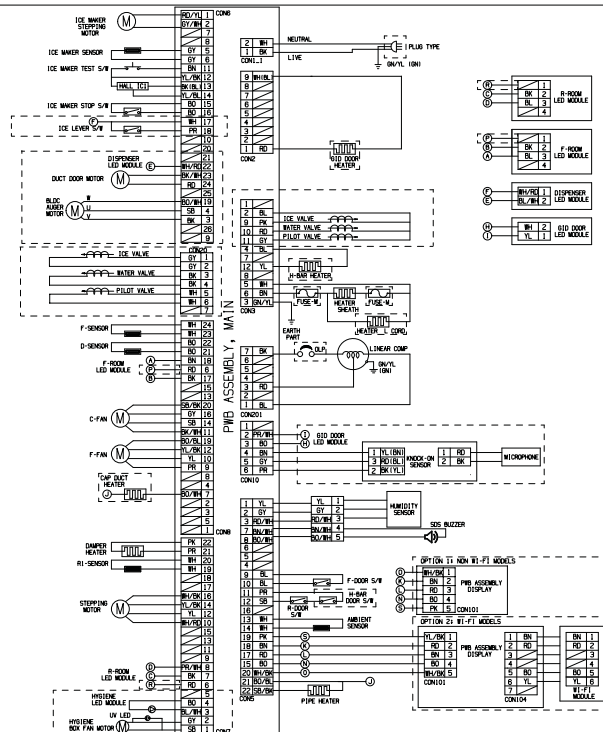
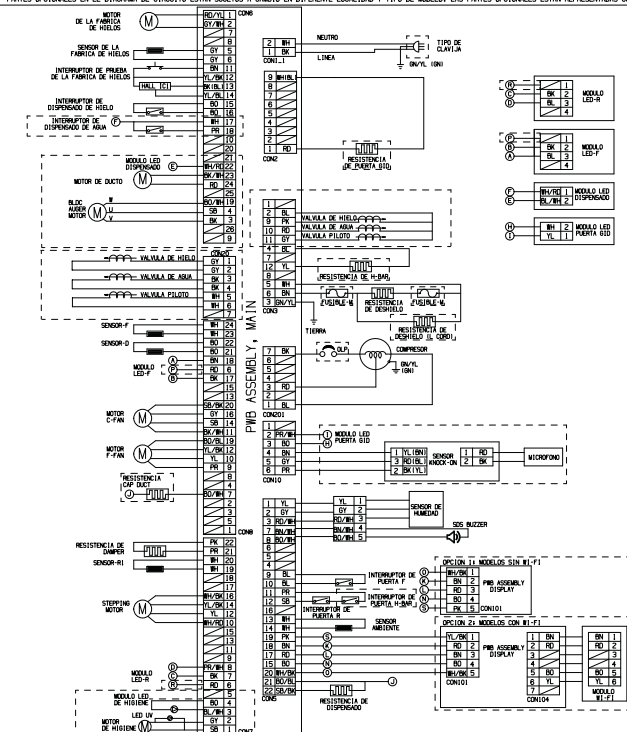
Model			LRSES2706*
Effective inner capacity	Total inner capacity(cu.ft)		26.8 (759.0 L)
	F-Room		16.9 (478.6 L)
	R-Room		9.9 (280.4 L)
Outer dimension (W X D X H)			35.9 (W) x 33.9 (D) x 70.3 (H) inch
Product weight (Kg)			129 kg
Rated consumption power of motor			105 ± 15%(W)
Heater	F-Room		350 ± 10% (W)
Cooling method			Indirect cooling(F-Control)
Temperature control	F-Room		MICOM(Outside)
	F-Room		MICOM(Outside)
Defrost	Method		Forced method
	Start		Auto
	End		Auto
	Eva poration		Forced method
	Type of heat shield		Cyclo-Pentane
F-Room	Fixed Shelf		3
	Drawer		2
R-Room	Fixed Shelf		4
	Shelf(Movable, Folding)		-
	Egg container		-
	Vegetable room		2
Freezing cycle	Compressor driving method		A Logic Inverter operation
	Evaporator		Discrete Type
	Condeser		Forced convection method
	Oil Charge		Freol Alpha5 oil(175cc)
	Type of refrigerant		R600a (80g)
	Capillary tube		Ø 0.70
	Dryer (drying tube)		MOLECULAR SIEVE XH-9
Electrical parts standard		Initial defrost	4~5 hours (vary depending on condition)
		Defrost cycle	9~11 hours (vary depending on condition)
		Rest time	3 Min
		Defrost sensor	Returend to defrost function when reaching to 5 °C
		Temp.fuse (rated/ operation temperature)	250V / 72 °C
		Heater Sheath	350W
	Parts related with dewing prevention	Dispenser duct door heater	-
		R-Room home bar heater	120V / 6.5W
		F-Room home bar heater	-
		Dispenser heater	DC 12V / 2.5W
	Capacitor	Comp’ Running	N/A
		I/maker geared motor Running	AC 250V / 14 μF
	For preventing ice making	Magic room Damper Heater	-
		R-Room Damper Heater	DC 12V / 1W
		Water Tank Heater	-
		Water supply Heater	DC 12V / 0.8W
	Overload protective device		MRA12362
	F-Room fan motor		DC 13V
	Fan motor for cooling condenser		DC 13V
	Inside lamp at F-Room		DC 12V / 5W (1EA)
	Inside lamp at R-Room		DC 12V / 5W (1EA)
	Door switch (F-Room/R-Room)		250 V / 0.5 A
	Home bar door switch		250 V / 0.5 A
	Main Fuse		250 V / 10 A
	Power cord		AC 125 V / 10 A



DIAGRAMA DE CIRCUITO / CIRCUIT DIAGRAM

PARTES OPCIONALES EN EL DIAGRAMA DE CIRCUITO ESTAN SUJETOS A CAMBIO EN DIFERENTE LOCALIDAD Y TIPO DE MODELO. LAS PARTES OPCIONALES ESTAN REPRESENTADAS CON LINEAS PUNTEADAS.

OPTIONAL PARTS ON CIRCUIT DIAGRAM ARE SUBJECT TO CHANGE IN DIFFERENT LOCALITIES AND MODEL TYPE. OPTIONAL PARTS ARE REPRESENTED WITH DOTTED LINE



BK (BLACK): NEGRO
YL (YELLOW): AMARILLO
GY (GRAY): GRIS
BN (BROWN): CAFE
BL (BLUE): AZUL

PK(PINK): ROSA
WH(WHITE): BLANCO
PR(PURPLE): VIOLETA
GN(GREEN): VERDE
RD(RED): ROJO

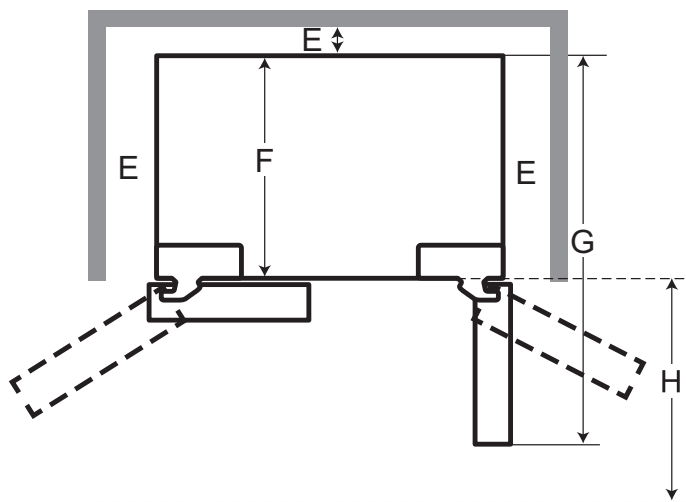
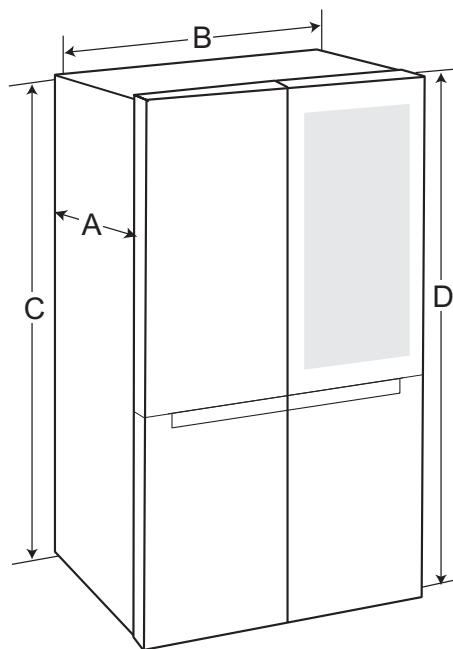
BO(BRIGHT ORANGE): NARANJA
GY/WH(GRAY/WHITE): GRIS/BLANCO
YL/BL(YELLOW/BLUE): AMARILLO/AZUL
GY/RD(GRAY/RED): GRIS/ROJO
WH/BK(WHITE/BLACK): BLANCO/NEGRO

BL/WH (BLUE/WHITE): AZUL/BLANCO
RD/YL (RED/YELLOW): ROJO/AMARILLO
PR/WH (PURPLE/WHITE): VIOLETA/BLANCO
GN/YL (GREEN/YELLOW): VERDE/AMARILLO
YL/BK (YELLOW/BLACK): AMARILLO/NEGRO

BL/RD(BLUE/RED): AZUL/ROJO
WH/RD(WHITE/RED): BLANCO/ROJO
BN/WH(BROWN/WHITE): CAFE/BLANCO
BO/WH(BRIGHT ORANGE/WHITE): NARANJA/BLANCO
BO/BL(BRIGHT ORANGE/BLUE): NARANJA/AZUL

SB(SKY BLUE): AZUL CIELO
SB/BK(SKY BLUE/BLACK): AZUL CIELO/NEGRO

Specifications

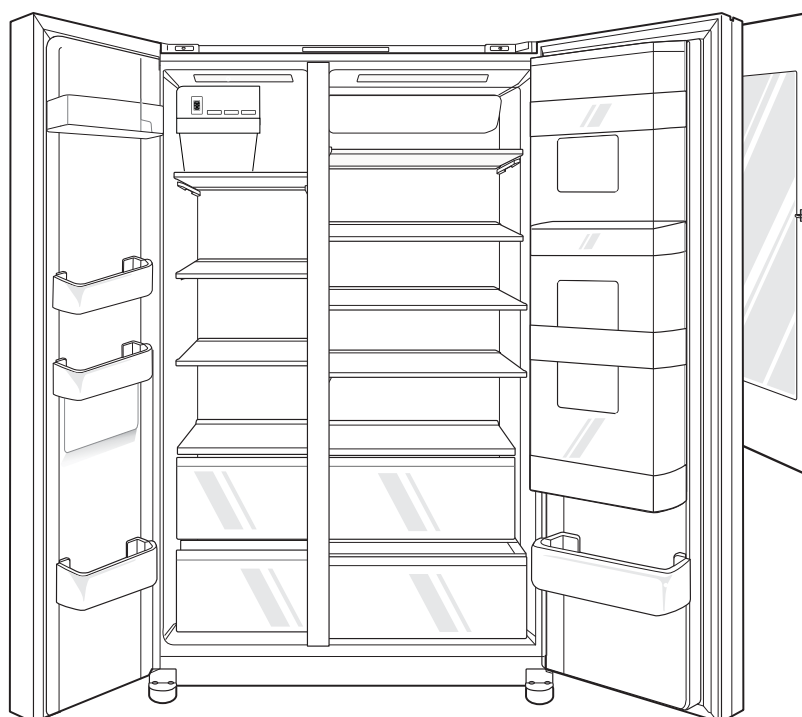
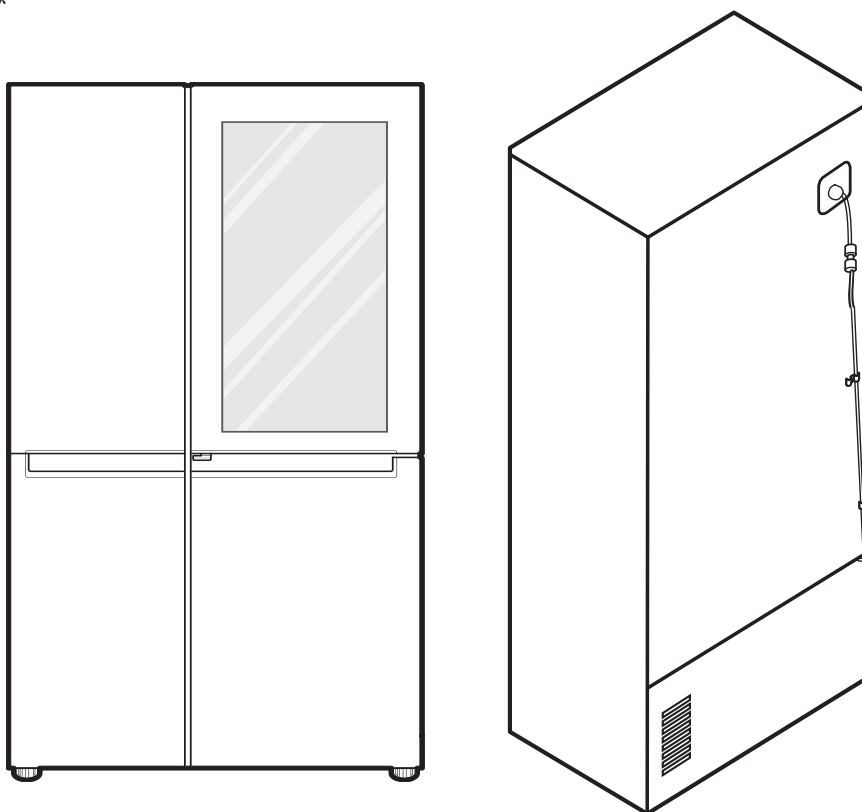


-	Dimension/Clearance	Model 27 cu.ft.
A	Depth	33 9/10" (861 mm)
B	Width	35 9/10" (912 mm)
C	Height to Top of Case	68 9/10" (1750 mm)
D	Height to Top of Hinge	70 3/10" (1785 mm)
E	Space Around	2" (50 mm)
F	Depth without Door	28 7/10" (730 mm)
G	Depth (Total with Door Open 90°)	50 3/5" (1285 mm)
H	Front Clearance	24" (610 mm)

Appearance Size of Refrigerator and Name of Every Part

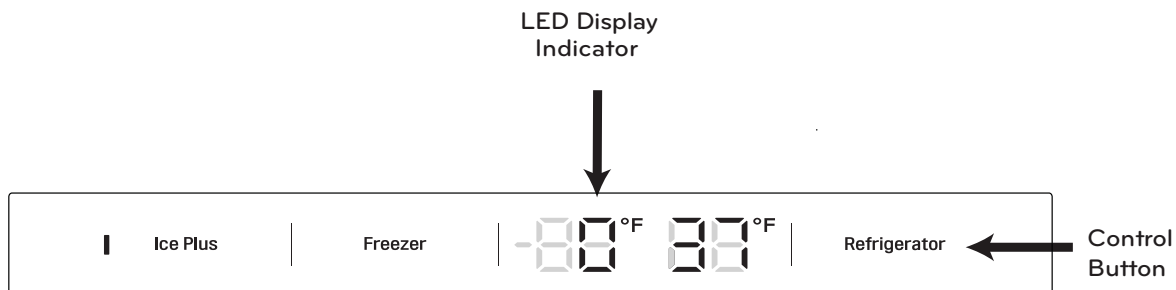
2. Main Name

MODEL : LRSES2706*



Micom Function

1. Operating Panel (Display)



Ice Plus

This function increases both ice making and freezing capabilities. Press the Ice Plus button to illuminate the icon and activate the function for 24 hours. The function automatically shuts off after 24 hours. Stop the function manually by pressing the button once more.

Freezer

Indicates the set temperature of the freezer compartment in Fahrenheit (°F). The default freezer temperature is 0°F. Press the Freezer button repeatedly to select a new set temperature from -7 °F to 5 °F.

Refrigerator

Indicates the set temperature of the refrigerator compartment in Fahrenheit (°F). The default refrigerator temperature is 37 °F. Press the Refrigerator button repeatedly to select a new set temperature from 33 °F to 43 °F.

2. Display PCB

P/N: EBR30338901
Display Design



Micom Function

2. Function description

2-1. Function of Temperature Selection

Notch	Temp	Power Initially On	1st press	2nd press	3rd press	4th press	5th press	6th press	7th press	8th press	9th press	11th press	12th press
Freezer	°C	-19	-20	-21	-22	-23	-24	-14	-15	-16	-17	-18	-19
Refrigeration	°C	4	3	2	1	7	6	5	4	3	2	1	7

1. The actual inner temperature varies depending on the food status, as the indicated setting temperature is a target temperature, not actual temperature within refrigerator.
2. Refrigeration function is weak in the initial time. Please adjust temperature as above after using refrigerator for minimum 2~3 days.

2-2. Automatic ice maker

The automatic icemaker can automatically makes 120~ 220 cubes per day. This quantity may vary by usage condition, including ambient temperature, door opening, freezer load, and etc.

Icemaker stops making ice when the ice storage bin is full.

If you don't want to have the automatic icemaker make ices, select I/M of botton on I/M module. If you want to have icemaker makes ices again, select I/M on botton on I/M module .

While ICE OFF indicator is on, Icemaker stops making ice. Dispense the ices until the ices run out from the ice storage.Micom Function

2-3. When ice is not dispensed smoothly

Ice is lumped together

- When ice is lumped together, take the ice lumps out of the ice storage bin, break them into small pieces, and then place them into the ice storage bin again.
- When the ice dispenser produces too small or lumped together ice, the amount of water supplied to the ice dispenser need to be adjusted. Contact the service center.
- If ice is not used frequently, it may lump together.

Power failure

Ice may drop into the freezer compartment. Take the ice storage bin out and discard all the ice then dry it and place it back. After the machine is powered again, the previous selection mode remains.

The unit is newly installed

It takes about 12 hours for a newly installed refrigerator to make ice in the freezer compartment.

2-4. Ice Plus

1. Ice Plus is function to improve cooling speed of the freezing room by consecutively operating compressors and freezing room fan.
2. Ice Plus is released if power failure occurs and then returns to the original status.
3. Temperature setting is not changed even if selecting the Ice Plus.
4. The change of temperature setting at the freezing room or the cold storage room is allowed with Ice Plus selected and processed.
5. The cold storage room operates the status currently set with Ice Plus selected and processed.
6. If selecting the Ice Plus, the Ice Plus function is released after continuously operating compressor and freezing room fan.
7. If frost removal starting time is arrived during Ice Plus, Ice Plus operation is done only for the remaining time after completion of frost removal when the Ice Plus operation time passes 90 minutes. If passing 90 minutes, Ice Plus operation is done only for 2 hours after completion of frost removal.
8. If pressing Ice Plus button during frost removal, the Ice Plus LED is turned on but if pressing the Ice Plus, compressor operates after the remaining time has passed.
9. If selection Ice Plus within 7 minutes (delay for 7 minutes of compressor) after the compressor stops, compressor operates after the remaining time has passed.
10. The freezing room fan motor operates at the high speed of RPM during operation of Ice Plus.
11. During 21 hours after Pill Down Operation, F-Room is controlled at Maximum F-Notch normally and F-Fan operates normal RPM.
12. The light of Ice Plus would be turned off after Ice Plus.
13. Execute defrost immediately in case of defrost signal occurs in Ice Plus and defrosting time is included at execution time 21 hours.
14. If Ice Plus is started during 2nd Load response operation, 2nd Load response operation will be canceled.
15. If the button of Ice Plus in display is turned off, Ice Plus operation will be canceled. The compulsory operation of F notch in the water tank's preventing frost is prior to the one of Ice Plus.

Micom Function

2-5. Control of variable type of freezing room fan

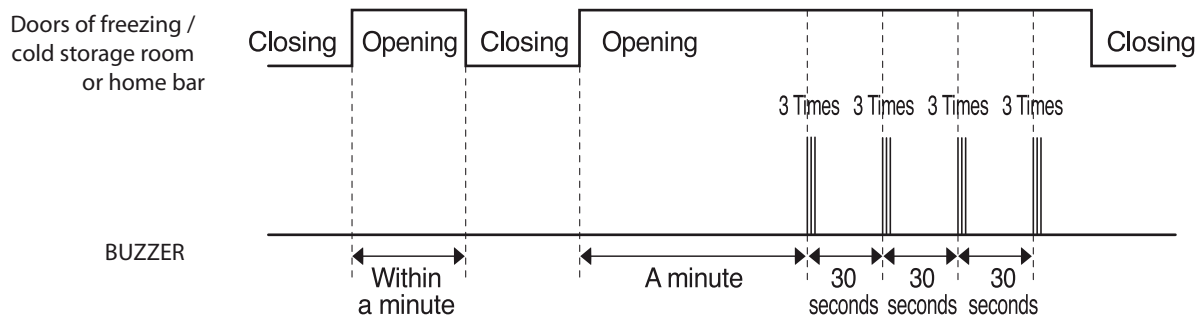
1. To increase cooling speed and load response speed, MICOM variably controls freezing room fan motor at the high speed of RPM and standard RPM.
2. MICOM only operates in the input of initial power or special freezing operation or load response operation for the high speed of RPM and operates in the standard RPM in other general operation.
3. If opening doors of freezing / cold storage room or home bar 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 of freezing room, the freezing room fan motor stops.
4. As for monitoring of BLDC fan motor error in the freezing room, MICOM immediately stops the fan motor by determining that the BLDC fan motor is locked or poor if there would be position signal for more than 65 seconds at the BLDC motor. Then it displays failure (refer to failure diagnosis function table) at the display part of refrigerator, performs re-operation in the cycle of 30 minutes. If normal operation is performed, poor status is released and refrigerator returns to the initial status (reset).

2-6. Control of M/C room fan motor

1. The M/C room fan motor performs ON/OFF control by linking with the COMP.
2. It controls at the single RPM without varying RPM.
3. Failure sensing method is same with freezing fan motor.(refer to failure diagnosis function table for failure display).

2-7. Door opening alarm

1. Buzzer generates alarm sound if doors are not closed even when more than a minute consecutively has passed with doors of freezing / cold storage room or home bar opened.
2. Buzzer rings three times in the interval of 0.5 second after the first one-minute has passed after doors are opened and then repeats three times of On/Off alarm in the cycle of every 30 seconds.
3. If all the doors of freezing / cold storage room or home bar are closed during door open alarm, alarm is immediately released.



2-8 Ringing of button selection buzzer

1. If pressing the front display button, "Ding ~ " sound rings.

2-9. 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.

Micom Function

ERROR CODE SUMMARY



Please make sure power off and discharge fully before you test

NO	Item	Error Code		Error description	Remark
		FREE ZER	REFRI GERA TOR		
1	F sensor abnormal	FS	E	F Sensor Open or short	Sensor lead wire or wafer badness
2	RT sensor abnormal	rt	E	RT Sensor Open or short	
3	R1 sensor abnormal	rS	E	R1 Sensor Open or short	
4	R2 sensor abnormal	r2	E	R2 Sensor Open or short	
5	D sensor abnormal	dS	F	D Sensor Open or short	
6	Defrost abnormal	dH	F	D sensor still below 5 °C after defrost heater on 80m	Fuse M open 、 Def Heater open 、 or Relay of def heater badness
7	F-Fan abnormal	FF	E	When Fan should be on, Main PCB can not receive the feed back signal in 65s	Fan lead wire badness, Fan drive IC badness
8	C-Fan abnormal	CF	E		
9	Ice maker sensor abnormal	IS	E	Ice maker Sensor Open or short	Sensor lead wire or wafer badness
10	Ice maker Kit abnormal	It	E	Ice maker Kit abnormal	
11	Communication error	CO	E	Communication between Main and display abnormal	Lead wire, Main PCB or Display PCB badness
12	Water tank Switch	tt	E	Water tank not assemble correctly or water tank hall switch abnormal	Lead wire, Hall Switch, Main PCB badness
13	Humidity Sensor abnormal	HS	E	Room humidity sensor short or open	Sensor lead wire or wafer badness
14	WIFI PCB abnormal	Od	E	WIFI PCB and Display PCB connect fail	Connect fail or PCB badness

Attention :

1. When No.2, 4, 9, 10,12,13,14 error happen, it can not be shown unless you hold “EXPRESS FRZ.” and “FREZZER” key more than 3 sec.

2. When other error happen, it can be shown automatically after 3 hours later since error happen.

Display Design DIP S/W Time

DIP S/W		Water Supply Time
S1	S2	
OFF	OFF	4.6sec
ON	OFF	4.3sec
OFF	ON	5.0sec
ON	ON	5.3sec

Micom Function

2-11. Test Function

1. Test function is function to find out any failed part in the failure status or check function of PWB and the product.
2. The test button is placed on the main PCB (test switch) of the refrigerator. The refrigerator ends the test mode after Max. 2 hours irrespective of modes and returns to normal status (reset).
3. The function control button is not detected during test mode.
4. When ending test mode, take out power cords and insert them again so as to become normal status.
5. If defect such as sensor failure during test mode is detected, release Test Mode to display failure code.
6. Test Mode is not performed even if pressing the test button during display of failure code.

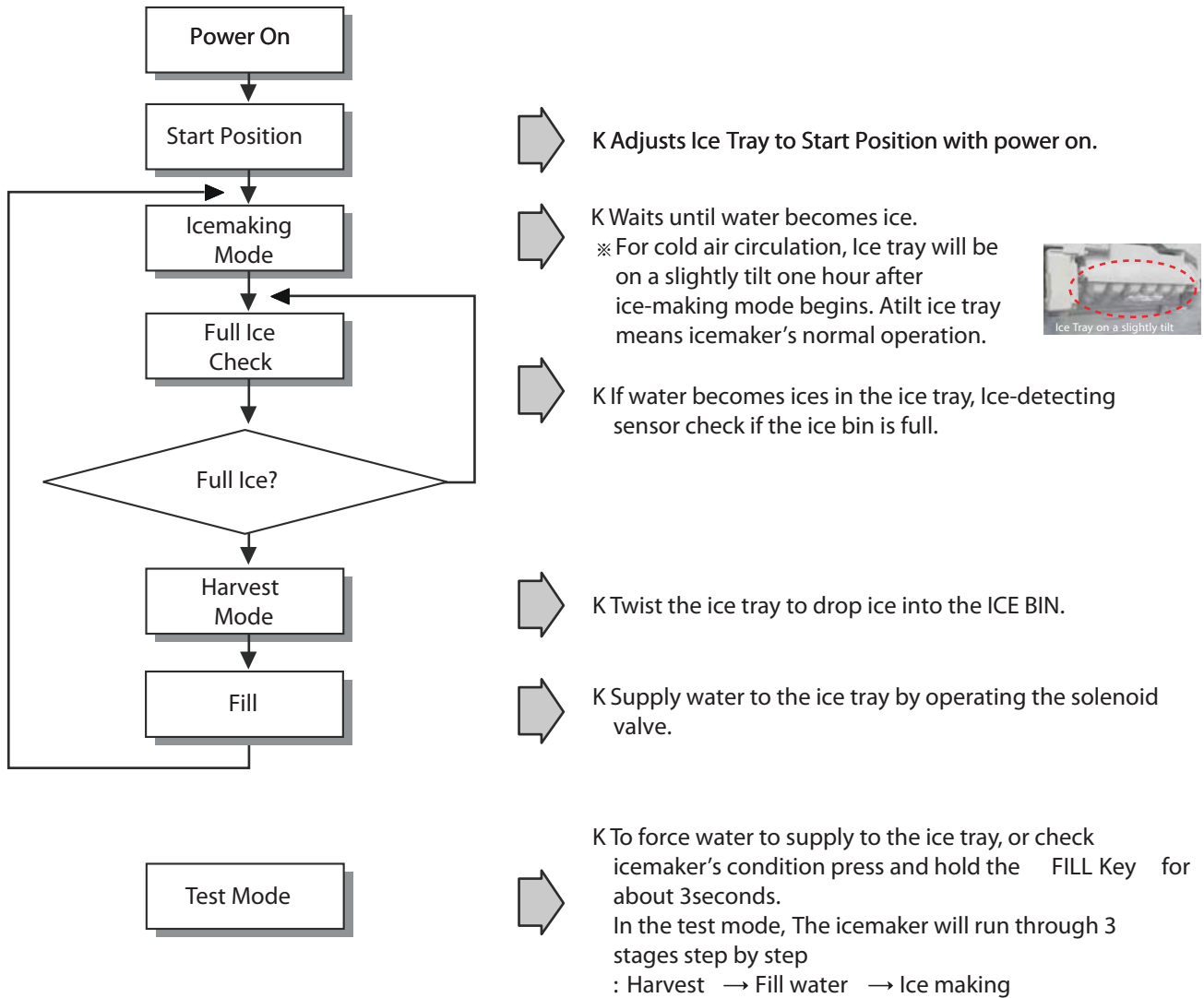
MODE	OPERATION	CONTENTS		REMARKS
TEST1	PRESS THE TEST BUTTON ONCE <STRONG COLD MODE>	1. CONTINUOUS OPERATION OF COMPRESSOR 2. CONTINUOUS OPERATION OF FREEZING BLDC MOTOR (HIGH-SPEED RPM) AND COOLING BLDC MOTOR 3. DEFROST HEATER TURNS OFF	4. STEPPING MOTOR DAMPER IS COMPLETELY OPENED (OPEN OF BAFFLE) 5. ALL DISPLAY GRAPHICS TURNS ON	FREEZING FAN TURNS OFF IN DOOR OPENING.
TEST2	PRESS TEST BUTTON ONCE AT THE TEST MODE 1 STATUS <FORCED DEFROST MODE>	1. COMPRESSOR OFF 2. FREEZING BLDC MOTOR AND COOLING BLDC MOTOR TURN OFF 3. DEFROST HEATER TURNS ON	4. STEPPING MOTOR DAMPER IS COMPLETELY CLOSED (CLOSING OF BAFFLE) 5. ALL DISPLAY GRAPHICS TURNS OFF (ONLY FAILURE CODE INDICATION PART TURNS ON "22" STATUS)	RETURNS TO THE NORMAL MODE WHEN THE DEFROST SENSOR IS ABOVE +5°C
NORMAL STATUS	PRESS TEST BUTTON ONCE AT THE TEST MODE 2 STATUS	RETURNING TO INITIAL STATUS		COMPRESSOR WILL OPERATE AFTER DELAY FOR 3 MINUTES

2-12. Functions performed when Ice Dispenser and Water Dispenser are mounted

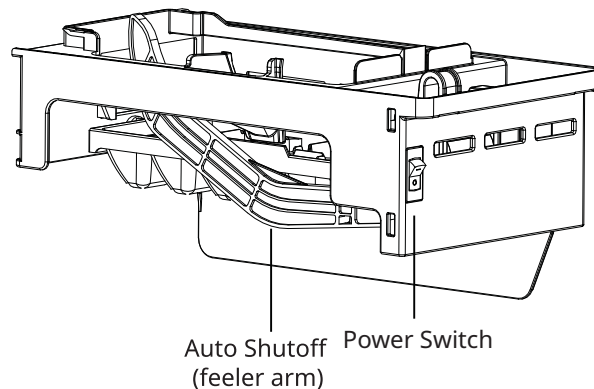
1. This is function to dispense ice and water outside without opening doors.
2. If pressing the Dispenser Pressing Switch after selecting ice (cube ice, Crushed ice) or water, relevant ice and water come out. However, when selecting ice, the duct door is opened by electric Motor (duct door, Motor) if pressing the Dispenser Pressing Switch. The duct door is closed after it remains for 5 seconds in open status if pressing and then releasing the Dispenser Pressing Switch.
3. Function to dispense ice and water out stops in the F-door open status.
4. If there is no OFF signal for 3 minutes after pressing the Dispenser Pressing Switch after selecting ice (cube ice, crushed ice) or water, the refrigerator automatically turns off both gear motor and solenoid (cube, water). However, the Motor (duct door) stops when 5 seconds pass after turning off. (This is for preventing coil-short due to heating of solenoid.)
5. Dispenser Lamp On/Off Function
If pressing the Dispenser Pressing Switch after selecting ice (cube ice, crushed ice) or water, the lamp on the dispenser part turns on and if releasing it, turns off.
6. Crushed Ice/Cube Select Function
 - 1) This is function to operate the refrigerator as Crushed Ice/Cube function on the function control part depending on user's selection. If pressing the Select Dispenser button, display and selection are done.
 - 2) For the initial Power On, Crushed ice is automatically selected.
 - 3) If pressing the Press Switch when ices are generated in the ice bank for selecting Crushed Ice, the refrigerator operates the gear motor so that crushed ices are supplied outside.
 - 4) If pressing the Press Switch when ices are generated in the ice bank for selecting Cube Ice, the refrigerator operates the gear motor so that Cube ices are supplied outside.

Icemaker and dispenser working principles and repair

Icemaker's Basic Operating Method



To reset the icemaker's operation, set the power switch OFF position and back it to ON position.



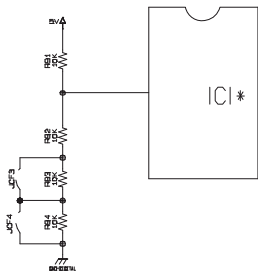
Icemaker working principles and repair

2. Function TEST

1. CAUTION! Before you carry out the test mode, check whether the water is frozen in the icemaker completely . If the test is performed while the water is not frozen in the icemaker, The water may overflow after test and it will cause other serious problem.
2. This is a forced operation for TEST, Service, cleaning, etc. It is operated by pressing and holding the Test Button for 3 seconds.
3. The test works only in the Icemaking Mode. (This test works when the ejector and stainless lever is at the their original position.)It cannot be entered from the Harvest or Fill mode.
4. After water is supplied, the mormally CYCLE is followed : Icemaking Checking full ice Harvest Fill Water →
Park Position

Micom Circuit description

2. Freezer undercool compensation circuit



Temperature compensation from cut		
JCF3	-1	-2
JCF4	-1	

Undercool compensation		Freezer temperature compensation	Remarks
JCF3	JCF4		
		0 (Factory default)	
CUT		-1	
	CUT	-1	
CUT	CUT	-2	

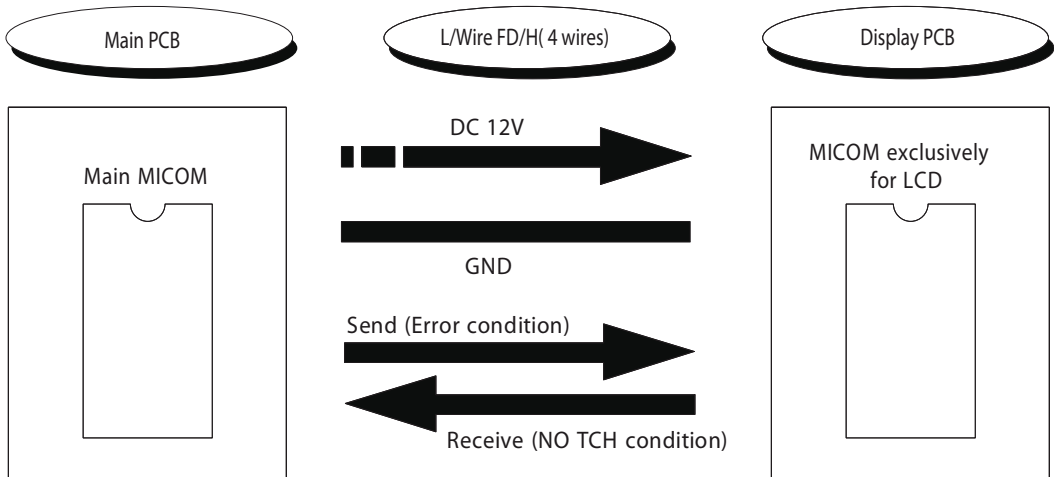
► Above option circuit compensates the freezer temperature by simply cutting the circuit during the service.

2-1. Communication circuit and connecting L/wire between main PCB and display PCB

As the communication circuit, the following circuit exchanges information required between main MICOM of main PCB and MICOM exclusively for LED for LED control of display PCB.

Sending/Receiving L/wire is required with DC12V required to operate the display PCB.

Communication error occurs when the information exchange between main MICOM of main PCB and MICOM exclusively for LED for LED control of display PCB is disconnected for more than 30 seconds

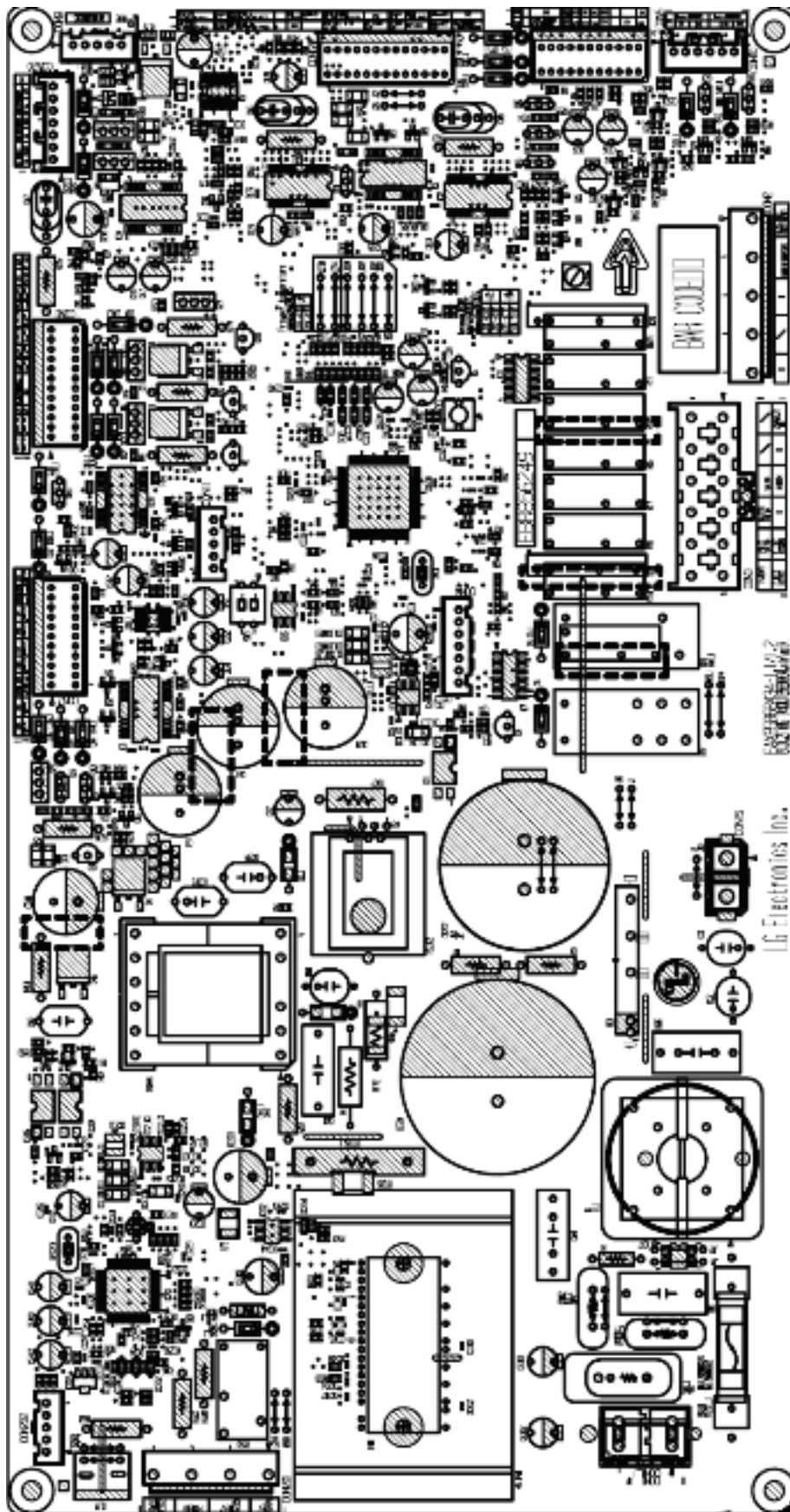


Micom Circuit description

3. Table of sensor resistance characteristics

Measured temperature	Freezer sensor	Refrigerator sensor 1, 2, defrost sensor, external sensor
-20	22.3k Ω	77k Ω
-15	16.9k Ω	60k Ω
-10	13k Ω	47.3k Ω
-5	10.1k Ω	38.4k Ω
0	7.8k Ω	30k Ω
+5	6.2k Ω	24.1k Ω
+10	4.9k Ω	19.5k Ω
+15	3.9k Ω	15.9k Ω
+20	3.1k Ω	13k Ω
+25	2.5k Ω	11k Ω
+30	2k Ω	8.9k Ω
+40	1.4k Ω	6.2k Ω
+50	0.8k Ω	4.3k Ω

Micom Circuit description



Compressor

1. Information of linear compressor

- The information tag provides compressor model, refrigerant, serial number and safety approval

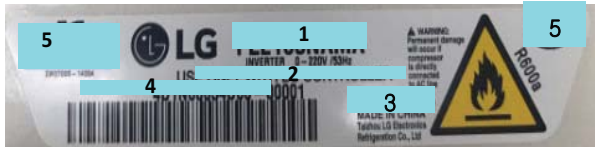
Compressor Label



Name Plate



Size: 90mm X 20mm



1. Compressor Model

Series name	FLE 165 N A M A	Operating Type
- FLE		- A : A-Control
Displacement		Rated Voltage&Frequency
- 165=16.5cc/rev		- M : 220-240V / 50/60Hz
Application Category		Improvement Series
- L : LBP with R134a		A,B,C,D
- N : LBP with R600a		

2. Corresponding Controller Model

3. Standard Print

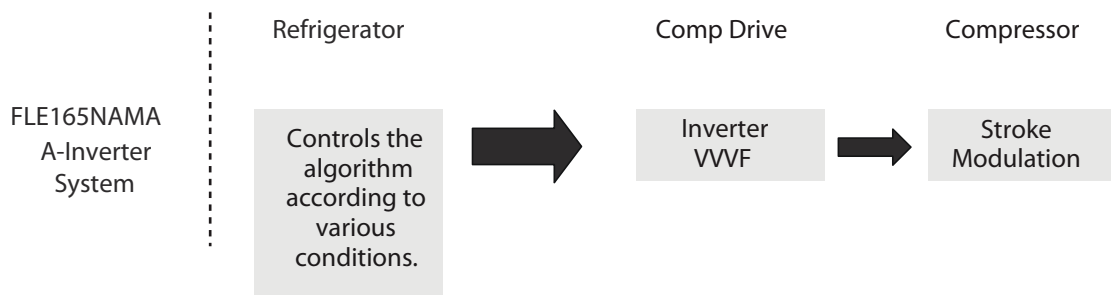
- Applied OLP : THERMALLY PROTECTED
- Unused OLP : PROTECTION ELECTRONIQUE(LG Drive Only)/ELECTRONICALLY PROTECTED(LG Drive Only)

4. Serial Number (Example)

Lot No.	604X01276	Series NO.
Year(2016)	0	Product Line
	10 - 1	Date
	6A471	Month(1,2,3,...0,N,D)

5. Safety Approval

- There are two types of controllers used in the linear compressor system.
- The "A"-inverter system is used with the FLE165NAMA compressor.

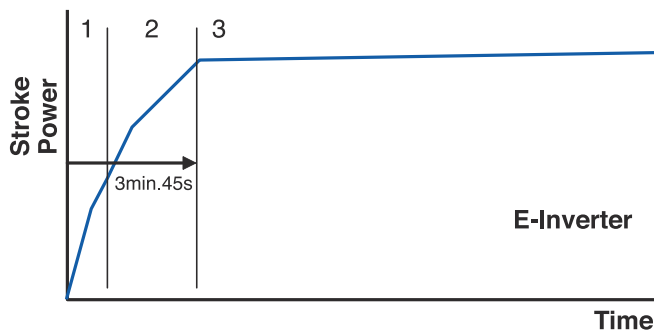


**VVVF : Variable Voltage Variable Frequency

**CVCF : Constant Voltage Constant Frequency

Compressor

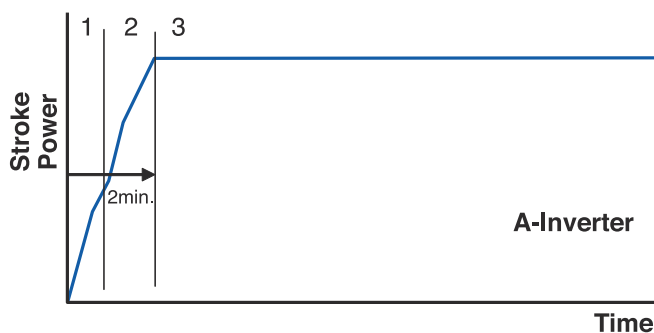
- To reduce noise level, the piston stroke is slowly increased to full power during start up.



Step 1) Start up - Half stroke interval for first 30 seconds.

Step 2) Ramp up - Stroke increases every 0.8sec until maximum stroke length is reached (about 3 min, 15 sec)

Step 3) CVCF interval - 180V / 60Hz



Step 1) Start up - Half stroke interval for first 20 seconds.

Step 2) Ramp up - Stroke increases until maximum stroke length is reached (about 1 min, 40 sec)

Step 3) VVVF interval - target voltage and frequency controlled by Control Board signals

- There are 6 protection logics designed to protect the linear compressor system. When a failure is detected, the compressor will shut and will try to restart after a set period of time for each type of failure. The LED located on the inverter drive PCB will flash the appropriate code to indicate the detected failure. This code will continue to flash until the unit is disconnected from the power source.

Inverter Error Codes

Inverter Error Codes	code	Requirement	Off Time	The number of LED flashes
FCT0	5	$ V_m, I_m > 2.5V + 20\%$ @ COMP off	0	1
Stroke	10	$ Stroke > 17.5mm$	60s	2
No Connect	15	$ Stroke \leq 9.4mm$ & While 4 seconds $ AC\ Current < 0.05A$	40s	3
Lock	25	$ AC\ Current > 1.0A$ & $ Stroke < 3.0mm$	50s	5
Current	30	$ Current > 3Ap$	360s	6
IPM	35	$uc_Fo_Trip! = 0$	205	7
Communication Error	-	Checksum error	0	8

Compressor

2. Resolution by number of LED blinks

No.	LED operating condition	Cause	Service guide
1	LED blinking 1 time repeatedly  • • Blink -Off-Blink-Off-Blink-Off-Blink-Off-Blink-Off • • Repeat	PCB part defect (MICOM)	1. After resetting the power check normal operation 2. When the same symptom occurs again after taking action for 1, replace the PCB
2	LED blinking 1 time repeatedly  • • Blink -Blink-Off-Blink-Blink-Off-Blink-Blink-Off • • Repeat	PCB part defect (Piston over-operation)	1. After resetting the power check normal operation 2. When the same symptom occurs again after taking action for 1, replace the PCB
3	LED blinking 3 time repeatedly  • • Blink -Blink-Blink-Off-Blink-Blink--Blink-Off- • • Repeat	Power voltage defect)	1. Check input power 2. After resetting the power check normal operation 3. When the same symptom occurs again after taking action for 1 and 2 replace the PCB
4	LED blinking 4 time repeatedly  • • Blink -Blink-Blink-Blink-Off-Blink-Blink--Blink-Blink-Off- • • Repeat	COMP cable contact error	1. Check connected condition between PCB and COMP 2. When there is no issue with 1, replace the PCB
5	LED blinking 5 time repeatedly  • • Blink -Blink-Blink-Blink-Blink-Off-Blink-Blink--Blink-Blink-Blink-Off- • • Repeat	Piston lock	1. After resetting the power check normal operation 2. When the same symptom occurs again after taking action for 1, replace the PCB 3. When the same symptom occurs again after taking action for 2, replace the COMP component
6	LED blinking 6 time repeatedly  • • Blink -Blink-Blink-Blink-Blink-Blink-Off-Blink-Blink--Blink-Blink-Blink-Blink-Off- • • Repeat	Circuit over-current error	1. After resetting the power check normal operation 2. When the same symptom occurs again after taking action for 1, replace the PCB 3. When the same symptom occurs again after taking action for 2, replace the COMP component
7	LED blinking 7 time repeatedly  • • Blink -Blink-Blink-Blink-Blink-Blink-Off-Blink-Blink--Blink-Blink-Blink-Blink-Blink-Off- • • Repeat	PCB part defect (IPM)	1. After resetting the power check normal operation 2. When the same symptom occurs again after taking action for 1, replace the PCB
8	LED blinking 8 time repeatedly  • • Blink -Blink-Blink-Blink-Blink-Blink-Blink-Off-Blink-Blink--Blink-Blink-Blink-Blink-Blink-Blink-Off- • • Repeat	Communication error	1. After resetting the power check normal operation 2. When the same symptom occurs again after taking action for 1, replace the PCB

Compressor Trouble Shooting

Comp Operation Defect



PCB COVER OPEN

Check the LED Blinking

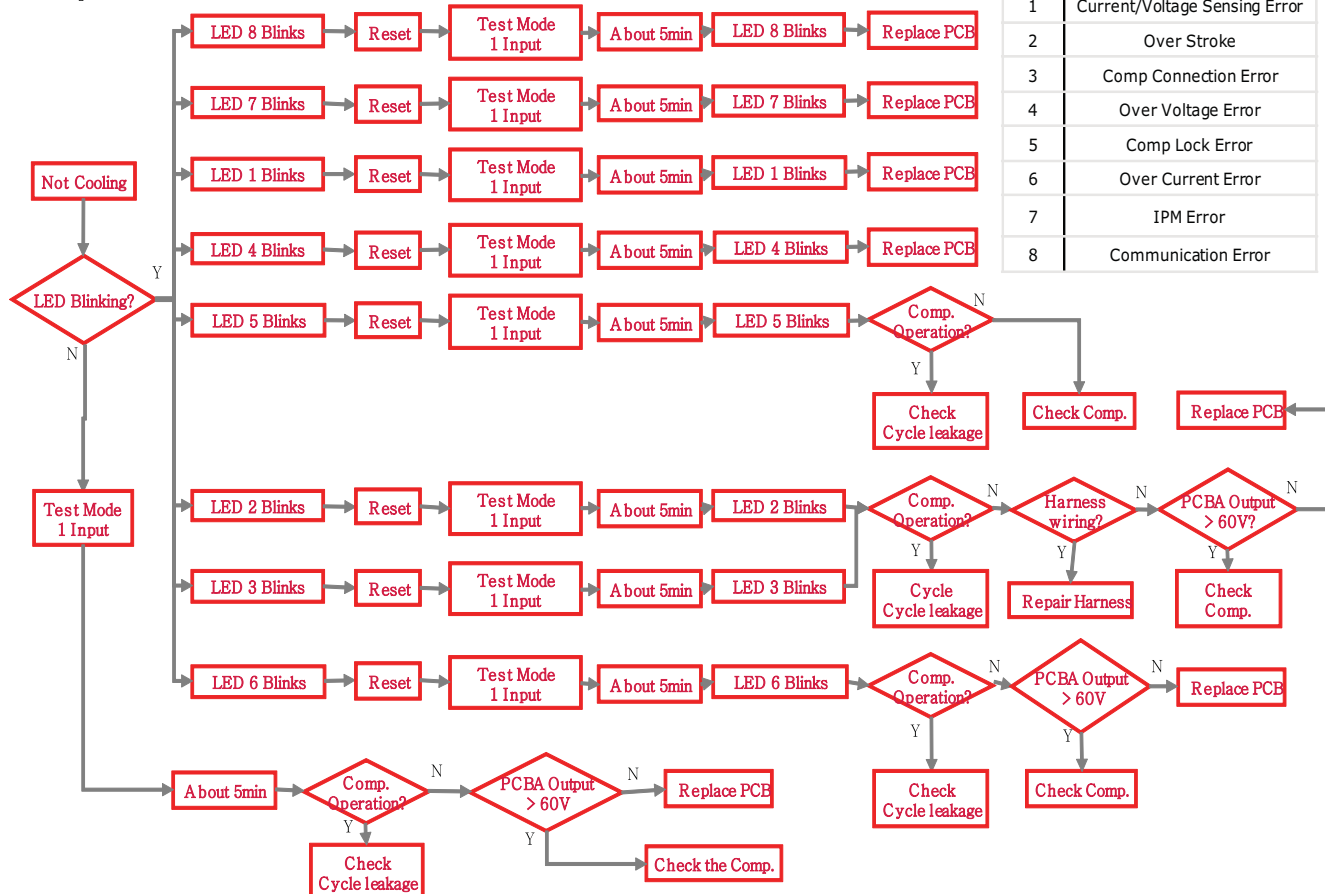
(Information about LED blinking is following next page LED is not work.

If It is normal condition then

If the Comp & Fan is not operated then input the test mode and check the comp condition.
(Operation or not)

LED Blinking Troubleshooting

- Simple Check Flow Chart



LED	Trip Information
1	Current/Voltage Sensing Error
2	Over Stroke
3	Comp Connection Error
4	Over Voltage Error
5	Comp Lock Error
6	Over Current Error
7	IPM Error
8	Communication Error

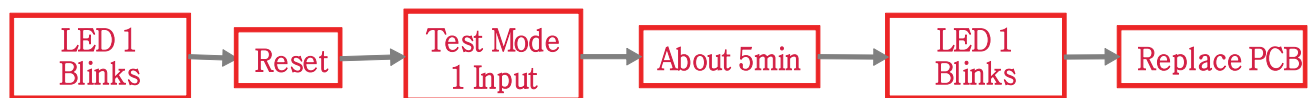
Compressor

Trip & LED Blinking Information

1. FCT0 Trip and LED Blinking 1 time (FCT0 Fault)



- Purpose : To detect the compressor voltage and current sensing error.
- Restart every 30 seconds after compressor off.

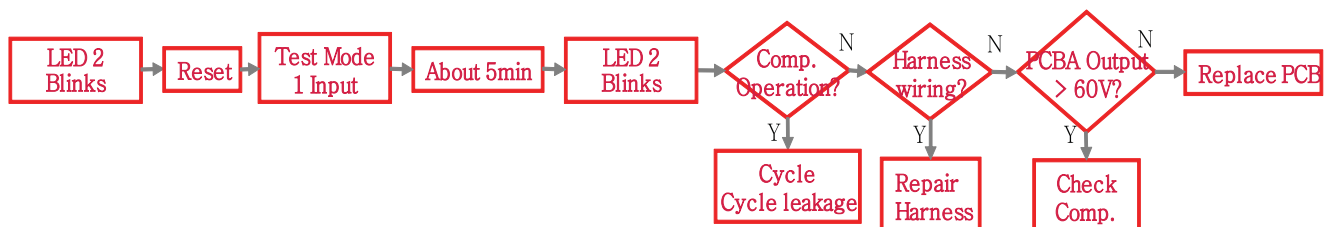


Trip & LED Blinking Information

2. Stroke Trip and LED Blinking 2 times (Stroke Trip)



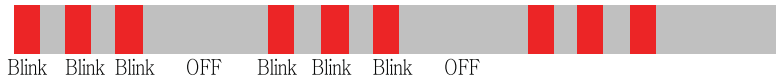
- Purpose : Protection piston crash by abnormally large Stroke.
- Case 1. Do not operate Comp.
 - : Harness connection failure between the PCB, Comp, Capacitor.
- Case 2. Do operate Comp. intermittently
 - : Condenser Fan or Freezer Fan Error.
 - System Error like water-clogging, capillary-clogging, refrigerant-leakage
- Logic: After the Comp. Off every 1 minute restart Comp.



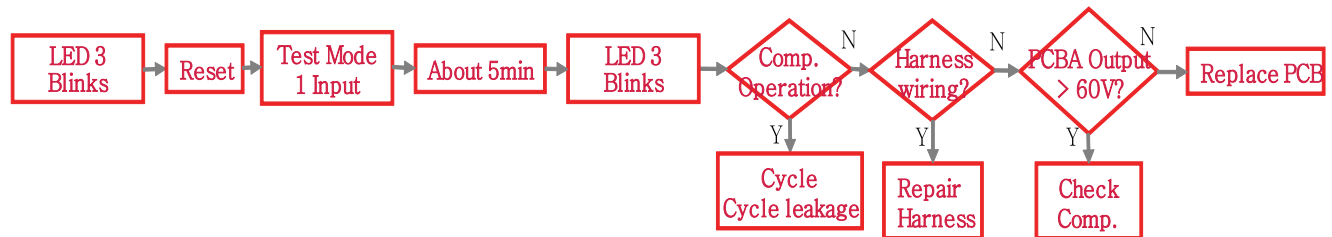
Compressor

Trip & LED Blinking Information

3. No Connect Trip and LED Blinking 3 times (No Connection Trip)



- Purpose : Prevention Over-Voltage and Over-Current by detecting connection error check.
- Cause : Harness connection failure between PCB, Comp, Capacitor.
Comp. insulation breakdown.
- Logic : After the Comp. Off every 40 seconds restart Comp.



Trip & LED Blinking Information

4. Over Voltage Trip and LED Blinking 4 times (Over Voltage Trip)



Compressor

Trip & LED Blinking Information

5. L/Piston Trip and LED Blinking 5 times (Locked Piston)

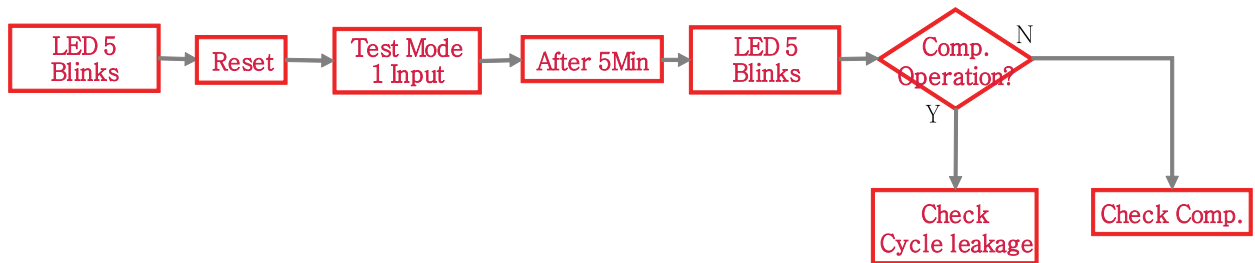


BlinkBlink BlinkBlinkBlink OFF

→ Purpose : Detect locked piston.

→ Cause : Oil shortage of the cylinder, Cylinder or Piston damage, clogging the discharge, Comp. internal debris.

→ Logic : After the Comp. Off every 2 min 30 seconds restart Comp.



Trip & LED Blinking Information

6. Current Trip and LED Blinking 6 times (Current Trip)



Blink Blink Blink Blink Blink Blink OF

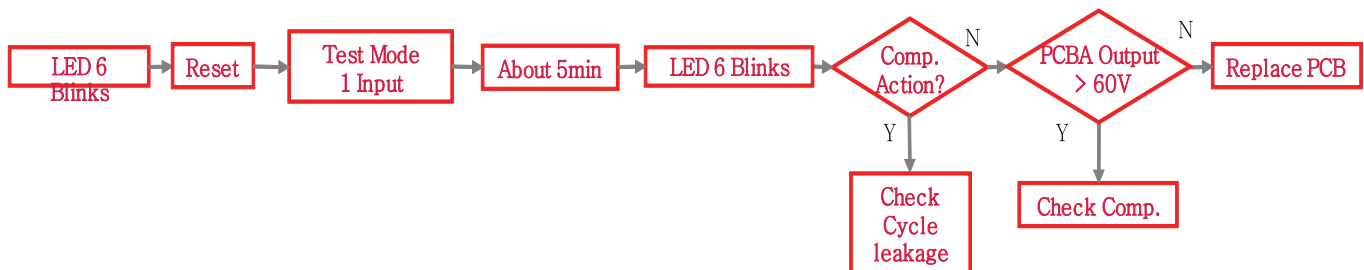
→ Purpose : Protection Over-Current(Over-Load)

→ Cause : Abnormally ambient temperature(Over 43℃), Abnormally conditions like Shield machine room etc.

Condenser Fan failure, Comp. failure, PCB failure(IPM breakdown)

Oil shortage of the cylinder, Cylinder or Piston damage, clogging the discharge, Comp. internal debris.

→ Logic : After the Comp. Off every 6 minutes restart Comp.



Compressor

Trip & LED Blinking Information

7. IPM Fault Trip and LED Blinking 7 times (IPM Fault)



Blink Blink Blink Blink Blink Blink Blink OFF

- Purpose : Protection Over-Current by failure IPM(IPM short)
- Cause : IPM Short and failure
- Logic : After the Comp. Off every 20 seconds restart Comp.



Trip & LED Blinking Information

8. Comp Tx Error Trip and LED Blinking 8 times (Communication Error)



Blink Blink Blink Blink Blink Blink Blink Blink OFF

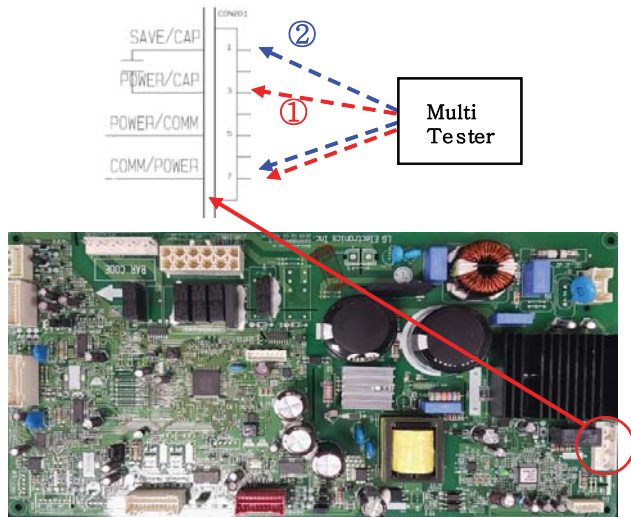
- Purpose : Detection communication error with the Micom of the refrigerator control.
- Cause : Communication Error
- Logic : Only LED blinking without the Comp. Off
(Comp. is operate command before communication error)



Compressor

Check the PCB Output

→ Check output voltage from PCB to Compressor.

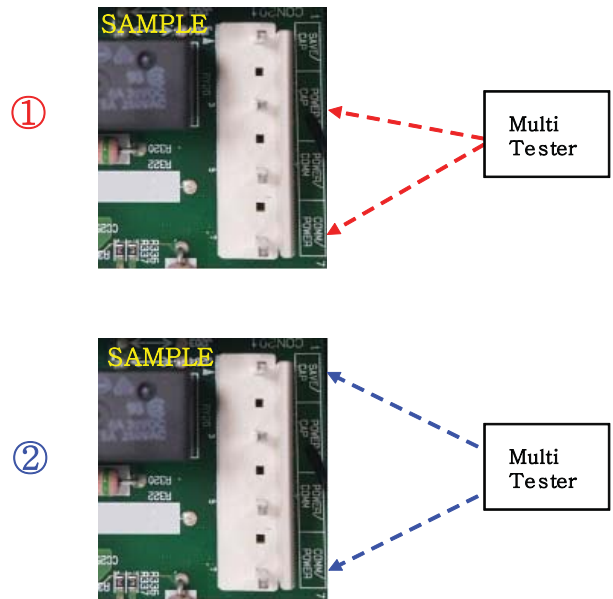


A-Inverter

→ To judge whether there is any issue with the PCB operation, check the PCB output voltage.

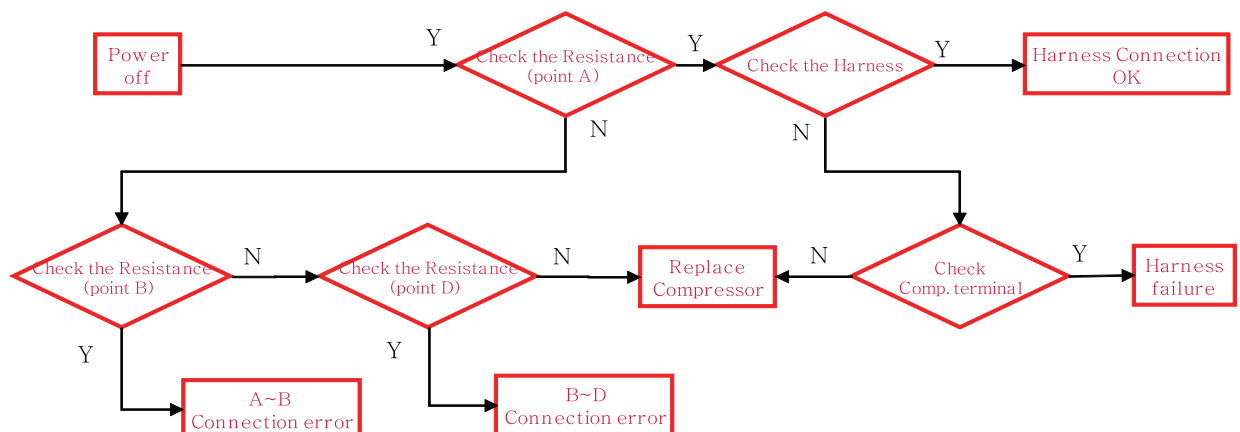
Normal: Voltage 60[V] or higher output at ①(COMMON,POWER) or ②(COMMOM,SAVE)

IPM Output check



Check the Compressor & Harness

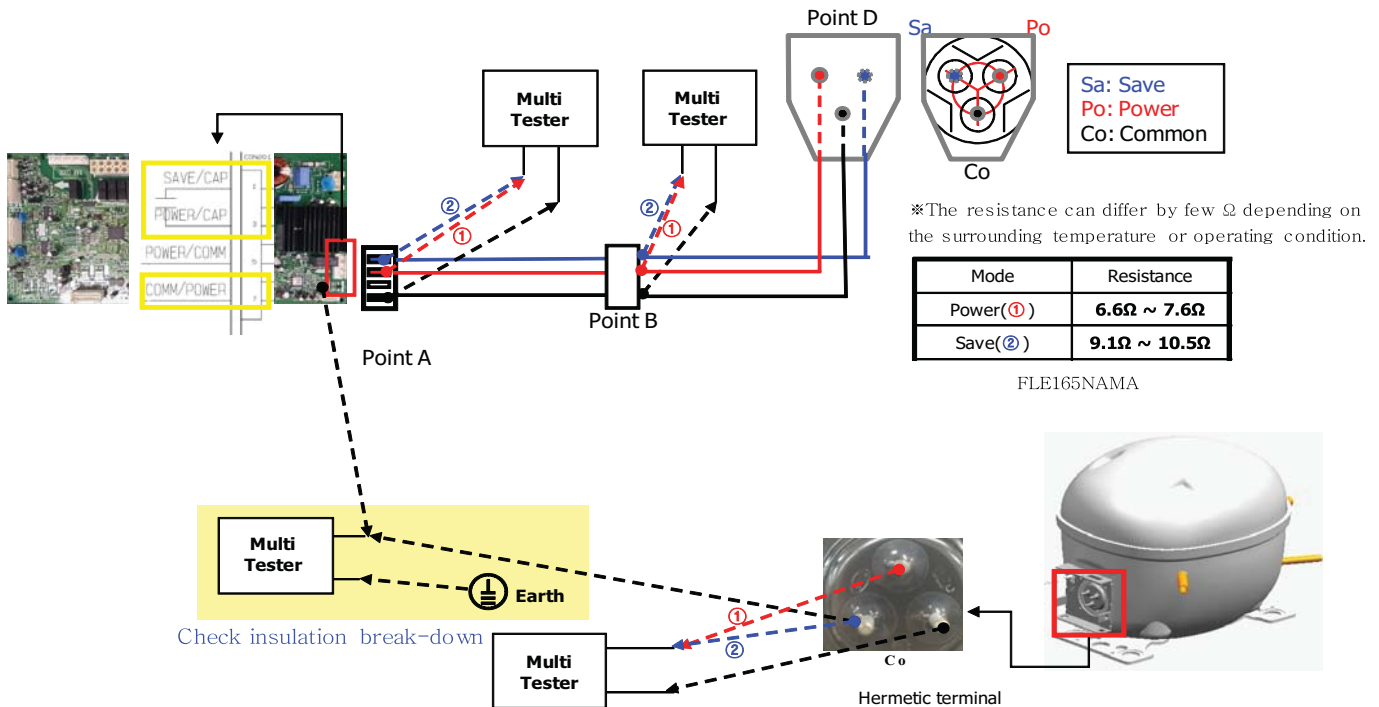
1. Check the Harness connection → Step 1. Power off.
2. Check the Compressor
 - Step 1. Power off.
 - Step 2. Check the Resistance(point A)
 - Step 3. Check the Harness(INF ohm).
 - Step 4. Check the Resistance(point B)
 - Step 5. Check the Resistance(point D)



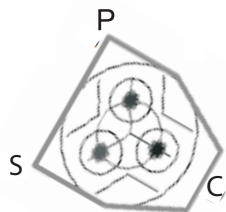
Compressor

Compressor & Harness

- Comp Terminal resistance measurement (Power & Common, Save & Common)
- Check the broken-down insulation : Comp. Save – Earth resistance measurement



FLE165NAMA



P : Power Line
S : Save Line
C : Common Line

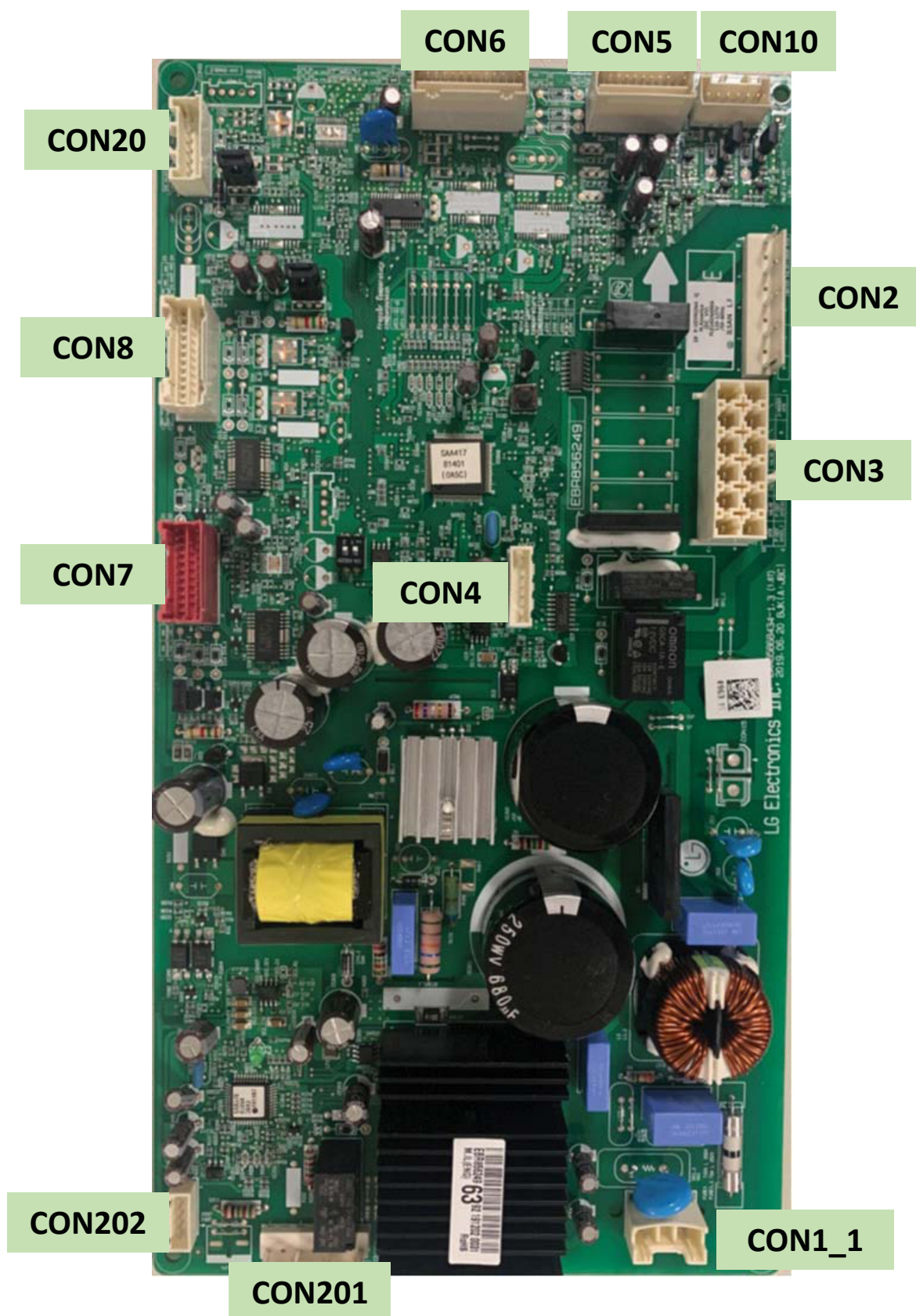
Specification

$9.1 \sim 10.5 \Omega$ Between S and C
 $6.6 \sim 7.6 \Omega$ Between P and C

Troubleshooting PCB

1. PCB Picture - Main PCB

(P/N: EBR85624963)

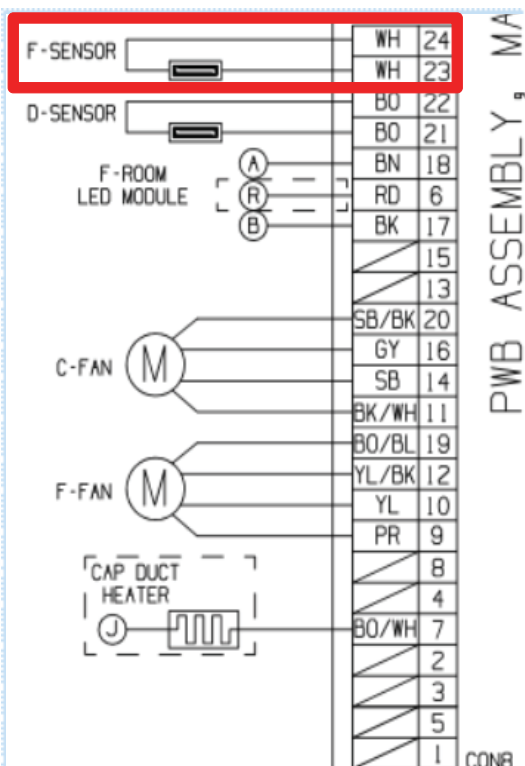
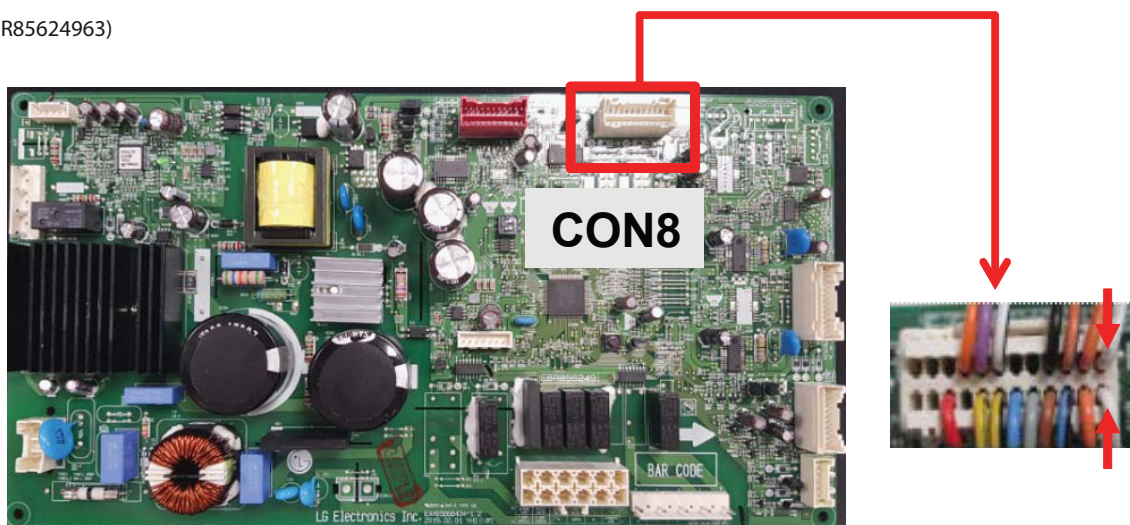


Troubleshooting with Error Display

1. Freezer Sensor Error

S ymptom	Check Point
1. E FS	1. Check for a loose connection 2. Check Sensor Resistance

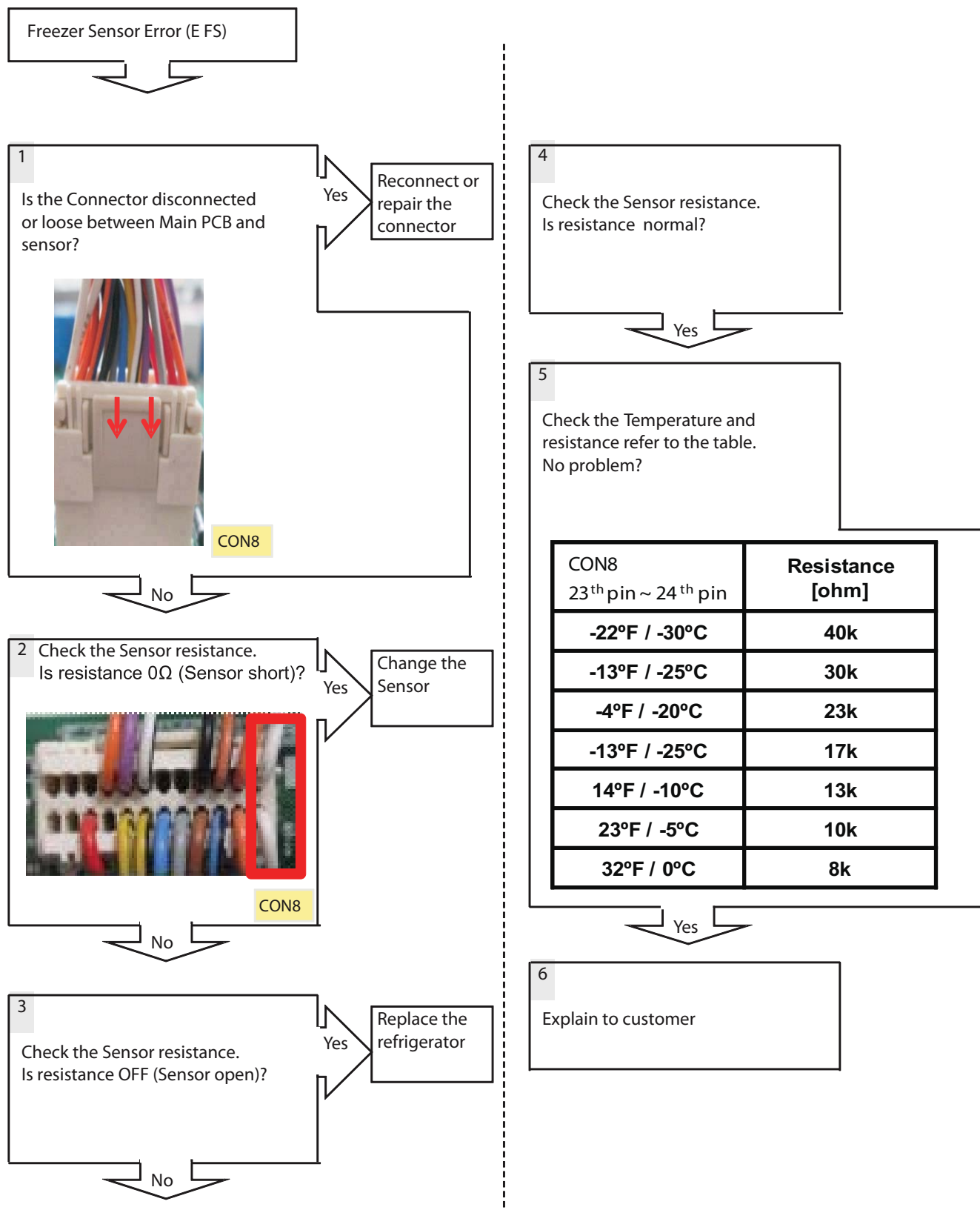
(P/N: EBR85624963)



	Resistance [Ω]	
CON8 23 th pin ~ 24 th pin	Short	0
	Open	OFF
	Other	Normal

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

Troubleshooting

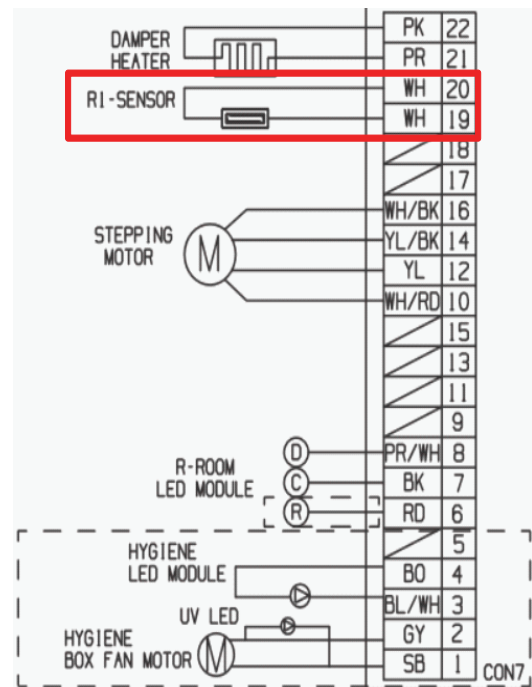
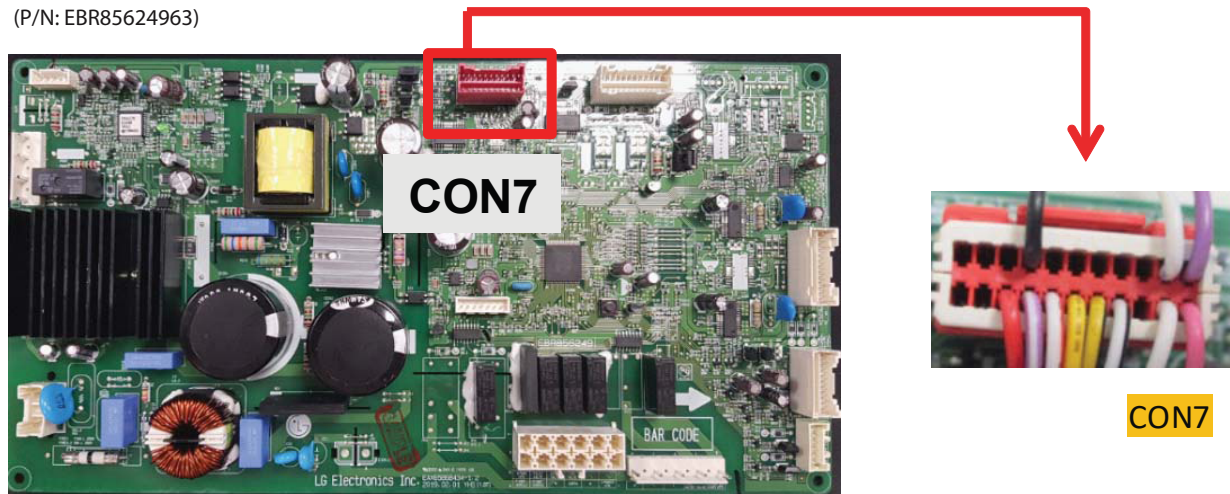


Troubleshooting

2. Refrigerator Sensor Error (E rS)

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

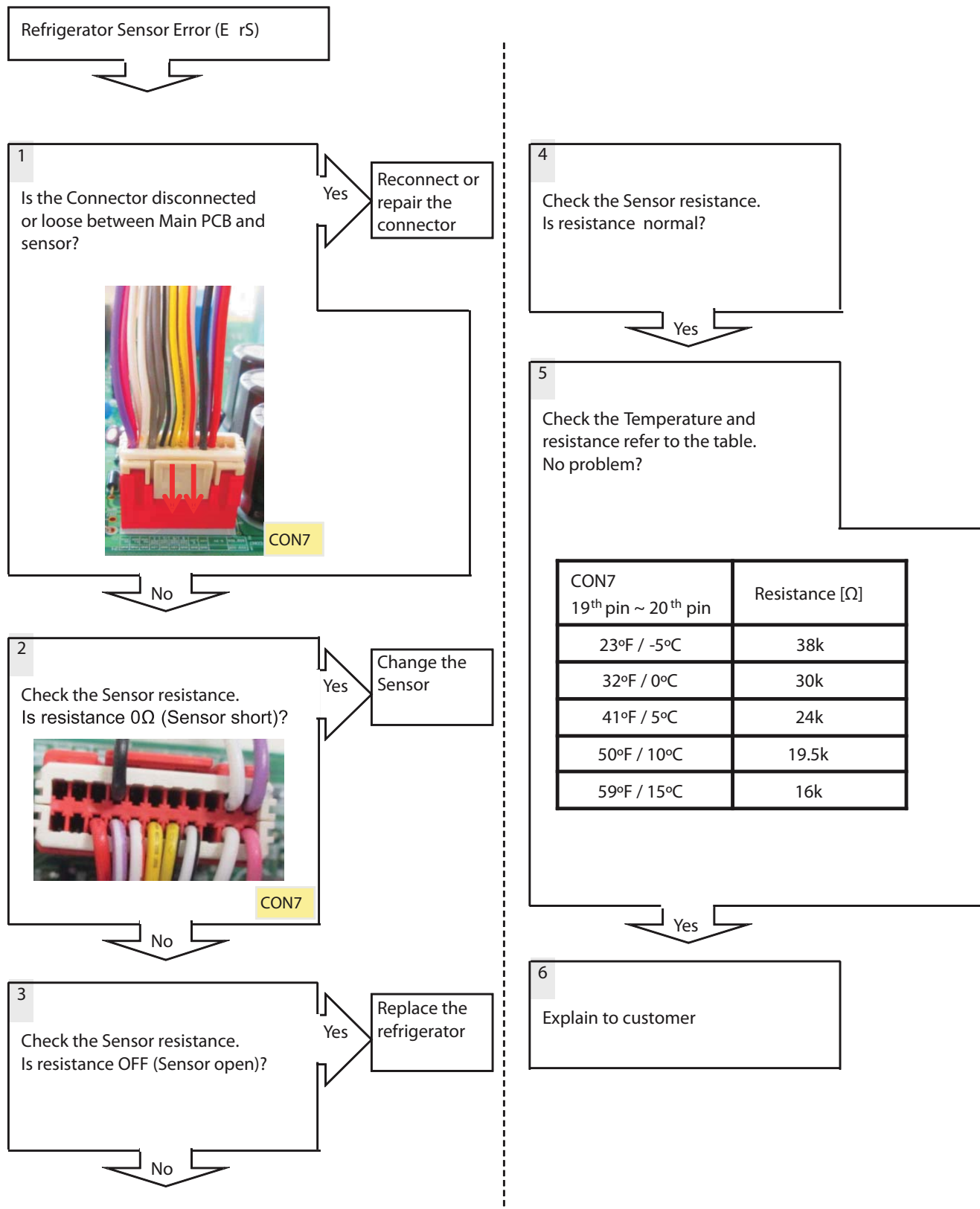
(P/N: EBR85624963)



CON7 19 th pin ~ 20 th pin	Resistance [Ω]	
	Short	0
	Open	OFF
	Other	Normal

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

Troubleshooting

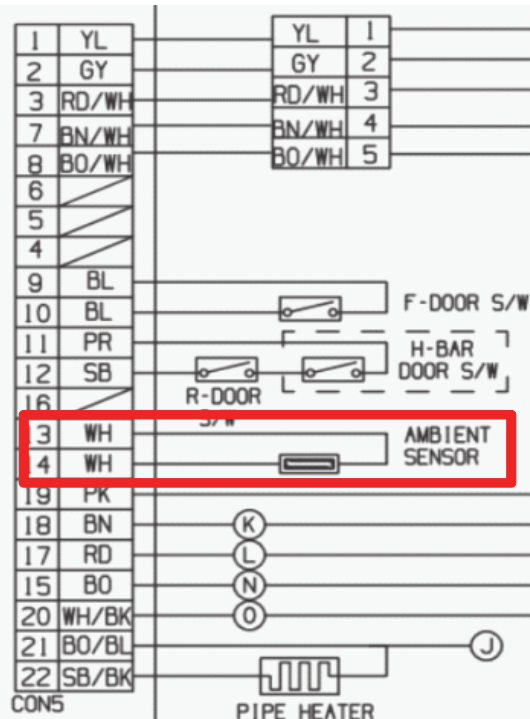
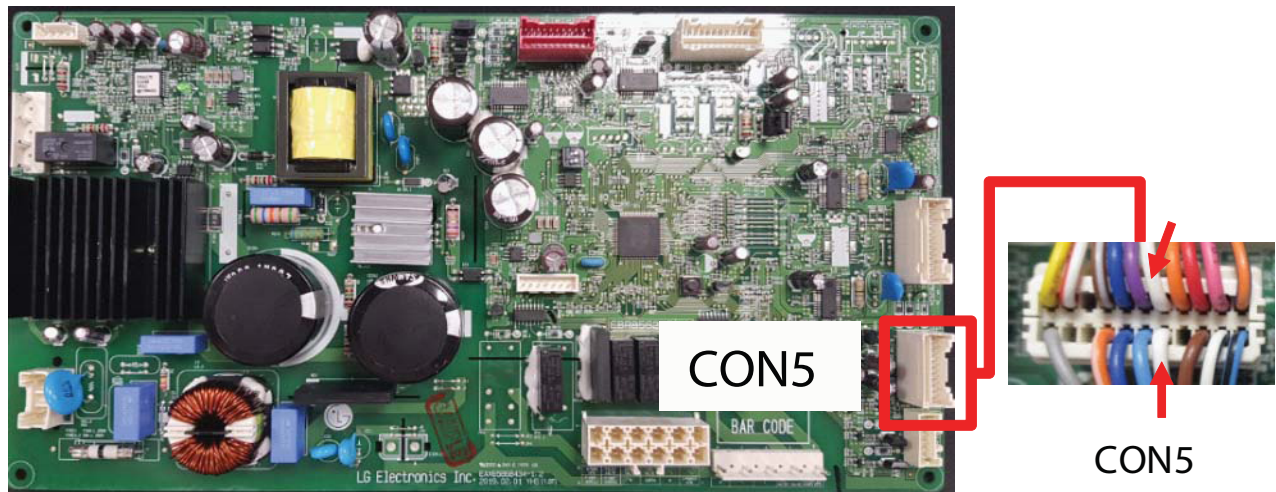


Troubleshooting

3. Room Temperature Sensor Error

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

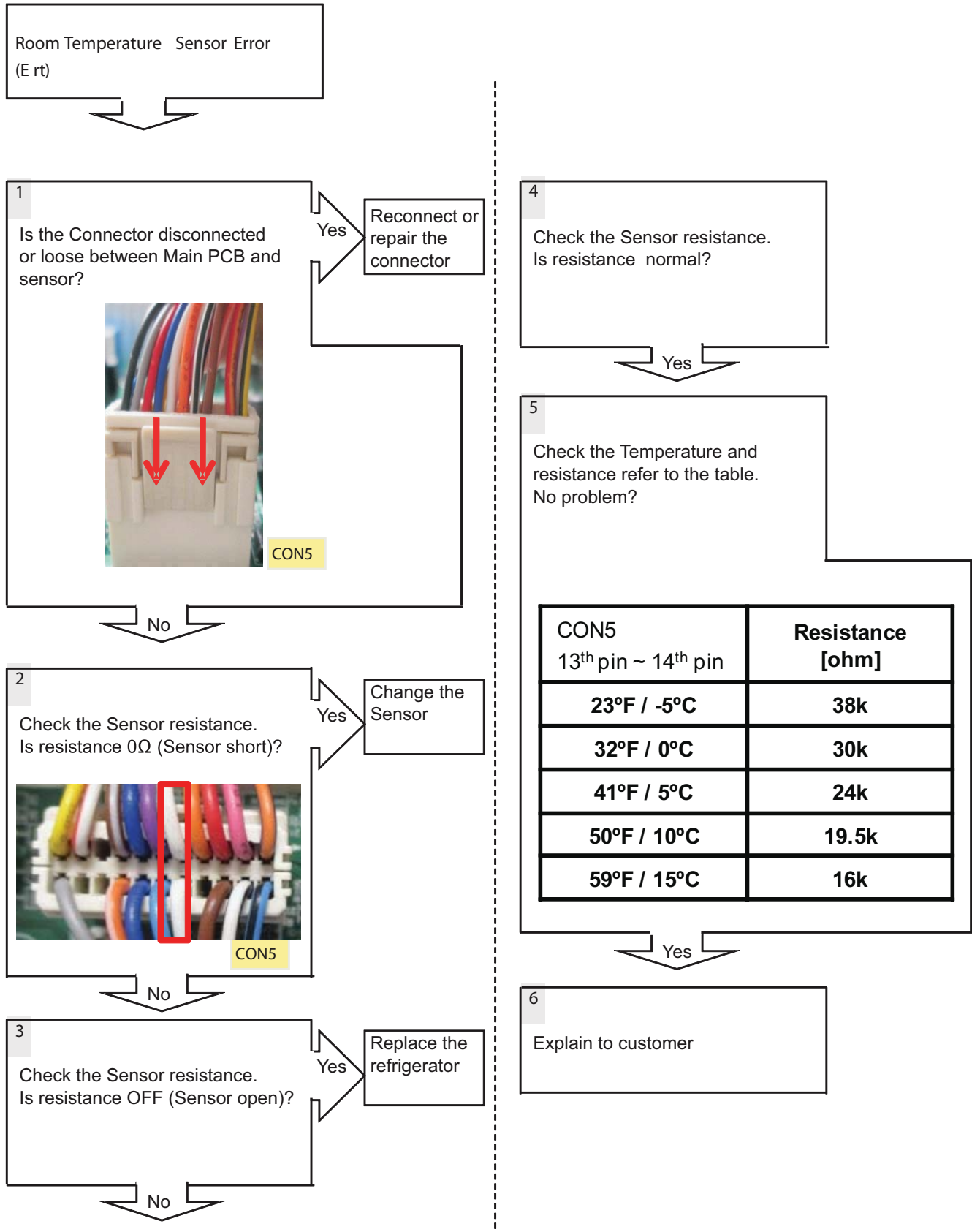
(P/N: EBR85624963)



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

CON5 13 th pin ~ 14 th pin	Resistance [ohm]
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

Troubleshooting

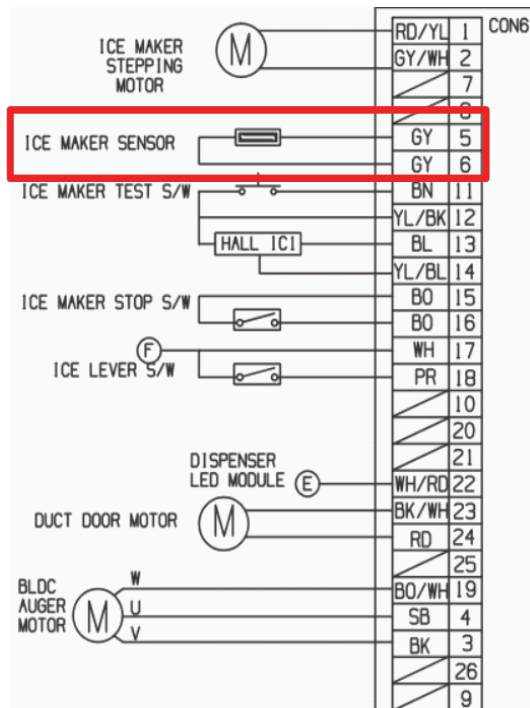
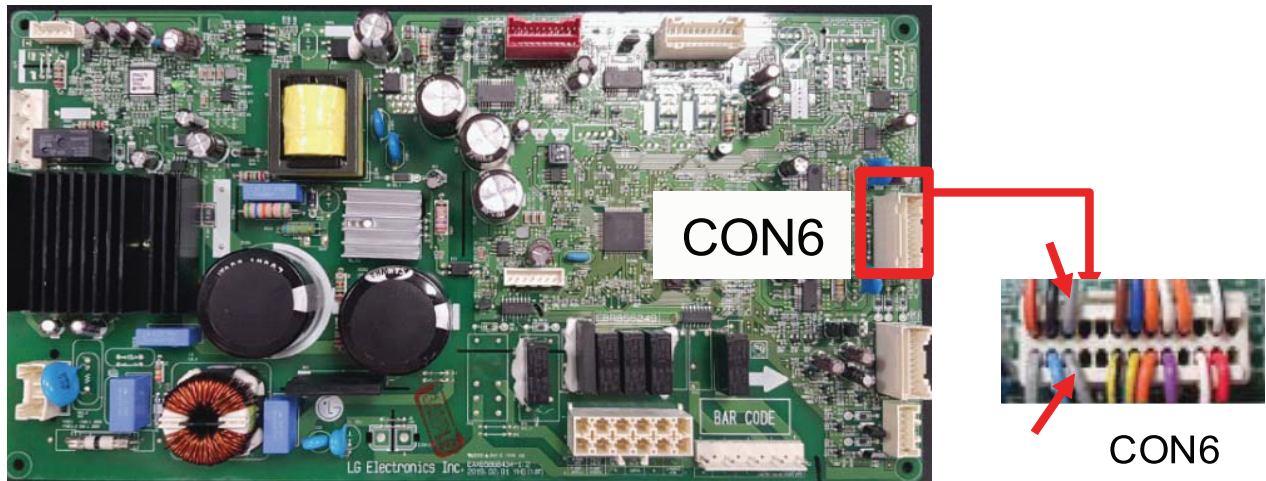


Troubleshooting

4. Icing Sensor Error

Symptom	Check Point
1. E IS	1. Check for a loose connection 2. Check Sensor Resistance

(P/N: EBR85624963)

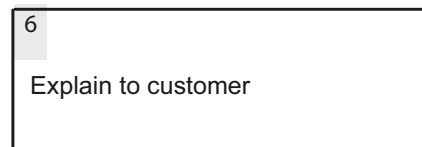
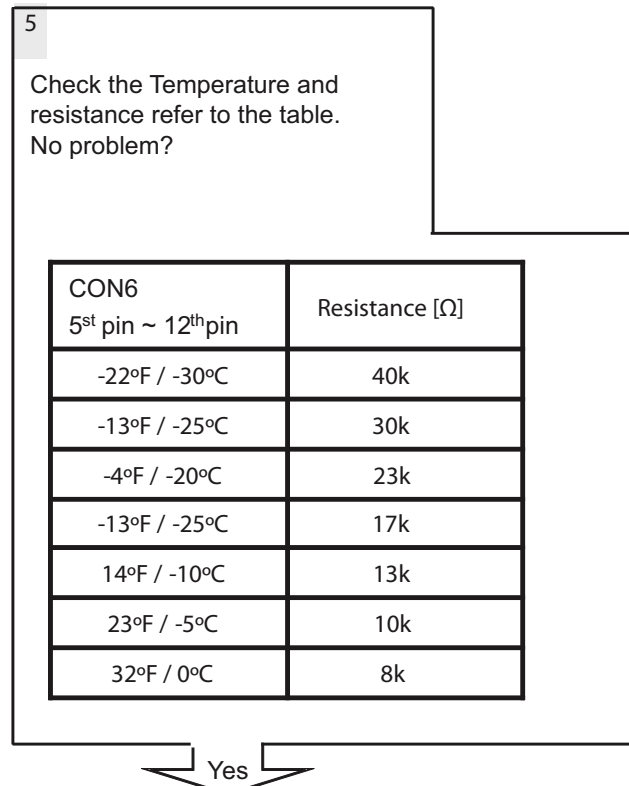
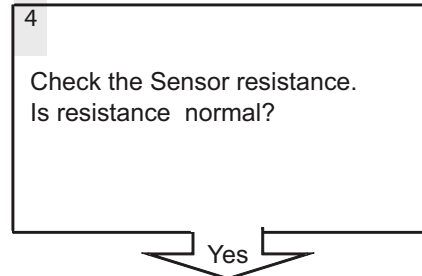
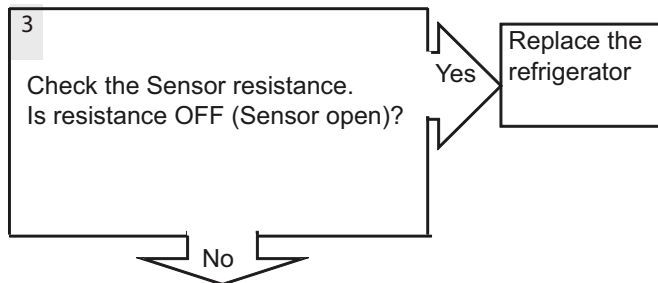
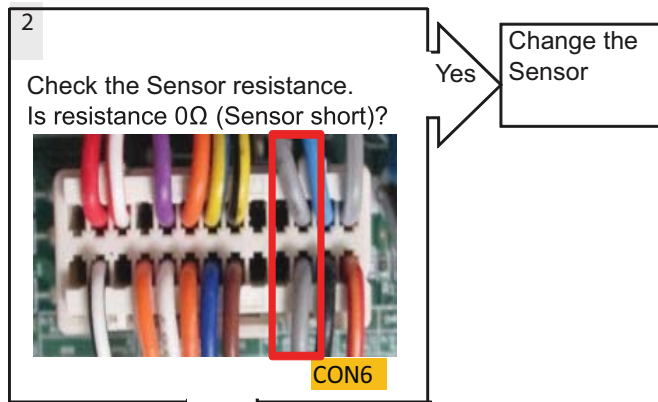
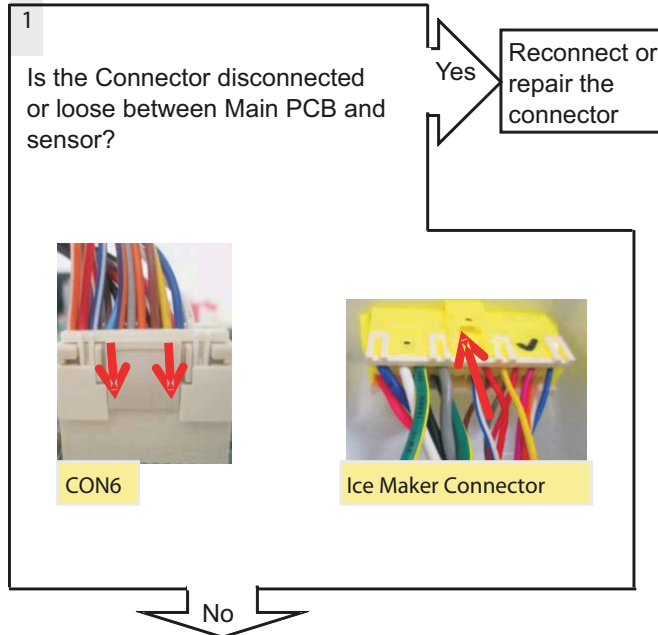


	Resistance [Ω]	
CON6 5 th pin ~ 6 th pin	Short	0
	Open	OFF
	Other	Normal

CON6 5 th pin ~ 6 th pin	Resistance [Ω]
-22°F / -30°C	40k
-13°F / -25°C	30k
-4°F / -20°C	23k
-13°F / -25°C	17k
14°F / -10°C	13k
23°F / -5°C	10k
32°F / 0°C	8k

Troubleshooting

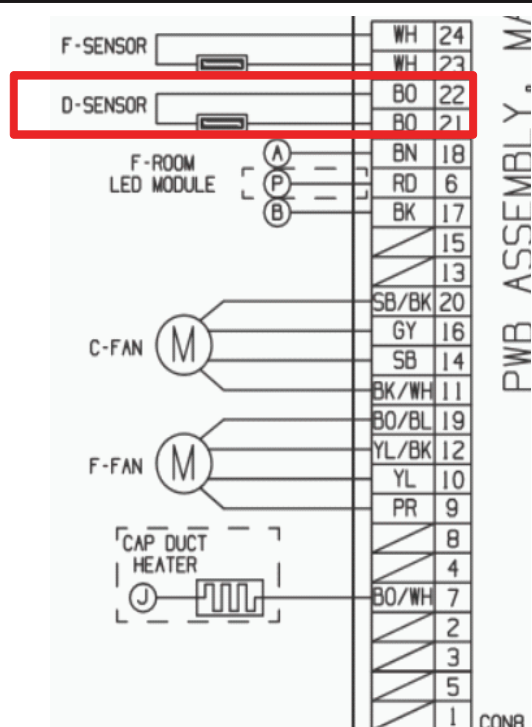
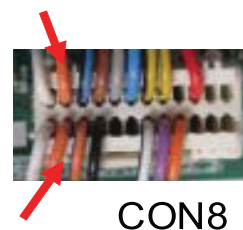
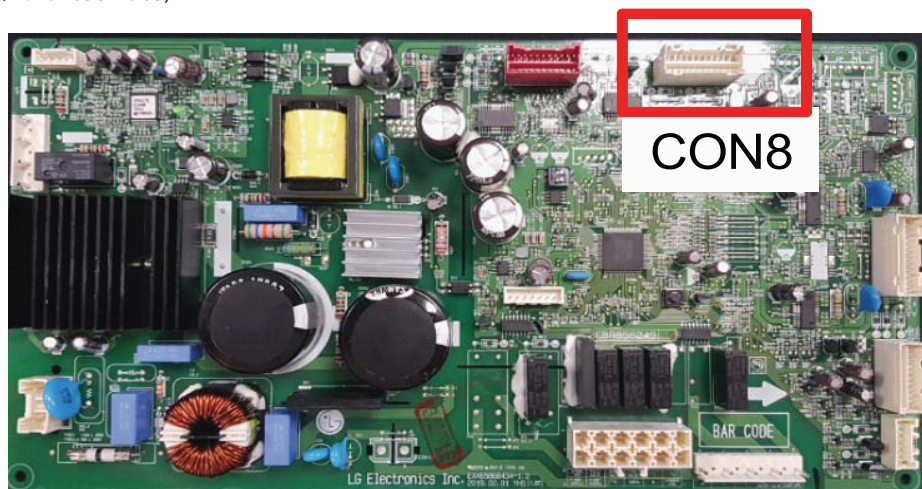
Icing Sensor Error (E IS)



5. Defrost Sensor Error

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

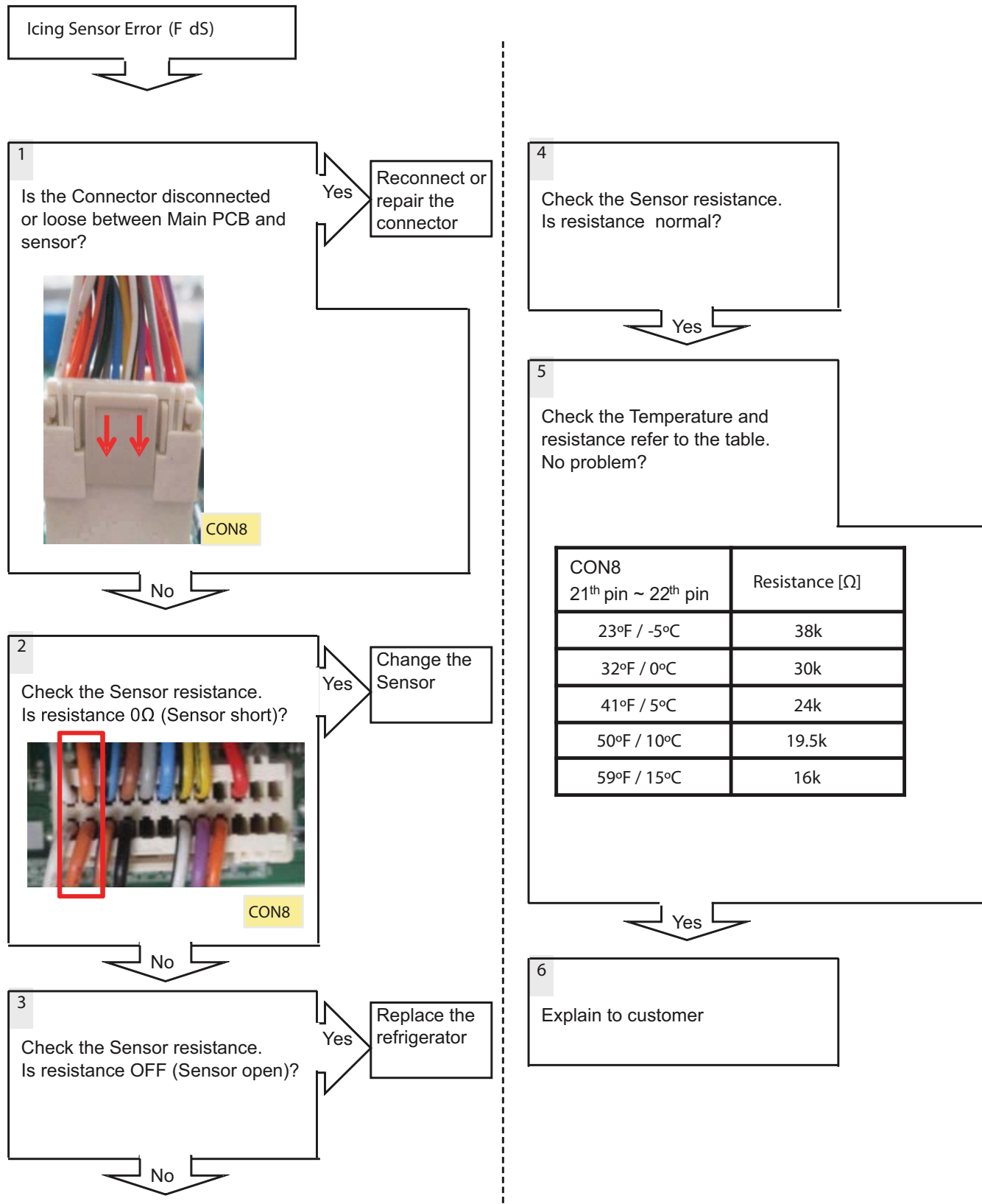
(P/N: EBR85624963)



	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

Troubleshooting

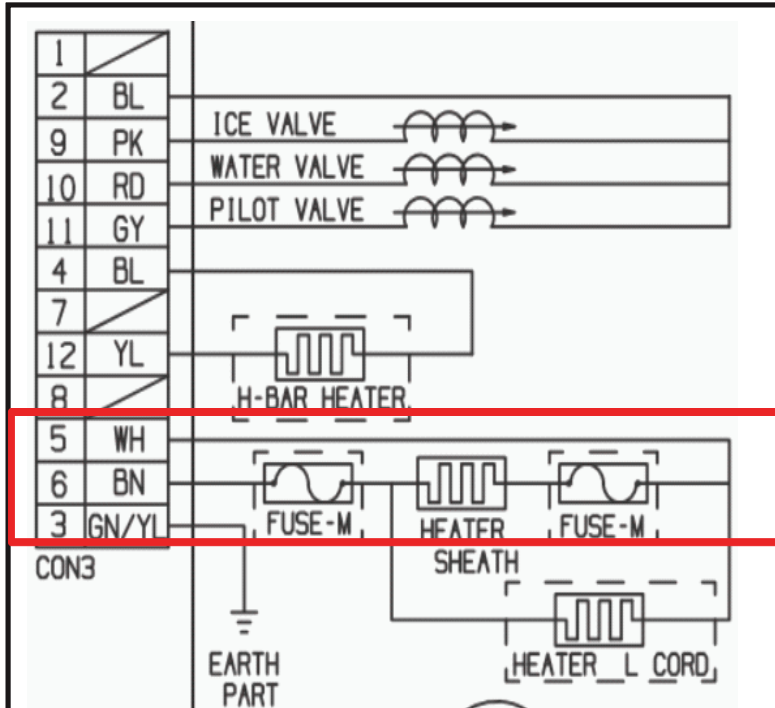


Troubleshooting

6. Defrost Heater Error

Symptom	Check Point
1. F dH	1. Check the heater disconnect 2. Check the Fuse hire 3. Check Drain stuck 4. Check the PCB output voltage

(P/N: EBR85624963)

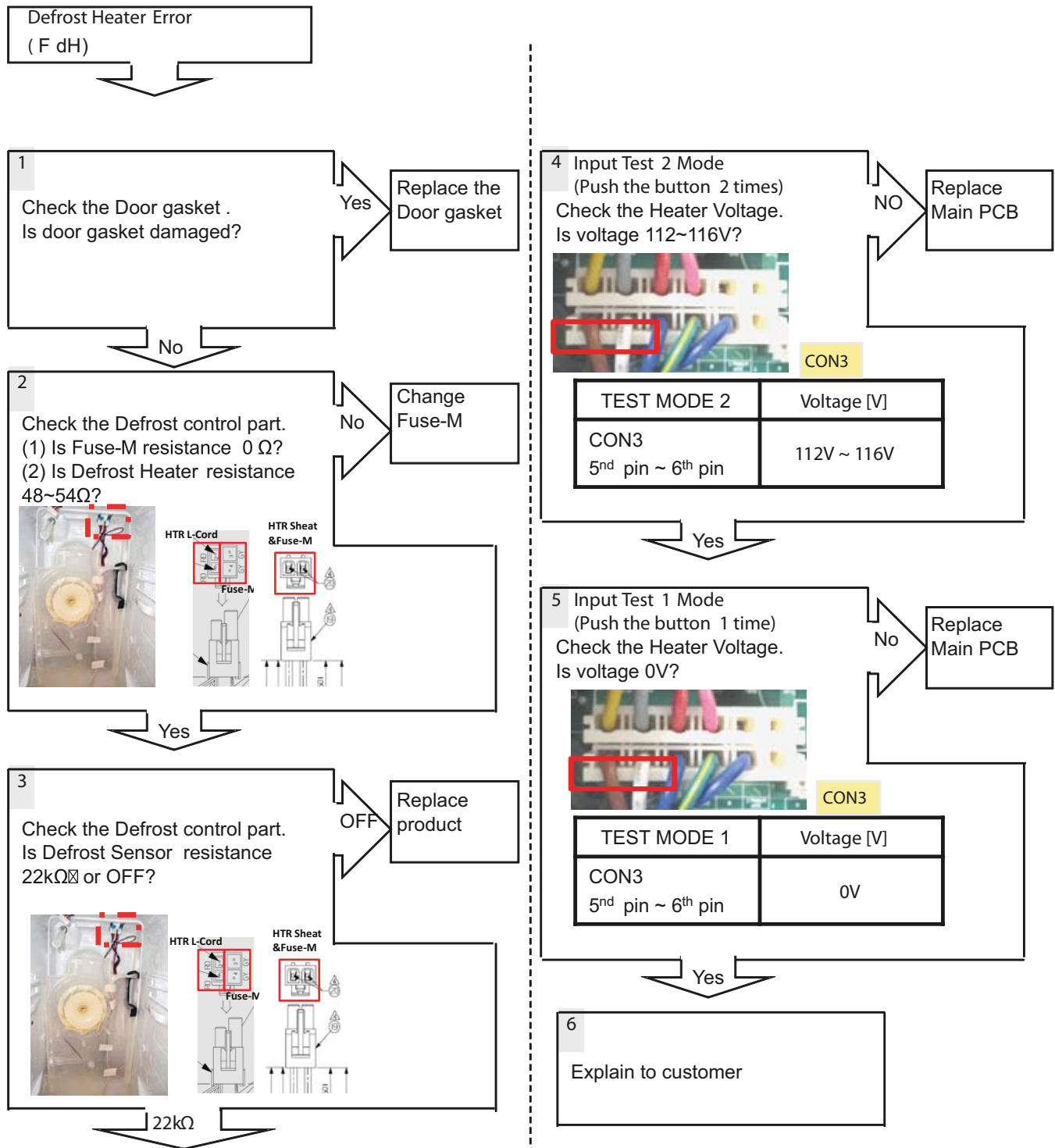


Part	Resistance [Ω]
FUSE-M	0
Defrost Heater	48~54
Defrost Sensor	22kΩ

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

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

Troubleshooting

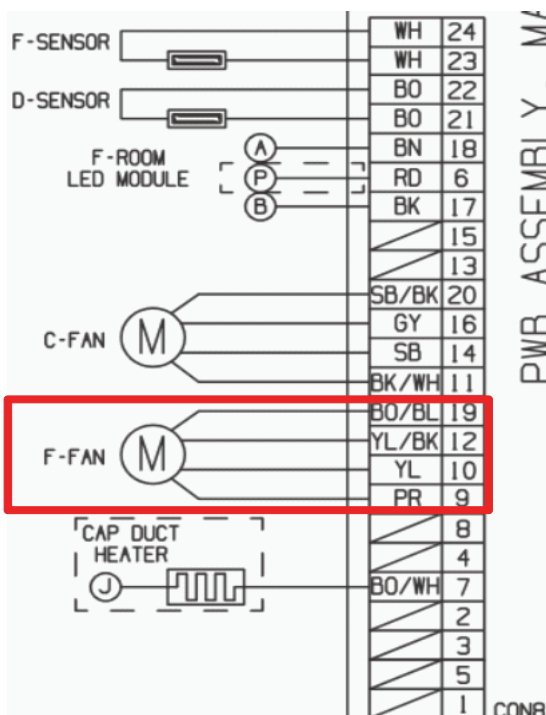
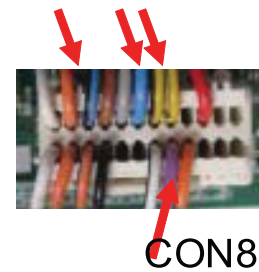
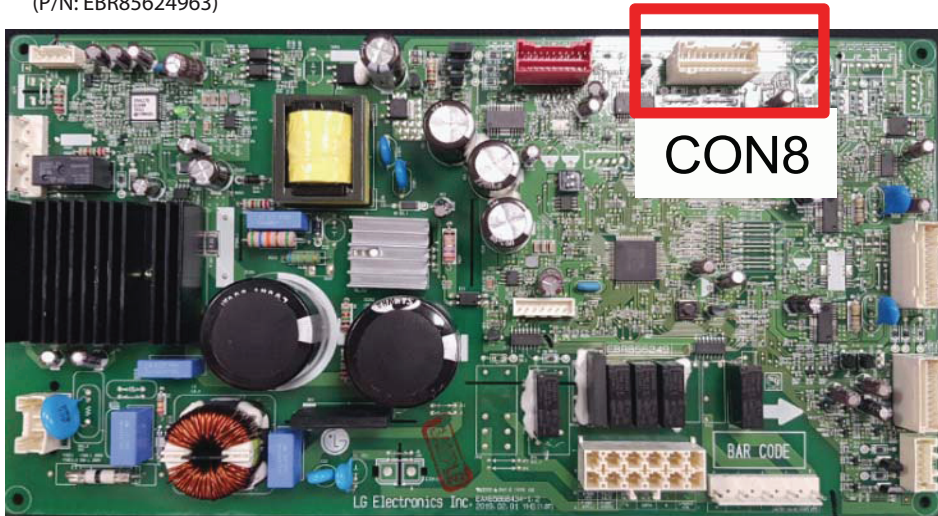


Troubleshooting

7. Freezer Fan Error (Er FF)

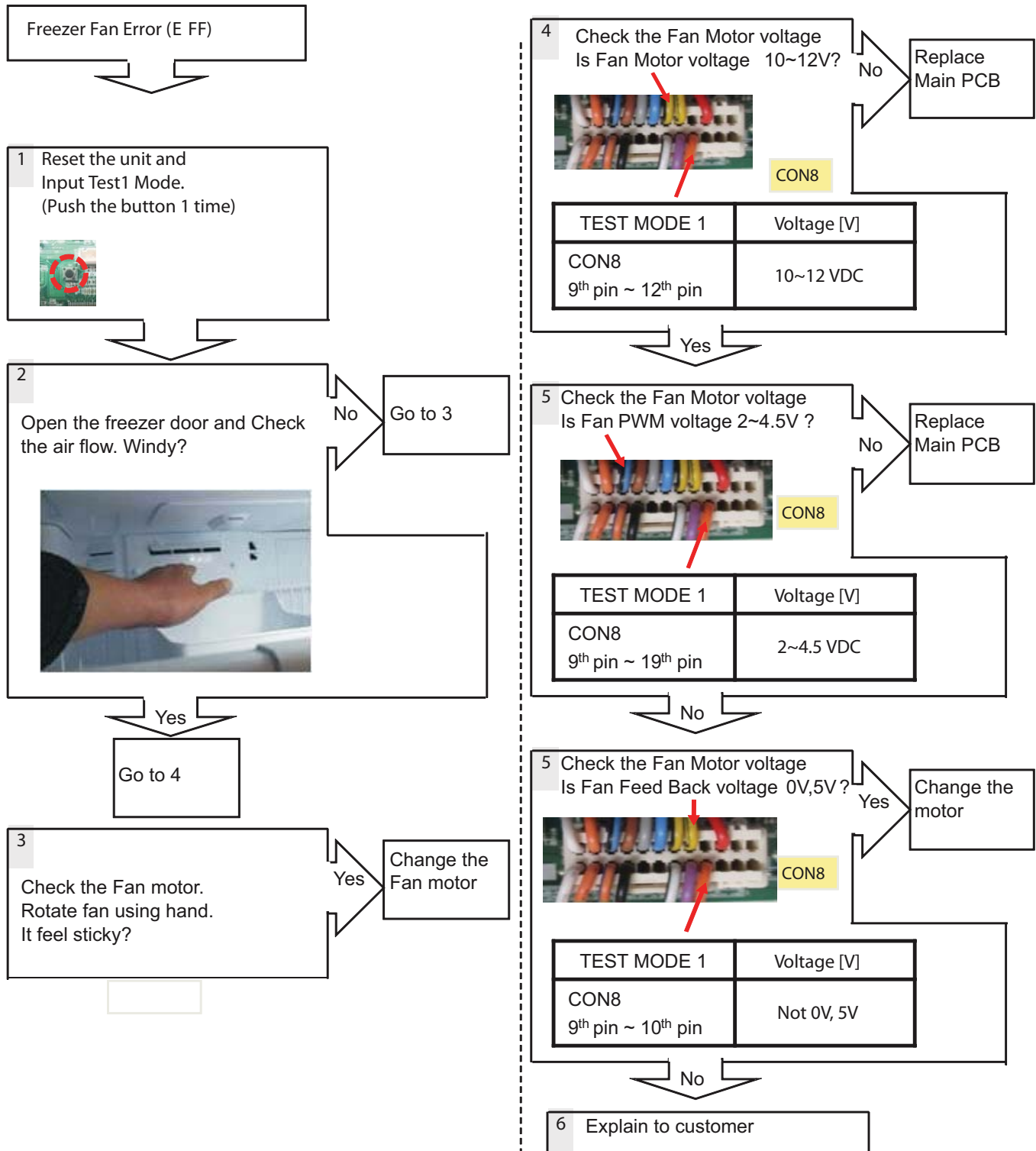
Symptom	Check Point
1.- E FF	1. Check the air flow 2. Check the Fan Motor 2. Check the PCB Fan motor voltage

(P/N: EBR85624963)



TEST MODE 1	Voltage [V]
CON8 9 th pin ~ 12 th pin	10~12 VDC
CON8 9 th pin ~ 19 th pin	2~4.5 VDC
CON8 9 th pin ~ 10 th pin	Not 0V, 5V

Troubleshooting

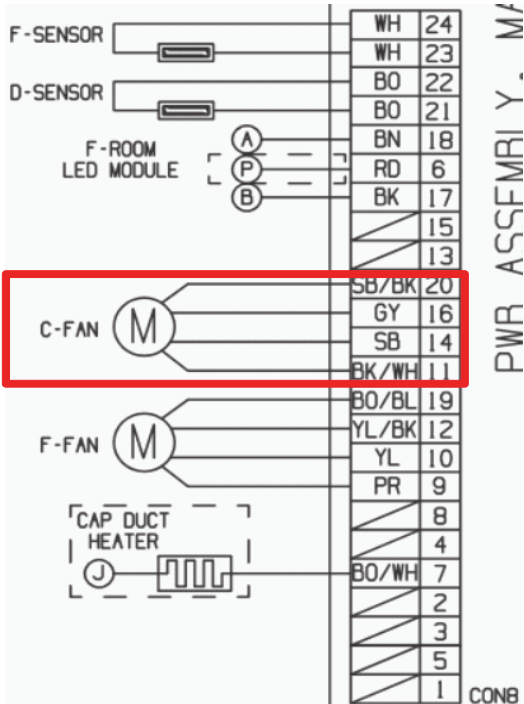
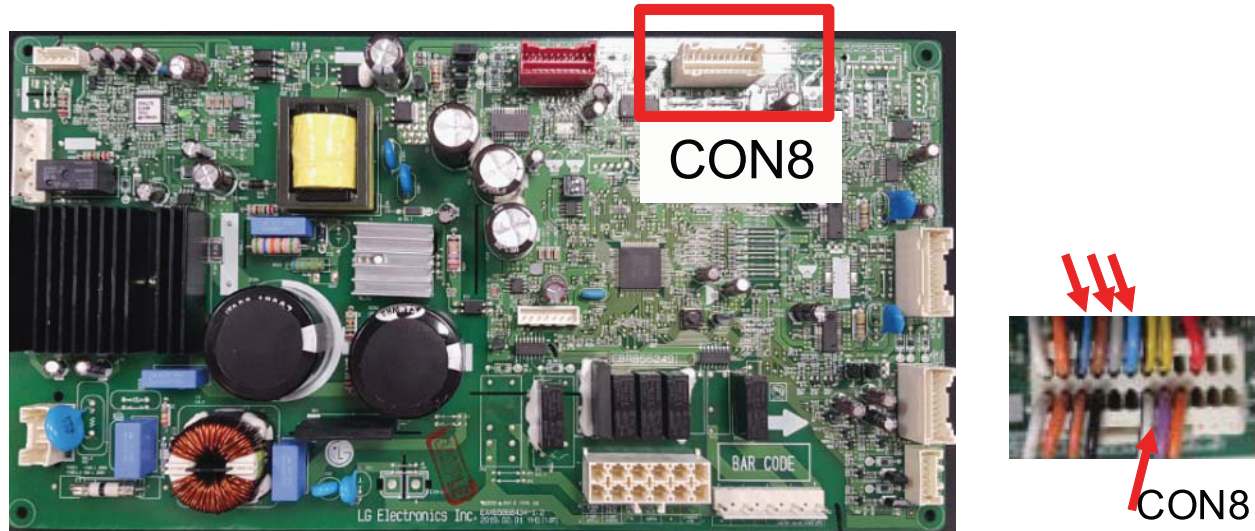


Troubleshooting

8. Condenser Fan Error (E CF)

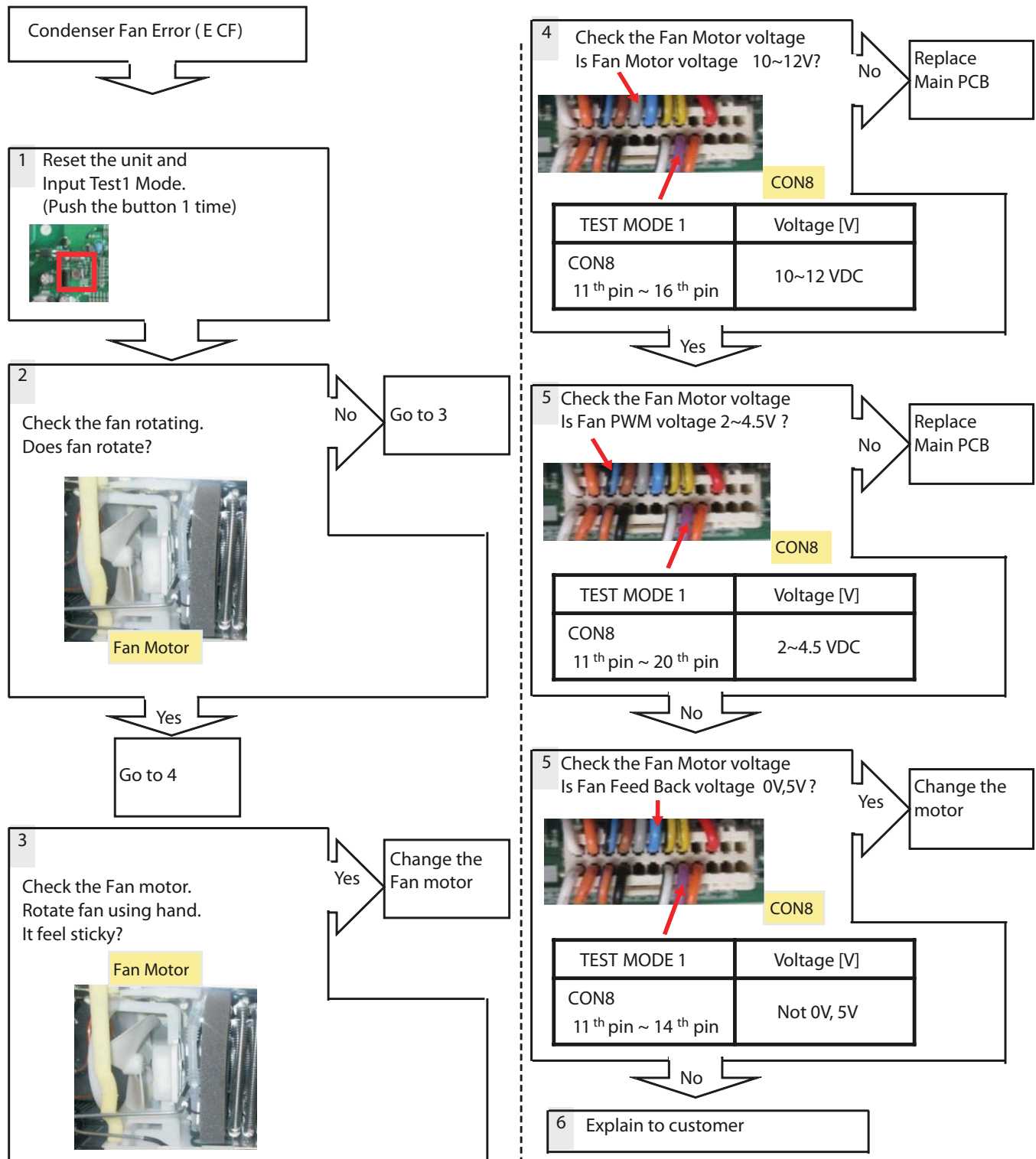
Symptom	Check Point
1.- E CF	1. Check the air flow 2. Check the fan motor and connector 2. Check the PCB Fan motor voltage

(P/N: EBR85624963)



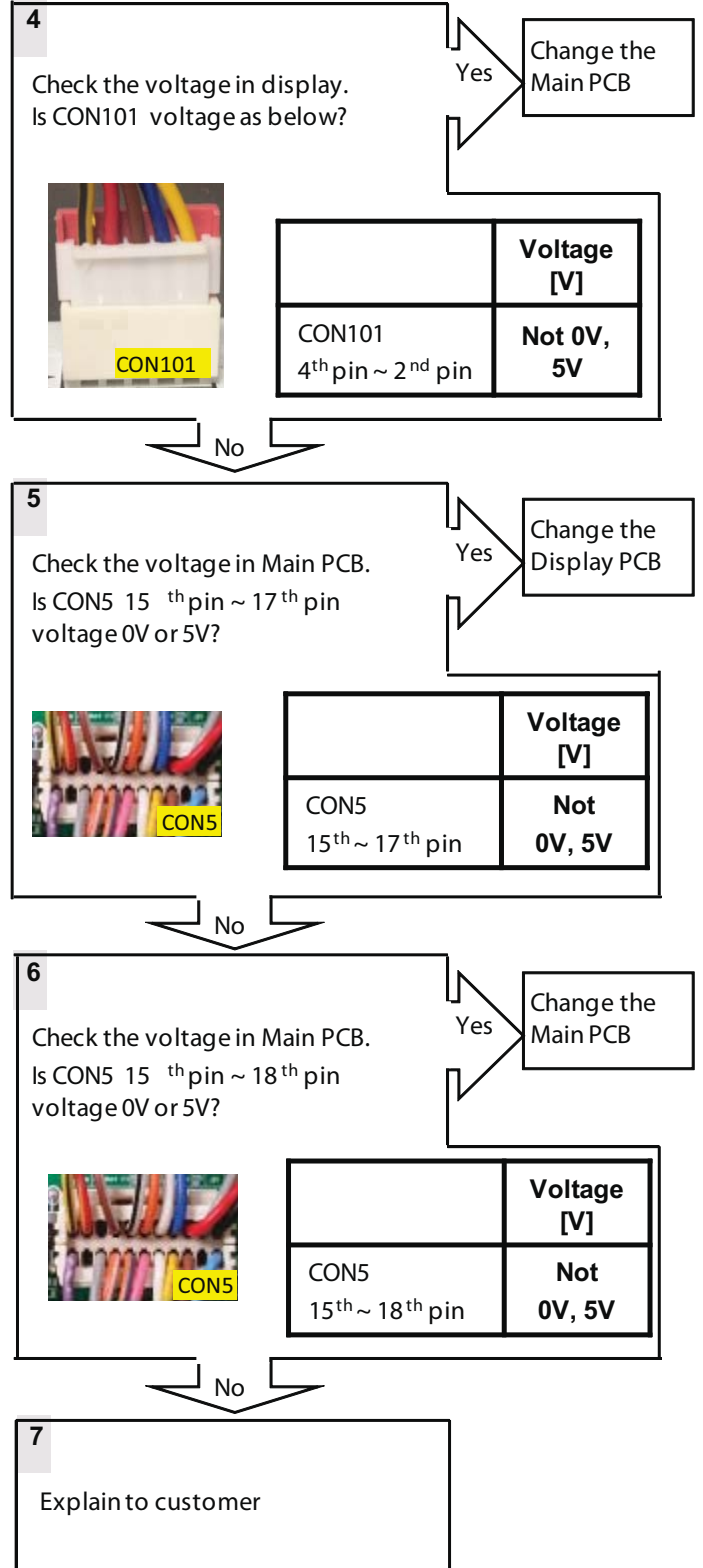
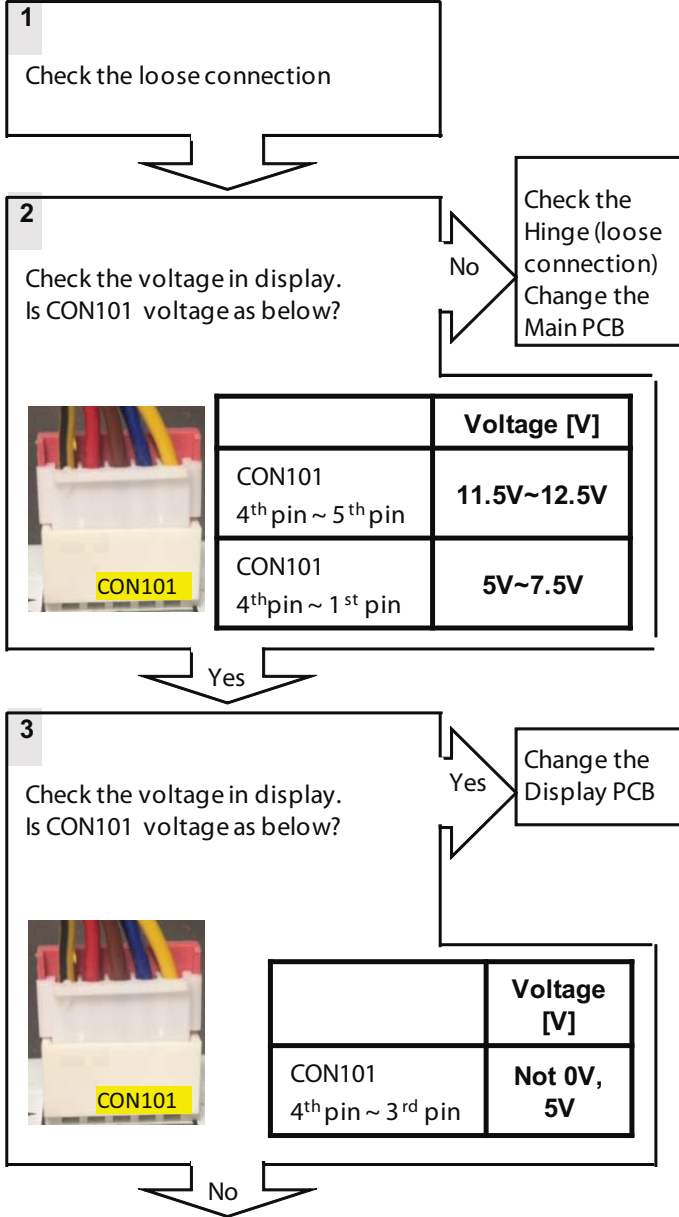
TEST MODE 1	Voltage [V]
CON8 11 th pin ~ 16 th pin	10~12 VDC
CON8 11 th pin ~ 20 th pin	2~4.5 VDC
CON8 11 th pin ~ 14 th pin	Not 0V, 5V

Troubleshooting



Troubleshooting

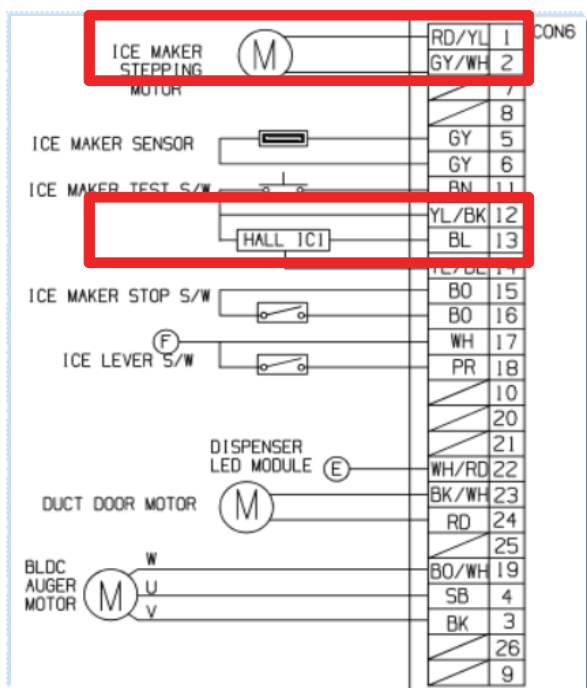
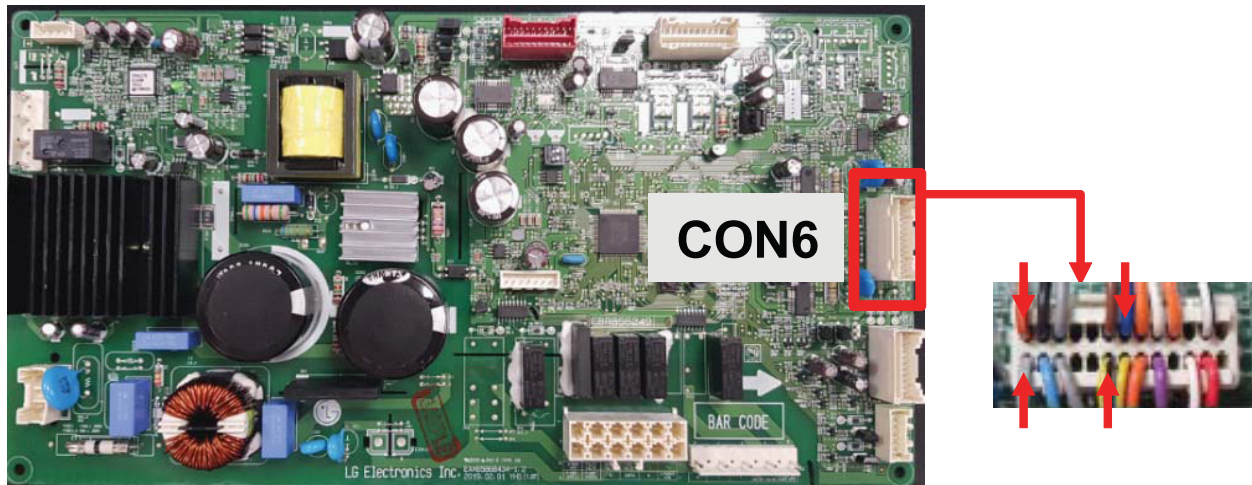
Communication Error (CO E)



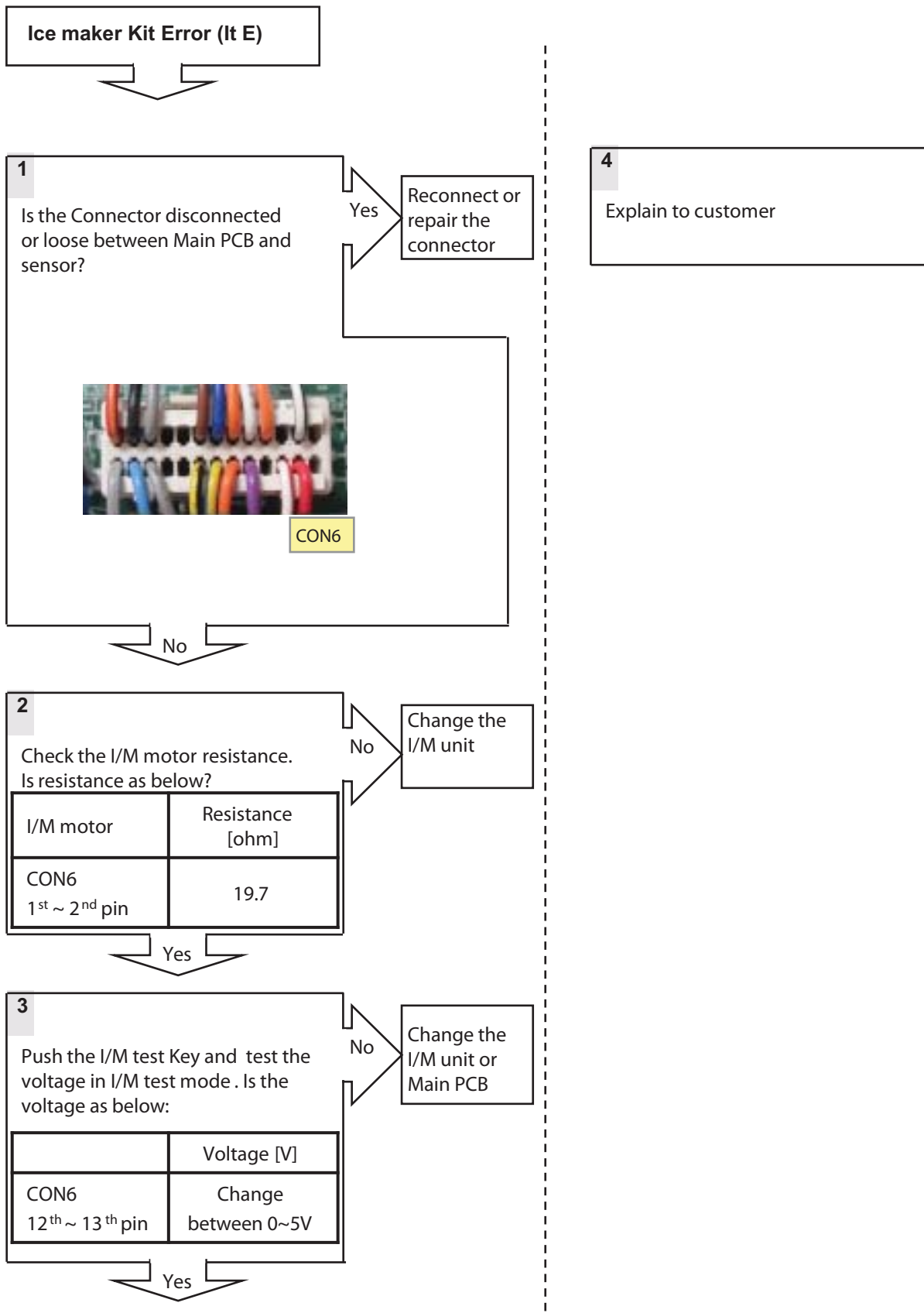
10. Ice Maker Motor Error (E It)

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

(P/N: EBR85624963)



Housing	Resistance [Ω]
CON6 1 st pin ~ 2 nd pin	19.7
CON6 12 th pin ~ 13 th pin	0~5V



Troubleshooting without Error Display

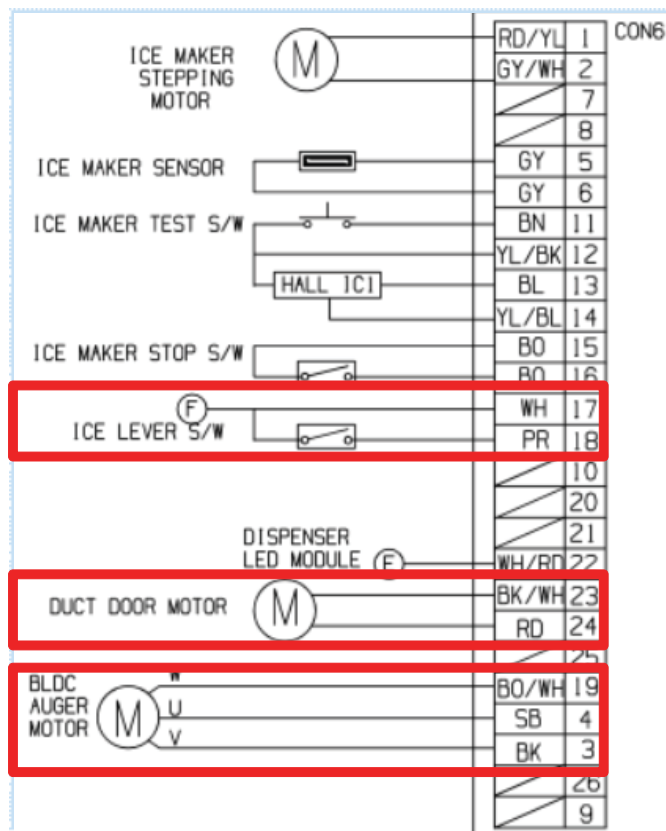
1. Cube mode doesn't work / 2. Crush mode doesn't work

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

(P/N EBR85624963)



1. Cube mode doesn't work / 2. Crush mode doesn't work



LEVER S/W	Voltage [V]	
CON6 3 rd pin~4 th pin	Pushing	10V↑
	Not Pushing	0~2V
CON6 3 rd pin~19 th pin	Pushing	10V↑
	Not Pushing	0~2V
CON6 4 th pin~19 th pin	Pushing	10V↑
	Not Pushing	0~2V
CON6 23 rd pin~24 th pin	When Push	11.5~12.5V (maintain 1s)
	Not Pushing	0~2V

Auger Motor (RT25 °C)	Resistance [ohm]
3 rd pin~4 th pin	2~3
3 rd pin~19 th pin	2~3
4 th pin~19 th pin	2~3

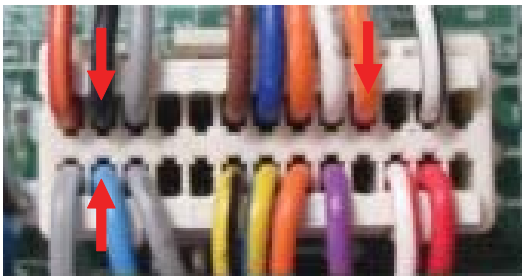
Duct Motor (RT25 °C)	Resistance [ohm]
23 rd pin~24 th pin	8~14ohm

1. Cube mode doesn't work
2. Crush mode doesn't work

1
Check the loose connection

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

No → Change the PCB



CON6

LEVERS/W	Voltage [V]	
CON6 3 rd pin~4 th pin	Pushing	10V↑
	Not Pushing	0~2V
CON6 27 th pin~29 th pin	Pushing	10V↑
	Not Pushing	0~2V
CON6 3 rd pin~19 th pin	Pushing	10V↑
	Not Pushing	0~2V
CON6 4 th pin~19 th pin	When Push	11.5~12.5V (maintain 1s)
	Not Pushing	0~2V

Yes

4
Check the resistance value.
Is Geared Motor resistance as below?

No → Replace Geared Motor



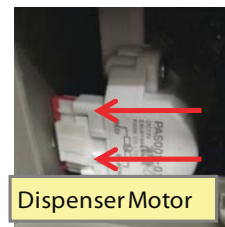
Geared Motor

Auger Motor (RT25 °C)	Resistance [ohm]
3 rd pin~4 th pin	2~3
3 rd pin~19 th pin	2~3
4 th pin~19 th pin	2~3

Yes

5
Check the resistance value.
Is Dispenser Motor resistance as below?

No → Replace duct Motor



Dispenser Motor

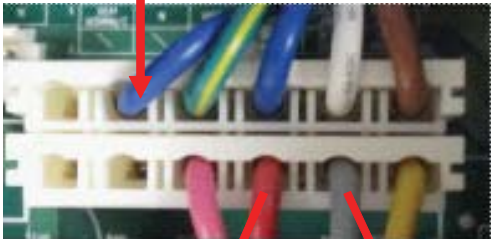
Duct Motor (RT25 °C)	Resistance [ohm]
23 rd pin~24 th pin	8~14ohm

Yes

6
Explain to customer

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



Ground (BL)

Water Valve (RD)

Pilot Valve (GY)

CON3



(1) (2)

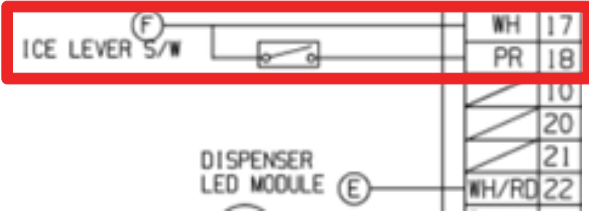
Pilot Valve Machine Room



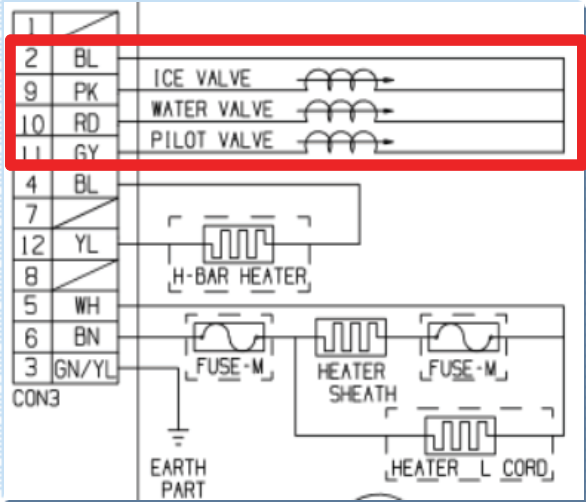
(3) (4)

Dispenser Ice Maker

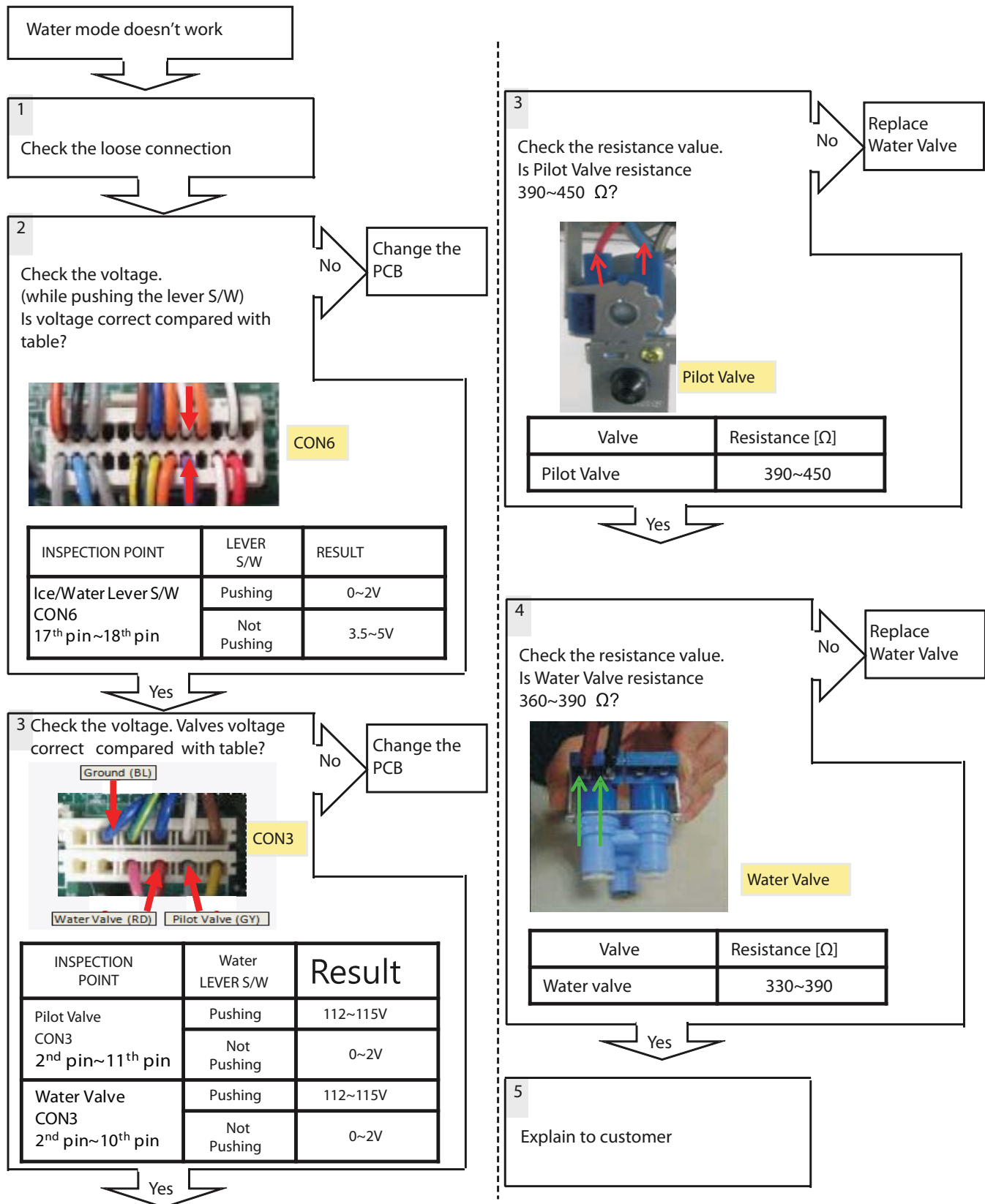
Water Valve



INSPECTION POINT	Water LEVER S/W	Result
Water Lever SW CON6 17 th pin~18 th pin	Pushing	0~2V
	Not Pushing	3.5~5V
Pilot Valve CON3 2 nd pin~11 th pin	Pushing	112~115V
	Not Pushing	0~2V
Water valve CON3 2 nd pin~10 th pin	Pushing	112~115V
	Not Pushing	0~2V

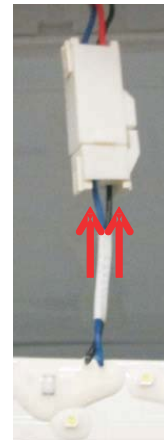


	Resistance [Ω]
Pilot Valve	390~450
Water valve	330~390



4. Refrigerator room led doesn't work

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

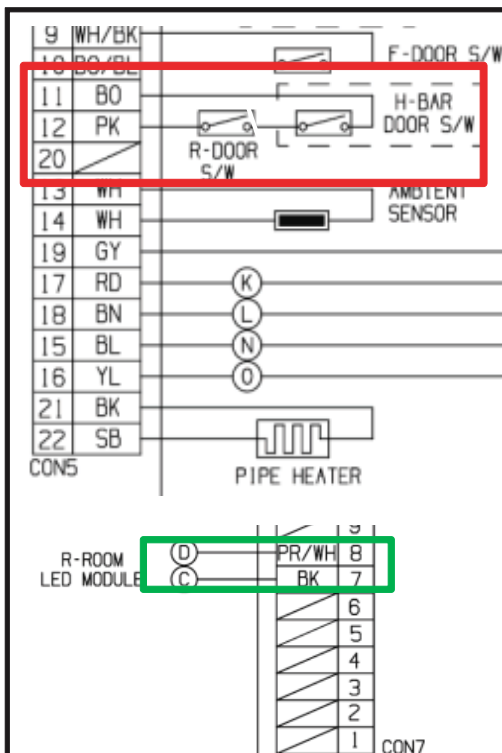


Door S/W

CON5 (R-Door S/W)

CON7 (R-LED Supply)

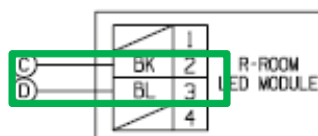
R Led Lamp



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

INSPECTION POINT	DOOR	Voltage [V]
CON7 7 th pin ~ 8 th pin	Close	0~2V
	Open	12V

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



Refrigerator room LED 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?



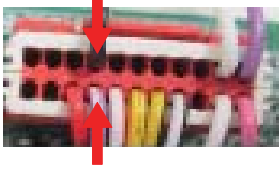
Door S/W

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

No → Change the Door S/W

Yes →

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



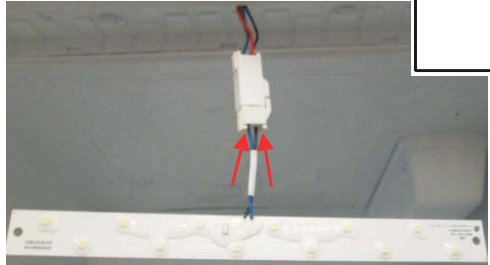
CON7

INSPECTION POINT	DOOR	Voltage [V]
CON7 7 th pin ~ 8 th pin	Close	0~2V
	Open	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)

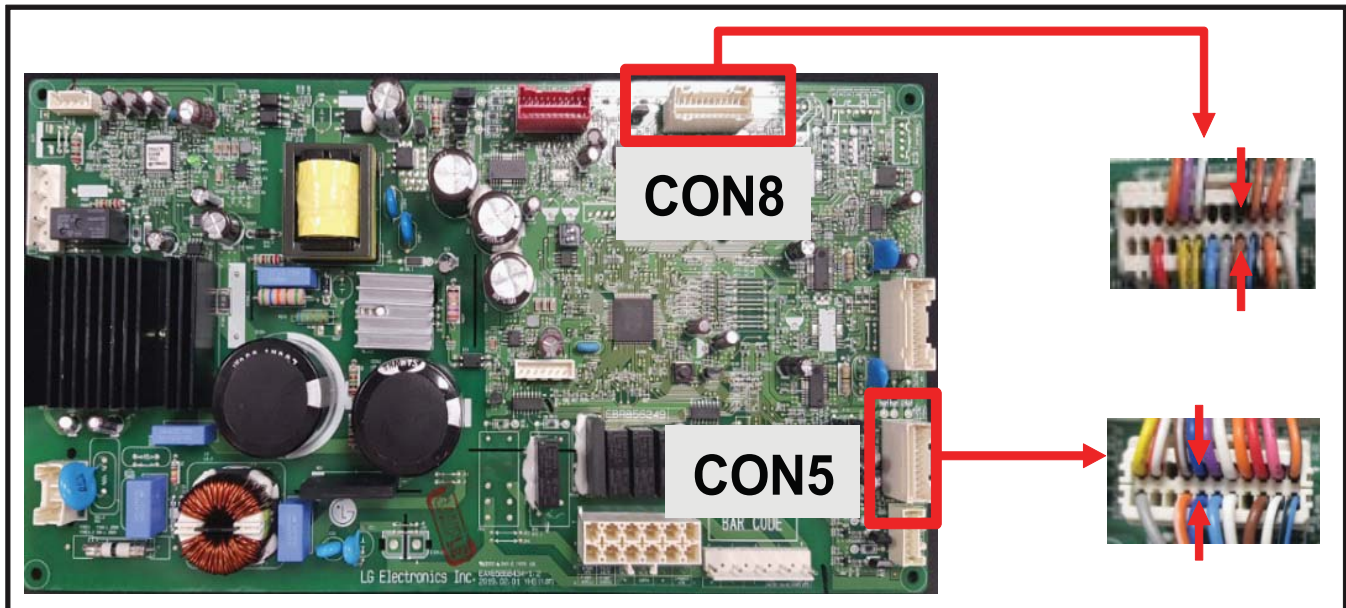
No → Change the LED Lamp

Yes →

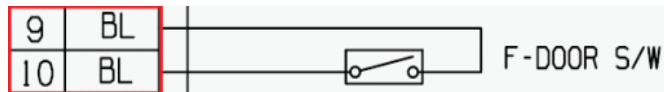
6 Explain to customer

5. Freezer room led doesn't work

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

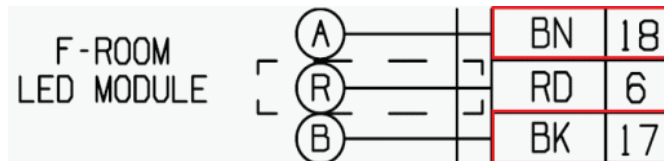


※ CON5



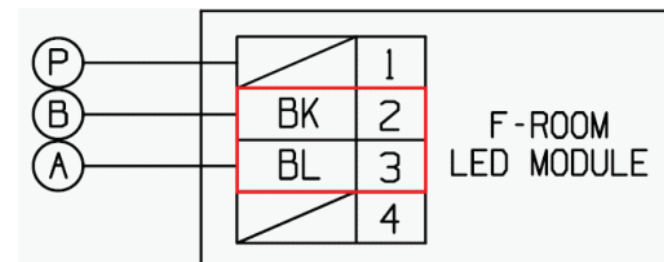
Door S/W	Resistance [Ω]	
	Open	Infinity
	Closed	0

※ CON7

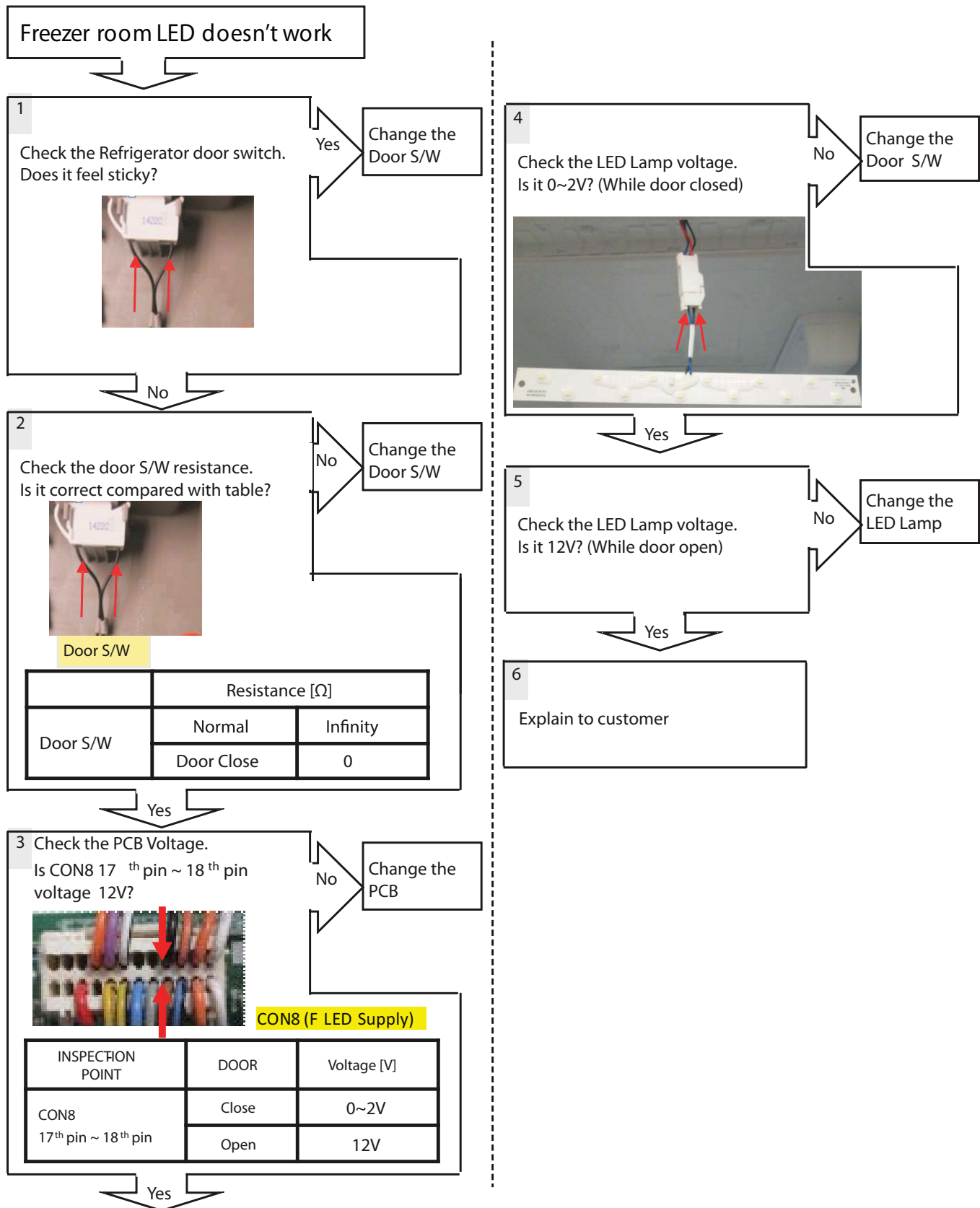


INSPECTION POINT	DOOR	Voltage [V]
CON8 17 th pin ~ 18 th pin	Close	0~2V
	Open	12V

※ LED MODULE

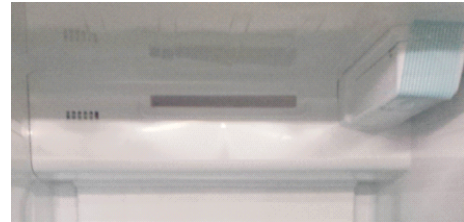


LED Lamp	Voltage [V]	
Blue~ Black	Closed	0~2V
	Open	12V



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



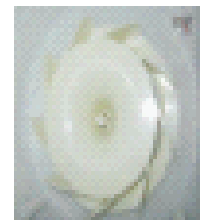
Duct



CON7

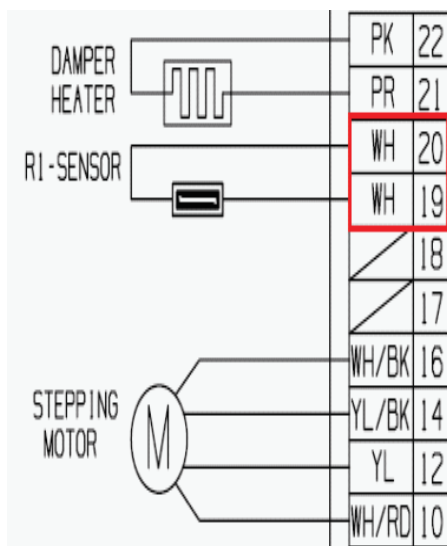


CON8

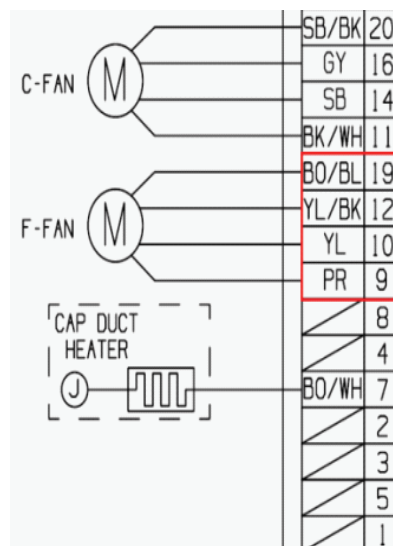


Fan Motor

※ CON7



※ CON8



CON6 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	10~12 VDC
CON8 9 th pin ~ 19 th pin	2~4.5 VDC
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

CON6 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 1
Damper OPEN

TEST MODE 2
Damper CLOSE

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

No
Check the damper
Go to 5

Yes

4 Check the air temperature.
Is it cold?

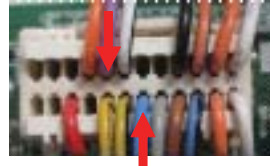
No
Check the Compressor
and sealed system

Yes

Go to 8

5 Check the Fan Motor voltage
Is Fan Motor voltage 10~12V?

No
Replace Main PCB



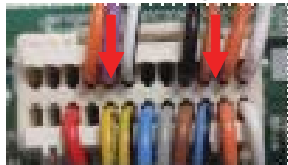
CON8

TEST MODE 1	Voltage [V]
CON8 9 th pin ~ 12 th pin	10~12 VDC

Yes

6 Check the Fan Motor voltage
Is Fan PWM voltage 2~4.5V ?

No
Replace Main PCB



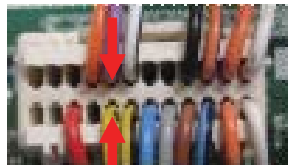
CON8

TEST MODE 1	Voltage [V]
CON8 9 th pin ~ 19 th pin	2~4.5 VDC

No

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

Yes
Change the motor



CON8

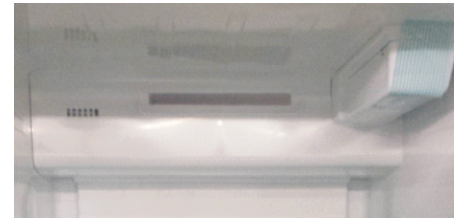
TEST MODE 1	Voltage [V]
CON8 9 th pin ~ 10 th pin	Not 0V, 5V

No

8 Explain to customer

7. Poor cooling in Freezer compartment

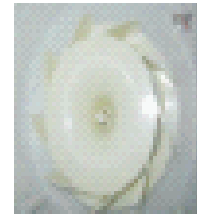
Symptom	Check Point
1. Poor cooling in Freezer compartment	1. Check the sensor resistance 2. Check the air flow 3. Check the air Temperature 4. Check the Fan motor sticky 4. Check the Fan motor voltage



Duct



CON8



Fan Motor

Wiring diagram showing connections for various components to a terminal block:

- F-SENSOR:** Connected to pins 24 (WH) and 23 (WH).
- D-SENSOR:** Connected to pins 22 (BO) and 21 (BO).
- F-ROOM LED MODULE:** Connected to pins 18 (BN), 6 (RD), and 17 (BK).
- C-FAN:** Connected to pins 20 (SB/BK), 16 (GY), and 14 (SB).
- F-FAN:** Connected to pins 11 (BK/WH), 19 (BO/BL), 12 (YL/BK), 10 (YL), and 9 (PR).

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

TEST MODE 1	Voltage [V]
CON8 9 th pin ~ 12 th pin	10~12 VDC
CON8 9 th pin ~ 19 th pin	2~4.5 VDC
CON8 9 th pin ~ 10 th pin	Not 0V, 5V

Duct	Status
Air Flow	Windy
Air Temperature	Cold

7) Poor cooling in Freezer compartment

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



TEST MODE 1
Damper OPEN



TEST MODE 2
Damper CLOSE

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

No
Check the damper
Go to 4

Yes

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?

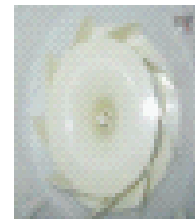
No

Check the Compressor and sealed system

Yes

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

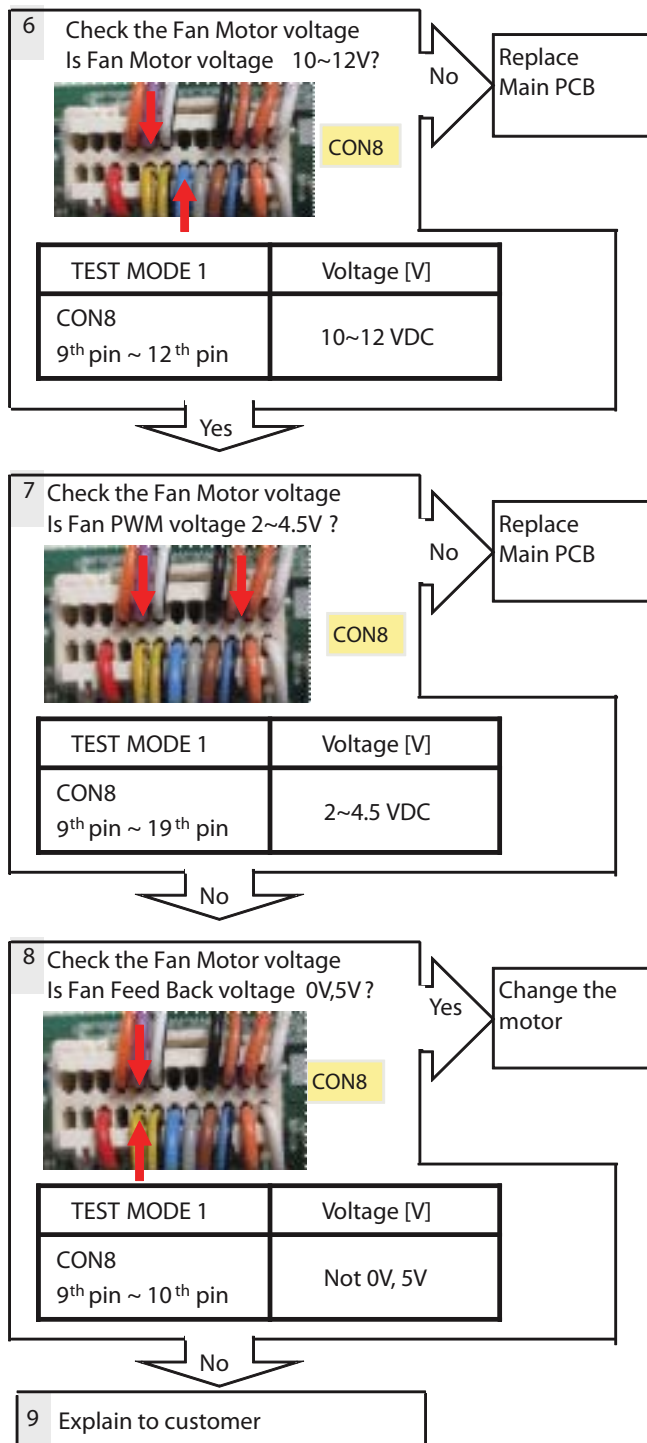
Fan Motor



Yes

Change the Fan motor

No



Troubleshooting

3. Reference

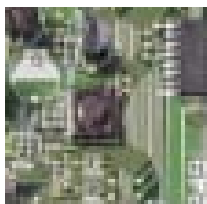
1) TEST MODE and Removing TPA

1. How to make TEST MODE

If you push the test button on the Main PCB, the refrigerator will be enter the TEST MODE



* 1 time :Comp / Damper / All FAN on
(All things displayed)



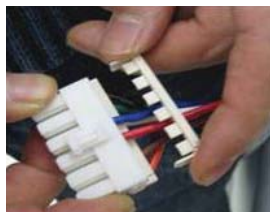
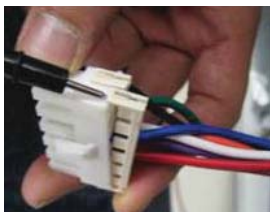
Main PWB

* 2 times :Forced defrost mode
(22 22 displayed)

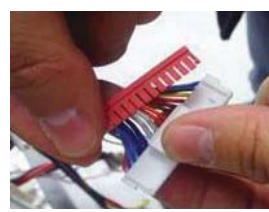
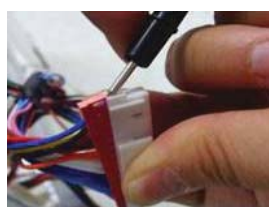


2. How to remove Terminal Position Assurance (TPA)

<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
PK : Pink

Troubleshooting

2) TEMPERATRUE CHART - FRZ AND ICING SENSOR

TEMP	RESISTANCE	VOLTAGE
-39°F(-40°C)	73.29Ω	4.09 V
-30°F(-35°C)	53.63Ω	3.84 V
-21°F(-30°C)	39.66Ω	3.55 V
-13°F(-25°C)	29.62Ω	3.23 V
-4°F(-20°C)	22.33Ω	2.89 V
5°F(-15°C)	16.99Ω	2.56 V
14°F(-10°C)	13.05Ω	2.23 V
23°F(-5°C)	10.1Ω	1.92 V
32°F(0°C)	7.88Ω	1.63 V
41°F(+5°C)	6.19Ω	1.38 V
50°F(+10°C)	4.91Ω	1.16 V
59°F(+15°C)	3.91Ω	0.97 V
68°F(+20°C)	3.14Ω	0.81 V
77°F(+25°C)	2.54Ω	0.67 V
86°F(+30°C)	2.07Ω	0.56 V
95°F(+35°C)	1.69Ω	0.47 V
104°F(+40°C)	1.39Ω	0.39 V

Troubleshooting

3) TEMPERATRUE CHART - REF AND DEF SENSOR

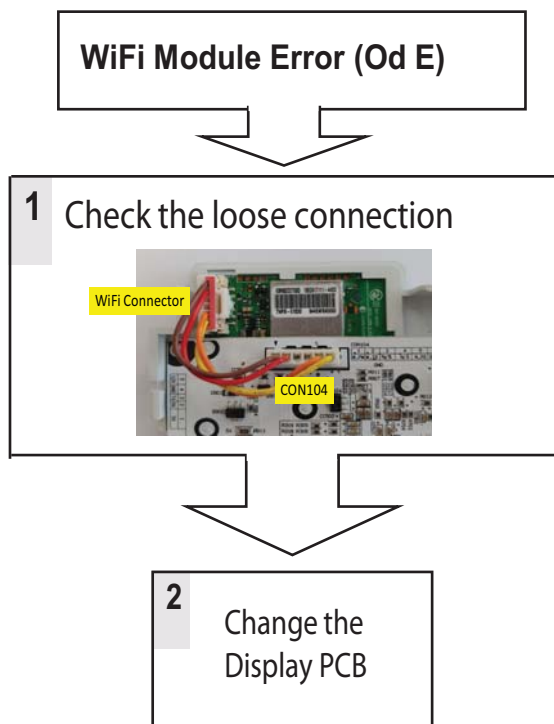
TEMP	RESISTANCE	VOLTAGE
-39°F(-40°C)	225.1Ω	4.48 V
-30°F(-35°C)	169.8Ω	4.33 V
-21°F(-30°C)	129.3Ω	4.16 V
-13°F(-25°C)	99.3Ω	3.95 V
-4°F(-20°C)	76.96Ω	3.734 V
5°F(-15°C)	60.13Ω	3.487 V
14°F(-10°C)	47.34Ω	3.22 V
23°F(-5°C)	37.55Ω	2.95 V
32°F(0°C)	30Ω	2.67 V
41°F(+5°C)	24.13Ω	2.40 V
50°F(+10°C)	19.53Ω	2.14 V
59°F(+15°C)	15.91Ω	1.89 V
68°F(+20°C)	13.03Ω	1.64 V
77°F(+25°C)	10.74Ω	1.45 V
86°F(+30°C)	8.89Ω	1.27 V
95°F(+35°C)	7.4Ω	1.10 V
104°F(+40°C)	6.2Ω	0.96 V

Troubleshooting

4) TEMPERATRUE CHART - AMBIENT SENSOR

TEMP	RESISTANCE	VOLTAGE
-39°F(-40°C)	225.1Ω	4.79 V
-30°F(-35°C)	169.8Ω	4.72 V
-21°F(-30°C)	129.3Ω	4.64 V
-13°F(-25°C)	99.3Ω	4.54 V
-4°F(-20°C)	76.96Ω	4.43 V
5°F(-15°C)	60.13Ω	4.29 V
14°F(-10°C)	47.34Ω	4.13 V
23°F(-5°C)	37.55Ω	3.95 V
32°F(0°C)	30Ω	3.75 V
41°F(+5°C)	24.13Ω	3.54 V
50°F(+10°C)	19.53Ω	3.31 V
59°F(+15°C)	15.91Ω	3.07 V
68°F(+20°C)	13.03Ω	2.83 V
77°F(+25°C)	10.74Ω	2.59 V
86°F(+30°C)	8.89Ω	2.35 V
95°F(+35°C)	7.4Ω	2.13 V
104°F(+40°C)	6.2Ω	1.91 V
113°F(+45°C)	5.19Ω	1.71 V

Wi-Fi Modem Error (E Od)

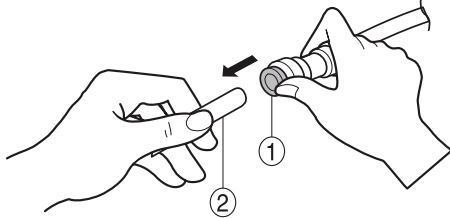


How to disassemble and assemble

1. DOOR

- 1) Disconnect water supply tube ② in the back of the refrigerator.

Pull the water supply tube forward while pressing on the coupling ① as shown in the drawing.



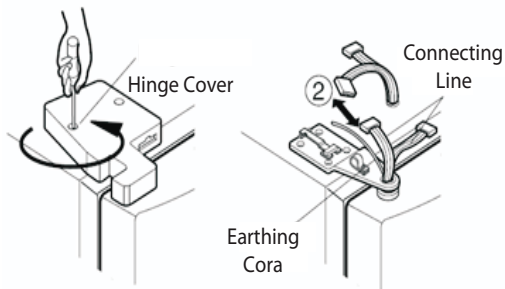
Disconnecting the tube under the door caused about 3 pints(1.5 liters) of water to flow out. Use a big container to catch it.

Note: Connect the same tube color

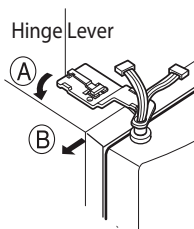
- 2) Remove the freezer door.

- (1) Loosen hinge cover screw of freezer door and remove the cover.

Disconnect all connecting lines except grounding cord.



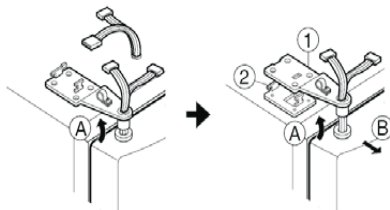
- 2) Turn hinge lever in arrow (A) direction until it is loosened and take it out in arrow (B) direction.



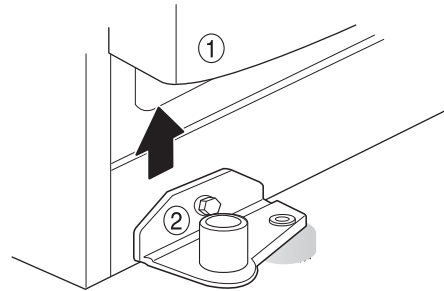
Note : • When disconnecting refrigerator door, turn hinge lever counterclockwise.

- If the hinge or bracket are bent during assembly, use two extra screws (Tap Tite M6, Left Hinge attaching screw) in the holes of the upper hinge.

- (3) Disconnect upper hinge ① from the hinge supporter ② by grasping the front part of upper hinge and lifting up (Hinge Assembly,U) in arrow (A) direction and pull forward in arrow (B) direction. Be careful because the door may fall, damaging the door, the floor, or injuring you.



- (4) Lift up the freezer door ① in arrow direction and disconnect the door from the lower hinge ②. Don't pull the door forward.

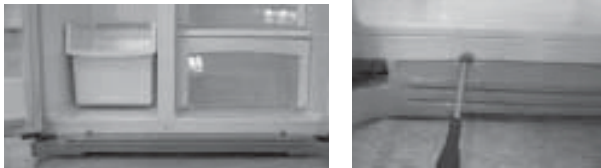


- (5) Assembly is the reverse order of disassembly.

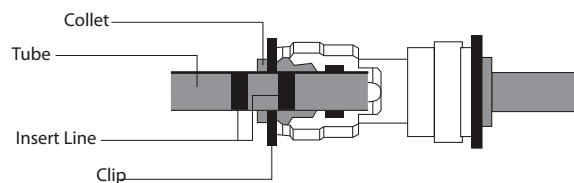
How to disassemble and assemble

4. WATER VALVE DISASSEMBLY METHOD

- 1) Turn off the power of the refrigerator (pull out the plug).
Open the FREEZER and REFRIGERATOR Door and disassemble the Lower Cover.



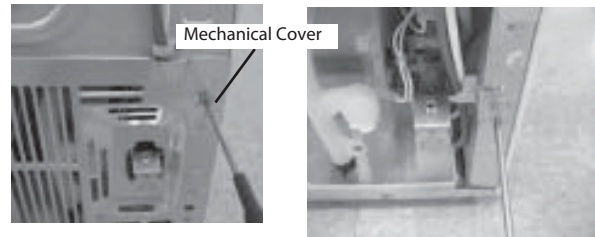
- 2) Lay a dry towel on the floor and get ready to spill water from the water tank.
Pull out the Clip. Then press the collet to separate the tube from the connector and pour out the water until emptied.



- 3) Turn off the water. Then separate the water line from the valve.



- 4) Separate the Mechanical Cover and Valve Screw.



- 5) Separate the housing and pull out the valve.



5. FAN AND FAN MOTOR DISASSEMBLY METHOD

- 1) Remove screw connected to back panel and detach hooks from drain pan



- 2) Remove the screw from guide fan and separate the Fan motor assembly and guide



The assembly is in the reverse order of the disassembly and take special care for the following details.

1. Be careful not to bend the tube during assembly.

How to disassemble and assemble

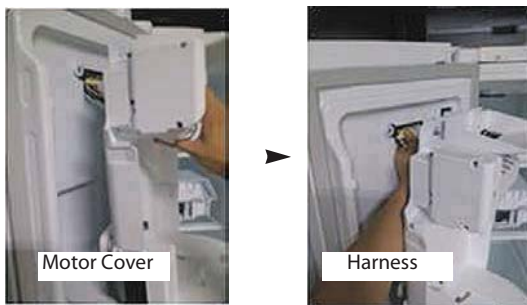
6. ICEMAKER DISASSEMBLY METHOD

Note :to disassemble the icemaker, separate Motor, AC from the door first.

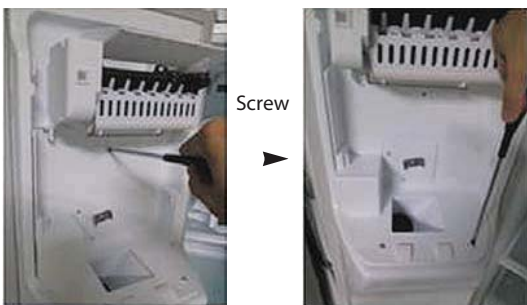
① disassemble Ice bin and cover.



② Separate the Motor,AC from the door.



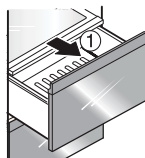
③ Remove the Three screws on the Motor,AC.



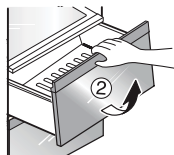
7. WATER TANK DISASSEMBLY METHOD

1) Hold the front of the Drawer and Pull it out completely.

Hold the front and pull it out the fresh compartment and pull it out until it gets blocked by the hooking part.



When you cannot pull out the fresh compartment any more, lift it up slightly to pull it out completely to the front side (outer side.)



2) Hold the front of the Cover,TV and Pull it out completely.



3) Loosen 1 Screw on the Water Tank.

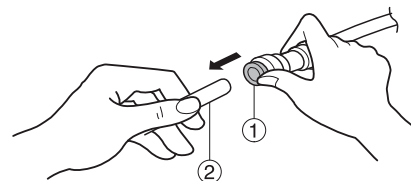


4) Pull the water supply, tube (1) in the back of the refrigerator.



① Under the Freezer Door

② on the Water vavle



Pull the water supply tube (1) forward while pressing on the coupling (2) as shown in the drawing.

5) Assembly is he reverse order of disassembly.



How to disassemble/reassemble the refrigerator home bar

How to disassemble/reassemble the refrigerator home bar

1. Family home bar model

1-1. How to disassemble the home bar

1. Loosen 2 screws on the hinge of the home bar located on the top of the door.



2. Use the tool to separate the hinge. (But be careful not to drop the home bar as it is heavy).



3. Hold the home bar with 2 hands and separate the home bar by lifting it up from the door.



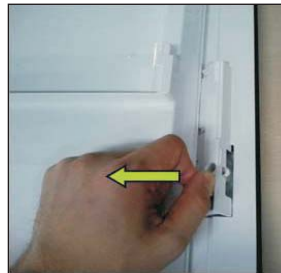
1-2. The Method to disassemble the Home Bar button

1. Separate the H/Bar Gasket adjacent to the Holder, Lever, and then unscrew three screws.



2. Hold the Holder, Lever, and then pull left firmly to separate the Cover Front.

It is able to separate the Holder, Lever if two screws, placed on the back of the separated Cover Front are unscrewed.



3. After unscrew the two Button Assembly screws, separate the Button Frame. (Requires a small Screw Driver)



How to adjust the refrigerator door level difference

How to adjust the refrigerator door level difference

1. When the refrigerator door is low
1. Open the door.



2. Use the spanner included in the document to turn the height adjustment screw located on the bottom of the refrigerator hinge in clockwise direction to adjust the height.



2. When the freezer door is low
1. Open the door.
2. Use the spanner included in the document to turn the height adjustment screw located on the bottom of the freezer hinge in clockwise direction to adjust the height.



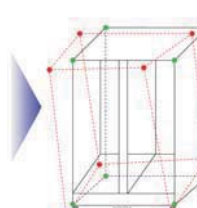
How to adjust the door level difference

* It may be unlevel concerning installed condition of the floor.

1. When the bottom part of refrigerator door unlevel.



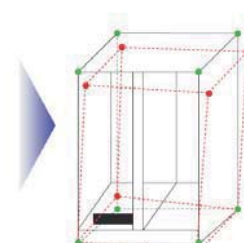
1. Put thr install plate under the rear corner of the refrigerator.
2. Check the movement of the freezer



3. If the freezer does not fixed, in screw the leg until it reaches on the floor.



2. When the bottom part of freezer door unlevel.
1. The same as refrigerator room.



Heavy Repair Method of Refrigerator by Application of Refrigerant

Heavy Repair Method of Refrigerator by Application of Refrigerant

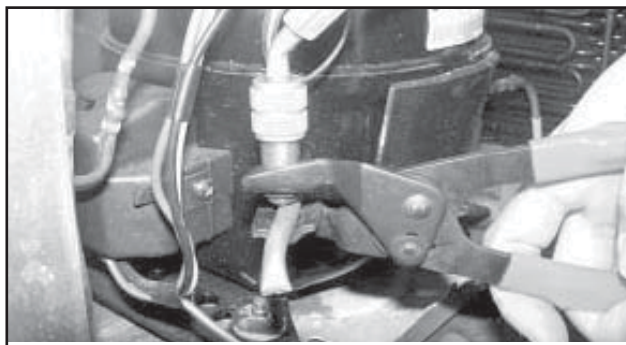
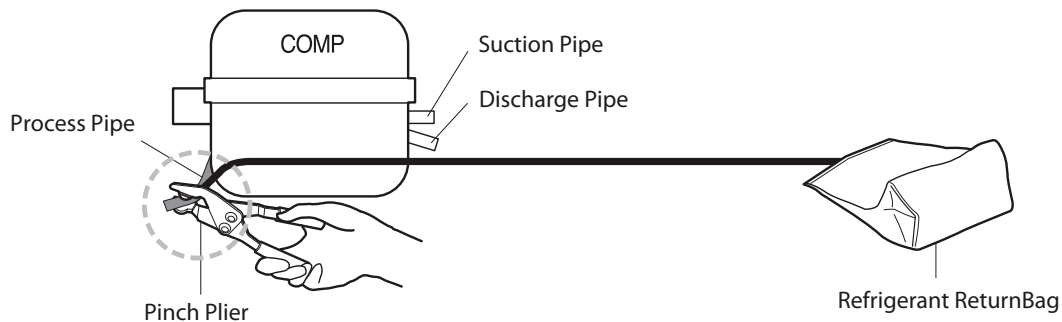
1. Heavy Repair SVC Method

For the heavier repair of R600a type of refrigerator, perform work according to following SVC method.

1-1. Return of Refrigerator Refrigerant

Required equipment: Pinch pliers, refrigerant discharging hose, refrigerant returnbag

- Take power cords out and remove power between 6sec through 12sec .
- Leave doors of a refrigerator so that they are not closed.
- Connect pinch pliers with a refrigerant discharging hose.
- Place the outlet of a refrigerant discharging hose outside.
(Remove fire appliances or heating sources near a refrigerant discharging hose.)
- Always use a refrigerant returnbag for working at the contained space.
- Bore the charging pipe of a compressor with pinch pliers.
(Remove fire appliances or heating sources near a refrigerator.)
- Perform refrigerant discharge for more than 7 minutes.

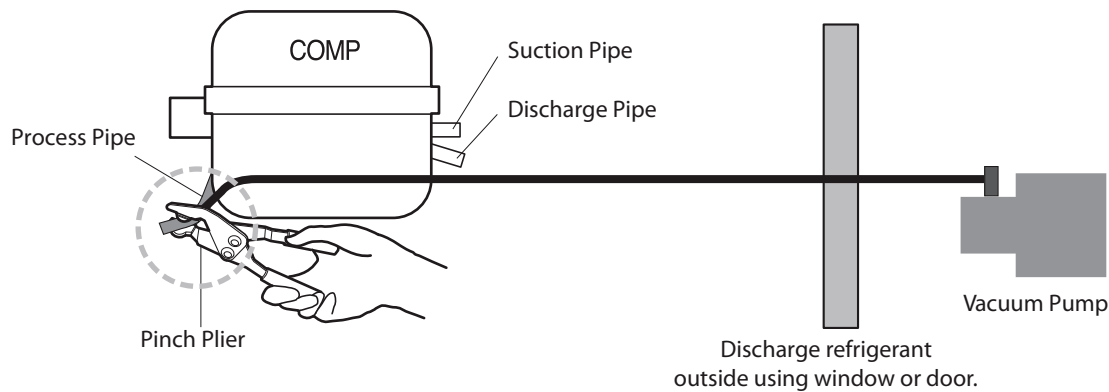


Heavy Repair Method of Refrigerator by Application of Refrigerant

1-2. Return of Remained Refrigerant

Required equipment: Pinch pliers, hose for refrigerant recovery, vacuum pump

- If refrigerant return time of 7 minutes has passed, connect a vacuum pump at the ends of a refrigerant return hose outdoor. (Vacuum pump must operate outdoor.)
- Operate a vacuum pump in order to return refrigerant remained in the pipe.
- Vacuum working time should be for more than 10 minutes.



1-3. Welding Repair Step

Required equipment: Simple welding machine

- Remove pinch pliers if remaining refrigerant return is completed.
- Cut the front part of a process pipe with a cutter. (Check that remaining refrigerant comes out.)
- Perform welding work such as replacement of compressor and dryer, or repair of leakage part. (Be cautious of fire during welding work.)

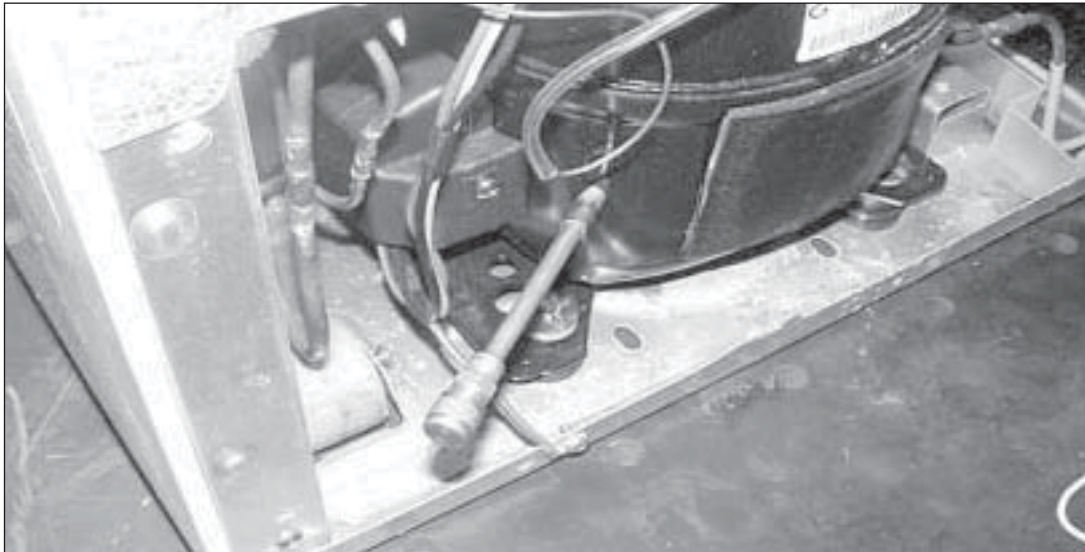
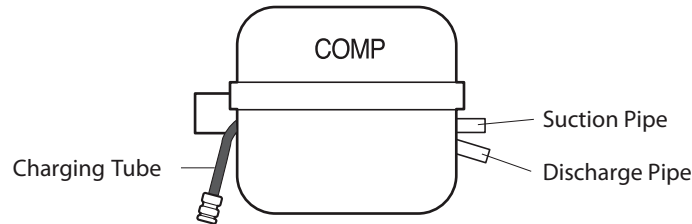


Heavy Repair Method of Refrigerator by Application of Refrigerant

1-4. Charging Tube Connection Step

Required equipment: Charging tube, simple welding machine

- Remove a charging pipe to recharge R600a refrigerant after completing work, and then connect a charging tube with welding



1-5. Vacuum Air Removal

Required equipment: Vacuum pump

- Connect a vacuum pump to a charging tube to perform vacuum cycle.
- Vacuum work should be performed for an hour. (If vacuum time is short, normal cooling performance may not be exerted due to failure of cooling cycle.)



Heavy Repair Method of Refrigerator by Application of Refrigerant

1-6. Refrigerant Charging

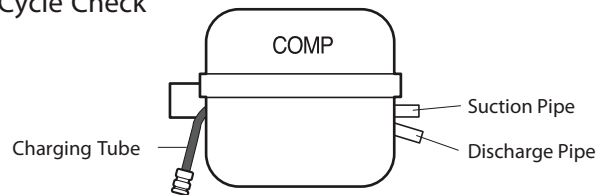
Required equipment: Bombe, R600-a refrigerant 80g.

- Firstly remove fire appliances and heating source for performing work when charging scaled refrigerator. (Do not spray refrigerant indoor.)
- Measure the accurate quantity 80 g of refrigerant to charge it into a Bombe.
- Make the Bomber as vacuum status to charge refrigerant.
(If there is air or moisture in a Bombe, it may give effect on performance of a cooling cycle.)
- Please manage refrigerant quantity as 80 g.

Refrigerant quantity = Weight after charging Weight before charging (weight of vacuumed Bombe)

- Connect Bombe with a charging tube to charge refrigerant.
 - Turn on power of refrigerator to operate a compressor.
 - Measure Bombe weight after 5 through 10 minutes to check remained refrigerant quantity to complete charging of refrigerant.
- (After charging refrigerant, never perform welding work or work using fire appliances.)

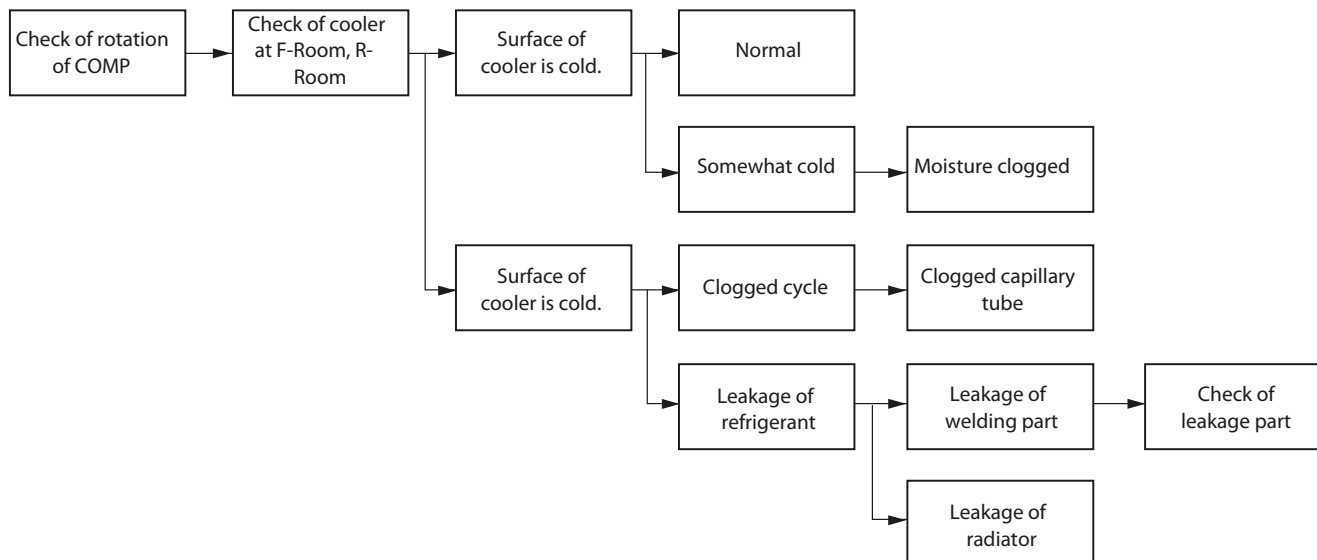
1-7. Leak Inspection and Cycle Check



Required equipment: Leakage checking machine (foam and leakage inspection machine)

- Check for leakage by using foam or a leakage inspection machine at the worked part if charging of refrigerant is completed.
- Check for leakage at the low pressure part with the compressor stopped, and check at the high pressure part with the compressor being operating.
- If leakage is detected, proceed to repair according to repair process again starting from "2-1. Return of Refrigerator Refrigerant".
(Never perform welding work or work using fire appliances.)
- Check that heat remains at a discharge pipe or condenser with the hands if leakage check is completed. If heat remains, the cooling cycle is normal.
(Take care since a discharge pipe may be hot.)

1-8. Failure Checking Procedures



HOW TO REMOVE AND REINSTALL THE COVER ASSEMBLY,PCB

1. Open the Home bar.



2. Remove the gasket from gasket channel at doorliner as shown in the illustration below.



3. Remove a Screw.



4. Using the lever principle, Insert the Small Screw Driver applies a force to hole.



5. Disconnect wire harness.



6. Remove a screw.



HOW TO REMOVE AND REINSTALL THE CASE ASSEMBLY,LAMP

When servicing the LEDs, Cover,Lamp is positively necessary.

1. Open the Home bar.



2. Tighten a screw to the cover.



3. Pull a screw using a Plier and disassemble the cover.

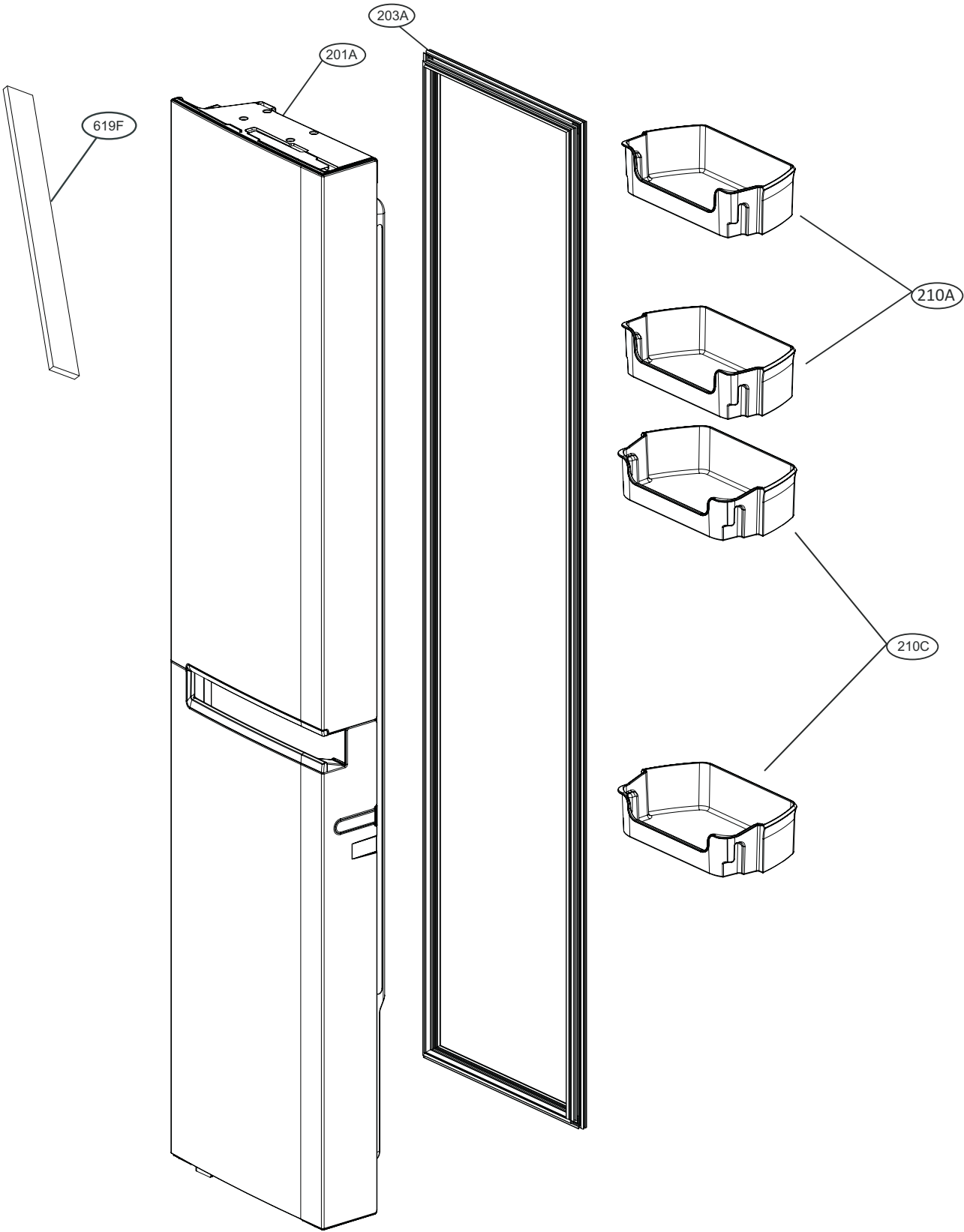


4. 1) Push the flat screwdriver in the rear of the LED lamp and take the lamp out from the hook.
2) Disassemble the combined housing with the flat screwdriver.
3) You should take LED lamps out and pull from the right.



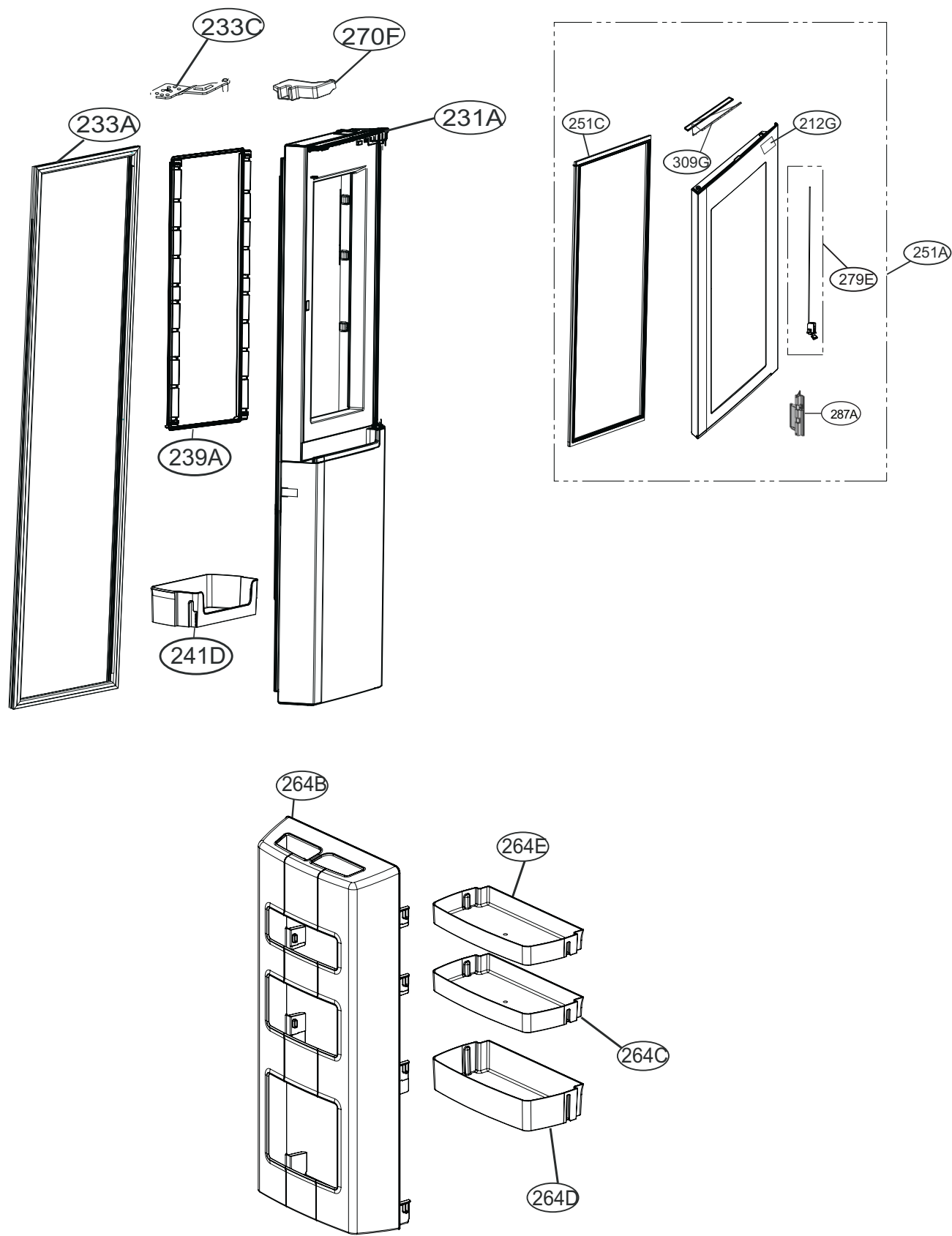
EXPLODED VIEW

FREEZER DOOR



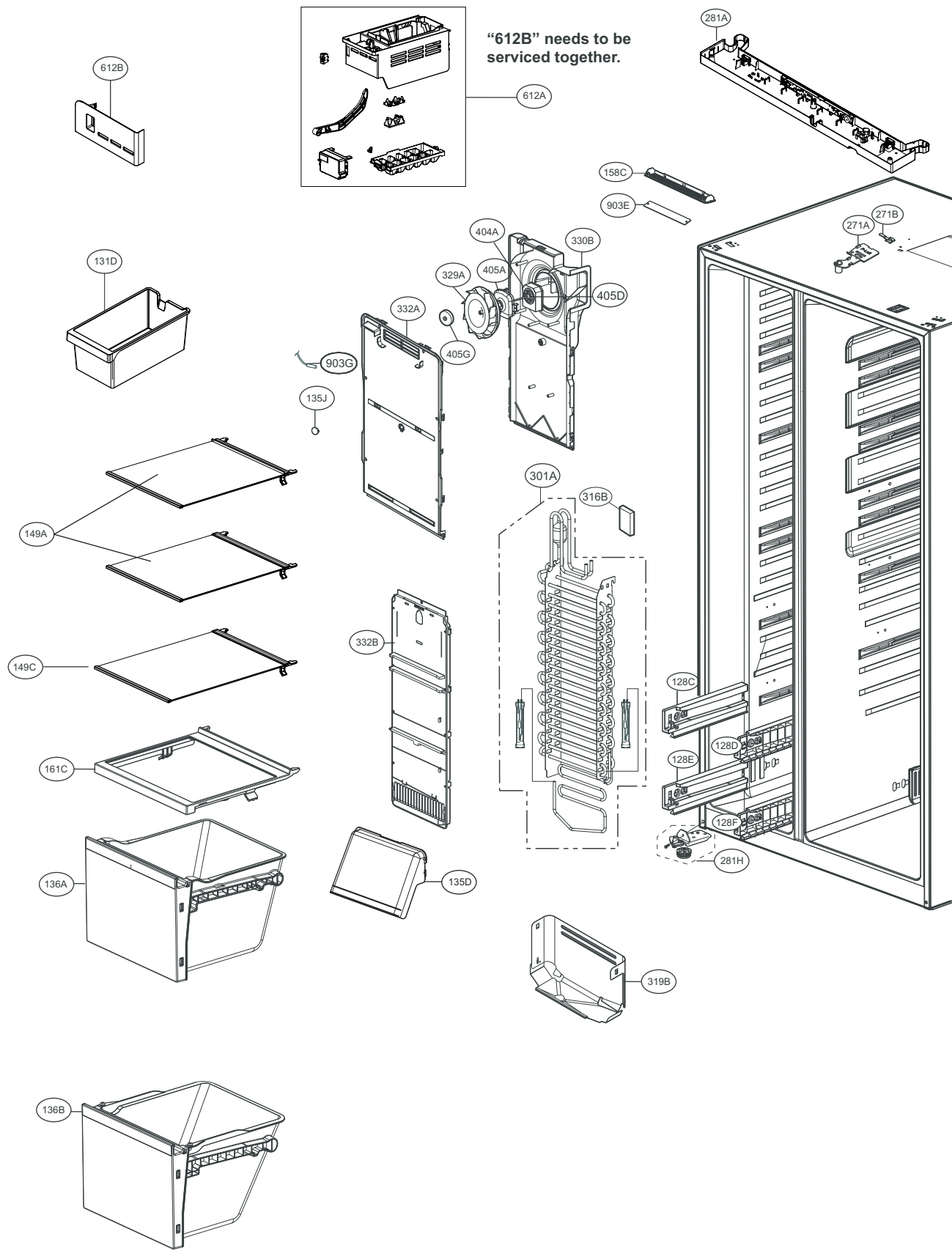
EXPLODED VIEW

REFRIGERATOR DOOR



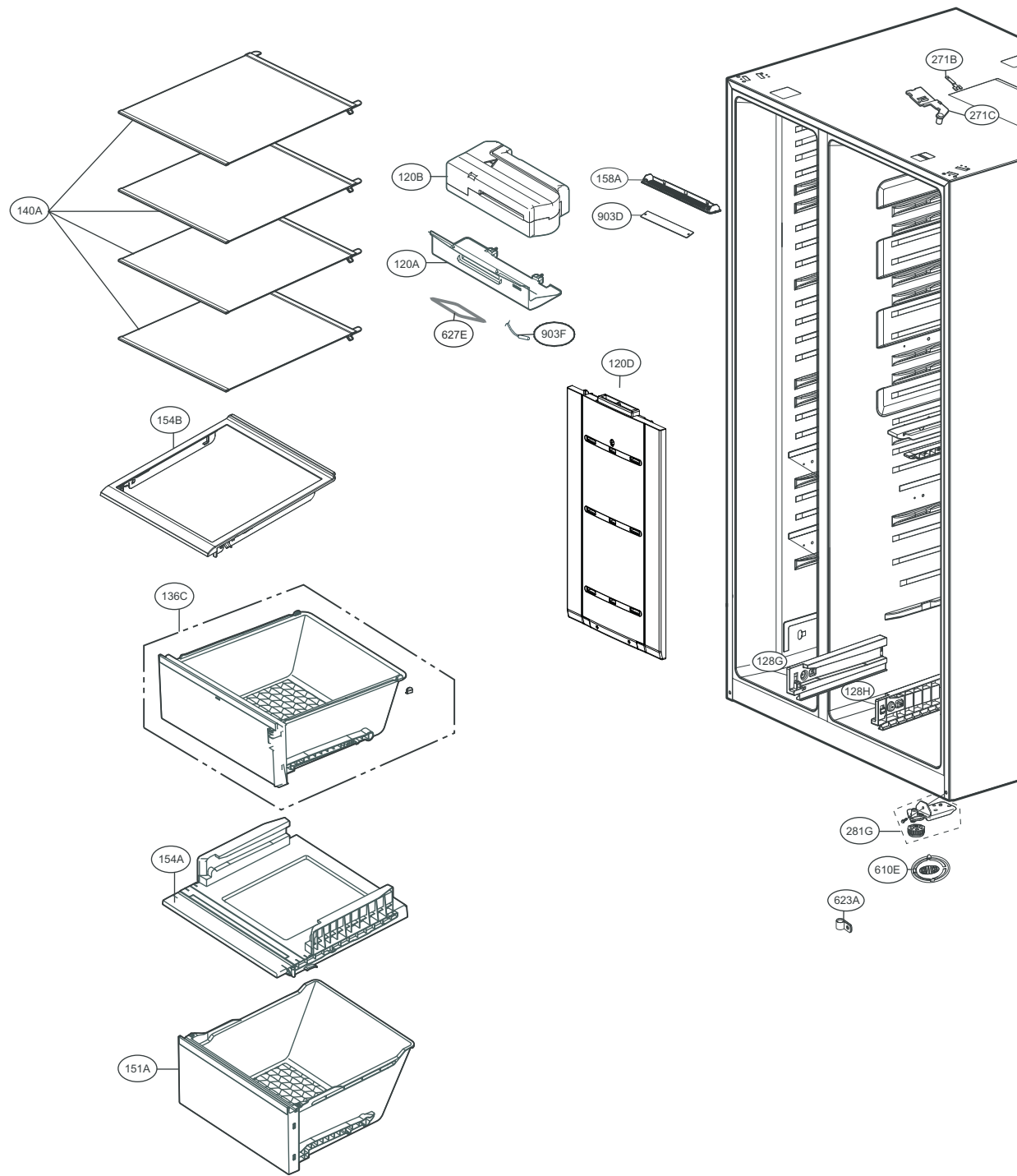
EXPLODED VIEW

FREEZER COMPARTMENT



EXPLODED VIEW

REFRIGERATOR COMPARTMENT



EXPLODED VIEW

MACHINE COMPARTMENT

