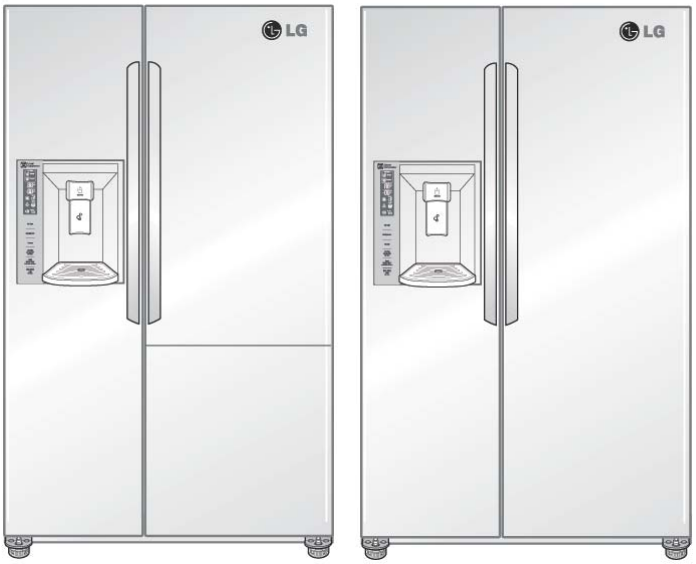
LG

SXS REFRIGERATOR
SERVICE MANUAL

CAUTION

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



MODELS:

LSXS26466*
LSXS26386*
LSXS26366*
LSXS26326*

CONTENTS

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.

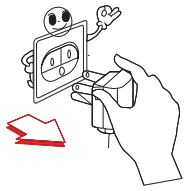
⚠ CAUTION

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.

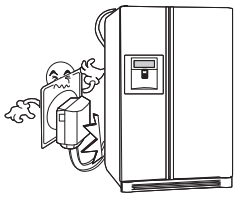


Do not allow consumers to directly repair, disassemble, or modify the refrigerator.

Harm, electric shock, or fire could occur.

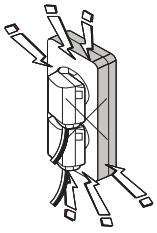
Be sure the plug and cord are not pressed by the rear side of the refrigerator.

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.

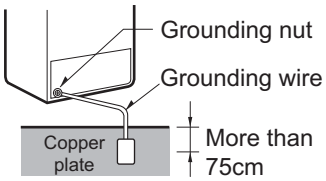


Safety Warning and Cautions

⚠ 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.

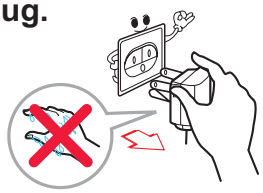


Do not store medications or biohazardous products requiring precise temperature control. Do not use the refrigerator to store papers, electronic storage media, or similar items.

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

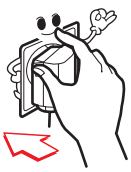
Unplug the refrigerator for cleaning or repair. Be sure your hands are dry when handling the power cord or plug.

Electric shock or harm may occur.



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

Dust or incomplete connection may result in fire.

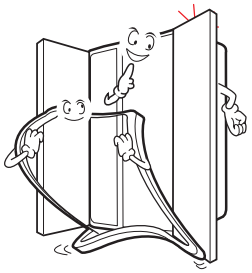


Do not store poisonous, flammable, or explosive chemicals in the refrigerator.

There is danger of explosion and fire.

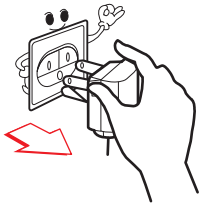
If storing or disposing of the refrigerator, remove the doors to eliminate the possibility of children playing in it.

Children may become entrapped in the refrigerator.



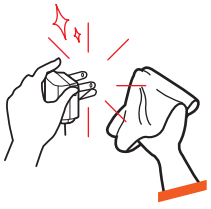
Firstly take power socket out for

Electric shock may occur.



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

Fire may occur.

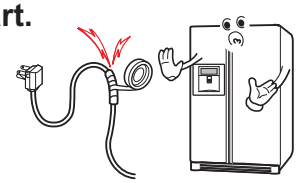


Safety Warning and Cautions

⚠ WARNING

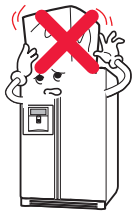
Do not alter the power cord. Replace it only with an exact factory replacement part.

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.

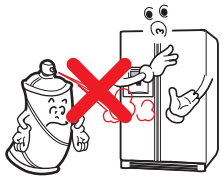


Do not hang or swing from the refrigerator doors.

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

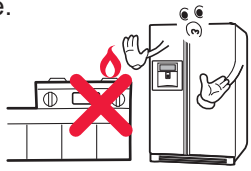
Do not use flammables near a refrigerator.

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 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.

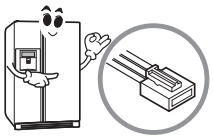
They may burst, leaving glass fragments in the food and possibly causing injury.

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.

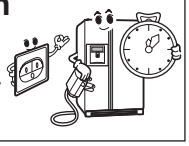
Replacement parts should look and fit exactly like the original parts and have the same electric rating.

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.



Do not put your hands, fingers, tools, or other objects into the icemaker, crusher, or discharge outlet. Do not check the operation of the ice dispenser or crusher in this manner.

You may damage your product, fingers, or tools.

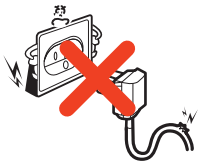
Safety Warning and Cautions

⚠ WARNING

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

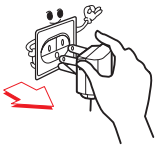
Fire may occur due to electric shock or short-circuit.

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.

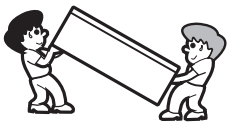
If the refrigerator is not installed at a firm, level location, the doors and icemaker may not operate properly.

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

Deterioration of insulation may cause electrical leakage.

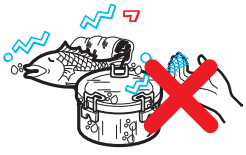
To carry the refrigerator, use the handles at the top of the back, and beneath the edge of the front.

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.

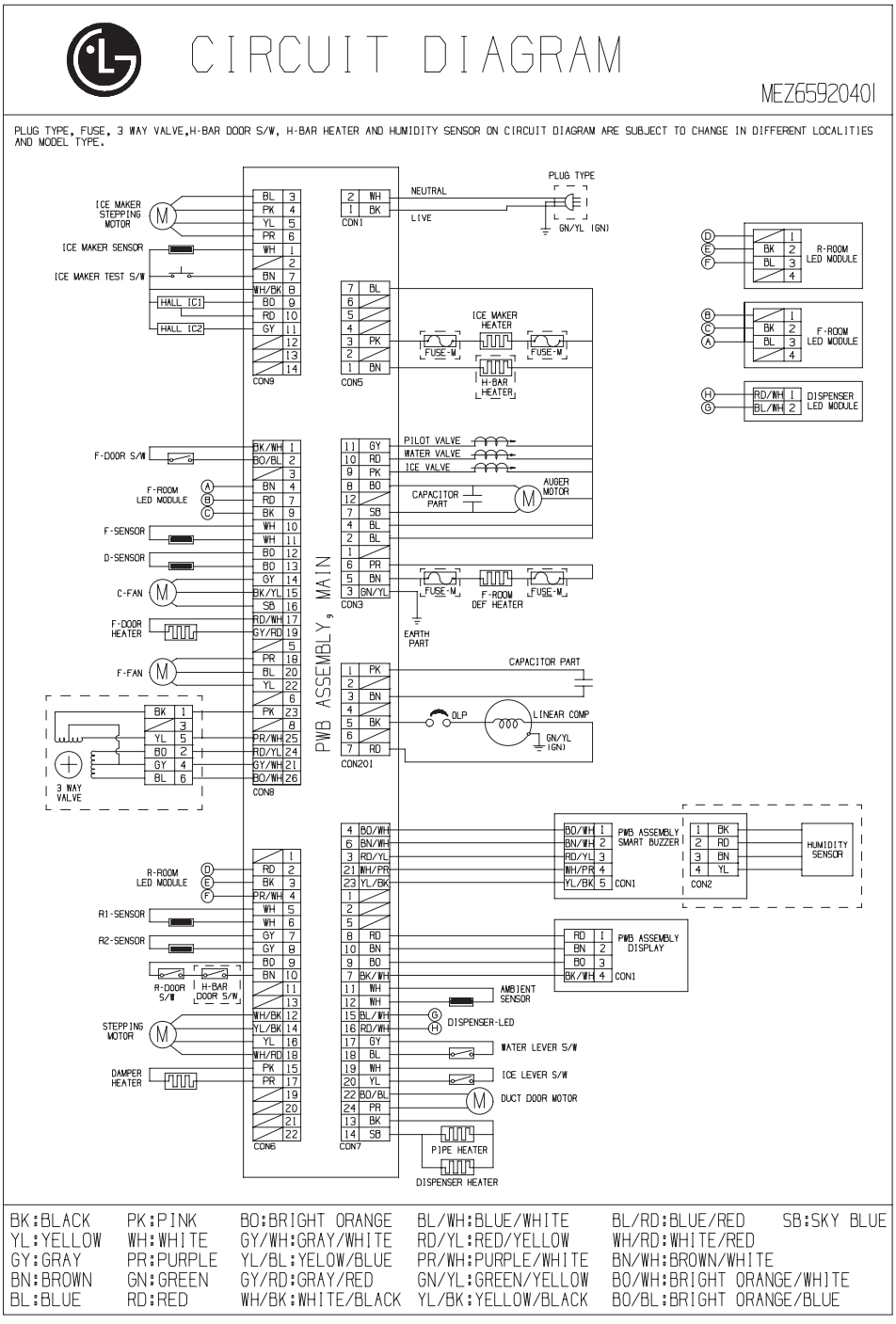
Watch out for sharp edges.

Do not put live animals in the refrigerator.

Product Standards

Model			LSXS26466*	LSXS26386*	LSXS26366*	LSXS26326*
Effective inner capacity	Total inner capacity(L)		738.66L (26.09 Cu.ft)			742.49L (26.22 Cu.ft)
	F-Room		260.59L (9.20 Cu.ft)			260.59L (9.20 Cu.ft)
	R-Room		478.07L (16.89 Cu.ft)			481.90L (17.02 Cu.ft)
Outer dimension (W X D X H)			35 7/8" x 35 7/8" x 70 3/8"			
Product weight (lb)			298			
Rated consumption power of motor			105 ± 15%(W)			
Heater	F-Room		260 ± 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			
	EvaPoration		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			
	EvaPoration		Pin tube type			
	Conderser		Forced convection method			
	F-Room oil		Freol Alpha5 oil(175cc)			
	Type of refrigerant		R134a(165g)		R134a(175g)	
	Capillary tube		Φ 0.7/0.9		Φ 0.75	
	Dryer (drying tube)		MOLECULAR SIEVE XH-9			
Electrical parts srandard		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℃			
		Temp.fuse (rated/ operation temperature)	250V / 72℃			
		Heater Sheath	AC 115V / 260W			
	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	AC 450V / 20 ㎌			
		I/maker geared motor Running	AC 250V / 14 ㎌			
	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		MRA12325			
	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			

Circuit Diagram

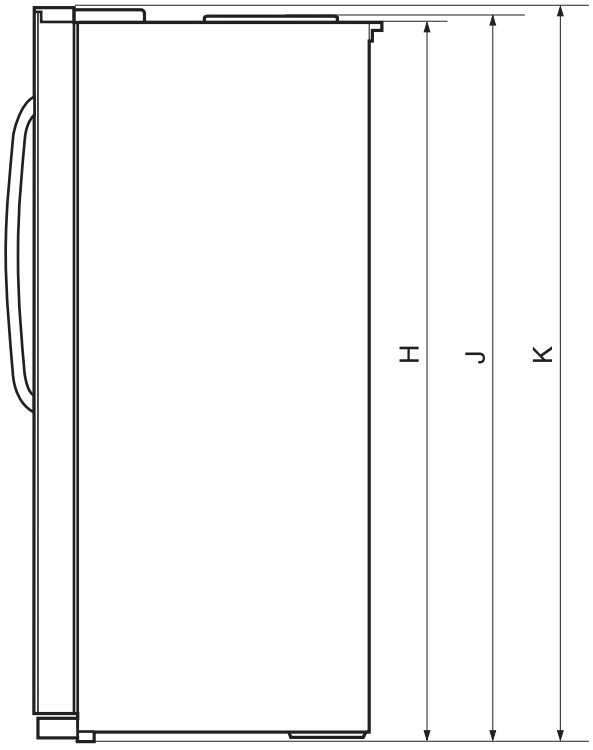


Specifications

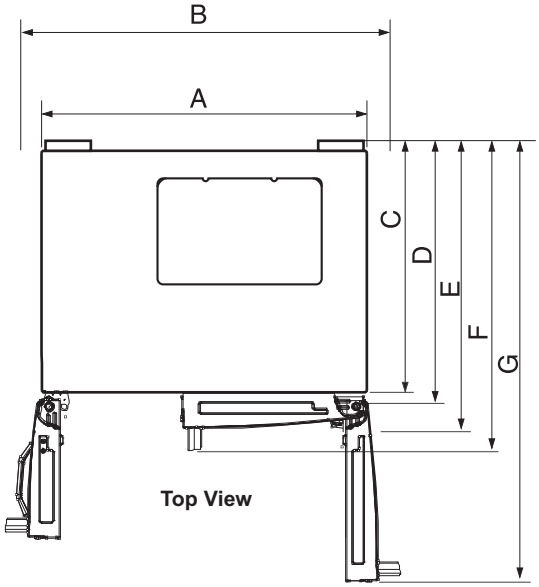
1. Specifications

Unit : inch (mm)

Item	Model	LSXS26466*/ LSXS26386* LSXS26366* / LSXS26326*
Width	Width (A)	35.9 (912)
	When opening door by 90° (including handle) (B)	39.6 (1005)
Depth	Case (including back handle) (C)	28.7（730）
	After disassembling door (including hinge, L) (D)	31.5（800）
	Including door (not including handle) (E)	33.4（848）
	Including handle (F)	35.9（912）
	When opening door by 90° (G)	50.6（1285）
Height	Cabinet (H)	68 9 1750
	Including cover PWB (J)	69.3（1760）
	Including door (K)	70.3 (1785)
Minimum air circulation space	Top part	11.8 (300)
	Side	0.8 (20)
	Rear part	2.0 (50)



Front View

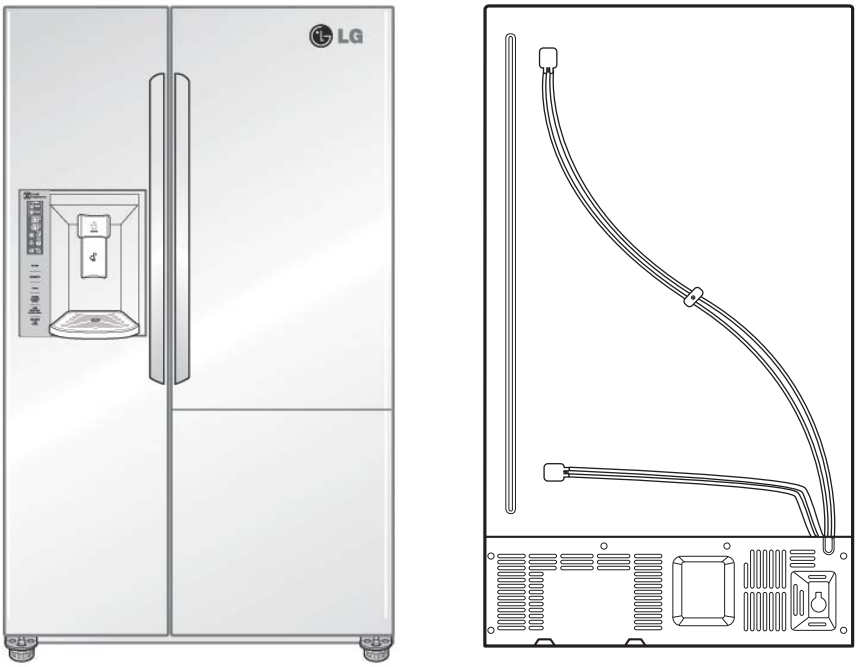


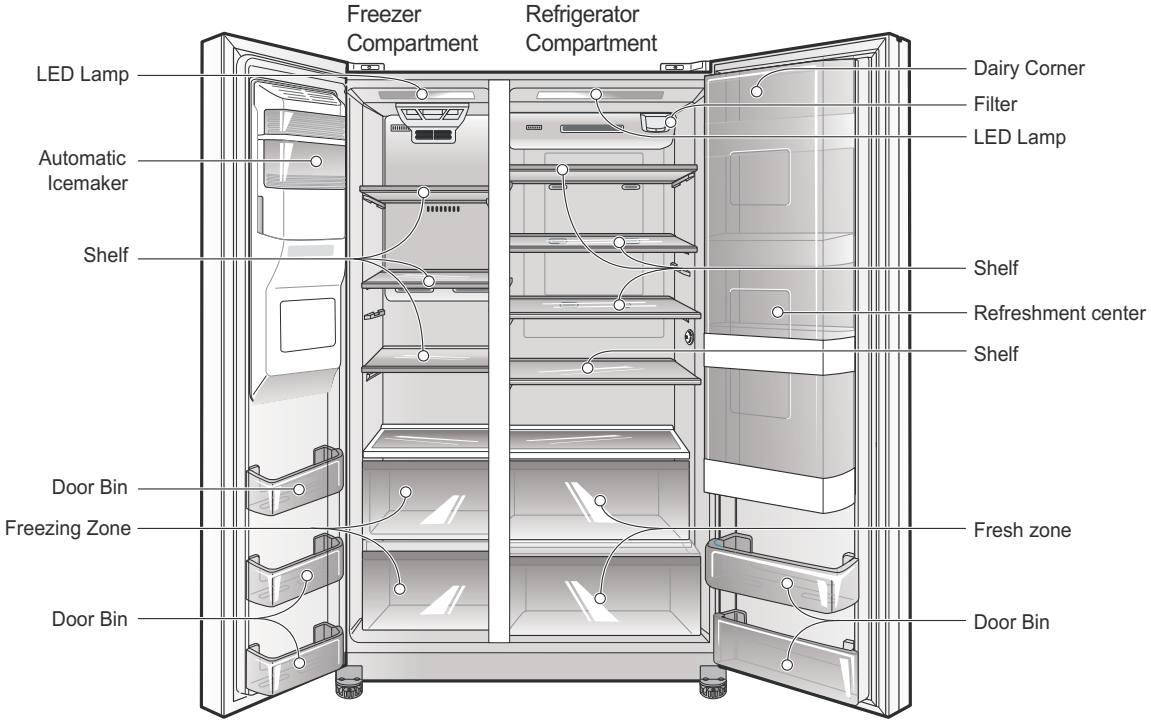
Top View

Appearance Size of Refrigerator and Name of Every Part

2. Main Name

MODEL : LSXS26466∗/ LSXS26386∗/ LSXS26366∗

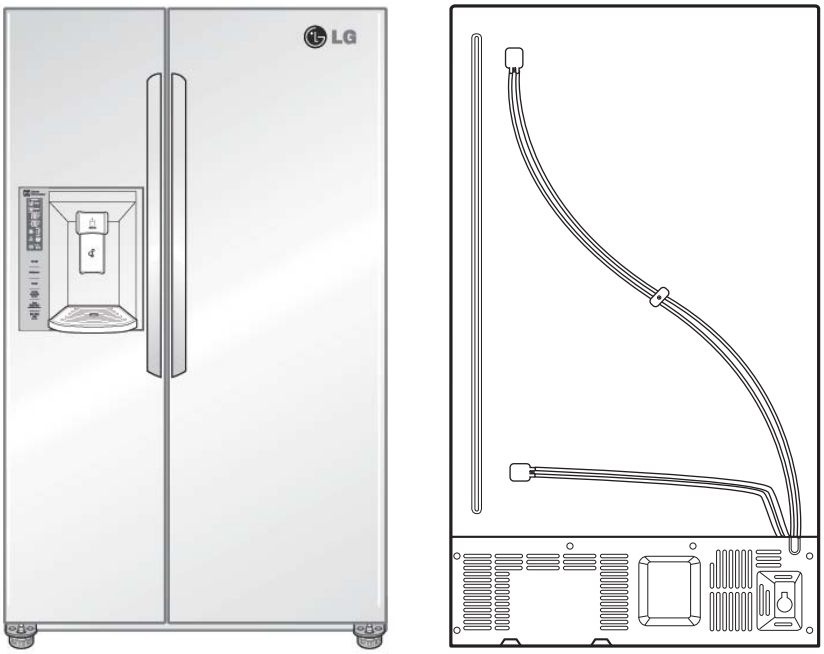


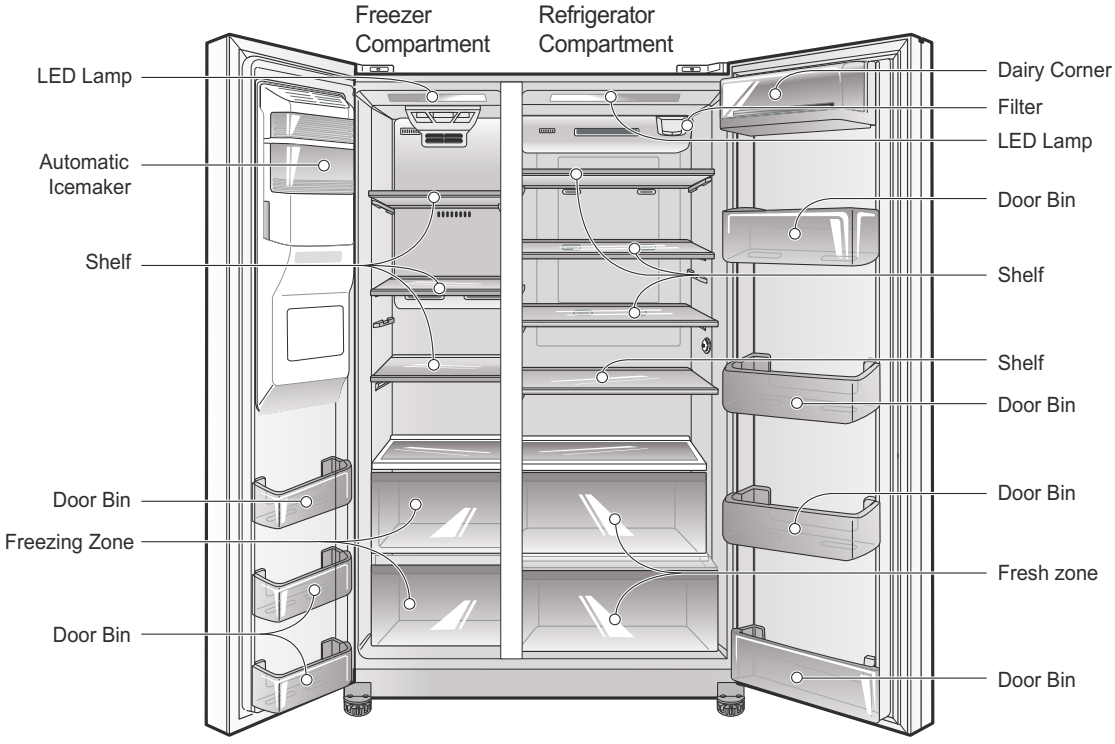


Appearance Size of Refrigerator and Name of Every Part

2. Main Name

MODEL : LSXS26326*

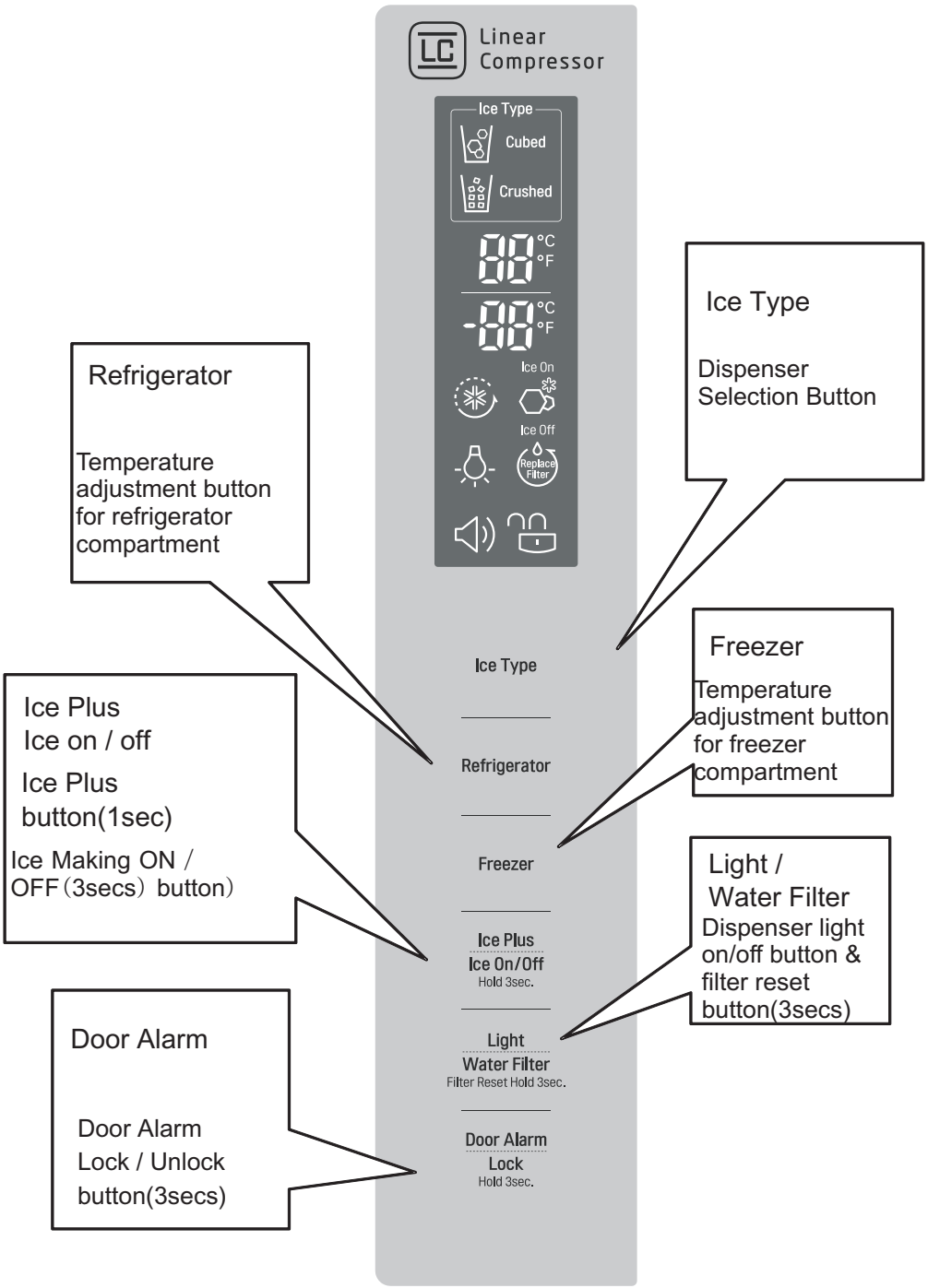




Micom Function

1. Operating Panel

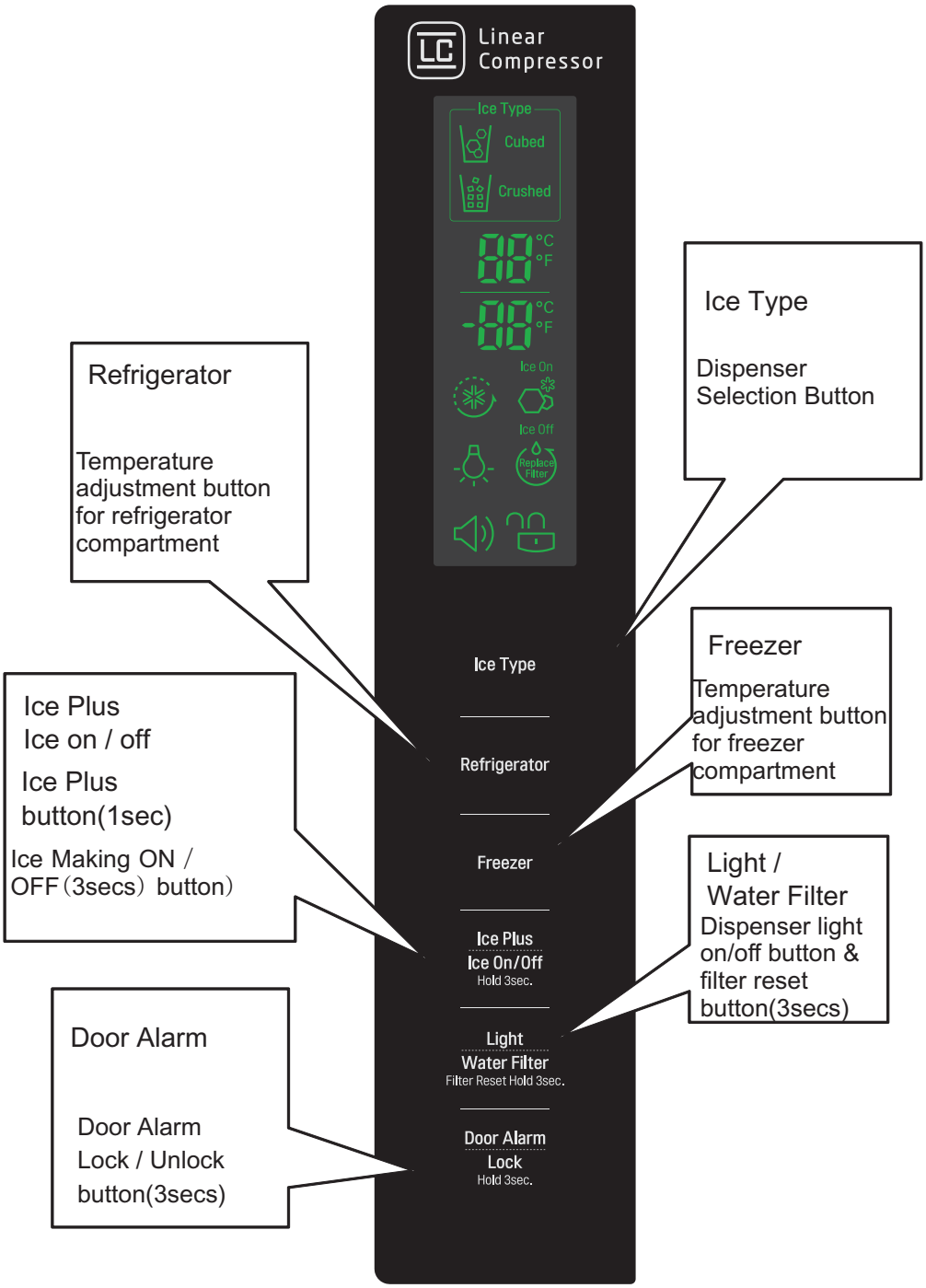
MODEL : LSXS26466*



Micom Function

1. Operating Panel

MODEL : LSXS26386* LSXS26366* / LSXS26326*



Micom Function

2. Function description

2-1. Funnction of Temperature Selection

Notch	Temp	Power Initiallly On	1st press	2nd press	3rd press	4th press	5th press	6th press	7th press	8th press	9th press	10th press	11th press	12th press	13th press
Freezer	°F	0	-1	-2	-3	-4	-6	8	6	5	4	3	2	1	0
Refrigeration	°F	37	36	35	34	33	46	45	44	43	42	41	40	39	38

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, press and hold ICE ON/OFF button until the indicator lights on. If you want to have icemaker makes ices again, press and hold ICE ON/OFF button until the indicator lights off.

While ICE OFF indicator is on, Icemaker stops making ice. But you can 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

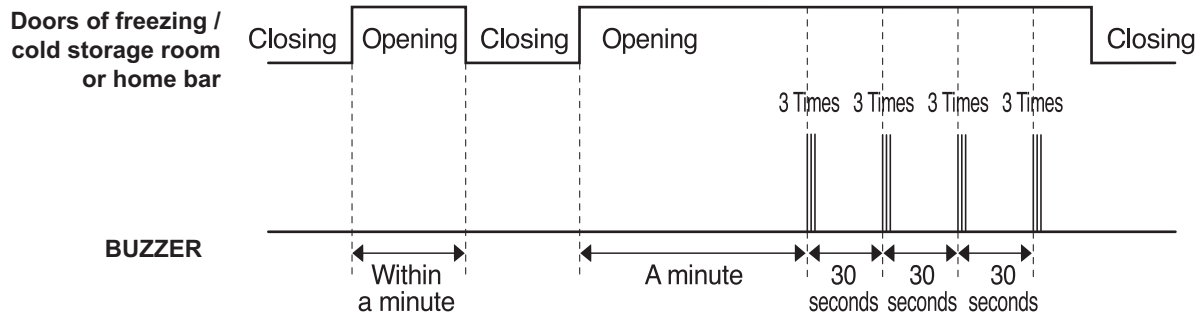
1. To increase cooling speed and load response speed, MICOM variably controls freezing room fan motor at the high speed of RPM and standard RPM.
2. MICOM only operates in the input of initial power or special freezing operation or load response operation for the high speed of RPM and operates in the 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.

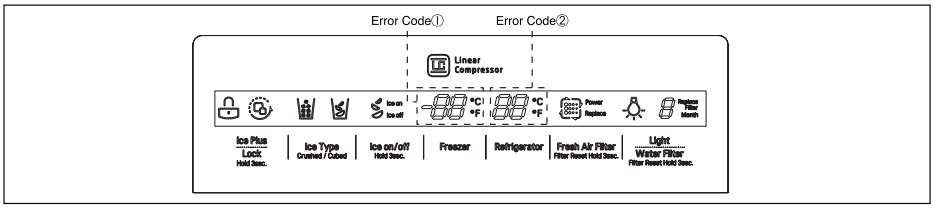
Micom Function

2-10. Function of Trouble Diagnosis(88-LED)

1. Failure diagnosis function is function to facilitate service when nonconforming matters affecting performance of product during use of product.
2. In occurrence of failure, pressing the function adjustment button does not perform function and only alarm sound (“Ding~”) rings.
3. If nonconforming matters occurred are released during display of failure code, MICOM returns to the original state (Reset).
4. Failure code is displayed on the display part of setting temperature for the freezing room and the display part of setting temperature for the cold storage room of LED, which are placed at the display part of a refrigerator. All the LED graphics other than a failure code are turned off

MICOM FAILURE DIAGNOSIS TABLE

CAUTION
1) DEFECT FAILURE CODE IS INDICATED ON THE DISPLAY PART OF SETUP TEMPERATURE FOR THE COLD STORAGE ROOM AND OF SETUP TEMPERATURE FOR THE FREEZING ROOM, AND THE OTHER DISPLAY PART IS TURNED OFF.
2) MAKE A PROPER OPERATION THROUGH REAPPLICATION AFTER ALWAYS TURNING OFF POWER WHEN DIAGNOSING FAILURE AND FINISHING TEST MODE.



(1) FAILURE DIAGNOSIS FUNCTION

○ : PROPER OPERATION

NO	ITEM	FAILURE CODE INDICATION PART		CONTENTS OF FAILURE	PRODUCT OPERATION STAUS IN FAILURE					
		FREEZER ROOM NOTCH TEMPERATURE DISPLAY	REFRIGERATOR ROOM NOTCH TEMPERATURE DISPLAY		COMPRESSOR	FREEZER FAN MOTOR	REFRIGERATOR FAN MOTOR	CONDENSER FAN MOTOR	FREEZER DEFROST HEATER	REFRIGERATOR DEFROST HEATER
1	ABNORMAL FREEZER SENSOR	FS	E	FREEZER SENSOR SHORT & OPEN CIRCUIT	ON FOR 15 MINUTES/ OFF FOR 15 MINUTES	○	○	○	○	○
2	ABNORMAL REFRIGERATOR SENSOR(R1) (UPPER PART IN THE REFRIGERATOR COMPARTMENT)	rS	E	REFRIGERATOR SENSOR(R1) SHORT&OPEN CIRCUIT	○	○	○	○	○	○
3	ABNORMAL REFRIGERATOR SENSOR(R2) (UPPER PART IN THE REFRIGERATOR COMPARTMENT)	r2	E	REFRIGERATOR SENSOR(R2) SHORT&OPEN CIRCUIT	○	○	○	○	○	○
4	ABNORMAL FREEZER DEFROST SENSOR	dS	F	FREEZER DEFROST SENSOR SHORT&OPEN CIRCUIT	○	○	○	○	○	○
5	FAILED FREEZER DEFROSTING	dH	F	DEFROST HEATER ,TEMPERATURE FUSE SHORT CIRCUIT, UNPLUGGED CONNECTOR (INDICATED 4 HOUR LATER AFTER TROUBLE)	○	○	○	○	○	NO DETROST
6	ABNORMAL FREEZER FAN MOTOR	FF	E	MOTOR DEFECT,HOKED OF LEAD WIRE TO FAN CONTACT OF STRUCTURE WITH FAN, SHORT OR OPEN OF LEAD WIRE (THERE NO SIGNAL OF BLDC FAN MOTOR MORE THAN 65 SECONDS IN OPERATION OF FAN MOTOR	○	OFF(RE-INSPECTS AFTER 30 MINUTES)	○	○	○	○
7	ABNORMAL CONDENSOR FAN MOTOR	CF	E		○	○	○	OFF(RE-INSPECTS AFTER 30 MINUTES)	○	○
8	ABNORMAL COMMUNICATION	CO	E	SHORT OR OPEN OF LEAD WIRE CONNECTING BETWEEN MAIN PCB AND DISPLAY PCB, TRANSMISSION TR AND RECEIVING PART.	○	○	○	○	○	○
9	ABNORMAL AMBIENT SENSOR	rt	E	AMBIENT SENSOR SHORT&OPEN CIRCUIT	○	○	○	○	○	○
10	ABNORMAL ICE-MAKER SENSOR	IS	E	ICE-MAKER SENSOR SHORT&OPEN CIRCUIT	○	○	○	○	○	○
11	ABNORMAL ICE-MAKER UNIT	It	E	FAULTY ICE-MAKER UNIT MOTOR OR HALLIC, LEAD WIRE SHORT&OPEN CIRCUIT, FAULTY MOTOR DRIVING CIRCUIT	○	○	○	○	○	○

NOTE1) "rt E","r2 E", "IS E", "It E" Appears on the display when Express Frz. key and Freezer temp. key pressed at the same time for 1sec.
NOTE2) Except 4 Errors displayed above, all the errors are displayed on the panel after 3 hours from the initial error.
NOTE3) All the errors can be displayed within the 3-hour period upon pressing the Express Frz. key and the Freezer temp. key at the same time for 1 second or longer.

(2)TEST FUNCTION

TEST KEY EXISTS ON PWB ASSY, MAIN BOARD.

MODE	OPERATION	CONTENTS	REMARKS
TEST1	PRESS 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)	RETURN 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	COMPERSSOR WILL OPERATE AFTER DELAY FOR 3 MINUTES

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.

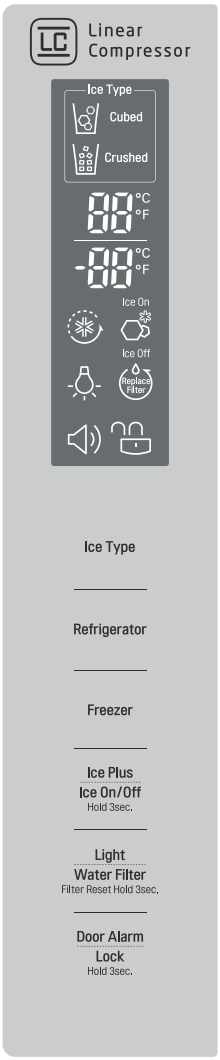
MODE	OPERATION	CONTENTS	REMARKS
TEST1	PRESS THEST BUTTON ONCE <STRONG COLD MODE>	1. CONTINUOUS OPERATION OF COMPRESSOR 2. CONTINUOUS OPERATION OF FREEZING BLDC MOTOR (HIGH-SPEED RPM) AND COOLING BLDC MOTOR 3. DEFROST HEATER TURNS OFF 4. STEPPING MOTOR DAMPER IS COMPLETELY OPENED (OPEN OF BAFFLE) 5. ALL 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	RETRUING TO INITIAL STATUS	COMPERSSOR 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.

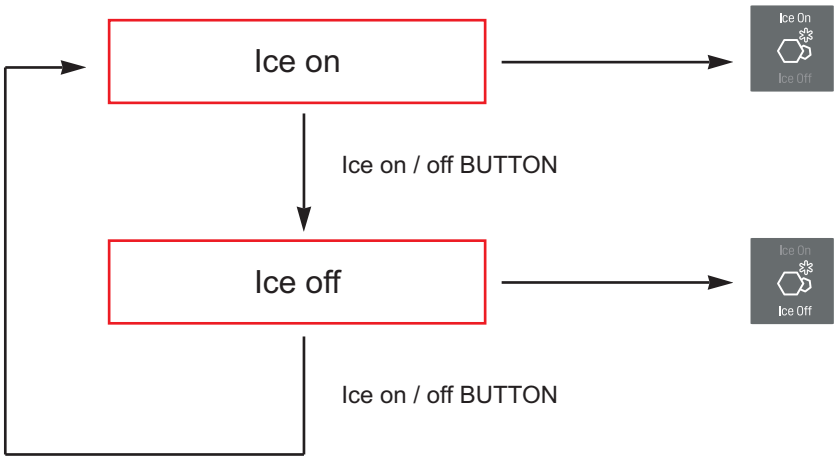
Micom Function

2-13 Ice on / off function



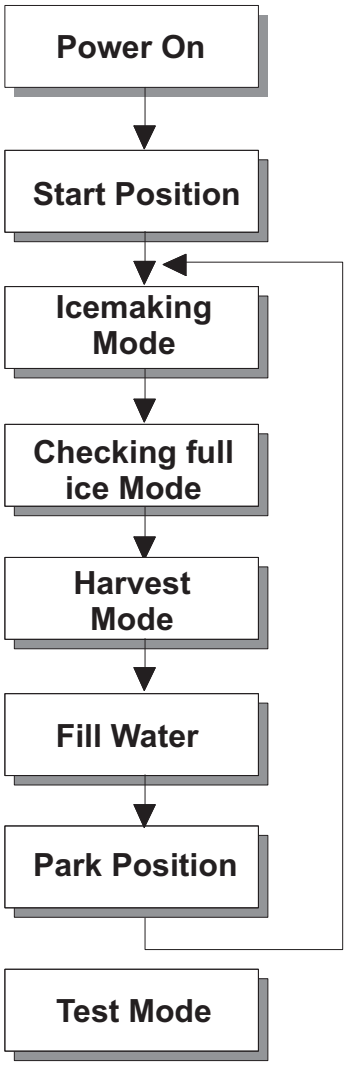
Press Ice on/off Button to select Ice Making on or off.

Ice on Mode in factory default setting.



Icemaker and dispenser working principles and repair

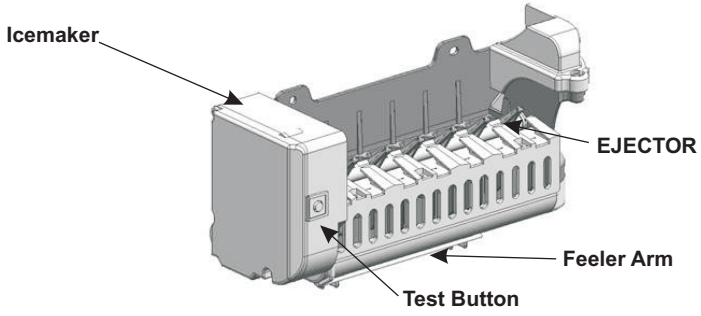
1. OPERATION PRINCIPLE
1-1. Operation Principle of Icemaker



- Adjusts EJECTOR to **Start Position with power on.**
- Waits until water becomes cold after starting the icemaking operation.
- Check if the ice bin is full.
- Runs MOTOR to drop ice from the tray into the ICE BIN.
- Performs **Ice Making Mode** after supplying water by operating the SOLENOID in ICE VALVE.
- With the detect lever, checks if the ICE BIN is full.
- To operate LINE and SERVICE, press and hold the Test Button
for 3 seconds. The icemaker will run through 3 stages:
Harvest → Fill → Icemaking.

- ICE-MAKING STATUS INDICATOR Shows Ice-making status. While the indicator lights on, Icemaker stops making ice.
- Press and hold the ICE ON/OFF button on display for 3sec. to stop or restart making ice.

While ICE OFF indicator is on, Icemaker stops making ice. But you can dispense the ices until the ices run out from the ice storage.



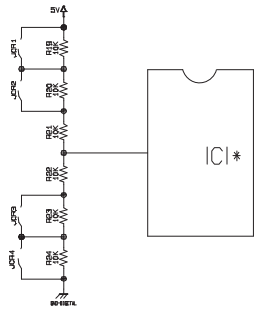
Icemaker and dispenser working principles and repair

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

1. Refrigerator undercool/overcool compensation circuit



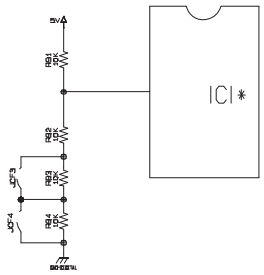
	Temperature compensation from cut	
JCR1	+1	+2
JCR2	+1	
JCR3	-1	-2
JCR4	-1	

Undercool compensation		Overcool compensation		Refrigerator temperature compensation	Remarks
JCR3	JCR4	JCR1	JCR2		
○ ○	○ ○	○ ○	○ ○	0 (Factory default)	
CUT	○ ○	○ ○	○ ○	-1	
○ ○	CUT	○ ○	○ ○	-1	
○ ○	○ ○	CUT	○ ○	+1	
○ ○	○ ○	○ ○	CUT	+1	
CUT	CUT	○ ○	○ ○	-2	
○ ○	○ ○	CUT	CUT	+2	
CUT	○ ○	CUT	○ ○	0	
CUT	○ ○	○ ○	CUT	0	
○ ○	CUT	CUT	○ ○	0	
○ ○	CUT	○ ○	CUT	0	
CUT	CUT	CUT	○ ○	-1	
○ ○	CUT	CUT	CUT	+1	
CUT	CUT	CUT	CUT	0	

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

Micom Circuit description

2. Freezer undercool compensation circuit



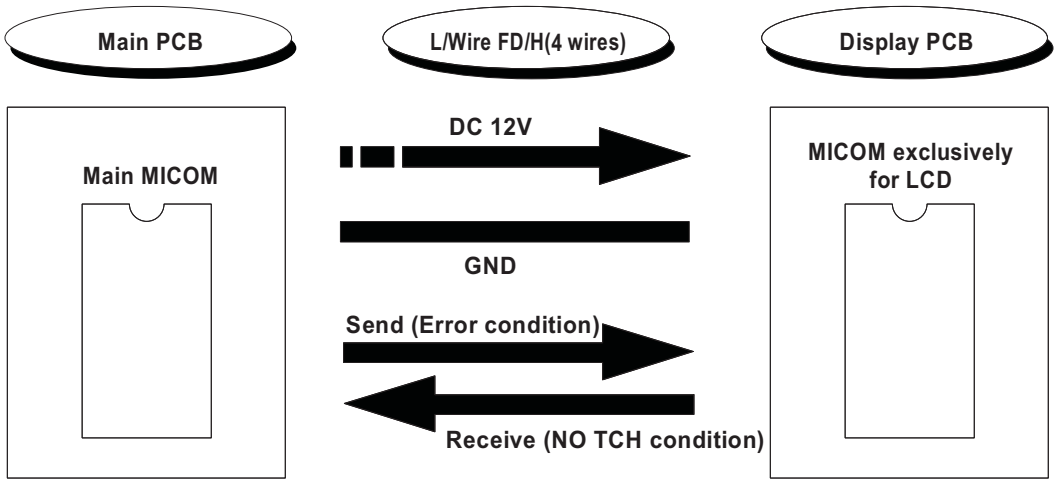
	Temperature compensation from cut	
JCF3	-1	-2
JCF4	-1	

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

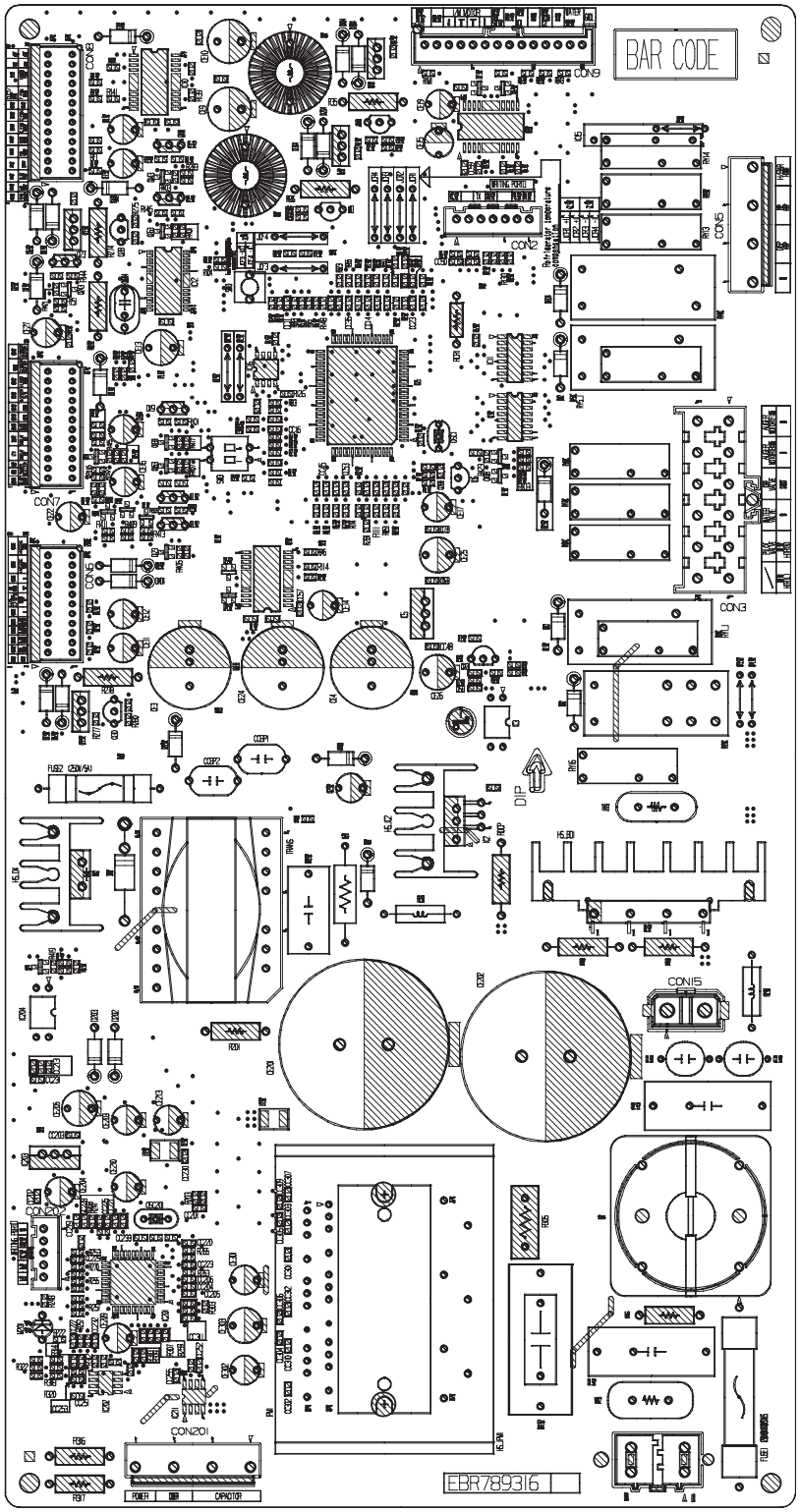


Micom Circuit description

3. Table of sensor resistance characteristics

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

Micom Circuit description



Compressor

12-1 INFORMATION OF LINEAR COMPRESSOR

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

Name Plate

Size : 90mm X 20mm

Compressor Label

1. Compressor Model

F L B 0 7 5 L A N A

- Series name: DLF/FA/FB
- Displacement: ex)90=9.0 /stroke
- Application Category
  - L : LBP with R134a
  - H : HBP with R134a
  - N : LBP with R600a
- Efficiency version
  - A : 1st generation
  - B : 2nd generation
- Rated Voltage & Frequency
  - M : 220V 50/60Hz
  - N : 115V 50/60Hz
- Operating Type
  - A : A-Inverter
  - E : E-Inverter

2. Refrigerant

3. Serial Number

00 00 9 2003 5 13 0012

- Buyer Code
- Model Code
- Line
- Year
- Month
  - 1 : January
  - ~
  - 9 : September
  - O : October
  - N : November
  - D : December
- Date
- Serial No.

4. Safety Approval

Ex)

• There are two types of controllers used in the linear compressor system.
  - The “A”-inverter system is used with the FLB075LANA compressor.

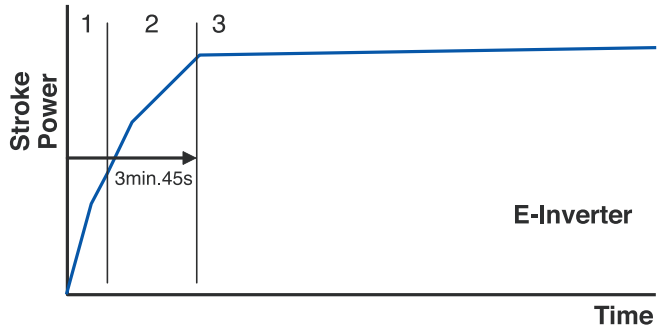
	Refrigerator		Comp Drive		Compressor
FLB075LANA E-Inverter System	Controls the algorithm according to various conditions.	→	**Inverter VVVF**	→	**Stroke Modulation**

**CVCF : Variable Voltage Variable Frequency

**CVCF : Constant Voltage Constant Frequency

Compressor

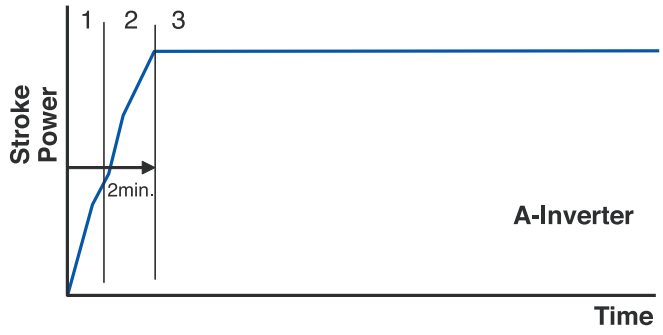
- To reduce noise level, the piston stroke is slowly increased to full power during start up.



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)

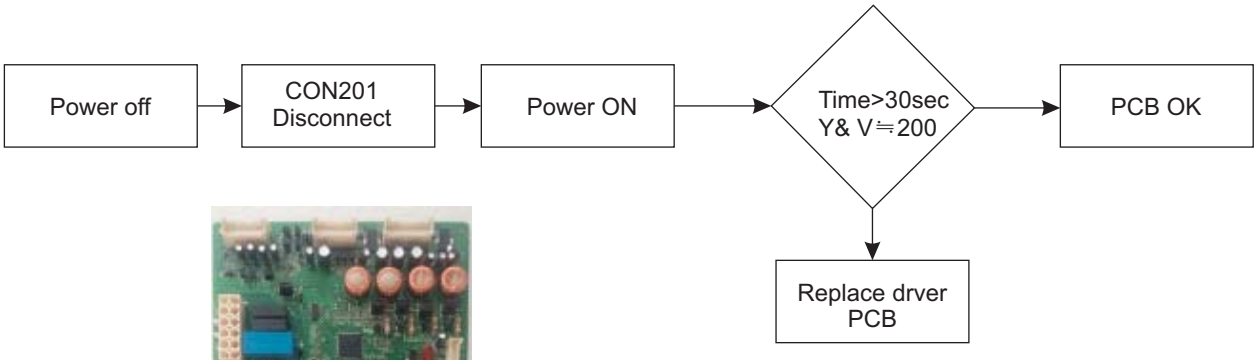
Step 3) VVCF interval - target voltage and frequency controlled by Control Board signals

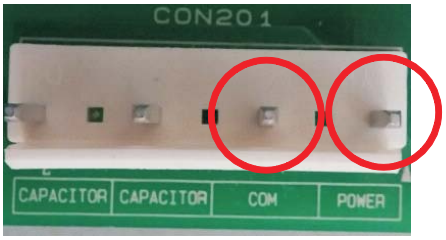
- There are 6 protection logics designed to protect the linear compressor system. When a failure is detected, the compressor will shut and will try to restart after a set period of time for each type of failure. The LED located on the inverter drive PCB will flash the appropriate code to indicate the 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	|Vm, Im|> 2.5V+20% @ COMP off	30s	1
Stroke	10	|Stroke|>17.5mm	60s	2
No Connect	15	|Stroke|<=9.4mm & While 4 seconds |AC Current|<0.05A	40s	3
Lock	25	|AC Current|>1.0A & |Stroke|<3.0mm	150s	5
Current	30	|Current|>3Ap	360s	6
IPM	35	uc_Fo_Trip!= 0	20S	7
Communication Error	-	Checksum error	0	8

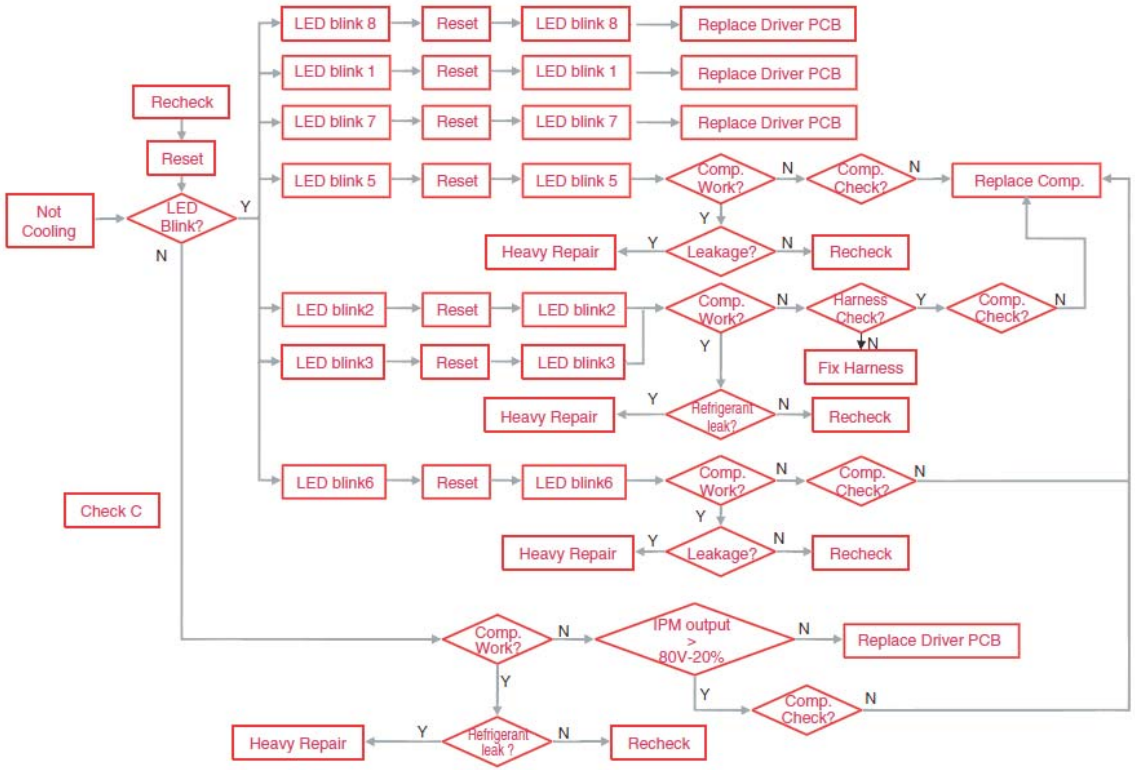
Compressor





	Ref.	Comp FLB075(A-Inverter)	Display & sound	Refer
TEST1	Forced Starting	TDC (Full Stroke)	Display ON, Buzz 1 time	

Troubleshooting



Compressor

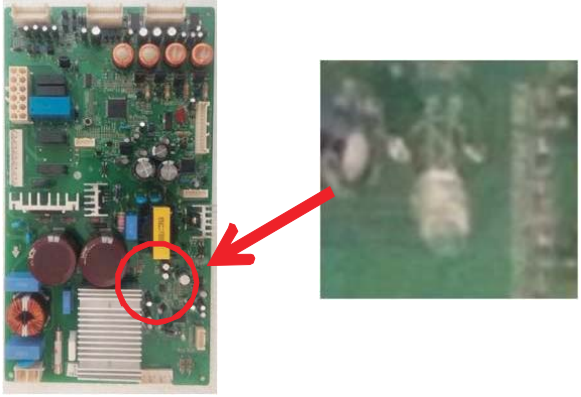
12-1 Check A

- Dear is PC board located in the PCB case.
  The control driver is PC board for the compressor.

- This step shows the source voltage of the driver PC board.

Step 1. Open PCB Cover

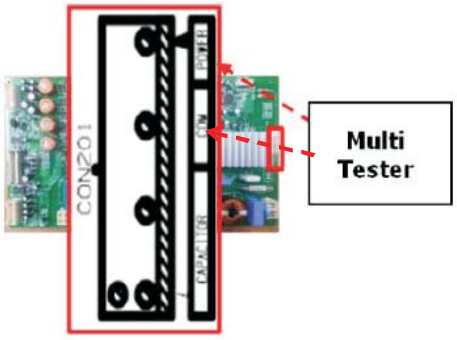
Step 2. Check Driver PCB



* Driver PCB located in machine room.

IPM Output check

- Measure the voltage between the POWER and COMM pins of the connector as shown below.



Check to make sure compressor is receiving voltage from IPM

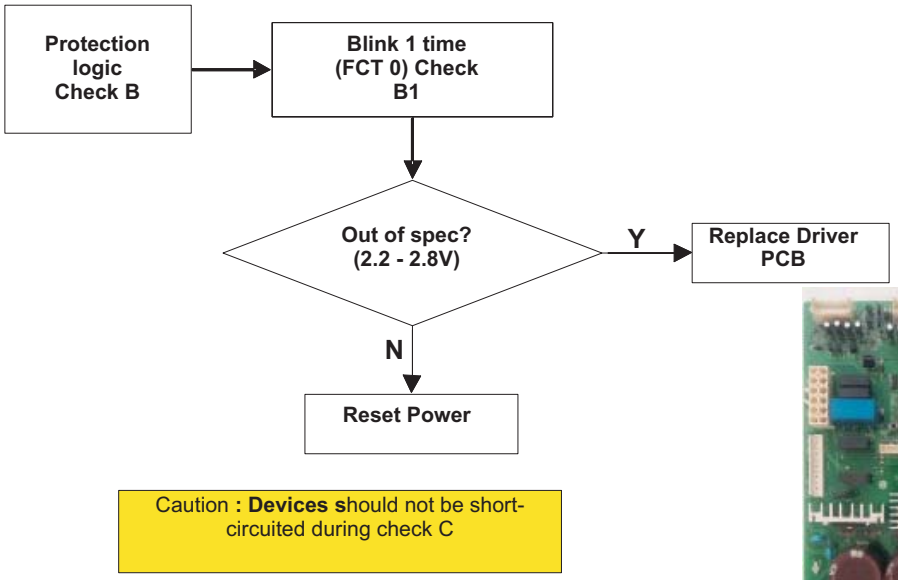
- In order to determine whether the compressor is operating normally, check the output voltage during the refrigeration cycle.
- After initial power-up, when the compressor begins to operate, wait 10 minutes before checking.
- The compressor is operating normally if the voltage is greater than 80V.

Compressor

12-1 Check B

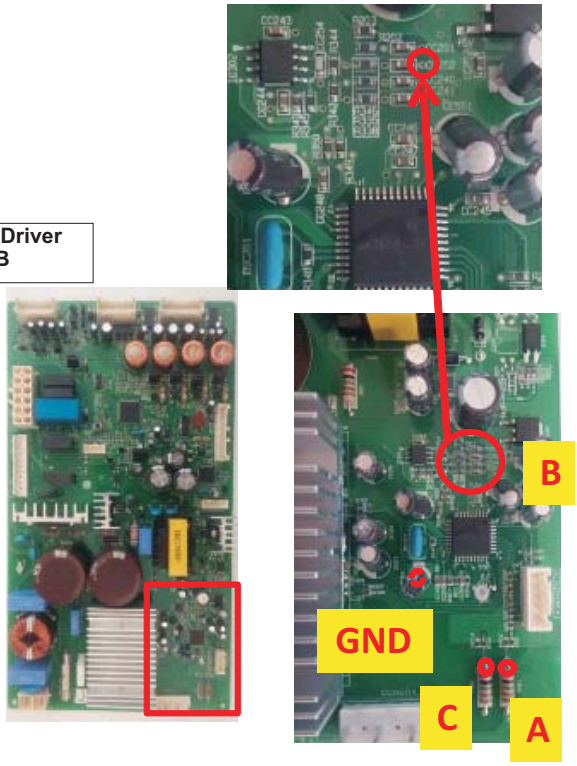
B1. LED blinks once, then repeats (FCT0 Fault: A-Inverter)

- Purpose: Detecting motor current and voltage error
- Check voltage at point A (Motor Voltage), point B (Motor Current) and Point C (Capacitor Voltage) when compressor is off.
- Spec: Points A, B, & C 2.5V 0.3V



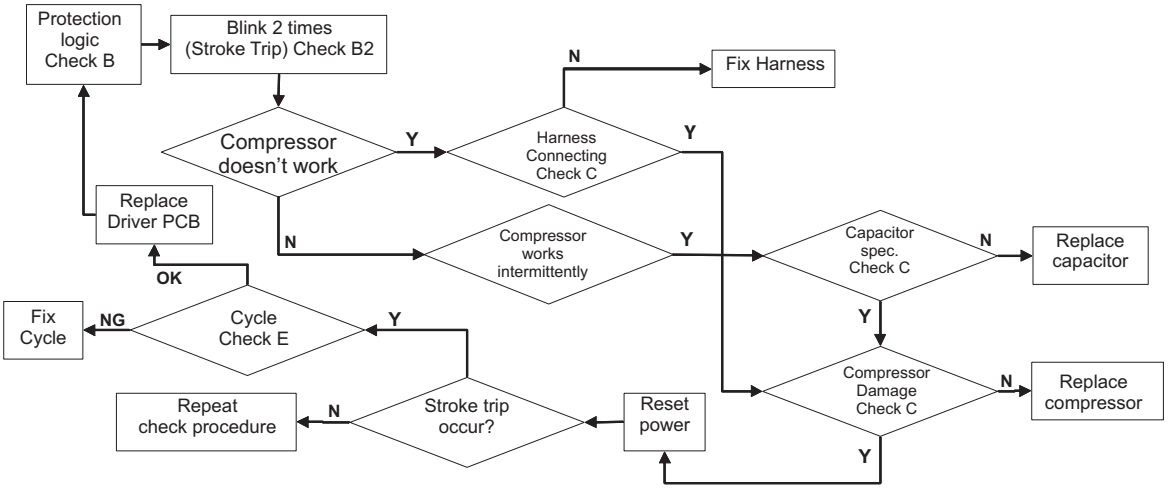
Caution : **Devices s**hould not be short-circuited during check C

Protection Logic



B2. LED blinks two times, then repeats (Stroke Trip)

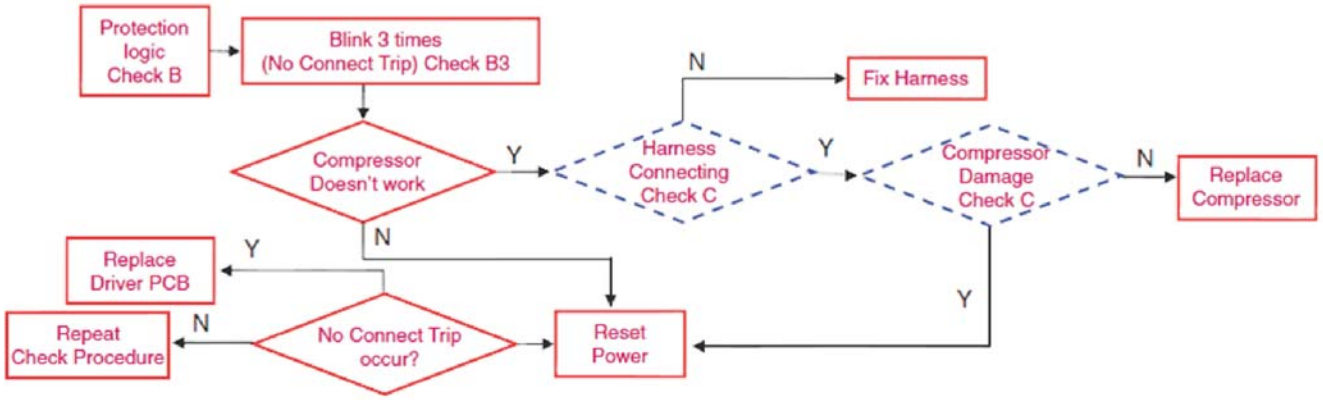
- Purpose: Prevent abnormally long piston strokes.
- Case 1. If compressor doesn't work and LED blinks - Cause: Possibly harness from compressor to PCB might be defective.
- Case 2. If compressor works intermittently and LED blinks - Cause: Condenser Fan or Freezer Fan is not running. Sealed system problem such as moisture restriction, restriction at capillary tube or refrigerant leak.
- Logic: Compressor is forced to off and then tries to restart after 1 minute.



Compressor

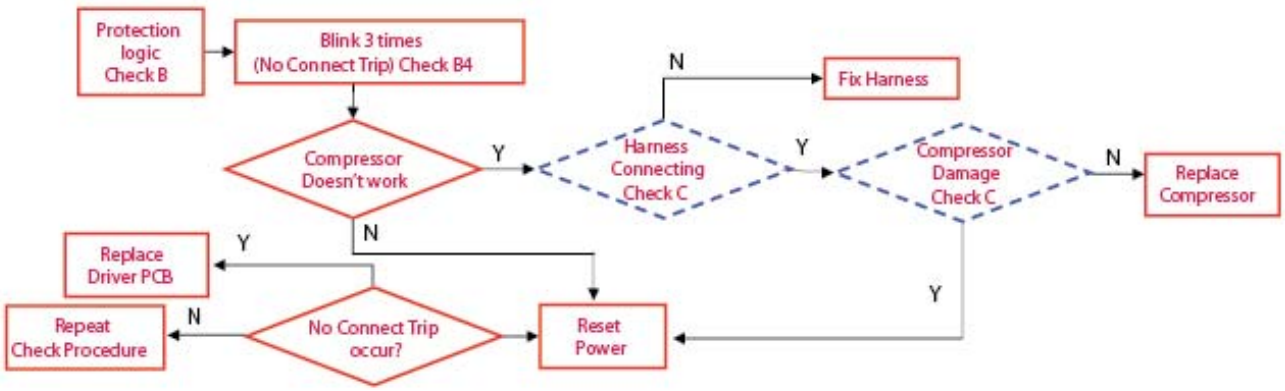
B3. LED blinks three times, then repeats (Stroke Trip) — Protection Logic

- Purpose : Prevent over voltage and current detecting connecting error.
- Cause : -.Connecting error of PCB and Comp, Capacitor harness -. Comp insulation damage.
- Logic : Compressor is forced off and tries to restart within 40 seconds.



B4. LED blinks three times, then repeats (Stroke Trip) — Protection Logic

- Purpose : Prevent over voltage and current detecting connecting error.
- Cause : -.Connecting error of PCB and Comp, Capacitor harness -. Comp insulation damage.
- Logic : Compressor is forced off and tries to restart within 40 seconds.



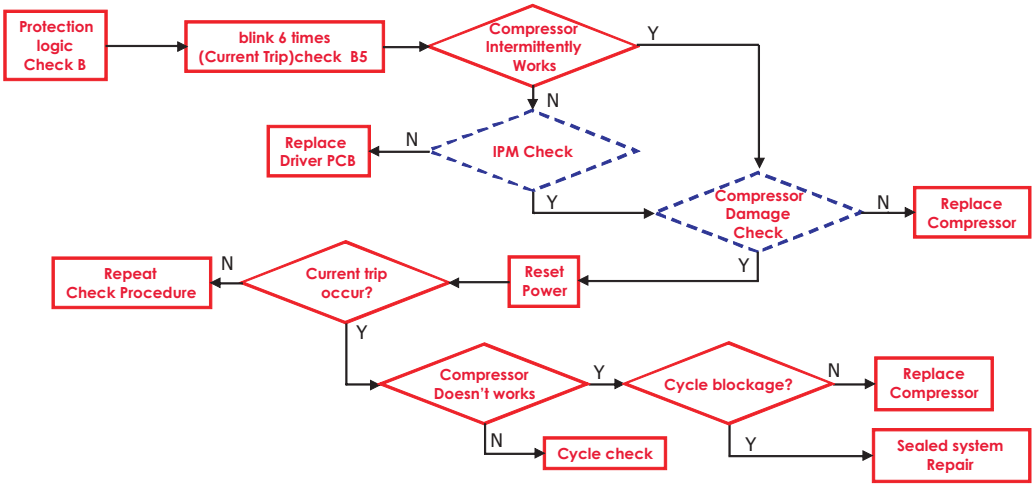
Compressor

B5. LED blinks five times, then repeats (Locked Piston: A & E Inverters)

Protection Logic

Blink Blink Blink Blink Blink OFF

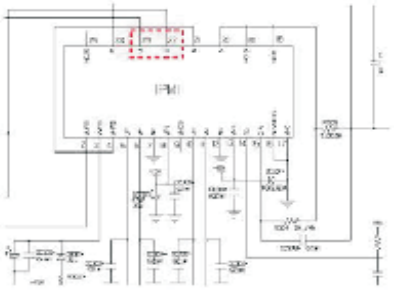
- Purpose: To detect locked piston
- Cause: Lack of oil to the cylinder, cylinder or piston damaged and or restricted discharge. A Locked Piston can also be caused by foreign materials inside the compressor.
- Logic: Compressor is forced off and tries to restart within 2.5 minutes.

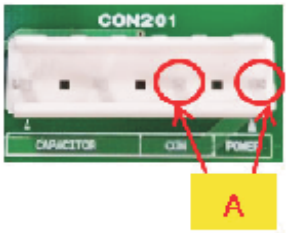


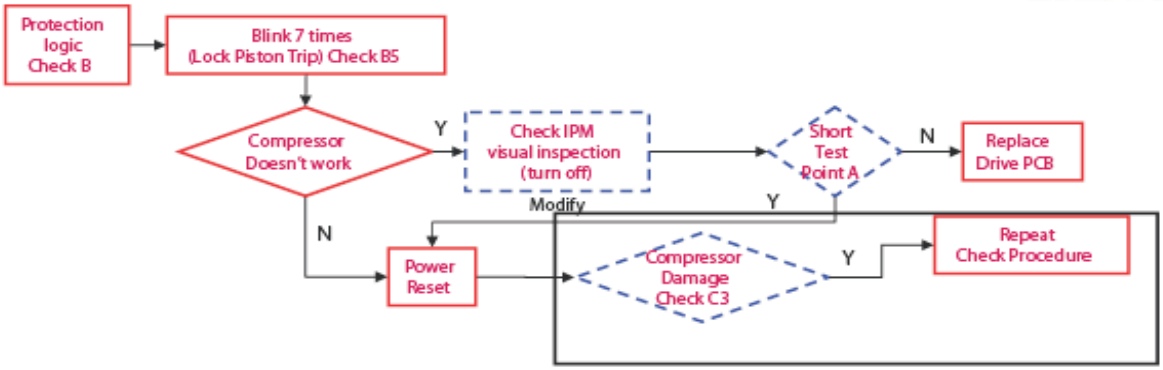
B6. LED blinks seven times, then repeats (IPM Fault: A & E Inverters)

Blink Blink Blink Blink Blink Blink Blink OFF

- Purpose: Prevent high current due to IPM Short
- Cause: Damaged IPM (Dead Short)
- Test for a dead short at Point A with a VOM.
- Logic: Compressor is forced off and tries to restart in 20 seconds.

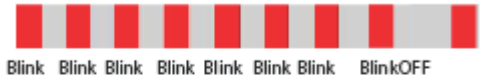






Compressor

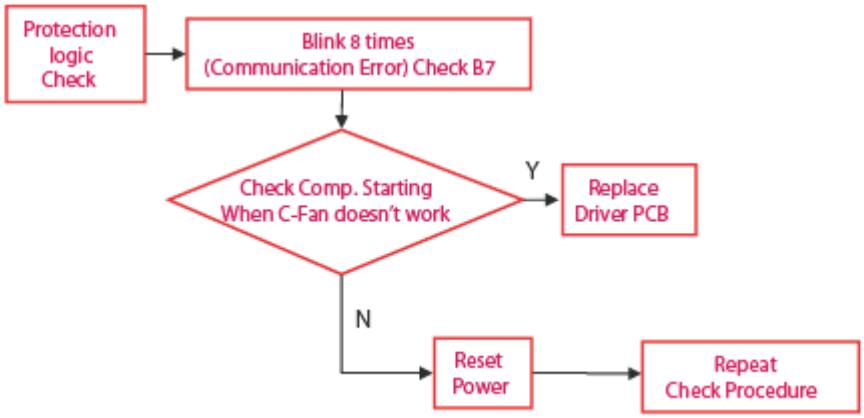
B7. LED Blinks eight times, then repeats (Communication Error)



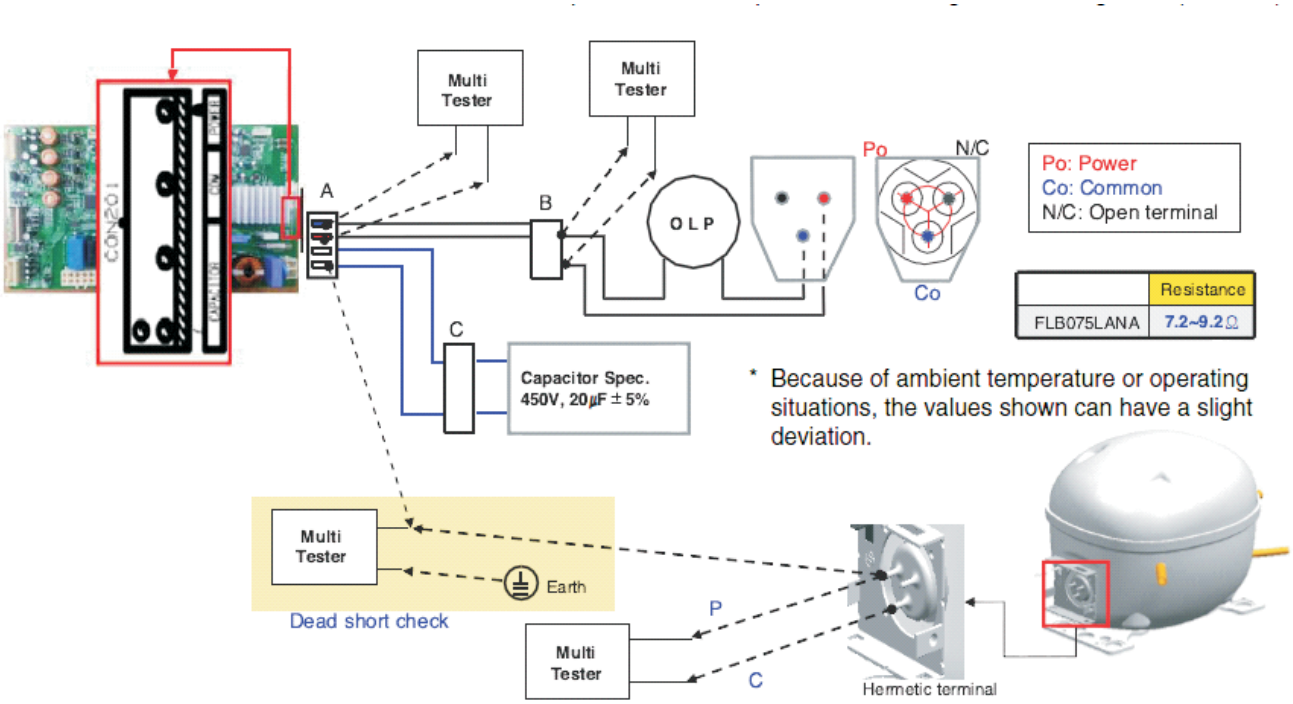
- Purpose: To detect Set control Micom and communication error
- Cause : Communication Error
- Logic : LED blink. (Compressor runs reference value before occuring communication Error)

1. Check Temp.&Sound Pressure of comp and D-pipe

2. Check whether or not C-Fan Works

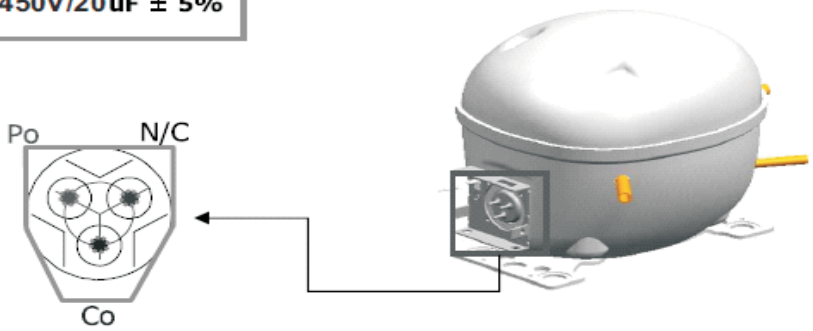


Compressor



FLB075LANA

Capacitor Spec.
450V/20uF ± 5%



Po : Power
Co : Common
N/C : No Connecting

Specification

7.2 ~ 9.2 Ω Between Po and Co

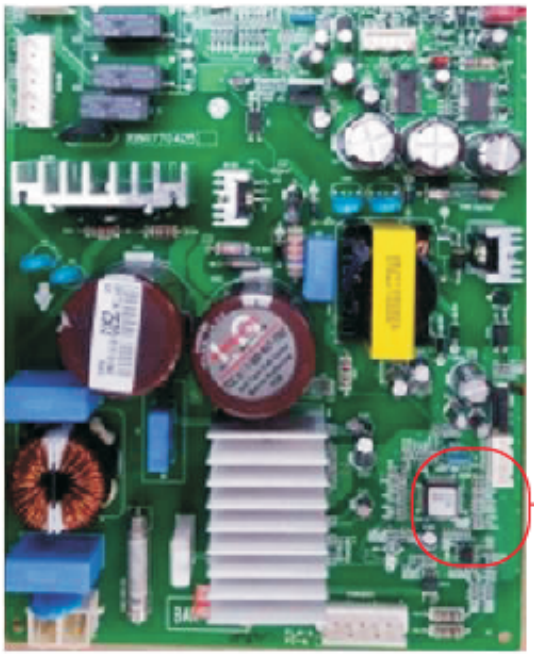
Compressor

Compressor Troubleshooting

⚠ WARNING HIGH VOLTAGE

Step 1) Open PCB cover

Step 2) Check for blinking frequency of LED and PCB



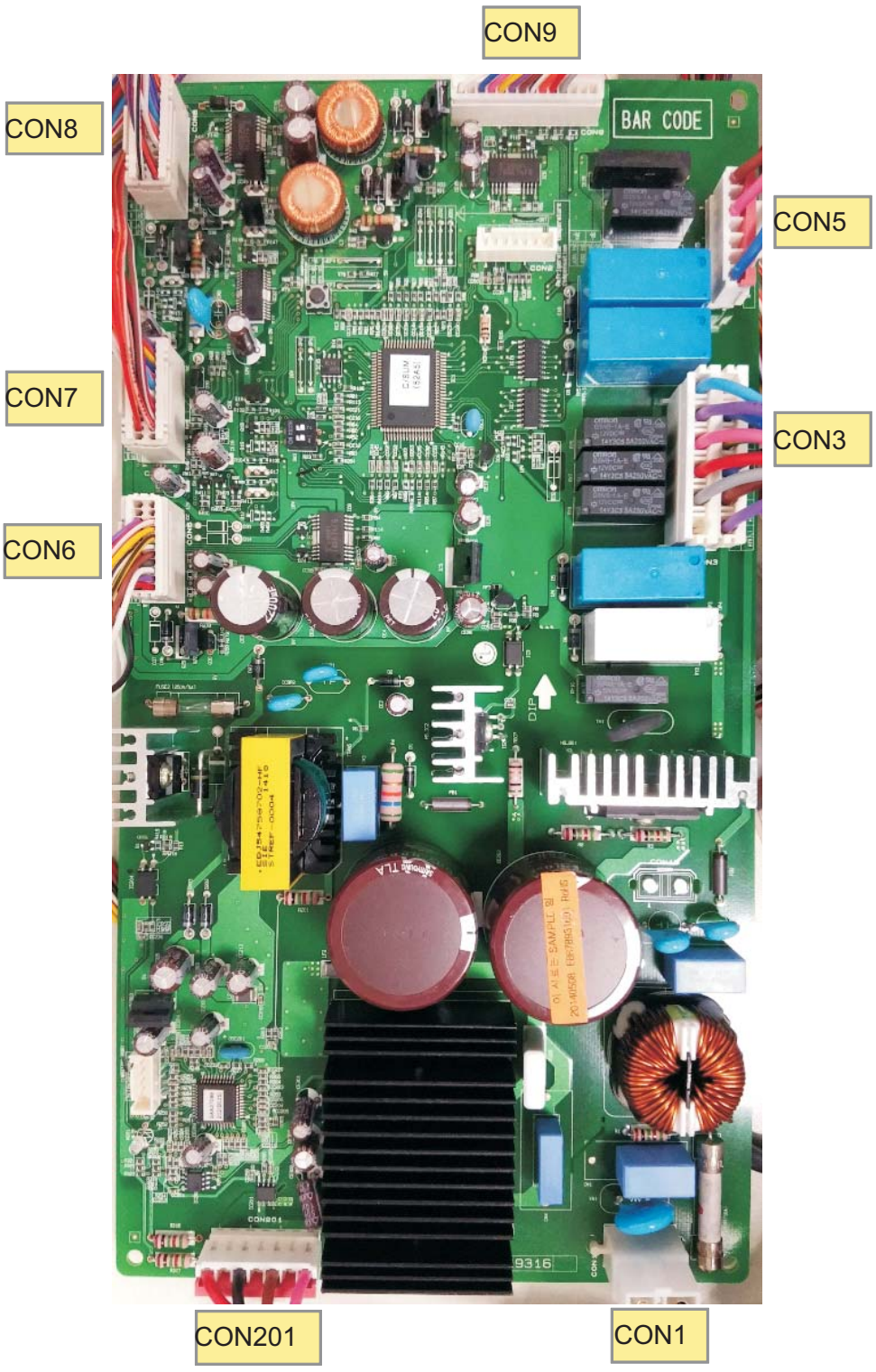
LED Lamp

When compressor is normal, it does not blink

: Refer to the next page to find out what actions to take according to how many times LED blink

Troubleshooting

Chapter 9 Troubleshooting
1. PCB Picture - Main PCB

P/No & MFG	EBR765311
Picture	

Troubleshooting

2. Troubleshooting With Error Display

1) Freezer Sensor Error(FS E)

<table>
<tr><th>No</th><th>Checking flow</th><th>Result & SVC Action</th></tr>
<tr><td>1</td><td>Check for a loose connection.</td><td></td></tr>
<tr><td>2</td><td>Check the <u>Pin10(1) to Pin11(2) of CON8.</u>

CON8  </td><td>
<table>
<tr><th colspan="3">ResultSVC Action</th></tr>
<tr><td>0 Ω</td><td>Short</td><td>Change the sensor</td></tr>
<tr><td>OFF</td><td>Open</td><td>Replace the refrigerator</td></tr>
<tr><td>Other</td><td>Normal</td><td>Check the Temp and resistance (Table-1)</td></tr>
</table>

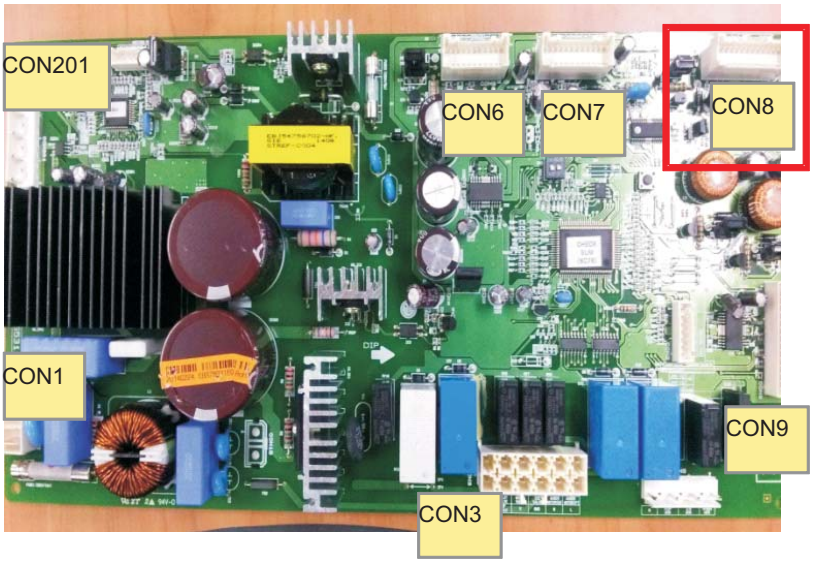
<Temperature table-1>
<table>
<tr><th>(1) To (2)</th><th>Result</th></tr>
<tr><td>-22°F / -30°C</td><td>40 kΩ</td></tr>
<tr><td>-13°F / -25°C</td><td>30 kΩ</td></tr>
<tr><td>-4°F / -20°C</td><td>23 kΩ</td></tr>
<tr><td>5°F / -15°C</td><td>17 kΩ</td></tr>
<tr><td>14°F / -10°C</td><td>13 kΩ</td></tr>
<tr><td>23°F / -5°C</td><td>10 kΩ</td></tr>
<tr><td>32°F / 0°C</td><td>8 kΩ</td></tr>
</table>

※ The sensor is determined by the temperature.
For example, 23kΩ indicates -20°C
</td></tr>
</table>

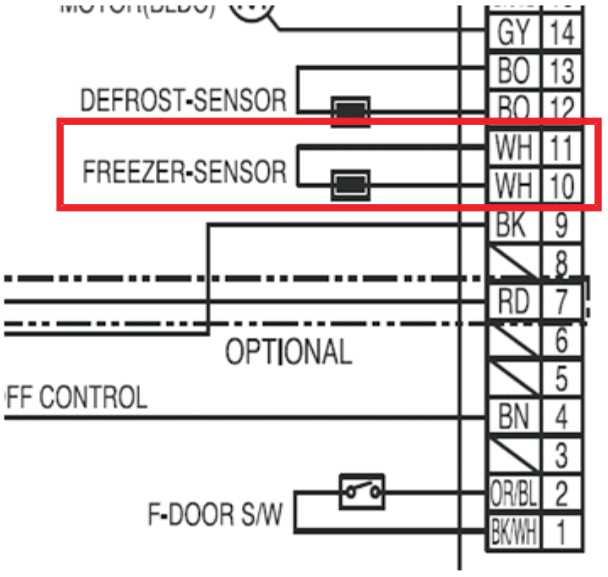
Troubleshooting

2-1. Freezer Sensor Error (FS E)

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



Check the Pin10(1) to Pin11(2) of CON8.



Result		SVC Action
0 Ω	Short	Change the sensor
OFF	Open	Replace the refrigerator
Other	Normal	Check the Temp and resistance (Table-1)

<Temperature table-1>

(1) To (2)	Result
-22°F / -30°C	40 kΩ
-13°F / -25°C	30 kΩ
-4°F / -20°C	23 kΩ
5°F / -15°C	17 kΩ
14°F / -10°C	13 kΩ
23°F / -5°C	10 kΩ
32°F / 0°C	8 kΩ

※ The sensor is determined by the temperature.
For example, 23kΩ indicates -20°C

Troubleshooting

Freezer Sensor Error (FS E)

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?

CON8 10th pin ~ 11th pin	**Resistance [Ω]**
-22ºF / -30ºC	**40k**
-13ºF / -25ºC	**30k**
-4ºF / -20ºC	**23k**
5ºF / -15ºC	**17k**
14ºF / -10ºC	**13k**
23ºF / -5ºC	**10k**
32ºF / 0ºC	**8k**

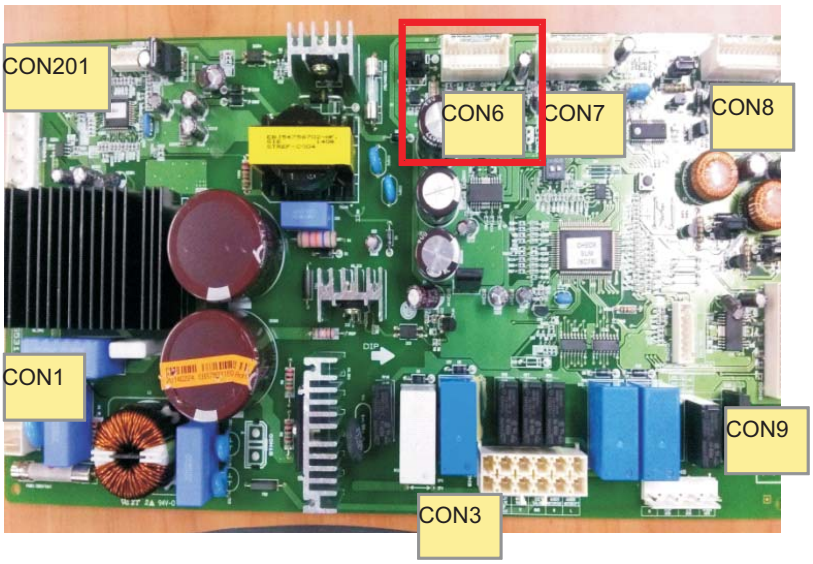
Yes

6 Explain to customer

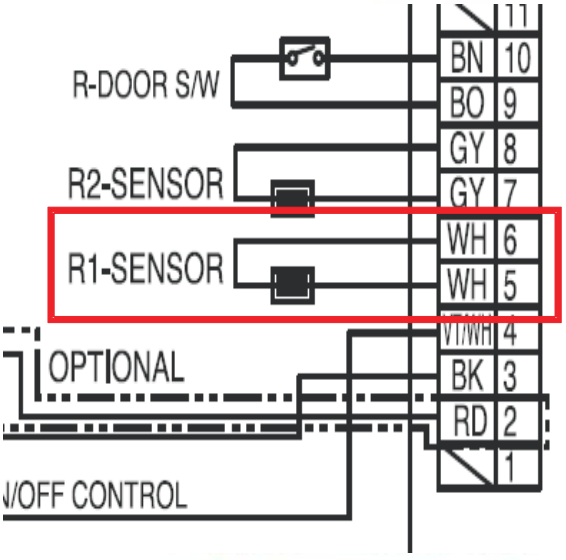
Troubleshooting

2-2. Refrigerator Sensor Error (rS E)

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



Check the Pin5(1) to Pin6(2) of CON6.



Result		SVC Action
0 Ω	Short	Change the sensor
OFF	Open	Replace the refrigerator
Other	Normal	Check the Temp and resistance (Table-2)

<Temperature table-2>

(1) To (2)	Result
23°F / -5°C	38 kΩ
32°F / 0°C	30 kΩ
41°F / 5°C	24 kΩ
50°F / 10°C	19.5 kΩ
59°F / 15°C	16 kΩ

※ The sensor is determined by the temperature.
For example, 30kΩ indicates 0°C

Troubleshooting

Refrigerator Sensor Error (rS E)

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?

CON6 5th pin ~ 6th pin	**Resistance [Ω]**
23ºF / -5ºC	**38k**
32ºF / 0ºC	**30k**
41ºF / 5ºC	**24k**
50ºF / 10ºC	**19.5k**
59ºF / 15ºC	**16k**

Yes

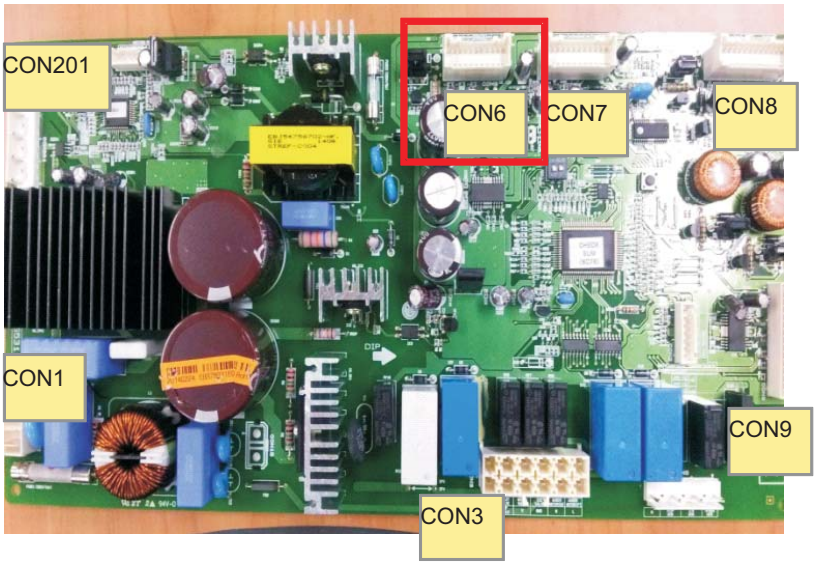
6

Explain to customer

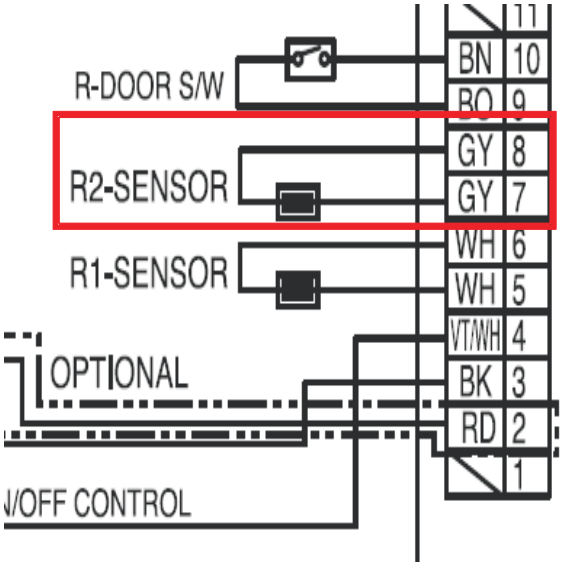
Troubleshooting

2-3. Refrigerator Sensor Error (r2 E)

Symptom	Check Point
1. r2 E	1. Check for a loose connection 2. Check Sensor Resistance



Check the Pin7(1) to Pin8(2) of CON6.



Result		SVC Action
0 Ω	Short	Change the sensor
OFF	Open	Replace the refrigerator
Other	Normal	Check the Temp and resistance (Table-2)

<Temperature table-2>

(1) To (2)	Result
23°F / -5°C	38 kΩ
32°F / 0°C	30 kΩ
41°F / 5°C	24 kΩ
50°F / 10°C	19.5 kΩ
59°F / 15°C	16 kΩ

※ The sensor is determined by the temperature.
For example, 30 kΩ indicates 0°C

Troubleshooting

Icing Sensor Error (r2 E)

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?

CON6 7th pin ~ 8th 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

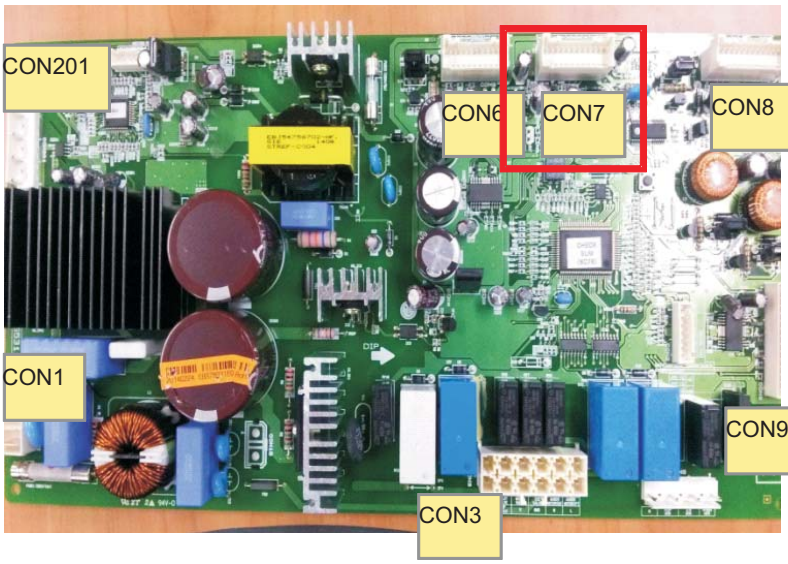
6

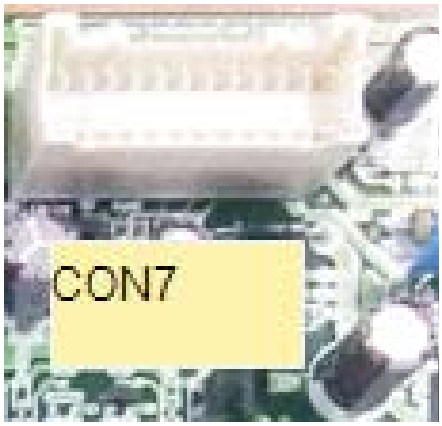
Explain to customer

Troubleshooting

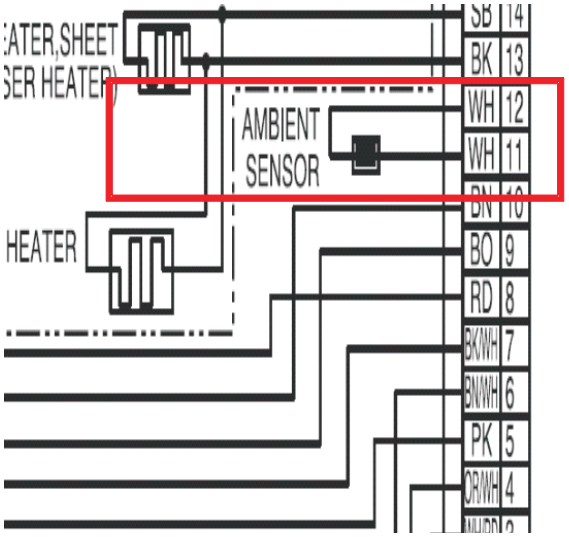
2-4. Ambient Sensor Error (rt E)

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





Check the Pin11(1) to Pin11(2) of CON7.



Result		SVC Action
0 Ω	Short	Change the sensor
OFF	Open	Replace the refrigerator
Other	Normal	Check the Temp and resistance (Table-2)

<Temperature table-2>

(1) To (2)	Result
23°F / -5°C	38 kΩ
32°F / 0°C	30 kΩ
41°F / 5°C	24 kΩ
50°F / 10°C	19.5 kΩ
59°F / 15°C	15.6 kΩ

※ The sensor is determined by the temperature.
For example, 30 kΩ indicates 0°C

Troubleshooting

Defrost Sensor Error (rt E)

1

Is the Connector disconnected or loose between Main PCB, Defrost controller 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 11th pin ~ 12th pin	**Resistance [Ω]**
23ºF / -5ºC	**38k**
32ºF / 0ºC	**30k**
41ºF / 5ºC	**24k**
50ºF / 10ºC	**19.5k**
59ºF / 15ºC	**16k**

Yes

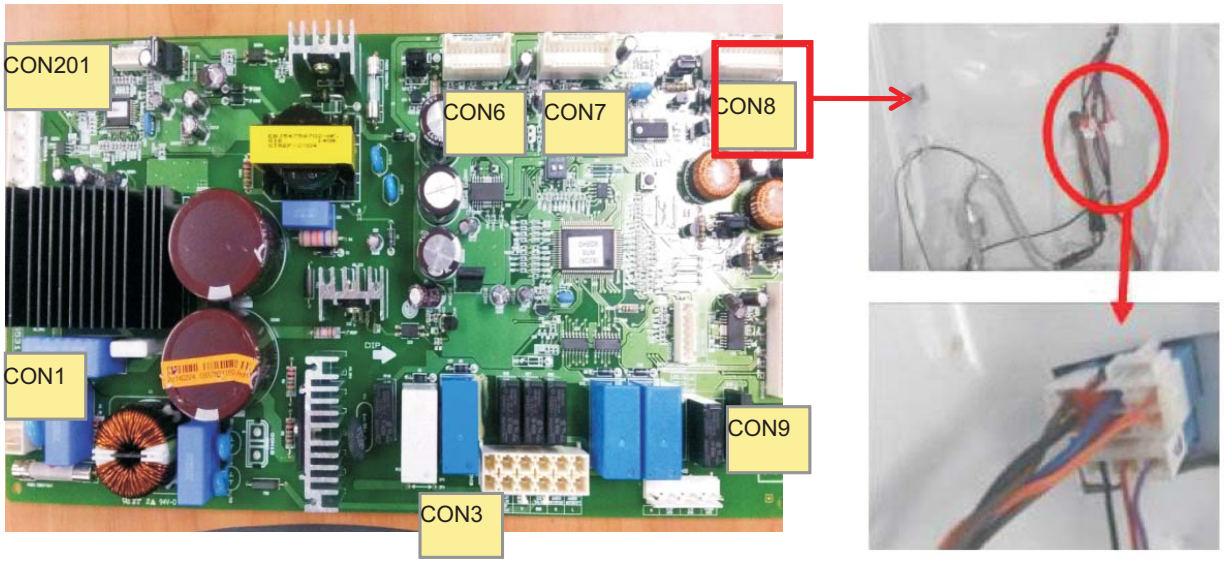
6

Explain to customer

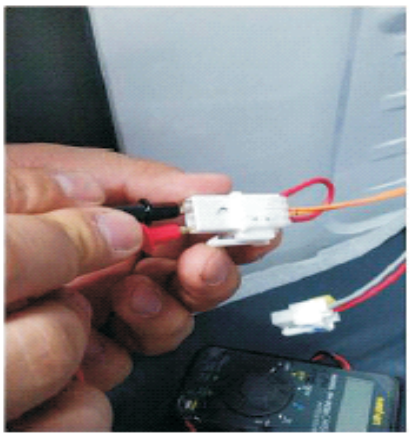
Troubleshooting

2-5. Defrost Sensor Error (dS F)

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



Check the Orange(1) to Orange(2).



Result		SVC Action
0 Ω	Short	Change the sensor
OFF	Open	Replace the refrigerator
Other	Normal	Check the Temp and resistance (Table-3)

<Temperature table-3>

(1) To (2)	Result
-22°F / -30°C	40 kΩ
-13°F / -25°C	30 kΩ
-4°F / -20°C	23 kΩ
5°F / -15°C	17 kΩ
14°F / -10°C	13 kΩ
23°F / -5°C	10 kΩ
32°F / 0°C	8 kΩ

※ The sensor is determined by the temperature.
For example, 23kΩ indicates -20°C

Troubleshooting

Defrost Sensor Error (dS F)

1

Is the Connector disconnected or loose between Main PCB, Defrost controller 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?

Check the Orange(1) to Orange(2).	**Resistance [Ω]**
-22ºF / -30ºC	**40k**
-13ºF / -25ºC	**30k**
-4ºF / -20ºC	**23k**
5ºF / -15ºC	**17k**
14ºF / -10ºC	**13k**
23ºF / -5ºC	**10k**
32ºF / 0ºC	**8k**

Yes

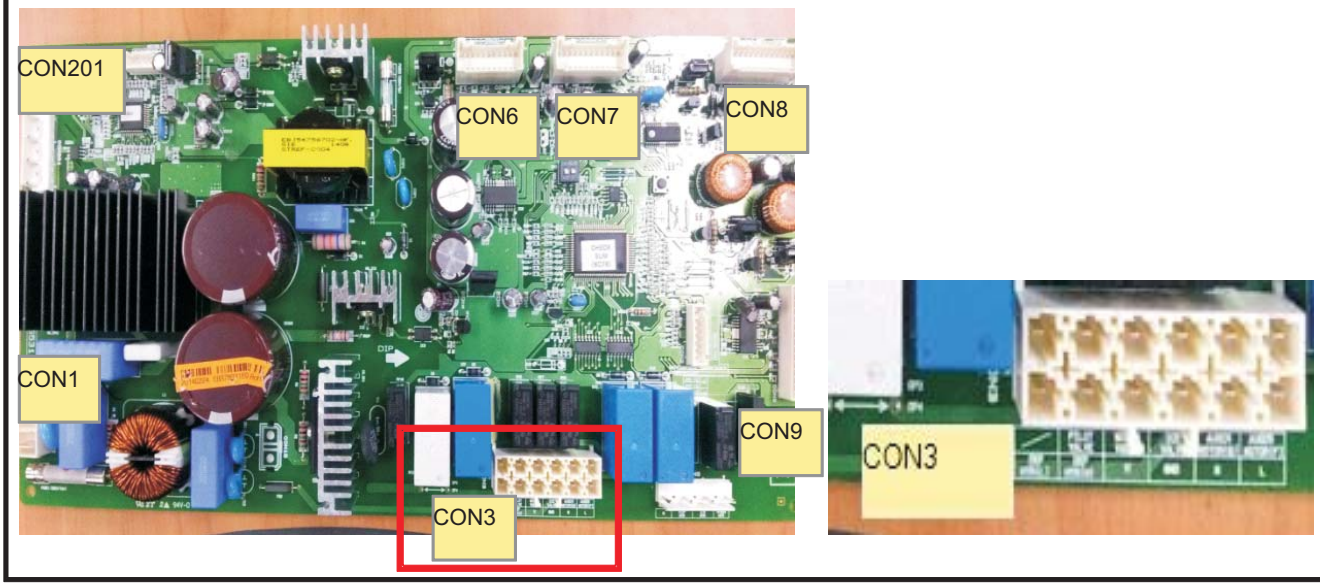
6

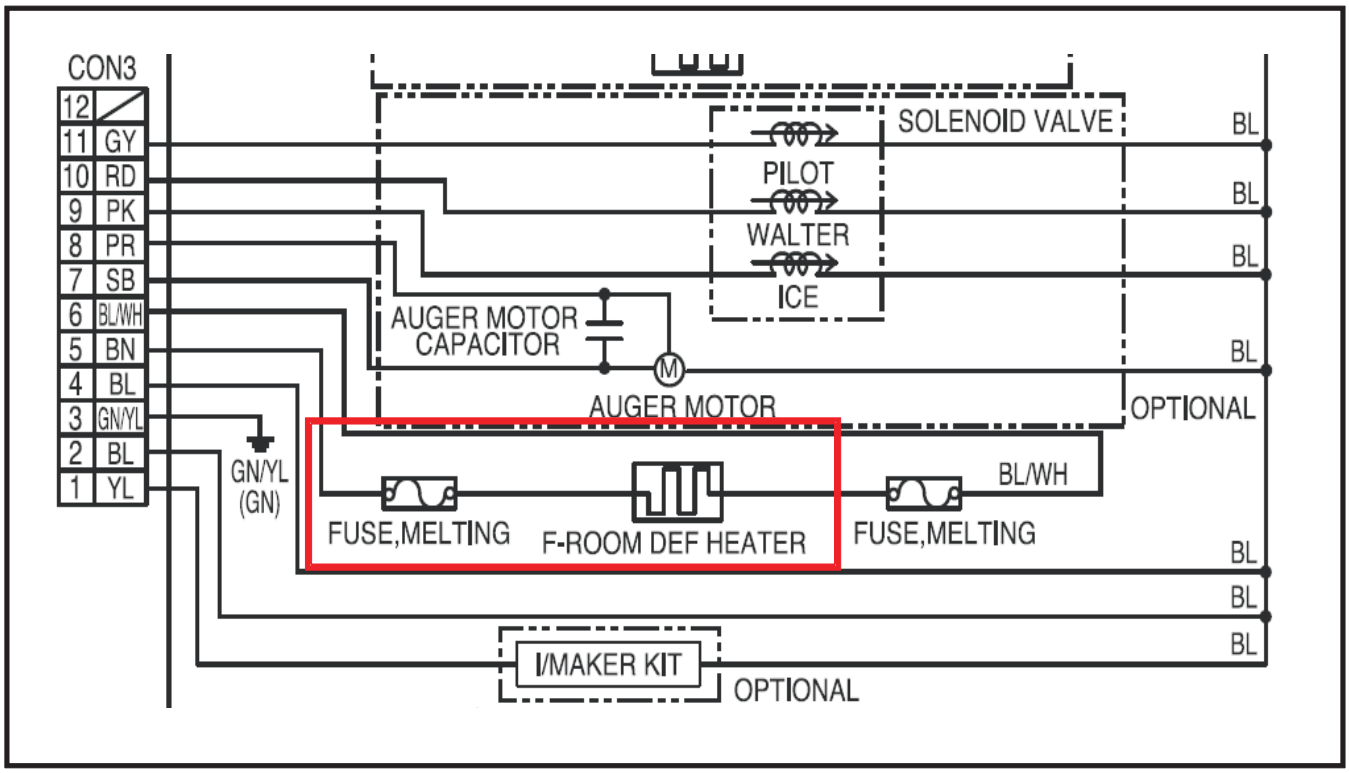
Explain to customer

Troubleshooting

2-6. Defrost Heater Error (dH F)

Symptom	Check Point
1. F dH	1. Check the door gasket 2. Check the Defrost control part 3. Check the PCB output voltage

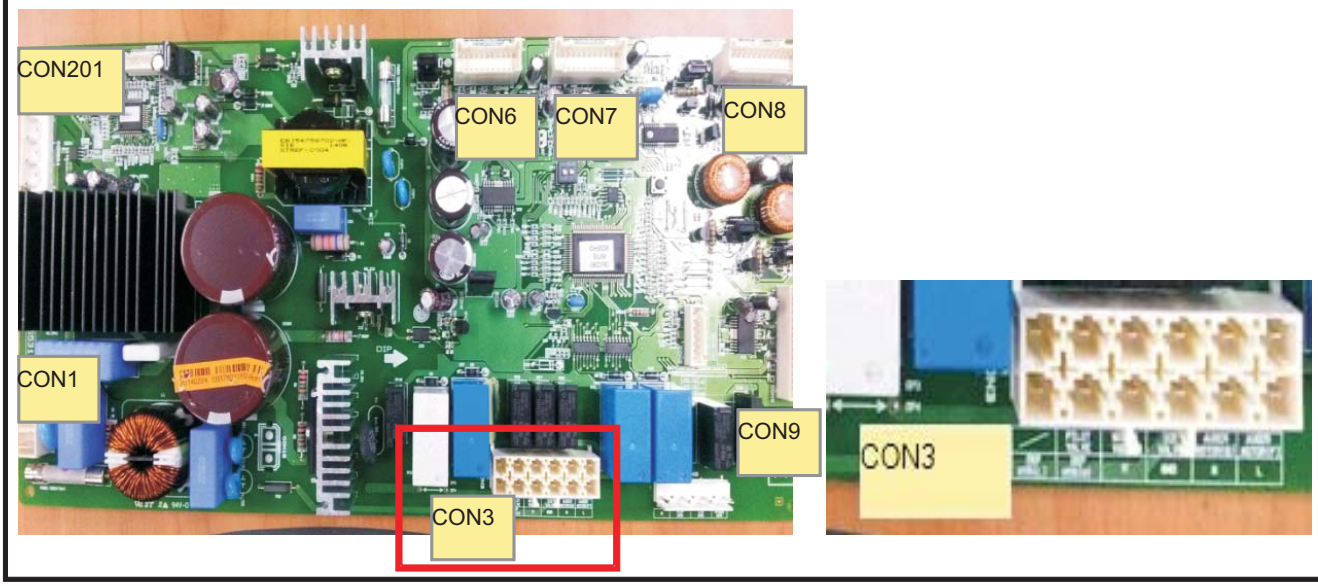


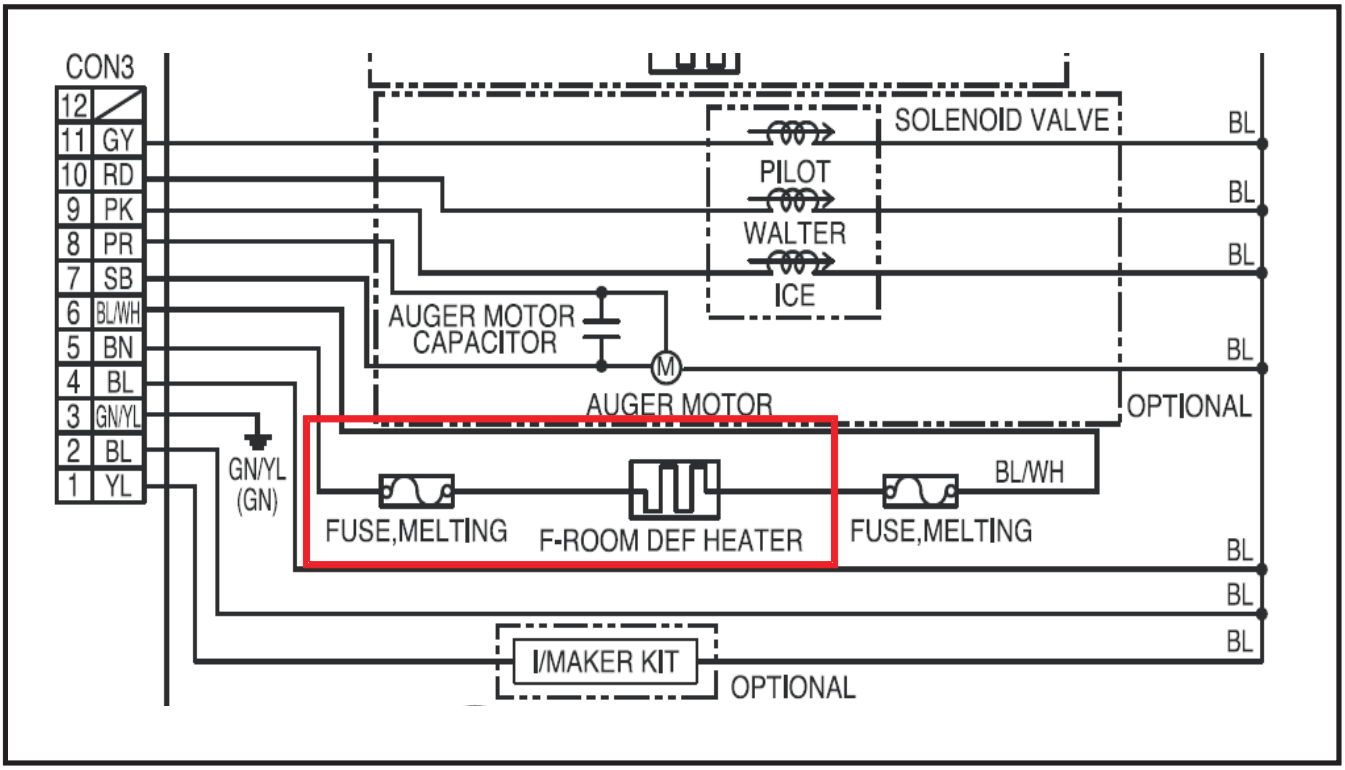


Troubleshooting

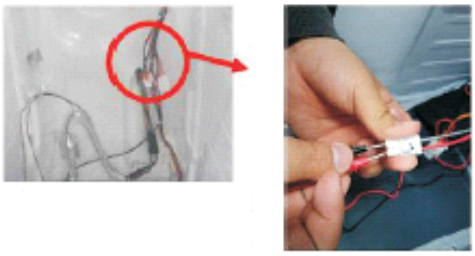
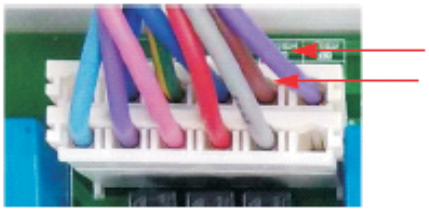
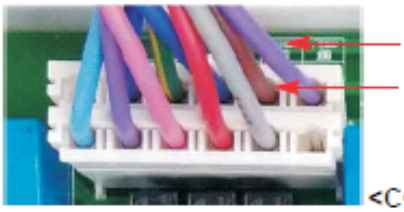
2-6. Defrost Heater Error (dH F)

Symptom	Check Point
1. F dH	1. Check the door gasket 2. Check the Defrost control part 3. Check the PCB output voltage





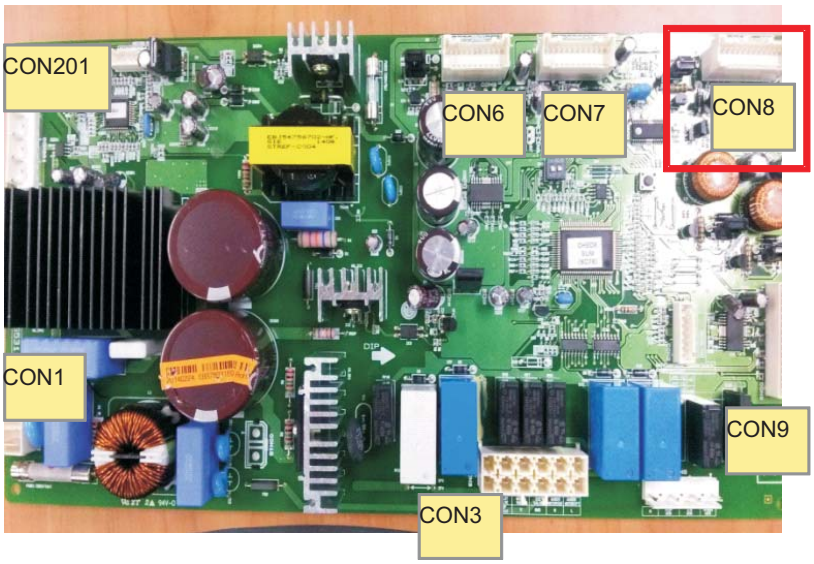
Troubleshooting

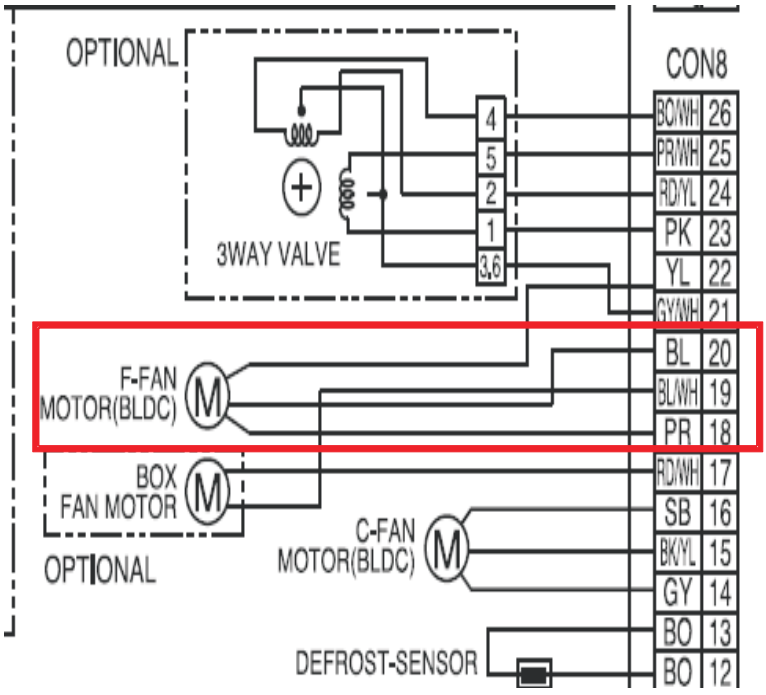
<table>
<tr><th>No</th><th>Checking flow</th><th>Result & SVC Action</th></tr>
<tr><td>1</td><td>Check the <u>Door gasket.</u></td><td rowspan="2"><table>
<tr><th>Part</th><th>Result</th><th>SVC Action</th></tr>
<tr><td rowspan="2">Def' Heater & Fuse-M</td><td>115V
: 48.45 ~ 53.55 Ω</td><td>Go to the 3</td></tr>
<tr><td>Other</td><td>Change Fuse-M</td></tr>
<tr><td rowspan="2">Def' Sensor</td><td>Normal (Check the Temp and resistance)</td><td>Go to the 3</td></tr>
<tr><td>Other</td><td>Replace product</td></tr>
</table></td></tr>
<tr><td>2</td><td>Check the <u>Defrost control part.</u>
  </td></tr>
<tr><td>3</td><td>Input Test 2 Mode.
(push the button 2 times)</td><td>  </td></tr>
<tr><td>4</td><td>Check the <u>Brown to PR.</u>
 
<CON3></td><td><table>
<tr><th>Result</th><th>SVC Action</th></tr>
<tr><td>115V ±10%</td><td>Go to the 5</td></tr>
<tr><td>0 V</td><td>Replace Main PCB</td></tr>
</table></td></tr>
<tr><td>5</td><td>Release the test mode.
push the button 1 times. (normal)</td><td>  </td></tr>
<tr><td>6</td><td>Check the <u>Brown to PR.</u>
 
<CON3></td><td><table>
<tr><th>Result</th><th>SVC Action</th></tr>
<tr><td>0 V</td><td>Explain to customer</td></tr>
<tr><td>115V ±10%</td><td>Replace Main PCB</td></tr>
</table></td></tr>
</table>

Troubleshooting

2-7. Freezer Fan Error (FF E)

Symptom	Check Point
1. FF E	1. Reset the unit and Input Test 1 Mode. 2. Open the freezer door and Check the air flow. 3. Check the Fan motor. 4.Check the Fan motor Voltage.





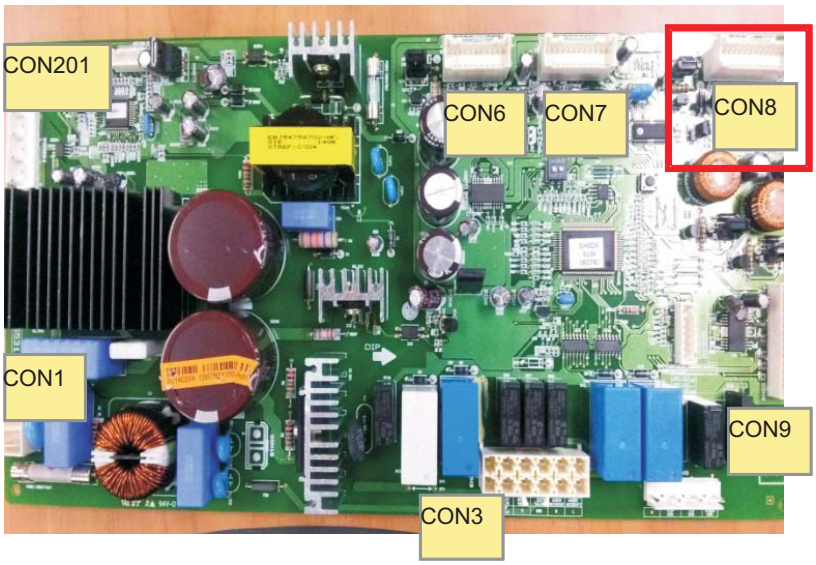
Troubleshooting

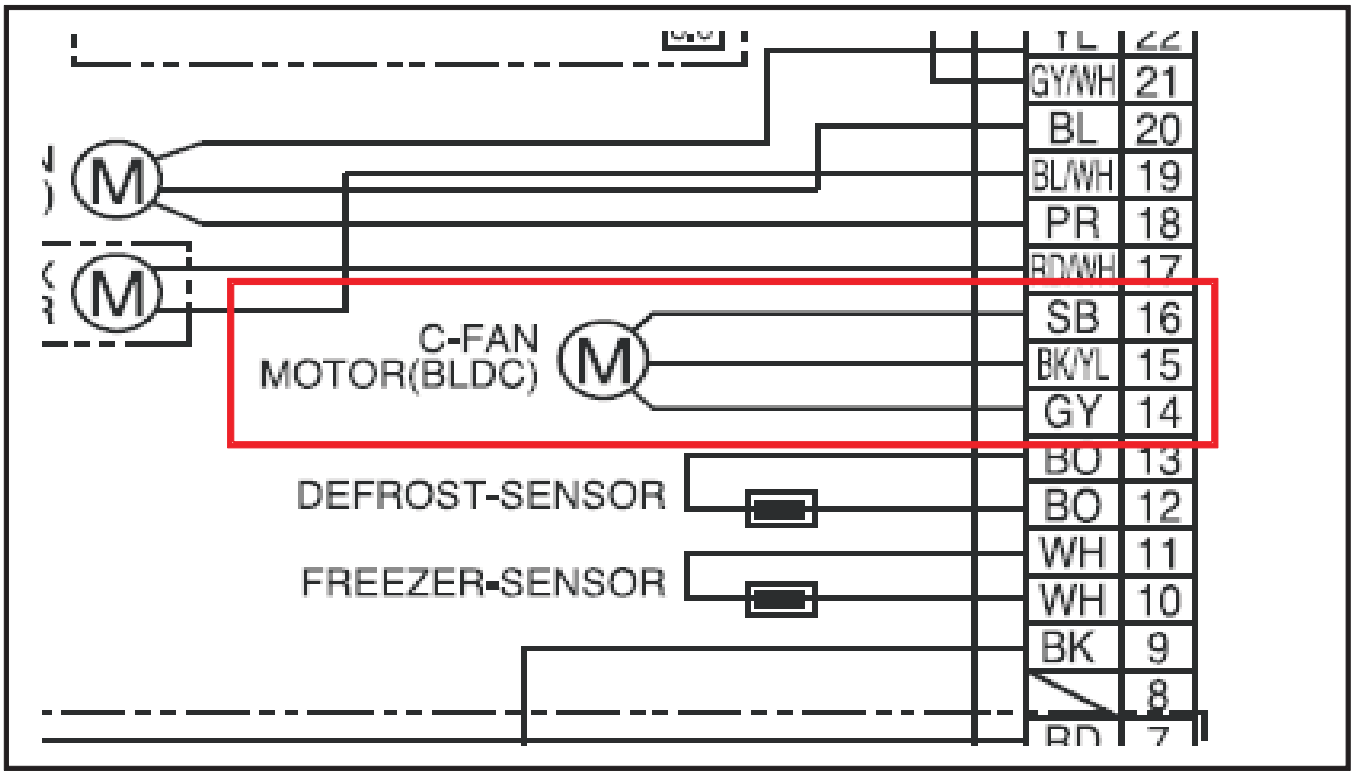
<table>
<tr><th>No</th><th>Checking flow</th><th>Result & SVC Action</th></tr>
<tr><td>1</td><td>Reset the unit and
Input Test 1 Mode.
(push the button 1 time)</td><td>  </td></tr>
<tr><td>2</td><td>Open the freezer door and
Check the air flow.
※ While an error code is displayed, the fan is not working.</td><td> 
<table><tr><th>Status</th><th>SVC Action</th></tr><tr><td>No windy</td><td>Go to 3</td></tr><tr><td>Windy</td><td>Go to 4</td></tr></table></td></tr>
<tr><td>3</td><td>Check the Fan motor.
  </td><td>Rotate fan using your hand.
It feel sticky, change the motor.
(cause of ice or rust inside of motor)</td></tr>
<tr><td>4</td><td>Check the Fan motor voltage.
Pin18(2), Pin20(3), Pin22(1)
of CON8.
CON8
  </td><td><table><tr><th>Point</th><th>Result</th><th>SVC Action</th></tr><tr><td>(2)~(3)</td><td>Below 12V</td><td>Change the PCB</td></tr><tr><td>(1)~(2)</td><td>0 or 5 V</td><td>Change the motor</td></tr></table></td></tr>
</table>

Troubleshooting

2-8. Condensor Fan Error (CF E)

Symptom	Check Point
1. CF E	1. Reset the unit and Input Test 1 Mode. 2. Open the fan rotating. 3. Check the Fan motor and surrounding. 4.Check the Fan motor Voltage.



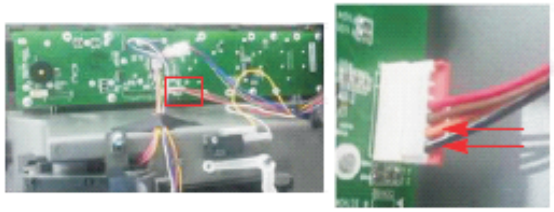
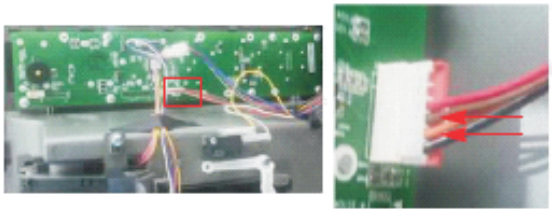
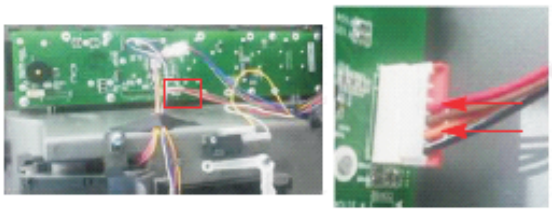


Troubleshooting

<table>
<tr><th>No</th><th>Checking flow</th><th>Result & SVC Action</th></tr>
<tr><td>1</td><td>Reset the unit and
Input Test 1 Mode.
(push the button 1 time)</td><td>  </td></tr>
<tr><td>2</td><td>Check the fan rotating.
※ While an error code is displayed, the fan is not working.</td><td> 
<table><tr><th>Status</th><th>SVC Action</th></tr><tr><td>No windy</td><td>Check motor</td></tr><tr><td>Windy</td><td>Go to the 4</td></tr></table></td></tr>
<tr><td>3</td><td>Check the Fan motor and surrounding.
  </td><td>Rotate fan using your hand.
It feel sticky, change the motor.</td></tr>
<tr><td>4</td><td>Check the Fan motor voltage.
Pin15(2), Pin14(1), Pin16(3)
of CON8.
CON8
  </td><td><table><tr><th></th><th>Result</th><th>SVC Action</th></tr><tr><td>(1)~(2)</td><td>Below 12V</td><td>Change the PCB</td></tr><tr><td>(2)~(3)</td><td>0 or 5 V</td><td>Change the motor</td></tr></table></td></tr>
</table>

Troubleshooting

2-9. Communication Error (CO E)

<table>
<tr><th>No</th><th>Checking flow</th><th>Result & SVC Action</th></tr>
<tr><td>1</td><td>Check the loose connection.</td><td></td></tr>
<tr><td>2</td><td>Check the White&Black to Orange.
  </td><td><table><tr><th>Result</th><th>SVC Action</th></tr><tr><td>12V</td><td>Go to the 3</td></tr><tr><td>Other</td><td>Check the Hinge
(loose connection)
Change the Main PCB</td></tr></table></td></tr>
<tr><td>3</td><td>Check the Orange to Brown.
  </td><td><table><tr><th>Result</th><th>SVC Action</th></tr><tr><td>0V or 5V</td><td>Change the Display PCB</td></tr><tr><td>Other</td><td>Go to the 4</td></tr></table></td></tr>
<tr><td>4</td><td>Check the Orange to Red.
  </td><td><table><tr><th>Result</th><th>SVC Action</th></tr><tr><td>0V or 5V</td><td>Change the Main PCB</td></tr><tr><td>Other</td><td>Go to the 5</td></tr></table></td></tr>
<tr><td>5</td><td>Check the Pin9 to Pin10 of CON7.</td><td><table><tr><th>Result</th><th>SVC Action</th></tr><tr><td>0V or 5V</td><td>Change the Display PCB</td></tr><tr><td>Other</td><td>Go to the 6</td></tr></table></td></tr>
<tr><td>6</td><td>Check the Pin8 to Pin9 of CON7.</td><td><table><tr><th>Result</th><th>SVC Action</th></tr><tr><td>0V or 5V</td><td>Change the Main PCB</td></tr><tr><td>Other</td><td>Explain to customer</td></tr></table></td></tr>
</table>

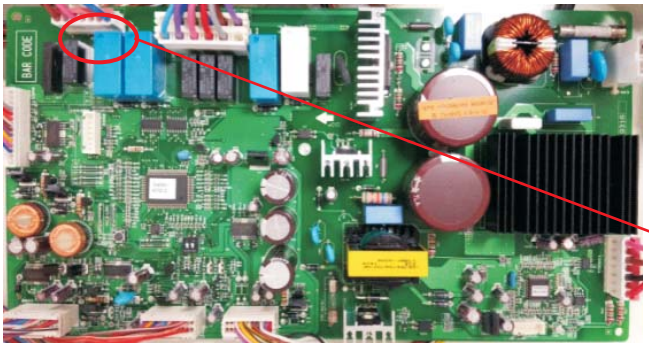
Troubleshooting

3. COMP operation error

①

1.Open the PWB COVER

②



2.Check the number of LED blinks
(Refer to the next page for resolution by number of LED blinks

When the COMP is normal, it will not blink

③

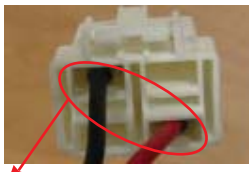
1.Open the BACK COVER

④

1.Check the temperature and noise of COMP and discharge outlet

2.Check whether the C-FAN is operating

3.Check the COMP connector voltage (Measure without pulling the HOUSING)



BLACK & RED

PS :Check the voltage during C- Fan operation.
(About AC 10V~ AC 230V)

When the COMP & FAN are not operating simultaneously, force operate from the MAIN PCB in TEST MODE to check whether it is operating and then check the power of the COMP end to reset the power.

Troubleshooting

4. 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-Blirk -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  • • Bink -Elink-Blink-Elink-Blink-Off-Blink -Blink--Blink-Elink-Elink-Cff- • • 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 -Bink-Bink-Blink-Blink-Blink-Off-Blink -Blink--Bink-Bink-Elink-Elink-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 -Bink-Bink-Blink-Blink-Blink-Off-Blink -Blink--Bink-Bink-Elink-Elink-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  • • Bink -Blirk-Bink-Elink-Elink-Elirk-Bink-Off-Elirk -Blink--Bink-Blink-Elink-Elirk-Elink-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

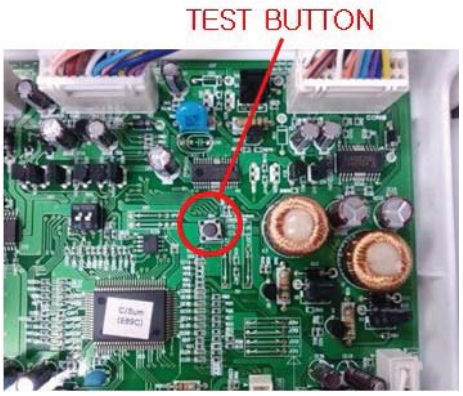
Troubleshooting

5. 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



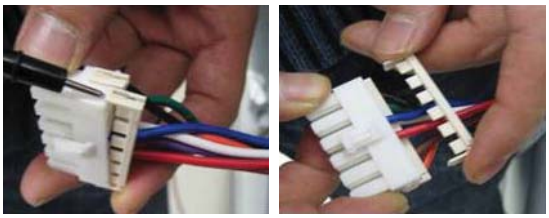
Main PWB

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

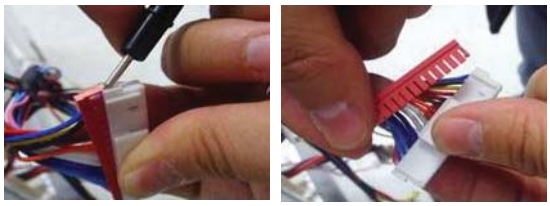
*** 2 times :Forced defrost mode**
(22 22 displayed)

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

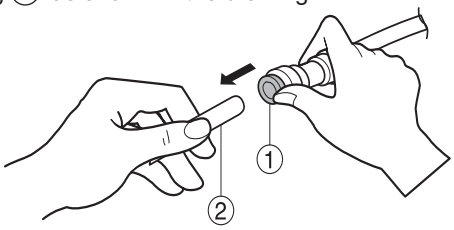
4) TEMPERATRUE CHART - AMBIENT SENSOR

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

How to disassemble and assemble

1. DOOR

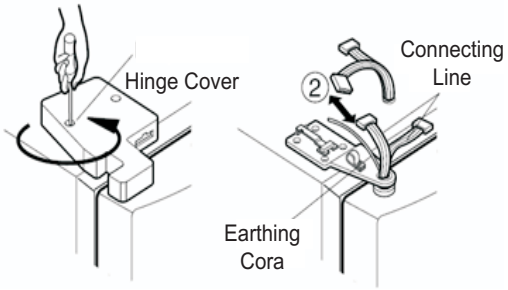
1) Disconnect water supply tube ② in the lower part of freezer door.
Pull the water supply tube forward while pressing on the coupling ① as shown in the drawing.



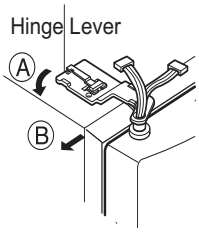
Disconnecting the tube under the door caused about 3 pints(1.5 litters) of water to flow out. Use a big container to catch it.

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.

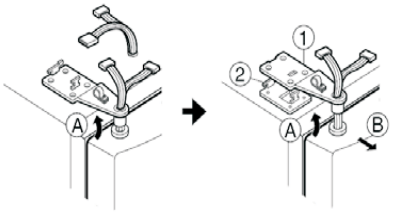


2) Turn hinge lever in arrow Ⓐ direction until it is loosened and take it out in arrow Ⓑ direction.

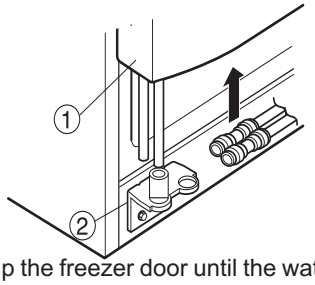


Note : • When disconnecting refrigerator door, turn hinge lever counterclockwise.
• If the hinge or bracket are bent during assembly, use two extra screws (Tap Tite M6, Left Hinge attaching screw) in the holes of the upper hinge.

(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 Ⓐ direction and pull foward in arrow Ⓑ 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.



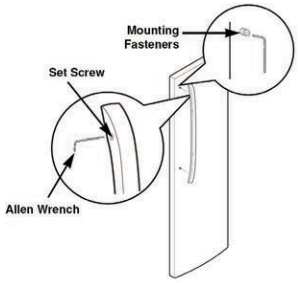
Note : Lift up the freezer door until the water supply tube Is fully taken out.

(5) Assembly is the reverse order of disassembly.

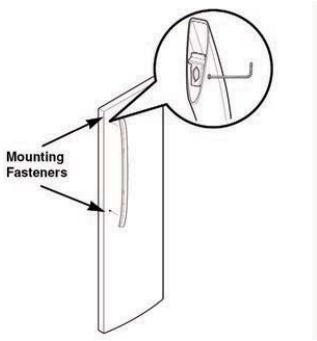
2. HANDLE

1) HANDLE REMOVAL

To move the refrigerator through a house door, it may be necessary to remove the refrigerator door handles.
Note : Handle appearance may vary from illustrations on this page.



Loosen the set screws with a 2.5mm(3/32") Allen wrench and remove the handle.
Note : If the handle mounting fasteners need to be tightened or removed, use a 1/4" Allen wrench.



Place the handle on the door by aligning handle footprints to fit mounting fasteners and tighten the set screws with a 2.5mm(3/32) Allen wrench.

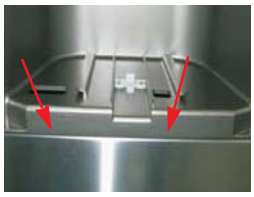
2) HANDLE REINSTALLATION

Note : If the handle mounting fasteners need to be tightened or removed, use a 1/4" Allen wrench.

How to disassemble and assemble

3-10 DISPENSER

1) Pull out the drain



2) Use these 2 holes to pull out the bottom

3) If nozzle is interfered with button, push and pull out the bottom of button and then pull out the right side.

4) Holding the inner side of the dispenser pull forward to remove.

5) Remove the lead wire.

⚠ **CAUTION:** When replacing the dispenser cover make sure the lead wire does NOT come off and the water line is not pinched by the dispenser.

3-11 DISPLAY PCB

As shown below, remove 1 screw on the PCB fixing screw. Remove the display PCB fixing screw.

Case, PCB

Display PCB

Figure 28

3-12 ICE BUTTON ASSEMBLY

1) Remove the 1 screw holding the lever.
2) Remove the spring from the hook.
3) Push and pull on the tab to remove.

Button Lever

3-13 WATER BUTTON ASSMEBLY

1) Remove screws.
2) Grasp the Button assembly and lift.

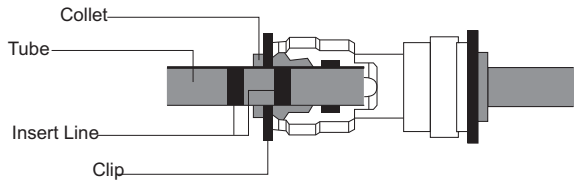
Button Lever

How to disassemble and assemble

4.WATER VALVE DISASSEMBLY METHOD

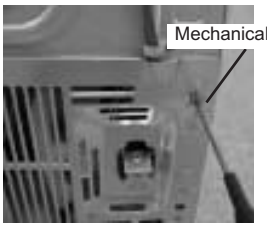
1)Turn off the power of the refrigerator (pull out the plug). Open the FREEZER and REFRIGERATOR Door and disassemble the Lower Cover.

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.
(Refer to the label attached on Front L on how to separate the tube.)

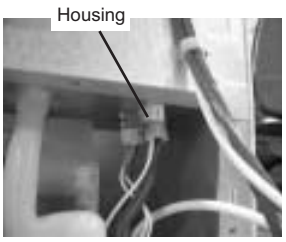


3)Turn off the water. Then separate the water line from the valve.

4)Separate the Mechanical Cover and Valve Screw.

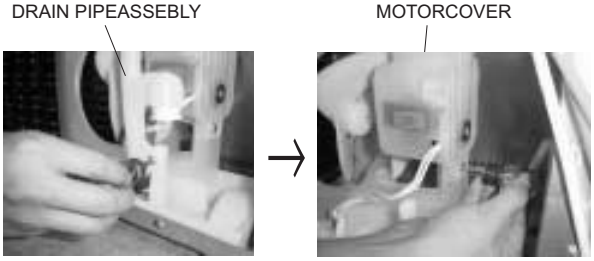


5)Separate the housing and pull out the valve.

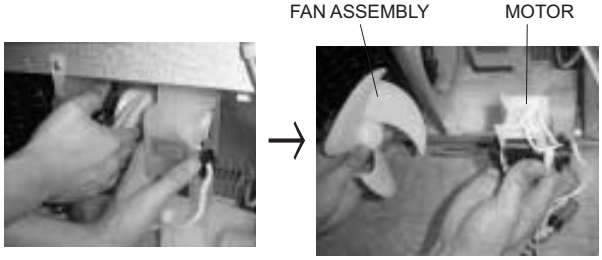


5.FAN AND FAN MOTOR DISASSEMBLY METHOD

1)Using a short screwdriver, loosen one SCREW in DRAIN PIPE ASSEMBLY and one connected to the MOTOR COVER.



2)Pull and separate the FAN ASSEMBLY and MOTOR turning counterclockwise based on the MOTOR SHAFT.



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.

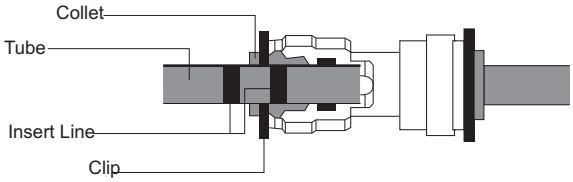
2.Press the WATER DISPENSER button until water pours out and check for leakage in the CONNECTOR TUBE (It differs by the water pressure but usually takes about 2 minutes until water pours out.)

How to disassemble and assemble

4.WATER VALVE DISASSEMBLY METHOD

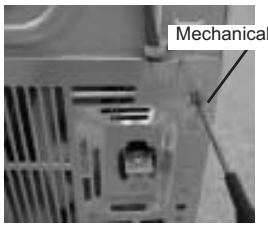
1)Turn off the power of the refrigerator (pull out the plug). Open the FREEZER and REFRIGERATOR Door and disassemble the Lower Cover.

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.
(Refer to the label attached on Front L on how to separate the tube.)

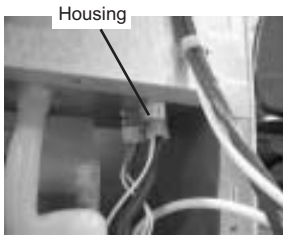


3)Turn off the water. Then separate the water line from the valve.

4)Separate the Mechanical Cover and Valve Screw.

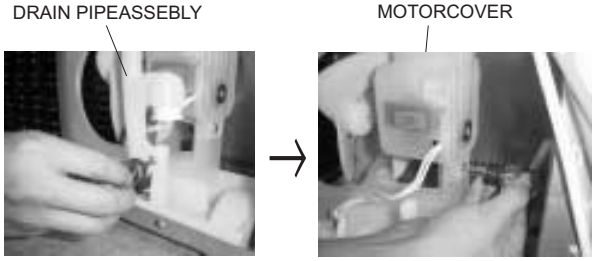


5)Separate the housing and pull out the valve.

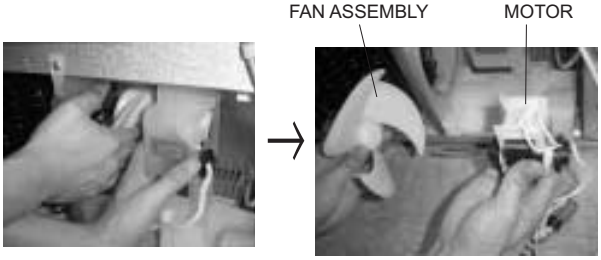


5.FAN AND FAN MOTOR DISASSEMBLY METHOD

1)Using a short screwdriver, loosen one SCREW in DRAIN PIPE ASSEMBLY and one connected to the MOTOR COVER.



2)Pull and separate the FAN ASSEMBLY and MOTOR turning counterclockwise based on the MOTOR SHAFT.



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.

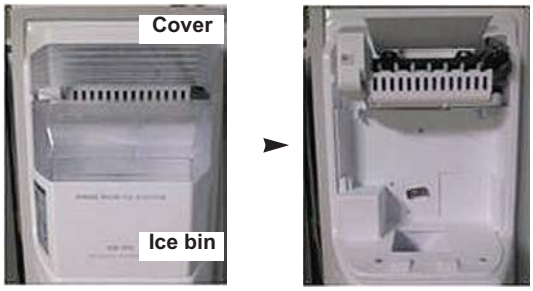
2.Press the WATER DISPENSER button until water pours out and check for leakage in the CONNECTOR TUBE (It differs by the water pressure but usually takes about 2 minutes until water pours out.)

How to disassemble and assemble

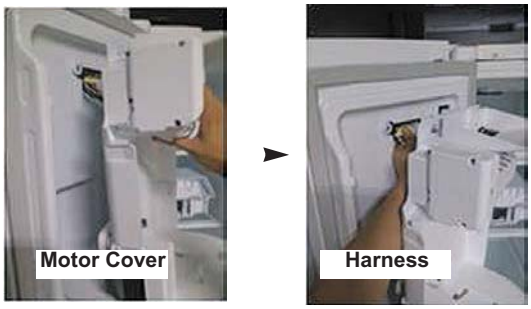
6. ICEMAKER DISASSEMBLY METHOD

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

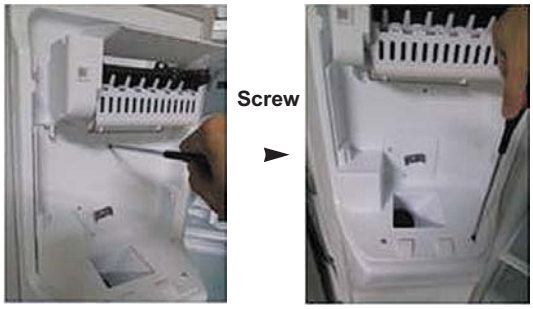
① disassemble Ice bin and cover.



② Separate the Motor,AC from the door.



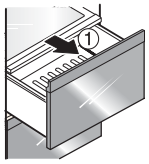
③ Remove the Three screws on the Motor,AC.



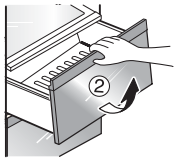
7. WATER TANK DISASSEMBLY METHOD

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.)

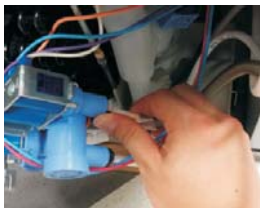


2) Hold the front of the Cover,TV and Pull it out completely.

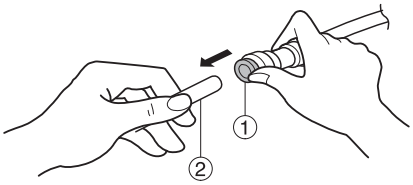
3) Loosen 1 Screw on the Water Tank.

4) Pull the water supply, tube (1) is under the Freezer door and (2) is on the water valve

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.

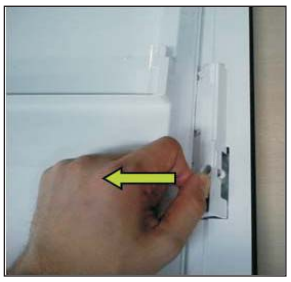
2.Use the tool to separate the hinge. (But be careful not to drop the home bar as it is heavy).

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

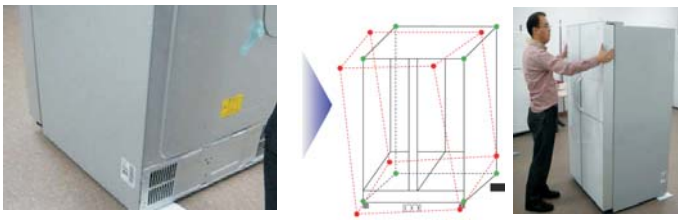
1. Open the door.
2. Use the spanner included in the document to turn the height adjustment screw located on the bottom of the freezer hinge in clockwise direction to adjust the height.

How to adjust the door level difference

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

1. When the bottom part of refrigerator door unleveled.

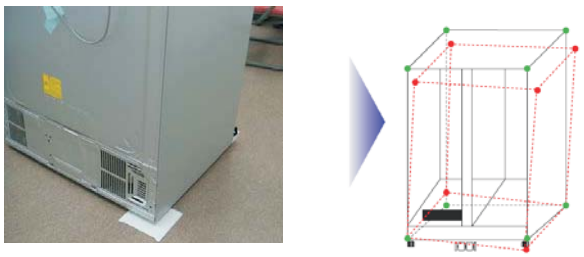
1. Put thr install plate under the rear corner of the refrigerator.
2. Check the movement of the freezer



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 unleveled.

1. The same as refrigerator room.



Heavy Repair Method of Refrigerator by Application of Refrigerant

Heavy Repair Method of Refrigerator by Application of Refrigerant

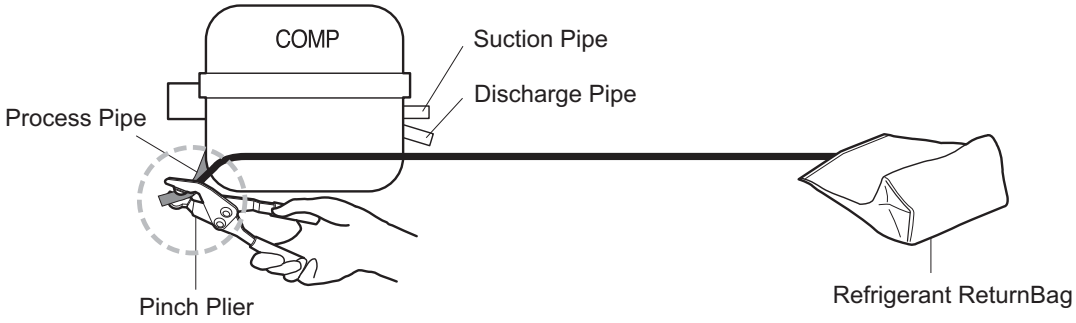
1. Heavy Repair SVC Method

For the heaver repair of R134a 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 after powering ON to open all both sides of 3way valve.
- 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.

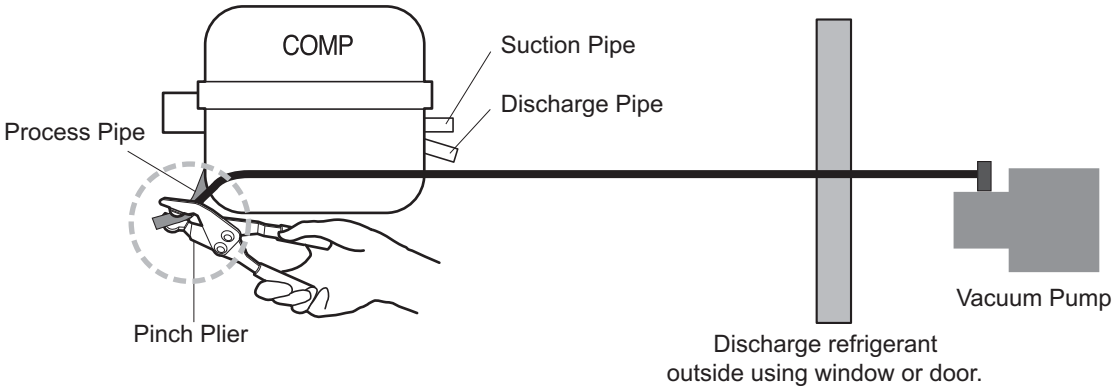


Heavy Repair Method of Refrigerator by Application of Refrigerant

1-2. Return of Remained Refrigerant

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

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



1-3. Welding Repair Step

Required equipment: Simple welding machine

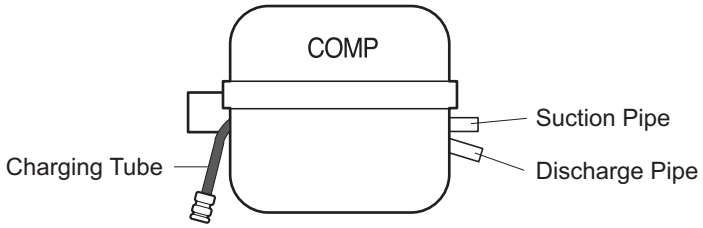
- Remove pinch pliers if remaining refrigerant returnis completed.
- Cut the front part of a process pipe with a cutter. (Check that remaining refrigerant comes out.)
- Perform welding work such as replacement of compressor and dryer, or repair of leakage part. (Be cautious of fire during welding work.)

Heavy Repair Method of Refrigerator by Application of Refrigerant

1-4. Charging Tube Connection Step

Required equipment: Charging tube, simple welding machine

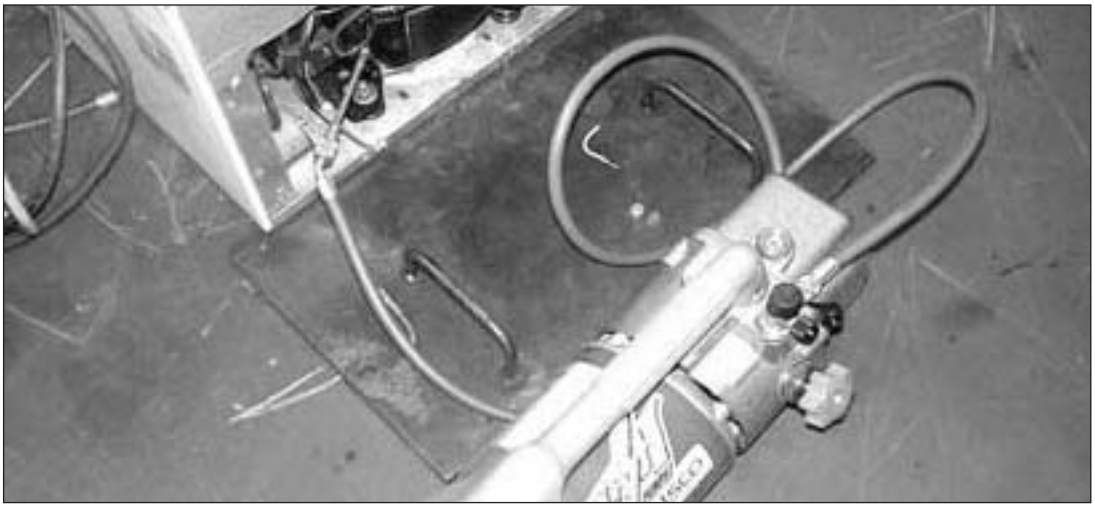
- Remove a charging pipe to recharge R134a refrigerant after completing work, and then connect a charging tube with welding



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.)



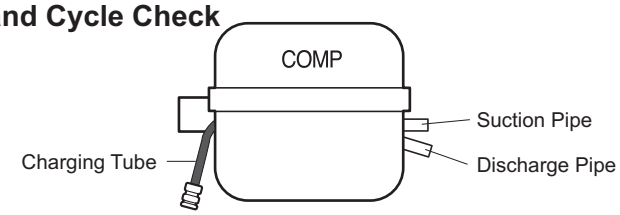
Heavy Repair Method of Refrigerator by Application of Refrigerant

1-6. Refrigerant Charging

Required equipment: Bombe, R134－a refrigerant (Energy Star, Al spiral condenser model : 165g / DOE, Fe wire condenser model: 175g)
• Firstly remove fire appliances and heating source for performing work when charging scaled refrigerant. (Do not spray refrigerant indoor.)
• Measure the accurate quantity (Energy Star, Al spiral condenser model : 165g / DOE, Fe wire condenser model : 175g) 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 165g 1 or 175g 1. Differently from R134a, R134a gives much effect on cooling performance depending on change of refrigerant quantity.

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.)

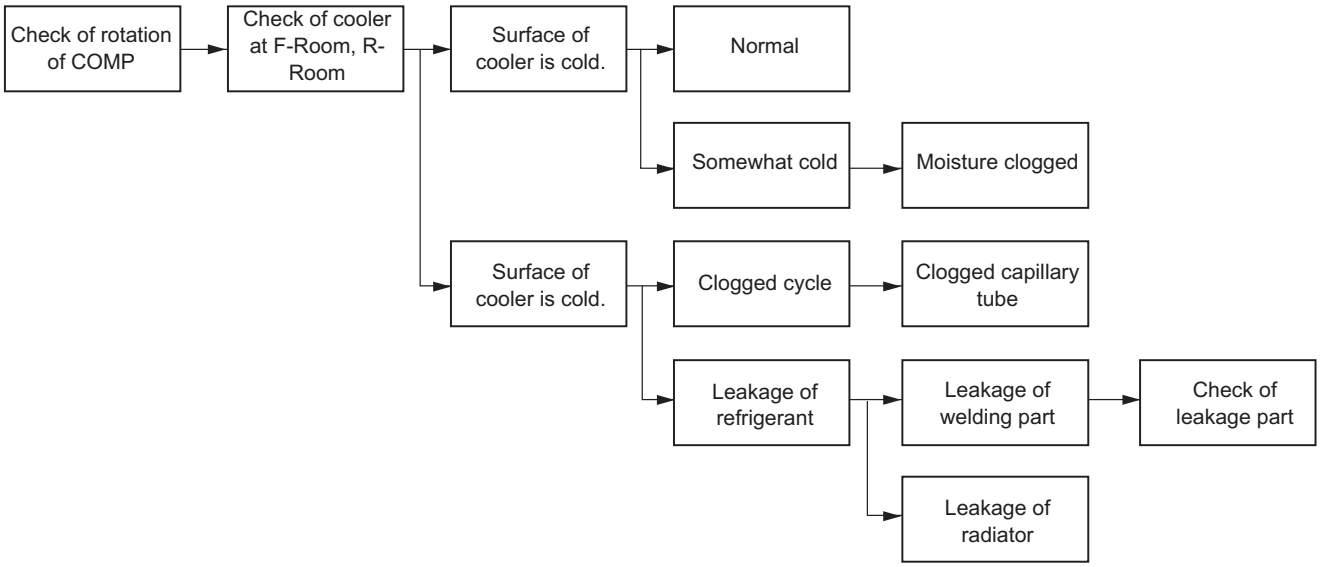
1-7. Leak Inspection and Cycle Check



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

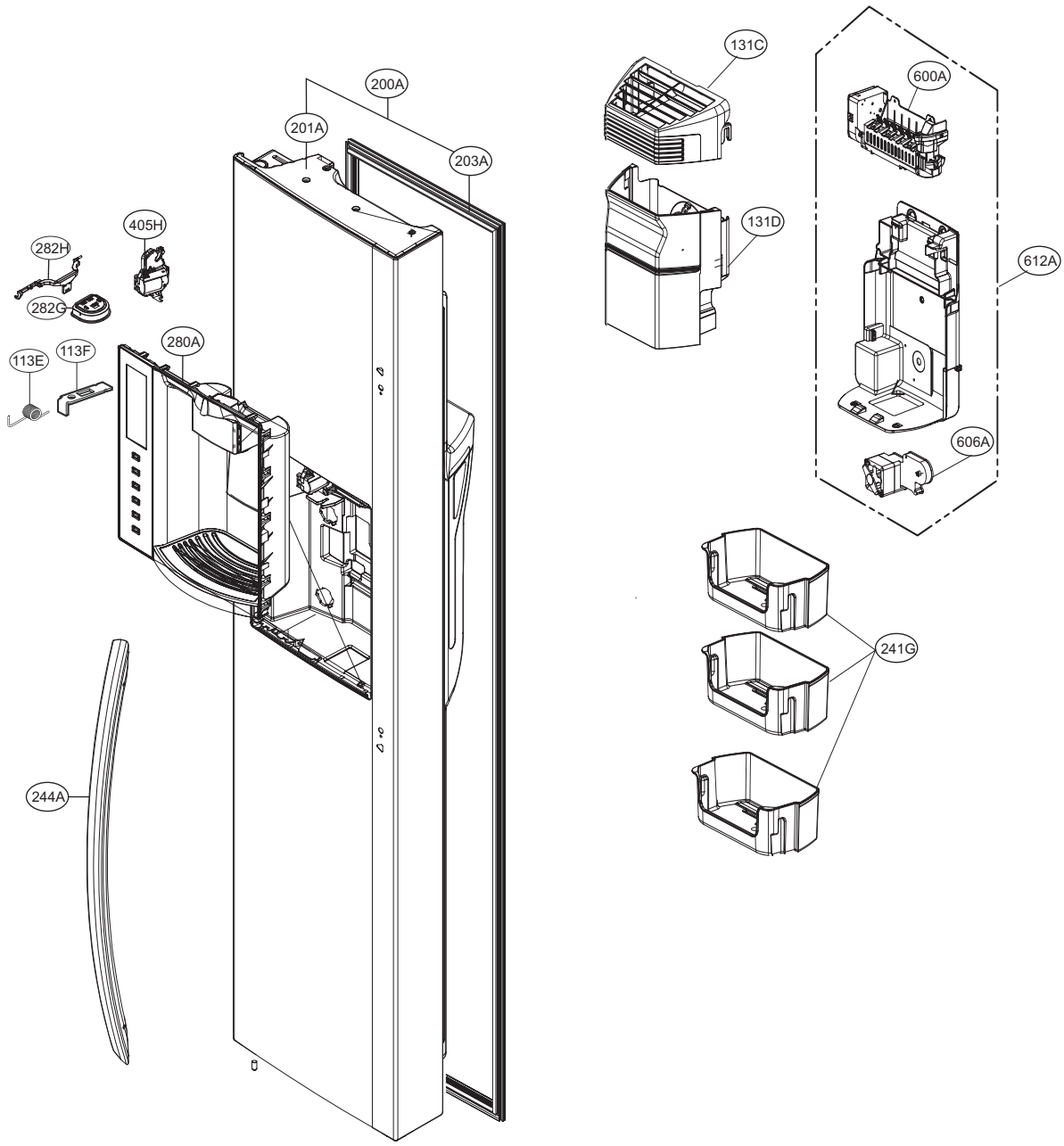
- Check for leakage by using form or a leakage inspection machine at the worked part if charging of refrigerant is completed.
- Check for leakage at the low pressure part with the compressor stopped, and check at the high pressure part with the compressor being operating.
- If leakage is detected, proceed to repair according to repair process again starting from “2-1. Returnof 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



EXPLODED VIEW

FREEZER DOOR



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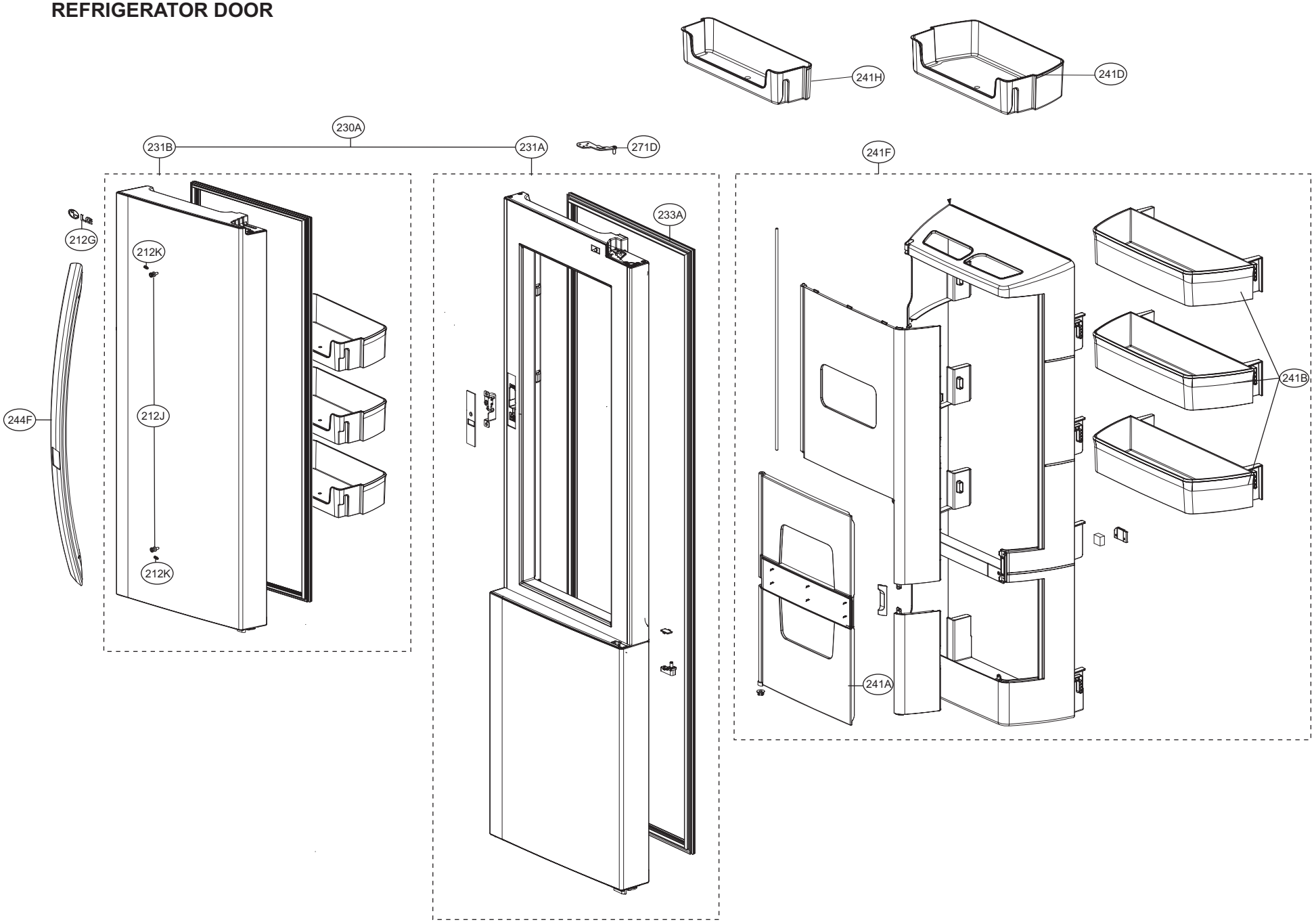
REFRIGERATOR DOOR



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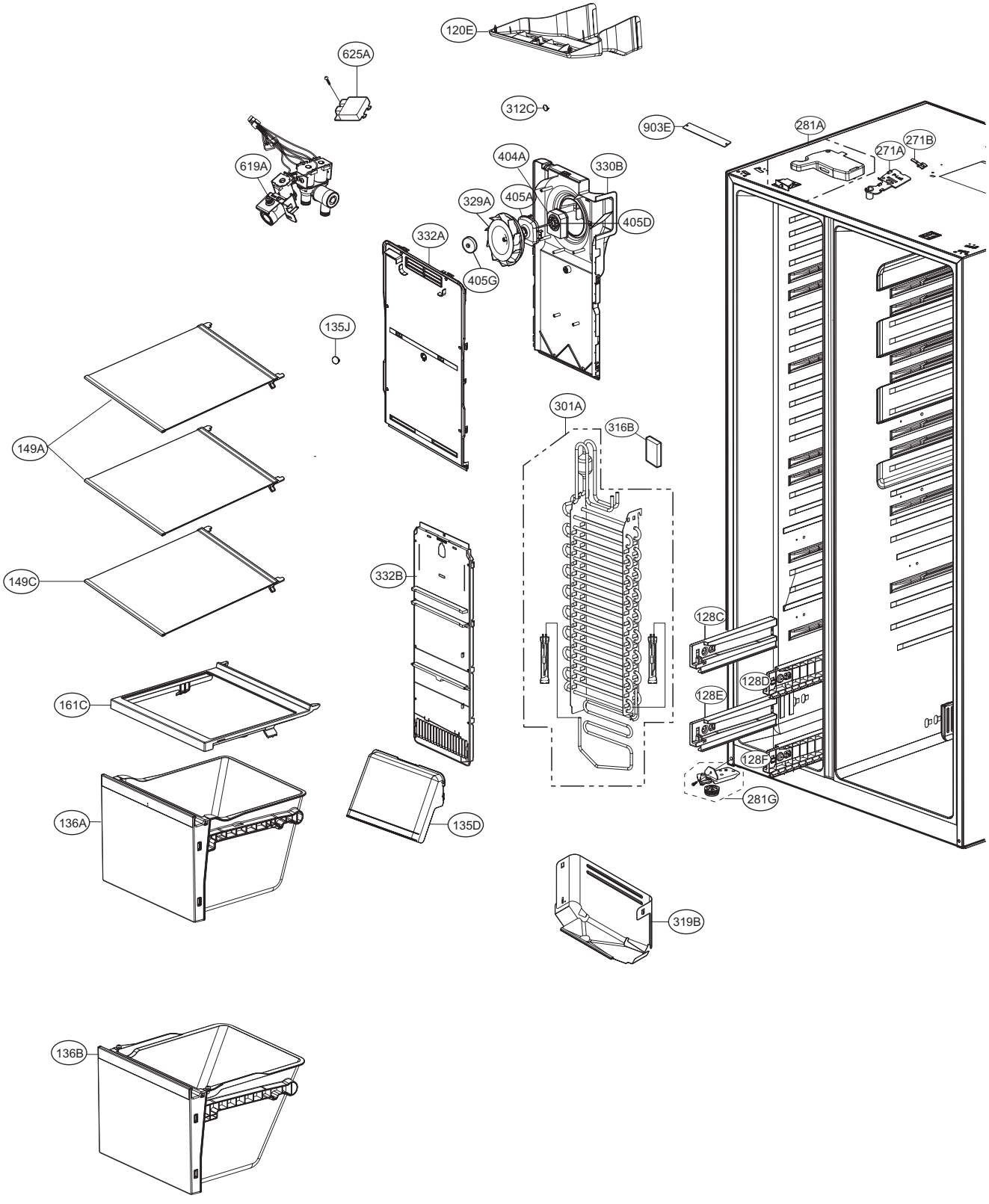
FREEZER COMPARTMENT



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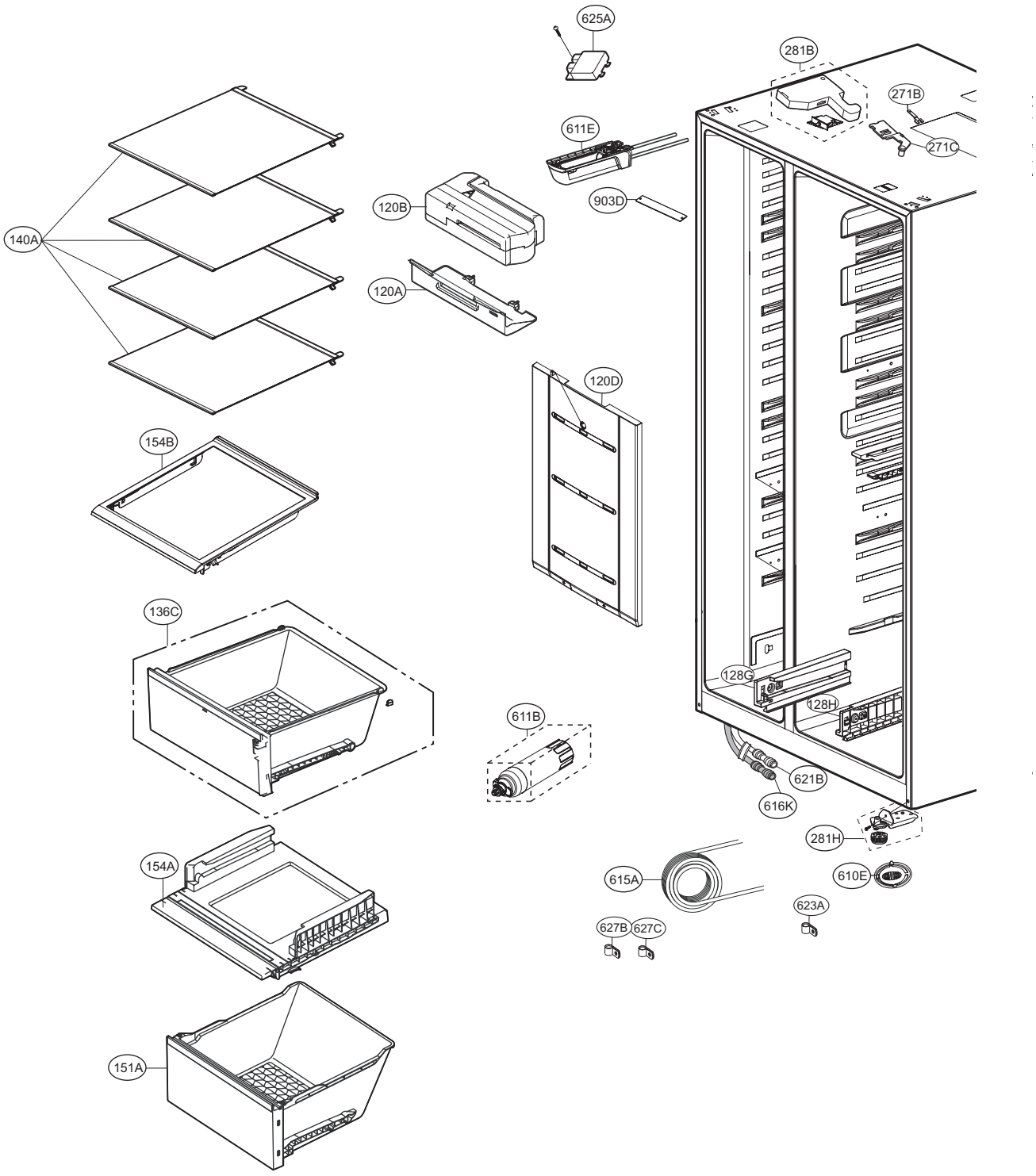
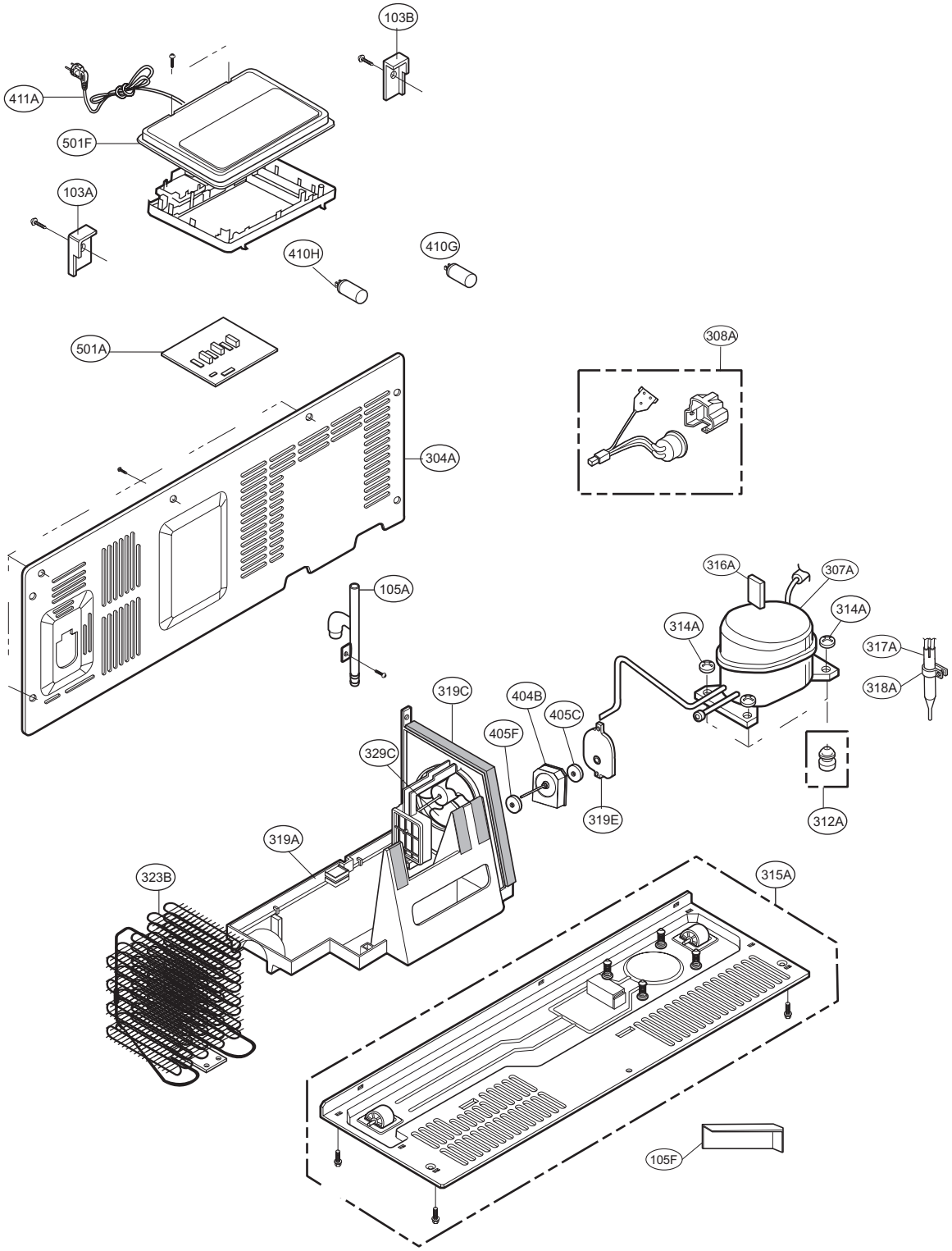
REFRIGERATOR COMPARTMENT



MACHINE COMPARTMENT



LG Electronics Inc.

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