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LG LFX25976SW Owner's Manual

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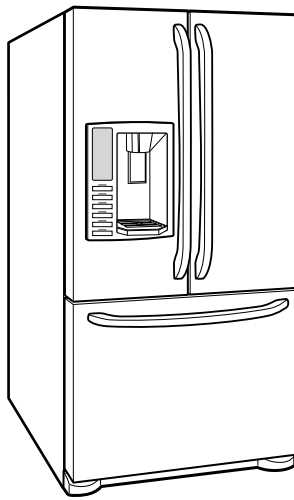
----- Manual continues below -----



REFRIGERATOR

SERVICE MANUAL

CAUTION
BEFORE SERVICING THE UNIT,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



MODEL: LFX25976ST
LFX25976WB
LFX25976SW

COLOR : STAINLESS(ST)
WESTERN BLACK
SUPER WHITE

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SAFETY PRECAUTIONS

Please read the following instructions before servicing your refrigerator.

1. Unplug the power before handling any elctrical componets.
2. Check the rated current, voltage, and capacity.
3. Take caution not to get water near any electrical components.
4. Use exact replacement parts.
5. Remove any objects from the top prior to tilting the product.

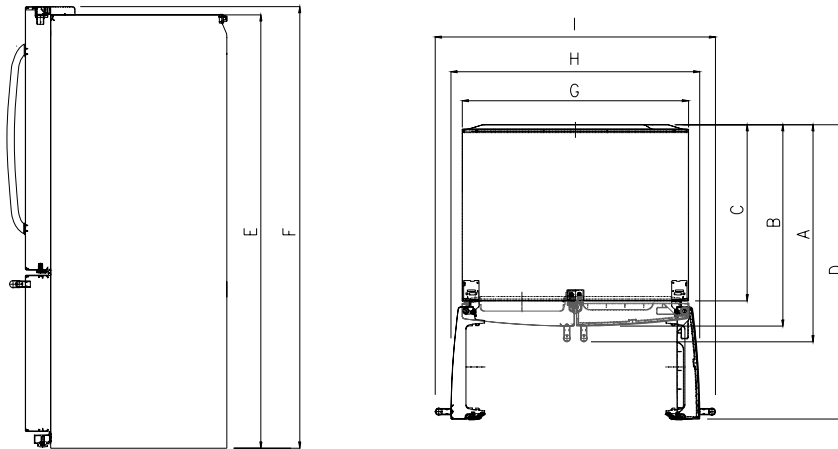
1. SPECIFICATIONS

25 cu. ft.

ITEMS	SPECIFICATIONS
DOOR DESIGN	Side Rounded
DIMENSIONS (inches)	35 3/4 X 34 1/4 X 69 3/4 (WxDxH) 25cu.ft
NET WEIGHT (pounds)	324.18 (25cu.ft)
COOLING SYSTEM	Fan Cooling
TEMPERATURE CONTROL	Micom Control
DEFROSTING SYSTEM	Full Automatic Heater Defrost
DOOR FINISH	Embossed Metal, VCM, Stainless
HANDLE TYPE	Bar
INNER CASE	ABS Resin
INSULATION	Polyurethane Foam

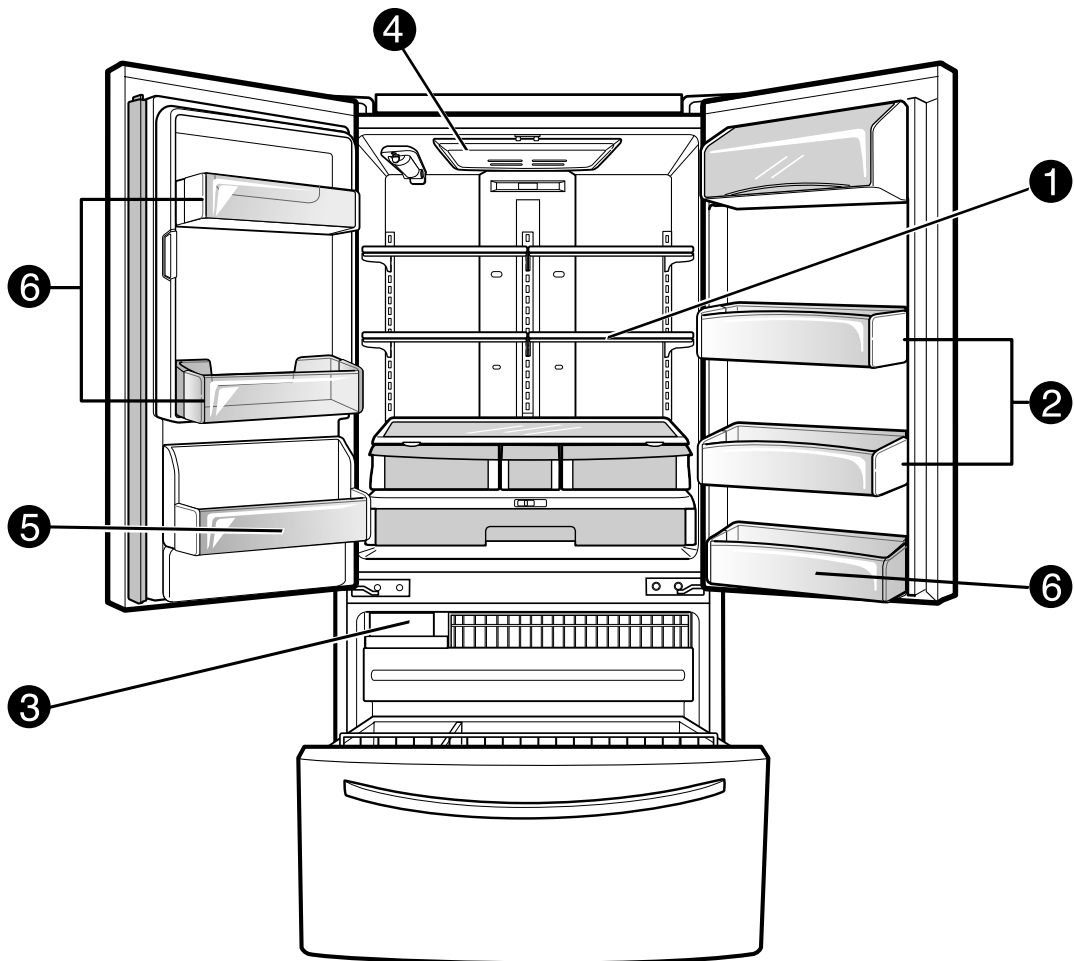
ITEMS	SPECIFICATIONS	
VEGETABLE TRAY	Opaque Drawer Type	
COMPRESSOR	Linear	
EVAPORATOR	Fin Tube Type	
CONDENSER	Spiral Condenser	
REFRIGERANT	R-134a (140 g)	
LUBRICATING OIL	ISO10 (280 ml)	
DEFROSTING DEVICE	SHEATH HEATER	
LAMP	REFRIGERATOR	LED Module(27)
	FREEZER	Bulb Lamp

DIMENSIONS



Description		LFX25976
Depth w/ Handles	A	34 1/4 in.
Depth w/o Handles	B	31 3/4 in.
Depth w/o Door	C	27 7/8 in.
Depth (Total with Door Open)	D	46 1/2 in.
Height to Top of Case	E	68 3/8 in.
Height to Top of Door Hinge	F	69 3/4 in.
Width	G	35 3/4 in.
Width (door open 90 deg. w/o handle)	H	39 1/4 in.
Width (door open 90 deg. w/ handle)	I	44 1/4 in.

2. PARTS IDENTIFICATION



1 ADJUSTABLE REFRIGERATOR SHELVING

The refrigerator compartment shelves are adjustable to allow flexibility for storage needs.

2 GALLON STORAGE BINS

Three interchangeable bins can be arranged to suit your storage needs.

3 REMOVABLE ICE STORAGE BIN

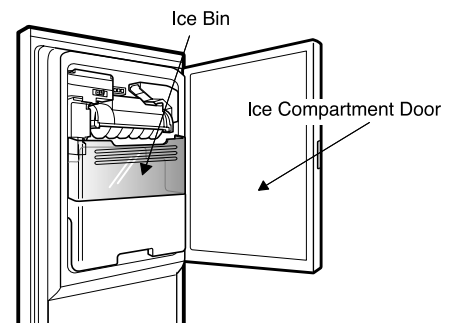
The ice storage bin can be removed to fill ice buckets, coolers, or pitchers.

4 LED INTERIOR LAMPS

Refrigerator interior is lit by the LED array.

5 CAN STORAGE BIN

6 FIXED DOOR BINS



3. DISASSEMBLY

3-1 REMOVING AND REPLACING REFRIGERATOR DOORS

● Removing Refrigerator Door

▲ **CAUTION:** Before you begin, unplug the refrigerator. Remove food and bins from doors.

▶ Left Door -FIG. 2

1. Disconnect water supply tube by pushing back on the disconnect ring (3).-FIG. 1
2. Open door. Loosen top hinge cover screw (1).
- Use flat tip screwdriver to pry back hooks on front underside of cover (2). Lift up cover.
3. Disconnect door switch wire harness. Remove cover.
4. Pull out the tube.
5. Disconnect the three wire harnesses (4). Remove the grounding screw (5).
6. Rotate hinge lever (6) counterclockwise. Lift top hinge (7) free of hinge lever latch (8).

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

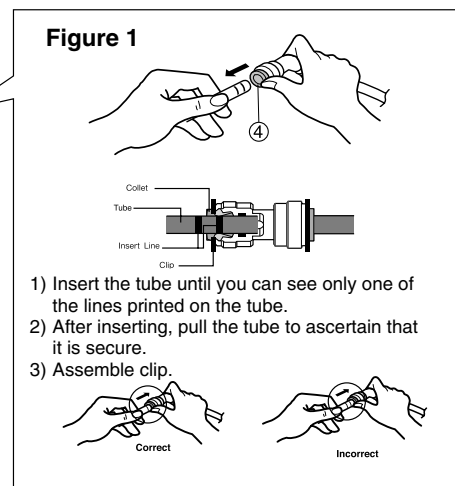
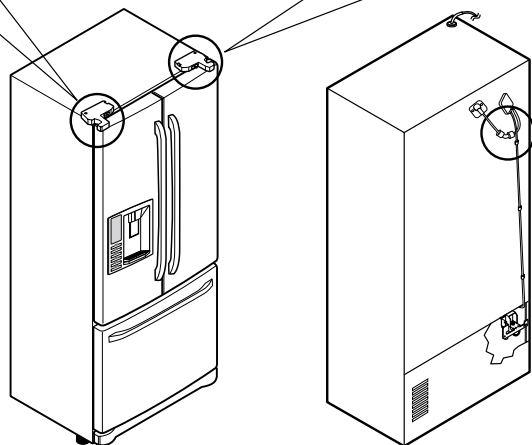
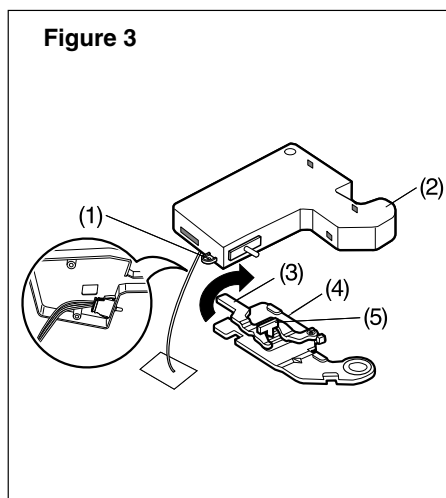
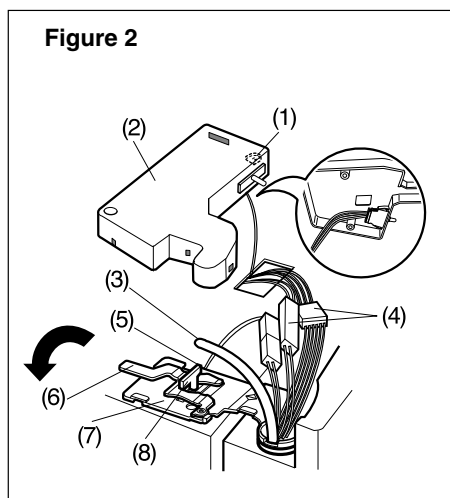
7. Lift door from middle hinge pin and remove door.
8. Place door, inside facing up, down onto a non-scratching surface.

▶ Right Door -FIG. 3

1. Open door. Loosen top hinge cover screw (1). Lift up cover (2).
2. Disconnect door switch wire harness. Remove cover.
3. Rotate hinge lever (3) clockwise. Lift top hinge (4) free of hinge lever latch (5).
4. Lift door from middle hinge pin and remove door.

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

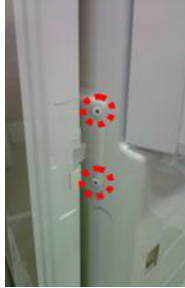
5. Place door, inside facing up, down onto a non-scratching surface.



3-2 DOOR

● Pillar Removal

1. Remove 2 screws.



2. Lift pillar up carefully.



3. Disconnect wire harness.



● Door Gasket Removal

1. Remove gasket

Pull gasket free from gasket channel on the four remaining sides of door.

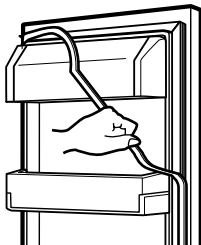


Figure 3

● Door Gasket Replacement

1. Insert gasket into channel

Press gasket into channels on the four remaining sides of door.

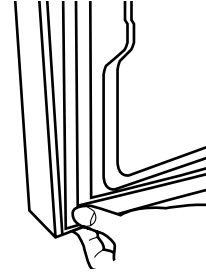


Figure 6

● Pillar Replacement

1. Connect wire harness.

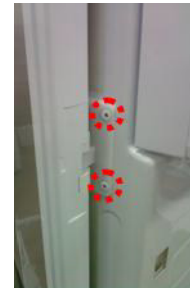


2. Insert pillar into channel.

Inserting pillar assy' into bracket, door



3. Assemble 2 screws.



3-3 Door Alignment

If the space between your doors is uneven, follow the instructions below to align the doors:
 Remove the Base Grille. Turn the leveling legs (CCW) to raise or (CW) to lower the height of the front of the refrigerator by using flat blade screw driver or 11/32" wrench. Use the wrench (Included with the User Manual) to adjust the bolt in the door hinge to adjust the height. (CCW to raise or CW to lower the height.)

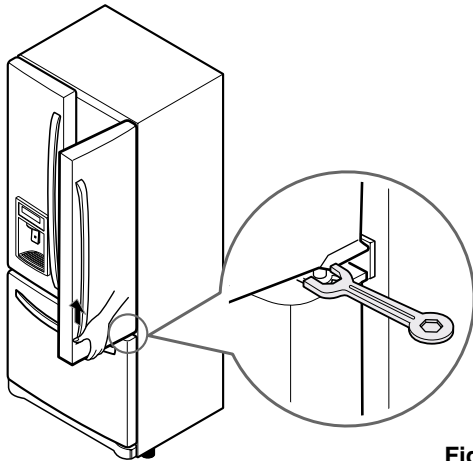


Figure 8

3-4 FAN AND FAN MOTOR(EVAPORATOR)

1. Remove the freezer shelf. (If your refrigerator has an icemaker, remove the icemaker first)
2. Remove the plastic guide for slides on left side by unscrewing phillips head screws.
3. Remove the grille by removing one screw and pulling the grille forward.
4. Remove the Fan Motor assembly by loosening 2 screws and disassembling the shroud.
5. Pull out the fan and separate the Fan Motor and Bracket.

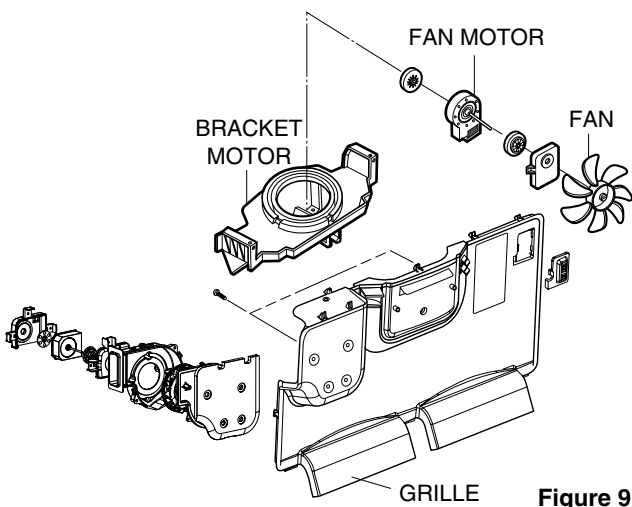


Figure 9

CAUTION
 DO NOT ATTEMPT TO REMOVE THE MULLION :
 REFRIGERANT LINES!

* Ice Fan Scroll Assembly Replacement

- 1) Remove the plastic guide for slides on left side by unscrewing phillips head screws.
- 2) Pull the grille forward as shown in the second picture.
- 3) Disconnect wire harness of the grille.
- 4) Remove the scroll assembly by loosening all screws.



(1)



(2)



(3)



(4)

3-5 DEFROST CONTROL ASSEMBLY

Defrost Control assembly consists of Defrost Sensor and FUSE-M.

The Defrost Sensor works to defrost automatically. It is attached to the metal side of the Evaporator and senses its temperature. At 46°F (8°C), it turns the Defrost Heater off. Fuse-M is a safety device for preventing over-heating of the Heater when defrosting.

1. Pull out the grille assembly. (Figure 10)
2. Separate the connector with the Defrost Control assembly and replace the Defrost Control assembly after cutting the Tie Wrap. (Figure 11)

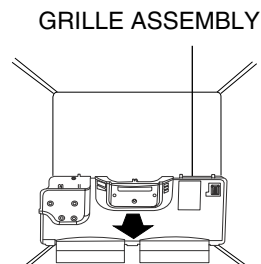


Figure 10

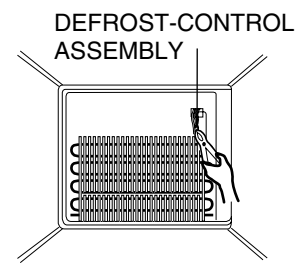


Figure 11

CAUTION
 DO NOT ATTEMPT TO REMOVE THE MULLION :
 REFRIGERANT LINES!

3-6 LAMP

Unplug Refrigerator, or disconnect power at the circuit breaker.

If necessary, remove top shelf or shelves.

3-6-1 Refrigerator Compartment Lamp

- 1) Release 2 screws.
- 2) Hold both ends with your both hands and pull it downward to remove it.

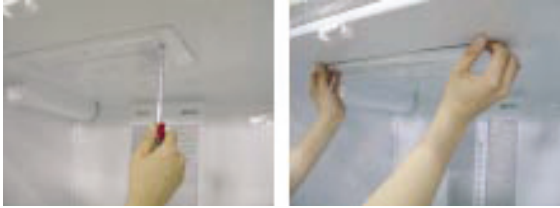


Figure 12

- 3) Use a flat tool as shown below to remove the cover lamp.

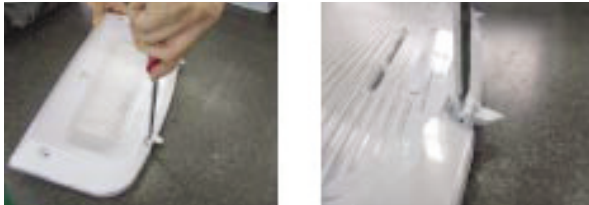


Figure 13

- 4) As shown below, use a flat tool to remove the cover lamp.

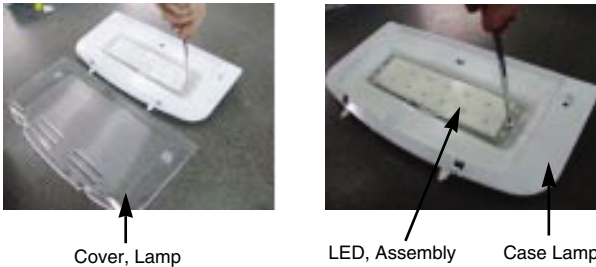


Figure 14

3-6-2 Freezer Compartment Lamp

1. Unplug refrigerator power cord form outlet.
2. Remove screw with direver.
3. Grasp the cover Lamp,pull the cover downward.

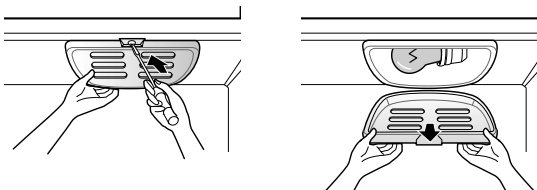


Figure 15

3-7 MULTI DUCT

1. Remove the upper and lower Caps by using a flat screwdriver, and remove 2 screws. (Figure 16)
2. Disconnect the lead wire on the bottom position.

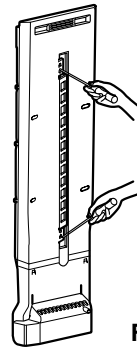


Figure 16

3-8 MAIN PWB

- 1) Loosen the 3 screws on the PWB cover.



- 2) Remove the PWB cover



- 3) Disconnect wire harness and replace the main PWB in the reverse order of removal.



3-9 DISPENSER



- 1) Pull out the darin



- 2) Hold the inner side of cover dispenser with both hands at the handle side to pull it out forward.



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



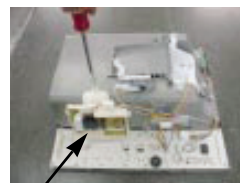
- 4) Rmouve the connected part of Lead wire.

- ▲ CAUTION:** When replacing the dispenser cover in the reverse order of removal, be careful that the lead wire does not come out and the water tube is not pinched by the dispenser.

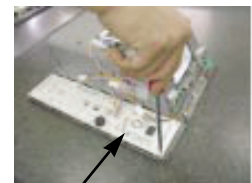


3-10 DISPLAY PCB

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



Case, PCB



Display PCB

3-11 ICE BUTTON ASSEMBLY

- 1) Remove the screw fixing the button lever.
- 2) Push the spring from the hanging hook to remove it.
- 3) Apply some pressure to the rib in ① direction and lift the button in ② direction.

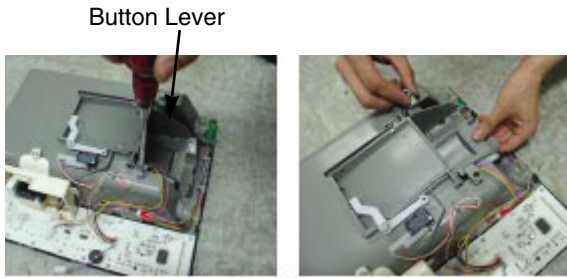


Button Lever



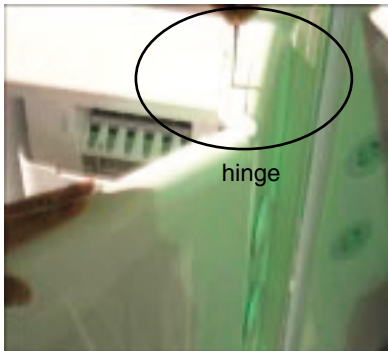
3-12 WATER BUTTON ASSMEBLY

- 1) Romove screws.
- 2) Grasp the Button assembly and lift up.



3-13 ICE CORNER DOOR REPLACEMENT

- 1) Loosen the front screw as shown in the picture.
- 2) Lift up the hinge with one hand.
- 3) Pull out the Ice Corner Door with the other hand.



3-14 ICEMAKER REPLACEMENT

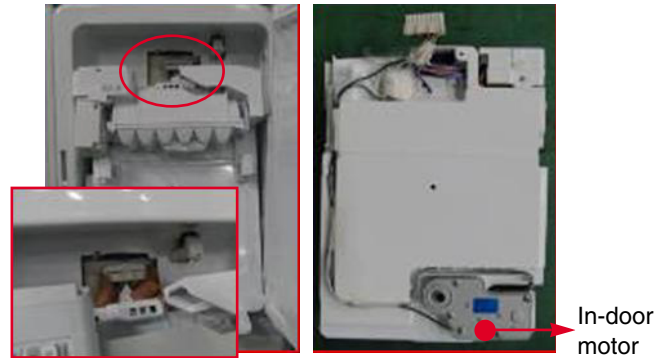
- 1) Remove the stainless screws marked in the picture below.



- 2) Grasp the bottom of motor cover assembly and pull it out slowly.



- 3) Disconnect wire harness from wall of compartment.



※ Caution: Check to see if the housing is stuck to mold and taped. If the housing is not on its original position, it will disturb Cover, motor to be positioned to the unit.



3-15 SUB PWB FOR WORKING DISPENSER

1) Disconnect the wire harness.



2) Loosen the screw on the sub PWB and replace the sub PWB in the reverse order of removal.



3-16 CAP DUCT MOTOR REPLACEMENT

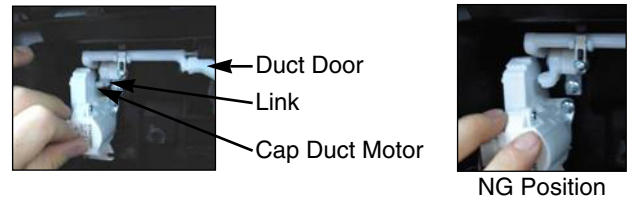
1) Separate the Housing of the Cap Duct Motor.



2) Unscrew 3 screws to disassemble the motor.



3) When replacing to a new Motor, always check position of the Duct Door and Link to install the Motor.



4) Assemble on the screws.

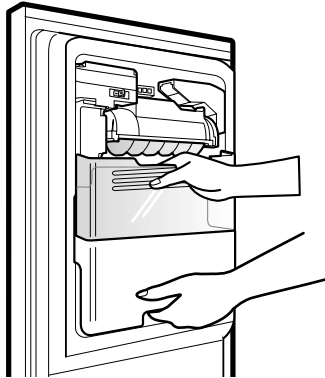


5) Contract the Housing.

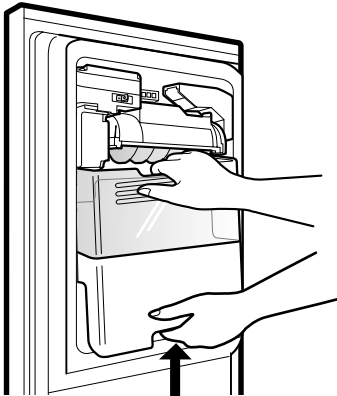


3-17 HOW TO REMOVE A ICE BIN

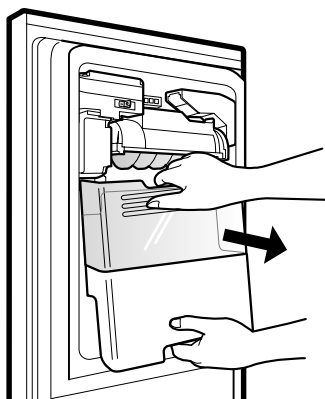
1) Grip the handles, as shown in the picture.



2) Lift the lower part slightly.

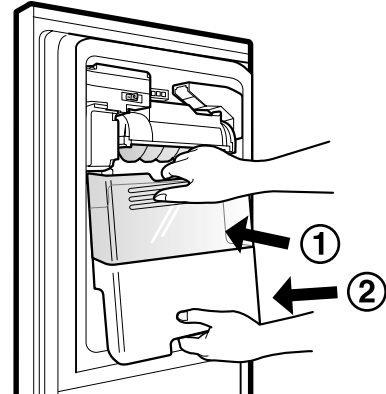


3) Take the Ice Bin out slowly.



3-18 HOW TO INSERT A ICE BIN

1) Insert the Ice Bin, slightly tilting it to avoid touching the Icemaker. (Especially, Ice-Detecting Sensor)



3-19 HOW TO REMOVE AND REINSTALL THE PULLOUT DRAWER

3-19-1 Follow Steps to Remove

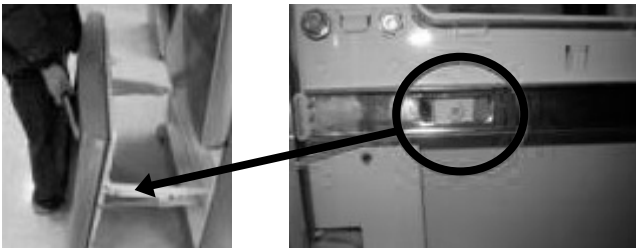
Step 1) Open the freezer door.



Step 2) Remove the lower basket.



Step 3) Remove the two screws from the guide rails (one from each side).



Step 4) Lift the freezer door up to unhook it from the rail support and remove. Pull both rails to full extension.

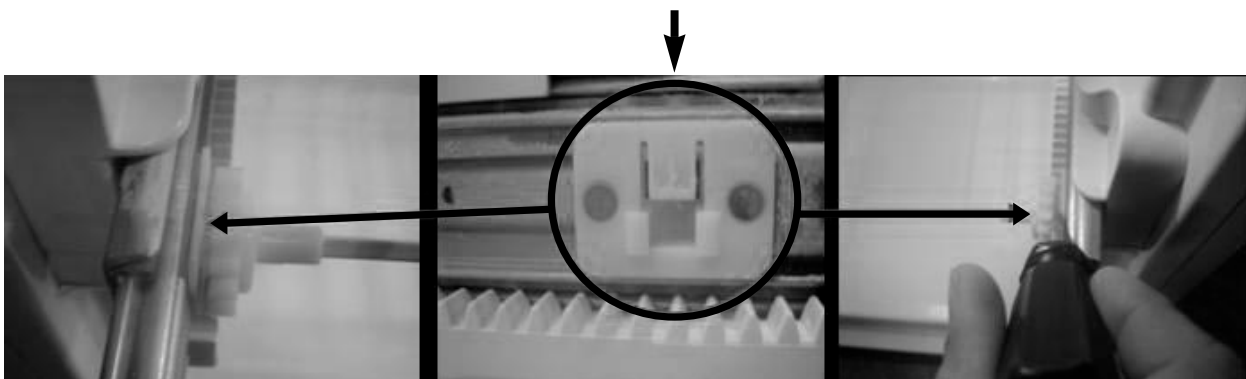


Step 5) First : Remove the gear from the left side first by releasing the tab behind the gear, place a screwdriver between the gear and the tab and pull up on the gear.

Second : Remove the center rail.

Third : Remove the gear from the right side by following the same steps for the left side.

NOTE : THIS TAB MUST BE PUSHED IN TO RELEASE THE GEAR.



3-19-2 Follow Steps to Reinstall

Step 1) Reinstall the right side gear into the clip.



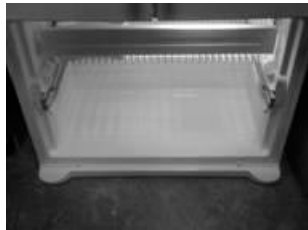
Step 2) Insert the rail into the right side gear. Gears do **not** need to be perpendicular to each other.



Step 3) Insert the rail into the left side gear, and insert the gear into the clip.



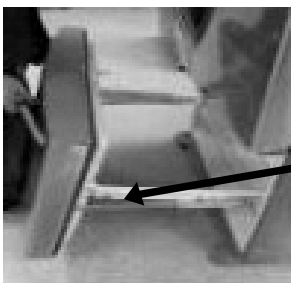
Step 4) The rail system will align itself by pushing the rails all the way into the freezer section. Pull the rails back out to full extension.



Step 5) Reinstall the freezer door by inserting the rail tabs into the guide rail.



Step 6) Reinstall the two screws into the guide rails (one from each side).

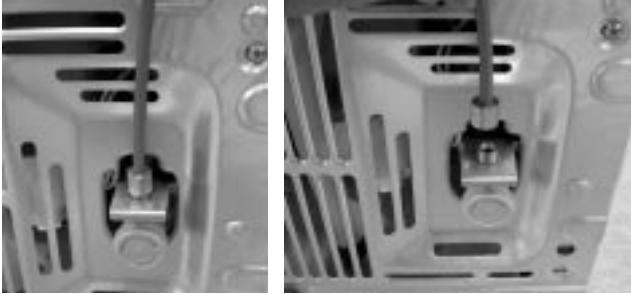


Step 7) Reinstall the lower basket, and close the freezer door.

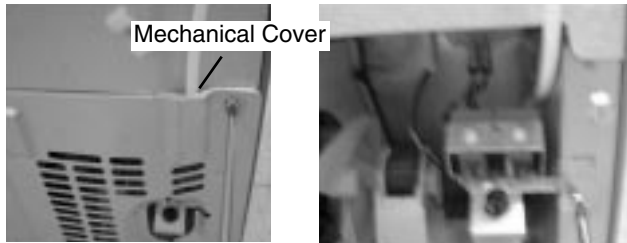


3-20 WATER VALVE DISASSEMBLY METHOD

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



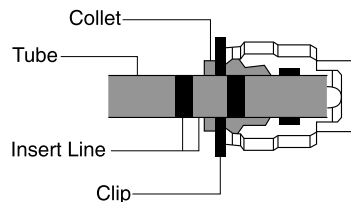
- 2) Separate the Mechanical Cover and Valve Screw.



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

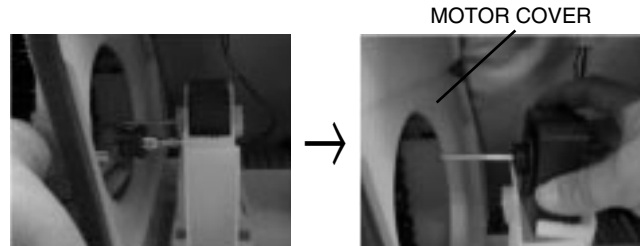


- 4) Lay a dry towel on the floor and get ready to spill water from the water filter. Pull out the Cilp. Then press te collet to separate the tube from the connector and pour out the water until emptied.

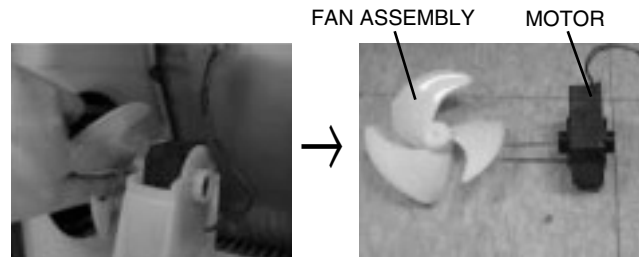


3-21 FAN AND FAN MOTOR DISASSEMBLY METHOD

- 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.

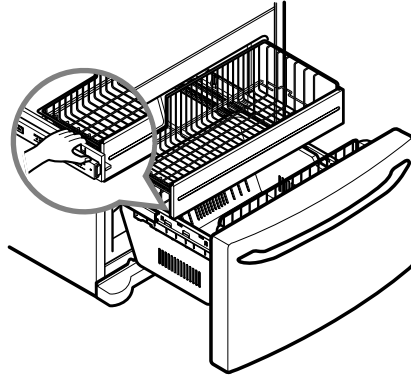


The assembly is in the reverse order of the disassembly and take special care for the following details.

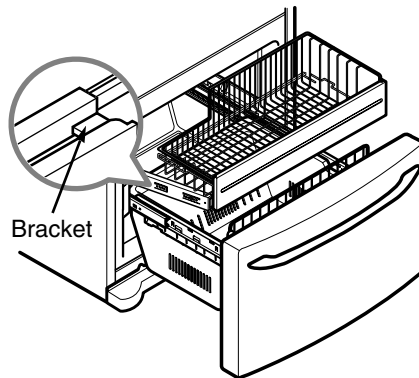
1. Be careful not to bend the tube during assembly.
2. Press the WATER DISPENSER button until water pours out and check for leakage in the CONNECTOR TUBE (It differs by the water pressure but usually takes about 2 minutes until water pours out.)

3-22 PULL OUT DRAWER

To remove the drawer, push the tabs located on the front inside surface of each rail. Next, gently lift the rear left and right sides of the drawer and pull it out.



To reinstall, pull out both rails to full extension. Insert the end of rib in the bracket at left and right. Making sure that the guides at the front are lined up properly, gently push down on both sides.



4. ADJUSTMENT

4-1 COMPRESSOR

4-1-1 Role

The compressor intakes low temperature and low pressure gas from the evaporator of the refrigerator and compresses this gas to high-temperature and high-pressure gas. It then delivers the gas to the condenser.

4-1-2 Note for Usage

- (1) Be careful not to allow over-voltage and over-current.
- (2) Do not drop or handle carelessly.
- (3) Keep away from any liquid.
If liquid such as oil or water enters the Cover PTC Compressor may fail due to breakdown of their insulating capabilities.
- (4) Always use the Parts designed for the compressor and make sure it is properly attached to the compressor. Parts may appear physically identical but could have different electrical ratings. Replace parts by part number and model number. Use only approved substitute parts.

4-1-3 Remove the cover PTC



- (1) Remove the Cover Back M/C



- (2) Loosen two screws on comp base

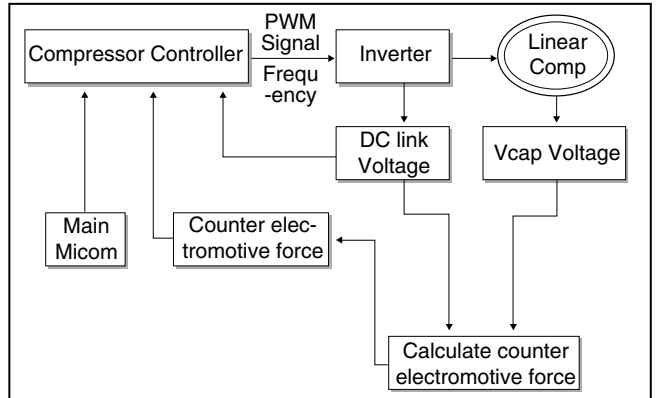


- (3) Use a L-shaped flap tool to pry off the cover
- (4) Assembly in reverse order of disassembly

4-2 INTRODUCTION OF E-LINEAR COMPRESSOR

- E-Linear compressor is run by mechanical part design through automatically varying the cooling power. The main parts consist of compressor and Sub PCB which controls the compressor. PCB authorizes constant voltage and constant frequency to the compressor and protects it.

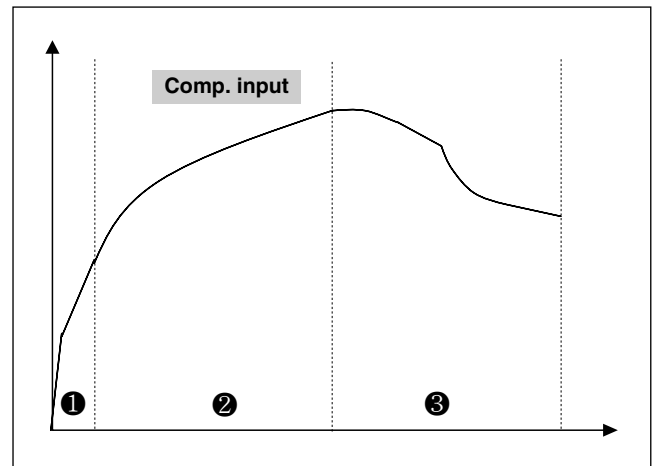
4-2-1 Control of Compressor Block Diagram



Control Block Diagram of Compressor

4-2-2 Compressor operating pattern

- Drive half stroke after turning on initial power for 1 second. Then, Reach Target Voltage by increasing 0.35 Vrms per every 0.3 second. Once reaching the target input, input naturally changes according to refrigerator load without any special control.



- Interval 1) Half stroke interval - after initial running, stay at the initial value for 1 second
- Interval 2) Running interval - Increase at every 0.3 till it reaches the target input; it takes about 1 minute
- Interval 3) CVCF interval - Run by target voltage and main operating frequency and the input naturally changes according to refrigerator load

4-2-3 Compressor protection logic

- Since linear Comp conducts linear reciprocating motion, we have protection logic for compressor, motor and PCB as the below.

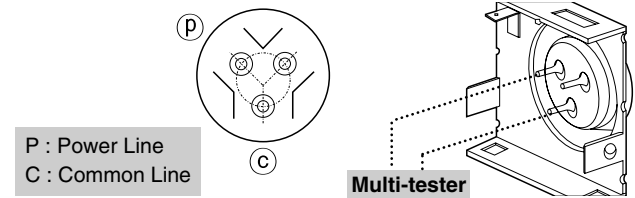
- Stroke Trip
During the operation, if stroke is above the target value, decrease the target volt by 3V.
- Current Trip
Current trip is set in order to protect compressor mechanical part and drive from the overcurrent that might arise during the operation.
Check the current for every 416.7us and if the Trip exceeds 1.86Arms more than three times at Comp ON, forcibly stop and restart six minutes later.
- Lock Piston Trip
If stroke is under 5mm even if the current is more than 14Arms, Take it as 'piston lock' and restart after 2'30" of Comp OFF. Check the current and stroke for every 416.7us and if the condition fits more than three times at Comp ON, the Trip occurs.
- IPM fault Trip
It occurs if FO signal received from IPM is LOW. For every 416.7us, check whether FO signal is LOW. The trip occurs if it is found three times during the five periods(83ms).

4-2-4 Compressor problems diagnosis

- When there is a problem or failure with the operation, you are kindly recommended to check it as follows ;

1) Check to normality by measurement of resistance

Measure the resistance between poles of the hermetic terminal (as shown picture) with a multi-tester. (measurement several minutes after power off)



Case 1-1

If the measured values lie in the normal resistance range as in the table below,

- ➔ Compressor is normal.

Case 1-2

If the measured values are above several MΩ or a infinity,

- ➔ Wire is disconnected in the shell.

Case 1-3

If the measured values are excessively of small number,

- ➔ There is short somewhere in the shell.

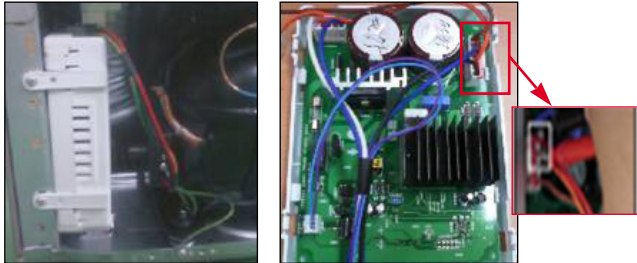
- Normal resistance range (measured at ambient temperature 23℃)

	Resistance
FC75LANE	6~8 Ω

- ※ According to ambient temperature or operation situation, the values could show a little deviation.

2) Check to normality by measurement of Voltage

Measure the resistance between pin of the connector (as shown picture) with a multi-tester.



<Fig. 1>

<Fig. 1>

Standard for normality

- In order to decide whether compressor operating is normal or not, check the output transfer during the refrigerator operation.
- After input the initial power and compressor operates, wait for 10 minutes to estimate.
- Compressor operation may be diagnosed as normal if the voltage falls between 145V and 180V.

Warning

1. Please be cautious of electric shock and short (it is estimated after turning on initial power).
2. If the voltage is estimated less than 80V, it is diagnosed as bad.

3) Check problems by LED On & Off Count _ (Sub PCB)

If compressor protection logic is running, LED Lamp's blinking frequency of sub PCB, which takes in charge of control, can help estimate the protection logic's symptoms and the cause of its problems.

Trip name	Led Times	Comp Off Time
Stroke Trip	2	1 min
Current Trip	6	6min
Lock Piston Trip	5	2min 30sec
IPM fault trip	7	20sec

- Current Trip ➔ PCB defects or Cycle clogging maybe the causes. After estimating winding resistance, estimate compressor operation voltage to check if there is any problem and take actions to repair cycle at replacement of compressor.
- Stroke Trip ➔ can occur when the surrounding temperature is high, C-Fan, F-Fan and so on are constrained, or when cycle problems, such as moisture blocking or compressor defect, are related.
- Lock Piston Trip ➔ Since compressor itself can be a potential cause of a defect, estimate the compressor resistance value according to #1's compressor winding value estimation method and estimate the #2's compressor operation voltage to decide whether it is defective or not (Before replacement of compressor, replace PCB and conduct the replacement of compressor during compressor replacement)
- IPM fault Trip ➔ Replace sub PCB since there is high chance that it is caused by sub PCB's part defect.

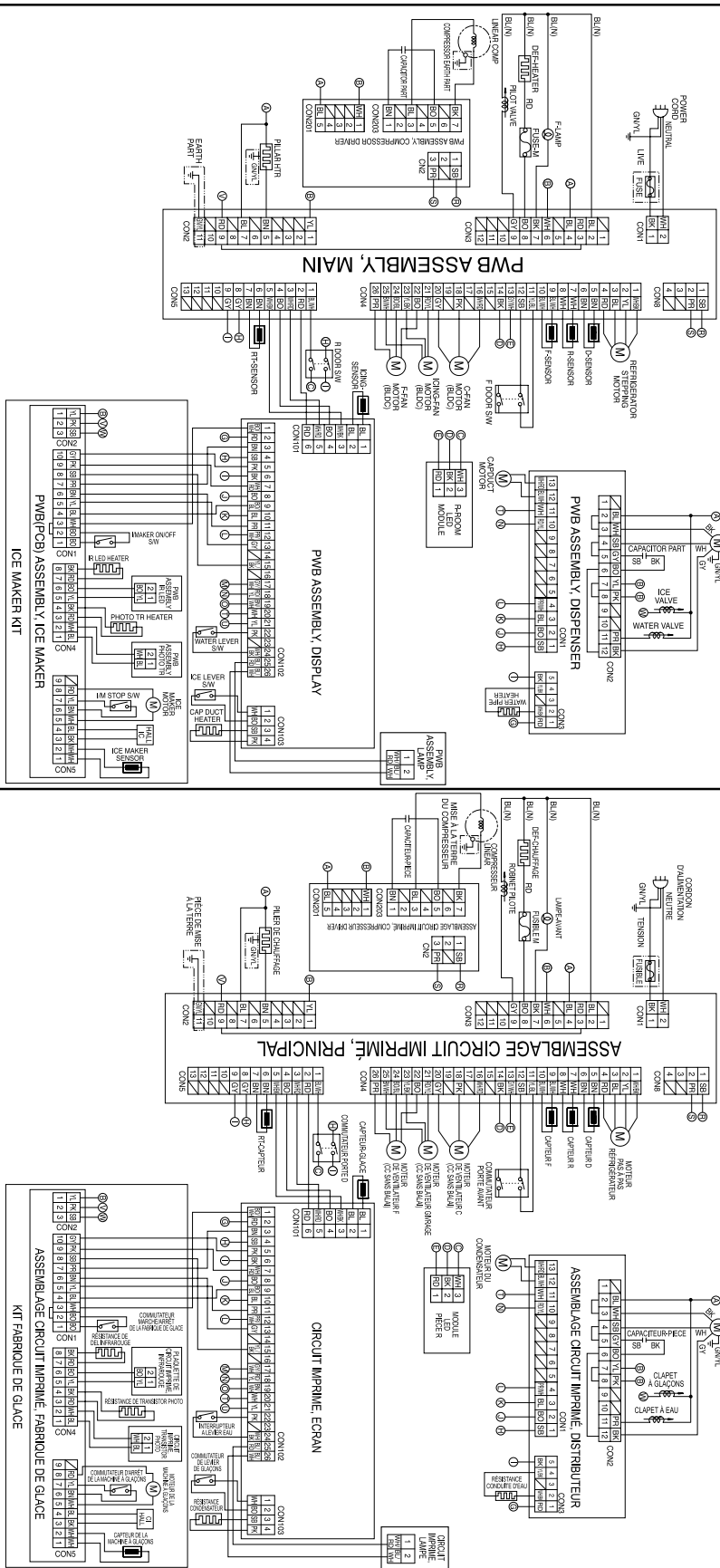
5. CIRCUIT DIAGRAM



CIRCUIT DIAGRAM

*PART PART: RUG TYPE AND COMP PART PART:
 *TYPE OF CIRCUIT BOARD: MAIN BOARD SUBJECT TO
 CHANGE IN STRUCTURE AND CIRCUIT BOARD TYPE.

*PIECE DE MERCI A LA TIRE: LE TYPE DE PIÈSE ET LE MERCI A LA TIRE DU COMPRESSEUR.
 *LISTE DES PIÈSES ET DES SCHÉMAS DU CIRCUIT SONT SUIVIS A MODIFICATION SELON LES RÉGIONS ET LE TYPE DE MODÈLE.



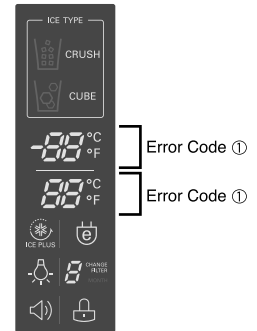
BL(BLACK) : NOIR	BL(BLUE) : BLEU	BN(BROWN) : MARRON	BO(BRIGHT ORANGE) : ORANGE BRILLANT	GI(GRAY) : GRIS	RO(RED) : ROUGE	WH(WHITE) : BLANC	WB(WHITELBLACK) : LANCNOIR	WR(WHITERED) : BLANC/ROUGE	BW(BROWNWHITE) : MARRON/BLANC	RD(REDWHITE) : ROUGE/BLANC	RY(YELLOW) : JAUNE	BY(BLUEYELLOW) : BLEU/BLANC	BN(BROWNWHITE) : MARRON/BLANC	RD(REDWHITE) : ROUGE/BLANC	RY(YELLOW) : JAUNE	BY(BLUEYELLOW) : BLEU/BLANC	BN(BROWNWHITE) : MARRON/BLANC	RD(REDWHITE) : ROUGE/BLANC	RY(YELLOW) : JAUNE	BY(BLUEYELLOW) : BLEU/BLANC
PK(PINK) : ROSE	GNV(GREENYELLOW) : VERT/JAUNE	GNV(GREEN) : VERT	WH(WHITE) : BLANC	WB(WHITELBLACK) : LANCNOIR	WR(WHITERED) : BLANC/ROUGE	WB(WHITELBLACK) : LANCNOIR	WR(WHITERED) : BLANC/ROUGE	WB(WHITELBLACK) : LANCNOIR	WR(WHITERED) : BLANC/ROUGE	WB(WHITELBLACK) : LANCNOIR	WR(WHITERED) : BLANC/ROUGE	WB(WHITELBLACK) : LANCNOIR	WR(WHITERED) : BLANC/ROUGE	WB(WHITELBLACK) : LANCNOIR	WR(WHITERED) : BLANC/ROUGE	WB(WHITELBLACK) : LANCNOIR	WR(WHITERED) : BLANC/ROUGE	WB(WHITELBLACK) : LANCNOIR	WR(WHITERED) : BLANC/ROUGE	WB(WHITELBLACK) : LANCNOIR

6. TROUBLESHOOTING

6-1 Error Code Summary

▲ WARNING: When you check the Resistance values,
be sure to turn off the power.
And wait for the voltage-discharge sufficiently.


NOTE) 3 hours before the error : Press the Ice Plus button and Freezer button simultaneously
3 hours after the error : All errors, except for "Er rt", "Er SS",
"Er IS(except for Icing sensor)", "Er gF", "Er It" error, are displayed.
"Er IS" which is displayed without input of user is the error of Icing Sensor.



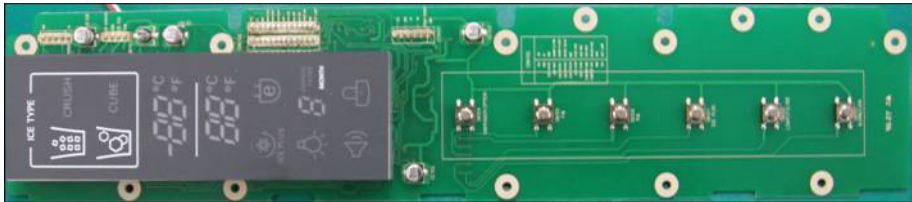
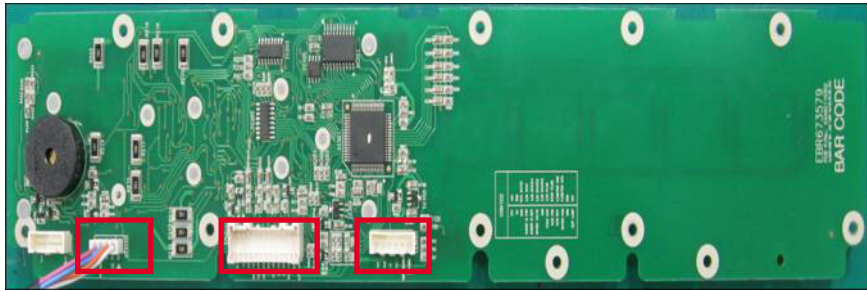
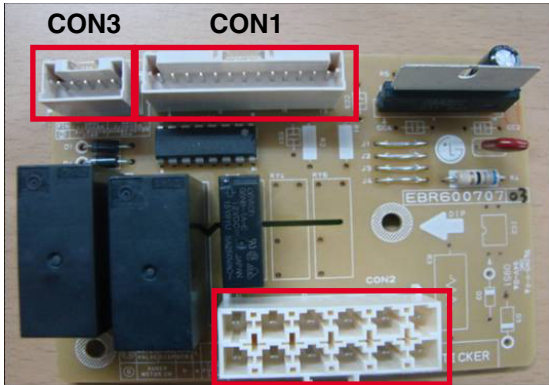
NO	Error Detection Category	Error Display		Error Generation Factors	Remark
		Freezer Temperature	Freezer Temperature		
1	Normality			None	Normal operation of Display
2	Freezer Sensor Error	Er	FS	Short or Disconnection of Freezer Sensor	Check each sensor and its connector.
3	Refrigerator Sensor Error	Er	rS	Short or Disconnection of Refrigerator Sensor	
4	Defrosting Sensor Error	Er	dS	Short or Disconnection of Defrosting Sensor	
5	Icing Sensor Error	Er	IS	Short or disconnection of the sensor about Ice maker (Icing sensor, Ice maker sensor)	
6	Pantry sensor error	Er	SS	Short or Disconnection of Pantry Sensor	
7	Room Temp Sensor Error	Er	rt	Short or Disconnectoin of Room temp.sensor	
8	Ice maker kit defect	Er	It	Other Electric system error such as moter, gear, Hall IC, operation circuit within I/M kit	
9	Flow Meter(Sensor) Defect	Er	gF	Error of flow meter or water input or low water pressure	Error of flow meter or water input or low water pressure or flow meter connection
10	Poor Defrosting	Er	dH	Even though it is passed 1 hour since then Defrosting, if Defrosting sensor is not over 46°F(8°C), it is caused	Temperature Fuse Disconnection, Heater disconnection, DRAIN Jam, Poor Relay for Heater
11	Abnormality of BLDC FAN Motor for Ice Making	Er	IF	It is caused when feedback signal isn't over 65 seconds during BLDC FAN motor operating	Poor BLDC Motor connection, DRIVE IC, and TR
12	Abnormality of BLDC FAN Motor for Freezer	Er	FF	It is caused when feedback signal isn't over 65 seconds during BLDC FAN motor operating	Poor BLDC Motor connection, DRIVE IC, and TR
13	Abnormality of BLDC FAN MOTOR For Refrigerator	Er	rF	It is caused when feedback signal isn't over 65 seconds during BLDC FAN motor operating	Poor BLDC Motor connection, DRIVE IC, and TR
14	Abnormality of BLDC FAN Motor for Mechanic Room	Er	CF	It is caused when feedback signal isn't over 65 seconds during BLDC FAN motor operating	Poor BLDC Motor connection, DRIVE IC, and TR
15	Communication Error	Er	CO	Communication Error between Micom of Main PCB and Display Micom	Poor Communication connection,Poor TR of Transmitter and Receiver Tx/Rx between display and main board.

7. PCB Picture

7-1 Main PCB

P/No & MFG	Picture
<p>EBR67348001 (2010.02~)</p>	 <p>The image shows a green printed circuit board (PCB) assembly. Five connectors are highlighted with red boxes and labeled: CON4, CON5, and CON8 are on the left side; CON3 and CON2 are on the right side; and CON1 is at the bottom right. The board contains various electronic components including capacitors, resistors, and integrated circuits.</p>

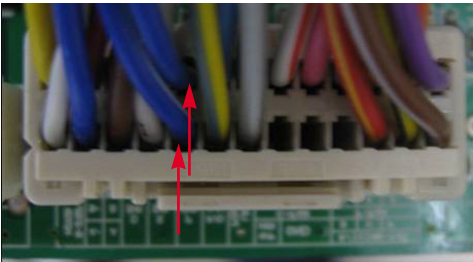
7-2 Display PCB & Sub PCB

P/No	Picture
<p>Display PCB EBR67357901 (2010.02~)</p>	
	 <p>CON103 CON102 CON101</p>
<p>Sub PCB EBR60070707 (2010.02~)</p>	 <p>CON3 CON1</p> <p>CON2</p>

8. Troubleshooting With Error Display

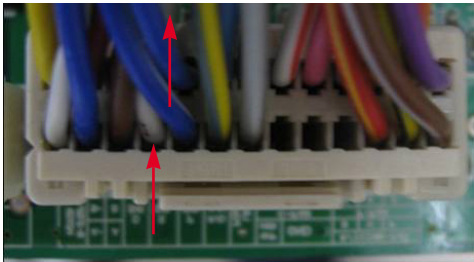
8-1 Freezer Sensor Error (Er FS)



No	Checking flow	Result & SVC Action																												
1	Check for a loose connection.																													
2	<p>Check the <u>Blue/White to Blue/White.</u></p>  <p><CON4></p>	<table border="1"> <thead> <tr> <th colspan="2">Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <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> </tbody> </table> <p><Temperature table-1></p> <table border="1"> <thead> <tr> <th>(1) To (2)</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>-22°F / -30°C</td> <td>40.5 ~ 38.5 kΩ</td> </tr> <tr> <td>-13°F / -25°C</td> <td>30.5 ~ 28.5 kΩ</td> </tr> <tr> <td>-4°F / -20°C</td> <td>23 ~ 21.5 kΩ</td> </tr> <tr> <td>5°F / -15°C</td> <td>17.5 ~ 16.5 kΩ</td> </tr> <tr> <td>14°F / -10°C</td> <td>13.5 ~ 12.5 kΩ</td> </tr> <tr> <td>23°F / -5°C</td> <td>10.5 ~ 9.5 kΩ</td> </tr> <tr> <td>32°F / 0°C</td> <td>8 ~ 7.5 kΩ</td> </tr> </tbody> </table> <p>※ The sensor is determined by the temperature. For example, 23kΩ indicates -4°F.</p>	Result		SVC Action	0 Ω	Short	Change the sensor	OFF	Open	Replace the refrigerator	Other	Normal	Check the Temp and resistance (Table-1)	(1) To (2)	Result	-22°F / -30°C	40.5 ~ 38.5 kΩ	-13°F / -25°C	30.5 ~ 28.5 kΩ	-4°F / -20°C	23 ~ 21.5 kΩ	5°F / -15°C	17.5 ~ 16.5 kΩ	14°F / -10°C	13.5 ~ 12.5 kΩ	23°F / -5°C	10.5 ~ 9.5 kΩ	32°F / 0°C	8 ~ 7.5 kΩ
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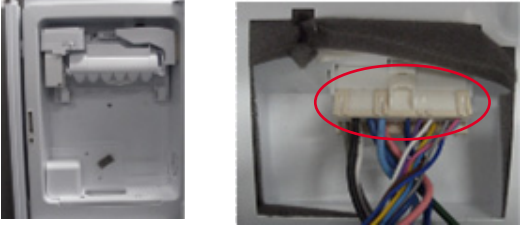
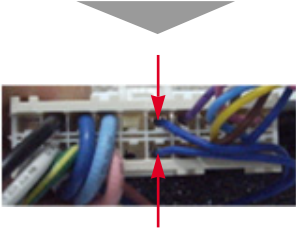
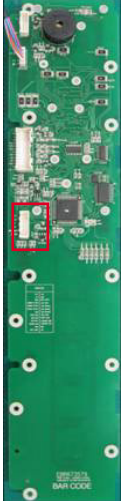
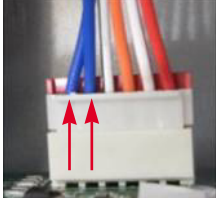
8-2 Refrigerator Sensor Error (Er rS)



No	Checking flow	Result & SVC Action																								
1	Check for a loose connection.																									
2	<p>Check the <u>White to White</u>.</p>  <p><CON4></p>	<table border="1" data-bbox="890 551 1455 757"> <thead> <tr> <th colspan="2">Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <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-2)</td> </tr> </tbody> </table> <p data-bbox="1018 797 1310 831" style="text-align: center;"><Temperature table-2></p> <table border="1" data-bbox="949 831 1382 1122"> <thead> <tr> <th>Temperature</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>23°F / -5°C</td> <td>38.5 ~ 36.5 kΩ</td> </tr> <tr> <td>32°F / 0°C</td> <td>30.5 ~ 29.5 kΩ</td> </tr> <tr> <td>41°F / 5°C</td> <td>24.5 ~ 23.5 kΩ</td> </tr> <tr> <td>50°F / 10°C</td> <td>20 ~ 19 kΩ</td> </tr> <tr> <td>59°F / 15°C</td> <td>16 ~ 15.5 kΩ</td> </tr> </tbody> </table> <p data-bbox="895 1140 1353 1234"> ※ The sensor is determined by the temperature. For example, 30kΩ indicates 32°F. </p>	Result		SVC Action	0 Ω	Short	Change the sensor	OFF	Open	Replace the refrigerator	Other	Normal	Check the Temp and resistance (Table-2)	Temperature	Result	23°F / -5°C	38.5 ~ 36.5 kΩ	32°F / 0°C	30.5 ~ 29.5 kΩ	41°F / 5°C	24.5 ~ 23.5 kΩ	50°F / 10°C	20 ~ 19 kΩ	59°F / 15°C	16 ~ 15.5 kΩ
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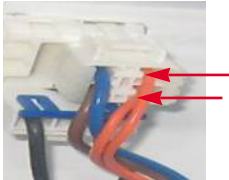
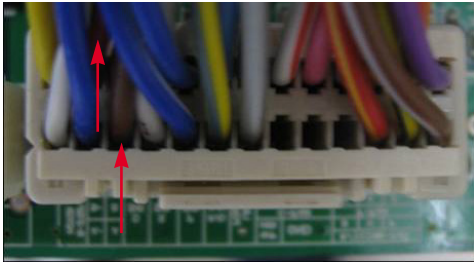
8-3 Icing Sensor Error (Er IS)



No	Checking flow	Result & SVC Action																												
1	Check for a loose connection.																													
2	<p>Check the <u>Blue to Blue</u>.</p>    <p>CON101</p>  <p><Display> <CON101></p>	<table border="1" data-bbox="895 551 1458 759"> <thead> <tr> <th colspan="2">Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <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> </tbody> </table> <p data-bbox="1023 797 1313 831" style="text-align: center;"><Temperature table-1></p> <table border="1" data-bbox="952 833 1385 1218"> <thead> <tr> <th>(1) To (2)</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>-22°F / -30°C</td> <td>40.5 ~ 38.5 kΩ</td> </tr> <tr> <td>-13°F / -25°C</td> <td>30.5 ~ 28.5 kΩ</td> </tr> <tr> <td>-4°F / -20°C</td> <td>23 ~ 21.5 kΩ</td> </tr> <tr> <td>5°F / -15°C</td> <td>17.5 ~ 16.5 kΩ</td> </tr> <tr> <td>14°F / -10°C</td> <td>13.5 ~ 12.5 kΩ</td> </tr> <tr> <td>23°F / -5°C</td> <td>10.5 ~ 9.5 kΩ</td> </tr> <tr> <td>32°F / 0°C</td> <td>8 ~ 7.5 kΩ</td> </tr> </tbody> </table> <p data-bbox="895 1236 1350 1330">※ The sensor is determined by the temperature. For example, 23kΩ indicates -4°F.</p>	Result		SVC Action	0 Ω	Short	Change the sensor	OFF	Open	Replace the refrigerator	Other	Normal	Check the Temp and resistance (Table-1)	(1) To (2)	Result	-22°F / -30°C	40.5 ~ 38.5 kΩ	-13°F / -25°C	30.5 ~ 28.5 kΩ	-4°F / -20°C	23 ~ 21.5 kΩ	5°F / -15°C	17.5 ~ 16.5 kΩ	14°F / -10°C	13.5 ~ 12.5 kΩ	23°F / -5°C	10.5 ~ 9.5 kΩ	32°F / 0°C	8 ~ 7.5 kΩ
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23°F / -5°C	10.5 ~ 9.5 kΩ																													
32°F / 0°C	8 ~ 7.5 kΩ																													

8-4 Defrost Sensor Error (F dS)



No	Checking flow	Result & SVC Action																								
1	<p>Check for a loose connection.</p> 																									
2	<p>Check the <u>Orange to Orange</u>.</p>  <p>Check the <u>Brown to Brown</u>.</p>  <p><CON4></p>	<table border="1" data-bbox="890 748 1455 958"> <thead> <tr> <th colspan="2">Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <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-3)</td> </tr> </tbody> </table> <p data-bbox="1018 999 1310 1028"><Temperature table-3></p> <table border="1" data-bbox="948 1032 1382 1323"> <thead> <tr> <th>Temperature</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>23°F / -5°C</td> <td>38.5 ~ 36.5 kΩ</td> </tr> <tr> <td>32°F / 0°C</td> <td>30.5 ~ 29.5 kΩ</td> </tr> <tr> <td>41°F / 5°C</td> <td>24.5 ~ 23.5 kΩ</td> </tr> <tr> <td>50°F / 10°C</td> <td>20 ~ 19 kΩ</td> </tr> <tr> <td>59°F / 15°C</td> <td>16 ~ 15.5 kΩ</td> </tr> </tbody> </table> <p data-bbox="895 1341 1347 1435">※ The sensor is determined by the temperature. For example, 23kΩ indicates -4°F.</p>	Result		SVC Action	0 Ω	Short	Change the sensor	OFF	Open	Replace the refrigerator	Other	Normal	Check the Temp and resistance (Table-3)	Temperature	Result	23°F / -5°C	38.5 ~ 36.5 kΩ	32°F / 0°C	30.5 ~ 29.5 kΩ	41°F / 5°C	24.5 ~ 23.5 kΩ	50°F / 10°C	20 ~ 19 kΩ	59°F / 15°C	16 ~ 15.5 kΩ
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50°F / 10°C	20 ~ 19 kΩ																									
59°F / 15°C	16 ~ 15.5 kΩ																									

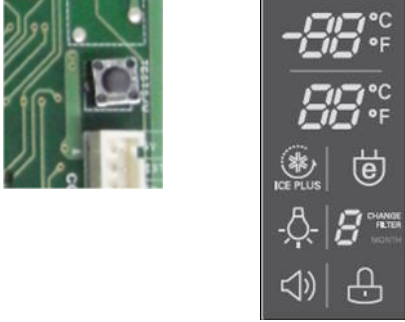


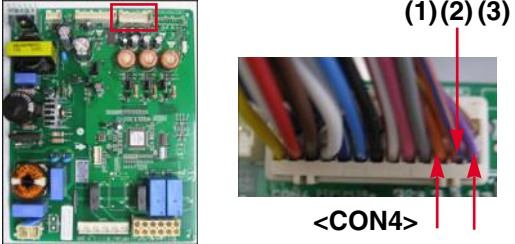
8-5 Defrost Heater Error (Er dH)



No	Checking flow	Result & SVC Action																		
1	Check the <u>Door gasket.</u>	<table border="1"> <thead> <tr> <th>Part</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Fuse-M</td> <td>0 Ω</td> <td>Go to the 3</td> </tr> <tr> <td>Other</td> <td>Change Fuse-M</td> </tr> <tr> <td rowspan="2">Def' Heater</td> <td>34~42 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>21 kΩ ↓</td> <td>Go to the 3</td> </tr> <tr> <td>Other</td> <td>Go to the 5</td> </tr> </tbody> </table>	Part	Result	SVC Action	Fuse-M	0 Ω	Go to the 3	Other	Change Fuse-M	Def' Heater	34~42 Ω	Go to the 3	Other	Change Fuse-M	Def' Sensor	21 kΩ ↓	Go to the 3	Other	Go to the 5
Part	Result		SVC Action																	
Fuse-M	0 Ω	Go to the 3																		
	Other	Change Fuse-M																		
Def' Heater	34~42 Ω	Go to the 3																		
	Other	Change Fuse-M																		
Def' Sensor	21 kΩ ↓	Go to the 3																		
	Other	Go to the 5																		
2	<p>Check the <u>Defrost control part.</u></p>																			
3	<p>Input Test 3 Mode. (Push the button 3 times)</p>																			
4	<p>Check the <u>Blue to Orange.</u></p> <p><CON3></p>	<table border="1"> <thead> <tr> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>112 ~ 116 V</td> <td>Go to the 5</td> </tr> <tr> <td>0 V</td> <td>Replace Main PCB</td> </tr> </tbody> </table>	Result	SVC Action	112 ~ 116 V	Go to the 5	0 V	Replace Main PCB												
Result	SVC Action																			
112 ~ 116 V	Go to the 5																			
0 V	Replace Main PCB																			
5	<p>Release the test mode. Push the button 1 times. (Normal)</p>																			
6	<p>Check the <u>Blue to Orange.</u></p> <p><CON3></p>	<table border="1"> <thead> <tr> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>0 V</td> <td>Explain to customer</td> </tr> <tr> <td>112 ~ 116 V</td> <td>Replace Main PCB</td> </tr> </tbody> </table>	Result	SVC Action	0 V	Explain to customer	112 ~ 116 V	Replace Main PCB												
Result	SVC Action																			
0 V	Explain to customer																			
112 ~ 116 V	Replace Main PCB																			




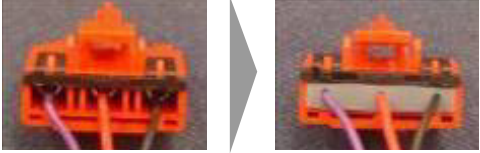


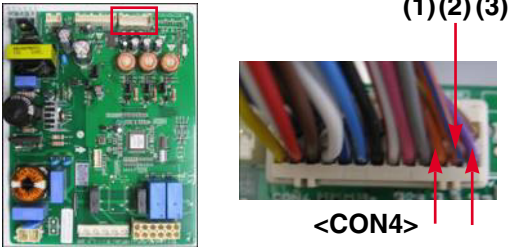
8-6 Freezer Fan Error (Er FF)



No	Checking flow	Result & SVC Action									
1	<p>Reset the unit and Input Test 1 Mode. (Push the button 1 time)</p>										
2	<p>Open the freezer door and Check the air flow. ※ While an error code is displayed, the fan is not working.</p>	 <table border="1" data-bbox="1134 1003 1458 1151"> <thead> <tr> <th>Status</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>No windy</td> <td>Go to 3</td> </tr> <tr> <td>Windy</td> <td>Go to 4</td> </tr> </tbody> </table>	Status	SVC Action	No windy	Go to 3	Windy	Go to 4			
Status	SVC Action										
No windy	Go to 3										
Windy	Go to 4										
3	<p>Check the <u>Fan motor</u>.</p> 	<p>Rotate fan using your hand. It feel sticky, change the motor. (Cause of ice or rust inside of motor)</p>									
4	<p>Check the <u>Fan motor voltage</u>.</p>  <p>(1)(2)(3)</p> <p><CON4></p>	<table border="1" data-bbox="892 1570 1458 1715"> <thead> <tr> <th>Point</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>(1) ~ (2)</td> <td>Below 9 V</td> <td>Change the PCB</td> </tr> <tr> <td>(2) ~ (3)</td> <td>0 or 5 V</td> <td>Change the motor</td> </tr> </tbody> </table>	Point	Result	SVC Action	(1) ~ (2)	Below 9 V	Change the PCB	(2) ~ (3)	0 or 5 V	Change the motor
Point	Result	SVC Action									
(1) ~ (2)	Below 9 V	Change the PCB									
(2) ~ (3)	0 or 5 V	Change the motor									







8-7 Icing Fan Error (Er IF)



No	Checking flow	Result & SVC Action									
1	<p>Reset the unit and Input Test 1 Mode. (Push the button 1 time)</p>										
2	<p>Open the refrigerator door and Check the air flow. ※ While an error code is displayed, the fan is not working.</p>	 <table border="1" data-bbox="1136 654 1465 795"> <thead> <tr> <th>Status</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>No windy</td> <td>Go to the 3,4</td> </tr> <tr> <td>Windy</td> <td>Go to the 5</td> </tr> </tbody> </table>	Status	SVC Action	No windy	Go to the 3,4	Windy	Go to the 5			
Status	SVC Action										
No windy	Go to the 3,4										
Windy	Go to the 5										
3	<p>Check the <u>Connector</u>. (Frozen caused the PCB short)</p> 	<p>※ Tip To protect ice short, add wire seal in connector. We developed new type connector, so order the new type.</p> 									
4	<p>Check the <u>Fan motor</u>. (Frozen, Lock, ect.)</p> 	 <p>Wire seal (Silicon)</p> <table border="1" data-bbox="893 1326 1460 1467"> <thead> <tr> <th>No</th> <th>Part Name</th> <th>Old P/No</th> <th>New P/No</th> </tr> </thead> <tbody> <tr> <td>407A</td> <td>Duct Asm, Connector</td> <td>5209JA 1044A</td> <td>5209JA 1044A</td> </tr> </tbody> </table>	No	Part Name	Old P/No	New P/No	407A	Duct Asm, Connector	5209JA 1044A	5209JA 1044A	
No	Part Name	Old P/No	New P/No								
407A	Duct Asm, Connector	5209JA 1044A	5209JA 1044A								
5	<p>Check the <u>Fan motor voltage</u>.</p>  <p>(1)(2)(3)</p> <p><CON4></p>	<table border="1" data-bbox="893 1585 1460 1729"> <thead> <tr> <th></th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>(1) ~ (2)</td> <td>Below 9 V</td> <td>Change the PCB</td> </tr> <tr> <td>(2) ~ (3)</td> <td>0 or 5 V</td> <td>Change the motor</td> </tr> </tbody> </table>		Result	SVC Action	(1) ~ (2)	Below 9 V	Change the PCB	(2) ~ (3)	0 or 5 V	Change the motor
	Result	SVC Action									
(1) ~ (2)	Below 9 V	Change the PCB									
(2) ~ (3)	0 or 5 V	Change the motor									

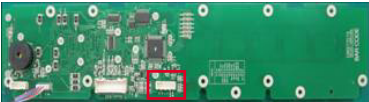
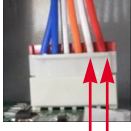
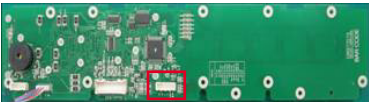
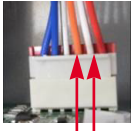

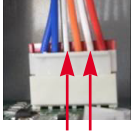

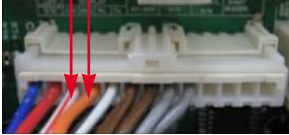

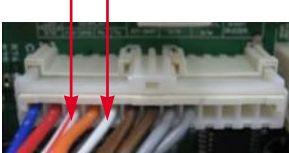
8-8 Condenser Fan Error (Er CF)



No	Checking flow	Result & SVC Action									
1	<p>Reset the unit and Input Test 1 Mode. (Push the button 1 time)</p>	 									
2	<p>Check the fan rotating. ※ While an error code is displayed, the fan is not working.</p>	 <table border="1" data-bbox="1134 651 1458 797"> <thead> <tr> <th>Status</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>No windy</td> <td>Check motor</td> </tr> <tr> <td>Windy</td> <td>Go to the 4</td> </tr> </tbody> </table>	Status	SVC Action	No windy	Check motor	Windy	Go to the 4			
Status	SVC Action										
No windy	Check motor										
Windy	Go to the 4										
3	<p>Check the <u>Fan motor</u> and <u>surrounding</u>.</p> 	<p>Rotate fan using your hand. It feel sticky, change the motor.</p>									
4	<p>Check the <u>Fan motor voltage</u>.</p>   <p>(1)(2)(3)</p> <p><CON4></p>	<table border="1" data-bbox="892 1229 1455 1370"> <thead> <tr> <th></th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>(1) ~ (2)</td> <td>Below 9 V</td> <td>Change the PCB</td> </tr> <tr> <td>(2) ~ (3)</td> <td>0 or 5 V</td> <td>Change the motor</td> </tr> </tbody> </table>		Result	SVC Action	(1) ~ (2)	Below 9 V	Change the PCB	(2) ~ (3)	0 or 5 V	Change the motor
	Result	SVC Action									
(1) ~ (2)	Below 9 V	Change the PCB									
(2) ~ (3)	0 or 5 V	Change the motor									

8-9 Communication Error (Er CO)



No	Checking flow	Result & SVC Action						
1	Check the loose connection.							
2	<p>Check the <u>Red to White/Red.</u></p>  <p>CON101 <Display></p>  <p><CON101></p>	<table border="1"> <thead> <tr> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>12 V</td> <td>Go to the 3</td> </tr> <tr> <td>Other</td> <td>Check the Hinge (loose connection) Change the Main PCB</td> </tr> </tbody> </table>	Result	SVC Action	12 V	Go to the 3	Other	Check the Hinge (loose connection) Change the Main PCB
Result	SVC Action							
12 V	Go to the 3							
Other	Check the Hinge (loose connection) Change the Main PCB							
3	<p>Check the <u>Orange to White/Red.</u></p>  <p>CON101 <Display></p>  <p><CON101></p>	<table border="1"> <thead> <tr> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>0 V or 5 V</td> <td>Change the Display PCB</td> </tr> <tr> <td>Other</td> <td>Go to the 4</td> </tr> </tbody> </table>	Result	SVC Action	0 V or 5 V	Change the Display PCB	Other	Go to the 4
Result	SVC Action							
0 V or 5 V	Change the Display PCB							
Other	Go to the 4							
4	<p>Check the <u>White/Black to White/Red.</u></p>  <p>CON101 <Display></p>  <p><CON101></p>	<table border="1"> <thead> <tr> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>0 V or 5 V</td> <td>Change the Main PCB</td> </tr> <tr> <td>Other</td> <td>Go to the 5</td> </tr> </tbody> </table>	Result	SVC Action	0 V or 5 V	Change the Main PCB	Other	Go to the 5
Result	SVC Action							
0 V or 5 V	Change the Main PCB							
Other	Go to the 5							
5	<p>Check the <u>White/Red to Orange.</u></p>   <p><CON5></p>	<table border="1"> <thead> <tr> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>0 V or 5 V</td> <td>Change the Display PCB</td> </tr> <tr> <td>Other</td> <td>Go to the 6</td> </tr> </tbody> </table>	Result	SVC Action	0 V or 5 V	Change the Display PCB	Other	Go to the 6
Result	SVC Action							
0 V or 5 V	Change the Display PCB							
Other	Go to the 6							
6	<p>Check the <u>White/Red to White/Black.</u></p>   <p><CON5></p>	<table border="1"> <thead> <tr> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>0 V or 5 V</td> <td>Change the Main PCB</td> </tr> <tr> <td>Other</td> <td>Explain to customer</td> </tr> </tbody> </table>	Result	SVC Action	0 V or 5 V	Change the Main PCB	Other	Explain to customer
Result	SVC Action							
0 V or 5 V	Change the Main PCB							
Other	Explain to customer							

9. Troubleshooting Without Error Display


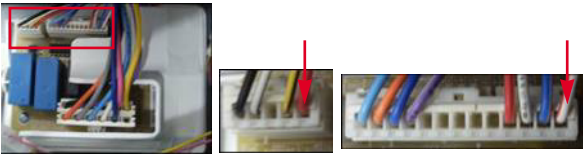
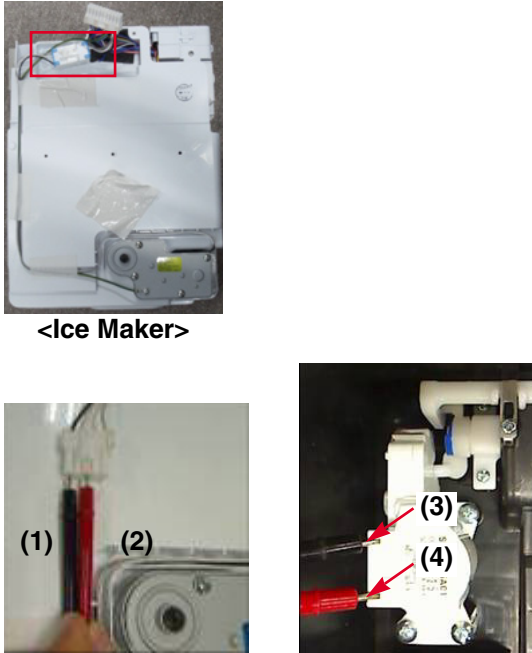
9-1 Cube mode doesn't work



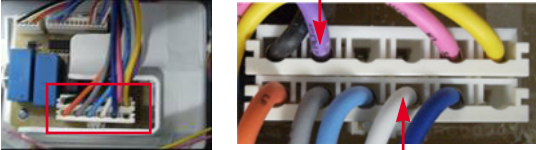
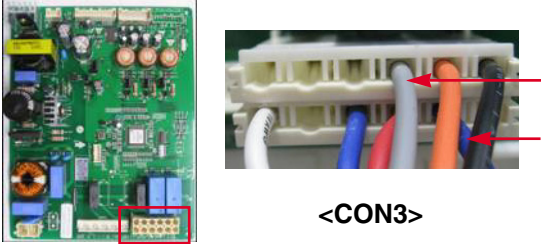
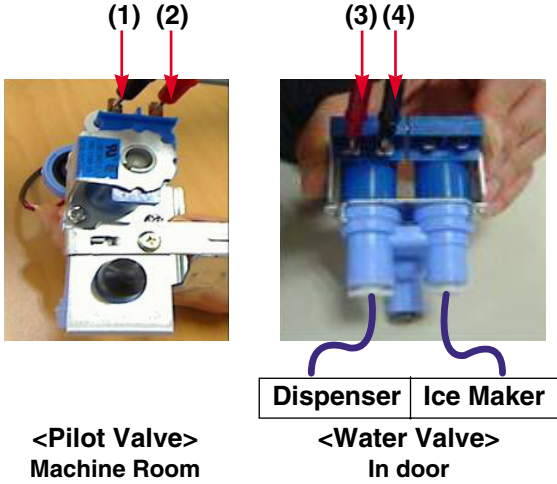
No	Checking flow	Result & SVC Action													
1	Check the loose connection.														
2	<p>Check the Black to White. (While pushing the lever S/W)</p> <p style="text-align: center;"><CON2></p>	<table border="1"> <thead> <tr> <th>Lever s/w</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Pushing</td> <td>112 ~ 115 V</td> <td>Go to the 3</td> </tr> <tr> <td>Other</td> <td>Change PCB</td> </tr> <tr> <td rowspan="2">Not pushing</td> <td>0 ~2 V</td> <td>Go to the 3</td> </tr> <tr> <td>Other</td> <td>Change PCB</td> </tr> </tbody> </table>	Lever s/w	Result	SVC Action	Pushing	112 ~ 115 V	Go to the 3	Other	Change PCB	Not pushing	0 ~2 V	Go to the 3	Other	Change PCB
Lever s/w	Result	SVC Action													
Pushing	112 ~ 115 V	Go to the 3													
	Other	Change PCB													
Not pushing	0 ~2 V	Go to the 3													
	Other	Change PCB													
3	<p>Check the Red to White Red. (While pushing the lever S/W)</p> <p style="text-align: center;"><CON3> <CON1></p>	<table border="1"> <thead> <tr> <th>Lever s/w</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Pushing</td> <td>9 ~ 12 V</td> <td>Go to the 4</td> </tr> <tr> <td>Other</td> <td>Change PCB</td> </tr> <tr> <td rowspan="2">Not pushing</td> <td>0 ~2 V</td> <td>Go to the 4</td> </tr> <tr> <td>Other</td> <td>Change PCB</td> </tr> </tbody> </table>	Lever s/w	Result	SVC Action	Pushing	9 ~ 12 V	Go to the 4	Other	Change PCB	Not pushing	0 ~2 V	Go to the 4	Other	Change PCB
Lever s/w	Result	SVC Action													
Pushing	9 ~ 12 V	Go to the 4													
	Other	Change PCB													
Not pushing	0 ~2 V	Go to the 4													
	Other	Change PCB													
4	<p>Check the resistance value.</p> <p style="text-align: center;"><Ice Maker></p> <p style="text-align: center;"><Geared Motor></p> <p style="text-align: center;"><Dispenser Motor></p>	<table border="1"> <thead> <tr> <th>Point</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">(1) to (2)</td> <td>31.1 ~ 42.1 Ω</td> <td>Explain</td> </tr> <tr> <td>Other</td> <td>Replace Geared Motor</td> </tr> <tr> <td rowspan="2">(3) to (4)</td> <td>9.9 ~ 12.1 Ω</td> <td>Explain</td> </tr> <tr> <td>Other</td> <td>Replace Geared Motor</td> </tr> </tbody> </table>	Point	Result	SVC Action	(1) to (2)	31.1 ~ 42.1 Ω	Explain	Other	Replace Geared Motor	(3) to (4)	9.9 ~ 12.1 Ω	Explain	Other	Replace Geared Motor
Point	Result	SVC Action													
(1) to (2)	31.1 ~ 42.1 Ω	Explain													
	Other	Replace Geared Motor													
(3) to (4)	9.9 ~ 12.1 Ω	Explain													
	Other	Replace Geared Motor													

9-2 Crush mode doesn't work


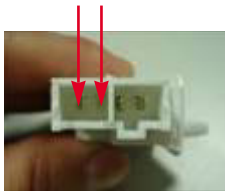
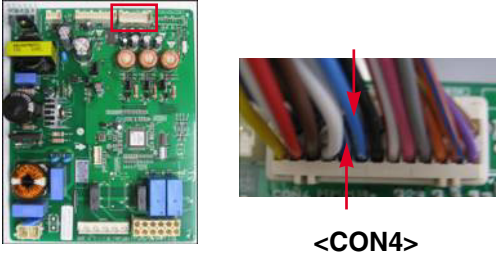
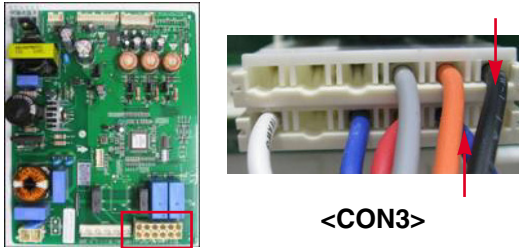


No	Checking flow	Result & SVC Action													
1	Check the loose connection.														
2	<p>Check the <u>Sky Blue to White</u>. (While pushing the lever S/W)</p>  <p style="text-align: center;"><CON2></p>	<table border="1"> <thead> <tr> <th>Lever s/w</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Pushing</td> <td>112 ~ 115 V</td> <td>Go to the 3</td> </tr> <tr> <td>Other</td> <td>Change PCB</td> </tr> <tr> <td rowspan="2">Not pushing</td> <td>0 ~2 V</td> <td>Go to the 3</td> </tr> <tr> <td>Other</td> <td>Change PCB</td> </tr> </tbody> </table>	Lever s/w	Result	SVC Action	Pushing	112 ~ 115 V	Go to the 3	Other	Change PCB	Not pushing	0 ~2 V	Go to the 3	Other	Change PCB
Lever s/w	Result	SVC Action													
Pushing	112 ~ 115 V	Go to the 3													
	Other	Change PCB													
Not pushing	0 ~2 V	Go to the 3													
	Other	Change PCB													
3	<p>Check the <u>Red to White Red</u>. (While pushing the lever S/W)</p>  <p style="text-align: center;"><CON3> <CON1></p>	<table border="1"> <thead> <tr> <th>Lever s/w</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Pushing</td> <td>9 ~ 12 V</td> <td>Go to the 4</td> </tr> <tr> <td>Other</td> <td>Change PCB</td> </tr> <tr> <td rowspan="2">Not pushing</td> <td>0 ~2 V</td> <td>Go to the 4</td> </tr> <tr> <td>Other</td> <td>Change PCB</td> </tr> </tbody> </table>	Lever s/w	Result	SVC Action	Pushing	9 ~ 12 V	Go to the 4	Other	Change PCB	Not pushing	0 ~2 V	Go to the 4	Other	Change PCB
Lever s/w	Result	SVC Action													
Pushing	9 ~ 12 V	Go to the 4													
	Other	Change PCB													
Not pushing	0 ~2 V	Go to the 4													
	Other	Change PCB													
4	<p>Check the resistance value.</p>  <p style="text-align: center;"><Ice Maker></p> <p style="text-align: center;"><Geared Motor> <Dispenser Motor></p>	<table border="1"> <thead> <tr> <th>Point</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">(1) to (2)</td> <td>31.1 ~ 42.1 Ω</td> <td>Explain</td> </tr> <tr> <td>Other</td> <td>Replace Geared Motor</td> </tr> <tr> <td rowspan="2">(3) to (4)</td> <td>9.9 ~ 12.1 Ω</td> <td>Explain</td> </tr> <tr> <td>Other</td> <td>Replace Geared Motor</td> </tr> </tbody> </table>	Point	Result	SVC Action	(1) to (2)	31.1 ~ 42.1 Ω	Explain	Other	Replace Geared Motor	(3) to (4)	9.9 ~ 12.1 Ω	Explain	Other	Replace Geared Motor
Point	Result	SVC Action													
(1) to (2)	31.1 ~ 42.1 Ω	Explain													
	Other	Replace Geared Motor													
(3) to (4)	9.9 ~ 12.1 Ω	Explain													
	Other	Replace Geared Motor													


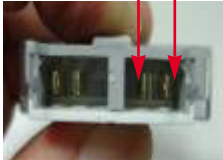
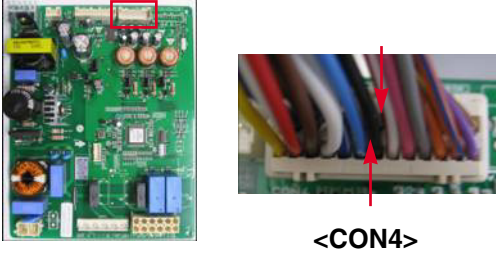


9-3 Water mode doesn't work

No	Checking flow	Result & SVC Action													
1	Check the loose connection.														
2	<p>Check the <u>Purple to White</u>. (While pushing the lever S/W)</p>  <p style="text-align: center;"><CON2></p>	<table border="1"> <thead> <tr> <th>Lever s/w</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Pushing</td> <td>112 ~ 115 V</td> <td>Go to the 3</td> </tr> <tr> <td>Other</td> <td>Change PCB</td> </tr> <tr> <td rowspan="2">Not pushing</td> <td>0 ~2 V</td> <td>Go to the 3</td> </tr> <tr> <td>Other</td> <td>Change PCB</td> </tr> </tbody> </table>	Lever s/w	Result	SVC Action	Pushing	112 ~ 115 V	Go to the 3	Other	Change PCB	Not pushing	0 ~2 V	Go to the 3	Other	Change PCB
Lever s/w	Result	SVC Action													
Pushing	112 ~ 115 V	Go to the 3													
	Other	Change PCB													
Not pushing	0 ~2 V	Go to the 3													
	Other	Change PCB													
3	<p>Check the <u>Blue to Gray</u>. (While pushing the lever S/W)</p>  <p style="text-align: center;"><CON3></p>	<table border="1"> <thead> <tr> <th>Lever s/w</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Pushing</td> <td>112 ~ 115 V</td> <td>Go to the 4</td> </tr> <tr> <td>Other</td> <td>Change PCB</td> </tr> <tr> <td rowspan="2">Not pushing</td> <td>0 ~2 V</td> <td>Go to the 4</td> </tr> <tr> <td>Other</td> <td>Change PCB</td> </tr> </tbody> </table>	Lever s/w	Result	SVC Action	Pushing	112 ~ 115 V	Go to the 4	Other	Change PCB	Not pushing	0 ~2 V	Go to the 4	Other	Change PCB
Lever s/w	Result	SVC Action													
Pushing	112 ~ 115 V	Go to the 4													
	Other	Change PCB													
Not pushing	0 ~2 V	Go to the 4													
	Other	Change PCB													
4	<p>Check the resistance value.</p>  <p style="text-align: center;"><Pilot Valve> Machine Room</p> <p style="text-align: center;">Dispenser Ice Maker <Water Valve> In door</p>	<table border="1"> <thead> <tr> <th>Point</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">(1) to (2)</td> <td>360 ~ 420Ω</td> <td>Explain</td> </tr> <tr> <td>Other</td> <td>Replace Water Valve</td> </tr> <tr> <td rowspan="2">(3) to (4)</td> <td>360 ~ 420Ω</td> <td>Explain</td> </tr> <tr> <td>Other</td> <td>Replace Water Valve</td> </tr> </tbody> </table>	Point	Result	SVC Action	(1) to (2)	360 ~ 420Ω	Explain	Other	Replace Water Valve	(3) to (4)	360 ~ 420Ω	Explain	Other	Replace Water Valve
Point	Result	SVC Action													
(1) to (2)	360 ~ 420Ω	Explain													
	Other	Replace Water Valve													
(3) to (4)	360 ~ 420Ω	Explain													
	Other	Replace Water Valve													

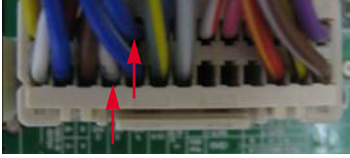


9-4 Freezer room AC Bulb Lamp doesn't work

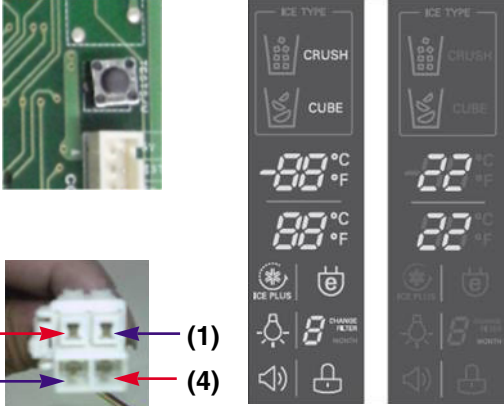

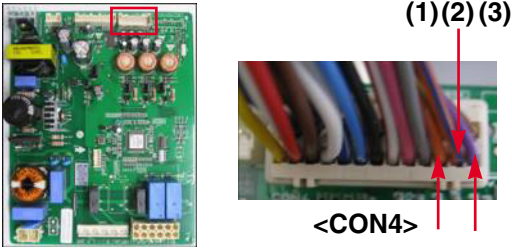
No	Checking flow	Result & SVC Action													
1	<p>Check the Freezer door switch.</p> 	<p>If feel sticky, Change the door s/w.</p>													
2	<p>Check the <u>door S/W resistance</u>.</p> 	<table border="1"> <thead> <tr> <th>Status</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Normal</td> <td>0 Ω</td> <td>Go to the 3</td> </tr> <tr> <td>Infinity</td> <td>Change door S/W</td> </tr> <tr> <td rowspan="2">Push S/W</td> <td>Infinity</td> <td>Go to the 3</td> </tr> <tr> <td>0 Ω</td> <td>Change door S/W</td> </tr> </tbody> </table>	Status	Result	SVC Action	Normal	0 Ω	Go to the 3	Infinity	Change door S/W	Push S/W	Infinity	Go to the 3	0 Ω	Change door S/W
Status	Result	SVC Action													
Normal	0 Ω	Go to the 3													
	Infinity	Change door S/W													
Push S/W	Infinity	Go to the 3													
	0 Ω	Change door S/W													
3	<p>Check the <u>Yellow Blue to Sky blue</u>.</p>  <p style="text-align: center;"><CON4></p>	<table border="1"> <thead> <tr> <th>Status</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Closed</td> <td>5 V</td> <td>Go to the 4</td> </tr> <tr> <td>Other</td> <td>Change the Door S/W</td> </tr> <tr> <td rowspan="2">Open</td> <td>0 V</td> <td>Go to the 4</td> </tr> <tr> <td>Other</td> <td>Change the Door S/W</td> </tr> </tbody> </table>	Status	Result	SVC Action	Closed	5 V	Go to the 4	Other	Change the Door S/W	Open	0 V	Go to the 4	Other	Change the Door S/W
Status	Result	SVC Action													
Closed	5 V	Go to the 4													
	Other	Change the Door S/W													
Open	0 V	Go to the 4													
	Other	Change the Door S/W													
4	<p>Check the <u>Blue to Black</u>.</p>  <p style="text-align: center;"><CON3></p>	<table border="1"> <thead> <tr> <th>Status</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Closed</td> <td>0 ~ 2 V</td> <td>Explain to customer</td> </tr> <tr> <td>Other</td> <td>Change the Main PCB</td> </tr> <tr> <td rowspan="2">Open</td> <td>115 V</td> <td>Change the F Lamp</td> </tr> <tr> <td>Other</td> <td>Change the PCB</td> </tr> </tbody> </table>	Status	Result	SVC Action	Closed	0 ~ 2 V	Explain to customer	Other	Change the Main PCB	Open	115 V	Change the F Lamp	Other	Change the PCB
Status	Result	SVC Action													
Closed	0 ~ 2 V	Explain to customer													
	Other	Change the Main PCB													
Open	115 V	Change the F Lamp													
	Other	Change the PCB													

9-5 Refrigerator room lamp doesn't work

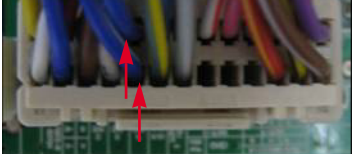
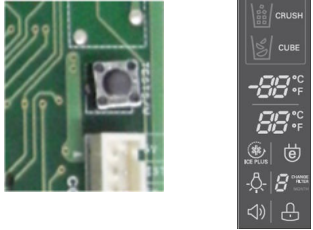

No	Checking flow	Result & SVC Action													
1	<p>Check the Refrigerator door switch.</p> 	<p>If feel sticky, Change the door s/w.</p>													
2	<p>Check the <u>door S/W resistance</u>.</p> 	<table border="1"> <thead> <tr> <th>Status</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Normal</td> <td>0 Ω</td> <td>Go to the 3</td> </tr> <tr> <td>Infinity</td> <td>Change door S/W</td> </tr> <tr> <td rowspan="2">Push S/W</td> <td>Infinity</td> <td>Go to the 3</td> </tr> <tr> <td>0 Ω</td> <td>Change door S/W</td> </tr> </tbody> </table>	Status	Result	SVC Action	Normal	0 Ω	Go to the 3	Infinity	Change door S/W	Push S/W	Infinity	Go to the 3	0 Ω	Change door S/W
Status	Result	SVC Action													
Normal	0 Ω	Go to the 3													
	Infinity	Change door S/W													
Push S/W	Infinity	Go to the 3													
	0 Ω	Change door S/W													
3	<p>Check the <u>Black to Gray White</u>.</p>  <p style="text-align: center;"><CON4></p>	<table border="1"> <thead> <tr> <th>Status</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Normal</td> <td>12 V</td> <td>Go to the 4</td> </tr> <tr> <td>Other</td> <td>Change the PCB</td> </tr> </tbody> </table>	Status	Result	SVC Action	Normal	12 V	Go to the 4	Other	Change the PCB					
Status	Result	SVC Action													
Normal	12 V	Go to the 4													
	Other	Change the PCB													
4	<p>Check the <u>Red to Black</u>.</p> 	<table border="1"> <thead> <tr> <th>Status</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Normal</td> <td>12 V</td> <td>Go to the 5</td> </tr> <tr> <td>Other</td> <td>Change the LED Lamp</td> </tr> </tbody> </table>	Status	Result	SVC Action	Normal	12 V	Go to the 5	Other	Change the LED Lamp					
Status	Result	SVC Action													
Normal	12 V	Go to the 5													
	Other	Change the LED Lamp													
5	<p>Check the <u>Black to White</u>.</p> 	<table border="1"> <thead> <tr> <th>Status</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Closed</td> <td>0 ~ 2 V</td> <td>Explain to customer</td> </tr> <tr> <td>Other</td> <td>Change the Door S/W</td> </tr> <tr> <td rowspan="2">Open</td> <td>12 V</td> <td>Explain to customer</td> </tr> <tr> <td>Other</td> <td>Change the LED Lamp</td> </tr> </tbody> </table>	Status	Result	SVC Action	Closed	0 ~ 2 V	Explain to customer	Other	Change the Door S/W	Open	12 V	Explain to customer	Other	Change the LED Lamp
Status	Result	SVC Action													
Closed	0 ~ 2 V	Explain to customer													
	Other	Change the Door S/W													
Open	12 V	Explain to customer													
	Other	Change the LED Lamp													

9-6 Poor cooling in Fresh food section

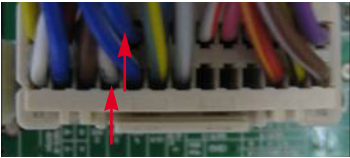



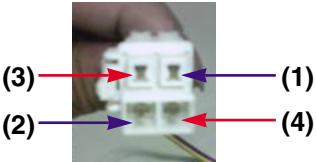
No	Checking flow	Result & SVC Action												
1	<p>Check the sensor resistance.</p>  <p><CON4></p> <p>※ The sensor is determined by the temperature. For example, 30kΩ indicates 32°F.</p>	<table border="1"> <thead> <tr> <th>Temperature</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>23°F / -5°C</td> <td>38.5 ~ 36.5 kΩ</td> </tr> <tr> <td>32°F / 0°C</td> <td>30.5 ~ 29.5 kΩ</td> </tr> <tr> <td>41°F / 5°C</td> <td>24.5 ~ 23.5 kΩ</td> </tr> <tr> <td>50°F / 10°C</td> <td>20 ~ 19 kΩ</td> </tr> <tr> <td>59°F / 15°C</td> <td>16 ~ 15.5 kΩ</td> </tr> </tbody> </table>	Temperature	Result	23°F / -5°C	38.5 ~ 36.5 kΩ	32°F / 0°C	30.5 ~ 29.5 kΩ	41°F / 5°C	24.5 ~ 23.5 kΩ	50°F / 10°C	20 ~ 19 kΩ	59°F / 15°C	16 ~ 15.5 kΩ
Temperature	Result													
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2	<p>Reset the unit and Input Test 1 Mode. (Push the button 1 time)</p>													
3	<p>Open the fresh food door and Check the air flow.</p> 	<table border="1"> <thead> <tr> <th>Status</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>Windy</td> <td>Go to the 4</td> </tr> <tr> <td>No windy</td> <td>Check the R Fan motor Check the damper (Go to the 6)</td> </tr> </tbody> </table>	Status	SVC Action	Windy	Go to the 4	No windy	Check the R Fan motor Check the damper (Go to the 6)						
Status	SVC Action													
Windy	Go to the 4													
No windy	Check the R Fan motor Check the damper (Go to the 6)													
4	<p>Check the air temperature. Cold or not?</p>	<table border="1"> <thead> <tr> <th>Status</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>Cold</td> <td>Explain to customer</td> </tr> <tr> <td>Not cold</td> <td>Check the Compressor And sealed system</td> </tr> </tbody> </table>	Status	SVC Action	Cold	Explain to customer	Not cold	Check the Compressor And sealed system						
Status	SVC Action													
Cold	Explain to customer													
Not cold	Check the Compressor And sealed system													

No	Checking flow	Result & SVC Action																								
5	<p>Damper checking method. Inputting TEST Mode, Check the damper and PCB.</p>  <p>(3) → (1) (2) → (4)</p>	<table border="1" data-bbox="890 439 1453 707"> <thead> <tr> <th>Test Mode</th> <th>Damper State</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>1 Mode</td> <td>Open</td> <td rowspan="2">Damper is normal. (Check the Damper)</td> </tr> <tr> <td>2 Mode</td> <td>Closed</td> </tr> <tr> <td>1,2 mode</td> <td>Not working</td> <td>Change the damper</td> </tr> </tbody> </table> <table border="1" data-bbox="890 757 1453 996"> <thead> <tr> <th>Point</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">(1) to (2)</td> <td>270 ~330 Ω</td> <td>It's normal</td> </tr> <tr> <td>Other</td> <td>Change damper</td> </tr> <tr> <td rowspan="2">(3) to (4)</td> <td>270 ~330 Ω</td> <td>It's normal</td> </tr> <tr> <td>Other</td> <td>Change damper</td> </tr> </tbody> </table>	Test Mode	Damper State	SVC Action	1 Mode	Open	Damper is normal. (Check the Damper)	2 Mode	Closed	1,2 mode	Not working	Change the damper	Point	Result	SVC Action	(1) to (2)	270 ~330 Ω	It's normal	Other	Change damper	(3) to (4)	270 ~330 Ω	It's normal	Other	Change damper
Test Mode	Damper State	SVC Action																								
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(3) to (4)	270 ~330 Ω	It's normal																								
	Other	Change damper																								
6	<p>Check the Fan motor. Rotate fan using your hand. It feel sticky, change the motor. (Cause of ice or rust inside of motor)</p> 	<table border="1" data-bbox="890 1079 1453 1171"> <thead> <tr> <th>Point</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>Motor</td> <td>Sticky</td> <td>Change the motor</td> </tr> </tbody> </table>	Point	Result	SVC Action	Motor	Sticky	Change the motor																		
Point	Result	SVC Action																								
Motor	Sticky	Change the motor																								
7	<p>Check the F Fan motor voltage.</p>  <p>(1)(2)(3)</p> <p><CON4></p>	<table border="1" data-bbox="890 1458 1453 1601"> <thead> <tr> <th>Point</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>(1) ~ (2)</td> <td>Below 12 V</td> <td>Change the PCB</td> </tr> <tr> <td>(2) ~ (3)</td> <td>0 or 5 V</td> <td>Change the motor</td> </tr> </tbody> </table>	Point	Result	SVC Action	(1) ~ (2)	Below 12 V	Change the PCB	(2) ~ (3)	0 or 5 V	Change the motor															
Point	Result	SVC Action																								
(1) ~ (2)	Below 12 V	Change the PCB																								
(2) ~ (3)	0 or 5 V	Change the motor																								

9-7 Poor cooling in Freezer compartment

No	Checking flow	Result & SVC Action																
1	<p>Check the sensor resistance.</p>  <p><CON4></p> <p>※ The sensor is determined by the temperature. For example, 23kΩ indicates -4°F.</p>	<table border="1"> <thead> <tr> <th>(1) To (2)</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>-22°F / -30°C</td> <td>40.5 ~ 38.5 kΩ</td> </tr> <tr> <td>-13°F / -25°C</td> <td>30.5 ~ 28.5 kΩ</td> </tr> <tr> <td>-4°F / -20°C</td> <td>23 ~ 21.5 kΩ</td> </tr> <tr> <td>5°F / -15°C</td> <td>17.5 ~ 16.5 kΩ</td> </tr> <tr> <td>14°F / -10°C</td> <td>13.5 ~ 12.5 kΩ</td> </tr> <tr> <td>23°F / -5°C</td> <td>10.5 ~ 9.5 kΩ</td> </tr> <tr> <td>32°F / 0°C</td> <td>8 ~ 7.5 kΩ</td> </tr> </tbody> </table>	(1) To (2)	Result	-22°F / -30°C	40.5 ~ 38.5 kΩ	-13°F / -25°C	30.5 ~ 28.5 kΩ	-4°F / -20°C	23 ~ 21.5 kΩ	5°F / -15°C	17.5 ~ 16.5 kΩ	14°F / -10°C	13.5 ~ 12.5 kΩ	23°F / -5°C	10.5 ~ 9.5 kΩ	32°F / 0°C	8 ~ 7.5 kΩ
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32°F / 0°C	8 ~ 7.5 kΩ																	
2	<p>Reset the unit and input Test 1 Mode. (Push the button 1 time)</p>																	
3	<p>Open the freezer door and check the air flow.</p> 	<table border="1"> <thead> <tr> <th>Status</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>Windy</td> <td>Go to the 4</td> </tr> <tr> <td>No windy</td> <td>Check the F Fan motor</td> </tr> </tbody> </table>	Status	SVC Action	Windy	Go to the 4	No windy	Check the F Fan motor										
Status	SVC Action																	
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4	<p>Check the air temperature. Cold or not ?</p>	<table border="1"> <thead> <tr> <th>Status</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>Cold</td> <td>Explain to customer</td> </tr> <tr> <td>Not cold</td> <td>Check the Compressor And sealed system</td> </tr> </tbody> </table>	Status	SVC Action	Cold	Explain to customer	Not cold	Check the Compressor And sealed system										
Status	SVC Action																	
Cold	Explain to customer																	
Not cold	Check the Compressor And sealed system																	

9-8 Over cooling in Fresh food compartment

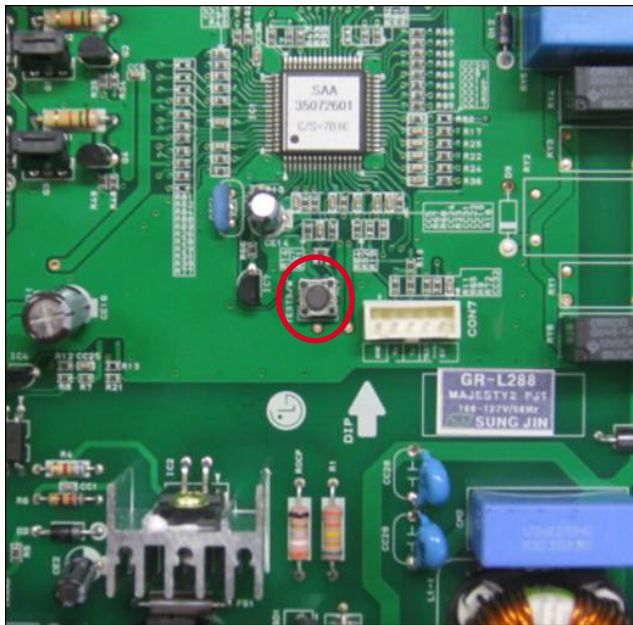
No	Checking flow	Result & SVC Action													
1	<p>Check the sensor resistance.</p>  <p><CON4></p> <p>※ The sensor is determined by the temperature. For example, 30kΩ indicates 32°F.</p>	<table border="1"> <thead> <tr> <th>Temperature</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>23°F / -5°C</td> <td>38.5 ~ 36.5 kΩ</td> </tr> <tr> <td>32°F / 0°C</td> <td>30.5 ~ 29.5 kΩ</td> </tr> <tr> <td>41°F / 5°C</td> <td>24.5 ~ 23.5 kΩ</td> </tr> <tr> <td>50°F / 10°C</td> <td>20 ~ 19 kΩ</td> </tr> <tr> <td>59°F / 15°C</td> <td>16 ~ 15.5 kΩ</td> </tr> </tbody> </table>	Temperature	Result	23°F / -5°C	38.5 ~ 36.5 kΩ	32°F / 0°C	30.5 ~ 29.5 kΩ	41°F / 5°C	24.5 ~ 23.5 kΩ	50°F / 10°C	20 ~ 19 kΩ	59°F / 15°C	16 ~ 15.5 kΩ	
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2	<p>Reset the unit and Input Test 1 Mode. (Push the button 1 time)</p>														
3	<p>Open the refrigerator door and Check the air flow.</p> 	<table border="1"> <thead> <tr> <th>Status</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>Windy</td> <td>Go to the 4</td> </tr> <tr> <td>No windy</td> <td>Check the R Fan Check the damper (Go to the 5)</td> </tr> </tbody> </table>	Status	SVC Action	Windy	Go to the 4	No windy	Check the R Fan Check the damper (Go to the 5)							
Status	SVC Action														
Windy	Go to the 4														
No windy	Check the R Fan Check the damper (Go to the 5)														
4	<p>Input Test 2 Mode and Check the air flow. (Push the button 1 time)</p> 	<table border="1"> <thead> <tr> <th>Status</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td>Windy</td> <td>Go to the 5</td> </tr> <tr> <td>No windy</td> <td>It's normal</td> </tr> </tbody> </table>	Status	SVC Action	Windy	Go to the 5	No windy	It's normal							
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Windy	Go to the 5														
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5	<p>Check the damper resistance.</p> 	<table border="1"> <thead> <tr> <th>Point</th> <th>Result</th> <th>SVC Action</th> </tr> </thead> <tbody> <tr> <td rowspan="2">(1) to (2)</td> <td>270 ~330 Ω</td> <td>It's normal</td> </tr> <tr> <td>Other</td> <td>Change damper</td> </tr> <tr> <td rowspan="2">(3) to (4)</td> <td>270 ~330 Ω</td> <td>It's normal</td> </tr> <tr> <td>Other</td> <td>Change damper</td> </tr> </tbody> </table>	Point	Result	SVC Action	(1) to (2)	270 ~330 Ω	It's normal	Other	Change damper	(3) to (4)	270 ~330 Ω	It's normal	Other	Change damper
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(1) to (2)	270 ~330 Ω	It's normal													
	Other	Change damper													
(3) to (4)	270 ~330 Ω	It's normal													
	Other	Change damper													

10. Reference

10-1 TEST MODE and Removing TPA

1. How to make TEST MODE

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



Main PWB

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



* 2 times : Damper closed
(22 22 displayed)

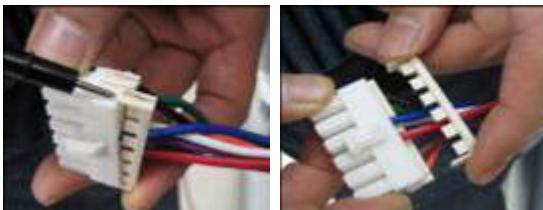


* 3 times : Forced defrost mode
(33 33 displayed)

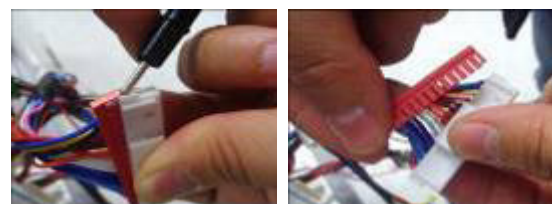


2. How to remove Terminal Position Assurance (TPA)

<AC TPA>



<DC TPA>



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

10-2 TEMPERATRUE CHART - FRZ AND ICING SENSOR

TEMP	RESISTANCE	VOLTAGE
-39°F (-40°C)	73.29 kΩ	4.09 V
-30°F (-35°C)	53.63 kΩ	3.84 V
-21°F (-30°C)	39.66 kΩ	3.55 V
-13°F (-25°C)	29.62 kΩ	3.23 V
-4°F (-20°C)	22.33 kΩ	2.89 V
5°F (-15°C)	16.99 kΩ	2.56 V
14°F (-10°C)	13.05 kΩ	2.23 V
23°F (-5°C)	10.10 kΩ	1.92 V
32°F (0°C)	7.88 kΩ	1.63 V
41°F (5°C)	6.19 kΩ	1.38 V
50°F (10°C)	4.91 kΩ	1.16 V
59°F (15°C)	3.91 kΩ	0.97 V
68°F (20°C)	3.14 kΩ	0.81 V
77°F (25°C)	2.54 kΩ	0.67 V
86°F (30°C)	2.07 kΩ	0.56 V
95°F (35°C)	1.69 kΩ	0.47 V
104°F (40°C)	1.39 kΩ	0.39 V

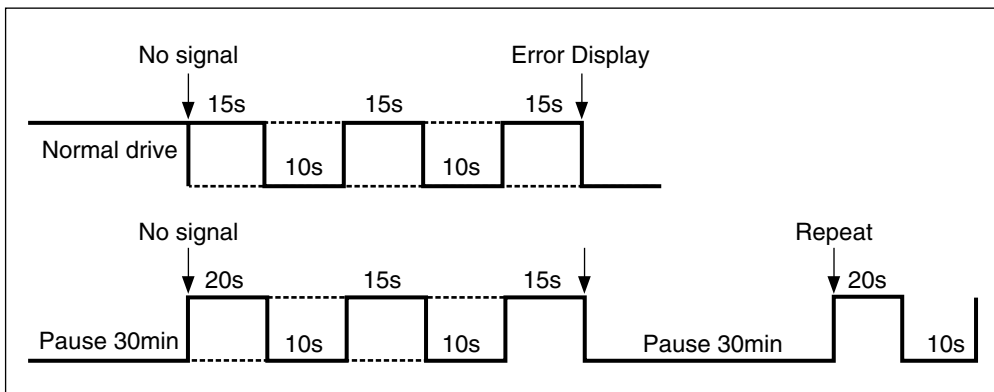
10-3 TEMPERATRUE CHART - REF AND DEF SENSOR

TEMP	RESISTANCE	VOLTAGE
-39°F (-40°C)	225.1 kΩ	4.48 V
-30°F (-35°C)	169.8 kΩ	4.33 V
-21°F (-30°C)	129.3 kΩ	4.16 V
-13°F (-25°C)	99.30 kΩ	3.95 V
-4°F (-20°C)	76.96 kΩ	3.734 V
5°F (-15°C)	60.13 kΩ	3.487 V
14°F (-10°C)	47.34 kΩ	3.22 V
23°F (-5°C)	37.55 kΩ	2.95 V
32°F (0°C)	30 kΩ	2.67 V
41°F (5°C)	24.13 kΩ	2.40 V
50°F (10°C)	19.53 kΩ	2.14 V
59°F (15°C)	15.91 kΩ	1.89 V
68°F (20°C)	13.03 kΩ	1.64 V
77°F (25°C)	10.74 kΩ	1.45 V
86°F (30°C)	8.89 kΩ	1.27 V
95°F (35°C)	7.40 kΩ	1.10 V
104°F (40°C)	6.20 kΩ	0.96 V

10-4 How to check the Fan-Error

(1) EBR673480

After sending a signal to the fan, the MICOM checks the BLDC fan motor's lock status. If there is no feedback signal from the BLDC fan, the fan motor stops for 10 seconds and then is powered again for 15 seconds. To determine that there is a fan motor malfunction, this process is repeated 3 times. If the fan motor is determined to be defective, the error code will be shown in the display for 30 minutes. At this point, the process will be repeated until the fan motor operates normally. If normal operation is achieved, the error display is erased and the MICOM is reset automatically.

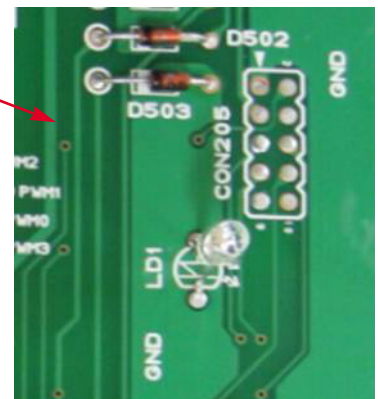
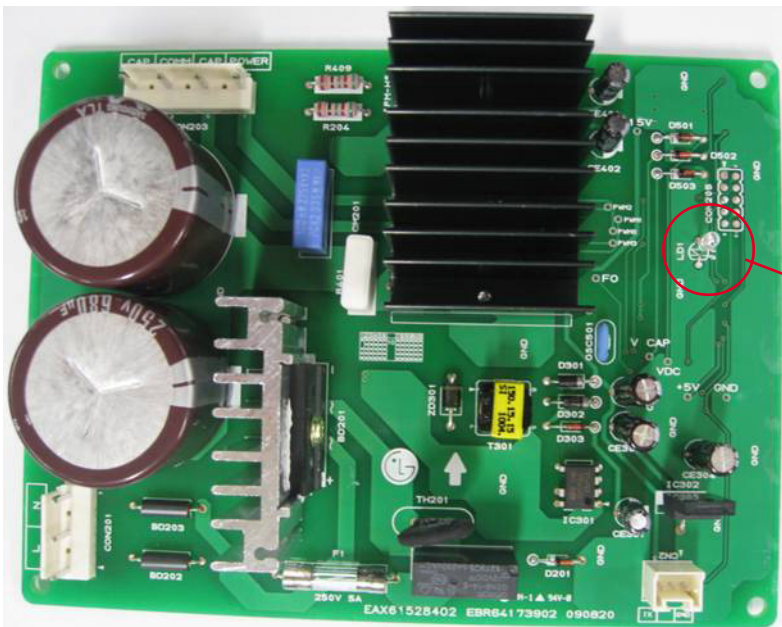


Compressor Troubleshooting

Step 1) Loosen up screw of Case Assembly PCB and open the Cover PCB








Step 2) Check for blinking frequency of LED, PWB



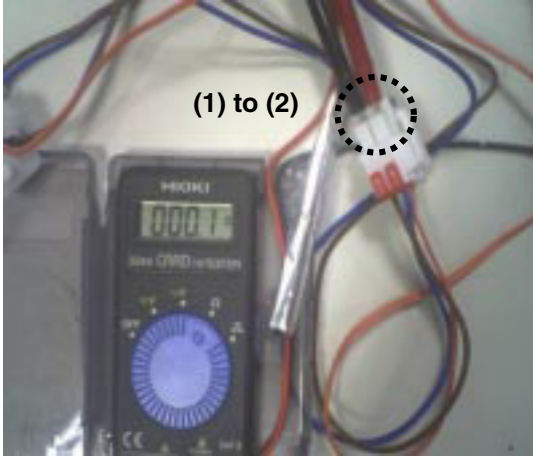
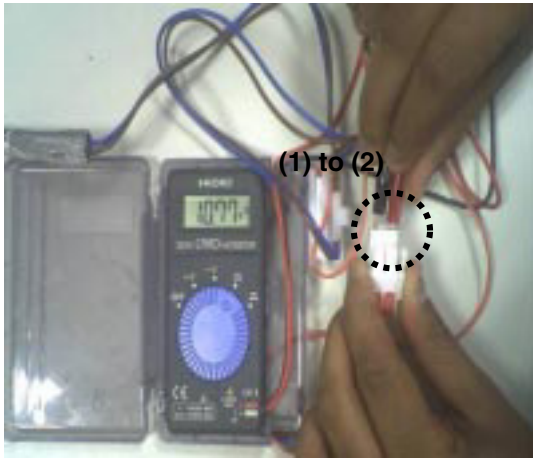
If compressor is normal, it does not blink
: Refer to the next page to find out what actions to take according to how many times LED blink

Actions to take according to Led blinking frequency


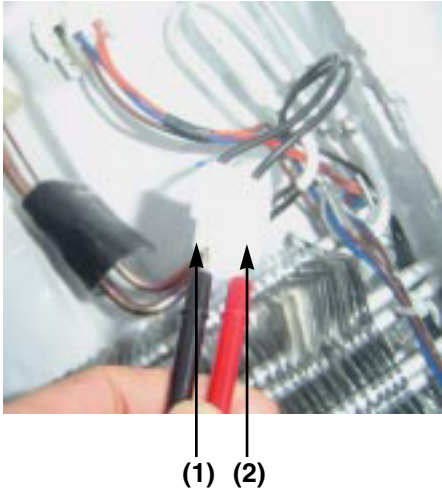
No	LED operating condition	Cause	Service guideline
1	<p>LED two - time repetiton (Stroke Trip)</p>  <p>..on - on - off - on - on - off - on - on - off ..repeating</p>	PCB Parts defect or Compress or Connector miss connecting (Piston over run)	<ol style="list-style-type: none"> 1. Please check, Whether connector of compressor is attached rightly or not. after power off 2. After the first action, You check on normal operation of compressor. 3. If the same symptom arises after the second action, replace PCB
2	<p>LED four - time repetiton (Overload Protect)</p>  <p>..on - on - on - on - off - on - on - on - on - off ..repeating</p>	Outlet clogging	<ol style="list-style-type: none"> 1. After resetting power, check if it is running normal 2. If the same symptom arises after the first action 3. If the same symptom arises after the second action, replace compressor
3	<p>LED five - time repetiton (Piston Lock Trip)</p>  <p>..on - on - on - on - on - off - on - on - on - on - off ..repeating</p>	Piston constraint	<ol style="list-style-type: none"> 1. After resetting power, check if it is running normal 2. If the same symptom arises after the first action 3. If the same symptom arises after the second action, replace compressor
4	<p>LED six - time repetiton (Current Trip)</p>  <p>..on - on - on - on - on - on - off - on - on - on - on - on - off ..repeating</p>	Circuit over current error Or cycle error	<ol style="list-style-type: none"> 1. After resetting power, check if it is running normal 2. If the same symptom arises after the first action 3. If the same symptom arises after the second action, replace compressor
5	<p>LED seven- time repetiton (IPM Fault Trip)</p>  <p>..on - on - on - on - on - on - on - off - on - on - on - on - on - on - off ..repeating</p>	PCB parts defect (IPM)	<ol style="list-style-type: none"> 1. After resetting power, check if it is running normal 2. If the same symptom arises after the first action, replace PCB

11. COMPONENT TESTING INFORMATION

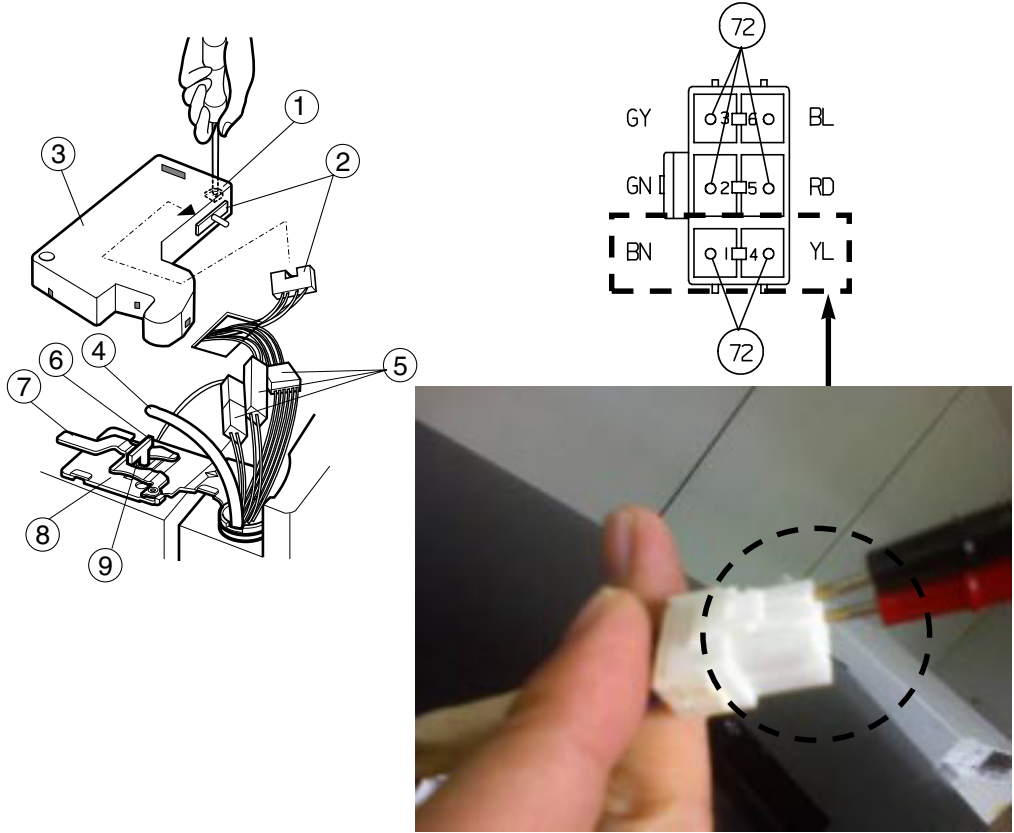
11-1 Defrost Controller Assembly

<p>Function</p>	<ul style="list-style-type: none"> - Controller assembly is consist of 2 kinds of part those are fuse-m and sensor. we can decide part is defect or not when we check the resistance. - Fuse-m can cut off the source when defrost heater operate the unusual high temperature. - Sensor give temperature information to Micom 									
<p>How to Measure (Fuse-M)</p>		<p>Set a ohmmeter to the 2 housing pin. Measure the 2 pin connected to Fuse-M. If the ohmmeter indicate below 0.1ohm fuse-m is a good condition, But infinitely great ohm Fuse-M is disconnection</p>								
<p>How to Measure (Sensor)</p>		<p>Set a ohmmeter to The 2housing pin. Measure the 2 pin connected to Sensor. If the ohmmeter indicate 11 kΩ (at room temperature) Sensor is not a defect. When check the ohm at other temperature Check the sensor manual.</p>								
<p>Standard</p>	<p style="text-align: center;">Fuse-M (at all temperature)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Test Point</th> <th>Ressult</th> </tr> </thead> <tbody> <tr> <td>(1) to (2)</td> <td>0 ~ 0.1 Ω</td> </tr> </tbody> </table>	Test Point	Ressult	(1) to (2)	0 ~ 0.1 Ω	<p style="text-align: center;">Sensor (at room temperature)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Test Point</th> <th>Ressult</th> </tr> </thead> <tbody> <tr> <td>(1) to (2)</td> <td>11 Ω</td> </tr> </tbody> </table>	Test Point	Ressult	(1) to (2)	11 Ω
Test Point	Ressult									
(1) to (2)	0 ~ 0.1 Ω									
Test Point	Ressult									
(1) to (2)	11 Ω									

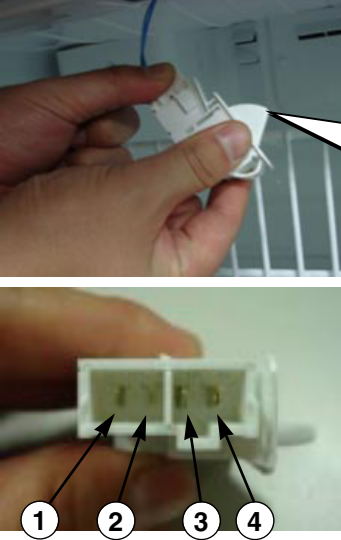
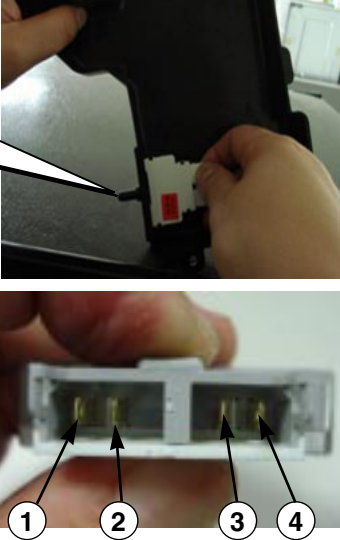
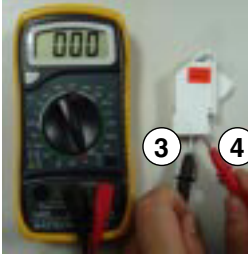

11-2 Sheath Heater

<p>Function</p>	<p>Sheath heater is a part for defrost. All heating wire is connected to only one line. So we can decide part is defect or not when we check the resistance.</p>				
<p>How to Measure</p>	<div style="display: flex; justify-content: space-around;">   </div> <p>Set a ohmmeter connect to The 2 housing pin. Measure the 2 pin connected to Sheath Heater. If the ohmmeter indicate $(V \div V) / \text{Watt} = R$ is good condition, ex) when watt=350w, voltage=115v $R = (115 \div 350) = 38 \Omega$ But the ohmmeter indicate infinitely great Sheath heater is disconnection</p>				
<p>Standard</p>	<p style="text-align: center;">Sheath heater (at all temperature)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Test Point</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>(1) to (2)</td> <td>34 ~ 42 Ω</td> </tr> </tbody> </table>	Test Point	Result	(1) to (2)	34 ~ 42 Ω
Test Point	Result				
(1) to (2)	34 ~ 42 Ω				

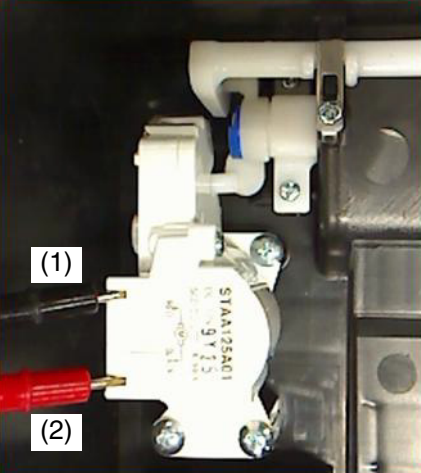
11-3 Door Heater Assembly

Function	The heater is designed to prevent the raising dew from door.				
How to Measure	 <p>The diagram illustrates the door heater assembly and its electrical connections. The assembly is shown with numbered callouts (1-9) indicating various components and measurement points. The wiring diagram shows a 6-pin connector with terminals labeled GY, GN, BN, BL, RD, and YL. Test points 72 are indicated at the top and bottom of the connector. A photograph shows a hand holding the heater assembly, with a dashed circle highlighting the measurement points.</p>				
Standard	<table border="1" data-bbox="424 1406 858 1503"> <thead> <tr> <th>Test Point</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>(1) to (2)</td> <td>2.3 ~ 2.9 Ω</td> </tr> </tbody> </table>	Test Point	Result	(1) to (2)	2.3 ~ 2.9 Ω
Test Point	Result				
(1) to (2)	2.3 ~ 2.9 Ω				


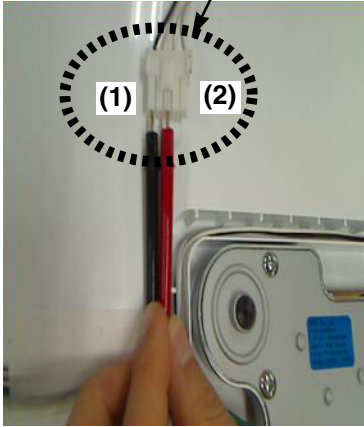
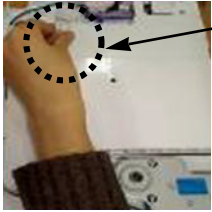
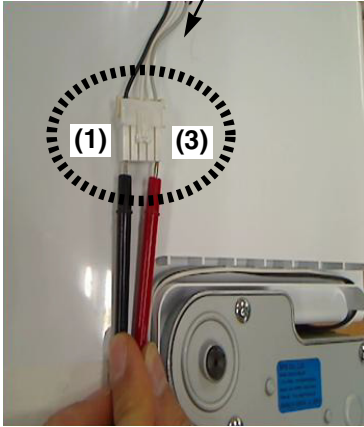
11-4 Door Switch

<p>Function</p>	<p>The switch sense if the door open or close.</p> <ul style="list-style-type: none"> - When the door open, lamp on. - When the door open, the switch give information to Micom. <p>When the door open, internal contact operate on and off moving plunger of door switch up and down.</p>				
<p>How to Measure</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><Switch, Freezer></p>  </div> <div style="text-align: center;"> <p><Switch, Refrigerator></p>  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">  <p>3 4</p> <p>Beep</p> </div> <div style="text-align: center;">  <p>2 1</p> <p>Beep</p> </div> </div> <p>Check the resistance between connectors 1, 2 and 3, 4 .It means check whether or not applying an electric current. If there is resistance, it means the switch not inferiority</p>				
<p>Standard</p>	<p style="text-align: center;">Multimeter beep – Switch F,R</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Nomal</td> <td style="padding: 5px;">Push the button(Plunger)</td> </tr> <tr> <td style="padding: 5px;">Beep or 0 Ω</td> <td style="padding: 5px;">None (∞ Ω)</td> </tr> </table>	Nomal	Push the button(Plunger)	Beep or 0 Ω	None (∞ Ω)
Nomal	Push the button(Plunger)				
Beep or 0 Ω	None (∞ Ω)				

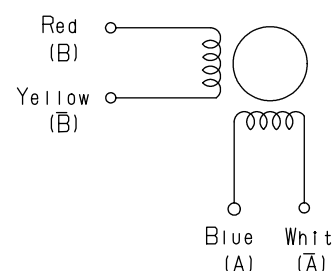
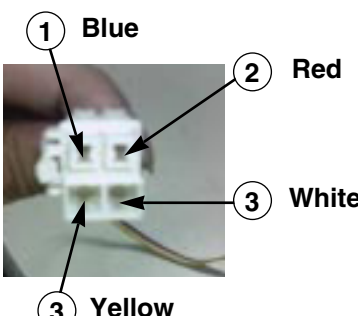
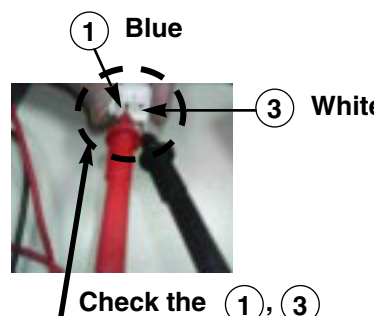


11-5 Dispenser DC Motor

Function	- Dispenser DC Motor : When customer push the dispenser button, Pull duct door and abstract from ice bank.						
How to Measure	<div style="text-align: center;">  <p>Dispenser DC Motor</p> </div>						
Standard	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2" style="text-align: center;">Dispenser DC Motor</th> </tr> <tr> <th style="text-align: center;">Test Points</th> <th style="text-align: center;">Result</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">(1) to (2)</td> <td style="text-align: center;">9.9 ~ 12.1 Ω</td> </tr> </tbody> </table>	Dispenser DC Motor		Test Points	Result	(1) to (2)	9.9 ~ 12.1 Ω
Dispenser DC Motor							
Test Points	Result						
(1) to (2)	9.9 ~ 12.1 Ω						

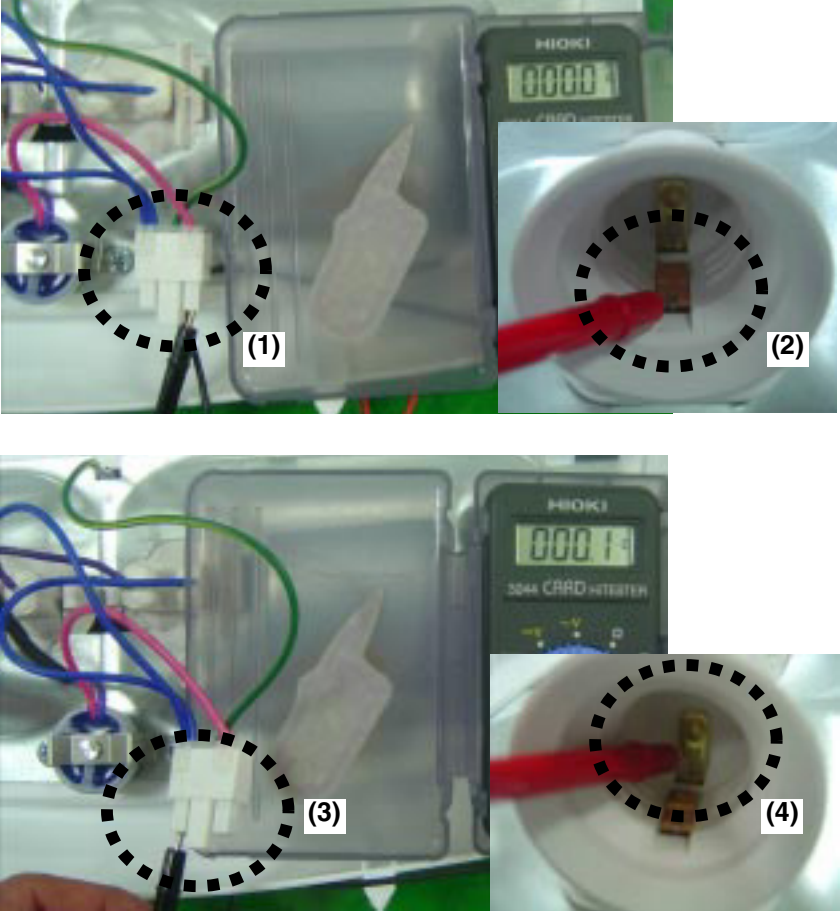
11-6 AC Motor ASSEMBLY

<p>Function</p>	<p>The In-door motor of AC motor assembly pushes ices to the dispenser.</p>									
<p>How to Measure</p>	<p>< In-door Motor ></p>  <p>① Take out the male housing from female housing</p>  <p>② Measure the resistance between (1) and (2)</p>	<p>< In-door Motor ></p>  <p>① Take out the male housing from female housing</p>  <p>② Measure the resistance between (1) and (3)</p> <p>Check the resistance between connectors (In-door motor 1, 2) and (In-door motor 1, 3). It means check whether or not applying an Electric current. If there is resistance, it means the geared motor or solenoid is not inferiority</p>								
<p>Standard</p>	<p style="text-align: center;">Geared Motor</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Test Points</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>(1) to (2)</td> <td>31.1 ~ 42.09 Ω</td> </tr> </tbody> </table>	Test Points	Result	(1) to (2)	31.1 ~ 42.09 Ω	<p style="text-align: center;">Cube Solenoid</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Test Points</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>(1) to (3)</td> <td>31.1 ~ 42.09 Ω</td> </tr> </tbody> </table>	Test Points	Result	(1) to (3)	31.1 ~ 42.09 Ω
Test Points	Result									
(1) to (2)	31.1 ~ 42.09 Ω									
Test Points	Result									
(1) to (3)	31.1 ~ 42.09 Ω									

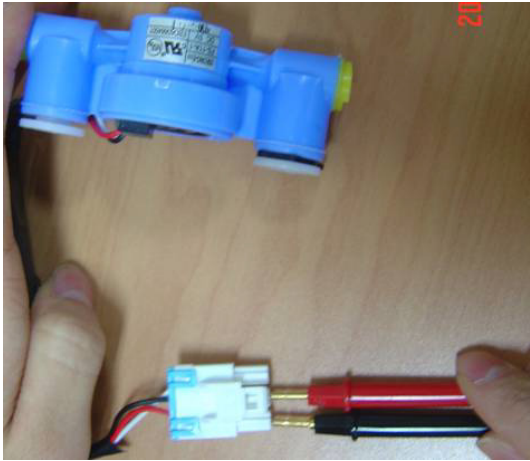

11-7 Damper

<p>Function</p>	<p>The damper supplies the cold air at freezer room to chillroom by using the damper's plate. Chillroom is colder than before when damper's plate is open. When damper's plate is close, chillroom's temperature will rise.</p>																														
<p>How to Measure</p>	<div style="border: 1px dashed black; padding: 10px;"> <p style="text-align: center;">Table(1): 결선도(Wiring)</p>  </div> <div style="border: 1px dashed black; padding: 10px; margin-top: 10px;"> <p style="text-align: center;">Table(2): 2-2상 여자순서(CW Rotation)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Housing No. & L/Wire Color</th> <th colspan="4">Step</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>1- Blue (A)</td> <td style="text-align: center;">+</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">+</td> </tr> <tr> <td>2- Red (B)</td> <td style="text-align: center;">+</td> <td style="text-align: center;">+</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> <tr> <td>3- White (A)</td> <td style="text-align: center;">-</td> <td style="text-align: center;">+</td> <td style="text-align: center;">+</td> <td style="text-align: center;">-</td> </tr> <tr> <td>4- Yellow (B)</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">+</td> <td style="text-align: center;">+</td> </tr> </tbody> </table> </div> <p style="text-align: center; margin-top: 10px;">< Damper Circuit ></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Check the ②, ④</p> </div> <div style="text-align: center;">  <p>Check the ①, ③</p> </div> </div> <p style="text-align: center; margin-top: 10px;">< extension ></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Check the ②, ④</p> </div> <div style="text-align: center;">  <p>Check the ①, ③</p> </div> </div> <p style="margin-top: 10px;">Check the resistance between connectors 1,3 and 2,4 .It means check whether or not applying an electric current. If there is resistance, it means the damper not inferiority</p>		Housing No. & L/Wire Color	Step				1	2	3	4	1- Blue (A)	+	-	-	+	2- Red (B)	+	+	-	-	3- White (A)	-	+	+	-	4- Yellow (B)	-	-	+	+
Housing No. & L/Wire Color	Step																														
	1	2	3	4																											
1- Blue (A)	+	-	-	+																											
2- Red (B)	+	+	-	-																											
3- White (A)	-	+	+	-																											
4- Yellow (B)	-	-	+	+																											
<p>Standard</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Damper</th> <th colspan="2"></th> </tr> <tr> <th style="width: 25%;">Test Points</th> <th style="width: 25%;">Result</th> <th style="width: 25%;">Test Points</th> <th style="width: 25%;">Result</th> </tr> </thead> <tbody> <tr> <td>Red and Yellow</td> <td style="text-align: center;">373 ~ 456 Ω</td> <td>Blue and White</td> <td style="text-align: center;">373 ~ 456 Ω</td> </tr> </tbody> </table>		Damper				Test Points	Result	Test Points	Result	Red and Yellow	373 ~ 456 Ω	Blue and White	373 ~ 456 Ω																	
Damper																															
Test Points	Result	Test Points	Result																												
Red and Yellow	373 ~ 456 Ω	Blue and White	373 ~ 456 Ω																												

11-8 Lamp Socket

<p>Function</p>	<p>The lamp socket connect cover lamp assembly to lamp. The lamp socket fix lamp and unite lamp and cover lamp assembly. The lamp socket supply electric source to lamp also.</p>				
<p>How to Measure</p>	<div style="text-align: center;">  </div> <p>Check the resistance between connector of housing and connector of lamp socket. It means check whether or not applying an electric current. If there is resistance it means the lamp socket is not inferiority.</p>				
<p>Standard</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Test Points</th> <th style="text-align: center;">Result</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">(1) to (2) and (3) to (4)</td> <td style="text-align: center;">$0\ \Omega$</td> </tr> </tbody> </table>	Test Points	Result	(1) to (2) and (3) to (4)	$0\ \Omega$
Test Points	Result				
(1) to (2) and (3) to (4)	$0\ \Omega$				

11-9 Flow Sensor

<p>Function</p>	<p>Flow Sensor (in machine room) Count the water quantity from city water to water filter in refrigerator</p>					
<p>How to Measure</p>	 <p style="text-align: center;">Flow Sensor (in machine room)</p>					
<p>Standard</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Test Points</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Red wire to Black wire</td> <td>4 ~ 30 Ω</td> </tr> </tbody> </table>		Test Points	Result	Red wire to Black wire	4 ~ 30 Ω
Test Points	Result					
Red wire to Black wire	4 ~ 30 Ω					

12. TROUBLESHOOTING

12-1 INFORMATION OF LINEAR COMPRESSOR

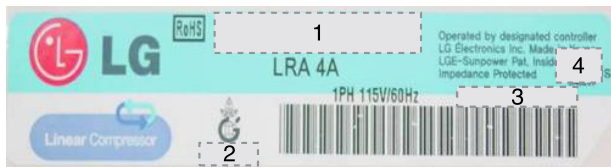
- The information tag provides compressor model, refrigerant, serial number and safety approval



Name Plate



Size : 90mm X 20mm



Compressor Label

1. Compressor Model

FC75LANE

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

2. Refrigerant

3. Serial Number

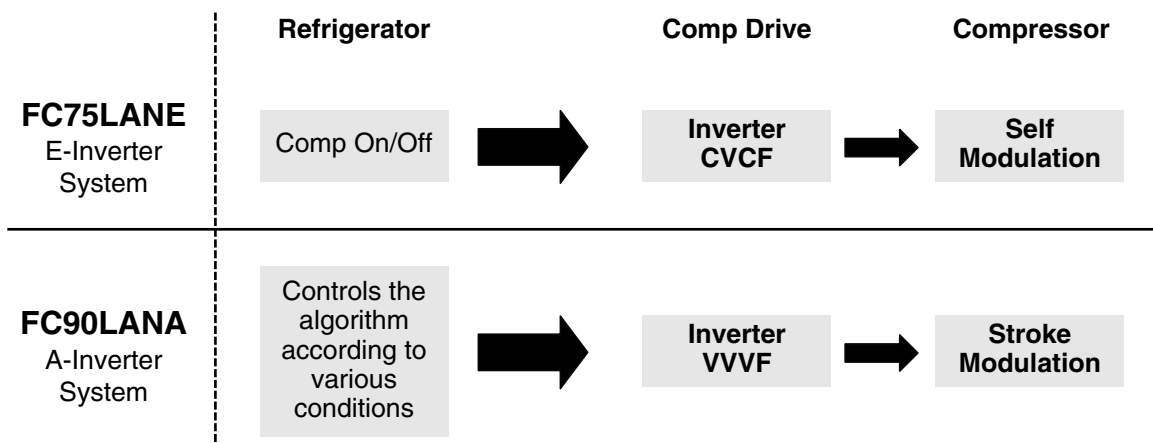
00 00 9 2003 5 13 0012

- Buyer Code** 00
 - Model Code** 00
 - Line** 9
 - Year** 2003
 - Month** 5
 - Date** 13
 - Serial No.** 0012
- 1: January O: October
~ N: November
9: September D: December

4. Safety Approval

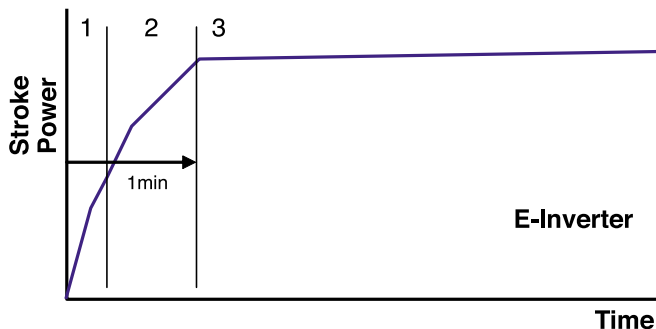


- There are two types of controllers used in the linear compressor system.
 - The "E"-inverter system is used with the FC75LANE compressor.
 - The "A"-inverter system is used with the FC90LANA compressor.

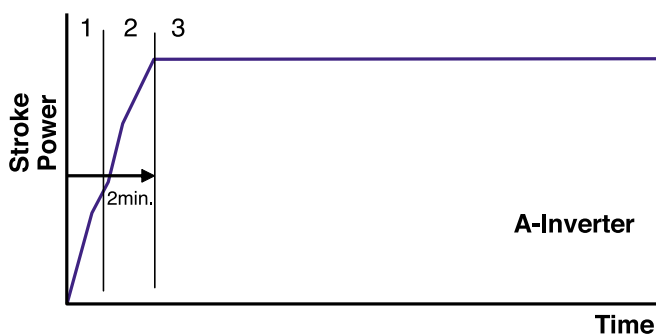


*VVVF : Variable Voltage Variable Frequency
**CVCF : Constant Voltage Constant Frequency

- 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 1 second.
- Step 2) Ramp up - Stroke increases every 0.8sec until maximum stroke length is reached (about 1 min)
- Step 3) CVCF interval - 180V / 60Hz



- Step 1) Start up - Half stroke interval for first 20 seconds.
- Step 2) Ramp up - Stroke increases until maximum stroke length is reached (about 1 min, 40 sec)
- Step 3) VVVF interval - target voltage and frequency controlled by Control Board signals

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

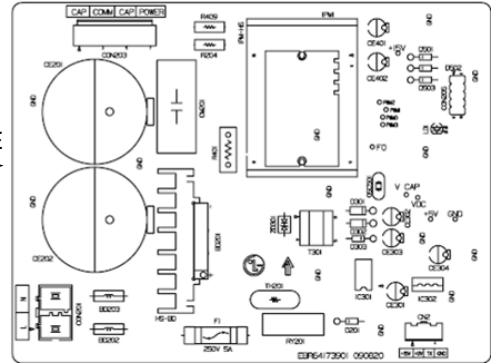
Inverter Error Codes

	App.	Requirement	Waiting Time	The number of LED flashes
FCT0	A-Inv.	Compressor current and voltage error.	20 sec.	1
Stroke Trip	E-Inv. A-Inv.	Piston stroke overrun detected.	1 min.	2
Locked Piston Trip	E-Inv. A-Inv.	Piston is locked.	2 min. 30 sec.	5
Current Trip	E-Inv. A-Inv.	Current overload detected.	6 min.	6
IPM Fault	E-Inv. A-Inv.	High current detected due to IPM failure.	20 sec.	7
Communication Error	A-Inv.	Miscommunication with Refrigerator	0	8

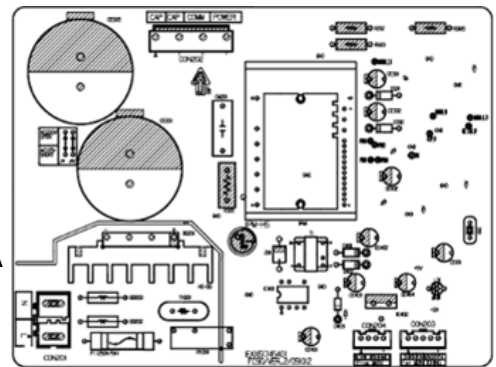
- Bridge Diodes converts 115V AC (Alternating current) to 115V DC (Direct current)
The Voltage Multiplying circuit then increases the 115V DC to 230V DC.
Then the IPM (Intelligent Power Module) converts the 230V DC to 230V AC.
The converted AC power can be regulated to any required voltage and frequency.



E-Inverter
FC75LANE

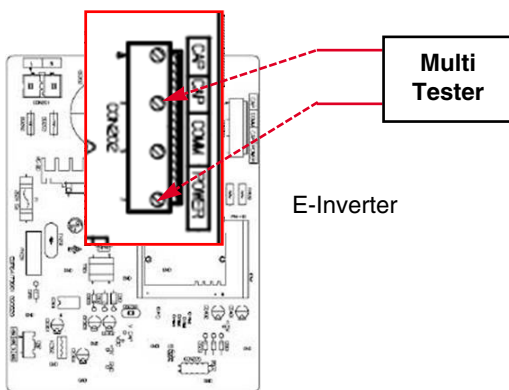


A-Inverter
FC90LANA

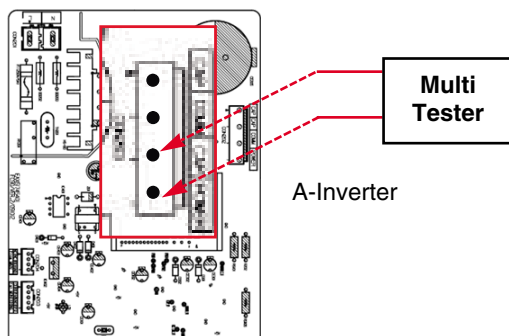


- There is a PCB located in the PCB case next to the compressor. That is the driver PCB, the linear compressor.

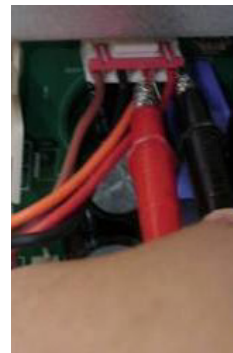
- Measure the voltage at locations on the connector (as shown picture) with a multi-tester.



E-Inverter



A-Inverter



IPM Voltage Check

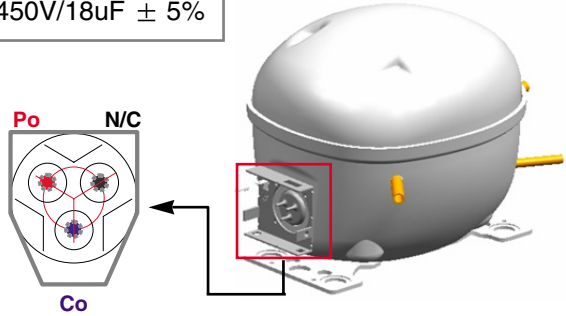
- To ensure proper diagnosis, make sure that the unit has been plugged in for at least 10 min.
- To determine if the compressor is receiving the proper voltage, check the PCB output voltage during operation.
- Normal operating voltage will be between 80V AC and 180V AC.

Note : Higher voltage readings may occur under "heavy" load conditions.

- Insulation check : Check for infinite Ohms between all compressor terminal and ground.

FC90LANA

Capacitor Spec.
 450V/18uF ± 5%

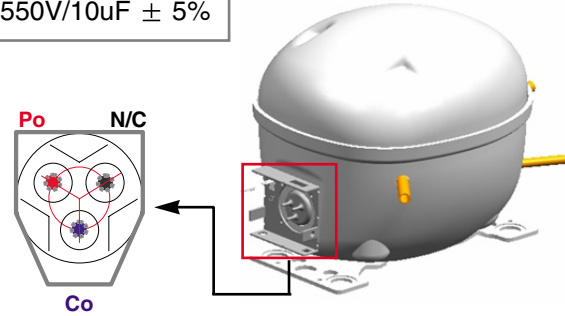


Po : Power
 Co : Common
 N/C : No Connecting

Compressor Winding Resistance Check
 6 ~ 8 Ω Between Po and Co

FC75LANE

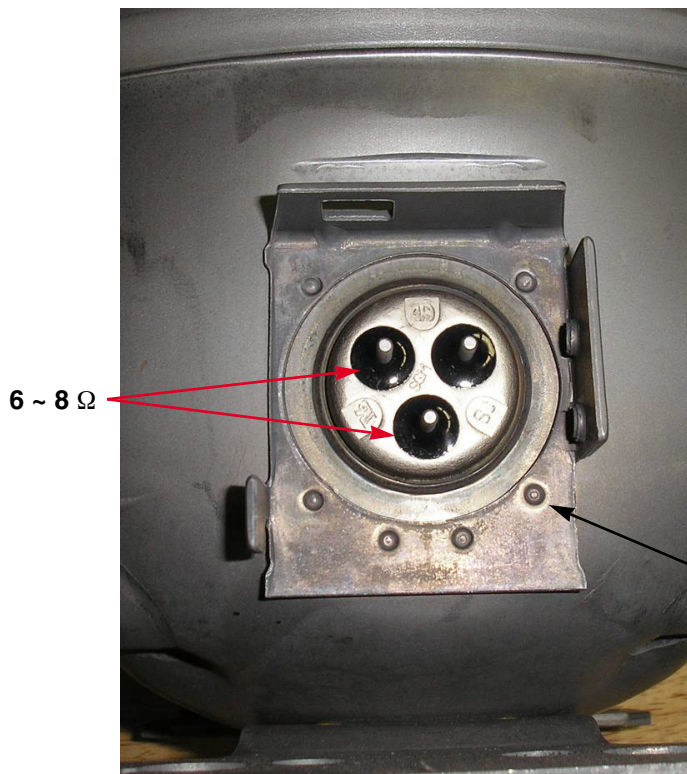
Capacitor Spec.
 550V/10uF ± 5%



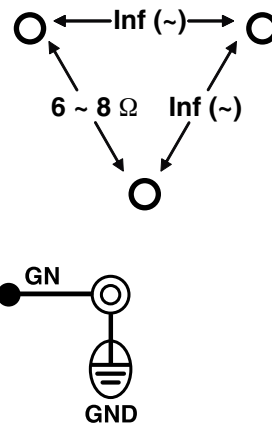
Po : Power
 Co : Common
 N/C : No Connecting

Compressor Winding Resistance Check
 6 ~ 8 Ω Between Po and Co

LG Linear Compressor



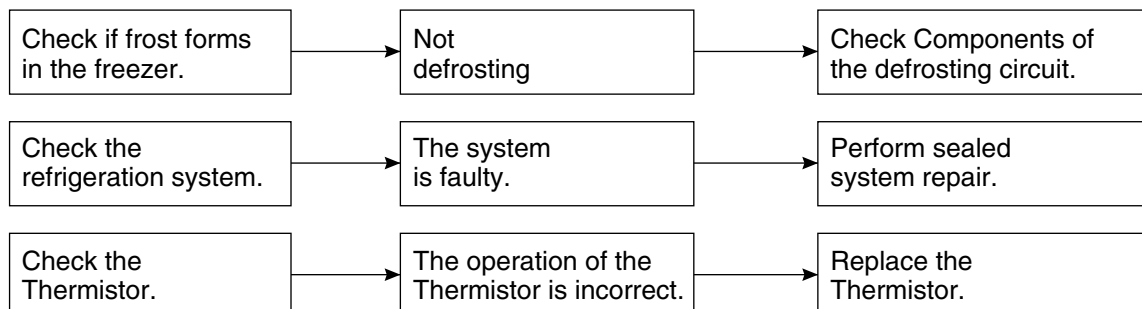
NOTE : Any Terminal to Ground should read Inf (~)



12-2 SERVICE DIAGNOSIS CHART

COMPLAINT	POINTS TO BE CHECKED	REMEDY
No Cooling.	<ul style="list-style-type: none"> Is the power cord unplugged from the outlet? Check if the power switch is set to OFF. Check if the fuse of the power switch is shorted. Measure the voltage of the power outlet. 	<ul style="list-style-type: none"> Plug into the outlet. Set the switch to ON. Replace the fuse. If the voltage is low, correct the wiring.
Cools poorly.	<ul style="list-style-type: none"> Check if the unit is placed too close to the wall. Check if the unit is placed too close to the stove, gas cooker, or in direct sunlight. Is the ambient temperature too high or the room door closed? Check if food put in the refrigerator is hot. Did you open the door of the unit too often or check if the door is sealed properly? Check if the Control is set to Warm position. 	<ul style="list-style-type: none"> Place the unit about 4 inches (10 cm) from the wall. Place the unit away from these heat sources. Lower the ambient temperature. Put in foods after they have cooled down. Don't open the door too often and close it firmly. Set the control to Recommended position.
Food in the Refrigerator is frozen.	<ul style="list-style-type: none"> Is food placed in the cooling air outlet? Check if the control is set to colder position. Is the ambient temperature below 41°F(5°C)? 	<ul style="list-style-type: none"> Place foods in the high-temperature section. (front part) Set the control to Recommended position. Set the control to Warm position.
Condensation or ice forms inside the unit.	<ul style="list-style-type: none"> Is liquid food sealed? Check if food put in the refrigerator is hot. Did you open the door of the unit too often or check if the door is sealed properly? 	<ul style="list-style-type: none"> Seal liquid foods with wrap. Put in foods after they have cooled down. Don't open the door too often and close it firmly.
Condensation forms in the Exterior Case.	<ul style="list-style-type: none"> Check if the ambient temperature and humidity of the surrounding air are high. Is there a gap in the door gasket? 	<ul style="list-style-type: none"> Wipe moisture with a dry cloth. It will disappear in low temperature and humidity. Fill up the gap.
There is abnormal noise.	<ul style="list-style-type: none"> Is the unit positioned in a firm and even place? Are any unnecessary objects placed in the back side of the unit? Check if the Drip Tray is not firmly fixed. Check if the cover of the compressor enclosure in the lower front side is taken out. 	<ul style="list-style-type: none"> Adjust the Leveling Screw, and position the refrigerator in a firm place. Remove the objects. Fix the Drip Tray firmly in the original position. Place the cover in its original position.
Door does not close well.	<ul style="list-style-type: none"> Check if the door gasket is dirty with an item like juice. Is the refrigerator level? Is there too much food in the refrigerator? 	<ul style="list-style-type: none"> Clean the door gasket. Position in a firm place and level the Leveling Screw. Make sure food stored in shelves does not prevent the door from closing.
Ice and foods smell unpleasant.	<ul style="list-style-type: none"> Check if the inside of the unit is dirty. Are foods with a strong odor unwrapped? The unit smells of plastic. 	<ul style="list-style-type: none"> Clean the inside of the unit. Wrap foods that have a strong odor. New products smell of plastic, but this will go away after 1-2 weeks.

● Other possible problems:



12-3 REFRIGERATION CYCLE

▼ Troubleshooting Chart

CAUSE		STATE OF THE UNIT	STATE OF THE EVAPORATOR	TEMPERATURE OF THE COMPRESSOR	REMARKS
LEAKAGE	PARTIAL LEAKAGE	Freezer compartment and Refrigerator don't cool normally.	Low flowing sound of Refrigerant is heard and frost forms in inlet only.	A little higher than ambient temperature.	<ul style="list-style-type: none"> Refrigerant level is low due to a leak. Normal cooling is possible by restoring the normal amount of refrigerant and repairing the leak.
	COMPLETE LEAKAGE	Freezer compartment and Refrigerator don't cool normally.	Flowing sound of refrigerant is not heard and frost isn't formed.	Equal to ambient temperature.	<ul style="list-style-type: none"> No discharging of Refrigerant. Normal cooling is possible by restoring the normal amount of refrigerant and repairing the leak.
CLOGGED BY DUST	PARTIAL CLOG	Freezer compartment and Refrigerator don't cool normally.	Flowing sound of refrigerant is heard and frost forms in inlet only.	A little higher than ambient temperature.	<ul style="list-style-type: none"> Normal discharging of the refrigerant. The capillary tube is faulty.
	WHOLE CLOG	Freezer compartment and Refrigerator don't cool.	Flowing sound of refrigerant is not heard and frost isn't formed.	Equal to ambient temperature.	<ul style="list-style-type: none"> Normal discharging of the Refrigerant.
MOISTURE CLOG		Cooling operation stops periodically.	Flowing sound of refrigerant is not heard and frost melts.	Lower than ambient temperature.	<ul style="list-style-type: none"> Cooling operation restarts when heating the inlet of the capillary tube.
DEFECTIVE COMPRESSION	COMP-RESSION	Freezer and Refrigerator don't cool.	Low flowing sound of refrigerant is heard and frost forms in inlet only.	A little higher than ambient temperature.	<ul style="list-style-type: none"> Low pressure at high side of compressor due to low refrigerant level.
	NO COMP-RESSION	No compressing operation.	Flowing sound of refrigerant is not heard and there is no frost.	Equal to ambient temperature.	<ul style="list-style-type: none"> No pressure in the high pressure part of the compressor.

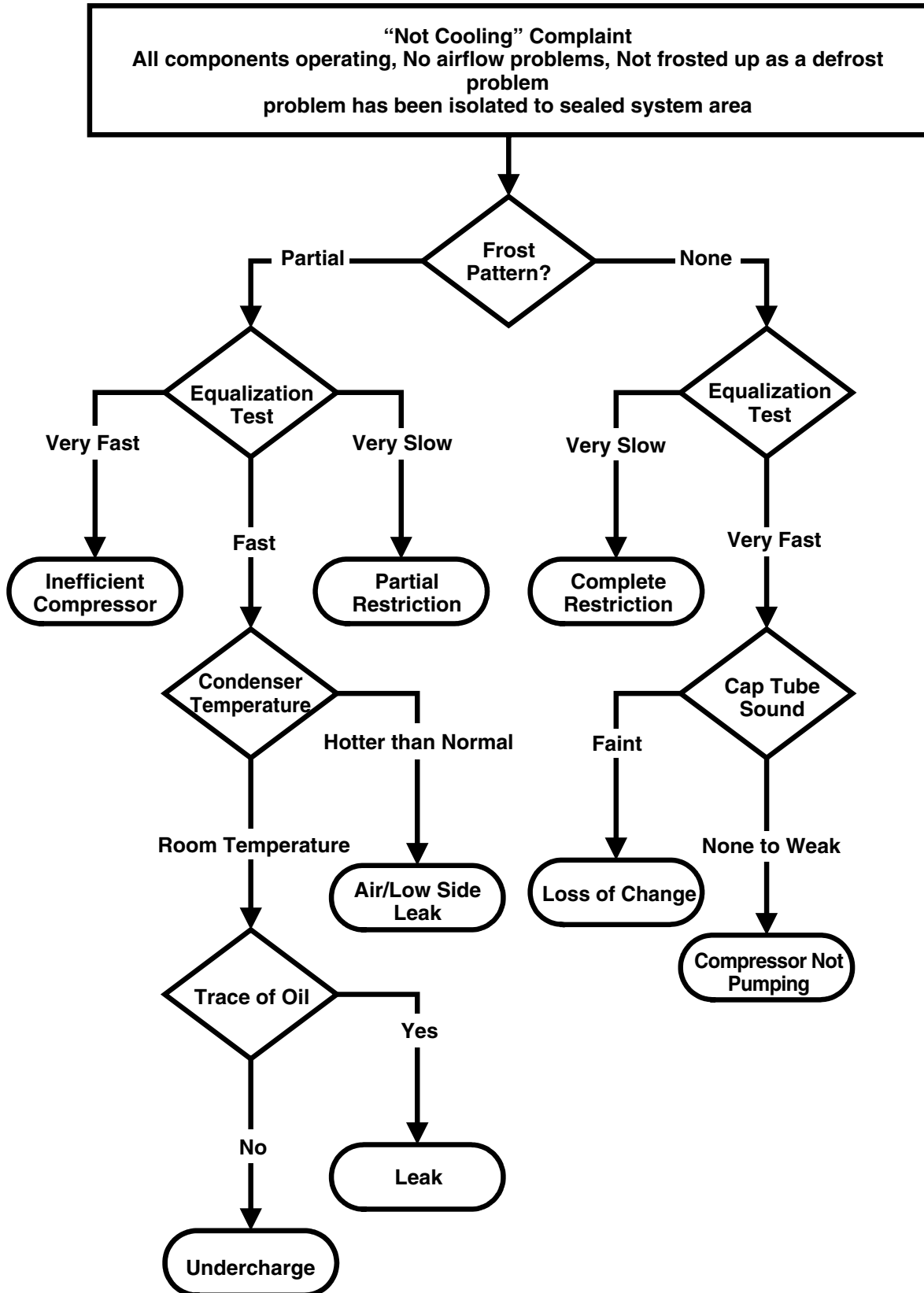
12-3-1 Cleaning

There is no need for routine condenser cleaning in normal Home operating environments. If the environment is particularly greasy or dusty, or there is significant pet traffic in the home, the condenser should be cleaned every 2 to 3 months to ensure maximum efficiency.

If you need to clean the condenser:

- Remove the mechanical cover.
- Use a vacuum cleaner with a soft brush to clean the grille, the open areas behind the grille and the front surface area of the condenser.
- Replace the mechanical cover.

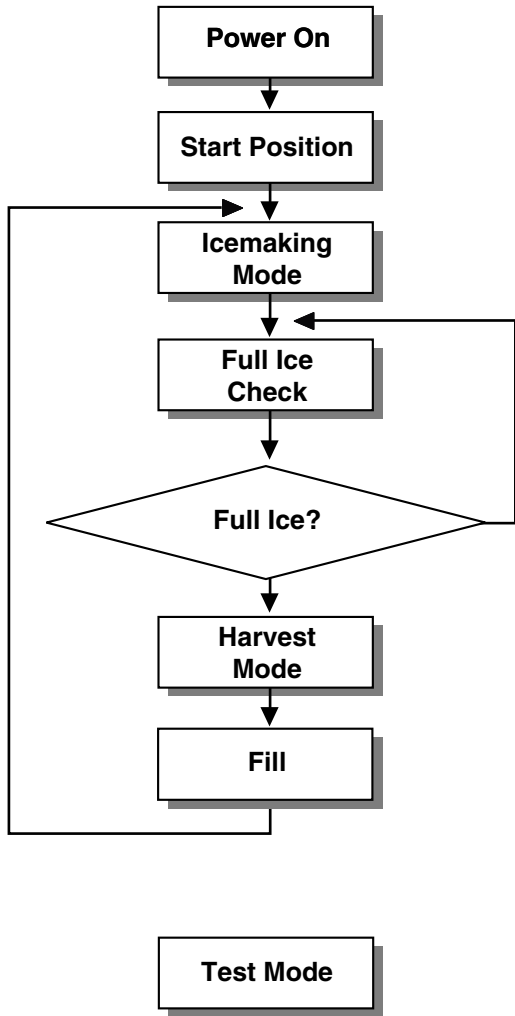
12-3-2 SEALED SYSTEM DIAGNOSIS



(The equalization test is trying to restart a compressor using a start kit after it has been operating.)

13. ICEMAKER OPERATING METHOD AND TROUBLE SHOOTING

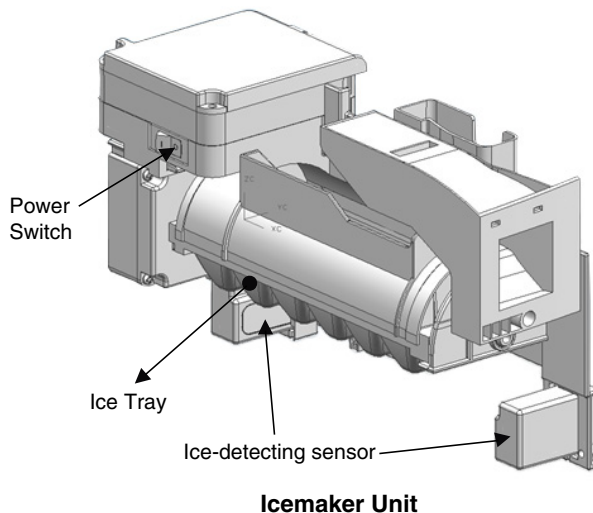
13-1 Icemaker's Basic Operating Method



- ➔ • Adjusts Ice Tray to Start Position with power on.
- ➔ • Waits until water becomes ice.
※ For cold air circulation, Ice tray will be on a slightly tilt one hour after ice-making mode begins. A tilt ice tray means icemaker's normal operation.
- ➔ • If water becomes ices in the ice tray, Ice-detecting sensor check if the ice bin is full.
- ➔ • Twist the ice tray to drop ice into the ICE BIN.
- ➔ • Supply water to the ice tray by operating the solenoid valve.
- ➔ • To force water to supply to the ice tray, or check icemaker's condition press and hold the **FILL Key** for about 3seconds.
In the test mode, The icemaker will run through 3 stages step by step
: **Harvest** → **Fill water** → **Ice making**



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



Icemaker Unit

13-2 ICE MAKER FUNCTIONS

13-2-1 Icemaking Mode

1. Icemaking Mode begins right after the ice tray fills with water.
 2. Icemaker waits until water becomes ice in the ice tray.
- ※ Ice-detecting sensor checks if the ice bin is full every 2min.

13-2-2 Harvest Mode

At least in 110min, since icemaker begun icemaking mode, Icemaker starts to twist the ice tray to drop ices into the Ice bin. (After installation, at least 1day is needed to make ices)

- ※ If the icemaker never drop ices to the ice bin though water becomes ices in the ice tray, check the real temperature of compartment. (not temperature on display)
Icemaker needs below 0°F to drop ices to ice bin.

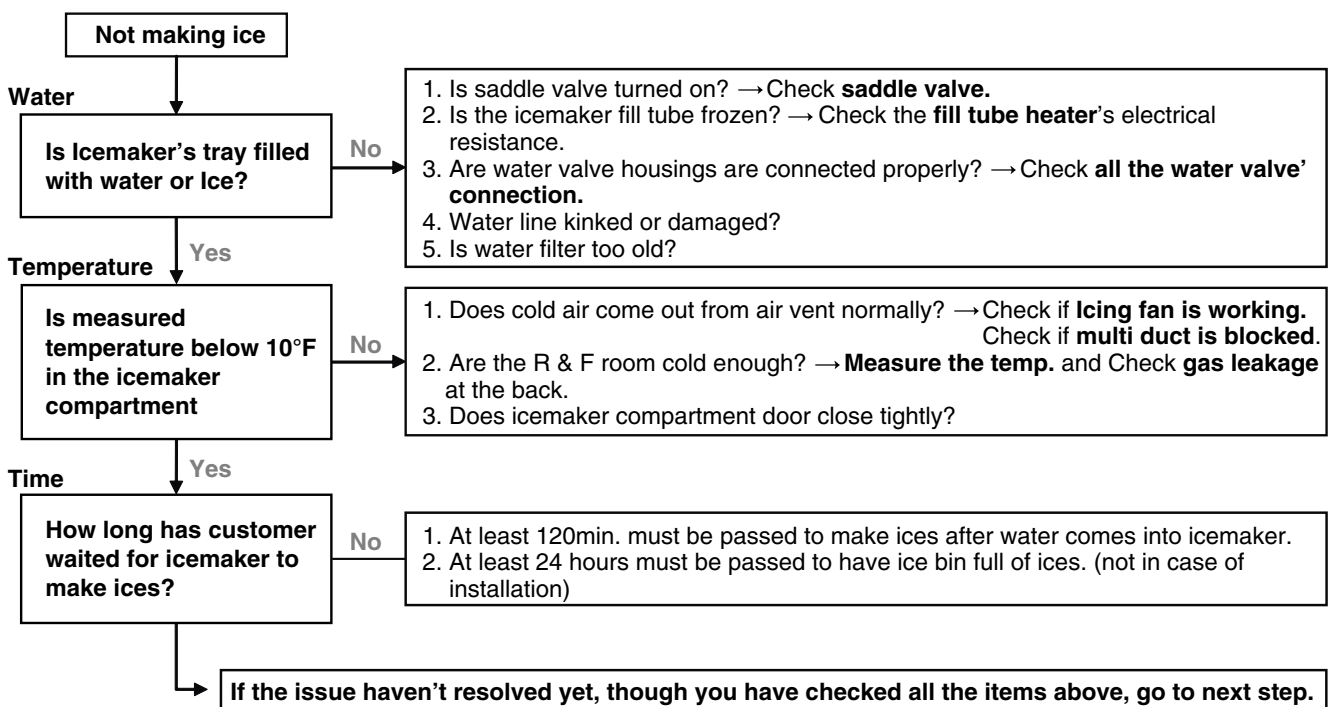
13-2-3 Fill/Park Position

Once the normal harvest mode has been completed, the water solenoid will be activated.

13-3 Trouble Shooting Ice & Water system Issues

13-3-1 Icemaker not making ice or not making enough ice (Environmental Diagnosis)

- Icemaker can't make ices itself. Basically, water, temperature and time are needed.
- Water : If no Water, then no Ice.
 - Temperature : The compartment, where the icemaker is located, has to be at least 1°F so that icemaker dumps ices to the bin.
 - Time : At least 80 minutes must be passed to make one series of ices after water comes into icemaker.
- ※ **Test Mode should not be carried out before checking below.**

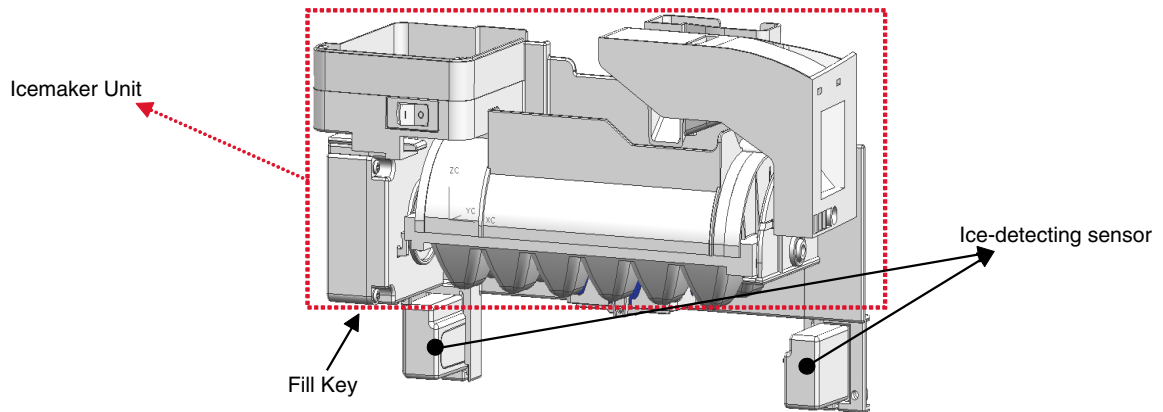


13-3-2 Icemaker not making ice or not making enough ice (Icemaker Unit & Ice-detecting sensor Diagnosis)

► Icemaker Unit and Ice-detecting sensor Diagnosis

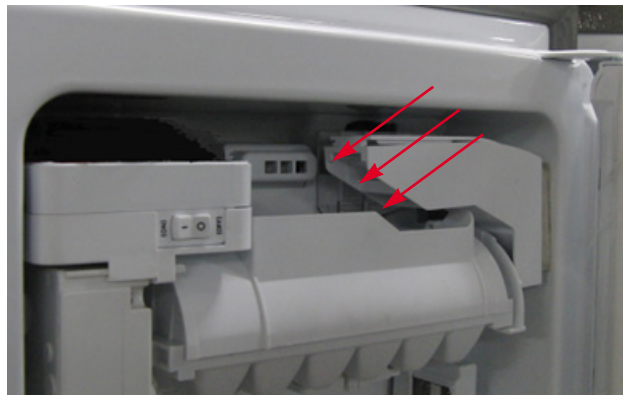
The icemaker unit and Ice-detecting sensor is programmed to be diagnosed.

Follow the procedure step by step to check to see if icemaker and Ice-detecting sensor is working normally.



1st STEP (Icemaker Unit Diagnosis)

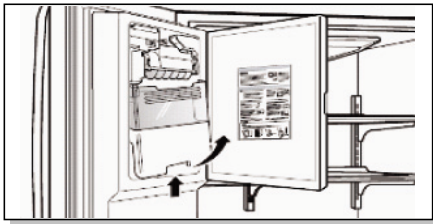
Press the fill key for about 3sec. If the icemaker runs 2 stages of harvest and filling water step by step, It means icemaker's mechanism is normal.



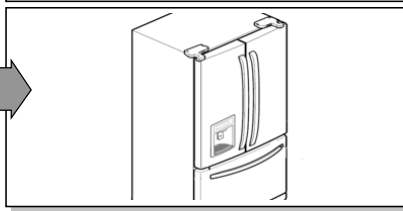
※ Caution : Be sure that the ice tray is not filled with water before pressing fill key.

2st STEP (Ice-detecting sensor Diagnosis)

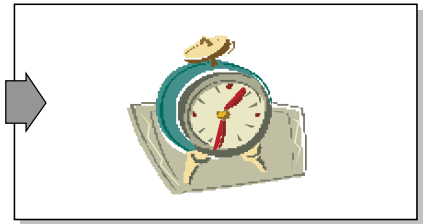
1. Remove Ice bin from compartment



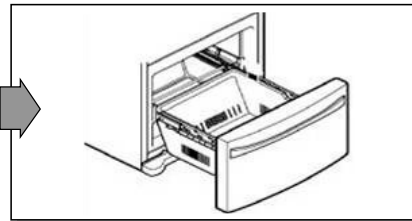
2. Close the left door (Door switch pushed)



3. Wait for 3min.



4. Stay opening freezer door



5. Hold pushing Refrigerator button & Lock button at the same time



If **"ETY"** is shown on the display after the procedure above, Ice-detecting sensor is **normal**.
If **"FULL"** is shown on the display after the procedure above, Ice-detecting sensor is **abnormal**.
※ *ETY* = empty

13-3-3 Icemaker not making ice or not making enough ice (Other Suspected Items)

Strongly suspect items below If the issue remains yet, though all the diagnosis for icemaker has been carried out.

- Cap duct bad sealing
- Defective thermal sensor in the icemaker compartment
- Not cold icemaker compartment area (sealed system)

13-3-4 Not Dispensing Ice

► Clogged Ice In the Ice Bin (suspected items)

- Customer haven't used ice dispenser over a week.
→ **Resolution** : the ices gets stuck if customer doesn't use ice dispenser.
In this case, empty the ice bin and wait until the new ices are stacked in the ice bin.
- Temperature of icemaker compartment is not cold enough.
→ **Resolution** : Check ice fan, sealed system, cap duct, vent and other items related to temperature.
- Cap duct doesn't seal the air properly.
→ **Resolution** : Possibly, warm air could get into the compartment and make ices get stuck. Replace the cap duct with new one.
- In-door geared motor doesn't work
→ **Resolution** : Change the in-door geared motor and test it.
- The water comes out of fill cup and the water get into the ice bin.
→ **Resolution** : The water pressure from shutoff valve is too high.
Recommend to use regulator to the customer and close the shutoff valve slightly.

► Clogged Ices In the Chute (suspected items)

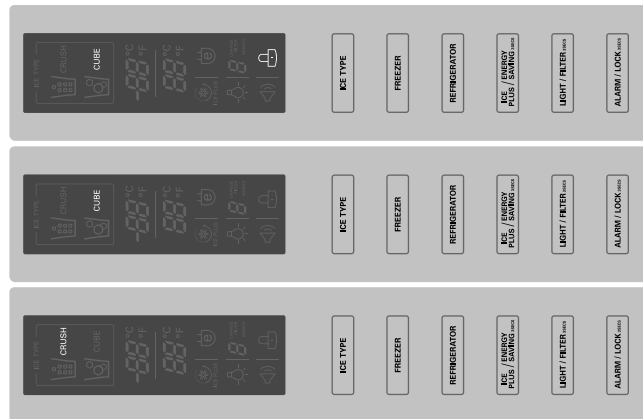
- Cap duct doesn't seal the air properly.
→ **Resolution** : Possibly, warm air could get into the compartment and make ices get stuck. Replace the cap duct with new one.

14. DESCRIPTION OF FUNCTION & CIRCUIT OF MICOM

14-1 FUNCTION

14-1-1 Function

- When the appliance is plugged in, it is set to 37°F for Refrigerator and 0°F for freezer.
You can adjust the Refrigerator and the Freezer control temperature by pressing the ADJUST button.
- When the power is initially applied or restored after a power failure, it is set to Control temperature Previously.
- If you do not press any button after turning on the power, only CRUSH or CUBE Label that has been selected will be turned on and all other LEDs on the display Panel will be turned off within 60 seconds. (Power Save Mode)
- If you press a button, only CRUSH, CUBE label and Lock icon that has been selected will be turned on and all other LEDs on the display Panel will be turned off within 20 seconds. (Power Save Mode)



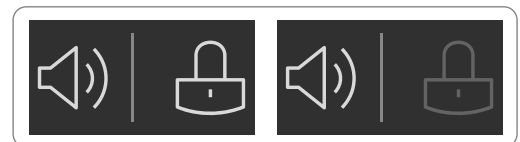
- If you do not want to use the Power Save Mode, you can change the Mode by pressing the ICE PLUS Button and Freezer TEMP button simultaneously for more than 5 seconds.

14-1-2 How to Toggle the Display between °F & °C

- The initial setting is °F and the display temperature mode can be changed from °F to °C or °C to °F by pressing and holding the FRZ TEMP and the REF TEMP keys at the same time for over 5 seconds.

14-1-3 Lock function (dispenser and display button lock)

- When the refrigerator is first turned on, the buttons are not locked. "LOCK" is deactivated with no light on.
- To lock the display, the dispenser, and the control panel, press and hold the LOCK button for 3 seconds. "LOCK" is activated with "Lock Icon" on.
- The LOCK button is the only control feature that remains active in the locked state. The buzzer sound, other control buttons, and the dispenser are deactivated.
- To release from the locked state, press and hold the LOCK button again for 3 seconds.
- If you don't hold the Alarm/Lock button more than 3 seconds, Alarm function will be changed and alarm for opened door will be on/off same as alarm icon indicating.



Ex) In selecting "LOCK"

Ex) In selecting "LOCK" again

14-1-4 Filter condition display function

- There is a replacement indicator light for the filter cartridge on the dispenser.
- Water filter needs replacement once six months or of using water filter.
- When the Water Filter Icon blinks, you must exchange the filter.
- After replacing the filter, press and hold the Light/Filter button for more than 3 seconds.
After then water Filter icon turn off with reset status.

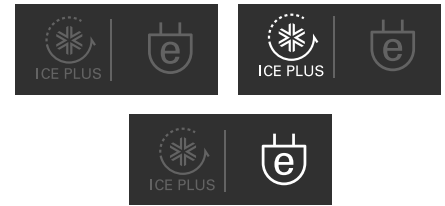
Classification

Filter Status Display

	In initial Power On / Filter RESET	Blinking
Filter Status Display		

14-1-5 Ice Plus selection

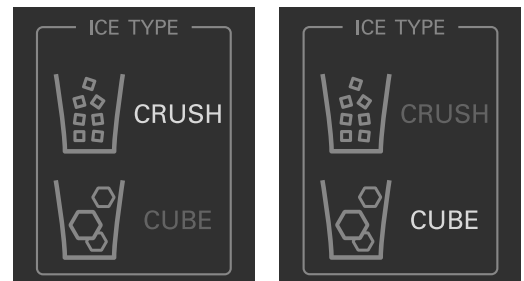
1. Please select ice plus function for quick freezing.
2. When you press the ice plus button, the ice plus icon will be turned on again.
3. Ice plus function automatically turns off after a fixed time passes.
4. If you want additional power save, you can turn on energy saving (some heater off for anti-dew).
5. To turn on or off the energy saving function, press Ice plus/Energy saving Button for more than 3 seconds.
6. We recommend using energy saving function when you go out for quite a long time and are out of the rainy season.



14-1-6 Dispenser use selection

You can select water or ice by separated pad switch.

- When you press ice type button, ice type will be changed. (Crush or Cube)
- Hold your cup in the dispenser for a few seconds after dispensing ice or water to allow the last pieces of ice drops or water to fall into the cup.
- When after initially establishing the water comes out, the water tank inside fills and until at the time of quality the hour is caught.



14-1-7 CONTROL OF FREEZER FAN MOTOR

1. Freezer fan motor has high and standard speeds.
2. High speed is used at power-up, for Ultra Ice, and when refrigerator is overloaded. Standard speeds is used for general purposes.
3. To improve cooling speed, the RPM of the freezer fan motor change from normal speed to high.
4. High speed (2700RPM) : Initial power on or load corresponding operation, Ultra Ice.
Normal speed (2400RPM) : General working conditions.

14-1-8 Cooling Fan Motor

1. The cooling fan is switched ON and OFF in conjunction with the compressor.
2. The cooling fan Motor has high and standard speeds. (When room temperature more high then 38°C speed is high)
3. The Failure sensing method is the same as in the fan motor of the freezing fan motor(refer to failure diagnosis function table for failure display).

14-1-9 Ice Compartment Fan

1. The Icing Fan is controlled by the the sensor on the top of the ice compartment.
2. The Failure sensing method is the same as in the fan motor of the freezer (refer to failure diagnosis function table for failure display)

14-1-10 Refrigeration room Fan Motor

1. The refrigeration room fan is switched ON and OFF in conjunction with the refrigeration room temperature.
2. The Failure sensing method is the same as in the fan motor of the freezing fan motor (refer to failure diagnosis function table for failure display).

14-1-11 Ice PLUS

1. The purpose of this function is to intensify the cooling speed of freezer and to increase the amount of ice.
2. Whenever selection switch is pressed, selection/release, the Icon will turn ON or OFF.
3. If there is a power outage and the refrigerator is powered on again, Ice PLUS will be canceled.
4. To activate this function, press the Ice PLUS key and the Icon will turn ON. This function will remain activated for 24 hrs. The first one hours the compressor, Freezer Fan and Icing Fan will be ON. The next 23 hours the Ice room will be controlled at the lowest temperature. After 24 hours or if the Ice PLUS key is pressed again, the Ice room will return to its previous temperature.
5. During the first 1 hours :
 - (1) Compressor, Freezer Fan and Icing Fan run continuously.
 - (2) If a defrost cycle begins during the first 30 minutes of Ice Plus, the Ice PLUS cycle will complete its cycle after defrosting has ended.
If the defrost cycle begins when Ice Plus has run for more than 30 minutes, Ice PLUS will run for 40 minutes after the defrost is completed.
 - (3) If Ice PLUS is pressed during defrost, Ice Plus Icon is on but this function will start seven minutes after defrost is completed and it shall operate for three hours.
 - (4) If Ice Plus is selected within seven minutes after compressor has stopped, the compressor (compressor delays seven minutes) shall start after the balance of the delay time.
6. For the rest of the 23 hours, the Ice room will be controlled at the lowest temperature.

14-1-12 How to set the display mode and cancel it

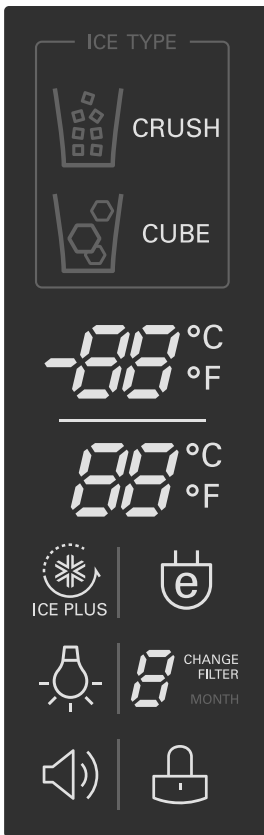
1. With the refrigerator door open, keep pressing the Refrigerator Temp Button and ICE PLUS Button more than 5 seconds, then it goes to the display mode with Special Beep Sound With Special Beep Sound.
2. Perform the same way again to cancel the display mode.
3. All Freezing unit will be turned off at display mode (Exceptions : Lamp, Display)

14-1-13 Defrosting (removing frost)

1. Defrosting starts each time the COMPRESSOR running time Between 7~50 hours.
2. For initial power on or for restoring power, defrosting starts when the compressor running time reaches 4 hours.
3. Defrosting stops if the sensor temperature reaches 46.4°F(8°C) or more. If the sensor doesn't reach 46.4°F(8°C) in 1 hours, the defrost mode is malfunctioning. (Refer to the defect diagnosis function, 8-1-15.)
4. Defrosting won't function if its sensor is defective (wires are cut or short circuited)

14-1-14 Defect Diagnosis Function

1. Automatic diagnosis makes servicing the refrigerator easy.
2. When a defect occurs, the buttons will not operate; but the tones. such as ding. will sound.
3. When the defect CODE removes the sign, it returns to normal operation (RESET).
4. The defect CODE shows on the Refrigerator and Freezer Display.



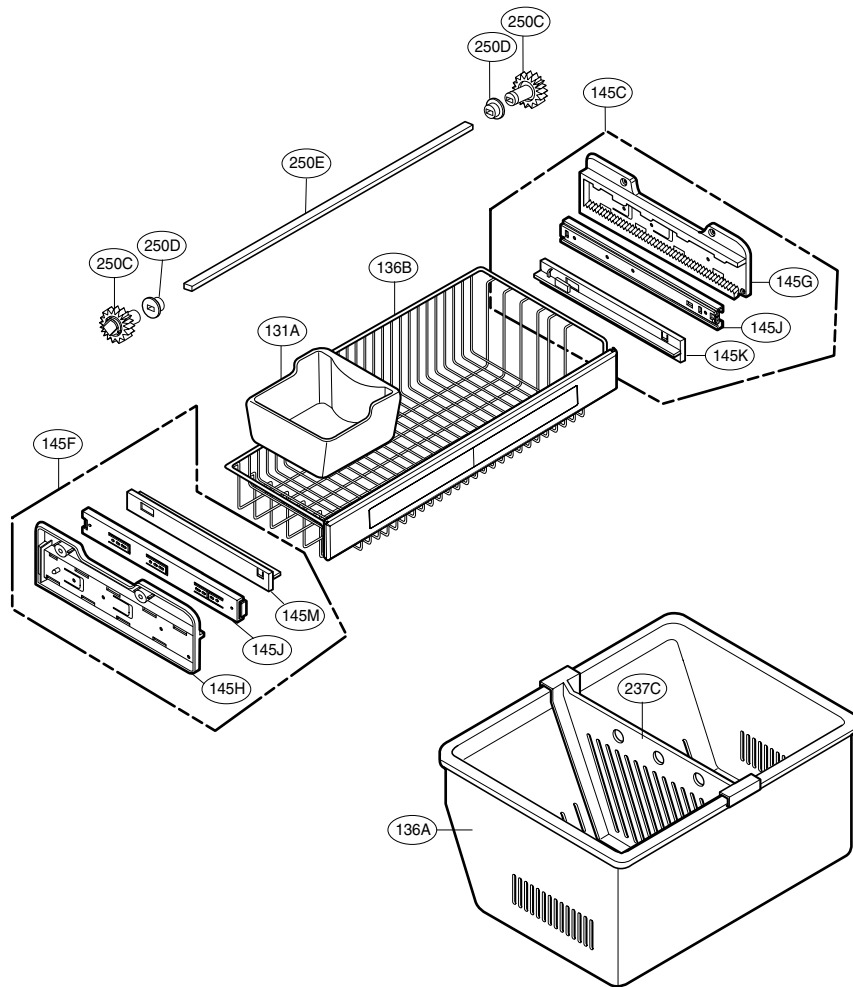
- * Display check function: If simultaneously pressing Ultra Ice button and freezing temperature adjustment button for a second, display LCD graphics on. If releasing the button, the LCD graphic displays the previous status.
You can check the error code Within 3-hour Period from initial error

14-1-15 Auto pantry

1. The temperature control will automatically start upon the selected Auto Pantry temperature control.
2. You can adjust the Pantry control with three different temperature ranges by pressing the Temp.Selector button.

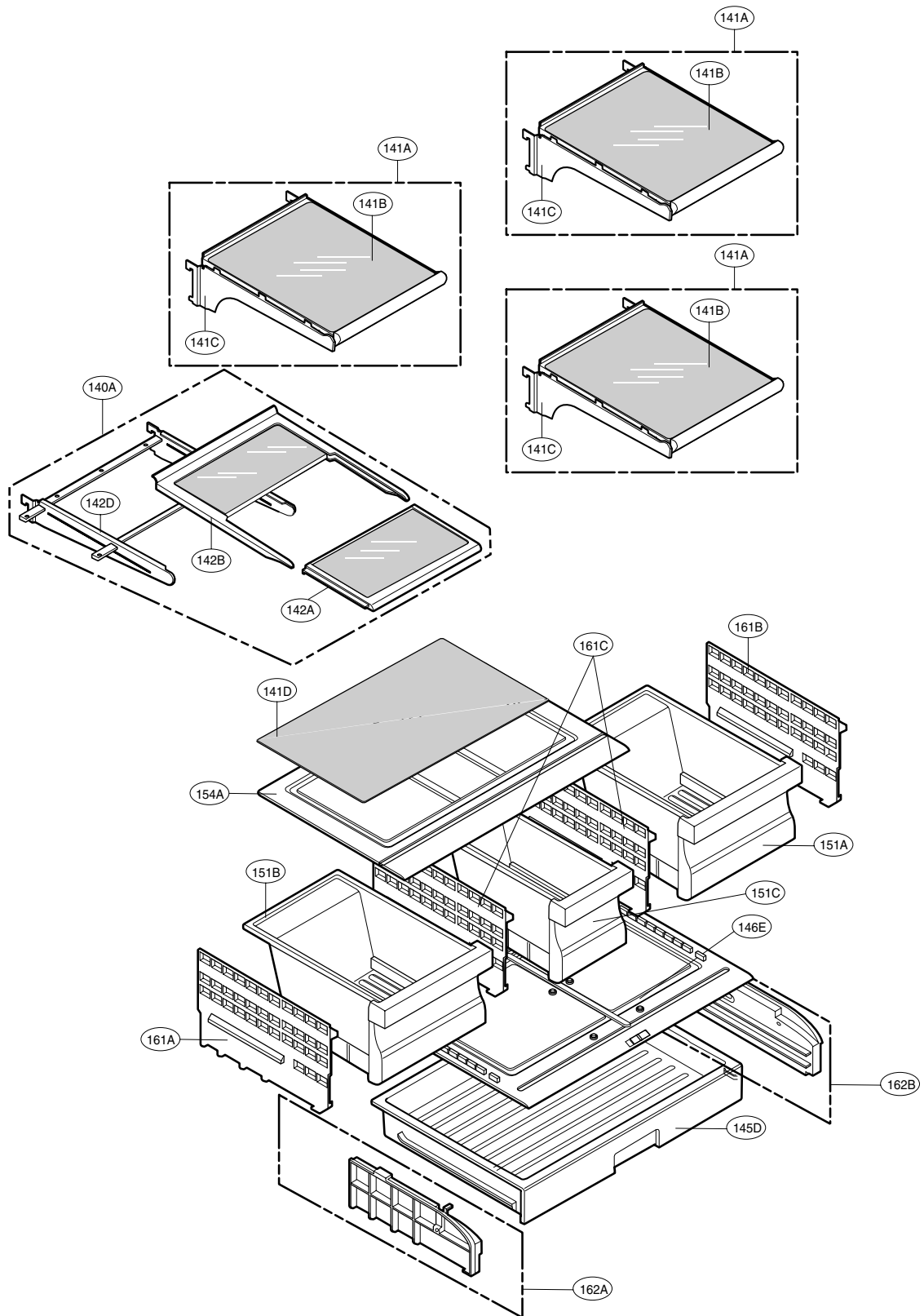
FREEZER PARTS

CAUTION : Use the part number to order part, not the position number.



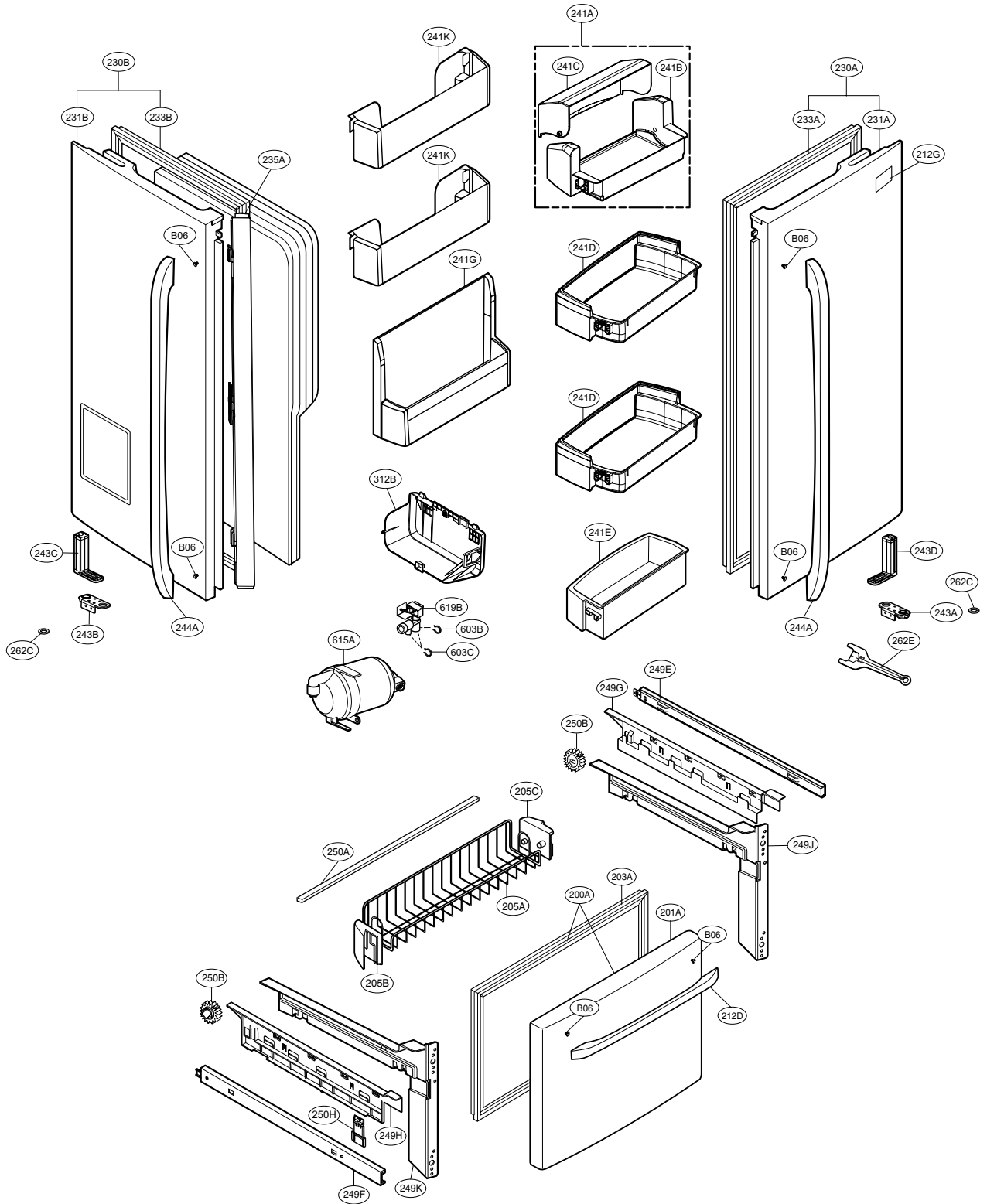
REFRIGERATOR PARTS

CAUTION : Use the part number to order part, not the position number.



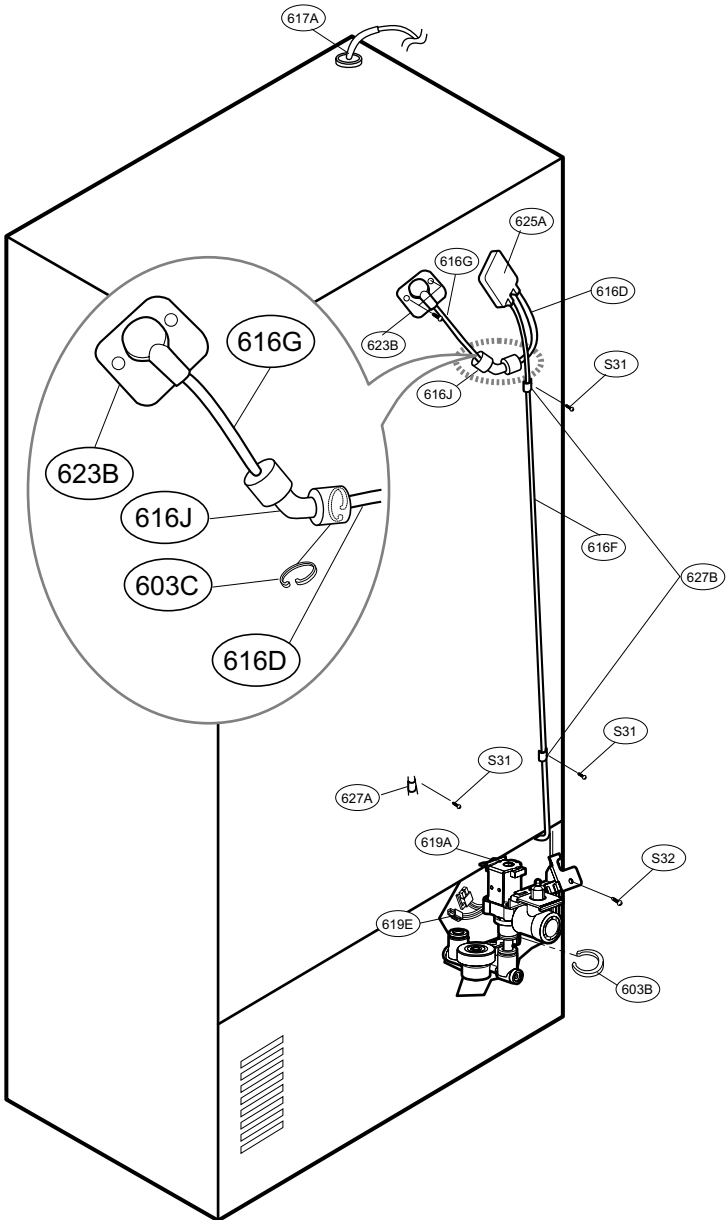
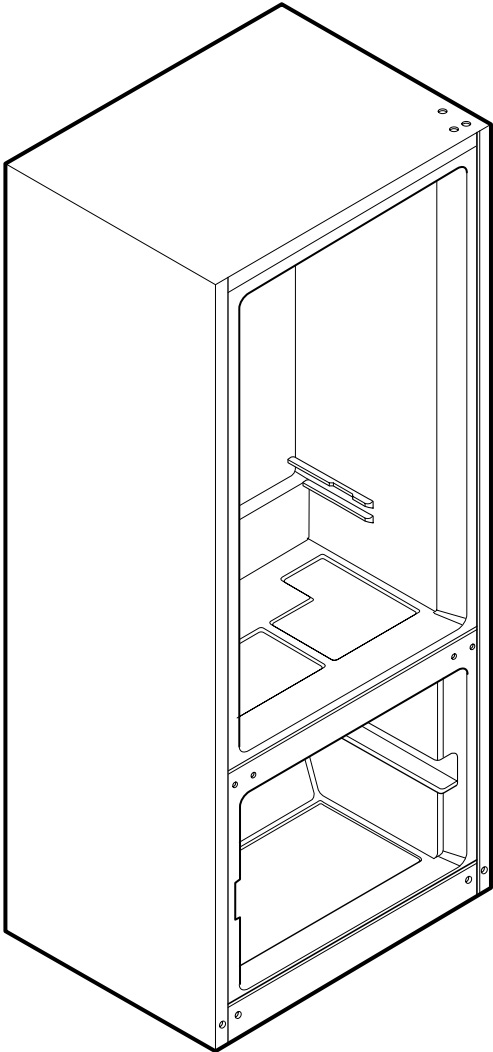
DOOR PARTS

CAUTION : Use the part number to order part, not the position number.



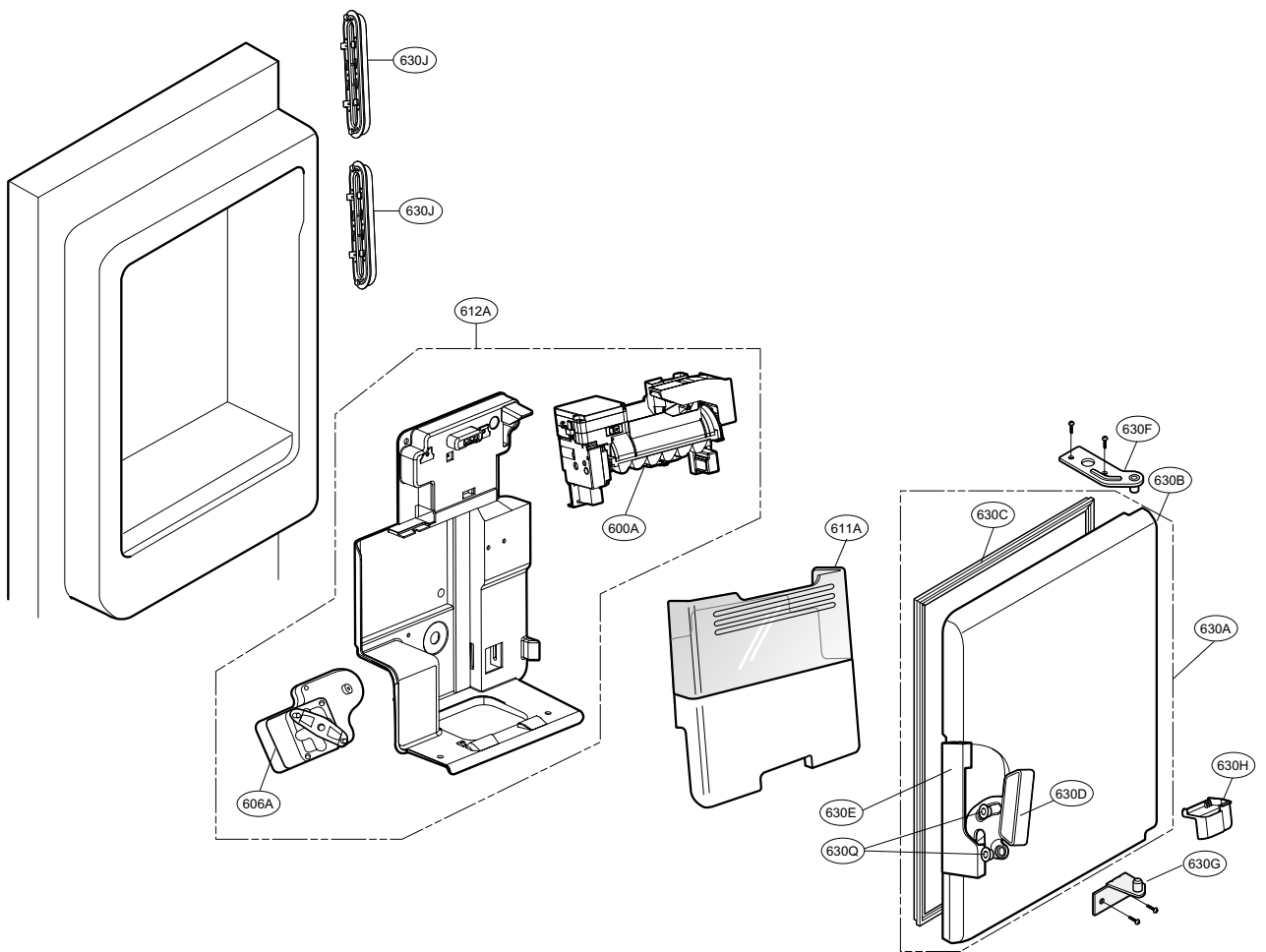
VALVE & WATER TUBE PARTS

CAUTION : Use the part number to order part, not the position number.



ICE BANK PARTS

CAUTION : Use the part number to order part, not the position number.





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