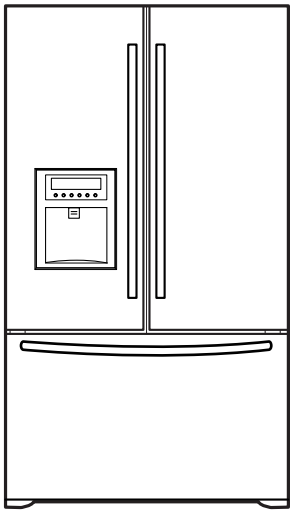
website : http://biz.lgservice.com

LG

# REFRIGERATOR

# SERVICE MANUAL

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



**MODEL:** LFX25960ST LFX21960ST
LFX25960SW LFX21960SW
LFX25960SB LFX21960SB
LFX25960TT LFX21960TT

**COLOR:** STAINLESS
SUPER WHITE
WESTERN BLACK
TITANIUM

# CONTENTS



# 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.

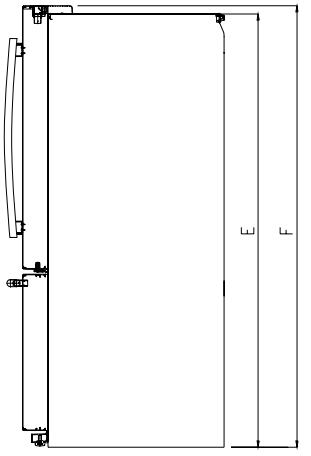
# 1. SPECIFICATIONS

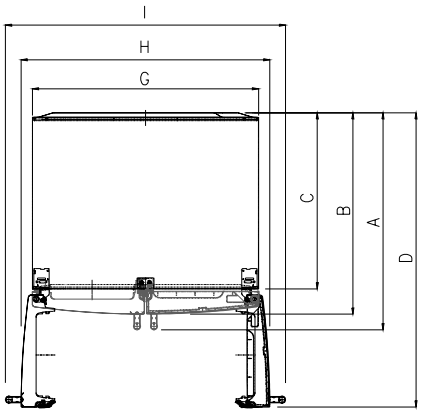
**21 cu. ft. / 25 cu. ft.**

| ITEMS | SPECIFICATIONS |
|---|---|
| DOOR DESIGN | Side Rounded |
| DIMENSIONS (inches) | 35 3/4 x 30 x 69 3/4 (WxDxH) 21cu.ft |
| | 35 3/4 x 34 1/4 x 69 3/4 (WxDxH) 25cu.ft |
| NET WEIGHT (pounds) | 302.58 (21cu.ft) |
| | 324.18 (25cu.ft) |
| COOLING SYSTEM | Fan Cooling |
| TEMPERATURE CONTROL | Micom Control |
| DEFROSTING SYSTEM | Full Automatic<br>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 | | Recipro |
| EVAPORATOR | | Fin Tube Type |
| CONDENSER | | Wire Condenser |
| REFRIGERANT | | R-134a (125 g) |
| LUBRICATING OIL | | ISO10 (280 ml) |
| DEFROSTING DEVICE | | SHEATH HEATER |
| LAMP | REFRIGERATOR | 60 W (2EA) |
| | FREEZER | 60 W (1EA) |

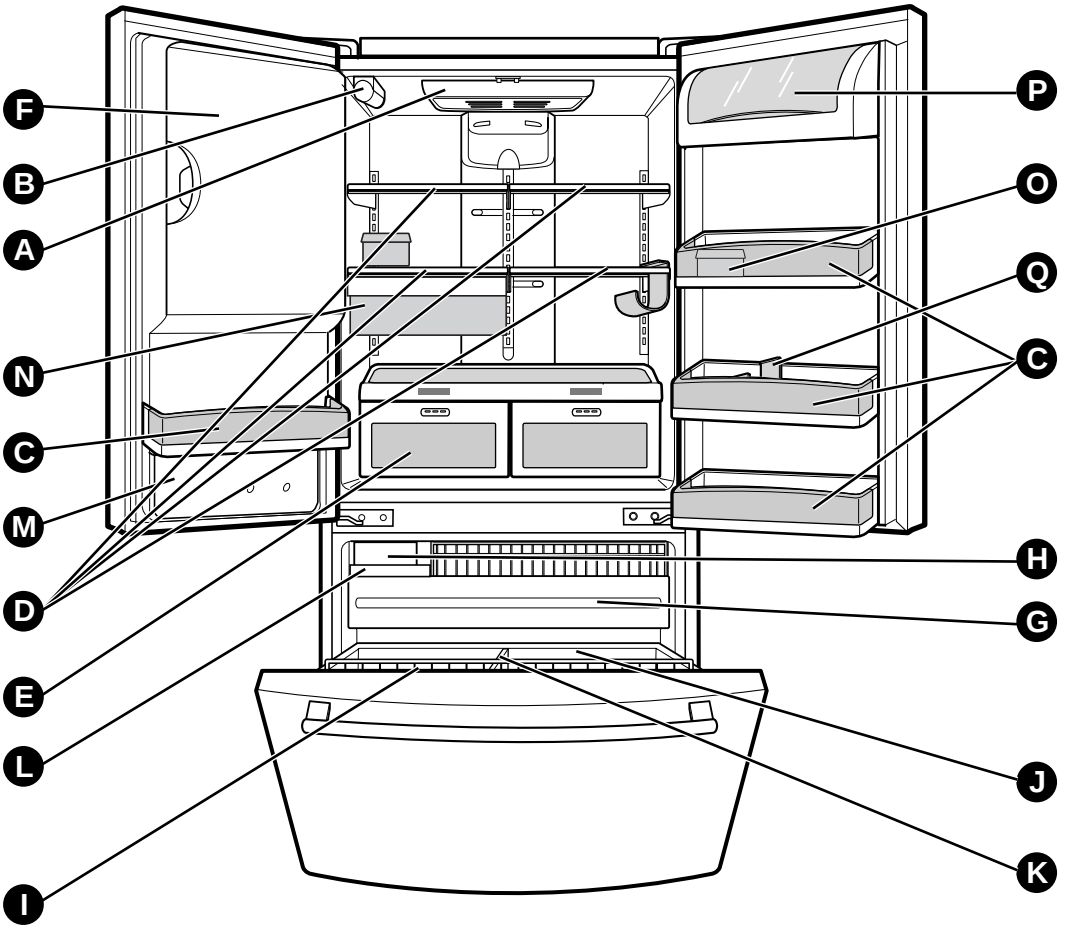
**DIMENSIONS**



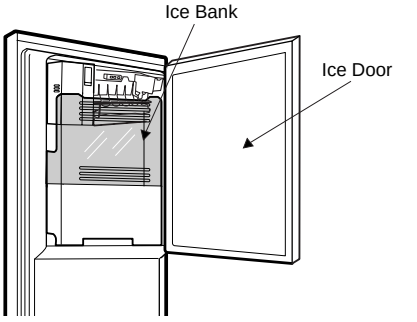




| Description | | LFC21760** | LFC25760** |
|---|---|---|---|
| Depth w/ Handles | A | 30 in. | 34 1/4 in. |
| Depth w/o Handles | B | 27 1/2 in. | 31 3/4 in. |
| Depth w/o Door | C | 23 5/8 in. | 27 7/8 in. |
| Depth (Total with Door Open) | D | 42 1/4 in. | 46 1 /2 in. |
| Height to Top of Case | E | 68 3/8 in. | 68 3/8 in. |
| Height to Top of Door Hinge | F | 69 3/4 in. | 69 3/4 in. |
| Width | G | 35 3/4 in. | 35 3/4 in. |
| Width (door open 90 deg. without handle) | H | 39 1/4 in. | 39/1/4 in. |
| Width (door open 90 deg. without handle) | I | 44 1/4 in. | 44 1/4 in. |

# 2. PARTS IDENTIFICATION




- **A** Refrigerator Light
- **B** Filter (Inside)
- **C** Modular Door Bins
- **D** Refrigerator Shelves
- **E** Supra Fresh Crisper with Tilt-Out Compartment
- **F** Ice Room (ICEMAKER and ICE BIN)
- **G** Pull out Drawer
- **H** Turbo Motor
- **I** Tilt-Out Door Basket
- **J** Durabase
- **K** Divider
- **L** Ice Bin
- **M** Water Tank Cover
- **N** Snack Pan
- **O** Egg Box
- **P** Dairy Bin
- **Q** Bottle Holder



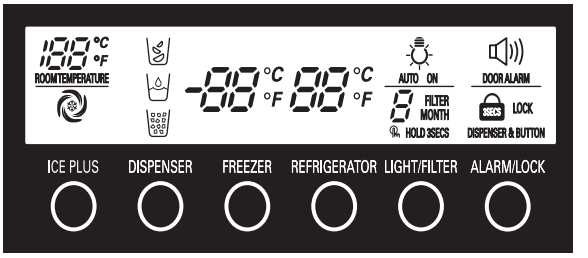
# 3. OPERATION

## 3-1. Explanation Of Each Function

### 1. Function

(1) When the appliance is plugged in, it is set to 37 °F for the refrigerator and 0 °F for the freezer.
You can adjust the refrigerator and the freezer control temperature by pressing the ADJUST button.

(2) When the power is initially applied or restored after a power failure, maintains its previously set temperature.




.

### 2 How to Toggle the Display between °F and °C

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

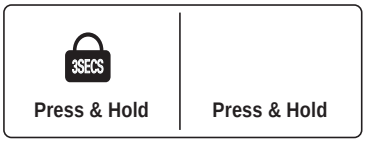
### 3. Lock function (dispenser and display button lock)

(1) When the refrigerator is first turned on, the buttons are not locked. The display panel shows the padlock unlocked icon.

(2) To lock the display, the dispenser, and the control panel, press and hold the LOCK button for 3 seconds. The locked pad lock icon is displayed.

(3) The LOCK button is the only control feature that remains active in the locked state. The buzzer sound, other control buttons, and the dispenser are deactivated.

(4) To release from the locked state, press and hold the LOCK button again for 3 seconds.




Ex) In selecting "LOCK"

Ex) In selecting "LOCK" again

### 4. Filter condition display function

(1) There is a replacement indicator icon for the filter cartridge on the dispenser.

(2)The water filter should be replaced approximately every six months.

(3) The water filter icon will turn on every six months to remind you to replace.

(4) After replacing the filter, press and hold the lock button more than 3 seconds.
This will turn off the reminder icon and reset the timer.

| Classification | In initial Power On / Filter RESET | Replace indicator light on |
|---|---|---|
| Filter Status Display | FILTER MONTH HOLD 3SECS | FILTER MONTH |

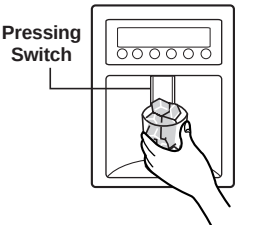
### 5. Ice Plus Selection

Please select this function for quick freezing.

(1) The ICE PLUS option starts counting its 24-hours period every time the button is pressed.

(2) The ICE PLUS function automatically turns off after twenty-four hours pass.

### 6. Dispenser Use Selection



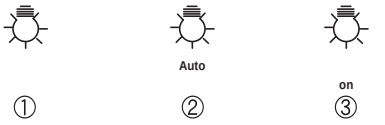

You can select water or ice.

∗ Select water, crushed ice, or ice cubes by cycling through the selections when pressing the DISPENSER button,

∗ Hold your cup in the dispenser for a few seconds after dispensing ice or water to allow the last pieces of ice or drops of water to fall into the cup.

### 7. Dispenser Light

Whenever the light button is pressed, the display changes as shown below.




(1) Normal status: When dispenser is operated, DISPENSER LIGHT is ON.

(2) AUTO status: Detecting the lighting of room by LIGHT SENSOR, DISPENSER LIGHT is on and off automatically.

(3) ON status: DISPENSER LIGHT is on continuously.

### 8. Control Of Freezer Fan Motor

(1) Freezer fan motor has high and standard speeds.

(2) High speed is used at power-up, for Ice Plus, and when refrigerator is overloaded. Standard speeds is used for general purposes.

(3) To improve cooling speed, the RPM of the freezer fan motor changes from normal speed to high.

(4) High speed (2700RPM) : Initial power on or load corresponding operation, Ice Plus
Normal speed (2400RPM) : General working conditions.

(5) Fan motor stops when a refrigerator or freezer door opens.

### 9. Cooling Fan Motor

(1) The cooling fan is switched ON and OFF in conjunction with the compressor.

(2) The cooling fan runs at a single speed.

(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).

### 10. Icing Fan

(1) The Icing Fan is controlled by the the sensor on the top of the ice room.

(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)

### 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 LED 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 LED will turn ON. This function will remain activated for 24 hours. The first three hours the compressor and Freezer Fan will be ON. The next 21 hours the freezer will be controlled at the lowest temperature. After 24 hours or if the Ice Plus key is pressed again, the freezer will return to its previous temperature.

(5) During the first 3 hours:

- Compressor and freezer fan (HIGH RPM) run continuously.
- If a defrost cycle begins during the first 90 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 90 minutes, Ice Plus will run for two hours after the defrost is completed.
- If Ice Plus is pressed during defrost, Ice Plus LED is on but this function will start seven minutes after defrost is completed and it shall operate for three hours.
- 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.
- The fan motor in the freezer compartment runs at high speed during Ice Plus.

(6) For the rest of the 21 hours, the freezer will be controlled at the lowest temperature.

### 12. Freezer and Refrigerator Lamp Auto Off

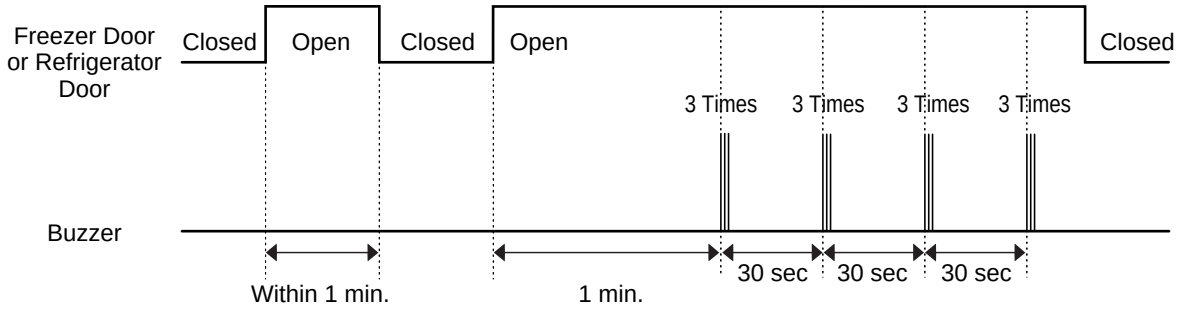
(1) To avoid heat damage caused by the lamp, it is turned off automatically when the refrigerator door is open for more than 7 minutes.

### 13. Alarm for Open Door

(1) This feature sounds a buzzer when the freezer or refrigerator door is not closed within 1 minute after it is opened.

(2 One minute after the door is opened, the buzzer sounds three times each for one half seconds. These tones repeat every 30 seconds.

(3) The alarm is cancelled when the freezer or the refrigerator is closed.



### 14. Defrosting (removing frost)

(1) Defrosting starts each time the COMPRESSOR running time reaches 7 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 2 hours, the defrost mode is malfunctioning. (Refer to the defect diagnosis function, 15.)

(4) Defrosting won't function if its sensor is defective (wires are cut or short circuited)

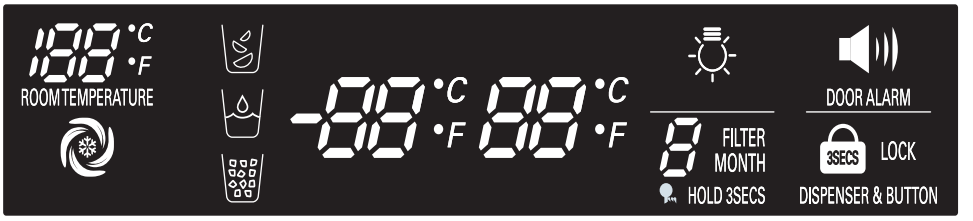
### 15. Defect Diagnosis Function

(1) Automatic diagnosis makes servicing the refrigerator easy.

(2) When a defect occurs, the buttons will not operate; but the tones will sound.

(3) When the defect CODE removes the sign, it returns to normal operation (RESET).

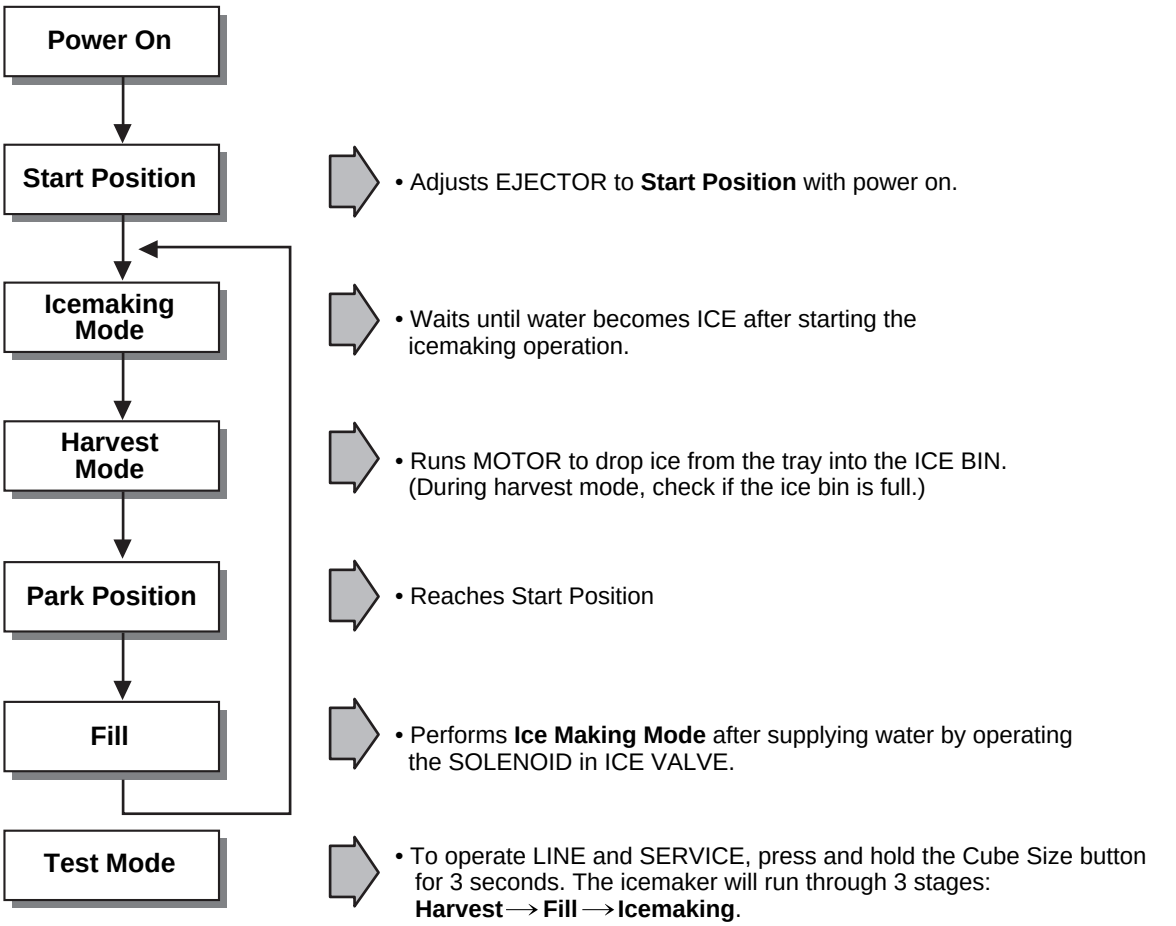
(4 The defect CODE shows on the Refrigerator and Freezer Display.



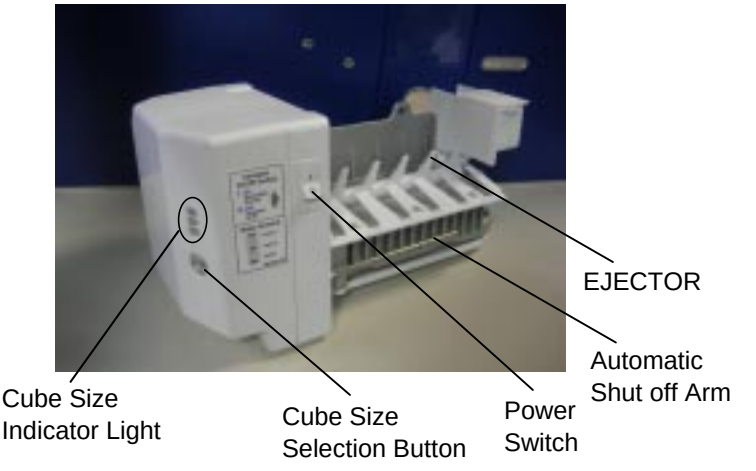

✻ LED check function: Press Ice Plus and Freezer buttons for a second, display LED graphics on. If releasing the button, the LED graphic displays the previous status.

## 3-2. Ice Maker Function

### 1. Operation Principle of icemaker




(1) Turning the Icemaker stop switch off (O) stops the ice making function.
(2) Setting the Icemaker switch to OFF and then turning it back on will reset the icemaker control.



## 2. Icemaking Mode

(1) Icemaking refers to the freezing of supplied water in the ice tray. Complete freezing is assured by measuring the temperature of the tray with Icemaking SENSOR.

(2) Icemaking starts after completion of the water fill operation.

(3) The icemaking function is completed when the sensor reaches 1 9 °ΔF (-7 °ΔC), 55 minutes after starting.
NOTE : After the icemaker power is ON, the icemaker heater will be on for test for 6 seconds.

## 3. Harvest Mode

(1) Harvest (Ice removing) refers to the operation of dropping cubes into the ice bin from the tray when icemaking has completed.

(2) Harvest mode:

- The Heater is ON for 30 seconds, then the motor starts.
- The feeler arm senses the quantity of ice in the ice storage bin while rotating with the EJECTOR.

A. Ice storage bin is full : The EJECTOR stops (heater off).

B. Ice storage bin is not full : The EJECTOR rotates twice to open for ice.

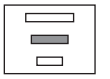
* If the EJECTOR does not rotate once within 5 minutes in B mode, separate heater control mode starts operating to prevent the EJECTOR from being constrained. (It is recommended that the user open for ice to return to normal mode.)

## 4. Fill/Park Position

(1) Once a normal harvest mode has been completed, the water solenoid will be activated.

(2) The amount of water is adjusted by pressing the fill key repeatedly. This changes the time allowed for fill as illustrated in the table below.

**Water supply amount TABLE**

| STAGE | TIME TO SUPPLY | INDICATIONS | REMARKS |
|---|---|---|---|
| 1 | 5 sec. |  | The water amount will vary depending on the water control switch setting as well as the water pressure of the connected water line. |
| 2 | 5.5 sec. (FIRST STAGE) |  | |
| 3 | 6 sec. |  | |

## 5. Function TEST

(1) This is a forced operation for test, service, cleaning, etc. It is operated by pressing and holding the cube size button for 3 seconds.

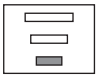
(2) The test works only in the Icemaking Mode. It cannot be entered from the Harvest or Fill mode.

(3) **Caution!** Caution! Caution! Caution! If the test is performed before water in the icemaker is frozen, the ejector will pass through the water. When the fill mode begins (Stage 4), unless the water supply has been shut off, added water will overflow into the ice bin. If the control doesn ' t

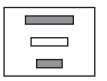
(4) After water is supplied, the normal CYCLE is followed: **icemaking** → **Harvest** → **Park Position** → **Fill.**

(5) Five seconds after Stage 5 is completed, the icemaker returns to MICOM control. The time needed to supply water resets to the

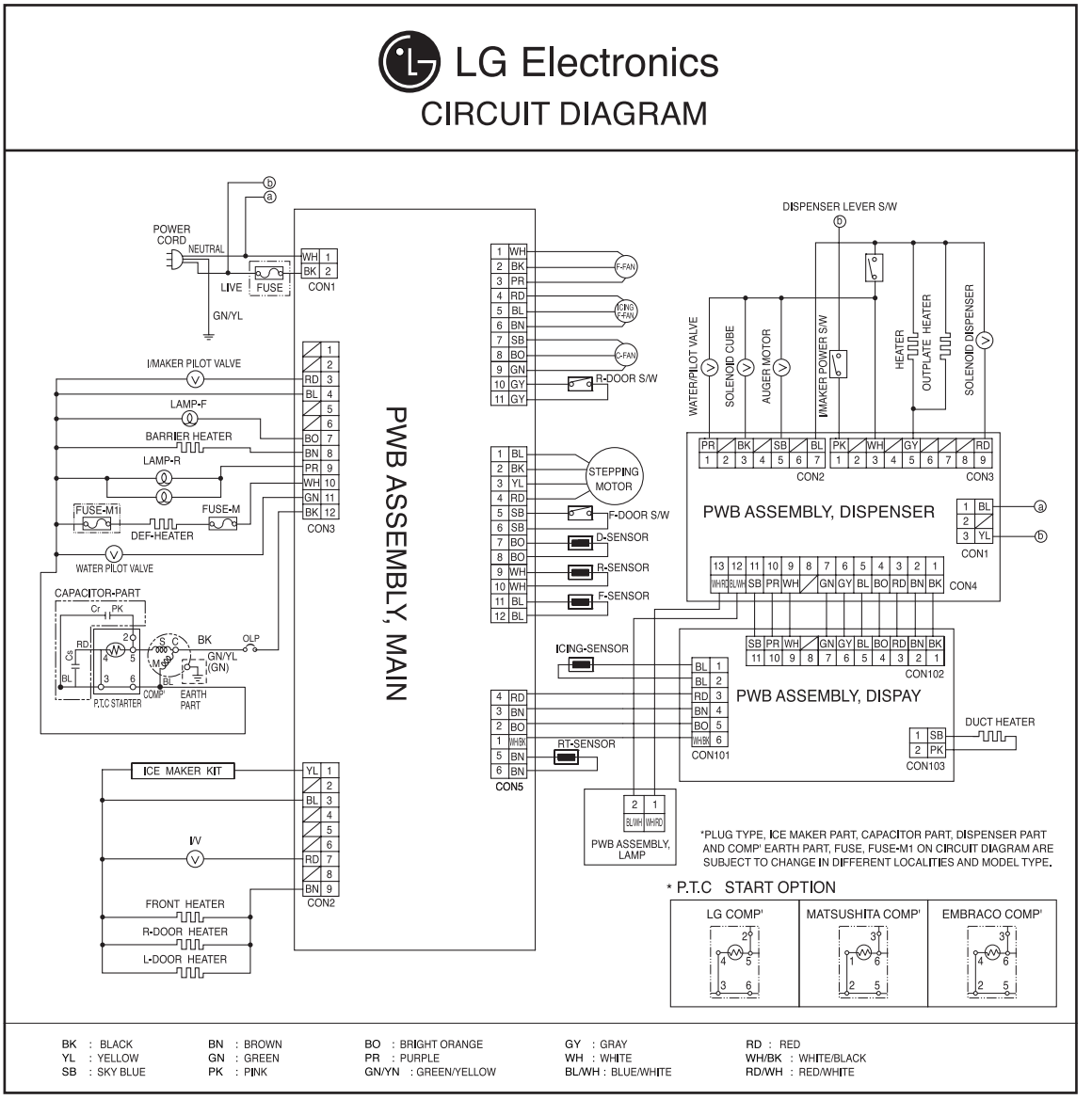
**Diagnosis TABLE**

| STAGE | ITEMS | INDICATOR | REMARKS |
|---|---|---|---|
| 1 | HEATER |  | Five seconds after the heater starts, it will go off if the temperature by sensor is higher than 10°C |
| 2 | MOTOR |  | Five seconds after the heater starts, you can confirm that the motor is moving. |
| 3 | HALL IC I |  | Check whether ice bin is full. If the ice bin if full, the motor and heater are off, but on standby until the ice bin is empty. |
| 4 | HALL IC II |  | You can confirm HALL IC detection of start position. |
| 5 | VALVE |  | Two seconds after the detection of start position, you can confirm that the valve is on. |
| 6 | Reset | Return to Status prior to TEST MODE | Five seconds after the fifth stage is completed, the icemaker resets to initial status. |

## 6. Error codes shown on the icemaker water supply control panel

| NO | DIVISION | INDICATOR | CONTENTS | REMARKS |
|---|---|---|---|---|
| 1 | Normal | Mark time to supply | None | Display switch operates properly |
| 2 | Icemaking sensor malfunction |  | Open or short-circuited wire | Make sure that the wire on each sensor is connected. |

# 4. WIRING DIAGRAM



# 5. ADJUSTMENT

## 5-1. Compressor

### 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.

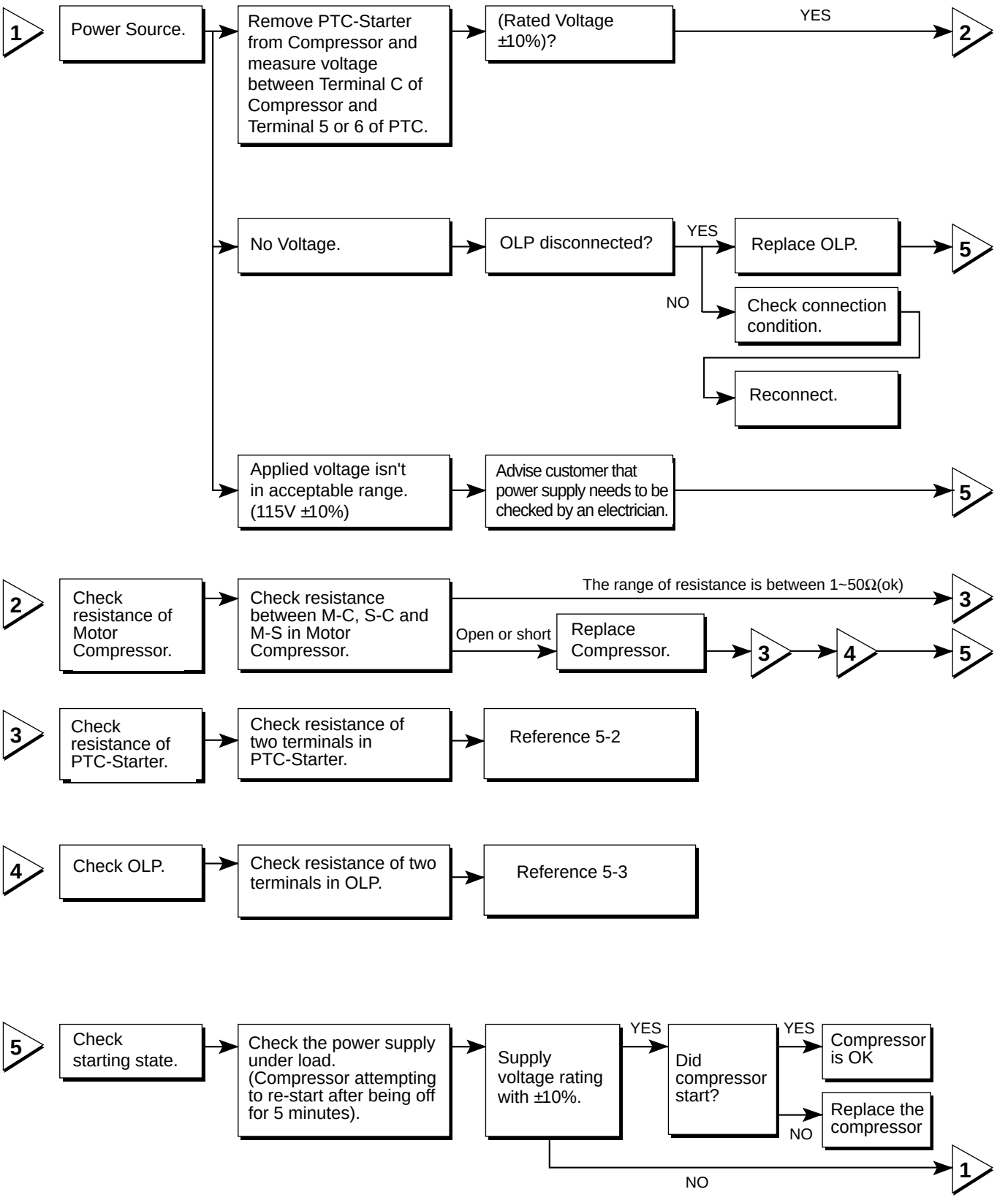
### 2. Composition

The compressor includes overload protection. The PTC starter and OLP (overload protector) are attached to the outside of the compressor. Since the compressor is manufactured to tolerances of 1 micron and is hermetically sealed in a dust and moisture-free environment, use extreme caution when performing repairs.

### 3. Note for usage

(1) Be careful not to allow over-voltage and over-current.
(2) If compressor is dropped or handled carelessly, poor operation and noise may result.
(3) Use proper electric components appropriate to the particular compressor in your product.
(4) Keep the compressor dry. If the Compressor gets wet (in the rain or a damp environment) and rust forms in the pin of the Hermetic Terminal, poor operation and contact may result.
(5) When replacing the compressor, be careful that dust, humidity, and soldering flux don’t contaminate the inside of the compressor. Dust, humidity, and solder flux may contaminate the cylinder and may cause noise, improper operation, or even lock up.

**4. diagnosis**


1
Power Source.
Remove PTC-Starter from Compressor and measure voltage between Terminal C of Compressor and Terminal 5 or 6 of PTC.
(Rated Voltage ±10%)?
YES
2
No Voltage.
OLP disconnected?
YES
Replace OLP.
5
NO
Check connection condition.
Reconnect.
Applied voltage isn't in acceptable range. (115V ±10%)
Advise customer that power supply needs to be checked by an electrician.
5
2
Check resistance of Motor Compressor.
Check resistance between M-C, S-C and M-S in Motor Compressor.
The range of resistance is between 1~50Ω(ok)
3
Open or short
Replace Compressor.
3
4
5
3
Check resistance of PTC-Starter.
Check resistance of two terminals in PTC-Starter.
Reference 5-2
4
Check OLP.
Check resistance of two terminals in OLP.
Reference 5-3
5
Check starting state.
Check the power supply under load. (Compressor attempting to re-start after being off for 5 minutes).
Supply voltage rating with ±10%.
YES
Did compressor start?
YES
Compressor is OK
NO
Replace the compressor
NO
1

## 5-2. Positive Temperature Coefficient (PTC) – Starter

**1. Composition**

(1) PTC (Positive Temperature Coefficient) is a no-contact semiconductor starting device which uses ceramic material consisting of BaTiO3.

(2) The higher the temperature is, the higher the resistance value. These features are used as a starting device for the motor.

**2. Role**

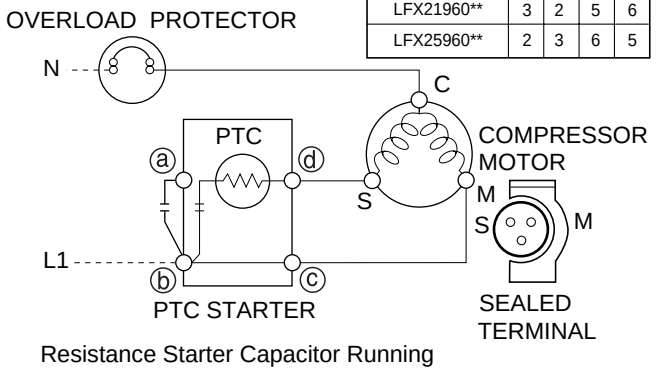
(1) The PTC is attached to the sealed compressor and is used for starting the compressor motor.

(2) The compressor is a single-phase induction motor. For starting operation, the PTC allows current flow to both the start winding and main winding.

**3. PTC – Applied circuit diagram**

● **Starting Method for the Motor**

| | ⓐ | ⓑ | ⓒ | ⓓ |
|---|---|---|---|---|
| LFX21960** | 3 | 2 | 5 | 6 |
| LFX25960** | 2 | 3 | 6 | 5 |




Resistance Starter Capacitor Running

**4. Motor restarting and PTC cooling**

(1) It requires approximately 5 minutes for the pressure to equalize before the compressor can restart.

(2) The PTC device generates heat during operation. Therefore, it must be allowed to cool before the compressor can restart.

**5. Relation of PTC – Starter and OLP**

(1) If the compressor attempts to restart before the PTC device is cooled, the PTC device will allow current to flow only to the main winding.

(2) The OLP will open because of the over current condition. This same process will continue (3 to 5 times) when the compressor attempts to restart until the PTC device has cooled. The correct OLP must be properly attached to prevent damage 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.

**6. Note for Using the PTC-Starter**

(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 PTC, the materials may fail due to breakdown of their insulating capabilities.

(4) If the exterior of the PTC is damaged, the resistance value may be altered. This can cause damage to the compressor and result in a no-start or hard-to-start condition.

(5) Always use the PTC 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.

## 5-3. Over Load Protector (OLP)

### 1. Define

(1) The OLP (OVERLOAD PROTECTOR) is attached to the Compressor and protects the motor by opening the circuit to the motor if the temperature rises and activating the bimetal spring in the OLP.

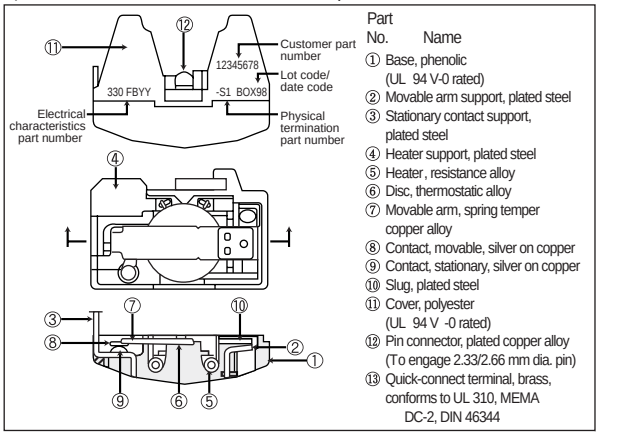
(2) When high current flows to the compressor motor, the Bimetal works by heating the heater inside the OLP, and the OLP protects the Motor by cutting off the current flowing to the Compressor Motor.

### 2. Role

(1) The OLP is attached to the sealed compressor used for the refrigerator. It prevents the motor coil from being started in the compressor.

(2) For normal operation of the OLP, do not turn the adjustment screw of the OLP in any way.

(OVERLOAD PROTECTOR cross section)



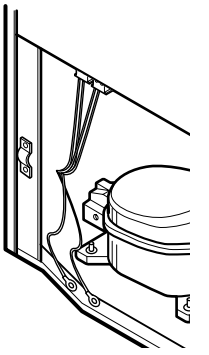

| Part No. | Name |
|---|---|
| ① | Base, phenolic (UL 94 V-0 rated) |
| ② | Movable arm support, plated steel |
| ③ | Stationary contact support, plated steel |
| ④ | Heater support, plated steel |
| ⑤ | Heater , resistance alloy |
| ⑥ | Disc, thermostatic alloy |
| ⑦ | Movable arm, spring temper copper alloy |
| ⑧ | Contact, movable, silver on copper |
| ⑨ | Contact, stationary, silver on copper |
| ⑩ | Slug, plated steel |
| ⑪ | Cover, polyester (UL 94 V -0 rated) |
| ⑫ | Pin connector, plated copper alloy (To engage 2.33/2.66 mm dia. pin) |
| ⑬ | Quick-connect terminal, brass, conforms to UL 310, MEMA DC-2, DIN 46344 |

## 5-4. Remove the cover Positive Temperature Coefficient (PTC)

(1) Remove the cover of the mechanical area.

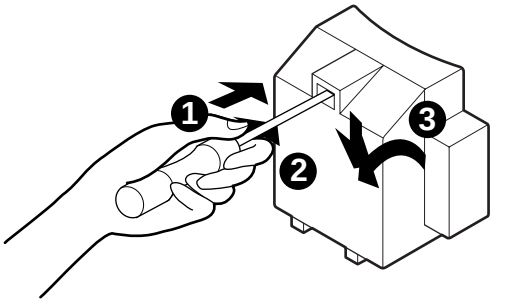
(2) Disconnect the two clamps holding the compressor in place.

(3) Loosen two screws on compressor base.



(4) Use a screwdriver to pry off the cover.

(5) Assembly is the reverse order of disassembly.



# 6. TROUBLESHOOTING

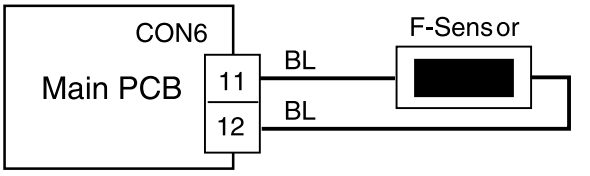
## 6-1. Error Code Summary

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

| NO | Error Detection Category | Error Display | | Error Generation Factors | Remark |
|---|---|---|---|---|---|
| | | Freezer Temperature | Ref. 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 Icing Sensor | |
| 6 | Poor Defrosting | Er | dH | Even though it is passed 1 hour since then Defrosting , if Defrosting sensor is not over 8°C, it is caused | Temperature Fuse Disconnection, Heater disconnection, DRAIN Jam, Poor Relay for Heater |
| 7 | Abnormality of BLDC FAN Motor for Ice Making | Er | IF | It is caused when feedback signal isn' t over 115 seconds during BLDC FAN motor operating | Poor BLDC Motor connection, DRIVE IC, and TR Tx/Rx between icemaker and main board. |
| 8 | Abnormality of BLDC FAN Motor for Freezer | Er | FF | It is caused when feedback signal isn' t over 115 seconds during BLDC FAN motor operating | Poor BLDC Motor connection, DRIVE IC, and TR Tx/Rx between icemaker and main board. |
| 9 | Abnormality of BLDC FAN Motor for Mechanic Room | Er | CF | It is caused when feedback signal isn ' t over 115 seconds during BLDC FAN motor operating | Poor BLDC Motor connection, DRIVE IC, and TR Tx/Rx between icemaker and main board. |
| 10 | 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 icemaker and main board. |

## 6-2. Troubleshooting With Error

### Freezer Sensor Err or




**Wiring diagram**

Is Er-FS dis played?


**Yes**

Is the connection loose? **Yes** → Reconnect

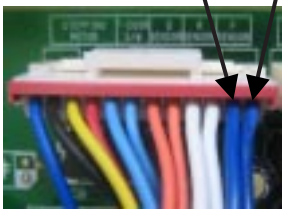
**No**

**Power Off**

Tip : To protection of MICOM

Disconnect CON6 and measure the value. Is resistance value between pins 11 & 12 of CON6 as below? (BL to BL) **No** → Replace F-sensor

**pin11** **pin12**



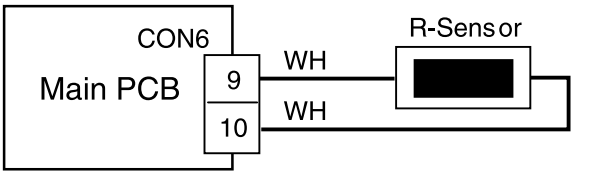
| Test Point | Result |
|---|---|
| pin11 to pin12 | 1.4 ~ 120k‰ |

**No**

Reconnect CON6 and Power ON

If the ER-FS appears, Replace the main PCB. Otherwise, explain to the customer!

## Refrigerator Sensor Error




**Wiring dia gram**

Is Er-rS displayed?


**Yes**

Is the connection loose? **Yes** → Reconnect

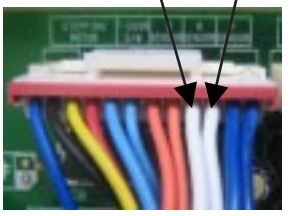
**No**

**Power Off**

Tip : To protection of MICOM

Disconnect CON6 and measure the value. Is resistance value between pins 9 & 10 of CON6 as below? (WH to WH) **No** → Replace R-sensor

**pin9** **pin10**



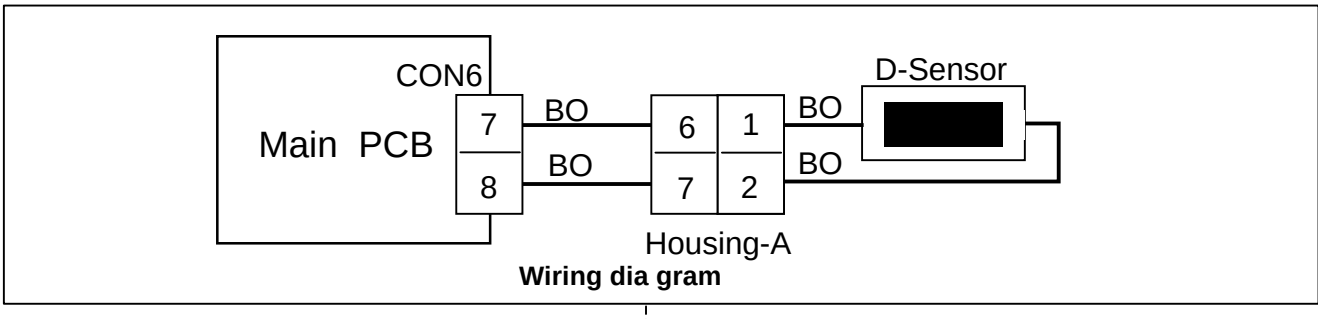
| Tpin10 pin9 | Result |
|---|---|
| pin9 to pin10 | 6 ~ 300 kΩ |

**No**

Reconnect CON6 and Power ON

If the ER-rS appears, Replace the main PCB. Otherwise, explain to the customer!

## Defrost Sensor Error




**Wiring dia gram**

Is Er-dS displayed?

**Yes**

Is the connection loose? **Yes** → Reconnect

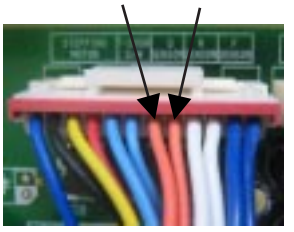
**No**

**Power Off**

Tip : To protection of MICOM

Disconnect CON6 and measure the value. Is resistance value between pins 7 & 8 of CON6 as below? (BO to BO) **No** → Replace D-sensor

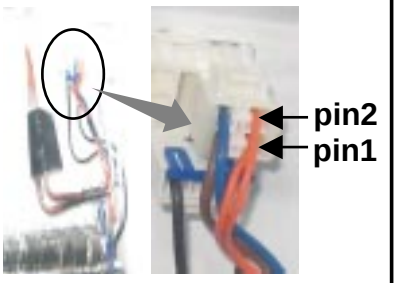
**pin7** **pin8**



| Test Point | Result |
|---|---|
| Pin7 to pin8 | 6 ~ 300k‰ |

**No**

Is resistance value between pins 1 & 2 of Housing- A as below? (BO to BO) **No** → Replace a D-Sensor




Checking Open or Short of wire

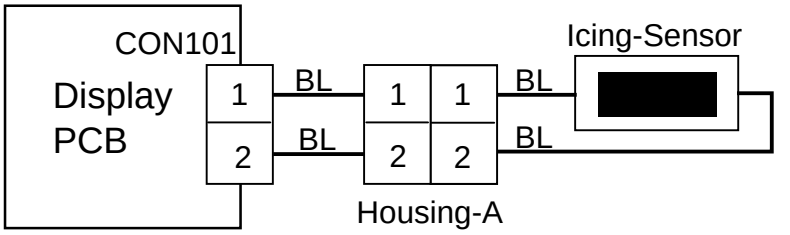
| Test Point | Result |
|---|---|
| Pin1 To pin2 | 1.156 ~141.5k‰ |

**Yes**

Reconnect and Power ON

If the ER-dS appears, Replace the main PCB. Otherwise, explain to the customer!

## Icing Room Sensor Error




**Wiring diagram**

Is Er-IS displayed?

**Yes**

Is the connection loose? **Yes** → Reconnect

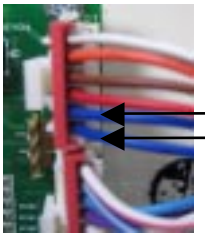
**Display PCB**

**Inner of Icing door**

**No**

Disconnect CON101 and measure the value. Is resistance value between pins 1 & 2 of CON101 as below? (BL to BL)

**No** → Replace Main PCB



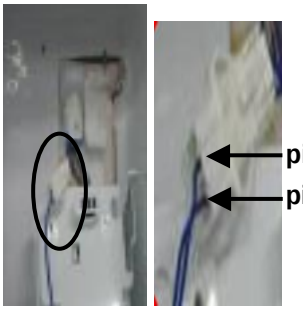

**Icing room Sensor Resistance**

| Test Point | Result |
|---|---|
| pin1 to pin2 | 1.156 ~141.5k‰ |

**Yes**

Is resistance value between pins 1 & 2 of Housing- A as below? (BL to BL)

**No** → Replace the Icing-Sensor




**Checking Open or Short of wire**

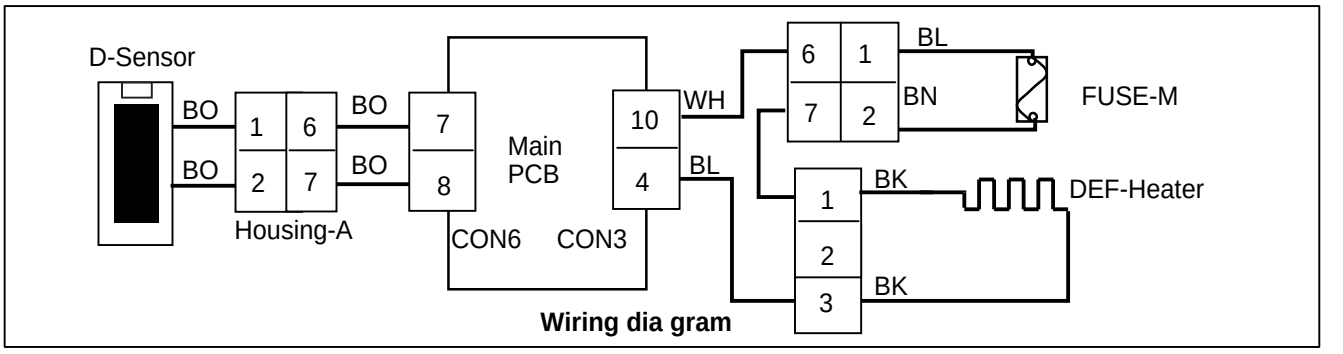
| Test Point | Result |
|---|---|
| (1) To (2) | 1.4 ~120k‰ |

**Yes**

Reconnect and Power ON

If the ER-IS appears, Replace Main PCB
Otherwise, explain to the customer!

## Defrost Heater Error




**Wiring dia gram**

Is Er-dH displayed?

**Yes**

Is the connec tion loose?

**Yes** → Reconnect

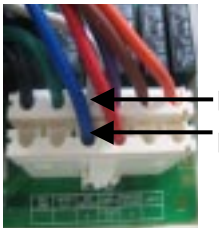
**CON6**

**CON3**

**No**

**Enter the TEST 3 MODE**
Is the voltage value between pins 10 (WH) and 4 (BL) of CON3 115 V AC?

**Yes** → Replace MAIN PCB



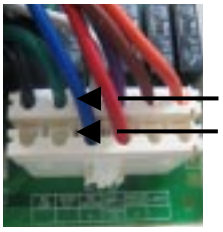

**Relay operation**

| Test Point | Result |
|---|---|
| pin4 To pin 10 | 115V |

**Yes**

**Reset TEST3 MODE(Normal)**
Is the voltage value between pins 10 (WH) and 4 (BL) of CON3 for 0 V AC?

**No** → Replace MAIN PWB



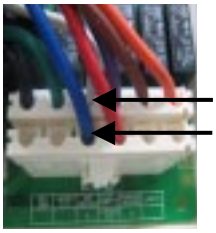

**Relay Open**

| Test Point | Result |
|---|---|
| Reset/Norm op | 0 ~ 2 V |

**Yes**

Is the resistance value between pins 10(WH) And 4(BL) of CON3 like as below?

Yes → Normal



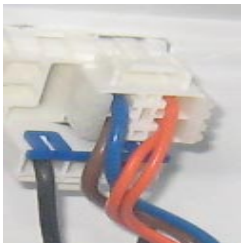

**Resistance**

| Test Point | Ressult |
|---|---|
| (1) To (2) | 34 ~ 42 Ω |

No

Is the connection loose?

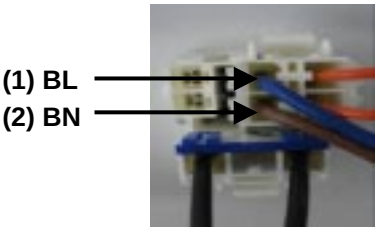
Yes → Reconnect



No

Is the resistance value of Fuse –M like as below?

No → Replace Fuse-M



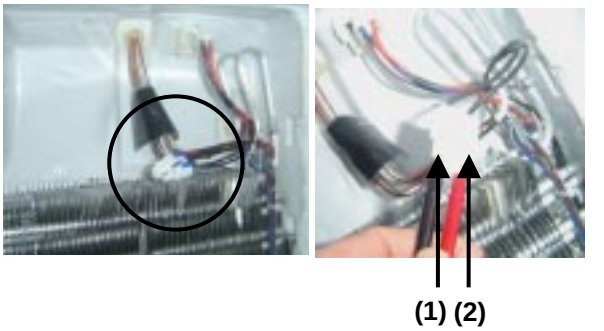

**Open or Short of Fuse-M**

| Test Point | Ressult |
|---|---|
| (1) To (2) | 0 Ω |

Yes

Is the resistance value of heater like as below?

No → Replace Heater



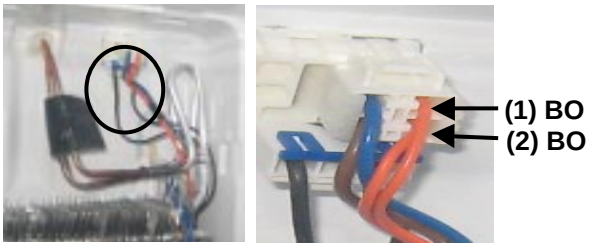

**Heater Resistance**

| Test Point | Ressult |
|---|---|
| (1) To (2) | 34 ~ 42 Ω |

Yes

Is the resistance value of DEF-sensor like as below? It depends on the temperature.

No → Replace DEF-sensor



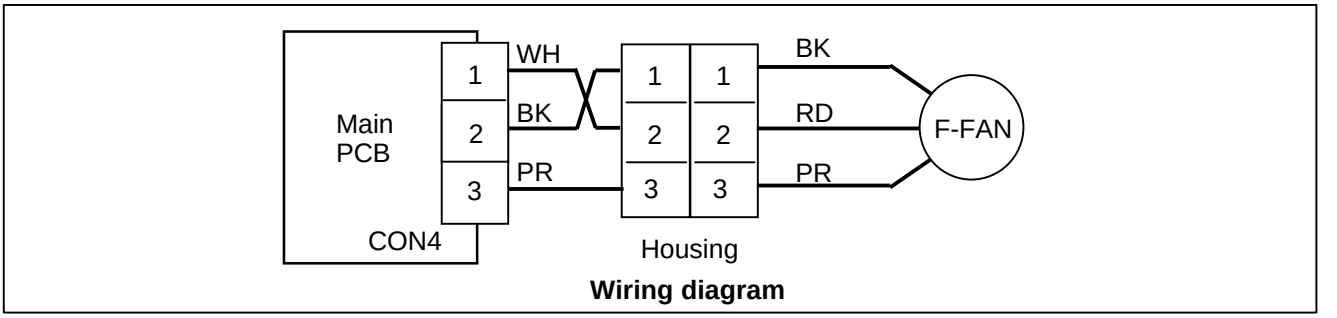

**Defrost Sensor Resistance**

| Test Point | Result | Test Point | Result |
|---|---|---|---|
| -30°C | 129.3 kΩ | 10°C | 19.53 kΩ |
| -20°C | 76.96 kΩ | 20°C | 13.03 kΩ |
| -10°C | 47.34 kΩ | 30°C | 8.896 kΩ |
| 0°C | 30 kΩ | 40°C | 6.201 kΩ |

Yes

Explain to the customer! :
It can be occurred, when the gasket is not stuck to product or when you put the high temperature loads (hot foods) a lot in the product.

## Freezer Fan Error




**Wiring diagram**

Is Er-FF displayed?

**Yes**

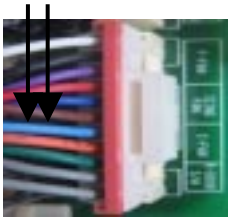
Is the connection loose?

**Yes** → Reconnect

**No**

**Reset and**
**Enter the TEST 1 MODE**
Is the output voltage between pin1 and pin2 of CON4 like as below?

**Pin1 WH** **Pin2 BK**



**Freezer Fan Voltages**

| Test Point | Ressult |
|---|---|
| pin1 to pin2 | 12 ~ 16 V |

**No** → Replace Main PCB

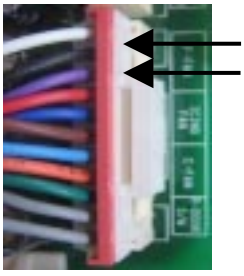
**Yes**

Does the cold-air come out of the top of the main duct?

**No** → Check fan motor (Connector, Frozen,Locked)

**Yes**

Is the feedback voltage between pin2 and pin3 of CON4 like as below? (from motor to main board)




**Feedback Voltages**

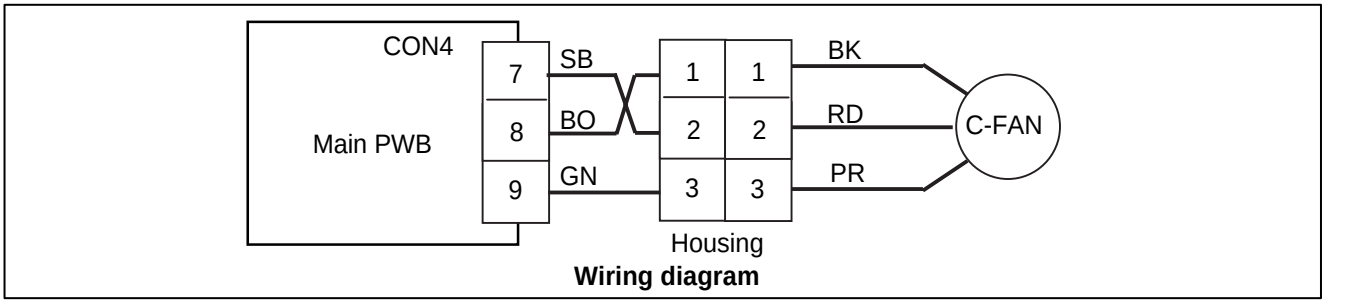
| Test Point | Ressult |
|---|---|
| pin2 to pin3 | 1 ~ 4 V |

**No** → Replace Main PCB

**Yes**

Explain to the customer!

## Condenser Fan Error




**Wiring diagram**

Is Er-CF displayed?

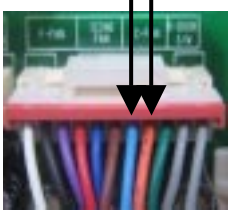

**Yes**

Is the connection loose? **Yes** → Reconnect

**No**

Reset and
Enter the TEST 1 MODE
Is the output voltage between pin7 and pin8 of CON4 like as below? **No** → Replace Main PCB

**Pin7 SB** **Pin8 BO**

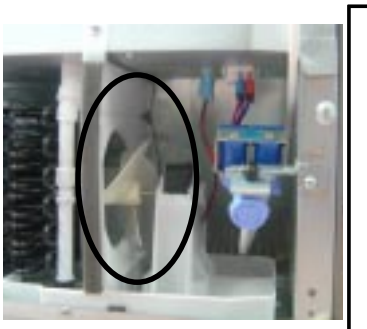


**Condenser Fan Voltages**

| Test Point | Ressult |
|---|---|
| pin7 to pin8 | 12 ~ 16 V |

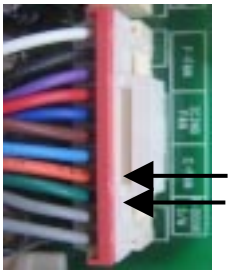
**Yes**

Is the condenser fan rotate? **No** → Check fan motor (Connector, Locked,mouse)



**Yes**

Is the feedback voltage between pin8and pin9 of CON4 like as below? (from motor to main board) **No** → Replace Main PCB



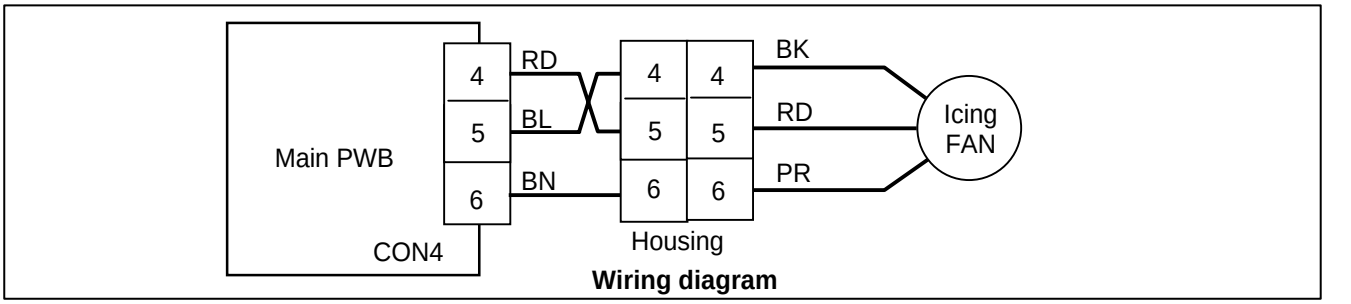

**Feedback Voltages**

| Test Point | Ressult |
|---|---|
| pin8 to pin9 | 1 ~ 4 V |

**Yes**

Explain to the customer!

## Icing Room Fan Error




**Wiring diagram**

Is Er-IF displayed?

**Yes**

Is the connection loose?

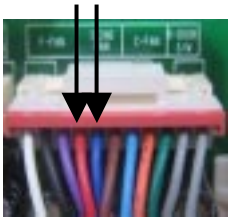
**Yes** → Reconnect

**N0**

**Reset and**
**Enter the TEST 1 MODE**
Is the output voltage between pin4 and pin5 of CON4 like as below?

**N0** → Replace Main PCB

**Pin4 RD** **Pin4 BL**



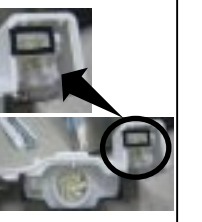
**Icing Fan Voltages**

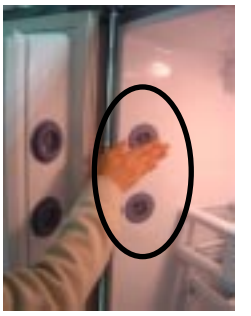
| Test Point | Ressult |
|---|---|
| pin4 to pin5 | 12 ~ 16 V |

**Yes**

Does the cold-air come out of the side duct?

**N0** → Check fan motor (Connector, Frozen,Locked)

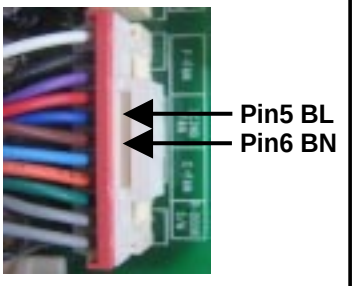




**Yes**

Is the feedback voltage between pin5 and pin6 of CON4 like as below? (from motor to main board)

**N0** → Replace Main PCB



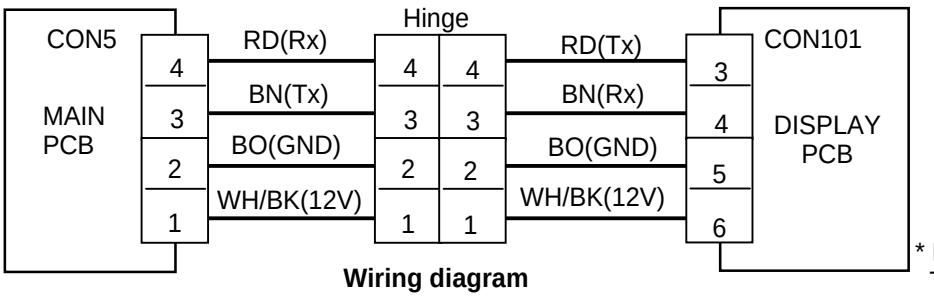

**Feedback Voltages**

| Test Point | Ressult |
|---|---|
| pin5 to pin6 | 1 ~ 4 V |

**Yes**

Explain to the customer!

## Communication Error




**Wiring diagram**

Is Er-CO displayed?


**Yes**

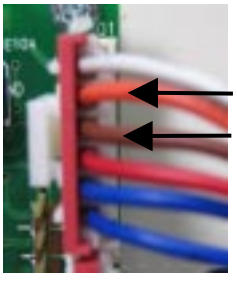
**Display PCB**
Is the connection loose?

**Yes** → Reconnect

**No**

**Display PCB**
Is the voltage between pins 4 and pin 5 of CON101?

**No** → Replace the Display PCB



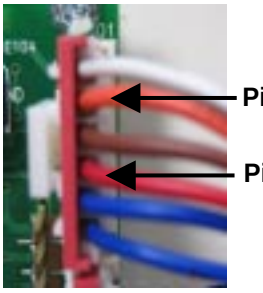

**Receiver fail Voltages**

| Test Point | Ressult |
|---|---|
| pin4 to pin5 | 0 V or 5 V |

**Yes**

**Display PCB**
Is the voltage between pin3 and pin5 of CON101 0 V or 5 V?

**No** → Replace Display PCB




**Transmitter Voltages**

| Test Point | Ressult |
|---|---|
| pin3 to pin5 | 0 V or 5 V |

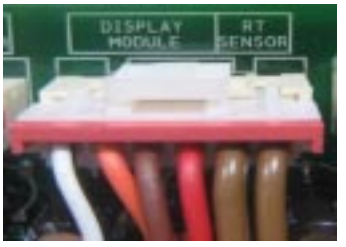
**Yes**

Is the joint connection loose In the Hinge?

**No** → Reconnect

**Yes**

**Main PCB**
Is the connection loose?

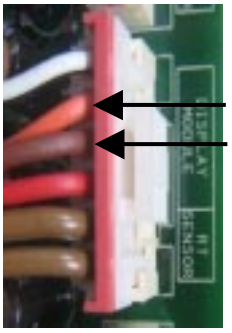



**Yes** → Reconnect

No

**Main PCB**
Is the voltage between pins 2 and pin 3 of CON5 0V or 5V?

**No** → Replace the Main PCB



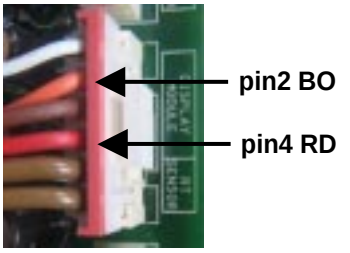

**Receiver Voltages**

| Test Point | Ressult |
|---|---|
| pin2 to pin3 | 0 V or 5 V |

**Yes**

**Main PCB**
Is the voltage between pin2 and pin4 of CON5 0 V or 5 V?

**No** → Replace Main PCB




**Transmitter Voltages**

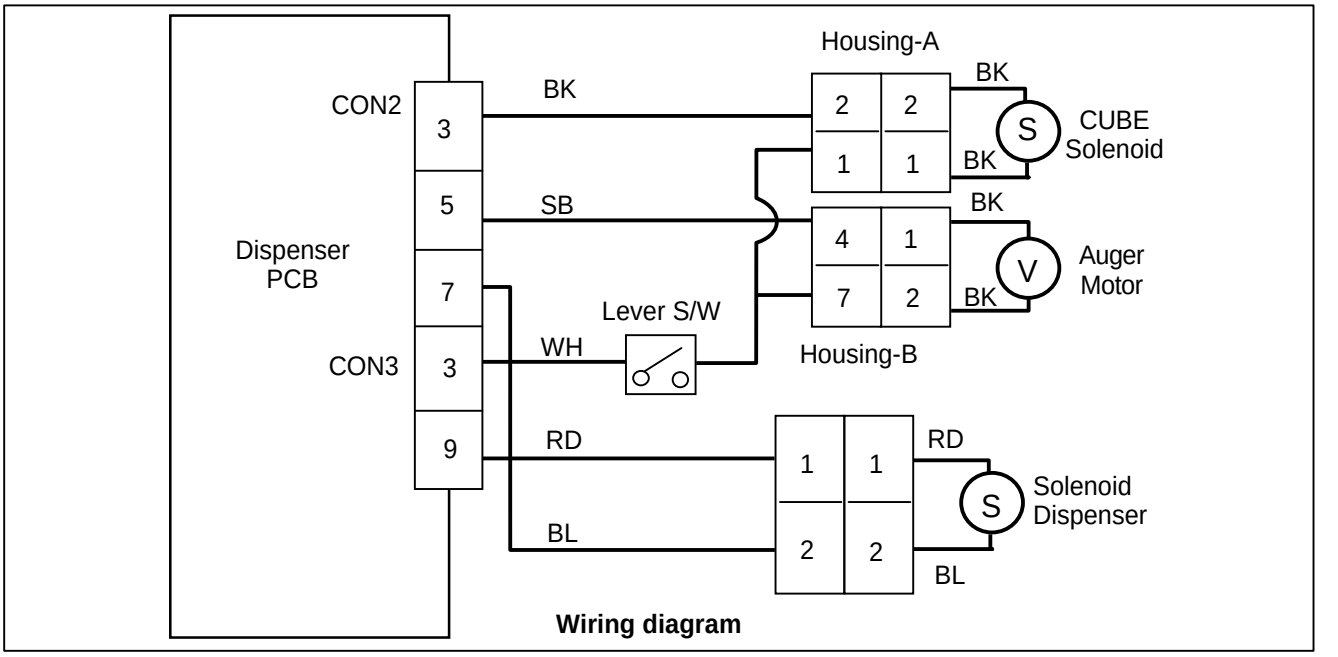
| Test Point | Ressult |
|---|---|
| (1) to (2) | 0 V or 5 V |

**Yes**

After plug in,
If Er-CO is disappeared,
Explain to the customer!

### 6-3. Troubleshooting Else

## CUBE Mode doesn't work




**Wiring diagram**

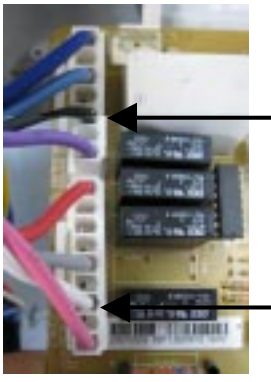
**Dispenser PCB**
Is the connection loose?

**Yes** → Reconnect

**No**

**In CUBE Mode,**
Is the voltage between pin3 of CON2 and pin3 of CON3 like as below, while pushing the lever switch?

**No** → Replace Dispenser PCB



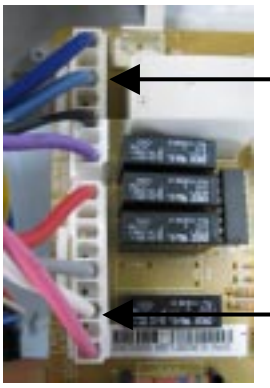

**Relay open of cube solenoid**

| Level switch | Test Point | Result |
|---|---|---|
| Pushing | pin3 to pin3 | 115 V |
| Normal | pin3 to pin3 | 0 ~ 2 V |

**Yes**

**In CUBE Mode,**
Is the voltage between pin5 of CON2 and pin3 of CON3 like as below, while pushing the lever switch?

No → Replace Dispenser PCB



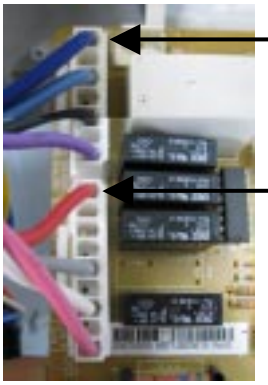

**Output voltage of auger motor**

| Level switch | Test Point | Result |
|---|---|---|
| Pushing | pin5 to pin3 | 115 V |
| Normal | pin5 to pin3 | 0 ~ 2 V |

Yes

**In CUBE Mode,**
Is the voltage between pin7 of CON2 and pin9 of CON3 like as below, while pushing the lever switch?

No → Replace Dispenser PCB



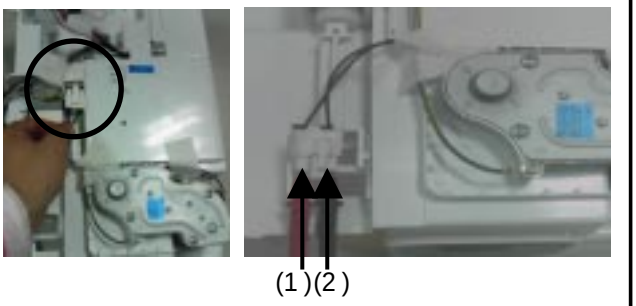

**Output voltage of dispenser solenoid**

| Level switch | Test Point | Result |
|---|---|---|
| Pushing | pin7 to pin9 | 115 V |
| Normal | pin7 to pin9 | 0 V |

Yes

Is the resistance value between (1) and (2) of the Auger motor like as below?

No → Replace Auger Motor



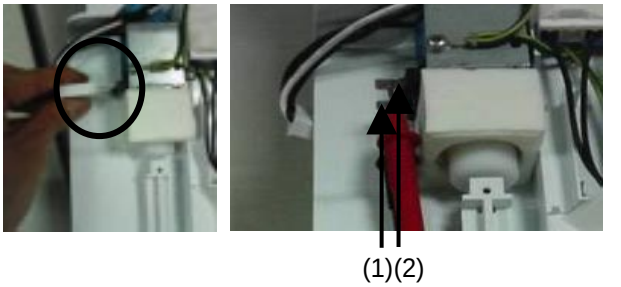

**Resistance of Auger Motor**

| Test Point | Result |
|---|---|
| (1) To (2) | 2.38 ~ 4.02 Ω |

Yes

Is the resistance value between (1) and (2) of the cube solenoid like as below?

No → Replace Cube Solenoid



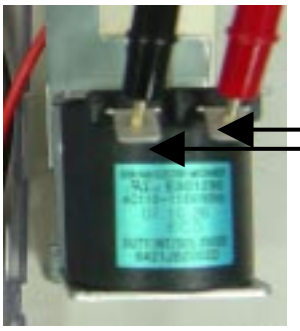

**Resistance of Cube solenoid**

| Test Point | Result |
|---|---|
| (1) To (2) | 32 ~ 40 Ω |

Yes

Is the resistance between (1) and (2) of the Dispenser solenoid like as below?

No → Replace Dispenser Solenoid



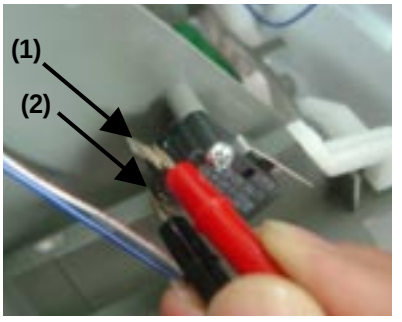

**Resistance of Dispenser solenoid**

| Level switch | Result |
|---|---|
| (1) to (2) | 44 ~54 Ω |

Yes

Is the condition of the micro switch like as below?

No → Replace Micro Switch

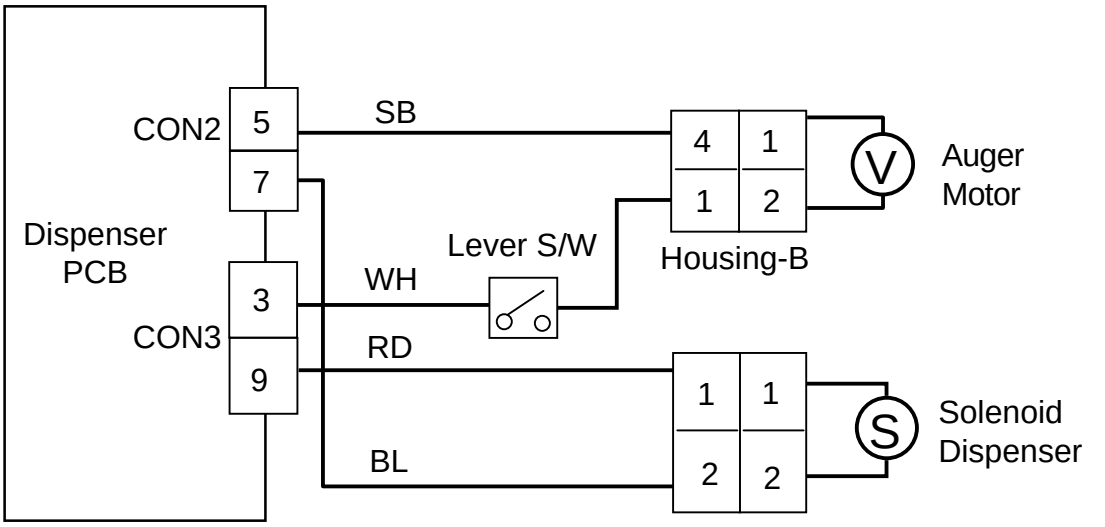



| Status | Tester |
|---|---|
| Normal | Infinity |
| Push the Lever | 0 Ω |

Yes

After plug in, explain to the customer!

## Crush Mode Doesn't work




**Wiring diagram**

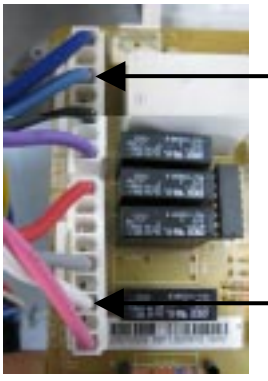
**Display PCB**
Is the connection loose?

**Yes** → Reconnect

**No**

**In Crush Mode,**
Is the voltage between pin5 of CON2 and pin3 of CON3 like as below, while pushing the lever switch?

**No** → Replace Dispenser PCB



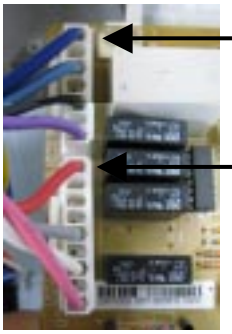

**Output voltage of Auger motor**

| Level switch | Test Point | Result |
|---|---|---|
| Pushing | pin5 to pin3 | 115 V |
| Normal | pin5 to pin3 | 0 V |

**Yes**

**In CUBE Mode,**
Is the voltage between pin7 of CON2 and pin9 of CON3 like as below, while pushing the lever switch?

No → Replace Dispenser PCB



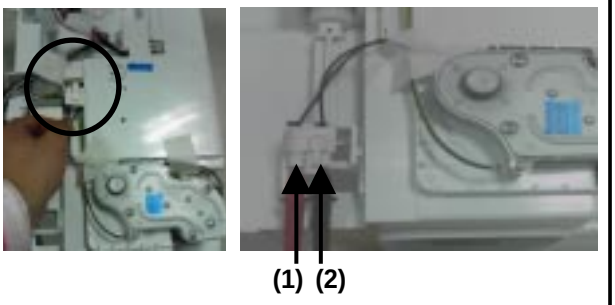

**Output voltage of auger motor**

| Level switch | Test Point | Result |
|---|---|---|
| Pushing | pin7 to pin9 | 115 V |
| Normal | pin7 to pin9 | 0 V |

Yes

Is the resistance value between (1) and (2) of the Auger motor like as below?

No → Replace Auger Motor



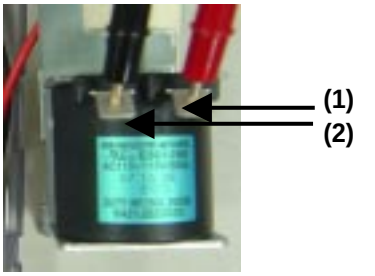

**Resistance of Auger Motor**

| Test Point | Result |
|---|---|
| (1) To (2) | 2.38 ~ 4.02 Ω |

Yes

Is the voltage between (1) and (2) of the Dispenser solenoid like as below?

No → Replace Dispenser Solenoid



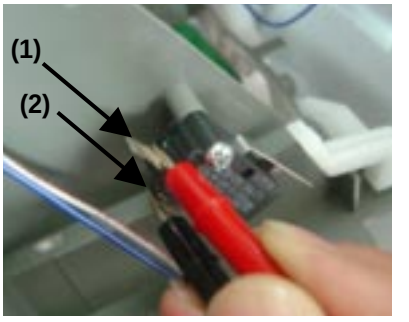

**Resistance of Dispenser solenoid**

| Test Point | Result |
|---|---|
| (1) To (2) | 44 ~ 54 Ω |

Yes

Is the condition of the micro switch like as below?

No → Replace Micro Switch

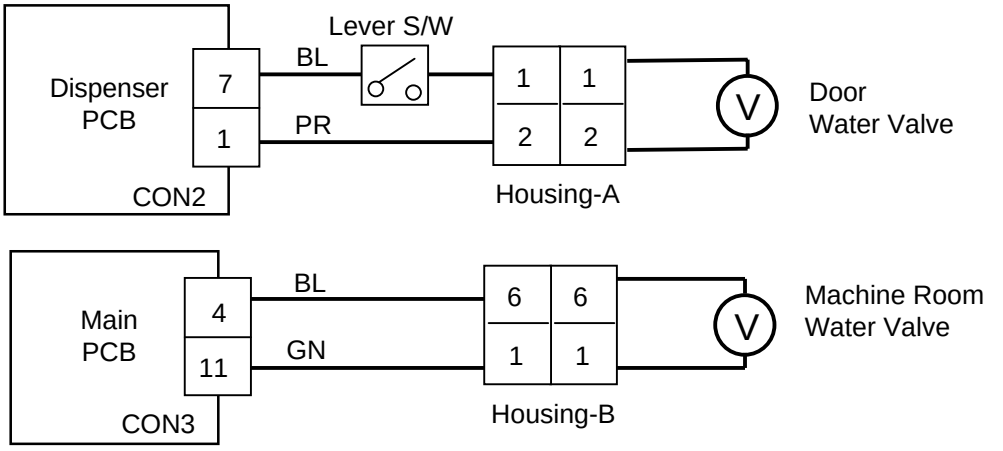



| Status | Tester |
|---|---|
| Normal | Infinity |
| Push the Lever | 0 Ω |

Yes

After plug in,
explain to the customer!

## Crush Mode Doesn't work




**Wiring diagram**

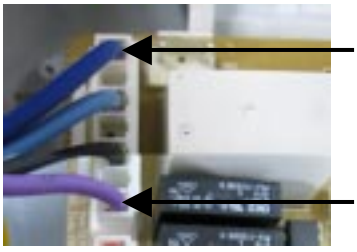
**Display PCB**
Is the connection loose?

**Yes** → Reconnect

**No**

**In Water Mode,**
Is the voltage between pin1 and pin7 of CON2 in dispenser PCB like as below, while pushing the level switch?

**No** → Replace Dispenser PCB



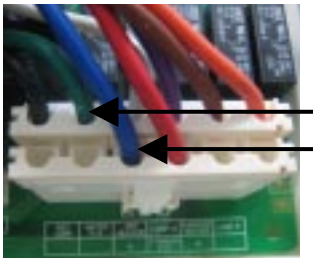

**Output voltage of door water valve**

| Level switch | Test Point | Result |
|---|---|---|
| Pushing | pin1 to pin7 | 115 V |
| Normal | pin1 to pin7 | 0 V |

**Yes**

**In Water Mode,**
Is the voltage between pin4 and pin11 of CON3 in main PCB like as below, while pushing the level switch?

No → Replace Main PCB



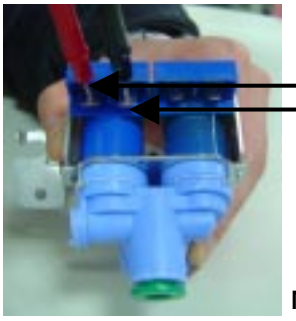

**Output voltage of machine room water valve**

| Test Point | Result |
|---|---|
| pin4 to pin11 | 115 V |

Yes

**First Water- valve**
Is the resistance value between (1) and (2) of the First-water valve like as below?

No → Replace First Water-valve



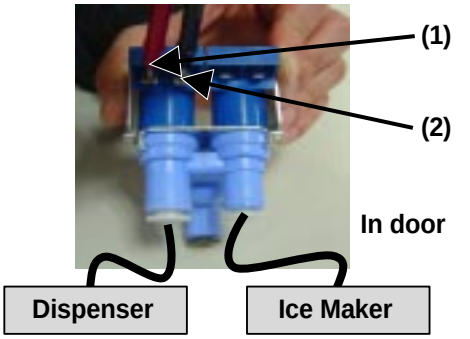

**Checking resistance of First-valve**

| Test Point | Result |
|---|---|
| (1) to (2) | 360 ~420 Ω |

Yes

**Second Water- valve**
Is the resistance value of Second-water valve like as below?

No → Replace Second Water-valve



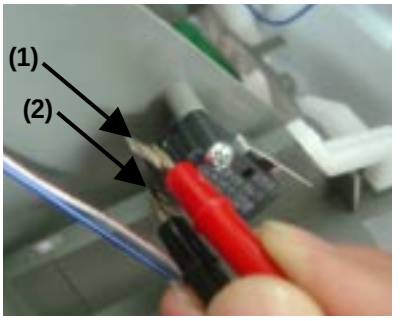

**Checking resistance of Second-valve**

| Test Point | Result |
|---|---|
| (1) to (2) | 360 ~ 420 Ω |

Yes

Is the condition of the micro switch like as below?

No → Replace Micro Switch

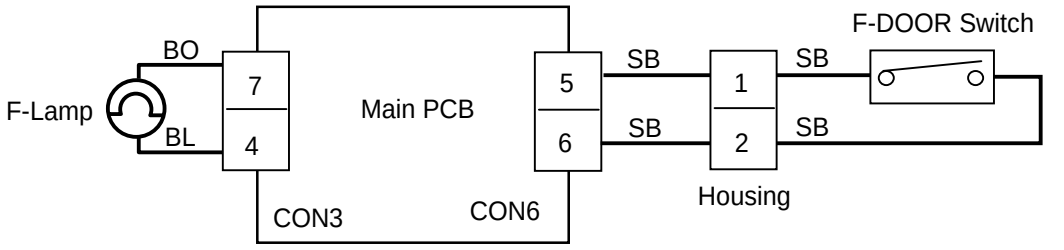



| Status | Tester |
|---|---|
| Normal | Infinity |
| Push the Lever | 0 Ω |

Yes

After plug in,
explain to the customer!

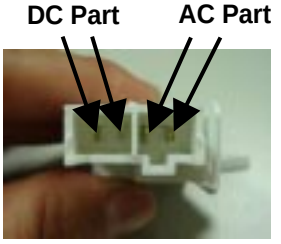
## Freezer-lamp Doesn't work




**Wiring diagram**

Is the condition of the freezer door switch like as below?

No → Replace Door switch




| Status | Tester |
|---|---|
| Normal | 0 Ω |
| Push the Switch | Infinity |

Yes ↓

Is the connection loose?

Yes → Reconnect

**CON6** **CON3**

No ↓

Is the voltage between pin 11 and 12 of CON6 like as below?

No → Replace Main PCB


**Voltage of Door switch**

| Door | Test Point | Result |
|---|---|---|
| Closed | pin5 to pin6 | 5 V |
| Open | pin5 to pin6 | 0 V |

Yes ↓

Is the voltage between pin 4 and pin7 of CON3 like as below?

No → Replace Main PCB

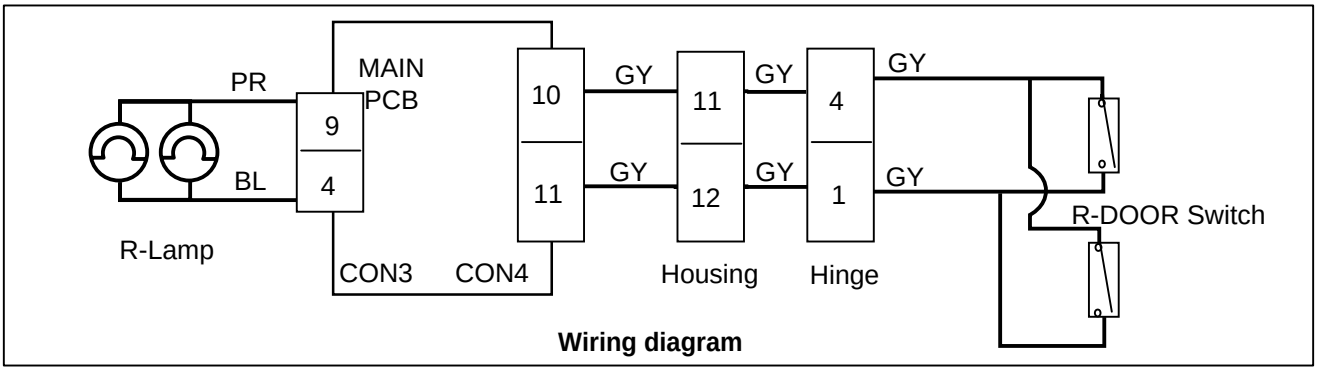

**Voltage of Freezer lamp**

| Door | Test Point | Result |
|---|---|---|
| Closed | pin4 to pin7 | 0 ~ 2 V |
| Open | pin4 to pin7 | 115 V |

Yes ↓

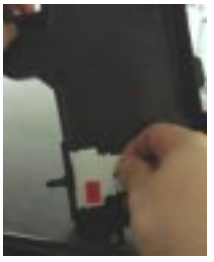
Replace Lamp

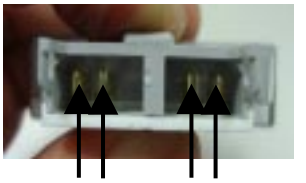
## Refrigerator-lamp Doesn't work




**Wiring diagram**

Is the condition of the refrigerator door switch like as below? **No** → Replace Door switch






| Status | Tester |
|---|---|
| Normal | 0 Ω |
| Push the Switch | Infinity |

**Yes**

Is the connection loose? **Yes** → Reconnect

**CON6** **CON3**

**No**

Is the voltage between pin10 and pin11 of CON4 like as below? **No** → Replace Main PCB


**Voltage of Door switch**

| Door | Test Point | Result |
|---|---|---|
| Closed | pin10 to pin11 | 5 V |
| Open | pin10 to pin11 | 0 V |

**Yes**

Is the voltage between pin4 and pin9 of CON3 like as below? **No** → Replace Main PCB


**Voltage of Refrigerator lamp**

| Door | Test Point | Result |
|---|---|---|
| Closed | pin4 to pin9 | 0 ~ 2 V |
| Open | pin4 to pin9 | 115 V |

**Yes**

Replace Lamp

## Poor cooling in the refrigerator compartment

**MAIN PWB**
Is the connection loose?

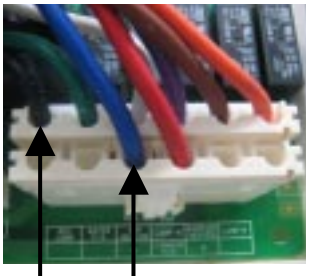
**Yes** → Replace

**CON3**

**No**

**Enter the TEST 1 MODE**
Is the voltage between
Pins 4 and pin 12 of CON3
like as below?

**Yes** → Reconnect Main PCB



**CON3**

**Pin12 BK** **Pin4 BL**

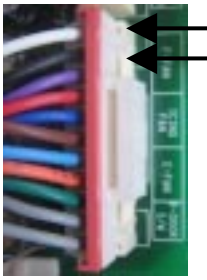
**Voltage of Compressor**

| Test Point | Result |
|---|---|
| pin4 to pin12 | 115 V |

**Yes**

Is the voltage between
pins 1 and pin 2 of CON4
like as below?

**No** → Replace the Main PCB



**Pin1 WH**
**Pin2 BK**

**CON4**

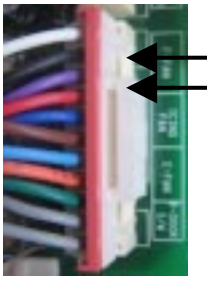
**Voltage of F-fan**

| Test Point | Result |
|---|---|
| pin1 to pin2 | 12 ~ 16 V |

**Yes**

**Feedback check.**
Is the voltage between
Pin 2 and pin3 of CON4
like as below?

**No** → Replace the Main PCB



**Pin2 BK**
**Pin3 PR**

**CON4**

**Feedback voltage of F-fan**

| Test Point | Result |
|---|---|
| pin2 to pin3 | 11 ~ 4 V |

**Yes**

Does the cold-air come out of the top of the main duct?

No → Check the Damper itself

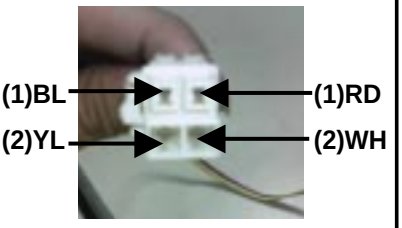
Yes

**Enter the TEST 2 MODE**
Does not cold-air come out of the top of the main duct?

Yes → Check the Damper itself

No

**Checking Damper itself**
Is the resistance Values between (1) & (4), (2) & (3) like as below?




No → Replace Damper

**Resistance of Damper**

| Test Point | Ressult |
|---|---|
| (1) to (4) | 373 ~456 ‰ |
| (2) to (3) | 373 ~456 ‰ |

Yes

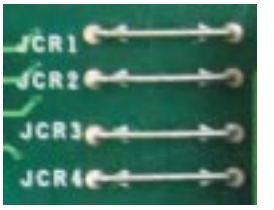
**After reset the unit,** take steps to PCB as follows for temperature compensation.

1. In the case of 6871JB1431 ( by July 2007)
   : Compensate with replacing RCR1


| RCR1 | Temp. Compension | Ressult |
|---|---|---|
| 8.2 k‰ | - 0.5 deg | Current |
| 5.6 k‰ | - 1 deg | ↓ Colder |
| 3.3 k‰ | - 1.5 deg | |
| 2 k‰ | - 2 deg | |
| 470 k‰ | - 2.5 deg | |

*** Change RCR1**

2. In the case of EBR34917102
   (from Aug 2007)
   : Compensate with Jump wire cutting




| JUMP WIRE | Temp. Compensation |
|---|---|
| JCR3 | - 1.0 deg |
| JCR4 | - 1.0 deg |
| Cutting both jumpers affords a 2… temperature compensation | |

*** Cutting of jumper wire**

## Over cooling in the refrigerator compartment

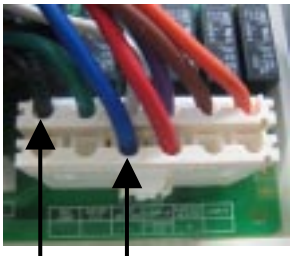
**MAIN PWB**
Is the connection loose?

**CON3**

**Yes** → Reconnect

**No**

**Enter the TEST 1 MODE**
Is the voltage between Pins 4 and pin 12 of CON3 like as below?




**Voltage of Compressor**

| Test Point | Ressult |
|---|---|
| pin4 to pin12 | 115 V |

**Yes** → Replace Damper

**Yes**

Check the Fan operation by placing your hand in front of the vents to feel for any cold air flow.

| Door | Fan-Motor |
|---|---|
| Open | OFF |
| Closed | ON |

**Yes** → Replace Fan

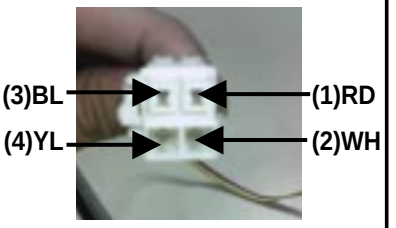
**No**

**Enter the TEST 2 MODE**
Does the cold-air coming out of the top of the main duct.?

**No** → Check the Damper itself

**Yes**

**Checking Damper itself**
Is the resistance Values between (1) & (4), (2) & (3) like as below?




**Resistance of Damper**

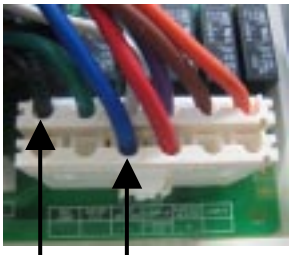
| Test Point | Ressult |
|---|---|
| (1) to (4) | 373 ~456 Ω |
| (2) to (3) | 373 ~456 Ω |

**Yes** → Replace Damper

**Yes**

**Enter the TEST 3 MODE**
Is the voltage between Pins 4 and pin 12 of CON3 like as below?

Yes → Replace Damper




**Voltage of Compressor**

| Test Point | Ressult |
|---|---|
| pin4 to pin12 | 115 V |

Yes

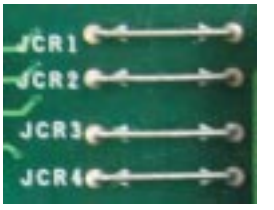
**After reset the unit,** take steps to PCB as follows for temperature compensation.

1. In the case of 6871JB1431 ( by July 2007)
   : Compensate with replacing RCR1


| RCR1 | Temp. Compension | Ressult |
|---|---|---|
| 180 k‰ | + 2.5 deg | Current |
| 56 k‰ | + 2 deg | ↑ Colder |
| 33 k‰ | + 1.5 deg | |
| 18 k‰ | + 1 deg | |
| 12 k‰ | + 0.5 deg | |

*** Change RCR1**

2. In the case of EBR34917102
   (from Aug 2007)
   : Compensate with Jump wire cutting




| JUMP WIRE | Temp. Compensation |
|---|---|
| JCR1 | + 1.0 deg |
| JCR2 | + 1.0 deg |
| Cutting both jumpers affords a 2… temperature compensation | |

*** Cutting of jumper wire**

## (NOTE)

### 1. How To Remove Terminal Position Assurance (TPA)

*** AC TPA**


*** DC TPA**


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

### 2. Wire Color

**BL** : Blue
**WH** : White
**BO** : Bright Orange
**BK** : Black
**BN** : Brown
**PR** : Purple
**RD** : Red
**GN** : Green
**SB** : Sky Blue
**GY** : Gray

### 3. How To Start Test Mode

Push the TEST button on the Main PWB,
You can start the TEST MODE.


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

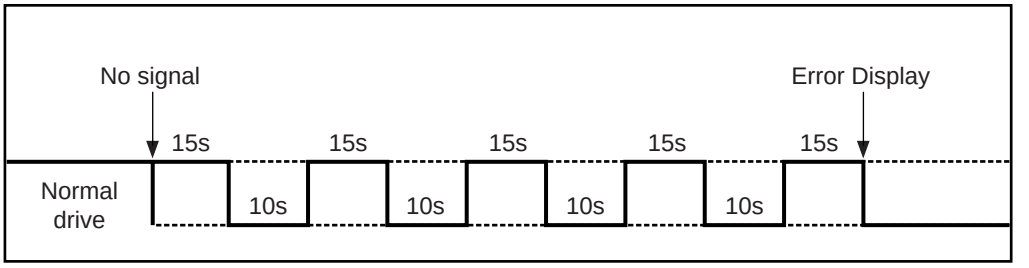

* 2 times : Damper closed
(22 22 displayed)


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

**4. How to check the Fan-Error**

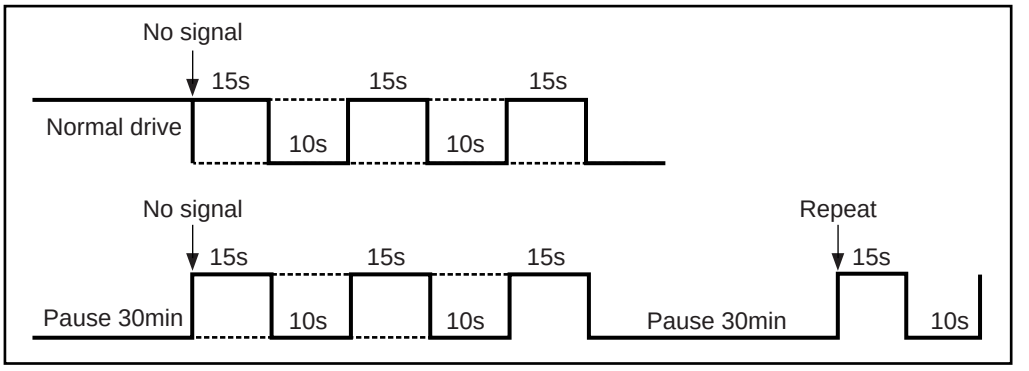
(1) 6871JB1431A ( ~ July 2007)

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 5 times. If the fan motor is determined to be defective, the error code will be shown continuously in the display. At this point, there is no further check of the fan motor.



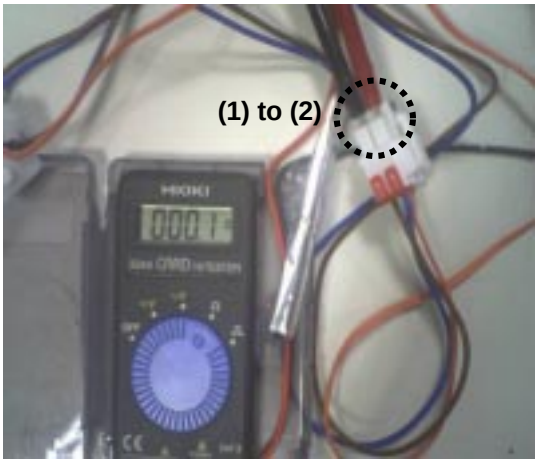

(2) EBR34917102 ( Aug 2007 ~)

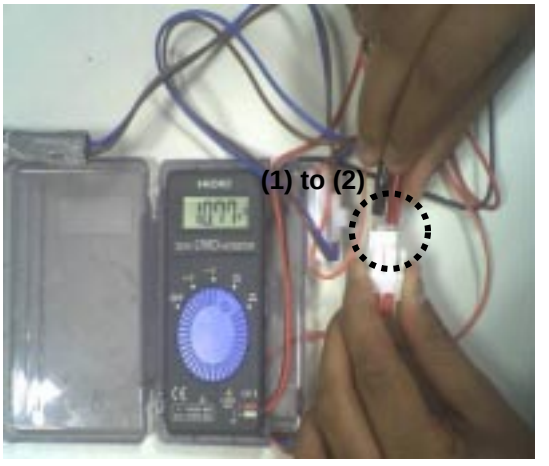
After sending a signal to the fan, the MICOM checks the BLDC fan motor's lock status. If there is no feedback signal from the BLDC fan, the fan motor stops for 10 seconds and then is powered again for 15 seconds. To determine that there is a fan motor malfunction, this process is repeated 3 times. If 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.



# 7. COMPONENT TESTING INFORMATION

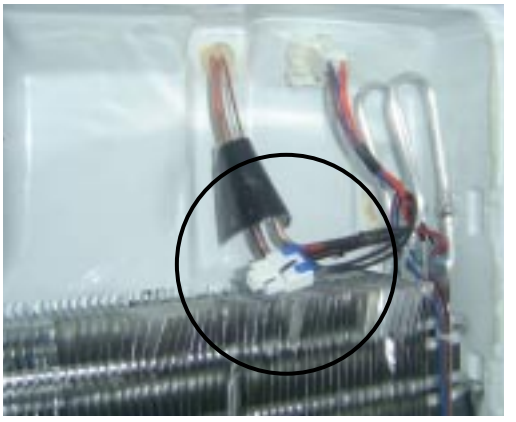
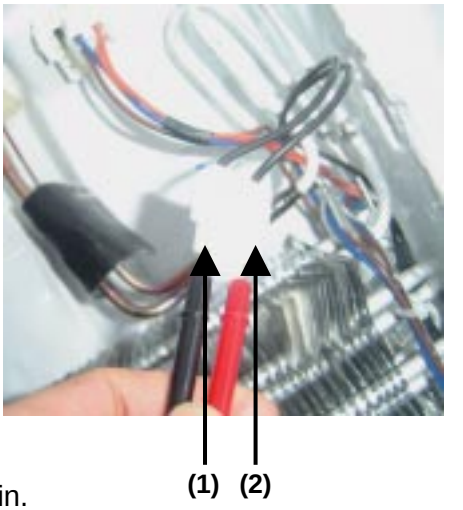
**7-1. Defrost Controller Assembly**

<table>
<tr><td>Function</td><td>- 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.<br>- Fuse-m can cut off the source when defrost heater operate the unusual high temperature.<br>- Sensor give temperature information to Micom</td></tr>
<tr><td>How to Measure (Fuse-M)</td><td> 

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</td></tr>
<tr><td>How to Measure (Sensor)</td><td> 

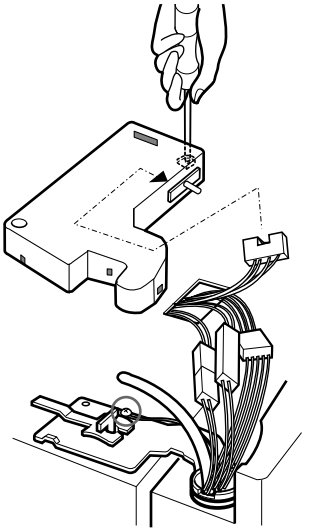
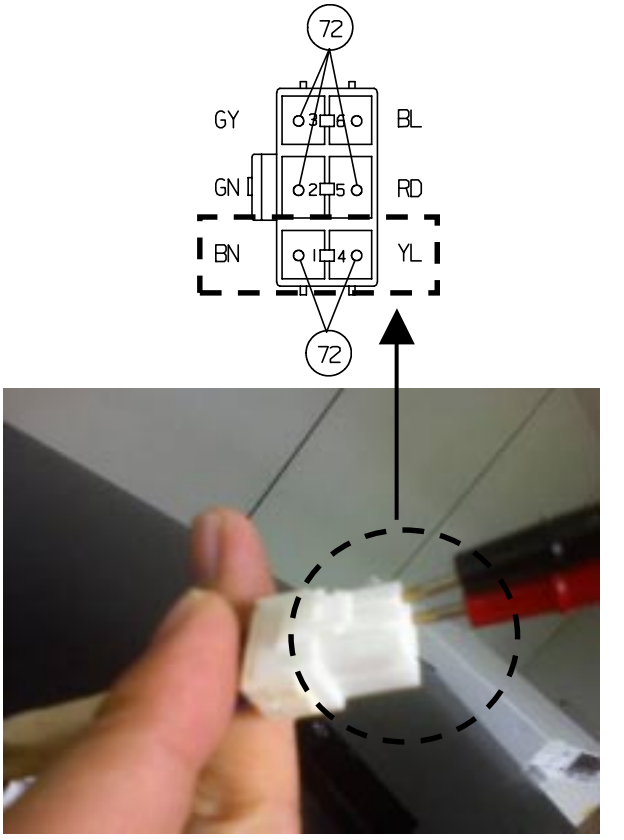
Set a ohmmeter to The 2housing pin.<br>Measure the 2 pin connected to Sensor.<br>If the ohmmeter indicate 11kΩ (at room temperature)<br>Sensor is not a defect.<br>When check the ohm at other temperature Check the sensor manual.</td></tr>
<tr><td>Standard</td><td>Fuse-M (at all temperature)
<table>
<tr><td>Test Point</td><td>Ressult</td></tr>
<tr><td>(1) to (2)</td><td>0 ~0.1 Ω</td></tr>
</table>
Sensor (at room temperature)
<table>
<tr><td>Test Point</td><td>Ressult</td></tr>
<tr><td>(1) to (2)</td><td>11 Ω</td></tr>
</table></td></tr>
</table>

### 7-2. Sheath Heater

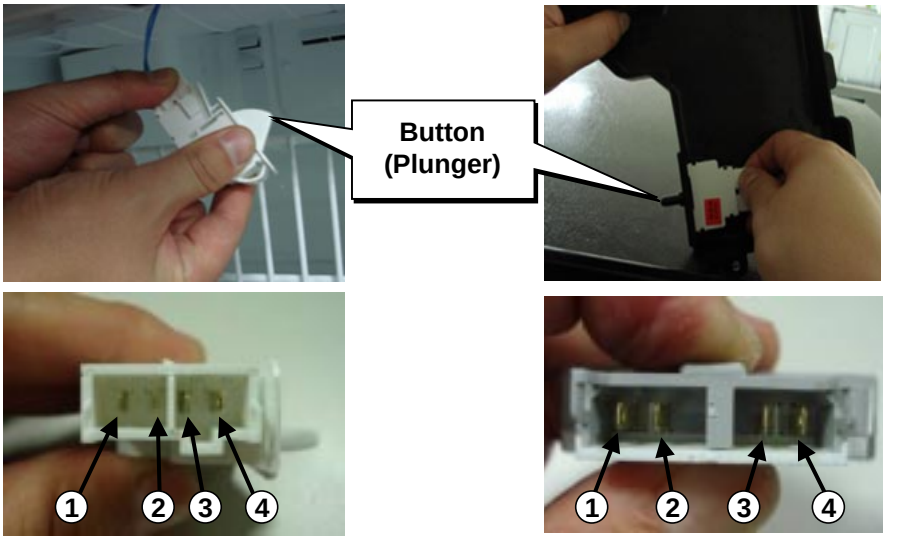
<table>
<tr><td>Function</td><td>Sheath heater is a part for defrost. All heating wire is connected to only one line. So we can decide part is defect or not when we check the resistance.</td></tr>
<tr><td>How to Measure</td><td>



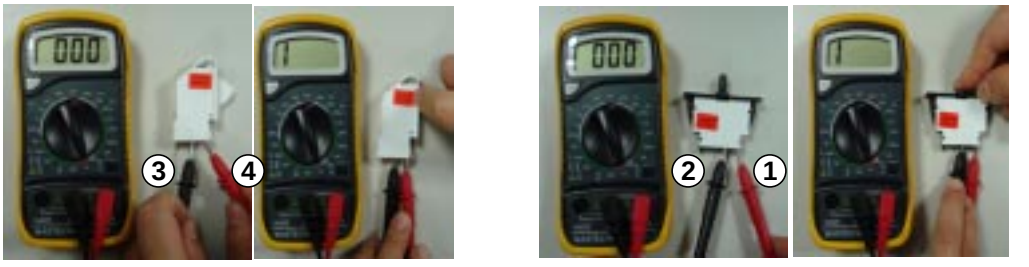
Set a ohmmeter connect to The 2 housing pin.<br>
Measure the 2 pin connected to Sheath Heater.<br>
If the ohmmeter indicate (V°øV)/Watt=R is good condition,<br>
ex) when watt=350w, voltage=115v R=(115°ø115)/350=38Ω<br>
But the ohmmeter indicate infinitely great<br>
Sheath heater is disconnection
</td></tr>
<tr><td>Standard</td><td>Sheath heater (at all temperature)
<table>
<tr><th>Test Point</th><th>Ressult</th></tr>
<tr><td>(1) to (2)</td><td>34 ~42 Ω</td></tr>
</table>
</td></tr>
</table>

### 7-3. Door Heater Assembly

| | |
|---|---|
| **Function** | The heater is designed to prevent the raising dew from door. |
| **How to Measure** |    |
| **Standard** | Test Point: (1) to (2) — Ressult: 2.3 ~2.9 Ω |

### 7-4. Door Switch

<table>
<tr><td>Function</td><td>The switch sense if the door open or close.<br>- When the door open, lamp on.<br>- When the door open, the switch give information to Micom.<br>When the door open, internal contact operate on and off moving plunger of door switch up and down.</td></tr>
<tr><td>How to Measure</td><td>
<Switch, Freezer> <Switch, Refrigerator><br>




Beep Beep<br>
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
</td></tr>
<tr><td>Standard</td><td>Multimeter beep – Switch F,R
<table>
<tr><td>Nomal</td><td>Push the button(Plunger)</td></tr>
<tr><td>Beep or 0 Ω</td><td>None (∞ Ω)</td></tr>
</table>
</td></tr>
</table>

### 7-5. Solenoid

<table>
<tr><td>Function</td><td>- Dispenser solenoid : When customer push the dispenser button, Pull duct door and abstract from ice bank.</td></tr>
<tr><td>How to Measure</td><td> 

Dispenser Solenoid</td></tr>
<tr><td>Standard</td><td>Dispenser Solenoid
<table>
<tr><th>Test Points</th><th>Result</th></tr>
<tr><td>(1) to (2)</td><td>44 ~ 54 Ω</td></tr>
</table></td></tr>
</table>

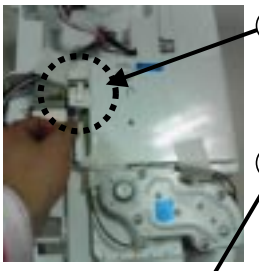
### 7-6. AC Motor ASSEMBLY (Geared Motor & Solenoid)

**Function**

The Geared Motor of ac motor assembly advances forward the ice by rotating the ice and The solenoid of ac motor assembly selects one of the cube mode or crush mode.
- Cube solenoid : Pulling the stir lip for moving the ice in ice maker system.

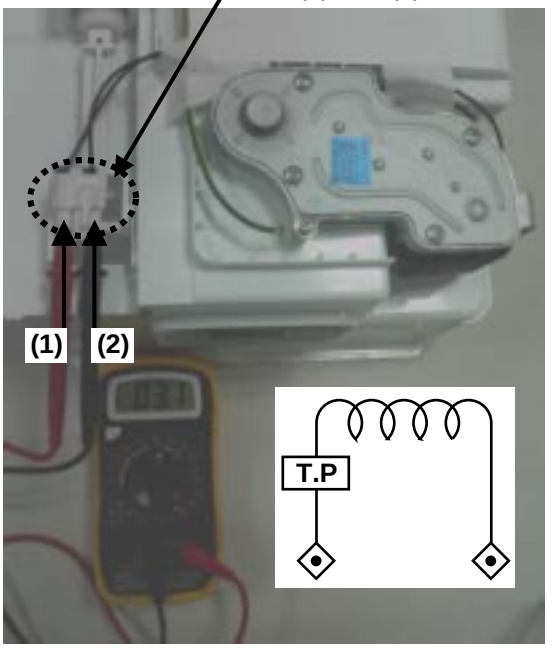
**How to Measure**

**< Geared Motor >**

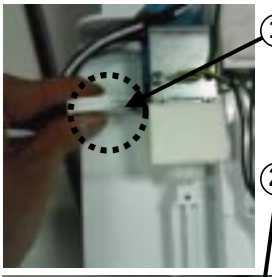


① Take out the male housing from female housing

② Measure the resistance between (1) and (2)

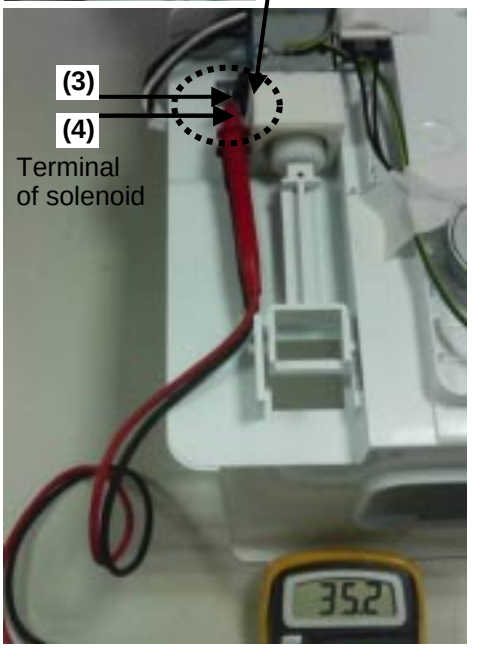



**< Cube Solenoid >**



① Remove the female housing from terminal.

② Measure the res istance between (3) and (4)




Check the resistance between connectors (Geared motor 1,2) and (solenoid 3,4).It means check whether or not applying an Electric current. If there is resistance, it means the geared motor or solenoid is not inferiority

**Standard**

Geared Motor

| Test Points | Result |
|---|---|
| (1) to (2) | 2.38 ~ 4.02 Ω |

Cube Solenoid

| Test Points | Result |
|---|---|
| (3) to (4) | 32 ~ 40 Ω |

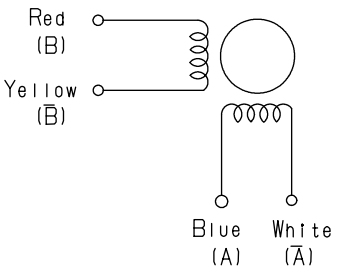
### 7-7. Damper

**Function**

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.

**How to Measure**

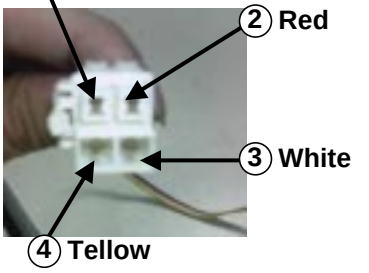
Table(1): 결선도(Wirering)



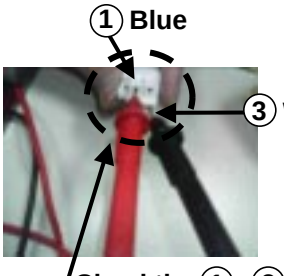

Table(2): 2-2상 여자순서(CW Rotation)

| Housing No. & L/Wire Color | Step 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1- Blue (A) | + | - | - | + |
| 2- Red (B) | + | + | - | - |
| 3- White(Ā) | - | + | + | - |
| 4- Yellow(B̄) | - | - | + | + |

**< Damper Circuit >**

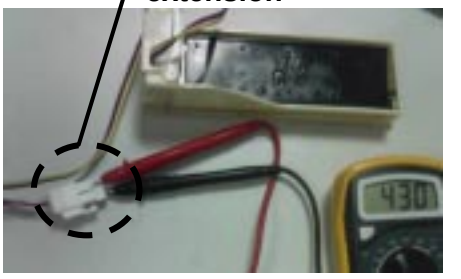



**Check the ②, ④**




**Checj the ①, ③**

**extension**



**Check the ①, ③**

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

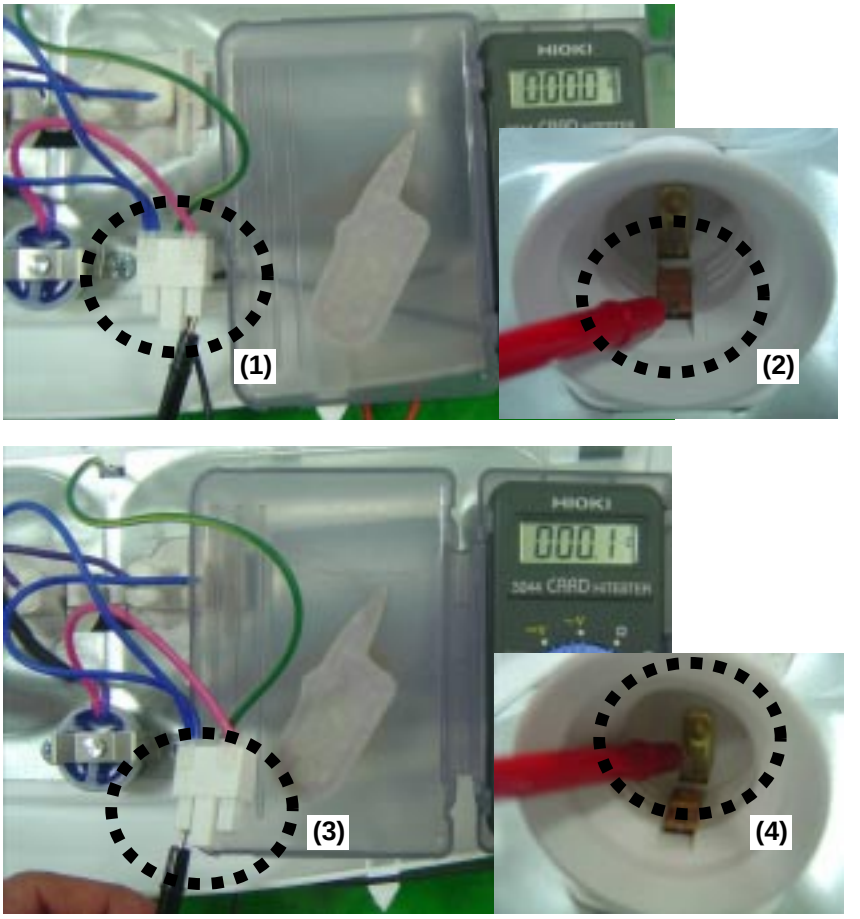
**Standard**

Damper

| Test Points | Result |
|---|---|
| Red and Yellow | 373 ~ 456 Ω |

| Test Points | Result |
|---|---|
| Blue and White | 373 ~ 456 Ω |

### 7-8. Lamp Socket

| | |
|---|---|
| **Function** | The lamp socket connect cover lamp assembly to lamp.<br>The lamp socket fix lamp and unite lamp and cover lamp assembly.<br>The lamp socket supply electric source to lamp also. |
| **How to Measure** |  <br>Check the resistance between connector of housing and connector of lamp socket. It means check whether or not applying an electric current.<br>If there is resistance it means the lamp socket is not inferiority. |
| **Standard** | <table><tr><th>Test Points</th><th>Result</th></tr><tr><td>(1) to (2) and (3) to (4)</td><td>0 Ω</td></tr></table> |

### 7-9. Water Valve

| | |
|---|---|
| **Function** | - first-Water Valve (in machine room)<br>: supply the water from city water to water filter in refrigerator<br>- second-Water Valve (in door)<br>: supply the water from water filter to icemaker and dispenser |
| **How to Measure** |  <br>First-water valve<br>(in machine room)<br>  <br>second-water valve<br>(in door) |
| **Standard** | Test Points: (1) to (2) — Result: 360 ~ 420 Ω |

# 8. DISASSEMBLY INSTRUCTIONS

## 8-1 REMOVING AND REPLACING REFRIGERATOR DOORS

**● Removing Refrigerator Door**

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

**▶ Left Door - Figure 2**

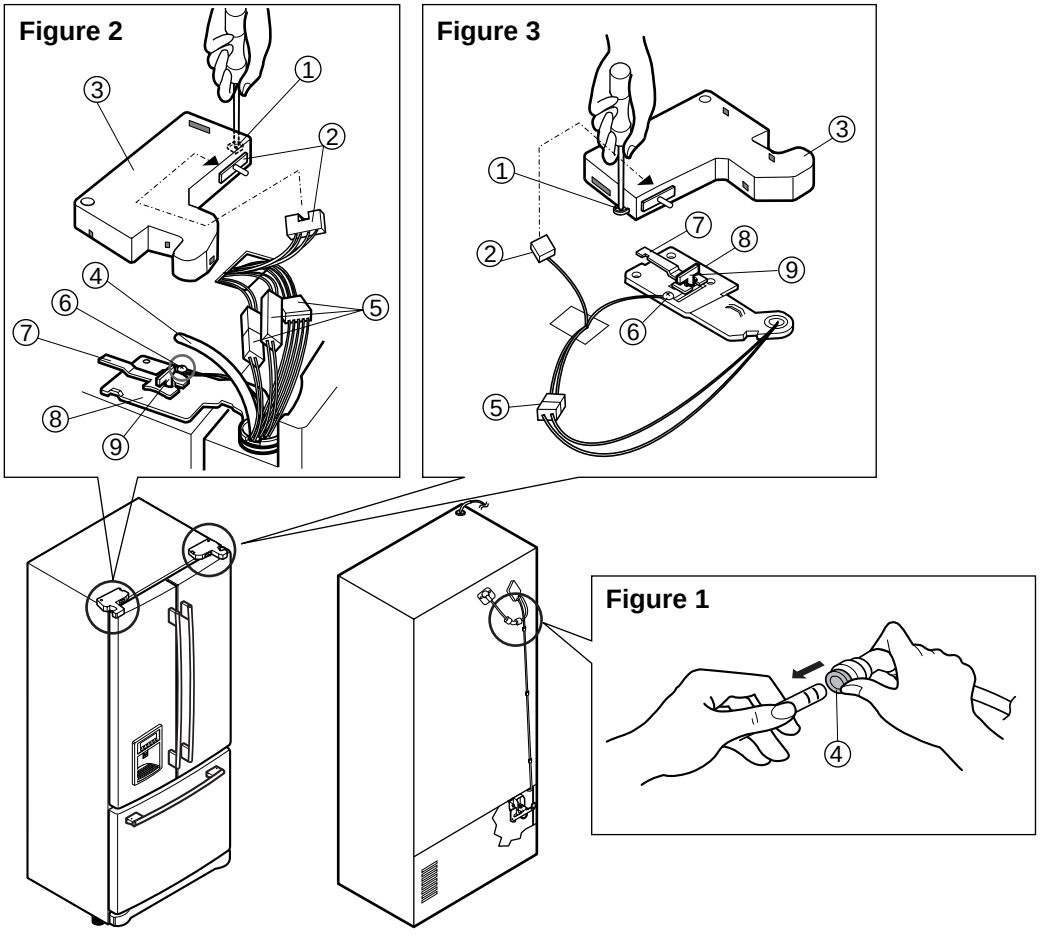
2. Open the door. Loosen the top hinge cover screw (1).
   Use a flat tip screwdriver to pry back hooks on front underside of the cover (3). Lift up the cover.
3. Disconnect the door switch wire harness (2). Remove the cover.
4. Pull out the tube.
5. Disconnect the three wire harnesses (5). Remove the grounding screw (6).
6. Rotate the hinge lever (7) counterclockwise and remove. Lift the top hinge (8) free of the hinge lever latch (9).

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

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

**▶ Right Door - Figure 3**

1. Open the door. Loosen the top hinge cover screw (1). Lift up the cover (3).
2. Disconnect the door switch wire harness (2). Remove the cover.
3. Disconnect the wire harness (5). Remove the grounding screw (6).
4. Rotate the hinge lever (7) clockwise and remove. Lift the top hinge (8) free of the hinge lever latch (9).
   CAUTION: When lifting the hinge free of the latch, be careful that the door does not fall forward.
5. Lift the door up from middle hinge pin (10) and remove the door.
6. Place the door, inside facing up, down onto a non-scratching surface.



## 8-2 DOOR

● **Door Gasket Removal**

**1. Remove door frame cover**

Starting at the top of cover and working down, snap the cover out and away from the door.

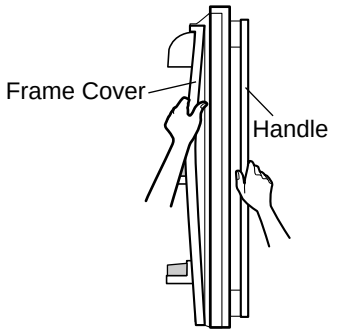



**Figure 1**

**2. Remove gasket bracket clips**

There are two clips on each door. Start the bracket removal near one of the middle clips.

1) Pull the gasket back to expose the gasket bracket clip and door frame.
2) Insert a flat tip screwdriver into the seam between the gasket bracket and the door frame and pry back until the clips snap out.
3) Continue prying back along the seam until all clips snap out.

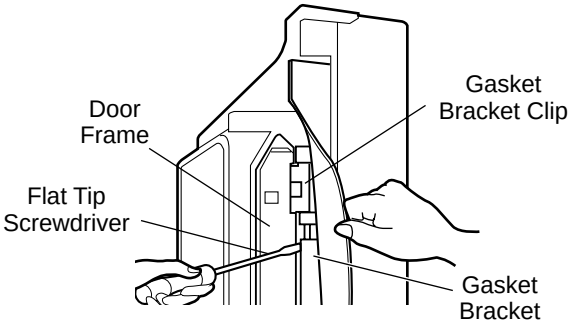



**Figure 2**

**3. Remove gasket**

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

**Figure 3**

● **Door Gasket Replacement**

**1. Insert gasket bracket clips**

1) Insert the gasket bracket edge beneath the door frame edge.
2) Turn the upper gasket bracket spring so that the spring ends are in the door channel.
3) Push in the clip until you hear it snap securely into place.

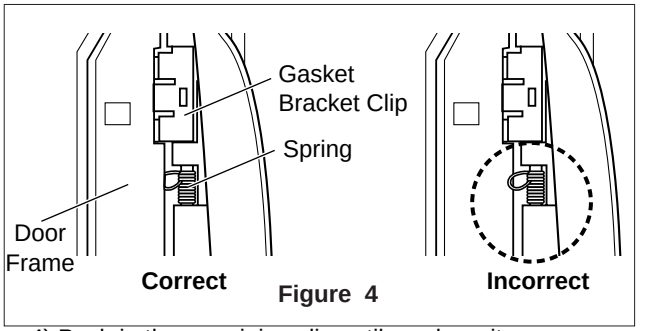



**Figure 4**

4) Push in the remaining clip until you hear it snap securely into place.

**Note:** Make sure that no part of the gasket bracket edge protrudes from beneath the door frame edge.

**2. Insert gasket into channel**

1) Snap the gasket assembly into the door bracket.

**Inserting the Gasket Assembly into the Bracket Door**

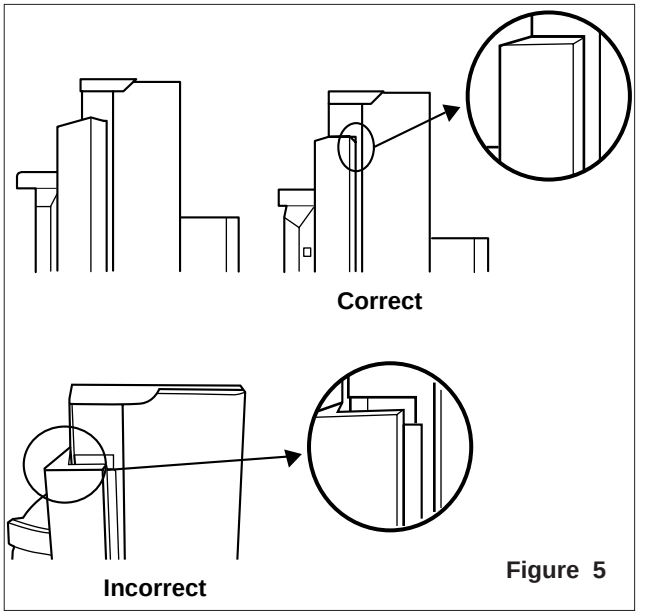



**Figure 5**

2) Press the gasket into the channels on the three remaining sides of door.

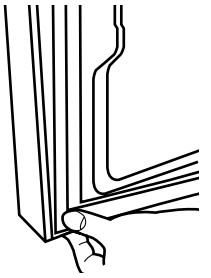


Figure 6

**3. Replace door frame cover**

Starting at the top of the cover and working down, snap the cover back into door.

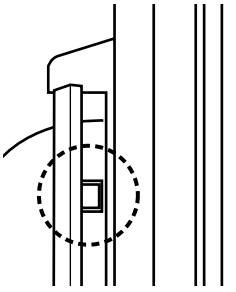


Figure 7

.

## 8-3 DOOR ALIGNMENT

If the space between your doors is uneven, follow the instructions below to align the doors:

1. With one hand, lift up the door you want to raise at the the middle hinge.
2. With the other hand, use pliers to insert the snap ring as shown.
3. Insert additional snap rings until the doors are aligned. (Three snap rings are provided with unit.)

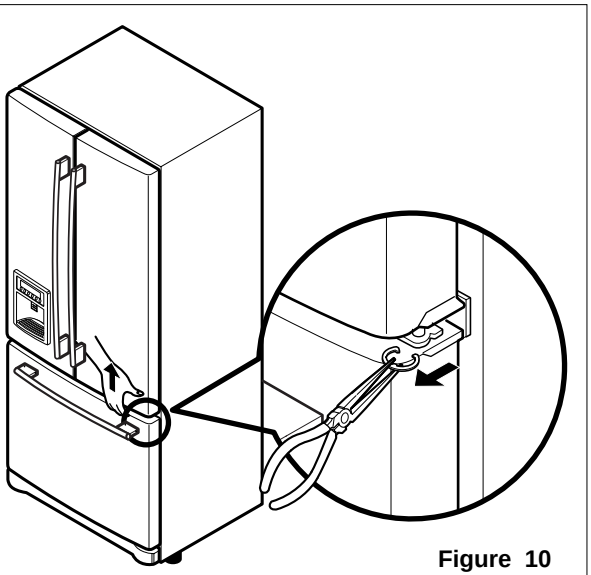


Figure 10

## 8-4 FAN AND FAN MOTOR (EVAPORATOR)

1. Remove the freezer shelf.
2. Remove the plastic guide for the slides on left side by unscrewing the 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.

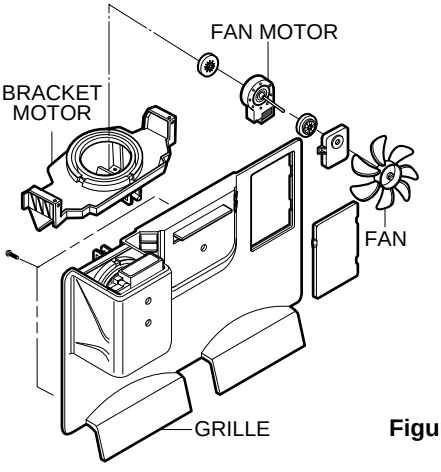



Figure 11

* Ice Fan Scroll Assembly Replacement

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

(1)

(2)

(3)

(4)

## 8-5 DEFROST CONTROL ASSEMBLY

The defrost Control assembly consists of the Defrost Sensor and the FUSE-M.

The Defrost Sensor works to defrost automatically. It is attached to the metal side of the Evaporator and senses its temperature. At 72°C, it turns the Defrost Heater off.

Fuse-M is a safety device for preventing overheating of the Heater when defrosting.

1. Pull out the grille assembly. (Figure 12)
2. Separate the connector with the Defrost Control assembly and replace the Defrost Control assembly after cutting the Tie Wrap. (Figure 13)

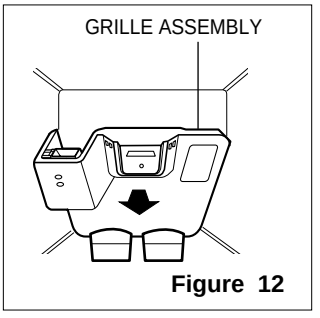



**Figure 12**

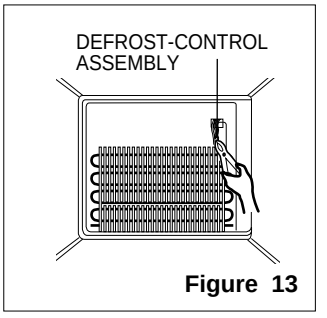



**Figure 13**

## 8-6 LAMP

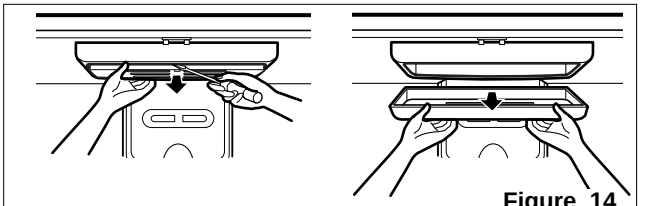


**Figure 14**

**8-6-1 Refrigerator Compartment Lamp**

1. Unplug the Refrigerator or disconnect power at the circuit breaker.
2. If necessary, remove the top shelf or shelves.
3. Using a flat instrument, gently pry the cover loose in the front as shown. Rotate downward to remove rear tabs.
4. Make sure the bulbs are cool to the touch. Turn bulbs counterclockwise to remove.
5. Assemble in reverse order by snapping the Lamp Cover in, engaging the rear tabs followed by the front tabs. (Max. 60 W-2EA)

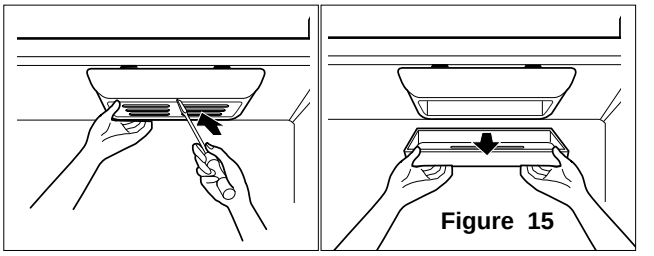


**Figure 15**

**8-6-2 Freezer Compartment Lamp**

1. Unplug refrigerator power cord form outlet.
2. Using a flat instrument, gently pry the lamp cover loose in the front as shown. Rotate downward to remove the rear tabs.
3. Make sure the bulb is cool to the touch. Turn the bulb counterclockwise to remove.
4. Replace with a new 60-watt appliance bulb.
5. Insert tabs on back of cover into slots in freezer ceiling. Push cover up to snap front into place.

## 8-7 CONTROL BOX-REFRIGERATOR

1. First, remove all shelves in the refrigerator, than remove the Refrigerator control Box by loosening 2 screws.

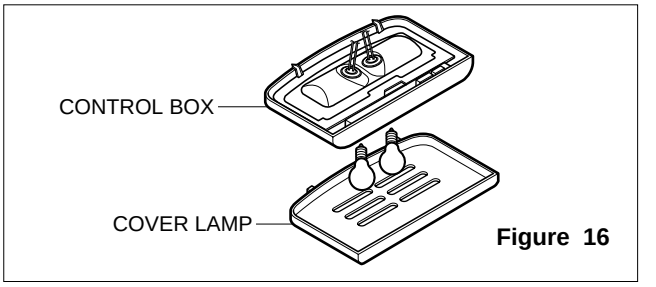



**Figure 16**

2. Remove the Refrigerator Control Box by pulling it downward.
3. Disconnect the lead wire on the right position and separate the lamp sockets.

### 8-8 MULTI DUCT

1. Remove the upper and lower caps by using a flat screwdriver, and remove 2 screws. (Figure 17)
2. Disconnect the lead wire on the bottom position.

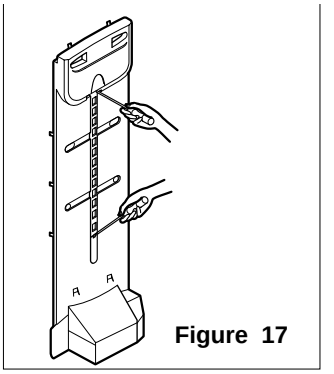


Figure 17

### 8-9 MAIN PWB

1) Loosen the 3 screws on the PCB cover.

2) Remove the PCB cover

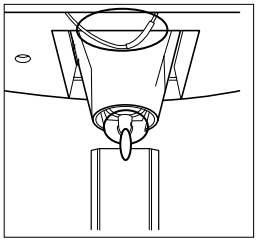
3) Disconnect wire harness and replace the main PCB in the reverse order of removal.

### 8-10 DISPENSER

1) Disconnect the funnel and button assembly by pulling down and forward.

2) Remove display frame assembly by making a gap between the display frame assembly and door with a flat blade screwdriver and pulling it forward. The cover dispenser is attached with a hook.

⚠ **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 cover, as shown in the picture below.



### 8-11 DISPLAY PCB REPLACEMENT

1) Pull up and out on the dispenser cover to remove.

2) Follow the steps in the pictures

### 8-12 FUNNEL REPLACEMENT

1) Pull up and out on the dispenser cover to remove.
2) Disconnect the wire harness.
3) Replace in reverse order.

### 8-13 SUB PWB FOR WORKING DISPENSER

1) Loosen the  screw on the sub PCB.


2) Pull the sub PCB down.

3) Disconnect the wire harness and replace the sub PCB in the reverse order of removal.


### 8-14 DUCT DOOR REPLACEMENT

1) Pull up and out on the dispenser cover to remove.

2) Disconnect the wire harness.

3) Remove the funnel

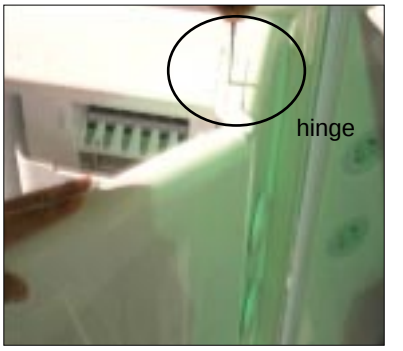
4) Replace in reverse order.


### 8-15 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.




### 8-16 ICEMAKER ASSEMBLY

1) Loosen two screws as shown in the first picture.


2) Disconnect the wire harness and ground screw replace theIcemaker assembly in the reverse order of removal.

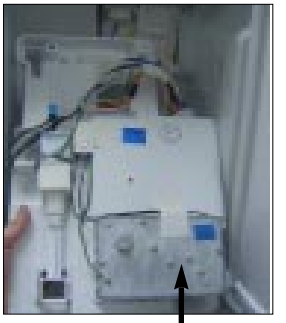
3) Remove the ground connection screw.

## 8-17 AUGER MOTOR COVER

1) After removing the icemaker remove the (5) stainless screws holding the auger motor cover, shown in the picutres below.

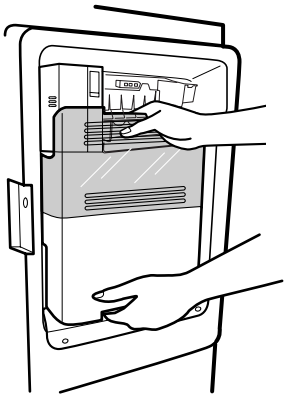

2) Grip the bottom of the motor cover assembly and pull out it.

3) Disconnect the wire harness of the motor cover assembly. There is a auger motor on the back, as shown in the picture.

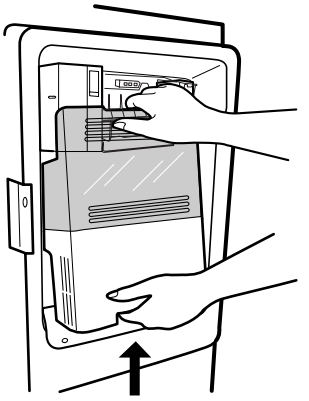



## 8-18 HOW TO REMOVE THE DOOR ICE BIN

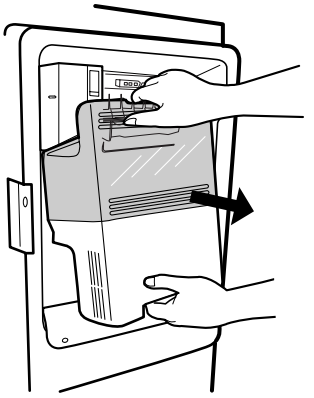
1) Grip the handles, as shown in the picture.



2) Lift the lower part slightly.

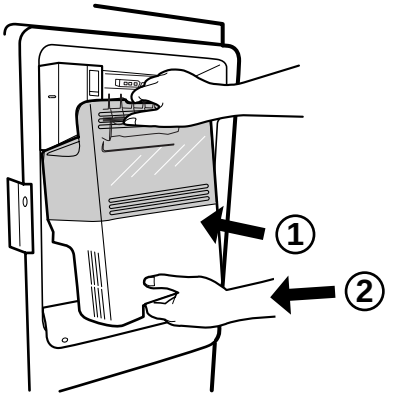


3) Take the ice bin out slowly.

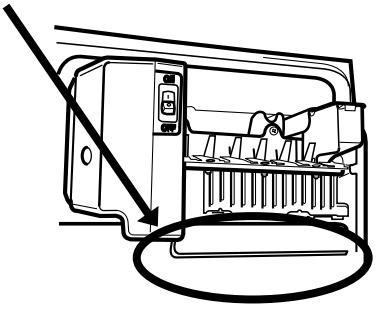


## 8-19 HOW TO INSERT THE DOOR ICE BIN

1) Insert the Ice Bin, slightly tilting it to avoid touching the icemaker. particularly the feeler arm lever.




※ Insert the ice bucket carefully avoid contacing the automatic shut off arm.



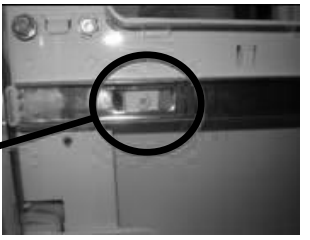
## 8-20 HOW TO REMOVE AND REINSTALL THE PULLOUT DRAWER

### 8-20-1 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).



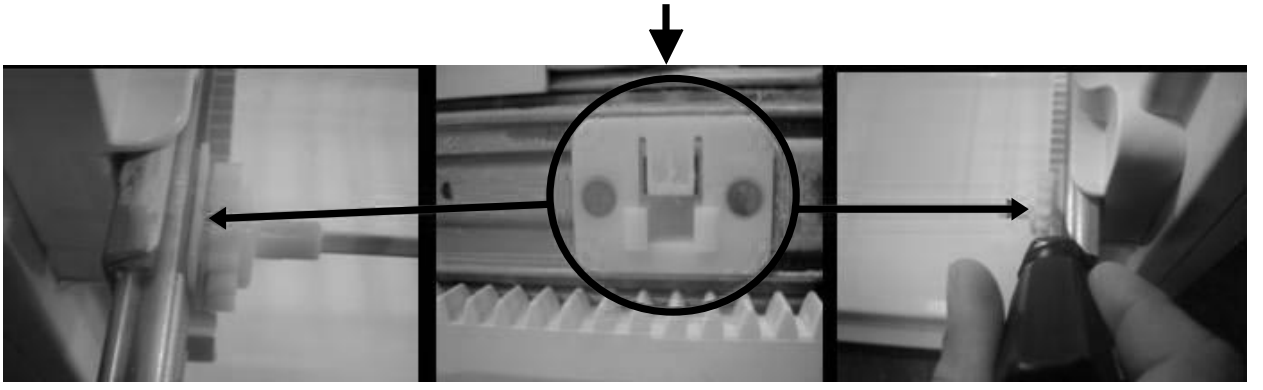
Step 4) Lift the freezer door up to unhook it from the rail support and remove.
Pull both rails to full extension.

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.**



### 8-20-2 Follow Steps to Reinstall

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



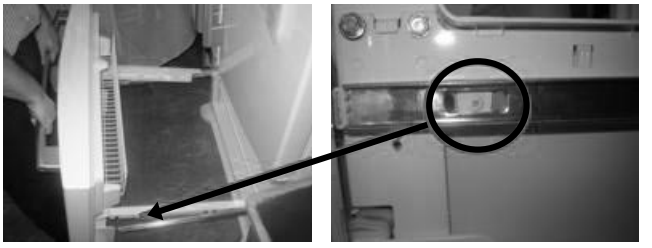
Step 2) Insert the rail into the right side gear. Gears do **not** need to be perpendicular to each other.

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).

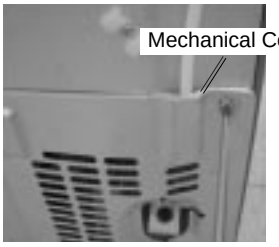


Step 7) Reinstall the lower basket, and close the freezer door.

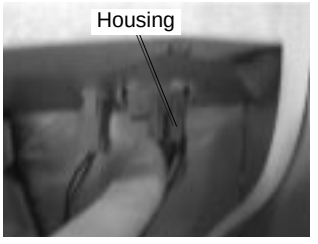
## 8-21. WATER VALVE DISASSEMBLY METHOD

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

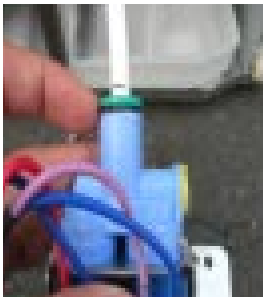
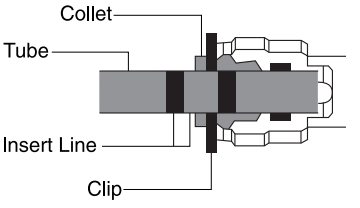

2). Separate the mechanical cover and valve screw.



3) Separate the housing and pull out the valve.

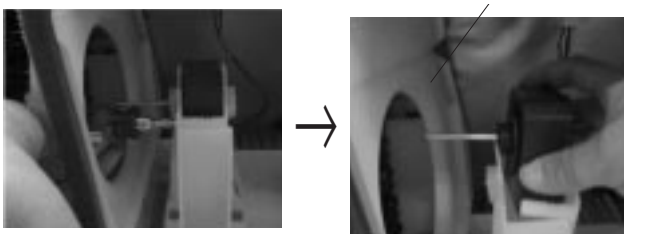


4) Lay a dry towel on the floor and get ready to spill water from the water filter. Pull out the cilp. Then press te the collet to separate the tube from the connector and pour out the water until emptied.

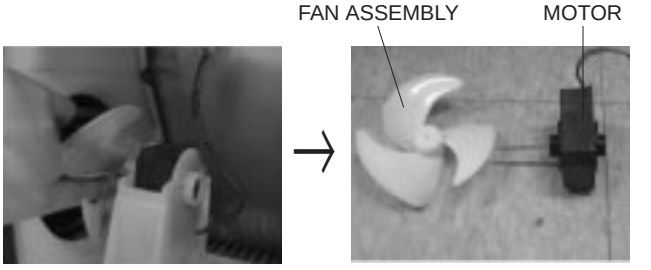




## 8-22. FAN AND FAN MOTOR DISASSEMBLY METHOD

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

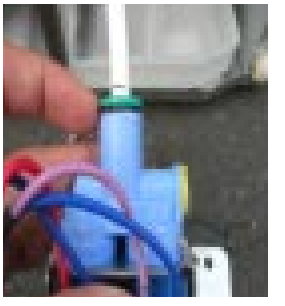
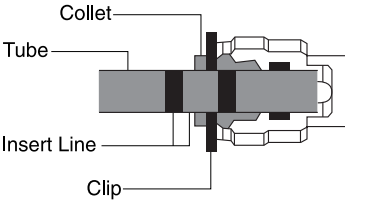



2) Pull and separate the FAN ASSEMBLY and MOTOR turning counterclockwise based on the MOTOR SHAFT.




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

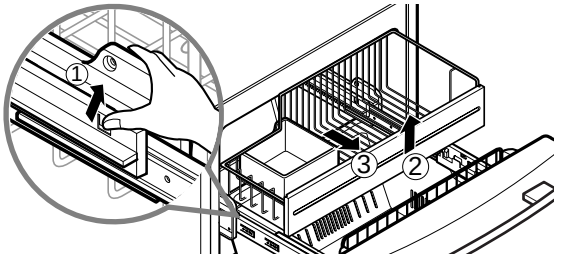
1. Be careful not to bend the tube during assembly.
2. Press the WATER DISPENSER button until water pours out and check for leakage in the CONNECTOR TUBE (It differs by the water pressure but usually takes about 2 minutes for the wayer to drain.)

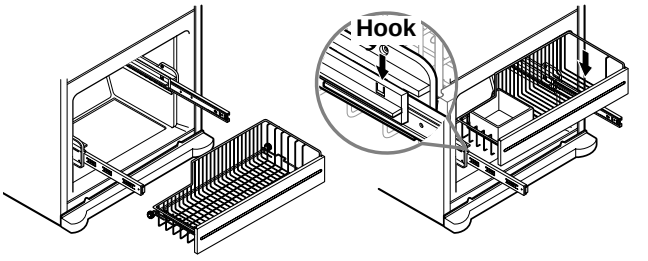
### 8-23 PULL OUT DRAWER

To separate the drawer, push the front left and right hooks in ① direction to pull up and remove.

Then gently lift the gear part of rear left and right side of the drawer and pull it out in ③ direction.




To install, reposition the gear part of rear left and right side of the drawer after pulling out both rails as much as possible, and gently push down both left and right side while checking the hook on the front part.



# 9. PCB ASSEMBLY

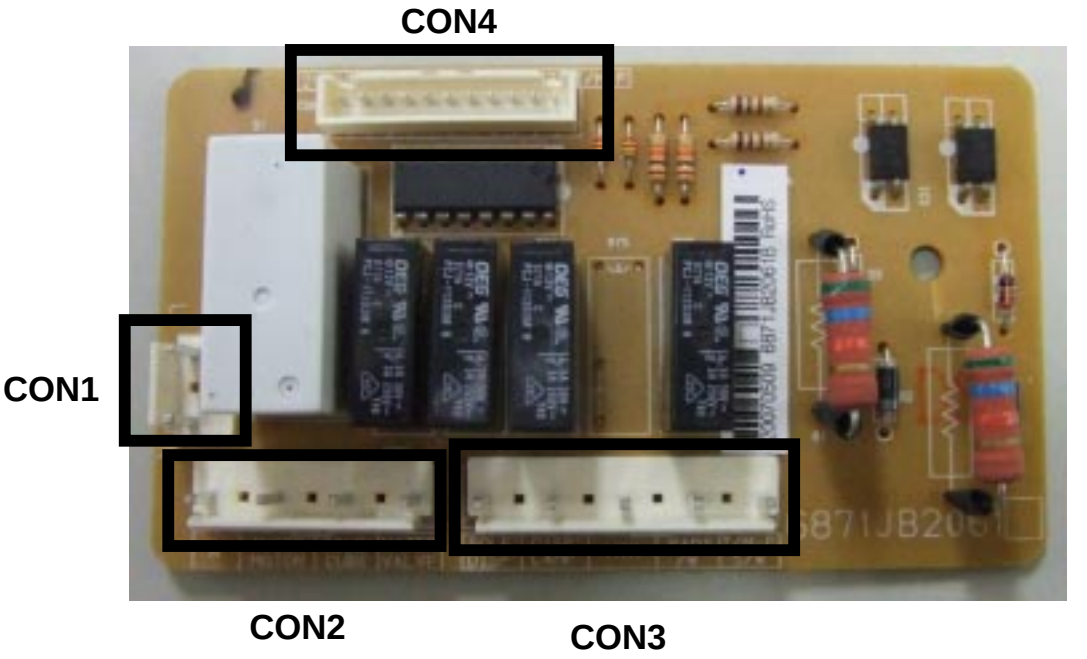
### 9-1. Main PCB Assembly

**6871JB1431 (by July 2007)**

**EBR34917102 (from Aug 2007)**

**9-2. Display and Dispenser Drive PCB Assembly**


**Display PCB**

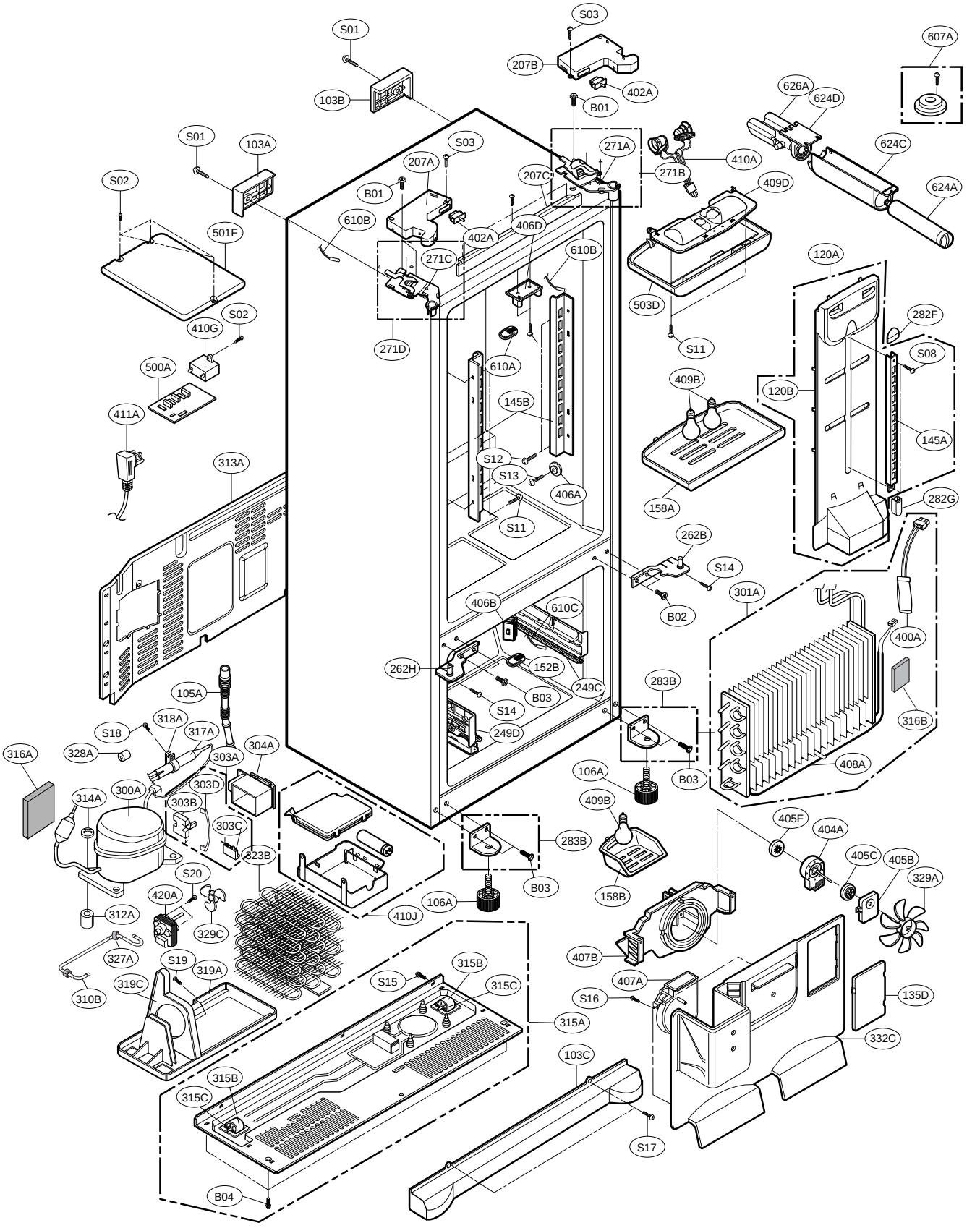



**Dispenser PWB**

# 10. EXPLODED VIEW

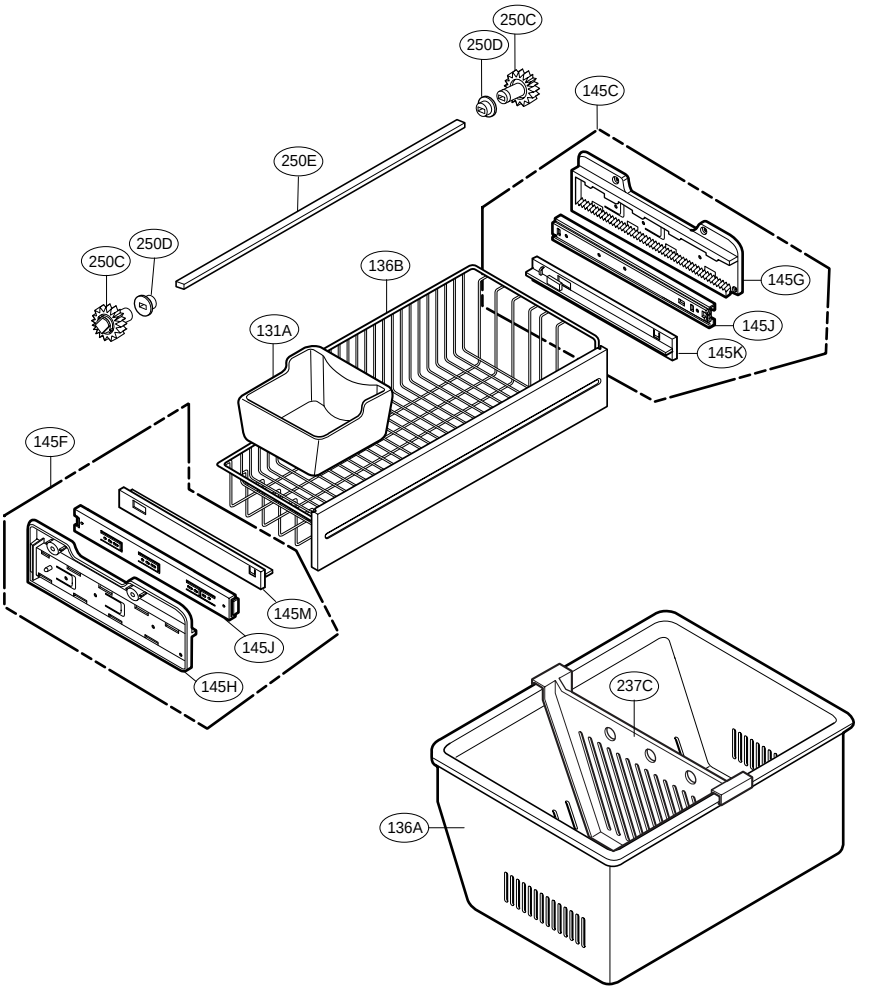
## CASE PARTS

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



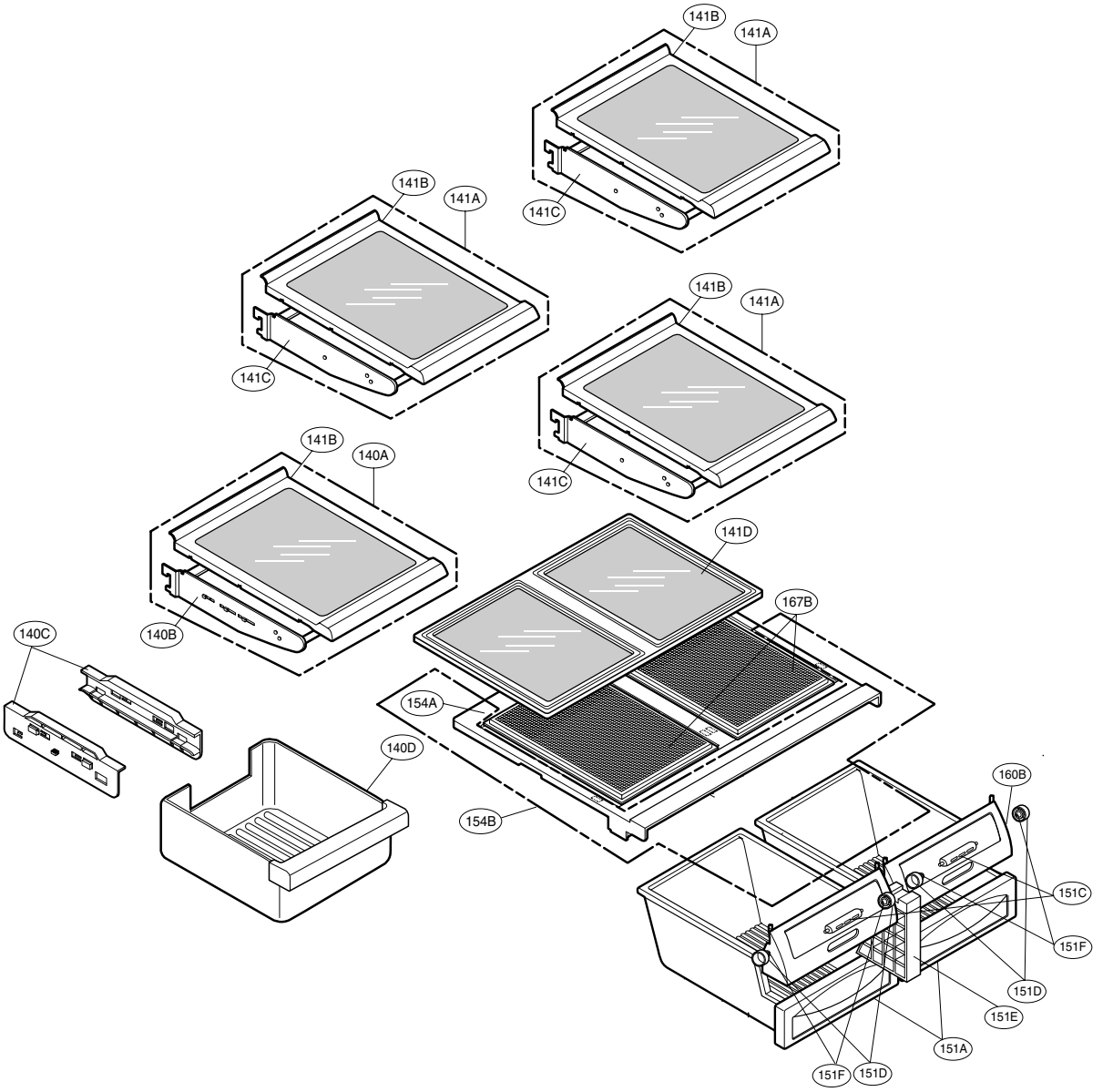
# FREEZER PARTS

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



# REFRIGERATOR PARTS

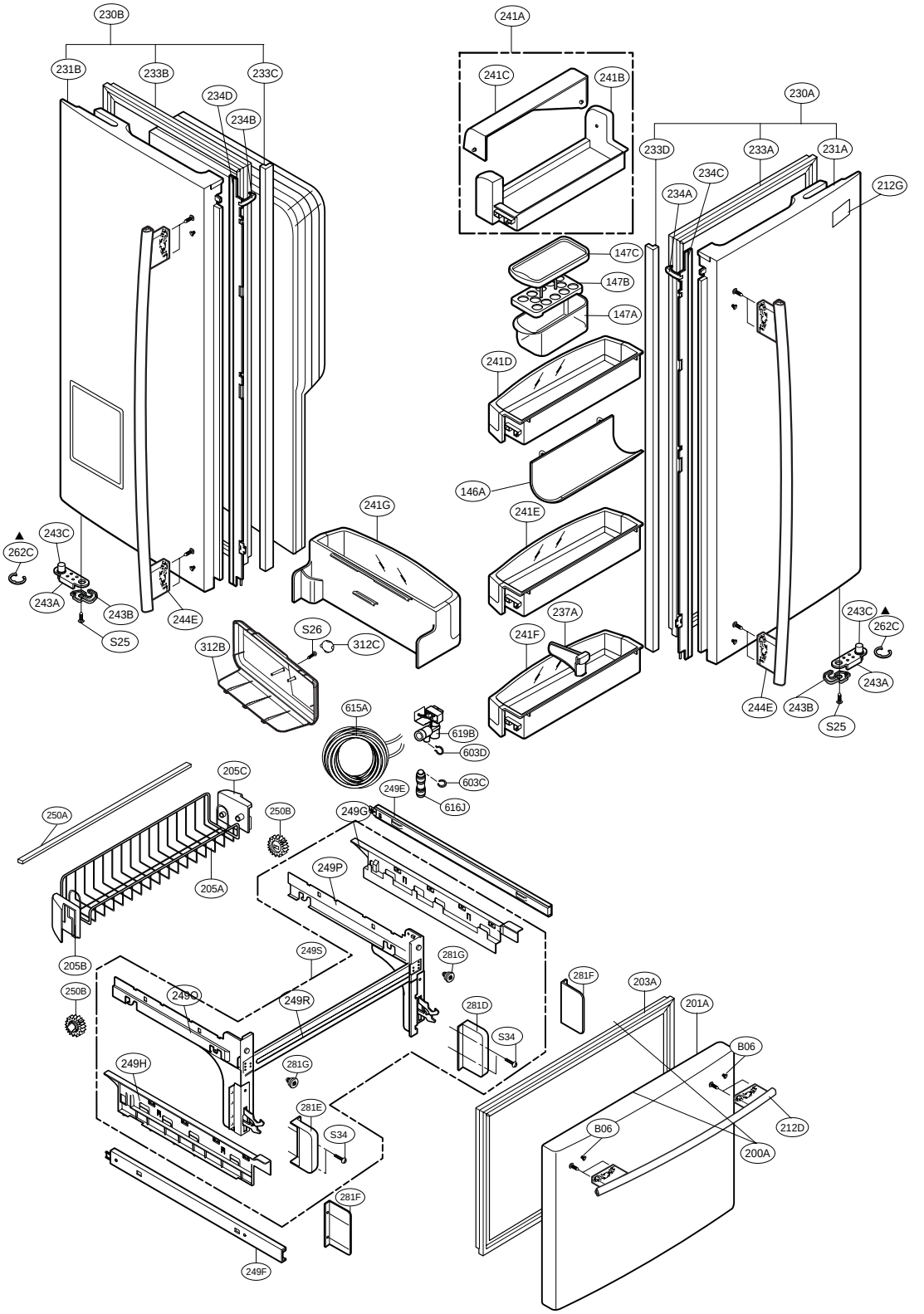
CAUTION: Use the part number to order part, not the position number.




* : on some models

# DOOR PARTS

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

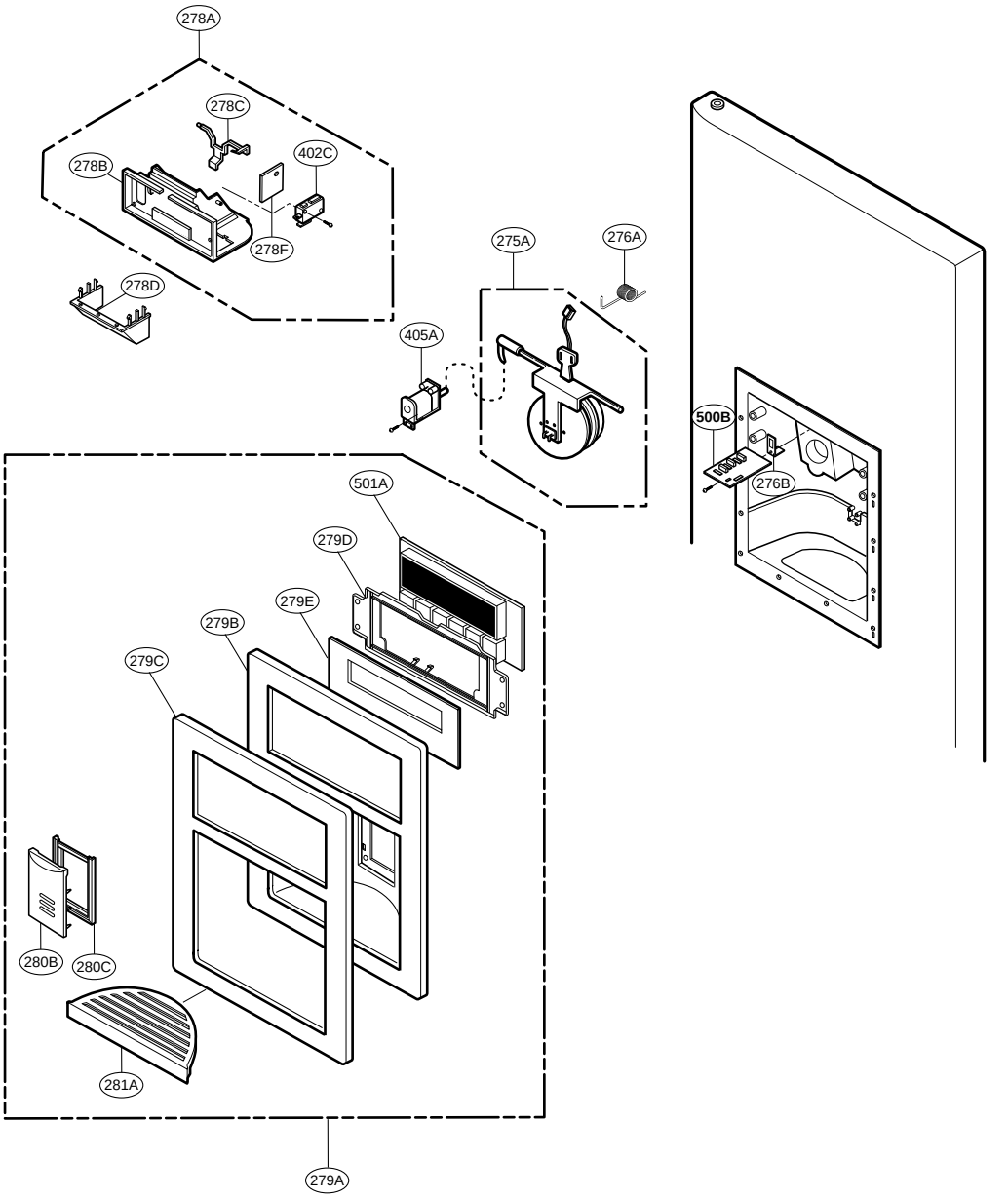



⋆ : on some models

▲ only for the service

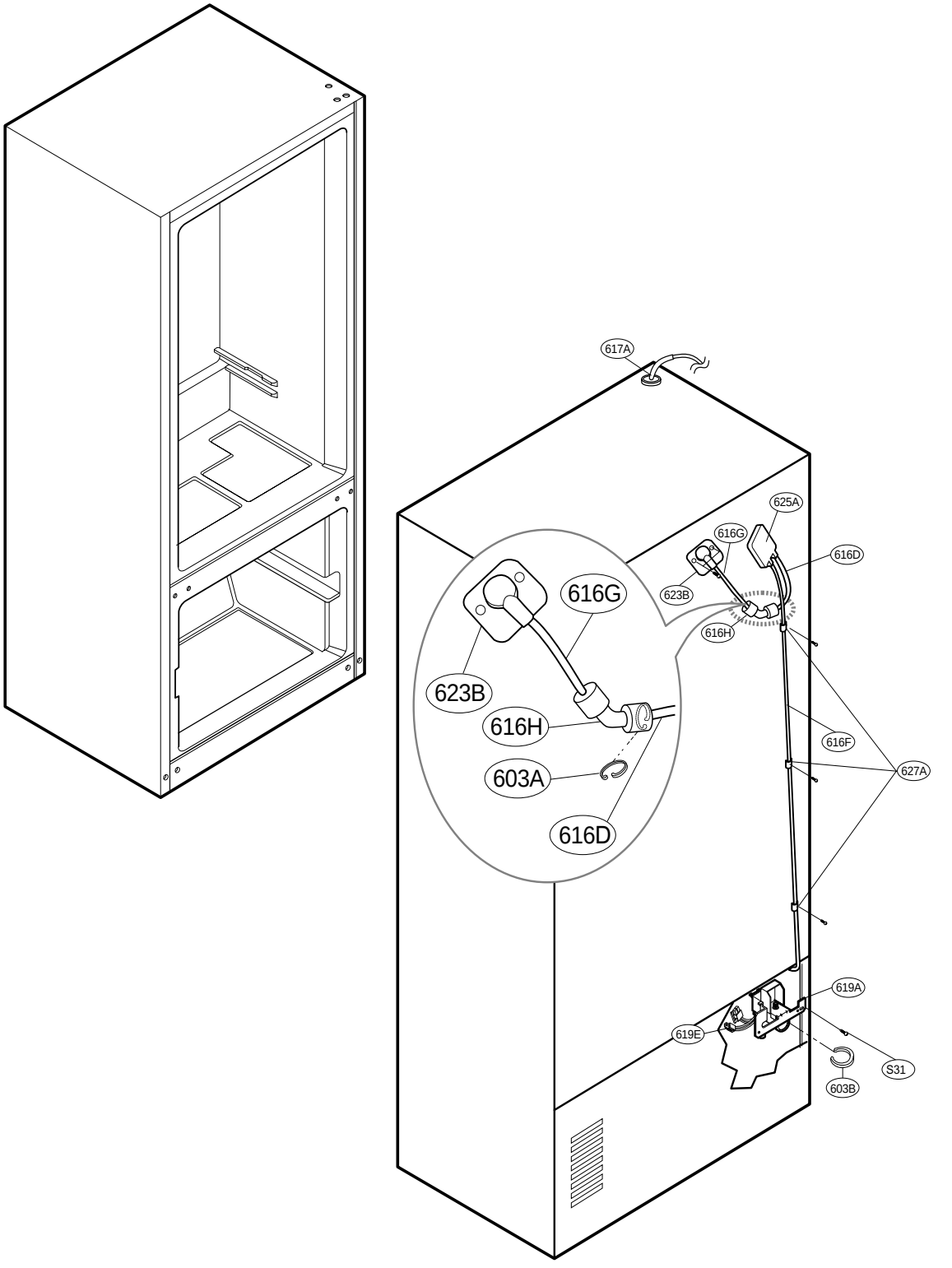
# DISPENSER PARTS

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



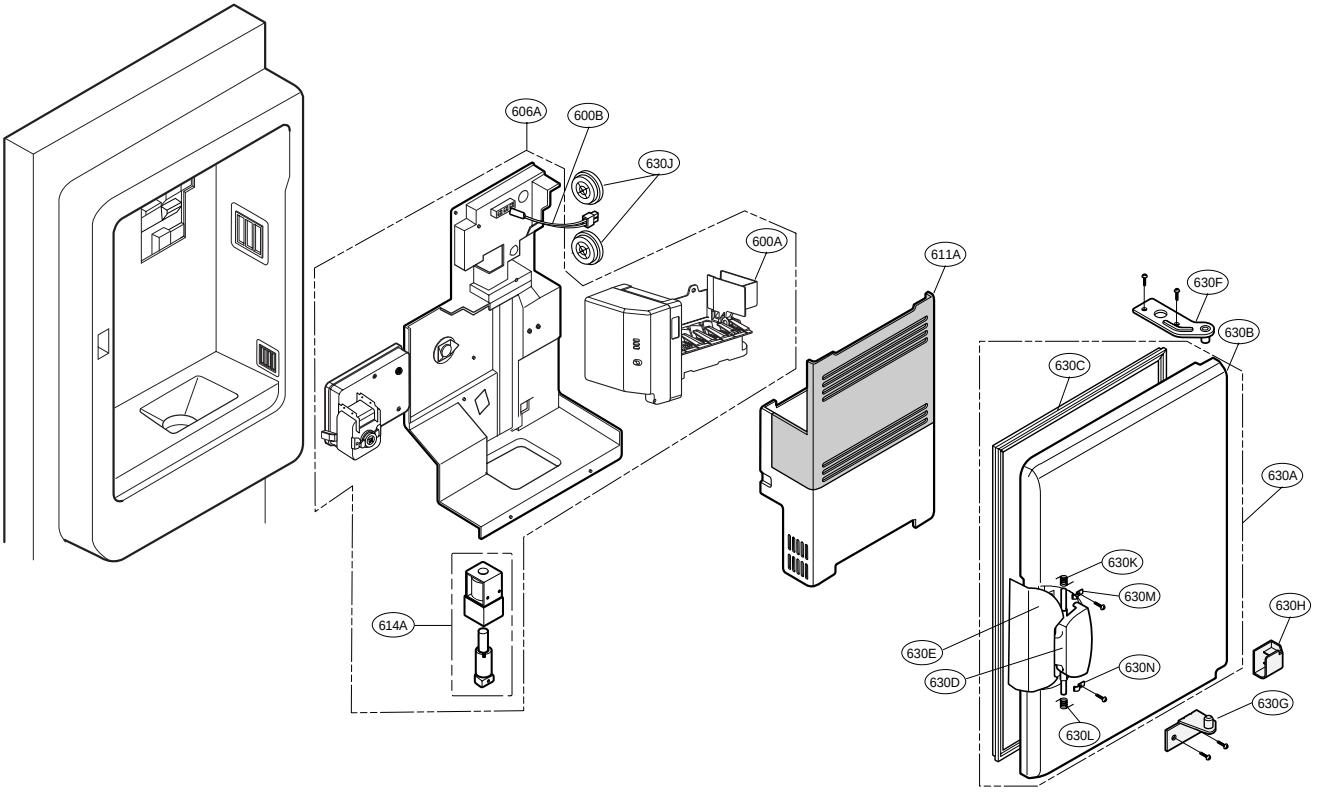
# ICE and ICEMAKER PARTS

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



# ICE BIN PARTS

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



LG Electronics Inc.

P/No. 3828JL8795A

APR., 2006 Printed in Korea