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

MODEL : LFX28977ST /01
LFX28977WB /01
LFX28977SW /01

REFRIGERATOR
SERVICE MANUAL
**ENC (Engineering Change Number)**

LFX28977 /01

<table>
<thead>
<tr>
<th>Loc No.</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>503F</td>
<td>Cover Assembly, Lamp</td>
</tr>
<tr>
<td>120A</td>
<td>Duct Assembly, Multi</td>
</tr>
<tr>
<td>409E</td>
<td>LED Assembly</td>
</tr>
<tr>
<td>409J</td>
<td>LED Assembly</td>
</tr>
<tr>
<td>319C</td>
<td>Guide, Fan</td>
</tr>
<tr>
<td>319A</td>
<td>Tray, Drip</td>
</tr>
</tbody>
</table>
SAFETY PRECAUTIONS

Please read the following instructions before servicing your refrigerator.

1. Unplug the power before handling any electrical components.
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

### 28 cu.ft.

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>SPECIFICATIONS</th>
<th>ITEMS</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOOR DESIGN</td>
<td>Side Rounded</td>
<td>VEGETABLE TRAY</td>
<td>Clear Drawer Type</td>
</tr>
<tr>
<td>DIMENSIONS (inches)</td>
<td>35 3/4 X 35 3/8 X 69 3/4 (WXDXH)</td>
<td>COMPRRESSOR</td>
<td>Linear</td>
</tr>
<tr>
<td>NET WEIGHT (pounds)</td>
<td>324(28cu.ft.)</td>
<td>EVAPORATOR</td>
<td>Fin Tube Type</td>
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<tr>
<td>COOLING SYSTEM</td>
<td>Fan Cooling</td>
<td>CONDENSER</td>
<td>Wire Condenser</td>
</tr>
<tr>
<td>TEMPERATURE CONTROL</td>
<td>Micom Control</td>
<td>REFRIGERANT</td>
<td>R-134a (140 g)</td>
</tr>
<tr>
<td>DEFROSTING SYSTEM</td>
<td>Full Automatic</td>
<td>LUBRICATING OIL</td>
<td>ISO10 (280 ml)</td>
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<tr>
<td>HEATER DEFROST</td>
<td></td>
<td>DEFROSTING DEVICE</td>
<td>SHEATH HEATER</td>
</tr>
<tr>
<td>DOOR FINISH</td>
<td>Embossed Metal, VCM, Stainless</td>
<td>LAMP</td>
<td>LED Module(24)</td>
</tr>
<tr>
<td>HANDLE TYPE</td>
<td>Bar</td>
<td>REFRIGERATOR FREEZER</td>
<td>LED Module(12)</td>
</tr>
<tr>
<td>INNER CASE</td>
<td>ABS Resin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INSULATION</td>
<td>Polyurethane Foam</td>
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### DIMENSIONS

<table>
<thead>
<tr>
<th>Description</th>
<th>LFX28977** /01</th>
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</thead>
<tbody>
<tr>
<td>Depth w/ Handles</td>
<td>A 35 3/8 in</td>
</tr>
<tr>
<td>Depth w/ Handles</td>
<td>B 32 7/8 in</td>
</tr>
<tr>
<td>Depth w/o Door</td>
<td>C 29 in</td>
</tr>
<tr>
<td>Depth (Total with Door Open)</td>
<td>D 47 5/8 in</td>
</tr>
<tr>
<td>Height to Top of Case</td>
<td>E 68 3/8 in</td>
</tr>
<tr>
<td>Height to Top of Door Hinge</td>
<td>F 69 3/4 in</td>
</tr>
<tr>
<td>Width</td>
<td>G 35 3/4 in</td>
</tr>
<tr>
<td>Width (door open 90 deg. w/o handle)</td>
<td>H 39 1/4 in</td>
</tr>
<tr>
<td>Width (door open 90 deg. w/ handle)</td>
<td>I 44 1/4 in</td>
</tr>
</tbody>
</table>
2. PARTS IDENTIFICATION

1. ADJUSTABLE REFRIGERATOR SHELVING
   The refrigerator compartment shelves are adjustable to allow flexibility for storage needs.

2. GALLON STORAGE BINS
   Three interchangeable bins can be arranged to suit your storage needs.

3. REMOVABLE ICE STORAGE BIN
   The ice storage bin can be removed to fill ice buckets, coolers, or pitchers.

4. LED INTERIOR LAMPS
   Two separate LED arrays light the freezer and refrigerator interiors.

5. SHORT N'TALL BIN

6. FIXED DOOR BIN
3. DISASSEMBLY

3-1 REMOVING AND REPLACING REFRIGERATOR DOORS

- Removing Refrigerator Door
  ▲ CAUTION: Before you begin, unplug the refrigerator. Remove food and bins from doors.
  ▶ Left Door - FIG. 2
  1. Disconnect water supply tube by pushing back on the disconnect ring (4). - FIG. 1
  2. Open door. Loosen top hinge cover screw (1). Use flat tip screwdriver to pry back hooks on front underside of cover (3). Lift up cover.
  3. Disconnect door switch wire harness (2). Remove cover.
  4. Pull out the tube.
  5. Disconnect the three wire harnesses (5). Remove the grounding screw (6).
  6. Rotate hinge lever (7) counterclockwise. Lift top hinge (8) free of hinge lever latch (9).
  ▲ CAUTION: When lifting hinge free of latch, be careful that door does not fall forward.
  7. Place door, inside facing up, down onto a non-scratching surface.
  ▶ Right Door - FIG. 3
  1. Open door. Loosen top hinge cover screw (1). Lift up cover (3).
  2. Disconnect door switch wire harness (2). Remove cover.
  3. Disconnect wire harness (5).
  4. Rotate hinge lever (6) clockwise. Lift top hinge (7) free of hinge lever latch (8).
  ▲ CAUTION: When lifting hinge free of latch, be careful that door does not fall forward.
  5. Lift door up from middle hinge pin (9) door.
  6. Place door, inside facing up, down onto a non-scratching surface.
3-2 DOOR

Door Gasket Removal

1. Remove door frame cover

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

2. Remove gasket bracket clips

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

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

Door Gasket Replacement

1. Insert gasket bracket clips

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

2. Insert gasket into channel

1) Snap gasket assembly into the door bracket.

3. Remove gasket

Pull gasket free from gasket channel on the three remaining sides of door.
2) Press gasket into channels on the three remaining sides of door.

3. Replace door frame cover
Starting at top of cover and working down, snap cover back into door.

3-3 Door Alignment
If the space between your doors is uneven, follow the instructions below to align the doors:
Remove the Base Grille. Turn the leveling legs (CCW) to raise or (CW) to lower the height of the front of the refrigerator using a flatblade screwdriver or 11/32" wrench. Use the wrench (included with the User Manual) to adjust the bolt in the door hinge to adjust the height. (CCW to raise or CW to lower the height.)

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

Figure 6
Figure 7
Figure 8
Figure 9
3-5 DEFROST CONTROL ASSEMBLY

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

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

3-6 LAMP

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

3-6-1 Refrigerator Compartment Lamp

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

3) To remove the case lamp and cover lamp, release another 2 screws as following picture.

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

4) To remove the LED Assembly, open the Hook part to pull it out as shown in the following picture.

3-6-2 Freezer Compartment Lamp

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

* Ice Fan Scroll Assembly Replacement

1) Remove the plastic guide for slides on left side by unscrewing phillips head screws.
2) Pull out the cover sensor to disassemble using tools shown in the figure.
3) Pull out the cover grille to disassemble using tools shown in the figure.
4) Put your hand into the inside of grille to disassemble shown in the figure.
5) Disconnect wire harness of the grille
6) Remove the scroll assembly by loosen all screws
3-7 MULTI DUCT
1. Remove the upper and lower Caps by using a flat screwdriver, and remove 2 screws. (Figure 16)
2. Disconnect the lead wire on the bottom position.

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

3-8 MAIN PWB
1) Loosen the 3 screws on the PWB cover.

2) Remove the PWB cover

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

3-9 DISPENSER
1) Pull out the darin

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

3-10 DISPLAY PCB
As shown below, remove 1 case PCB fixing screw. Remove the display PCB fixing screw.

3-11 ICE BUTTON ASSEMBLY
1) Remove the screw fixing the button lever.
2) Push the spring from the hanging hook to remove it.
3) Apply some pressure to the rib in direction and lift the button in direction.

3-12 FUNNEL REPLACEMENT
Pull down and forward.
3-13 WATER BUTTON ASSEMBLY
1) Remove screws.
2) Grasp the Button assembly and lift up.

3-14 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.

3-15 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.

3-16 ICEMAKER ASSEMBLY
1) Loosen two screws as shown in the first picture.
2) Disconnect the wire harness & ground screw replace the icemaker assembly in the reverse order of removal.
3) It separates a ground connection screw.
3-17 SUB PWB FOR WORKING DISPENSER
1) Loosen the screw on the sub PWB.
2) Pull the sub PWB down.
3) Disconnect the wire harness and replace the sub PWB in the reverse order of removal.

3-18 CAP DUCT MOTOR REPLACEMENT
1) Separate the Housing of the Cap Duct Motor.
2) Unscrew 3 screws to disassemble the motor.
3) When replacing to a new Motor, always hold the Duct Door with your hand to install the Motor.
4) Assemble on the screws.
5) Contract the Housing.
3-19 AUGER MOTOR COVER

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

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

3) Disconnect wire harness of motor cover assembly. There is a auger motor on the back, as shown in the picture.
3-20 HOW TO REMOVE A ICE BIN
1) Grip the handles, as shown in the picture.
2) Lift the lower part slightly.
3) Take the Ice Bin out slowly.

3-21 HOW TO INSERT A ICE BIN
1) Insert the Ice Bin, slightly tilting it to avoid touching the Icemaker. (especially, icemaker lever)
※ Insert the ice bin carefully avoiding contacting the automatic shut off arm.
3-22 HOW TO REMOVE AND REINSTALL THE PULLOUT DRAWER

3-22-1 Follow Steps to Remove

Step 1) Open the freezer door.  
Step 2) Remove the lower basket.

Step 3) Remove the two screws from the guide rails (one from each side).  
Step 4) Lift the freezer door up to unhook it from the rail support and remove. Pull both rails to full extension.

Step 5) First: Remove the gear from the left side first by releasing the tab behind the gear, place a screwdriver between the gear and the tab and pull up on the gear.  
Second: Remove the center rail.  
Third: Remove the gear from the right side by following the same steps for the left side.

NOTE: THIS TAB MUST BE PUSHED IN TO RELEASE THE GEAR.
3-22-2 Follow Steps to Reinstall

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

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

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

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

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

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

Step 7) Reinstall the lower basket, and close the freezer door.
3-23. 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 Clip. Then press the collet to separate the tube from the connector and pour out the water until emptied.

3-24. FAN AND FAN MOTOR DISASSEMBLY METHOD
1) Using a short screwdriver, loosen one SCREW in DRAIN PIPE ASSEMBLY and one connected to the MOTOR COVER.

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

The assembly is in the reverse order of the disassembly and take special care for the following details.
1. Be careful not to bend the tube during assembly.
2. Press the WATER DISPENSER button until water pours out and check for leakage in the CONNECTOR TUBE (it differs by the water pressure but usually takes about 2 minutes until water pours out.)
3-25 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.
### 4. ADJUSTMENT

#### 4-1 COMPRESSOR

##### 4-1-1 Role
The compressor intakes low temperature and low pressure gas from the evaporator of the refrigerator and compresses this gas to high-temperature and high-pressure gas. It then delivers the gas to the condenser.

##### 4-1-2 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.

##### 4-1-3 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 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 contaminate the cylinder and may cause noise, improper operation or even cause it to lock up.

#### 4-2 PTC-STARTER

##### 4-2-1 Composition of PTC-Starter
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.

##### 4-2-2 Role of PTC- Starter
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. The starting operation, the PTC allows current flow to both the start winding and main winding.

#### 4-3-3 PTC-Applied Circuit Diagram

##### Starting Method for the Motor

![PTC-Applied Circuit Diagram](PTC-Applied_Circuit_Diagram.png)

- **4-2-4 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.

- **4-2-5 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.

##### 4-2-6 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, PTC 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.
4-3 OLP (OVERLOAD PROTECTOR)

4-3-1 Definition of OLP

(1) 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.

4-3-2 Role of the OLP

(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 Adjust Screw of the OLP in any way.

4-4 TO REMOVE THE COVER PTC

(1) Remove the Cover Back M/C.

(2) Disconnect two housing upper side of comp connected in.

(3) Loosen two screws on comp base.

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Figure 19:

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<table>
<thead>
<tr>
<th>Part</th>
<th>Name</th>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Base, phenolic</td>
<td>(UL 94 V-0 rated)</td>
<td>Movable arm support, plated steel</td>
</tr>
<tr>
<td>2</td>
<td>Heater support, plated steel</td>
<td></td>
<td>Stationary contact support, plated steel</td>
</tr>
<tr>
<td>3</td>
<td>Heater, resistance alloy</td>
<td></td>
<td>Heater, resistance alloy</td>
</tr>
<tr>
<td>4</td>
<td>Disc, thermostatic alloy</td>
<td></td>
<td>Heater, resistance alloy</td>
</tr>
<tr>
<td>5</td>
<td>Movable arm, spring temper copper alloy</td>
<td></td>
<td>Stationary contact, silver on copper</td>
</tr>
<tr>
<td>6</td>
<td>Contact, movable, silver on copper</td>
<td></td>
<td>Contact, movable, silver on copper</td>
</tr>
<tr>
<td>7</td>
<td>Slug, plated steel</td>
<td></td>
<td>Slug, plated steel</td>
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<tr>
<td>8</td>
<td>Cover, polyester</td>
<td>(UL 94 V-0 rated)</td>
<td>Pin connector, plated copper alloy</td>
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<td>9</td>
<td>Quick-connect terminal, brass, DIN 46344</td>
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<td>Quick-connect terminal, brass, DIN 46344</td>
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<tr>
<td>10</td>
<td></td>
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<td>Quick-connect terminal, brass, DIN 46344</td>
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</table>
5. CIRCUIT DIAGRAM
6. TROUBLESHOOTING

6-1. Error Code Summary

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

NOTE) 3 hours before the error: Press the Ice Plus button and Freezer button simultaneously.
3 hours after the error: All errors, except for “Er rt” “Er SS” error, are displayed.

<table>
<thead>
<tr>
<th>NO</th>
<th>Error Detection Category</th>
<th>Error Display</th>
<th>Error Generation Factors</th>
<th>Remark</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Normality</td>
<td></td>
<td>None</td>
<td>Normal operation of Display</td>
</tr>
<tr>
<td>2</td>
<td>Freezer Sensor Error</td>
<td>Er FS</td>
<td>Short or Disconnection of Freezer Sensor</td>
<td></td>
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<tr>
<td>3</td>
<td>Refrigerator Sensor Error</td>
<td>Er rS</td>
<td>Short or Disconnection of Refrigerator Sensor</td>
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<tr>
<td>4</td>
<td>Defrosting Sensor Error</td>
<td>Er dS</td>
<td>Short or Disconnection of Defrosting Sensor</td>
<td>Check each sensor and its connector.</td>
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<tr>
<td>5</td>
<td>Icing Sensor Error</td>
<td>Er iS</td>
<td>Short or Disconnection of Icing Sensor</td>
<td></td>
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<tr>
<td>6</td>
<td>Pantry sensor error</td>
<td>Er SS</td>
<td>Short or Disconnection of Pantry Sensor</td>
<td></td>
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<tr>
<td>7</td>
<td>Room Temp Sensor Error</td>
<td>Er rt</td>
<td>Short or Disconnection of Room temp.sensor</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Poor Defrosting</td>
<td>Er dH</td>
<td>Even though it is passed 1 hour since then Defrosting, if Defrosting sensor is not over 46°F(8°C), it is caused</td>
<td>Temperature Fuse Disconnection, Heater disconnection, DRAIN Jam, Poor Relay for Heater</td>
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<tr>
<td>9</td>
<td>Abnormality of BLDC FAN Motor for Ice Making</td>
<td>Er IF</td>
<td>It is caused when feedback signal isn’t over 65 seconds during BLDC FAN motor operating</td>
<td>Poor BLDC Motor connection, DRIVE IC, and TR</td>
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<td>Er CF</td>
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<td>Poor BLDC Motor connection, DRIVE IC, and TR</td>
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<tr>
<td>13</td>
<td>Communication Error</td>
<td>Er CO</td>
<td>Communication Error between Micom of Main PCB and Display Micom</td>
<td>Poor Communication connection, Poor TR of Transmitter and Receiver Tx/Rx between display and main board.</td>
</tr>
</tbody>
</table>
6-2. Troubleshooting With Error

**Freezer Sensor Error**

Is Er-FS displayed?
- Yes
- No

Is the connection loose?
- Yes
- No

**Power Off**
Tip: To protection of MICOM

**Connect CON6 and Power ON**

If the ER-FS appears when you press FREEZER key and ICE PLUS Key at the same time, Replace the main PWB. (Position No:500A)
Otherwise, explain to the customer!

Disconnect CON6 and measure the value. Is resistance value between pins 11 & 12 of CON6 as below? (BL/WH to BL/WH)
- Pin11
- Pin12

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin11 to pin12</td>
<td>1.4 ~ 120 Ω</td>
</tr>
</tbody>
</table>

Replace F-sensor (Position No: 610C)
**Refrigerator Sensor Error**

- Is Er-rS displayed?
  - Yes
  - No

- 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)
  - Pin9 to pin10
  - Result: 6 ~ 300 Ω
  - Yes
  - Reconnect CON6 and Power ON
  - No
    - Replace R-sensor (Position No: 610B)

If the ER-rS appears when you press FREEZER key and ICE PLUS Key at the same time, Replace the main PWB. (Position No: 500A)
Otherwise, explain to the customer!
Defrost Sensor Error

Is Er-dS displayed?

Yes

No

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 1 & 2 of Housing- A as below? (BO to BO)

Replace D-sensor (Position No : 400A)

No

Yes

Test Point

Pin1 To pin2

Result

6 ~ 300 Ω

Is resistance value between pins 7 & 8 of CON6 as below? (BN to BN)

Replace D-sensor (Position No : 400A)

No

Yes

Test Point

Pin7 to pin8

Result

6 ~ 300 Ω

Checking Open or Short of wire

If the ER-dS appears when you press FREEZER key and ICE PLUS Key at the same time, Replace the main PWB.(Position No : 500A)

Otherwise, explain to the customer!
Icing Room Sensor Error

Is Er-IS displayed? Yes

Is the connection loose? Yes

Display PWB

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

Replace the Icing-Sensor (Position No : 600B)

No

Yes

Disconnection and Power ON

Yes

Replace the Icing-Sensor (Position No : 600B)

No

Yes

Icing room Sensor Resistance

Test Point Result

pin1 To pin2 1.4 ~ 120 ㏀
Pantry Sensor Error

Is Er-SS displayed?
- No
- Yes

Is the connection loose?
- No
- Yes

Reconnect and Power ON

Checking Open or Short of wire

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin3 To pin6</td>
<td>6 ~ 300 Ω</td>
</tr>
</tbody>
</table>

Yes

Disconnect CON10 and measure the value. Is resistance value between pins 10 & 11 of CON10 as below? (WH/RD to WH/RD)
- No
- Yes

Replace Pantry-sensor

If the ER-SS appears when you press FREEZER key and ICE PLUS Key at the same time, Replace the main PWB (Position No : 500A) Otherwise, explain to the customer!

Tip : To protection of MICOM

Pin10 to pin11
- 6 ~ 300 Ω
**Defrost Heater Error**

- Is Er-dH displayed? Yes
- Is the connection loose? Yes → Reconnect
- Is the voltage value between pins 10 (BO) and 2 (BL) of CON3 115 V AC? Yes
- Enter the TEST 3 MODE
  - Reset TEST3 MODE(Normal) Is the voltage value between pins 10 (BO) and 2 (BL) of CON3 0 V AC? No → Replace MAIN PWB (Position No : 500A)
- Relay operation
  - Test Point pin2 To pin10 Result 115V
  - Yes
- Replace MAIN PWB (Position No : 500A)
Is the resistance value between pins 10 (BO) and 2 (BL) of CON3 like as below?

Pin10 BO Pin2 BL

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) To (2)</td>
<td>34 ~ 42 Ω</td>
</tr>
</tbody>
</table>

Is the connection loose?

Yes: Reconnect

No

Is the resistance value of heater like as below?

Heater Resistance

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) To (2)</td>
<td>34 ~ 42 Ω</td>
</tr>
</tbody>
</table>

Replace Heater (Position No : 408A)

No

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

Defrost Sensor Resistance

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>-30 °C</td>
<td>129.3 Ω</td>
<td>10 °C</td>
<td>19.53 Ω</td>
</tr>
<tr>
<td>-20 °C</td>
<td>76.96 Ω</td>
<td>20 °C</td>
<td>13.03 Ω</td>
</tr>
<tr>
<td>-10 °C</td>
<td>47.34 Ω</td>
<td>30 °C</td>
<td>8.896 Ω</td>
</tr>
<tr>
<td>0 °C</td>
<td>30 Ω</td>
<td>40 °C</td>
<td>6.201 Ω</td>
</tr>
</tbody>
</table>

Replace D-sensor (Position No : 400A)

No

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.

Open or Short of Fuse-M

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) BL</td>
<td>(2) BN</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) (2)</td>
<td>0 Ω</td>
</tr>
</tbody>
</table>

Replace Fuse-M (Position No : 400A)
Freezer Fan Error

Is Er-FF displayed?

Yes

Is the connection loose?

Yes

Reconnect

No

Reset and Enter the TEST 1 MODE

Is the output voltage between pin6 and pin7 of CON4 like as below?

Pin6 WH Pin7 BO

Yes

Replace MAIN PWB (Position No : 500A)

No

Feedback Voltages

Test Point Result

pin7 To pin8 1 ~ 4 V

Yes

Explain to the customer!

Does the cold-air come out of the top of the Grill Fan under Test1 mode?

Check fan motor (Connector, Frozen, Locked) and replace.

No

Replace MAIN PWB (Position No : 500A)

No

Yes
### Condenser Fan Error

- **Is Er-CF displayed?**
  - Yes
  - No

- **Is the connection loose?**
  - Yes: Reconnect
  - No

- **Reset and Enter the TEST 1 MODE**
  - Is the output voltage between pin12 and pin13 of CON4 like as below?
    - Pin12 PK Pin13 WH/RD
  - Yes
  - No

- **Condenser Fan Voltages**
  - Test Point: pin12 To pin13
  - Result: 10 ~ 16 V
  - Yes
  - No

- **Check fan motor (Connector, Locked, mouse) and replace. (Position No: 420A)**
  - Yes
  - No

- **Is the condenser fan rotate under Test1 mode?**
  - Yes
  - No

- **Is the feedback voltage between pin13 and pin14 of CON4 like as below?**
  - (from motor to main board)
  - Pin13 WH/RD
  - Pin14 SB
  - Replace MAIN PWB (Position No: 500A)
  - Yes
  - No

- **Feedback Voltages**
  - Test Point: Pin13 To pin14
  - Result: 1 ~ 4 V
  - Yes
  - No

- **Explain to the customer!**
**Icing Room Fan Error**

**Main PWB**

- **CON4**
  - **Pin 9** (RD)
  - **Pin 10** (BL)
  - **Pin 11** (BN)

**Housing Wiring Diagram**

1. **Is Er-IF displayed?**
   - **Yes**
   - **No**

2. **Is the connection loose?**
   - **Yes**
   - **Reconnect**
   - **No**

3. **Reset and Enter the TEST 1 MODE**
   - **Yes**
   - **No**

4. **Is the output voltage between pin 9 and pin 10 of CON4 like as below?**
   - **Pin 9 RD**
   - **Pin 10 BL**

5. **Icing Fan Voltages**
   - **Test Point**
     - **Pin 9 To pin 10**
   - **Result**
     - **10 ~ 16 V**
   - **Yes**

6. **Feedback Voltages**
   - **Test Point**
     - **Pin 10 To pin 11**
   - **Result**
     - **1 ~ 4 V**
   - **Yes**

7. **Check fan motor (Connector, Frozen, Locked) and replace.**

8. **Does the cold-air come out of the side duct under the Test1 Mode?**
   - **No**
   - **Yes**

9. **Is the feedback voltage between pin 10 and pin 11 of CON4 like as below?**
   - **From motor to main board**
   - **Pin 10 BL**
   - **Pin 11 BN**

10. **Replace MAIN PWB (Position No : 500A)**

**Explain to the customer!**
Refrigerator Fan Error

Is Err-F displayed?

Is the connection loose?
Reconnect

Feedback Voltages

Test Point | Result
---|---
Pin4 To pin5 | 1 – 4 V

Freezer Fan Voltages

Test Point | Result
---|---
Pin3 To pin4 | 12 – 16 V

Does the cold-air come out of the top of the main duct under Test1 mode?

Is the feedback voltage between pin4 and pin5 of CON4 like as below?

Replace MAIN PWB (Position No : 500A)

Check fan motor (Connector, Frozen, Locked) and replace.

Reset and Enter the TEST 1 MODE
Is the output voltage between pin3 and pin4 of CON4 like as below?

Pin3 BL/WH Pin4 GY

Yes

Replace MAIN PWB (Position No : 500A)

No

Yes

Pin5 YL/BK

Yes

Explain to the customer!
Communication Error

Is Er-CO displayed?

Display PWB
Is the connection loose?

Yes

Reconnect

No

Yes

Display PWB
Is the voltage between pins 3 and pin 5 of CON101?

Pin5 WH/RD  Pin3 WH/BK

Receiver fail Voltages

Test Point  Result
pin3 To pin5  0 V or 5 V

No

Yes

Replace the Display PWB (Position No : 501A)

Transmitter Voltages

Test Point  Result
pin4 To pin5  0 V or 5 V

No

Yes

Is the joint connection loose in the Hinge?

Yes

No

Reconnect

Replace the Display PWB (Position No : 501A)
MAIN PWB
Is the connection loose?

Yes
Reconnect

No

Main PWB
Is the voltage between pin 3 and pin 5 of CON5 0 V or 5 V?

Yes
Replace MAIN PWB (Position No : 500A)

No

Transmitter Voltages
Test Point
pin3 WH/RD

Result
0 V or 5 V

Receiver Voltages
Test Point
pin3 To pin4

Result
0 V or 5 V

After plug in, if Er-CD is disappeared, explain to the customer!
6-3. Troubleshooting Else

CUBE Mode doesn’t work

Dispenser PWB

Is the connection loose? Reconnect

Yes

In CUBE Mode, is the voltage between pin 3 and pin 12 of CON2 like as below, while pushing the ICE lever switch?

No

Replace Dispenser PWB (Position No: 500C)

Relay open of cube solenoid

<table>
<thead>
<tr>
<th>Lever switch</th>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pushing</td>
<td>pin 3 to pin 12</td>
<td>115 V</td>
</tr>
<tr>
<td>Normal</td>
<td>pin 3 to pin 12</td>
<td>0 - 2V</td>
</tr>
</tbody>
</table>

Yes
In CUBE Mode, is the voltage between pin3 and pin4 of CON2 like as below, while pushing the ICE lever switch?

Output voltage of auger motor

<table>
<thead>
<tr>
<th>Lever switch</th>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pushing</td>
<td>pin3 To pin4</td>
<td>115 V</td>
</tr>
<tr>
<td>Normal</td>
<td>pin3 To pin4</td>
<td>0 ~ 2 V</td>
</tr>
</tbody>
</table>

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

Resistance of Auger Motor

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) To (2)</td>
<td>2.38 ~ 4.02 Ω</td>
</tr>
</tbody>
</table>

In CUBE Mode, is the voltage between pin12 and pin13 of CON1 like as below, while pushing the ICE lever switch?

Output voltage of dispenser cap duct

<table>
<thead>
<tr>
<th>Lever switch</th>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pushing</td>
<td>pin12 To pin13</td>
<td>12 V</td>
</tr>
<tr>
<td>Normal</td>
<td>pin12 To pin13</td>
<td>0 V</td>
</tr>
</tbody>
</table>

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

Resistance of Cube solenoid

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) To (2)</td>
<td>32 ~ 40 Ω</td>
</tr>
</tbody>
</table>

Yes

No

Replace Dispenser PWB (Position No: 500C)

Replace Auger Motor (Position No: 606A)

Replace Cube Solenoid (Position No: 614A)
Is the condition of the micro switch like as below?

<table>
<thead>
<tr>
<th>Status</th>
<th>Tester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Infinity</td>
</tr>
<tr>
<td>Push the Lever</td>
<td>0 Ω</td>
</tr>
</tbody>
</table>

Replace Micro Switch (Position No: 402C)

Yes

After plug in, explain to the customer!
Crush Mode Doesn’t work

Dispenser PWB

Is the connection loose? Reconnect

Yes

In Crush Mode, Is the voltage between pin 3 and pin 4 of CON2 like as below, while pushing theICE lever switch?

No

Replace Dispenser PWB (Position No : 500C)

Output voltage of auger motor

<table>
<thead>
<tr>
<th>Lever switch</th>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pushing</td>
<td>pin 3 To pin 4</td>
<td>115 V</td>
</tr>
<tr>
<td>Normal</td>
<td>pin 3 To pin 4</td>
<td>0 – 2V</td>
</tr>
</tbody>
</table>

- Pin 3 WH
- Pin 4 SB
In Crush Mode, is the voltage between pin12 and pin13 of CON1 like as below, while pushing the ICE lever switch?

Output voltage of dispenser cap duct

<table>
<thead>
<tr>
<th>Lever switch</th>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pushing</td>
<td>pin12 To pin13</td>
<td>12 V</td>
</tr>
<tr>
<td>Normal</td>
<td>pin12 To pin13</td>
<td>0 V</td>
</tr>
</tbody>
</table>

Yes

Replace Dispenser PWB (Position No: 500C)

Is the condition of the micro switch like as below?

<table>
<thead>
<tr>
<th>Status</th>
<th>Tester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Infinity</td>
</tr>
<tr>
<td>Push the Lever</td>
<td>0 Ω</td>
</tr>
</tbody>
</table>

Yes

Replace Micro Switch (Position No: 402C)

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

Resistance of Auger Motor

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) To (2)</td>
<td>2.38 ~ 4.02 Ω</td>
</tr>
</tbody>
</table>

Yes

Replace Auger Motor (Position No: 606A)

After plug in, explain to the customer!
Water Mode Doesn’t work

Dispenser PWB

Is the connection loose? 
Reconnect

Yes

In Water Mode, 
Is the voltage between pin2 and pin11 of CON2 in dispenser PWB like as below, while pushing the Water lever switch?

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>pin2 To pin11</td>
<td>115 V</td>
</tr>
<tr>
<td>pin2 To pin11</td>
<td>0 V</td>
</tr>
</tbody>
</table>

No

Replace Dispenser PWB 
(Position No : 500C)

Output voltage of door water valve

Yes

No

Dispenser PWB

Main PWB

Door Water Valve

Machine Room Water Valve

Wiring diagram
In Water Mode, is the voltage between pin2 and pin11 of CON3 in main PWB like as below, while pushing the level switch?

Output voltage of machine room water valve

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin2 To pin11</td>
<td>115 V</td>
</tr>
</tbody>
</table>

Yes

Replace MAIN PWB (Position No : 500A)

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

Checking resistance of Second-valve

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) To (2)</td>
<td>360 ~ 420 Ω</td>
</tr>
</tbody>
</table>

Yes

Replace Second Water-valve (Position No : 619B)

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

Checking resistance of First-valve

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) To (2)</td>
<td>360 ~ 420 Ω</td>
</tr>
</tbody>
</table>

Yes

Replace First Water-valve (Position No : 619A)

After plug in, explain to the customer!
Freezer-LED Module Doesn’t work

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

Replace Door switch (Position No: 406B)

Is the connection loose?

Reconnect

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

Replace MAIN PWB (Position No: 500A)

Voltage of Refrigerator LED

<table>
<thead>
<tr>
<th>Door</th>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don’t Care</td>
<td>pin1 To pin2</td>
<td>12 V</td>
</tr>
</tbody>
</table>

Status | Tester
-------|--------
Normal | 0 Ω    
Push the Switch | Infinity
Is the voltage between pin 1 and pin 2 of Freezer LED Module Housing?

1. Check the harness open or short
2. Replace F LED Module

Yes

No

Voltage of Freezer LED

<table>
<thead>
<tr>
<th>Door</th>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't care</td>
<td>pin 1 To pin 2</td>
<td>12 V</td>
</tr>
</tbody>
</table>

Pin2 BK Pin1 RD

- 44 -
Refrigerator-LED Module Doesn't work

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

- Yes
- No

Replace Door switch (Position No: 402A)

Is the connection loose?

- Yes
- No

Reconnect

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

- Replace MAIN PWB (Position No: 500A)
- No

CON4

Voltage of Refrigerator LED

<table>
<thead>
<tr>
<th>Door</th>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't care</td>
<td>pin1 To pin2</td>
<td>12 V</td>
</tr>
</tbody>
</table>

CON4
Is the voltage between pin 1 and pin 2 of Refrigerator LED Module Housing?

- Check the harness open or short
- Replace R LED Module

Yes
No

Pin1 RD
Pin2 BK

Voltage of Refrigerator LED

<table>
<thead>
<tr>
<th>Door</th>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't care</td>
<td>pin1 To pin2</td>
<td>12 V</td>
</tr>
</tbody>
</table>

Is the connection loose? Reconnect

Yes
No

CON5

Voltage of Door S/W Signal

<table>
<thead>
<tr>
<th>Door</th>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't care</td>
<td>pin1 To pin3</td>
<td>12 V</td>
</tr>
</tbody>
</table>

Is the voltage between pin 2 and pin 3 of Refrigerator LED Module Housing?

- Check the harness open or short
- Replace R LED Module

Yes
No

Pin2 BK
Pin3 BL

Voltage of Door S/W Signal

<table>
<thead>
<tr>
<th>Door</th>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close</td>
<td>pin2 To pin3</td>
<td>0 V</td>
</tr>
<tr>
<td>Open</td>
<td>pin2 To pin3</td>
<td>12 V</td>
</tr>
</tbody>
</table>

Is the voltage between pin 1 and 3 of CON5 like as below?

- Replace MAIN PwB (Position No : 500A)

Yes
No

CON5

Pin1 BL/WH
Pin3 WH/RD

Voltage of Door S/W Signal

<table>
<thead>
<tr>
<th>Door</th>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't care</td>
<td>pin1 To pin3</td>
<td>12 V</td>
</tr>
</tbody>
</table>

Is the voltage between pin 1 and 3 of CON5 like as below?

- Replace R LED Module (Position No : 409D)

Yes
No
Poor cooling in the refrigerator compartment

**Compressor**
Check the compressor
Refer to page 51

Enter the TEST 1 MODE

---

Is the voltage between pins 3 and pin 4 of CON4 like as below?

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>pin3 To pin4</td>
<td>12 ~ 16 V</td>
</tr>
</tbody>
</table>

Replace MAIN PWB (Position No : 500A)

---

Feedback check.
Is the voltage between Pin 4 and pin 5 of CON4 like as below?

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>pin4 To pin5</td>
<td>1 ~ 4 V</td>
</tr>
</tbody>
</table>

Replace MAIN PWB (Position No : 500A)
Does the cold-air come out of the top of the main duct?

- No

Enter the TEST 2 MODE

Does not cold-air come out of the top of the main duct?

- Yes

Check the Damper itself

- Yes

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

1. In the case of EBR638236:
   - Compensate with Jump wire cutting
   - Cutting of jumper wire

<table>
<thead>
<tr>
<th>JUMP WIRE</th>
<th>Temp. Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>JCR3</td>
<td>-1.0 deg</td>
</tr>
<tr>
<td>JCR4</td>
<td>-1.0 deg</td>
</tr>
</tbody>
</table>

* Cutting of jumper wire

Checking Damper itself

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

- No

Replace Damper (Position No: 120A)

(1)RD  (2)WH  (3)BL  (4)YL

Resistance of Damper

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) To (4)</td>
<td>373 ~ 456Ω</td>
</tr>
<tr>
<td>(2) To (3)</td>
<td>373 ~ 456Ω</td>
</tr>
</tbody>
</table>

Yes
Over cooling in the refrigerator compartment

Compressor
Check the compressor
Refer to 4-2-4 of page 17

Enter the TEST 1 MODE

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

<table>
<thead>
<tr>
<th>Door</th>
<th>Fan-Motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>OFF</td>
</tr>
<tr>
<td>Closed</td>
<td>ON</td>
</tr>
</tbody>
</table>

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

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

Replacing Damper
(Position No: 120A)

Resistance of Damper

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) To (4)</td>
<td>373 ~ 456 Ω</td>
</tr>
<tr>
<td>(2) To (3)</td>
<td>373 ~ 456 Ω</td>
</tr>
</tbody>
</table>

Yes
Yes
Yes
Yes
No
No
Yes
After reset the unit, take steps to PWB as follows for temperature compensation.

1. In the case of EBR638236
   - Compensate with Jump wire cutting

<table>
<thead>
<tr>
<th>JUMP WIRE</th>
<th>Temp. Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>JCR1</td>
<td>+1.0 deg</td>
</tr>
<tr>
<td>JCR2</td>
<td>+1.0 deg</td>
</tr>
</tbody>
</table>

   Cutting both jumpers affords a 2° temperature compensation

* Cutting of jumper wire
1. How To Remove Terminal Position Assurance (TPA)
   * AC TPA
   ![AC TPA Image]
   * DC TPA
   ![DC TPA Image]
   - 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
   BL/WH: Blue & White
   WH/RD: White & Red
   YL/BK: Yellow & Black

3. How To Start Test Mode
   Push the TEST button on the Main PWB, You can start the TEST MODE.
   ![Test Mode Button Image]
   * 1 time: Comp / Damper / All FAN on
     (All things displayed)
4. How to check the Fan-Error

(1) EBR60038302

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

Function
- Controller assembly is consist of 2 kinds of part those are fuse-m and sensor. we can
decide part is defect or not when we check the resistance.
- Fuse-m can cut off the source when defrost heater operate the unusual high temperature.
- Sensor give temperature information to Micom

How to Measure (Fuse-M)

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

How to Measure (Sensor)

Set a ohmmeter to The 2housing pin.
Measure the 2 pin connected to Sensor.
If the ohmmeter indicate 11Ω (at room
temperature) Sensor is not a defect.
When check the ohm at other temperature
Check the sensor manual.

Standard

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) to (2)</td>
<td>0 ~ 0.1 Ω</td>
<td>(1) to (2)</td>
<td>11 Ω</td>
</tr>
</tbody>
</table>

7-1. Defrost Controller Assembly

Function
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decide part is defect or not when we check the resistance.
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Set a ohmmeter to The 2housing pin.
Measure the 2 pin connected to Sensor.
If the ohmmeter indicate 11Ω (at room
temperature) Sensor is not a defect.
When check the ohm at other temperature
Check the sensor manual.

Standard

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) to (2)</td>
<td>0 ~ 0.1 Ω</td>
<td>(1) to (2)</td>
<td>11 Ω</td>
</tr>
</tbody>
</table>
7-2. Sheath Heater

<table>
<thead>
<tr>
<th>Function</th>
<th>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.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>How to Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set a ohmmeter connect to The 2 housing pin. Measure the 2 pin connected to Sheath Heater. If the ohmmeter indicate ( \frac{V^2}{W} ) is good condition, ex) when watt=350w, voltage=115v ( R=\frac{(115^2/115)}{350}=38 \Omega ) But the ohmmeter indicate infinitely great Sheath heater is disconnection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard</th>
<th>Sheath heater (at all temperature)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Point</td>
<td>Result</td>
</tr>
<tr>
<td>(1) to (2)</td>
<td>34 – 42 ( \Omega )</td>
</tr>
</tbody>
</table>
7-3. Door Heater Assembly

<table>
<thead>
<tr>
<th>Function</th>
<th>The heater is designed to prevent the raising dew from door.</th>
</tr>
</thead>
</table>

**How to Measure**

<table>
<thead>
<tr>
<th>Test Point</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) to (2)</td>
<td>2.3 ~ 2.9 Ω</td>
</tr>
</tbody>
</table>
### 7-4. Door Switch

#### Function
The switch senses if the door is open or closed.
- When the door is open, the lamp turns on.
- When the door is open, the switch provides information to Micom.
When the door is open, the internal contact operates on and off, moving the plunger of the door switch up and down.

#### How to Measure

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

#### Diagram

- **<Switch, Freezer>**
- **<Switch, Refrigerator>**

Beep: Check the resistance between connectors 1, 2, and 3, 4. It means checking whether or not applying an electric current. If there is resistance, it means the switch is inferior.
7-5. Solenoid

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

### How to Measure

![Dispenser Solenoid](image)

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

How to Measure

**< Geared Motor >**

1. Take out the male housing from female housing
2. Measure the resistance between (1) and (2)

**< Geared Motor >**

1. Remove the female housing from terminal.
2. Measure the resistance 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.

<table>
<thead>
<tr>
<th>Standard</th>
<th>Geared Motor</th>
<th>Cube Solenoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Points</td>
<td>(1) to (2)</td>
<td>(3) to (4)</td>
</tr>
<tr>
<td>Result</td>
<td>2.38 ~ 4.02Ω</td>
<td>32 ~ 40Ω</td>
</tr>
</tbody>
</table>
7-7. Damper

**Function**
The damper supplies the cold air to the 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: Wiring Information |
|-----------------------------|-----------------|
| Red (R)                     | Blue (A)        |
| Yellow (Y)                  | White (A)       |

| Table 2: 2-2M 0° 90° CW Rotation |
|-----------------------------------|-----------------|
| Housing No. 4                     | Wire Color      |
| 1. Blue (A)                       | + - - +         |
| 2. Red (B)                        | + + - -         |
| 3. White AF                       | - + + -         |
| 4. Yellow (Y)                     | - - + +         |

**< Damper Circuit >**

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 is inferior.

<table>
<thead>
<tr>
<th>Standard</th>
<th>Damper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Points</td>
<td>Result</td>
</tr>
<tr>
<td>Red and Yellow</td>
<td>373 ~ 456 Ω</td>
</tr>
</tbody>
</table>
7-8. Lamp Socket

<table>
<thead>
<tr>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>The lamp socket connect cover lamp assembly to lamp.</td>
</tr>
<tr>
<td>The lamp socket fix lamp and unite lamp and cover lamp assembly.</td>
</tr>
<tr>
<td>The lamp socket supply electric source to lamp also.</td>
</tr>
</tbody>
</table>

**How to Measure**

Check the resistance between connector of housing and connector of lamp socket. It means check whether or not applying an electric current. If there is resistance it means the lamp socket is not inferiority.

<table>
<thead>
<tr>
<th>Standard</th>
<th>Test Points</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) to (2) and (3) to (4)</td>
<td>0 Ω</td>
</tr>
</tbody>
</table>
7-9. Water Valve

Function
- First-Water Valve (in machine room): supply the water from city water to water filter in refrigerator
- Second-Water Valve (in door): supply the water from water filter to icemaker and dispenser

How to Measure

<table>
<thead>
<tr>
<th>Test Points</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) to (2)</td>
<td>360 ~ 420 Ω</td>
</tr>
</tbody>
</table>

Standard

First-water valve
(in machine room)

Dispense

Ice Maker

second-water valve
(in door)
8. TROUBLESHOOTING

8-1 COMPRESSOR AND ELECTRIC COMPONENTS

1. Power source. Remove TSD-Starter from compressor and measure voltage between terminal C of compressor and terminal 5 or 6 of TSD. (Rated voltage ±10%)?

   YES
   
   NO
   
   2. Apply voltage isn't in acceptable range. (115V ±10%)?
      
      NO
      
      Yes
      
      3. Check resistance of motor compressor.
      
      4. Check resistance of TSD-Starter.
      
      5. Check OLP. Check resistance of two terminals in OLP.

   6. 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
      
      NO
      
      Replace OLP.
      
      Check connection condition.
      
      Reconnect.

   7. The range of resistance is between 1~50Ω (ok)

   8. Advise customer that power supply needs to be checked by an electrician.

   9. Replace compressor.

   10. Replace OLP.

   11. Reconnect.

   12. Refer to page 12.

COMPRESSOR DOES NOT SWITCH ON OR STOPS DURING RUNNING:
- Check if the connections have been properly inserted (see Assembly Instruction Item for details).
- Check the voltage between TSD terminal “L” and “N”.
- The voltage should be according to the Technical Specification Item.
- Check if the overload protector is tripping. If this occurs, check the Table of Main Refrigeration Problems (Compressor Application Manual from Embraco).
- If you have done all the items above and the problem persists, change the TSD.

NOTE: For further details, please check the Compressor Application Manual-Embraco.
8-2 TSD AND OLP

Normal operation of compressor is impossible or poor.

Separate TSD-Starter from compressor and measure resistance between No. 5 and 6 of PTC-Starter with a tester. (Figure 19)

Observation value is 115V/60Hz: 6.8Ω±30%

The resistance value is 0Ω (short) or ∞ (open).

Replace TSD-Starter.

Separate OLP from compressor and check resistance value between two terminals of OLP with a tester. (Figure 20)

Check another electric component.

Replace OLP.

Observation value is 115V/60Hz: 6.8Ω±30%

Replace TSD-Starter.

The resistance value is 0Ω (short) or ∞ (open).

Figure 19

Figure 20
## 8-3 SERVICE DIAGNOSIS CHART

<table>
<thead>
<tr>
<th>COMPLAINT</th>
<th>POINTS TO BE CHECKED</th>
<th>REMEDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Cooling.</td>
<td>• Is the power cord unplugged from the outlet?</td>
<td>• Plug into the outlet.</td>
</tr>
<tr>
<td></td>
<td>• Check if the power switch is set to OFF.</td>
<td>• Set the switch to ON.</td>
</tr>
<tr>
<td></td>
<td>• Check if the fuse of the power switch is shorted.</td>
<td>• Replace the fuse.</td>
</tr>
<tr>
<td></td>
<td>• Measure the voltage of the power outlet.</td>
<td>• If the voltage is low, correct the wiring.</td>
</tr>
<tr>
<td>Cools poorly.</td>
<td>• Check if the unit is placed too close to the wall.</td>
<td>• Place the unit about 4 inches (10 cm) from the wall.</td>
</tr>
<tr>
<td></td>
<td>• Check if the unit is placed too close to the stove,</td>
<td>• Place the unit away from these heat sources.</td>
</tr>
<tr>
<td></td>
<td>gas cooker, or in direct sunlight.</td>
<td>• Lower the ambient temperature.</td>
</tr>
<tr>
<td></td>
<td>• Is the ambient temperature too high or the room</td>
<td>• Put in foods after they have cooled down.</td>
</tr>
<tr>
<td></td>
<td>door closed?</td>
<td>• Don’t open the door too often and close it firmly.</td>
</tr>
<tr>
<td></td>
<td>• Check if food put in the refrigerator is hot.</td>
<td>• Set the control to <strong>Recommended position</strong>.</td>
</tr>
<tr>
<td></td>
<td>• Did you open the door of the unit too often or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>check if the door is sealed properly?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Check if the Control is set to <strong>Warm position</strong>.</td>
<td></td>
</tr>
<tr>
<td>Food in the Refrigerator</td>
<td>• Is food placed in the cooling air outlet?</td>
<td>• Place foods in the high-temperature section. (front part)</td>
</tr>
<tr>
<td>is frozen.</td>
<td>• Check if the control is set to <strong>colder position</strong>.</td>
<td>• Set the control to <strong>Recommended position</strong>.</td>
</tr>
<tr>
<td></td>
<td>• Is the ambient temperature below 41°F(5°C)?</td>
<td>• Set the control to <strong>Warm position</strong>.</td>
</tr>
<tr>
<td>Condensation or ice forms</td>
<td>• Is liquid food sealed?</td>
<td>• Seal liquid foods with wrap.</td>
</tr>
<tr>
<td>inside the unit.</td>
<td>• Check if food put in the refrigerator is hot.</td>
<td>• Put in foods after they have cooled down.</td>
</tr>
<tr>
<td></td>
<td>• Did you open the door of the unit too often or</td>
<td>• Don’t open the door too often and close it firmly.</td>
</tr>
<tr>
<td></td>
<td>check if the door is sealed properly?</td>
<td></td>
</tr>
<tr>
<td>Condensation forms in the</td>
<td>• Check if the ambient temperature and humidity of the</td>
<td>• Wipe moisture with a dry cloth. It will disappear in low temperature</td>
</tr>
<tr>
<td>Exterior Case.</td>
<td>surrounding air are high.</td>
<td>and humidity.</td>
</tr>
<tr>
<td></td>
<td>• Is there a gap in the door gasket?</td>
<td>• Fill up the gap.</td>
</tr>
<tr>
<td>There is abnormal noise.</td>
<td>• Is the unit positioned in a firm and even place?</td>
<td>• Adjust the Leveling Screw, and position the refrigerator in a firm</td>
</tr>
<tr>
<td></td>
<td>• Are any unnecessary objects placed in the back side</td>
<td>place.</td>
</tr>
<tr>
<td></td>
<td>of the unit?</td>
<td>• Remove the objects.</td>
</tr>
<tr>
<td></td>
<td>• Check if the Drip Tray is not firmly fixed.</td>
<td>• Fix the Drip Tray firmly in the original position.</td>
</tr>
<tr>
<td></td>
<td>• Check if the cover of the compressor enclosure in the</td>
<td>• Place the cover in its original position.</td>
</tr>
<tr>
<td></td>
<td>lower front side is taken out.</td>
<td></td>
</tr>
<tr>
<td>Door does not close well.</td>
<td>• Check if the door gasket is dirty with an item like</td>
<td>• Clean the door gasket.</td>
</tr>
<tr>
<td></td>
<td>juice.</td>
<td>• Position in a firm place and level the Leveling Screw.</td>
</tr>
<tr>
<td></td>
<td>• Is the refrigerator level?</td>
<td>• Make sure food stored in shelves does not prevent the door from</td>
</tr>
<tr>
<td></td>
<td>• Is there too much food in the refrigerator?</td>
<td>closing.</td>
</tr>
<tr>
<td>Ice and foods smell</td>
<td>• Check if the inside of the unit is dirty.</td>
<td>• Clean the inside of the unit.</td>
</tr>
<tr>
<td>unpleasant.</td>
<td>• Are foods with a strong odor unwrapped?</td>
<td>• Wrap foods that have a strong odor.</td>
</tr>
<tr>
<td></td>
<td>• The unit smells of plastic.</td>
<td>• New products smell of plastic, but this will go away after 1-2 weeks.</td>
</tr>
</tbody>
</table>

**Other possible problems:**

- Check If frost forms in the freezer.
  - Not defrosting
    - Check Components of the defrosting circuit.
- Check the refrigeration system.
  - The system is faulty
    - Perform sealed system repair.
- Check the Thermistor.
  - The operation of the Thermistor is incorrect
    - Replace the Thermistor.
## Troubleshooting Chart

<table>
<thead>
<tr>
<th>CAUSE</th>
<th>STATE OF THE UNIT</th>
<th>STATE OF THE EVAPORATOR</th>
<th>TEMPERATURE OF THE COMPRESSOR</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PARTIAL LEAKAGE</strong></td>
<td>Freezer compartment and Refrigerator don't cool normally.</td>
<td>Low flowing sound of Refrigerant is heard and frost forms in inlet only.</td>
<td>A little higher than ambient temperature.</td>
<td>• Refrigerant level is low due to a leak.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Normal cooling is possible by restoring the normal amount of refrigerant and repairing the leak.</td>
</tr>
<tr>
<td><strong>COMPLETE LEAKAGE</strong></td>
<td>Freezer compartment and Refrigerator don't cool normally.</td>
<td>Flowing sound of refrigerant is not heard and frost isn't formed.</td>
<td>Equal to ambient temperature.</td>
<td>• No discharging of Refrigerant.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Normal cooling is possible by restoring the normal amount of refrigerant and repairing the leak.</td>
</tr>
<tr>
<td><strong>PARTIAL CLOG</strong></td>
<td>Freezer compartment and Refrigerator don't cool normally.</td>
<td>Flowing sound of refrigerant is heard and frost forms in inlet only.</td>
<td>A little higher than ambient temperature.</td>
<td>• Normal discharging of the Refrigerant.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• The capillary tube is faulty.</td>
</tr>
<tr>
<td><strong>WHOLE CLOG</strong></td>
<td>Freezer compartment and Refrigerator don't cool.</td>
<td>Flowing sound of refrigerant is not heard and frost isn't formed.</td>
<td>Equal to ambient temperature.</td>
<td>• Normal discharging of the Refrigerant.</td>
</tr>
<tr>
<td><strong>MOISTURE CLOG</strong></td>
<td>Cooling operation stops periodically.</td>
<td>Flowing sound of refrigerant is not heard and frost melts.</td>
<td>Lower than ambient temperature.</td>
<td>• Cooling operation restarts when heating the inlet of the capillary tube.</td>
</tr>
<tr>
<td><strong>COMPRESSOR CLOG</strong></td>
<td>Freezer and Refrigerator don't cool.</td>
<td>Low flowing sound of refrigerant is heard and frost forms in inlet only.</td>
<td>A little higher than ambient temperature.</td>
<td>• Low pressure at high side of compressor due to low refrigerant level.</td>
</tr>
<tr>
<td><strong>NO COMPRESSOR</strong></td>
<td>No compressing operation.</td>
<td>Flowing sound of refrigerant is not heard and there is no frost.</td>
<td>Equal to ambient temperature.</td>
<td>• No pressure in the high pressure part of the compressor.</td>
</tr>
</tbody>
</table>

### 8-4-1 Cleaning

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

If you need to clean the condenser:

- Remove the mechanical cover.
- Use a vacuum cleaner with a soft brush to clean the grille, the open areas behind the grille and the front surface area of the condenser.
- Replace the mechanical cover.
"Not Cooling" Complaint
All components operating, No airflow problems, Not frosted up as a defrost problem
problem has been isolated to sealed system area

- Frost Pattern?
  - Partial
    - Equalization Test
      - Very Fast
        - Inefficient Compressor
      - Fast
        - Condenser Temperature
          - Hotter than Normal
            - Room Temperature
              - Air/Low Side Leak
            - None to Weak
              - Cap Tube Sound
                - Faint
                  - Loss of Change
                    - Compressor Not Pumping
                - None
                  - Undercharge
        - Partial Restriction
          - Undercharge
            - Yes
              - Trace of Oil
                - Undercharge
            - No
              - Leak
                - Undercharge
      - Very Slow
        - Partial Restriction
          - Undercharge
            - Yes
              - Trace of Oil
                - Undercharge
            - No
              - Leak
                - Undercharge
  - None
    - Equalization Test
      - Very Fast
        - Complete Restriction
          - Undercharge
            - Yes
              - Trace of Oil
                - Undercharge
            - No
              - Leak
                - Undercharge
      - Very Slow
        - Complete Restriction
          - Undercharge
            - Yes
              - Trace of Oil
                - Undercharge
            - No
              - Leak
                - Undercharge

(The equalization test is trying to restart a compressor using a start kit after it has been operating.)
9. OPERATION PRINCIPLE AND REPAIR METHOD OF ICEMAKER

9-1 OPERATION PRINCIPLE

9-1-1 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.

**Diagram:**
- **Power Switch**
- **Ejector**
- **Cube Size Indicator Light**
- **Test Button Hole (use tool like pin, end of tool have to smooth)**
- **Automatic Shut off Arm**

**Flow Chart:**
- **Power On**
  - Adjusts EJECTOR to **Start Position** with power on.
- **Start Position**
- **Icemaking Mode**
  - Waits until water becomes ICE after starting the icemaking operation.
- **Harvest Mode**
  - Runs MOTOR to drop ice from the tray into the ICE BIN. (During harvest mode, check if the ice bin is full)
- **Park Position**
  - Reaches Start Position
- **Fill**
  - Performs **Ice Making Mode** after supplying water by operating the SOLENOID in ICE VALVE.
- **Test Mode**
  - To operate LINE and SERVICE, press and hold the Fill Key for 3 seconds. The icemaker will run through 3 stages: Harvest → Fill → Icemaking.
9-2  ICE MAKER FUNCTIONS

9-2-1. 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 Ice Making function is completed when the sensor reaches 19°F (-7°C), 55 minutes after starting.
   NOTE: After Icemaker Power is ON, the Icemaker heater will be on for test for 6 sec.

9-2-2. Harvest Mode
1. Harvest (Ice removing) refers to the operation of dropping ices into the ice bin from the tray when icemaking has completed.
2. Harvest mode:
   (1) The Heater is ON for 30 seconds, then the motor starts.
   (2) 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.)

9-2-3. 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

<table>
<thead>
<tr>
<th>STAGE</th>
<th>TIME TO SUPPLY</th>
<th>INDICATIONS</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.5 sec.</td>
<td></td>
<td>The water amount will vary depending on the water control Switch setting, as well as the water pressure of the connected water line.</td>
</tr>
<tr>
<td>2</td>
<td>4.7 sec.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5.0 sec.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9-2-4 Function TEST
1. This is a forced operation for TEST, Service, cleaning, etc. It is operated by pressing and holding the Fill Key for 3 seconds.
2. The test works only in the Icemaking Mode. It cannot be entered from the Harvest or Fill mode.
3. **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 operate normally in the TEST mode, check and repair as needed.
4. After water is supplied, the normal CYCLE is followed: **Icemaking → Harvest → Park Position → Fill.**
5. Five seconds after Stage 5 is completed, the Ice Maker returns to MICOM control. The time needed to supply water resets to the pre-test setting.

<table>
<thead>
<tr>
<th>STAGE</th>
<th>ITEMS</th>
<th>INDICATOR</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HEATER</td>
<td>![Heater Icon]</td>
<td>Five seconds after heater starts, a heater will go off if the temperature by sensor is higher than 10°C</td>
</tr>
<tr>
<td>2</td>
<td>MOTOR</td>
<td>![Motor Icon]</td>
<td>Five seconds after heater starts, you can confirm that a motor is moving.</td>
</tr>
<tr>
<td>3</td>
<td>HALL IC I</td>
<td>![Hall IC I Icon]</td>
<td>Check if Ice Bin is full or not. If Ice bin is full, the motor and heater are off and on stand by until Ice bin is empty.</td>
</tr>
<tr>
<td>4</td>
<td>HALL IC II</td>
<td>![Hall IC II Icon]</td>
<td>You can confirm HALL IC detection of start position.</td>
</tr>
<tr>
<td>5</td>
<td>VALVE</td>
<td>![Valve Icon]</td>
<td>Two seconds after detection of start position, you can confirm that valve is on.</td>
</tr>
<tr>
<td>6</td>
<td>Reset</td>
<td>![Reset Icon]</td>
<td>Return to Status prior to TEST MODE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Five seconds after fifth stage is completed, The icemaker resets to initial status.</td>
</tr>
</tbody>
</table>

9-3 DEFECT DIAGNOSIS FUNCTION

9-3-1 ERROR CODES shown on Ice Maker water supply control panel

<table>
<thead>
<tr>
<th>NO</th>
<th>DIVISION</th>
<th>INDICATOR</th>
<th>CONTENTS</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Normal</td>
<td>Mark time to supply</td>
<td>None</td>
<td>Display switch operates properly</td>
</tr>
<tr>
<td>2</td>
<td>Icemaking Sensor malfunction</td>
<td>![Sensor Icon]</td>
<td>Open or short-circuited wire</td>
<td>Make sure that the wire on each sensor is connected.</td>
</tr>
</tbody>
</table>
10. DESCRIPTION OF FUNCTION & CIRCUIT OF MICOM

10-1 Function

10-1-1 Function
1. When the appliance is plugged in, it is set to 37°F for Refrigerator and 0°F for freezer.
   You can adjust the Refrigerator and the Freezer control temperature by pressing the ADJUST button.
2. When the power is initially applied or restored after a power failure, it is set to Control temperature previously.
3. If you do not press any button after turning on the power, only CRUSH or CUBE Label that has been selected will be turned on and all other LEDs on the display Panel will be turned off within 60 seconds. (Power Save Mode)
4. If you press a button, only CRUSH or CUBE Label that has been selected will be turned on and all other LEDs on the display Panel will be turned off within 20 seconds. (Power Save Mode)

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

10-1-2 How to Toggle the Display between °F & °C
1. The initial setting is °F and the display temperature mode can be changed from °F to °C or °C to °F by pressing and holding the FRZ TEMP and the REF TEMP keys at the same time for over 5 seconds.

10-1-3 Lock function (dispenser and display button lock)
1. When the refrigerator is first turned on, the buttons are not locked. "LOCK" is deactivated with no light on.
2. To lock the display, the dispenser, and the control panel, press and hold the LOCK button for 3 seconds. "LOCK" is activated with light on.
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.

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

10-1-4 Filter condition display function
1. There is a replacement indicator light for the filter cartridge on the dispenser.
2. Water filter needs replacement once six months or of using water filter.
3. When the Water Filter icon blinks, you must exchange the filter.
4. After replacing the filter, press and hold the Light/Filter button for more than 3 seconds.
   After then water Filter icon turn off with reset status.
10-1-5 Ice Plus selection
Please select this function for quick freezing.
- When you press the Ice Plus Button, the Ice Plus ICON will be turned on again.
- The Ice Plus function automatically turns off after a fixed time passes.

10-1-6 Dispenser use selection
You can select water or ice by separated pad switch.
- When you press ice type button, ice type will be changed. (Crush or Cube)
- Hold your cup in the dispenser for a few seconds after dispensing ice or water to allow the last pieces of ice drops of water to fall into the cup.
- When after initially establishing the water comes out, the water tank inside fills and until at the time of quality the hour is caught.

10-1-7 CONTROL OF FREEZER FAN MOTOR
1. Freezer fan motor has high and standard speeds.
2. High speed is used at power-up, for Ultra ice, and when refrigerator is overloaded.
   Standard speeds is used for general purposes.
3. To improve cooling speed, the RPM of the freezer fan motor change from normal speed to high.
4. High speed (2700RPM) : Initial power on or load corresponding operation, Ultra Ice.
   Normal speed (2400RPM) : General working conditions.

10-1-8 Cooling Fan Motor
1. The cooling fan is switched ON and OFF in conjunction with the compressor.
2. The cooling fan motor has high and standard speeds. (When room temperature more high then 38°C speed is high)
3. The Failure sensing method is the same as in the fan motor of the freezing fan motor (refer to failure diagnosis function table for failure display).

10-1-9 Ice Compartment Fan
1. The Icing Fan is controlled by the sensor on the top of the ice compartment.
2. The Failure sensing method is the same as in the fan motor of the freezer (refer to failure diagnosis function table for failure display).

10-1-10 Refrigeration room Fan Motor
1. The refrigeration room fan is switched ON and OFF in conjunction with the refrigeration room temperature.
2. The Failure sensing method is the same as in the fan motor of the freezing fan motor (refer to failure diagnosis function table for failure display).
10-1-11 Ice PLUS
1. The purpose of this function is to intensify the cooling speed of freezer and to increase the amount of ice.
2. Whenever selection switch is pressed, selection/release, the Icon will turn ON or OFF.
3. If there is a power outage and the refrigerator is powered on again, Ice PLUS will be canceled.
4. To activate this function, press the Ice PLUS key and the Icon will turn ON. This function will remain activated for 24 hrs.
   The first 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:
   (1) Compressor and freezer fan (HIGH RPM) run continuously.
   (2) 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.
   (3) If Ice PLUS is pressed during defrost, Ice Plus Icon is on but this function will start seven minutes after defrost is completed and it shall operate for three hours.
   (4) If Ice Plus is selected within seven minutes after compressor has stopped, the compressor (compressor delays seven minutes) shall start after the balance of the delay time.
   (5) The fan motor in the freezer compartment runs at high speed during Ice Plus.
6. For the rest of the 21 hours, the freezer will be controlled at the lowest temperature.

10-1-12 How to set the display mode and cancel it
1. With the refrigerator door open, keep pressing the Refrigerator Temp Button and ICE PLUS Button more than 5 seconds, then it goes to the display mode with Special Beep Sound.
2. Perform the same way again to cancel the display mode.
3. All Freezing unit will be turned off at display mode (Exceptions : Lamp, Display)

10-1-13 Defrosting (removing frost)
1. Defrosting starts each time the COMPRESSOR running time between 7~50 hours.
2. For initial power on or for restoring power, defrosting starts when the compressor running time reaches 4 hours.
3. Defrosting stops if the sensor temperature reaches 46.4°F(8°C) or more. If the sensor doesn’t reach 46.4°F(8°C) in 1 hours, the defrost mode is malfunctioning. (Refer to the defect diagnosis function, 8-1-15.)
4. Defrosting won’t function if its sensor is defective (wires are cut or short circuited)
10-1-14 Defect Diagnosis Function
1. Automatic diagnosis makes servicing the refrigerator easy.
2. When a defect occurs, the buttons will not operate; but the tones, such as ding, will sound.
3. When the defect CODE removes the sign, it returns to normal operation (RESET).
4. The defect CODE shows on the Refrigerator and Freezer Display.

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

10-1-15 Auto pantry
1. The temperature control will automatically start upon the selected Auto Pantry temperature control.
2. You can adjust the Pantry control with three different temperature ranges by pressing the Temp.Selector button.
11. PWB ASSEMBLY

11-1 Main PWB Assembly (EBR600283)
11-2 Display and Dispenser Drive PCB Assembly

CON104
CON103
CON102
CON101

Display PWB
11. EXPLODED VIEW & REPLACEMENT PARTS LIST

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.
DOOR PARTS

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

CAUTION: Use the part number to order part, not the position number.
ICE & WATER PARTS

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