

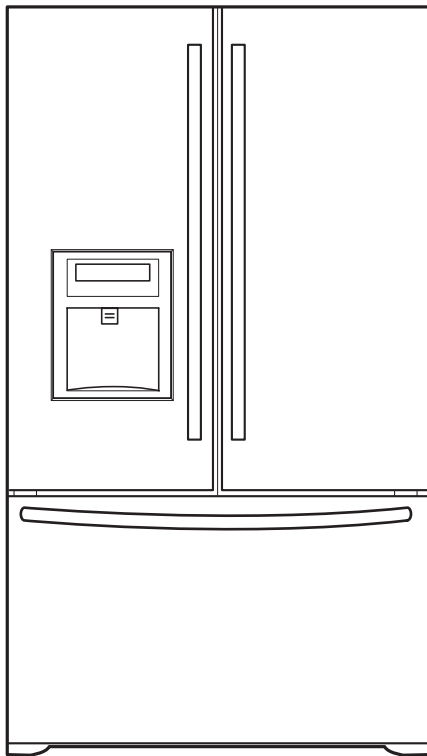


BOTTOM FREEZER REFRIGERATOR

REFRIGERATOR SERVICE MANUAL

CAUTION

**BEFORE SERVICING THE PRODUCT
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.**



MODELS:

795.78402.804
795.78403.804
795.78406.804
795.78409.804
795.78412.804
795.78413.804
795.78416.804
795.78419.804

ECN (Engineering Change Number)

Rev.803

•**Change Cover Lower (improve structure) &**
Change Cover PCB (improve)

Rev.804

•**Change model to Barrierless type**
Accomplish DOE

CONTENTS

| | |
|---|----|
| SAFETY PRECAUTIONS | 2 |
| 1. SPECIFICATIONS | 3 |
| 2. PARTS IDENTIFICATION | 6 |
| 3. DISASSEMBLY | 7 |
| 3.1 Doors..... | 7 |
| 3.2 Leveling and Door Alignment..... | 9 |
| 3.3 Door Gasket..... | 10 |
| 3.4 Fan and fan motor (evaporator)..... | 11 |
| 3.5 Defrost control assembly..... | 11 |
| 3.6 Lamp | 12 |
| 3.7 Multiduct..... | 12 |
| 3.8 Main PCB..... | 12 |
| 3.9 Dispenser | 13 |
| 3.10 Display PWB Replacement | 13 |
| 3.11 Funnel Replacement | 13 |
| 3.12 Sub PWB or working dispenser..... | 13 |
| 3.13 Duct Door Replacement..... | 14 |
| 3.14 Ice corner door replacement..... | 14 |
| 3.15 Icemaker assembly..... | 14 |
| 3.16 Auger motor cover | 15 |
| 3.17 How to remove a door ice bin | 15 |
| 3.18 How to insert a door ice bin | 16 |
| 3.19 How to remove and reinstall the pull out drawer | 17 |
| 3.20 Fan and fan motor disassembly method | 18 |
| 3.21 Glide out drawer | 18 |
| 4. ADJUSTMENT | 19 |
| 4.1 Compressor | 19 |
| 4.2 PTC-Starter | 19 |
| 4.3 OLP (Overload Protector) | 19 |
| 4.4 To remove the cover PTC | 20 |
| 5. CIRCUIT DIAGRAM | 21 |
| 6. TROUBLESHOOTING | 22 |
| 6.1 Compressor and electrical components | 22 |
| 6.2 PTC and OLP | 23 |
| 6.3 Other electrical components | 24 |
| 6.4 Service diagnosis chart | 26 |
| 6.5 Refrigeration cycle | 28 |
| 7. OPERATION PRINCIPLE AND REPAIR METHOD OF ICEMAKER | 28 |
| 7.1 Operation principle | 28 |
| 7.2 Ice maker functions | 29 |
| 7.3 Defect diagnosis function | 30 |
| 8. DESCRIPTION OF FUNCTION & CIRCUIT OF MICOM | 31 |
| 8.1 Function | 31 |
| 8.2 PCB function | 37 |
| 8.3 Troubleshooting | 42 |
| 8.4 Main PWB assembly and parts list | 44 |
| 9. EXPLODED VIEW AND REPLACEMENT PART LIST | 46 |

SAFETY PRECAUTIONS

Please read the following instructions before servicing your refrigerator.

1. Check the refrigerator for current leakage.
2. To prevent electric shock, unplug before servicing.
3. Always check line voltage and amperage.
4. Use standard electrical components.
5. Don't touch metal products in the freezer with wet hands. This may cause frost bite.
6. Prevent water from spilling on to electric elements or the Machine parts.
7. Before tilting the refrigerator, remove all materials from on or in the refrigerator.
8. When servicing the evaporator, wear gloves to prevent injuries from the sharp evaporator fins.
9. Service on the refrigerator should be performed by a qualified technician. Sealed system repair must be performed by a CFC certified technician.

1. SPECIFICATIONS

1-1. DISCONNECT POWER CORD BEFORE SERVICING

IMPORTANT: Reconnect all grounding devices.

All parts of this appliance capable of conducting electrical current are grounded. If grounding wires, screws, straps, clips, nuts or washers used to complete a path to ground are removed for service, they must be returned to their original position and properly fastened.

1-2. IMPORTANT NOTICE

This information is intended for use by individuals possessing adequate background of electrical, electronic and mechanical experience.

Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.

1-3. ELECTRICAL SPECIFICATIONS

| | |
|---|-----------------------|
| Freezer temperature control (Middle setting)..... | -6°F to +8°F |
| Defrost Control | Automatic |
| Defrost Thermostat | 50°F |
| Electrical Rating : 115VAC, 60Hz..... | 1-5 A |
| Maximum Current Leakage | 0.5mA |
| Maximum Ground Path Resistance | 0.14 Ohms |
| Energy Consumption..... | 22.5 cu.ft. 670kWh/yr |

1-4. NO LOAD PERFORMANCE

Control Position: MID/MID

| | | | |
|----------------------------|--------------|----------------------------------|-----------|
| And Ambient of: | 70°F | 90°F | |
| Fresh Food, °F..... | 33°F to 41°F | Fresh Food, °F.....33°F to 41°F | |
| Frozen Food, °F..... | -4°F to +4°F | Frozen Food, °F.....-4°F to +4°F | |
| Percent Running Time | 25% - 35% | Percent Running Time | 45% - 60% |

1-5. REFRIGERATION SYSTEM

| | |
|---|------------|
| Minimum Compressor Capacity Vacuum..... | 21 in |
| Minimum Equalized Pressure | |
| @70°F..... | 49 PSIG |
| @90°F..... | 56 PSIG |
| Refrigerant R134a..... | 4.2 oz |
| Compressor..... | 957 BTU/hr |

1-6. INSTALLATION

Clearance must be provided at top, sides and rear of the refrigerator for air circulation.

| | |
|---------------|------|
| At Top..... | 2 in |
| At Sides..... | 2 in |
| At Rear..... | 2 in |

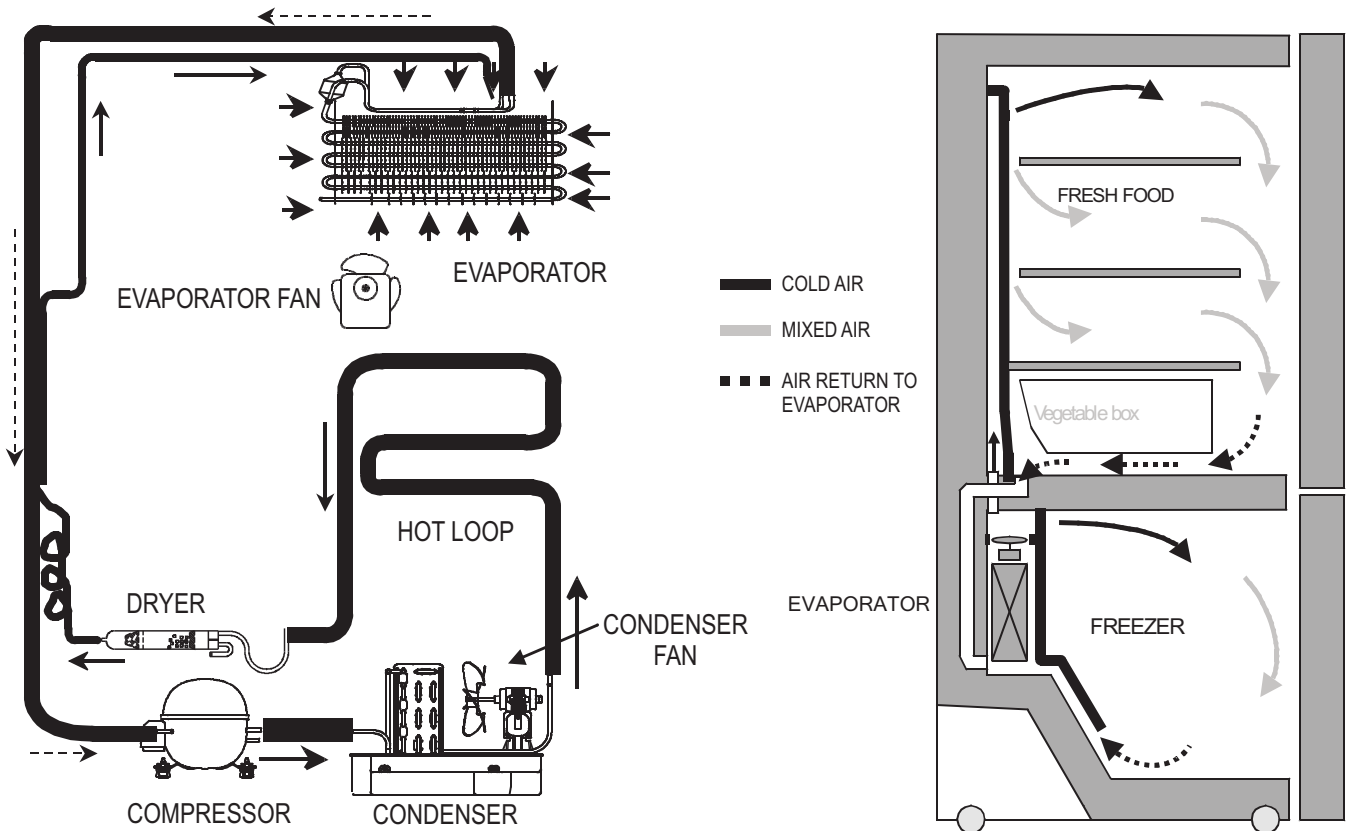
1-7. REPLACEMENT PARTS

Relay.....EBG42993601
 Overload.....EAF39584205
 Defrost Thermostat.....6615JB2005C
 Defrost Heater.....5300JB1100J

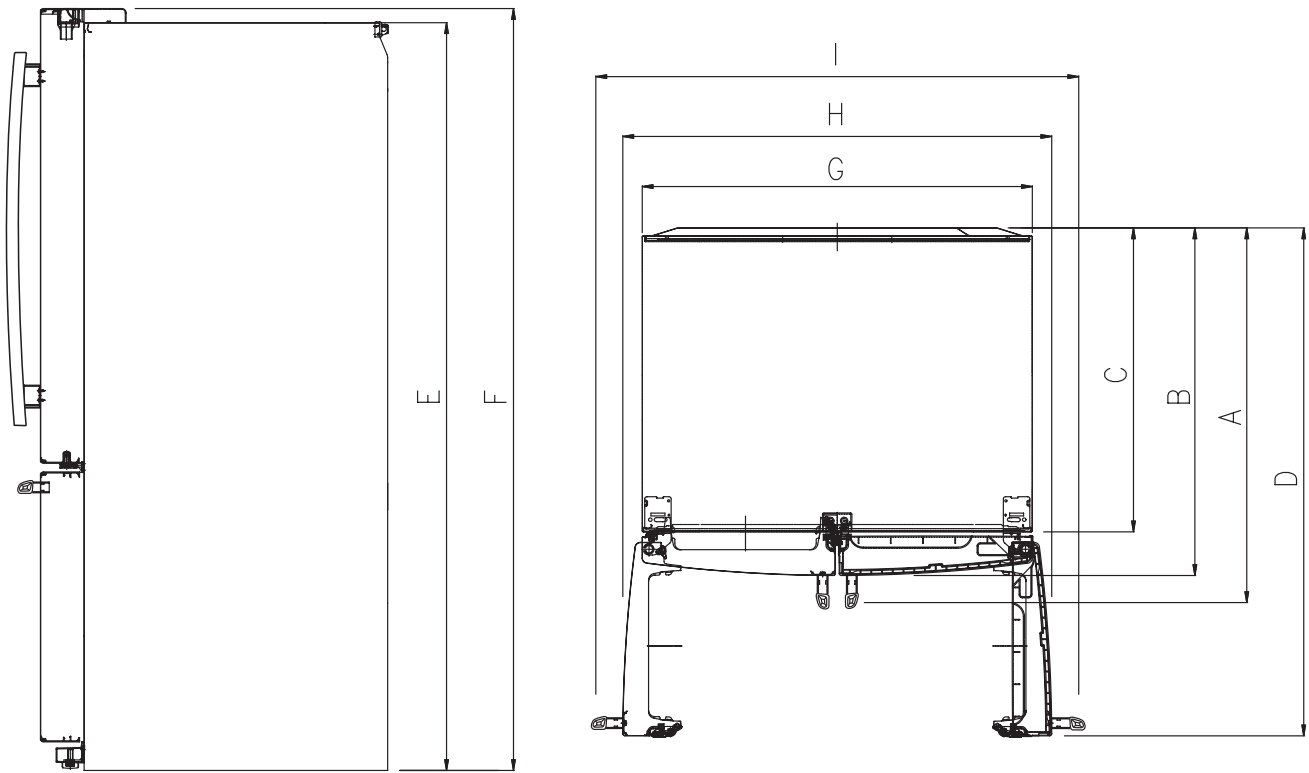
Evaporator Fan Motor.....4681JB1027C
 Capacitor.....0CZZJB2012K
 Compressor (Hi-Side).....TCA31748003
 Evaporator (Lo-Side).....5421JJ1001B
 Condenser.....5403JJ1007A
 Dryer.....5851JA2007E
 Condenser Fan Motor.....4681JB1029J
 Temperature Control.....EBR43358504
 Main Control.....EBR41956108
 Duct Assy Connector.....ADJ36834101

| PERFORMANCE DATA (NORMAL OPERATING CONDITIONS) | | | |
|---|----------------|------------------------|--------------|
| AMB | WATTS | SYSTEM PRESSURE (PSIG) | |
| | | HIGH SIDE | LOW SIDE |
| 70°F | 98 (+10 / -10) | 98 (+5 / -3) | (-5) to (-2) |
| 90°F | 98 (+10 / -10) | 132 (+3 / -3) | (-4) to 1 |
| 110°F | 103 (+5 / -5) | 180 (+5 / -5) | (-2) to 3 |

1-8. AIR FLOW

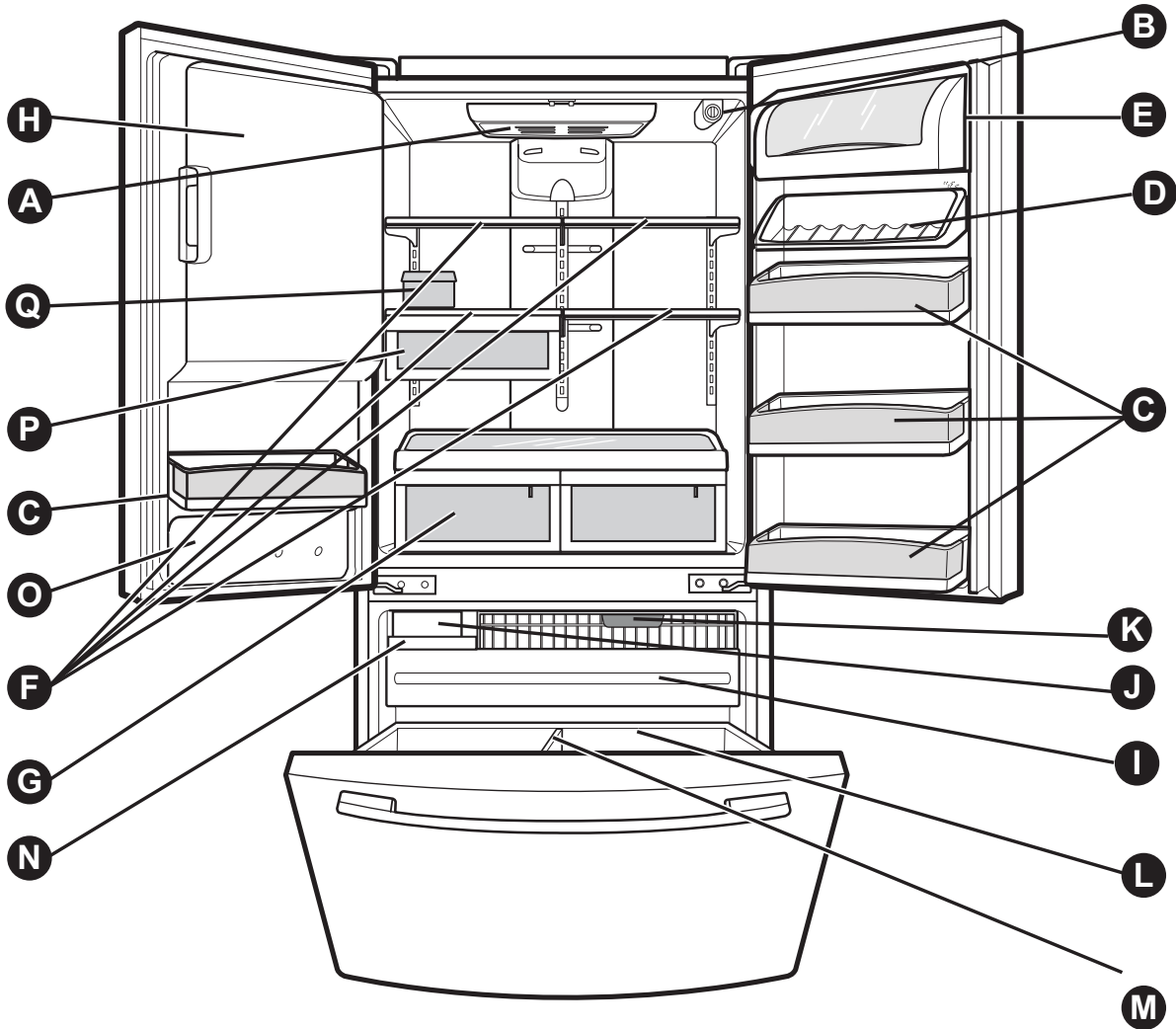


DIMENSIONS



| Description | | 7840* / 7841* |
|--------------------------------------|---|----------------------------------|
| Depth w/ Handles | A | 34 ⁵ / ₈ |
| Depth w/o Handles | B | 32 ¹ / ₈ |
| Depth w/o Door | C | 28 ¹ / ₄ |
| Depth (Total with Door Open) | D | 45 ¹ / ₂ |
| Height to Top of Case | E | 67 ¹⁵ / ₁₆ |
| Height to Top of Door Hinge | F | 69 ¹ / ₁₆ |
| Width | G | 32 ³ / ₄ |
| Width (door open 90 deg. w/o handle) | H | 36 ¹ / ₄ |
| Width (door open 90 deg. w/ handle) | I | 41 ¹ / ₄ |

2. PARTS IDENTIFICATION

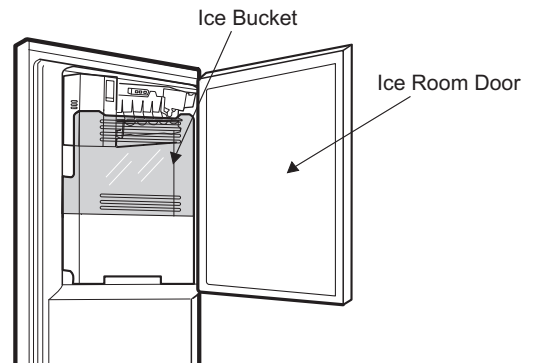


Use this section to become more familiar with the parts and features.

NOTE: This guide covers several different models. The refrigerator you have purchased may have some or all of the items listed below. The locations of the features shown below may not match your model.

- | | |
|---|----------------------------|
| A Ice Room (Ice Maker and Ice Bucket) | J Dairy Corner |
| B Refrigerator Light | K Can Rack* |
| C Refrigerator Shelves | L Modular Door Bins |
| D EggBox | M Crisper |
| E Snack Pan | N Freezer Light |
| F Water Tank Cover | O Pull out Drawer |
| G Turbo Motor | P Durabase |
| H Ice Bin | Q Divider |
| I Filter (Inside) | |

* On some models



3. DISASSEMBLY

3-1 DOORS

1. Removing Refrigerator Door

NOTE: Handle appearance may vary.

IMPORTANT: Before you begin, turn the refrigerator OFF and unplug it. Remove food and any bins from doors.

► Left Door

- Loosen the screws and remove the cove on back side (see figure A).
- Disconnect water supply tube by pushing back on the disconnect ring (3).
- Loosen the cover screw (1).
- Disconnect door switch wire (2).
- Pull out the tube (4).

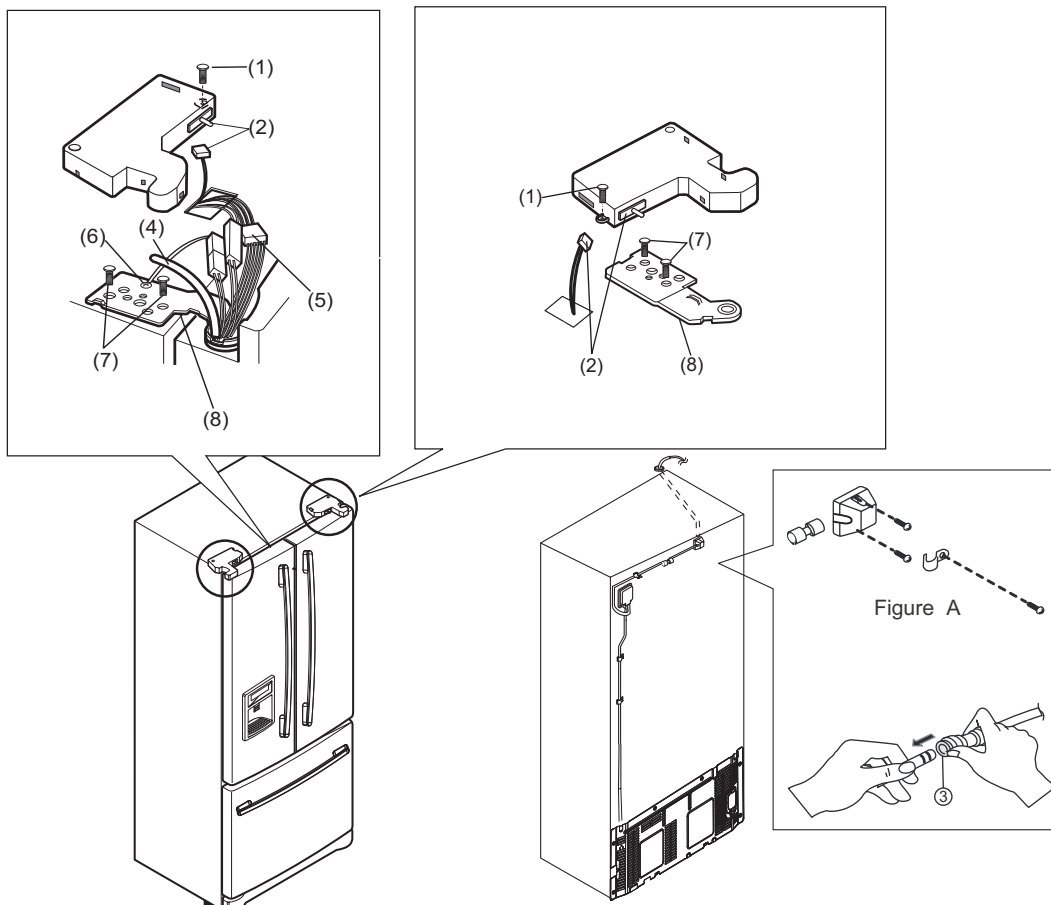
⚠ CAUTION: If a tube end is deformed or worn out, cut the damaged portion away.

- Disconnect wire harness (5).
- Remove the ground screw (6).
- Loosen screws (7) and lift off the top hinge (8).
- Place the door on a non-scratching surface with the inside up.

⚠ CAUTION: When removing top hinge, be careful that the door does not fall forward.

► Right Door

- Loosen the cover screw (1).
- Disconnect door switch wire (2).
- Loosen screws (7) and lift off the top hinge (8).
- Place the door on a non-scratching surface with the inside up.



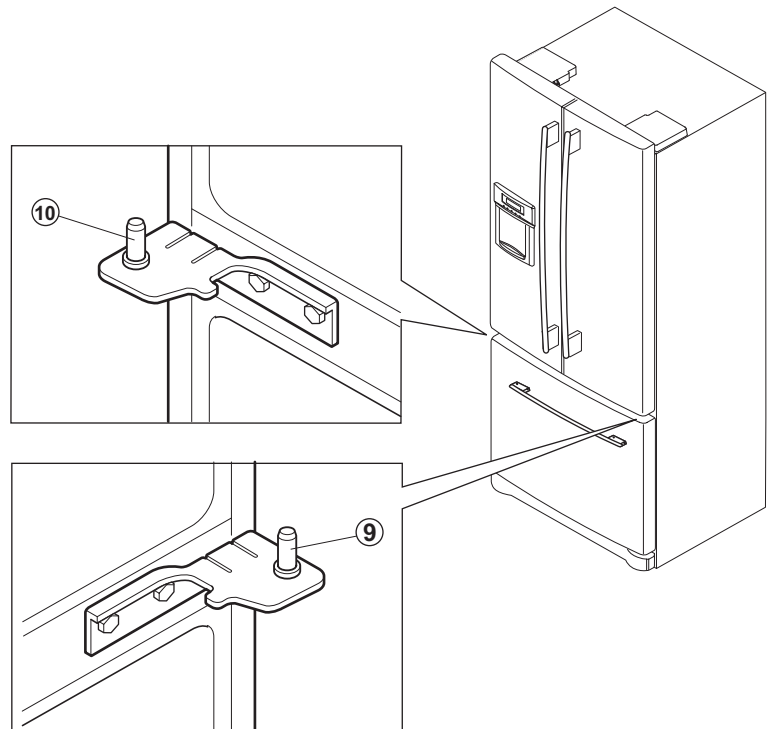
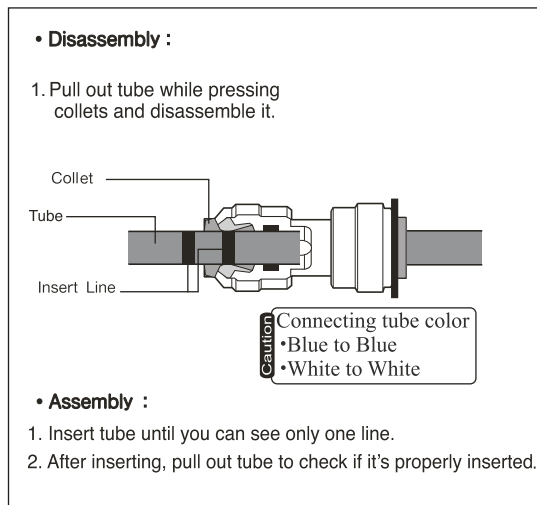
2.Replacing Refrigerator Door

► Right Door

- Lower the door onto the middle hinge pin (9). Make sure the door is aligned with the cabinet.
- Replace the top hinge (8) installing hinge screws (7) to secure it.
- Make sure the gasket on the door is flush against the cabinet and is not folded. Support the door on the handle side while securing hinge. Make sure the door is straight and the gap between the doors is even.
- Connect the door switch wire (2).
- Tighten the cover screw (1).

► Left Door

- Lower the door onto the middle hinge pin (10). Make sure the door is aligned with the cabinet.
- Replace the top hinge (8) installing hinge screws (7) to secure it.
- Make sure the gasket on the door is flush against the cabinet and is not folded. Support the door on the handle side while tightening. And make sure the door is straight and the gap between the doors is even.
- Insert the water supply tube (4) into the connector tube until you see only one scale mark.
(Fully insert the tube over 5/8"(15 mm)).
- Install the ground screw (6) and connect the wire harness (5).
- Connect the door switch wire (2).
- Tighten the cover screw (1).



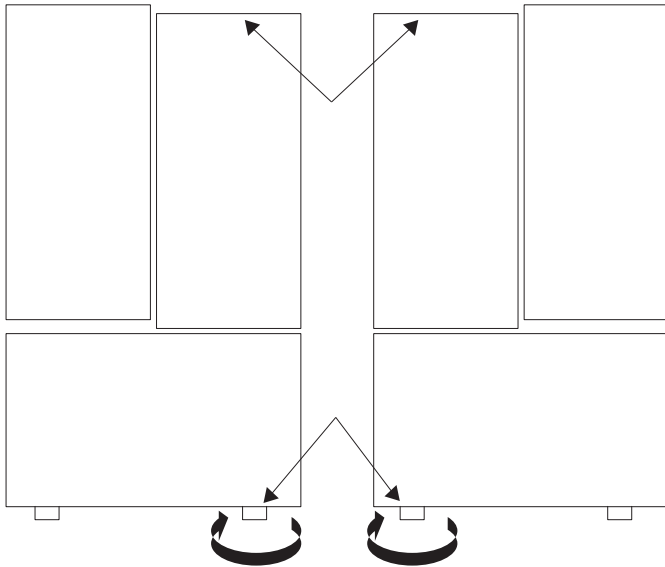
3-2 LEVELING AND DOOR ALIGNMENT

1. Leveling

Your refrigerator has two front leveling screws. One on the right and one on the left. If your refrigerator seems unsteady or you want the doors to close easier, adjust the Refrigerator's tilt using the instructions below:

- 1.Plug the refrigerator's power cord into a 3-prong grounded outlet. Move the refrigerator into its final Position. Remove the base cover.
- 2.Turn the leveling screw clockwise to raise that side of the refrigerator or counterclockwise to lower it. It may take several turns of the leveling screw to adjust the tilt of the refrigerator.

NOTE:Having someone push against the top of the refrigerator takes some weight off the leveling screws. This makes it easier to adjust the screws.



- 3.Open both doors again and check to make sure that they close easily. If not, tilt the refrigerator slightly more to the rear by turning both leveling screws clockwise. It may take several more turns, and you should turn both leveling screws the same amount.

4.Re-adjust if necessary.

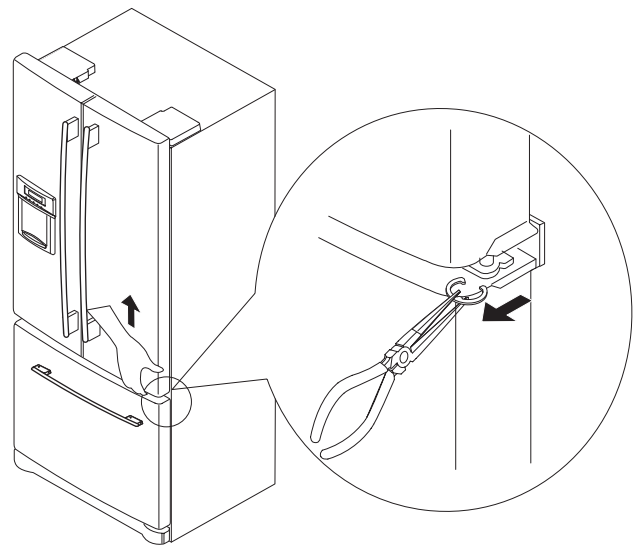
5.Replace the base cover.

NOTE:Your new refrigerator is uniquely designed with two fresh food doors. Either door can be opened or closed independently of one another. You may have to exert slight pressure on doors to get them to close completely.

2. 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 middle hinge.
- 2.With other hand, use pliers to insert snap ring as shown.
- 3.Insert additional snap rings until the doors are aligned. (Three snap rings are provided with the refrigerator.)

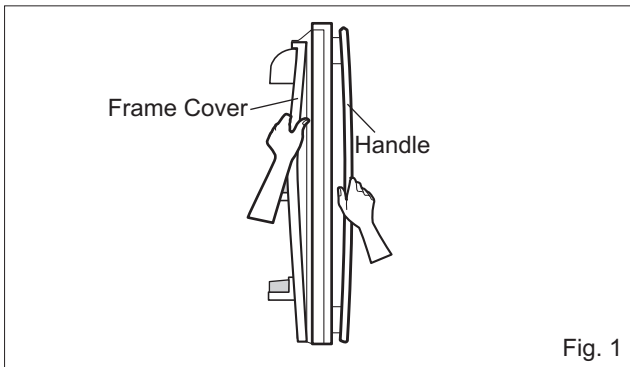


3-3 DOOR GASKET

1. Door Gasket Removal

1. Remove door frame cover

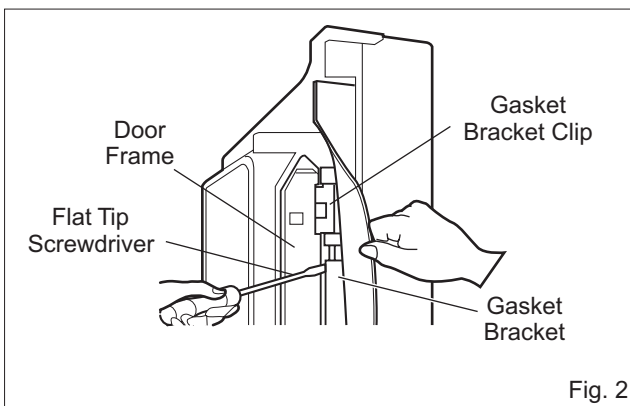
Starting at top of cover and working down, snap cover out and away from door.



2. Remove gasket bracket clips

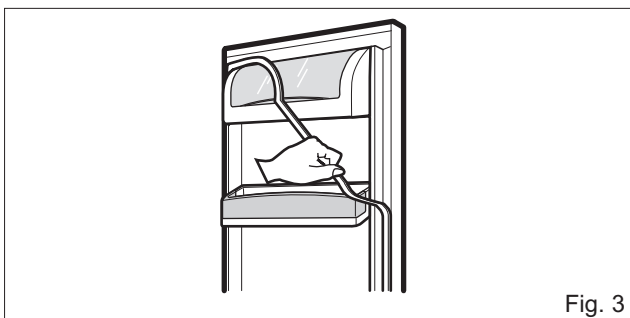
There are two clips on each door. Start bracket removal near one of the middle clips.

- 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.



3. Remove gasket

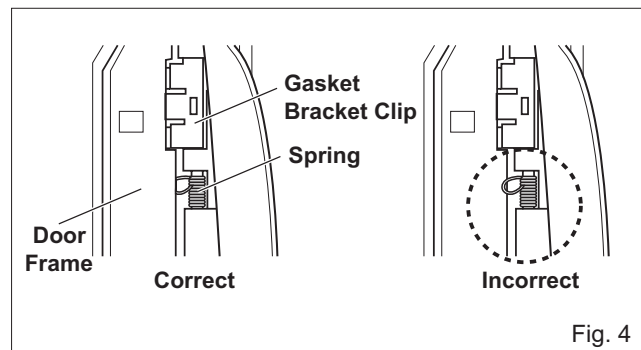
Pull gasket free from gasket channel on the three remaining sides of door.



2. 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.



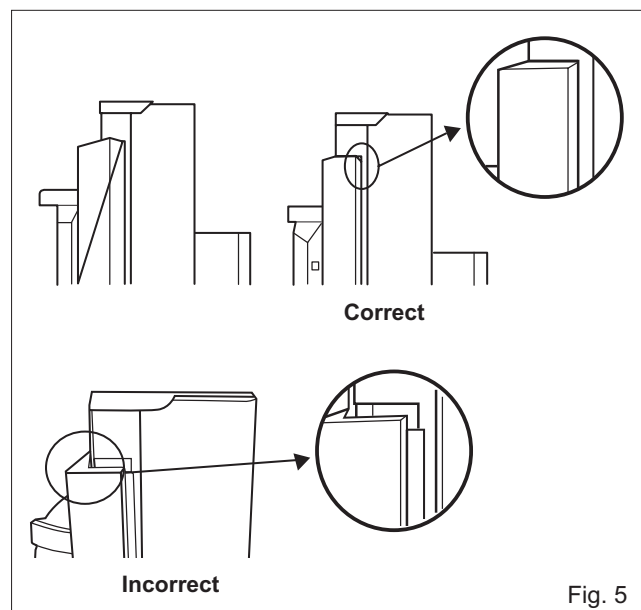
- 4) Push in remaining clip until you hear it snap securely into place.

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

2. Insert gasket into channel

- 1) Snap gasket assembly into the door bracket.

<Inserting the Gasket Assembly into the Bracket Door>



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

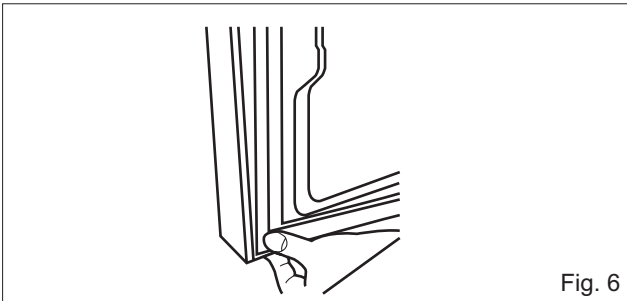


Fig. 6

3. Replace door frame cover

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

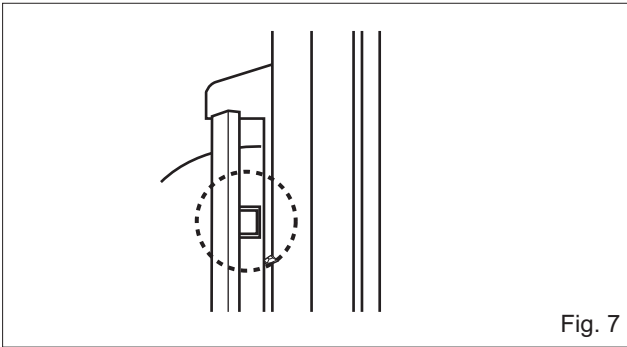


Fig. 7

3-4 FAN AND FAN MOTOR(EVAPORATOR)

1. Remove the freezer shelf. (If your refrigerator has an icemaker, remove the icemaker first)
2. Remove the plastic guide for slides on left side by unscrewing phillips head screws.
3. Remove the grille by pulling the grille fan 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.

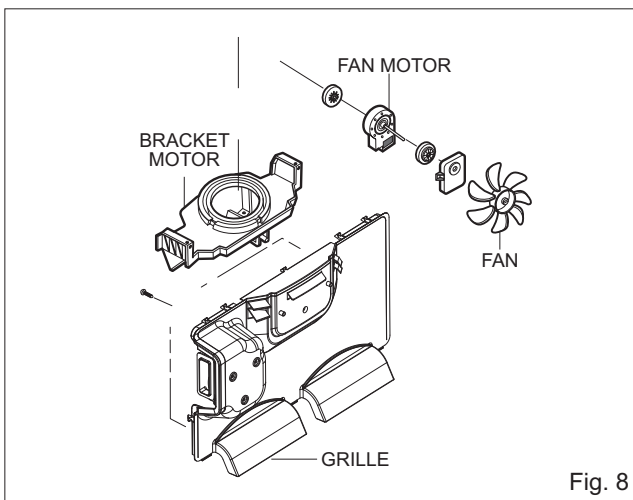


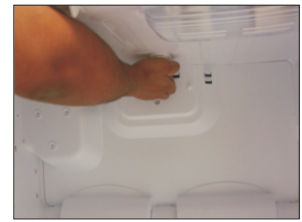
Fig. 8

* Ice Fan Scroll Assembly Replacement

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



(1)



(2)



(3)



(4)

3-5 DEFROST CONTROL ASSEMBLY

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

The Defrost Sensor works to defrost automatically. It is attached to the metal side of the Evaporator and senses its temperature. At 72°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. (Fig. 9)
2. Separate the connector with the Defrost Control assembly and replace the Defrost Control assembly after cutting the Tie Wrap. (Fig. 10)

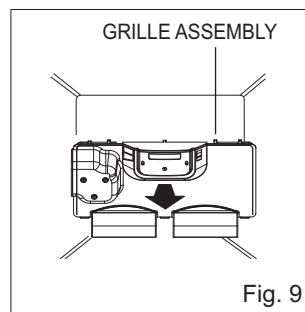


Fig. 9

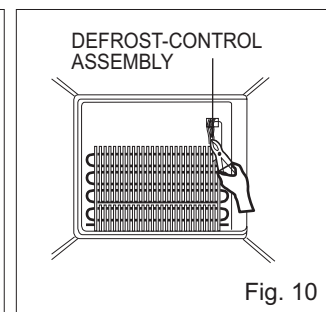
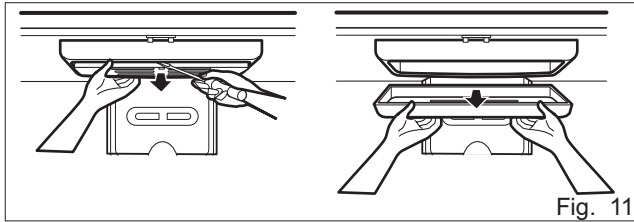


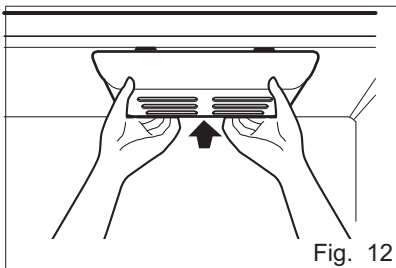
Fig. 10

3-6 LAMP



3-6-1 Refrigerator Compartment Lamp

1. Unplug Refrigerator, or disconnect power at the circuit breaker.
2. If necessary, remove 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)

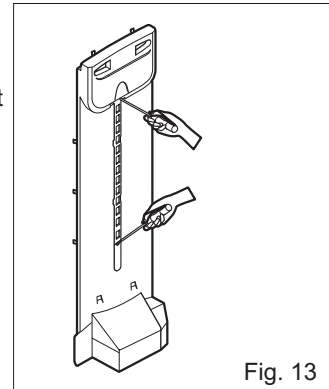


3-6-2 Freezer Compartment Lamp

1. Unplug refrigerator power cord from outlet.
2. Gently pry the lamp cover loose in the back as shown. Rotate forward to remove the front 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 front of cover into slots in freezer ceiling. Push cover up to snap back into place.

3-7 MULTI DUCT

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



3-8 MAIN PWB

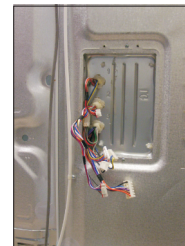
- 1) Loosen the 3 screws on the PWB cover.



- 2) Remove the PWB cover



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



3-9 DISPENSER

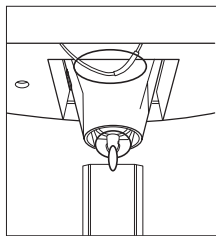
- 1) Disconnect funnel and button assembly by pulling down and forward.



- 2) Remove display frame assembly by making a gap between a 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.



3-10 DISPLAY PWB REPLACEMENT

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



- 2) Follow the steps in the pictures



3-11 FUNNEL REPLACEMENT

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



3-12 SUB PWB FOR WORKING DISPENSER

- 1) Loosen the screw on the sub PWB.

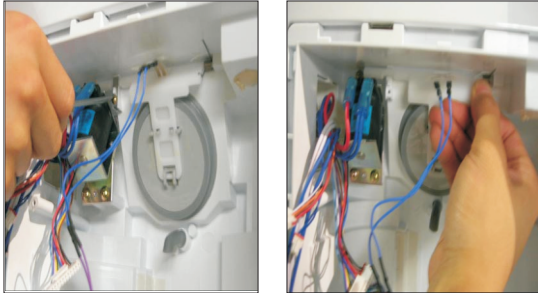


- 2) Pull the sub PWB down.
- 3) Disconnect the wire harness and replace the sub PWB in the reverse order of removal.



3-13 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.



3-14 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.

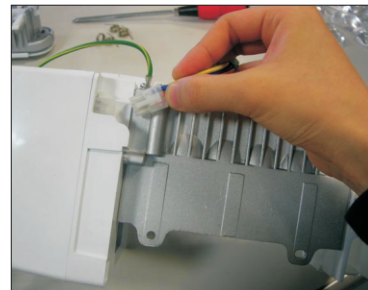


3-15 ICEMAKER ASSEMBLY

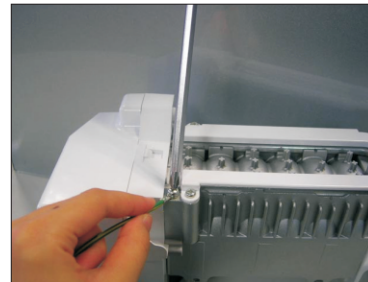
- 1) Loosen two screws as shown in the first picture.



- 2) Disconnect the wire harness & ground screw replace the icemaker assembly in the reverse order of removal.

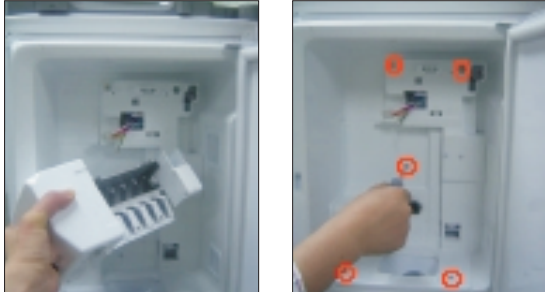


- 3) It separates a ground connection screw.



3-16 AUGER MOTOR COVER

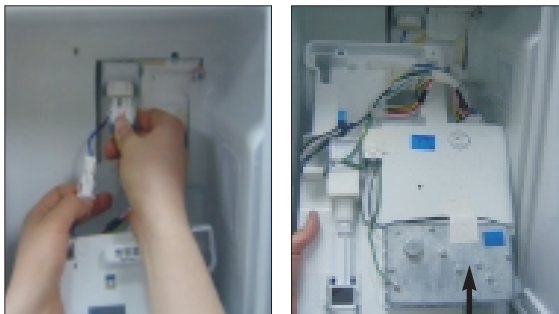
1) After removing the icemaker remove the (5) stainless screws holding the auger motor cover, shown in the pictures below.



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



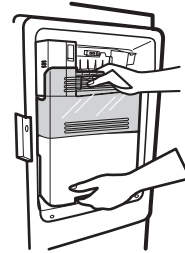
3) Disconnect wire harness of motor cover assembly. There is a auger motor on the back, as shown in the picture.



Auger Motor

3-17 HOW TO REMOVE A DOOR ICE BIN

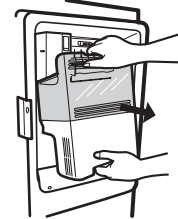
1) Grip the handles, as shown in the picture.



2) Lift the lower part slightly.

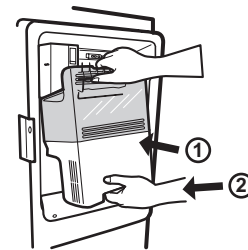


3) Take the Ice Bin out slowly.

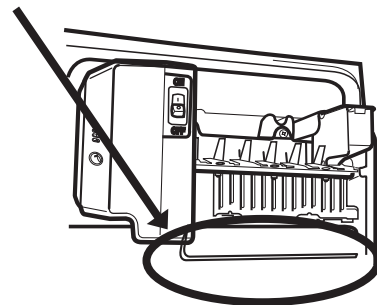


3-18 HOW TO INSERT A DOOR ICE BIN

1) Insert the Ice Bin, slightly tilting it to avoid touching the icemaker. (especially, ice maker lever)



Insert the ice bucket carefully avoid contacting the automatic shut off arm.

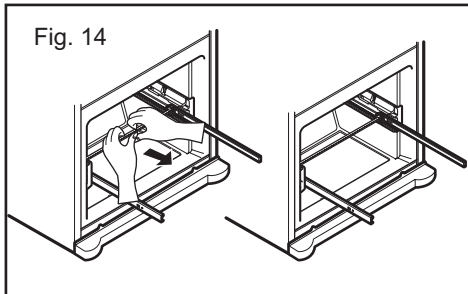


3-19 PULL OUT DRAWER

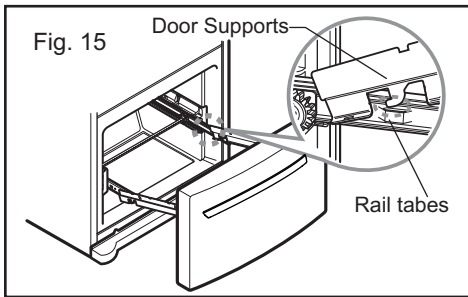
1. HOW TO INSTALL PULL OUT DRAWER

IMPORTANT: To avoid possible injury, product or property damage, you will need two people to perform the following instructions.

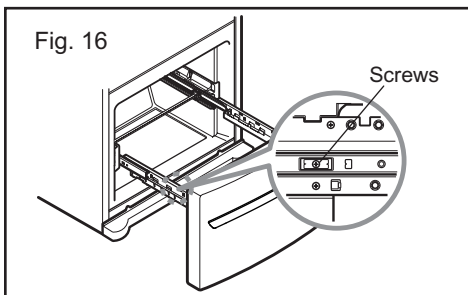
- With both hands, hold the center of the bar and pull it out to let both rails out to full extension simultaneously.



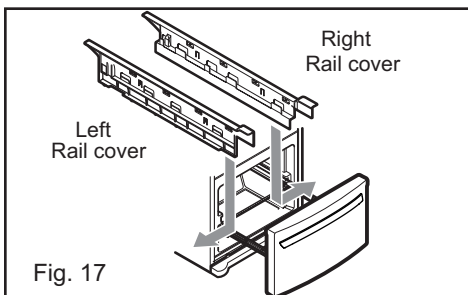
- Hook door supports into rail tabs.



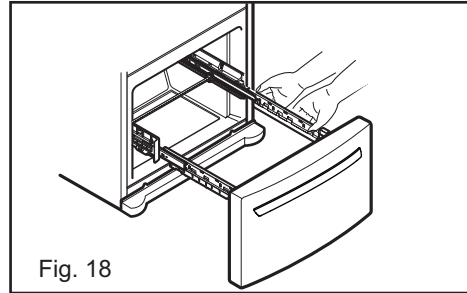
- Lower door into final position and tighten the screws.



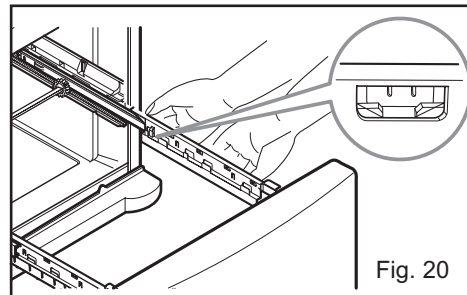
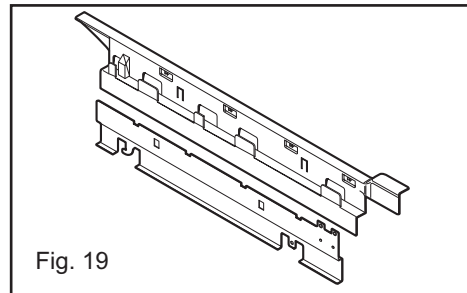
- Make sure you have a right rail cover for each side.



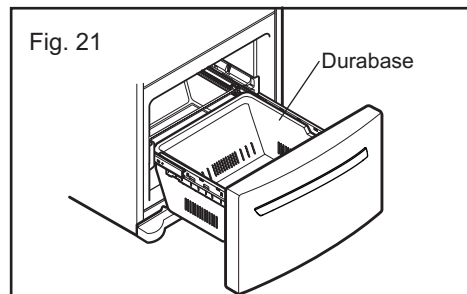
- Align the top holes of the rail cover with the top holes of the door supports to assemble the rail cover.



- Verify the hole's assembly



- With the rails pulled out to full extension, insert the durabase in the rail assembly.



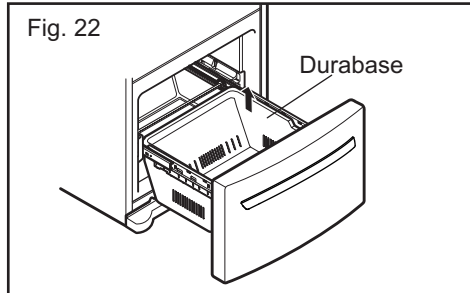
⚠ WARNING: To prevent accidental child and pet entrapment or suffocation risk. DO NOT allow them to play inside of drawer.

⚠ WARNING: DO NOT step or sit down on Freezer Door.

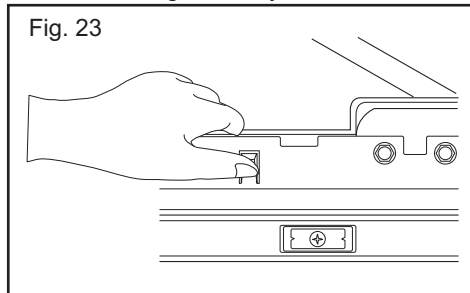
2. HOW TO REMOVE PULL OUT DRAWER

IMPORTANT: To avoid possible injury, product or property damage, you will need two people to perform the following instructions.

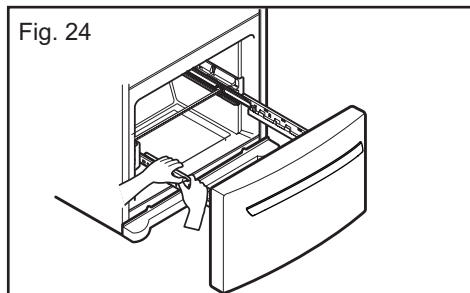
- Pull the drawer open to full lower extension. Remove durabase by lifting it from rail system.



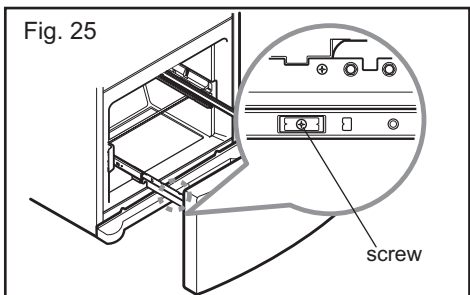
- Press both hangers with your thumbs to lift it up.



- Separate the left and right rail cover



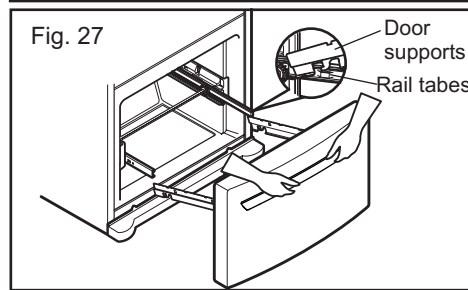
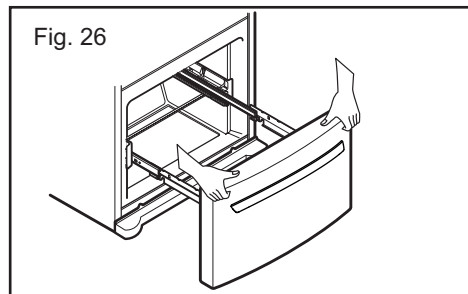
- Remove the screws of the rail on both sides.



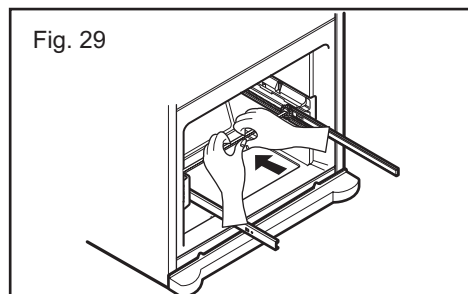
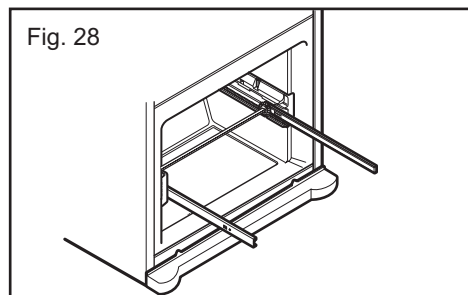
⚠ CAUTION: When removing drawer door, do not hold it by the handle. Door could fall down and you may be injured. Grasp door with both hands as pictured below when removing.

⚠ CAUTION: When laying down the drawer, be careful not to damage the floor or hurt your feet with the sharp edges on hinge side.

- With both hands, hold both sides of the door and pull it up to separate it from the rails.

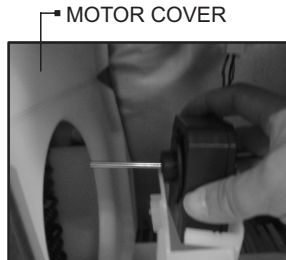
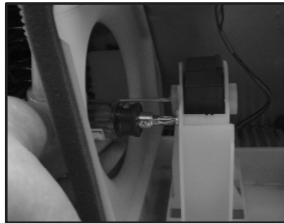


- Push rails back into drawer cavity. With both hands, hold the center of the bar and push it in so that both rails go back simultaneously.

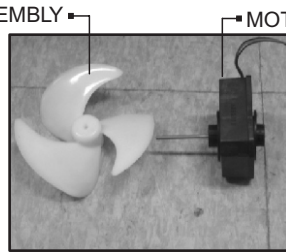


3-20 FAN AND FAN MOTOR DISASSEMBLY METHOD

- 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.

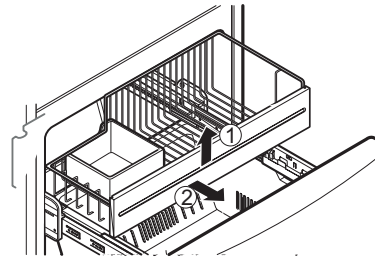


The assembly is in the reverse order of the disassembly and take special care for the following details.

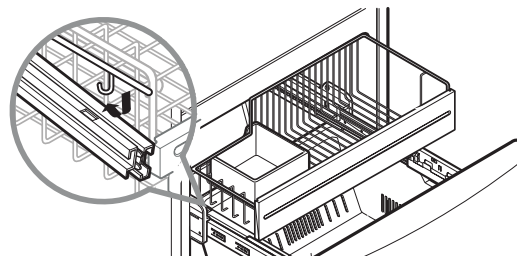
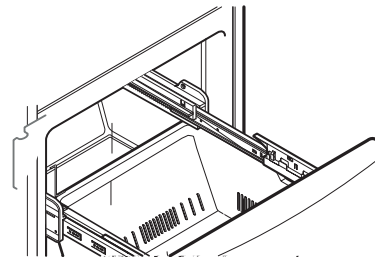
1. Be careful not to bend the tube during assembly.
2. Press the WATER DISPENSER button until water pours out and check for leakage in the CONNECTOR TUBE (It differs by the water pressure but usually takes about 2 minutes until water pours out.)

3-21 GLIDE OUT DRAWER

1. To remove, lift basket up and pull out straight out.



2. To Install, pull both rails out to full extension. Hook the basket supports into the rail tabs and push to the back of compartment.



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 repairing it.

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

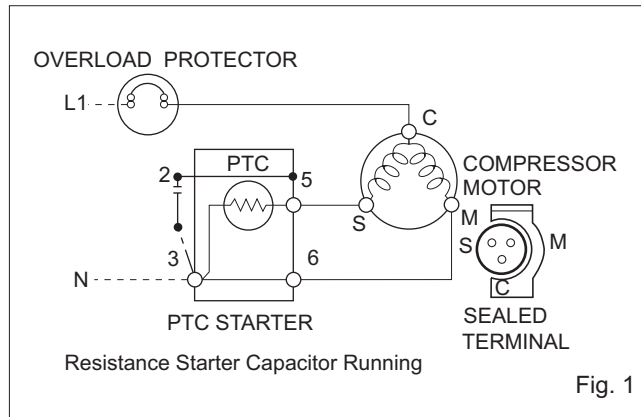
4-2-1 Composition of PTC-Starter

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

4-2-3 PTC-Applied Circuit Diagram Starting Method for the Motor



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. Using an incorrect part could result in damage to the product, fire, injury, or possibly death.

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. Using an incorrect part could result in damage to the product, fire, injury, or possibly death.

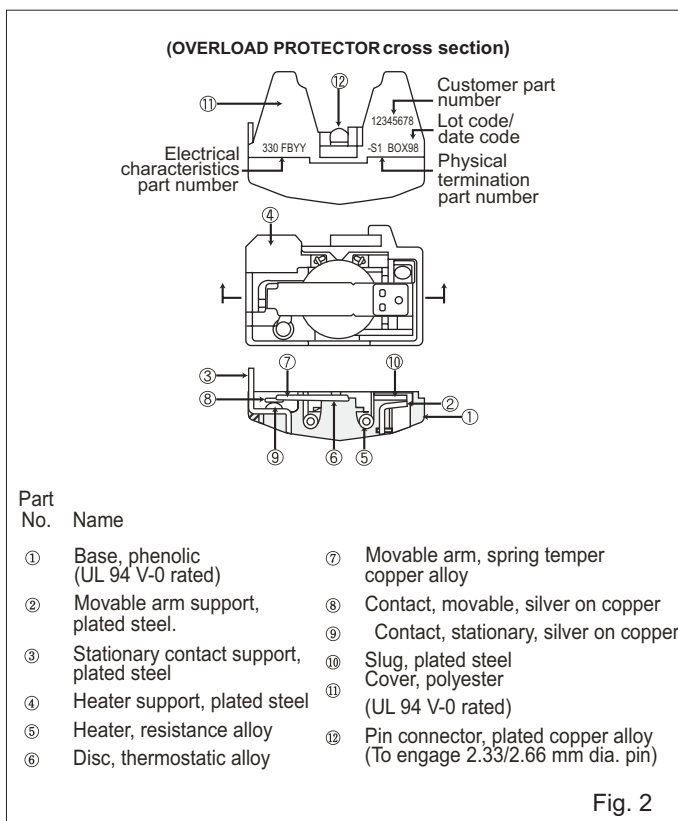
4-3 OLP (OVERLOAD PROTECTOR)

4-3-1 Definition of OLP

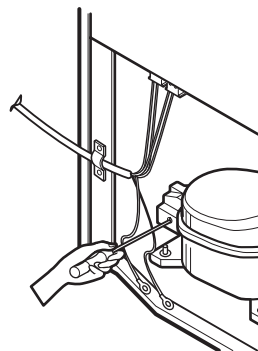
- (1) OLP (OVERLOAD PROTECTOR) is attached to the Compressor and protects the Motor by opening the circuit to the Motor if the temperature rises and activating the bimetal spring in the OLP.
- (2) When high current flows to the Compressor motor, the Bimetal works by heating the heater inside the OLP, and the OLP protects the Motor by cutting off the current flowing to the Compressor Motor.

4-3-2 Role of the OLP

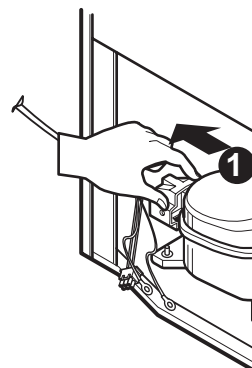
- (1) The OLP is attached to the Sealed Compressor used for the Refrigerator. It prevents the Motor Coil from being started in the Compressor.
- (2) For normal operation of the OLP, do not turn the Adjust Screw of the OLP in any way.



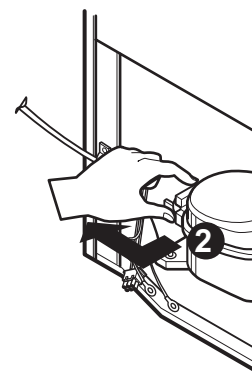
4-4 TO REMOVE THE COVER PTC



- 1) Remove the Cover Back M/C.
- (2) Remove the screw on Cover PTC.



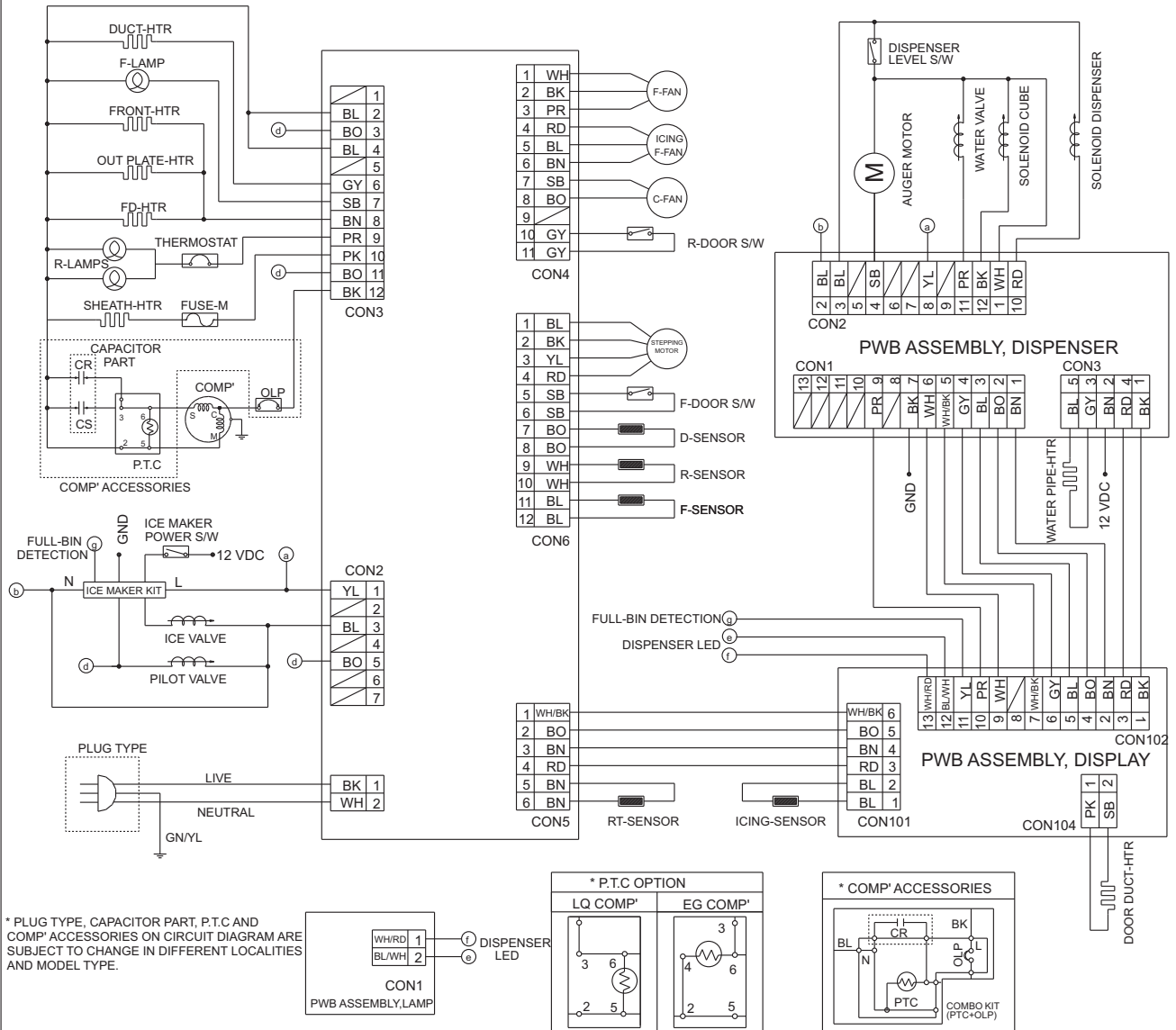
- (3) Remove two Housings on upper part of Cover PTC.
- (4) Take out the cover PTC from upper to lower position like (1).



- (5) Turn 45° in the direction of (2) and take it out.
- (6) Assembly in reverse order of disassembly.

5. CIRCUIT DIAGRAM

CIRCUIT DIAGRAM



* PLUG TYPE, CAPACITOR PART, P.T.C AND COMP' ACCESSORIES ON CIRCUIT DIAGRAM ARE SUBJECT TO CHANGE IN DIFFERENT LOCALITIES AND MODEL TYPE.

BK: BLACK
YL: YELLOW
SB: SKY BLUE
BN: BROWN

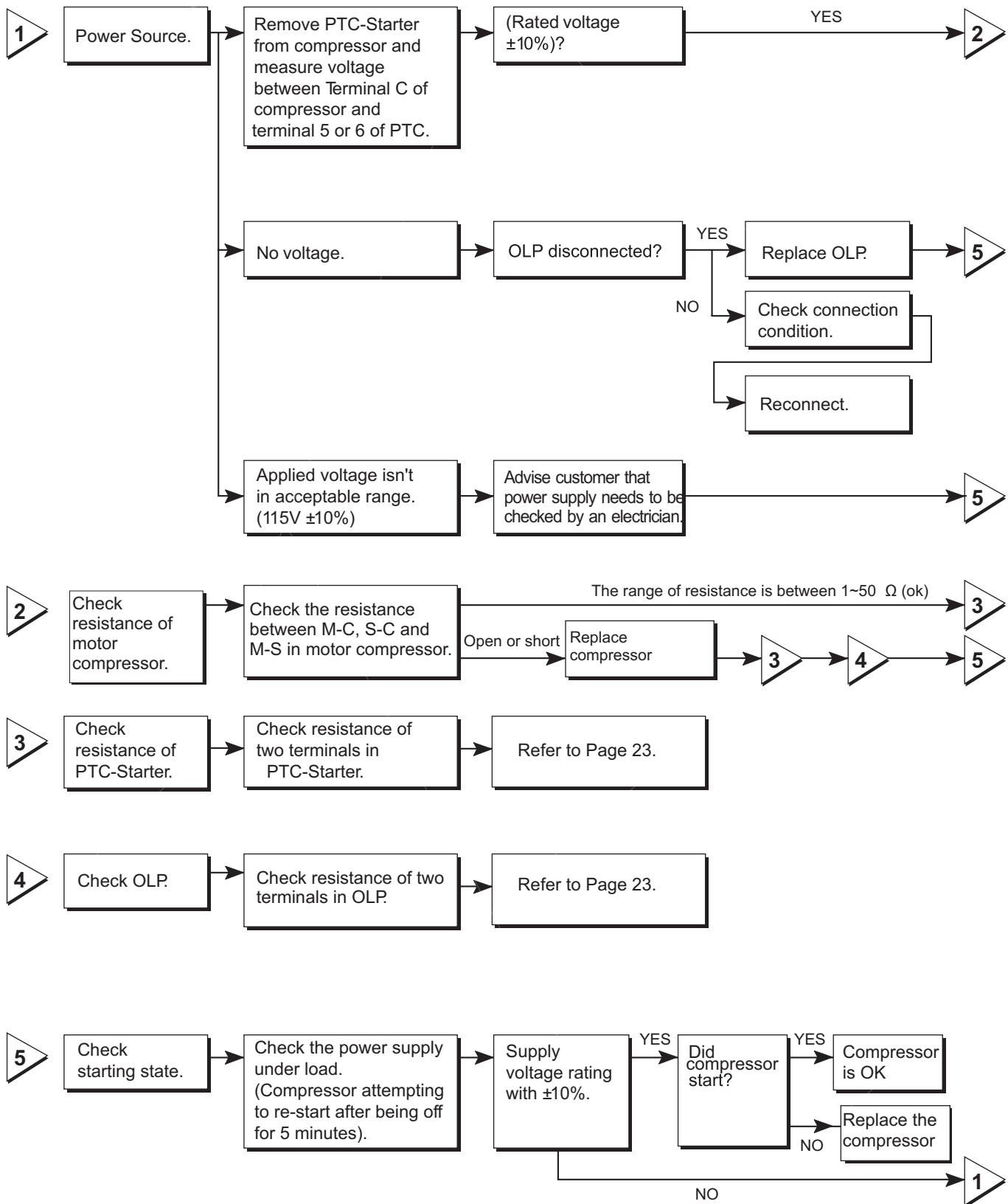
GN: GREEN
PK: PINK
BO: BRIGHT ORANGE
PR: PURPLE

GY: GRAY
WH: WHITE
BL: BLUE
RD: RED

GN/YL: GREEN/YELLOW
BL/WH: BLUE/WHITE
BK/WH: BLACK/WHITE
WH/RD: WHITE/RED

6. TROUBLESHOOTING

6-1. COMPRESSOR AND ELECTRIC COMPONENTS



6-2. PTC AND OLP

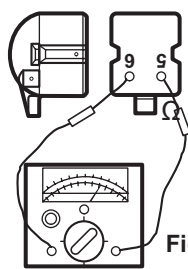
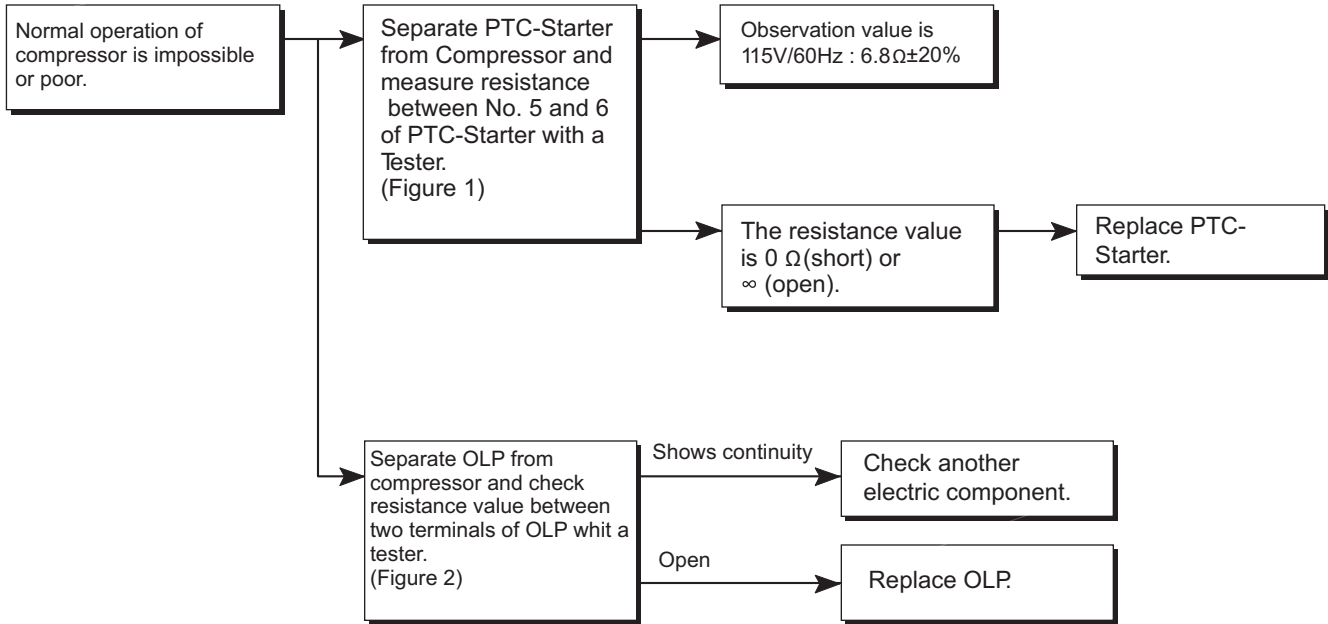


Figure 1

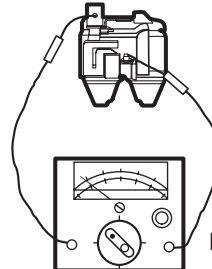
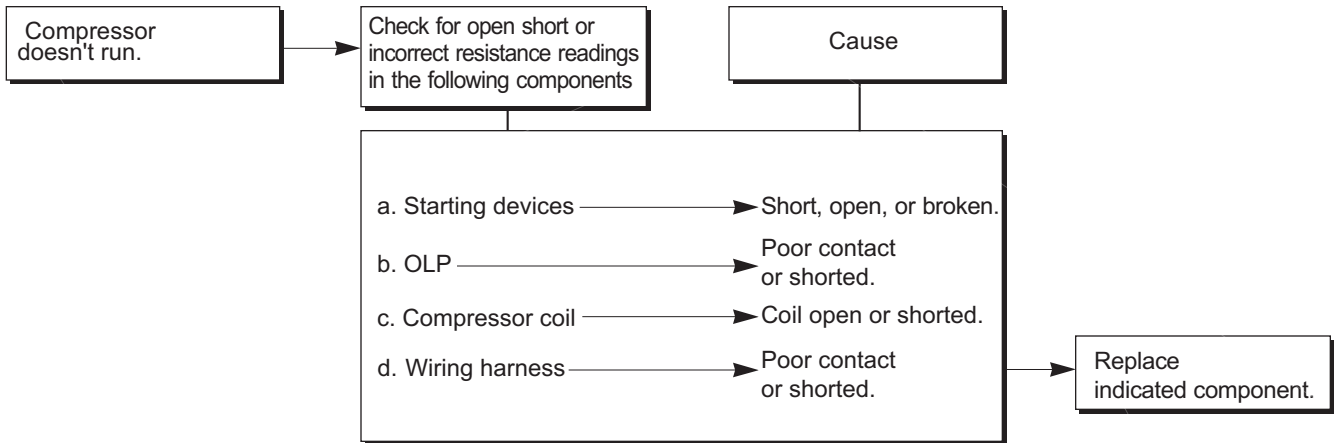


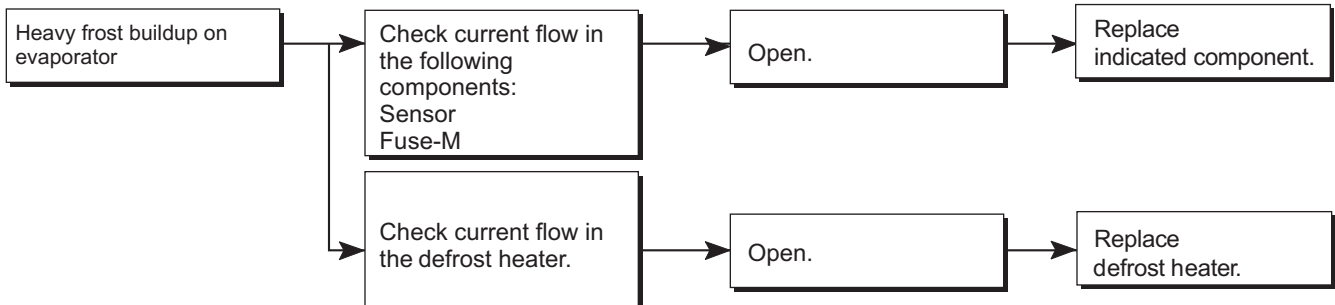
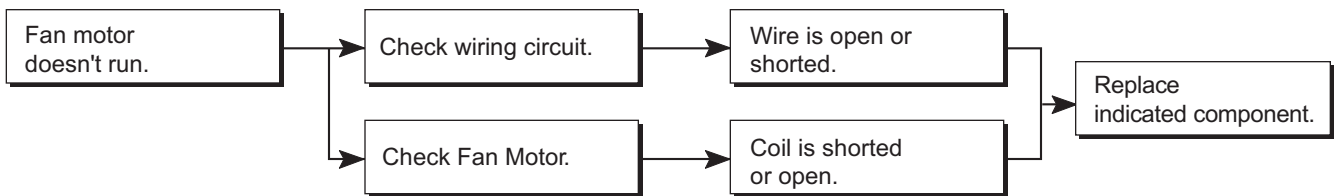
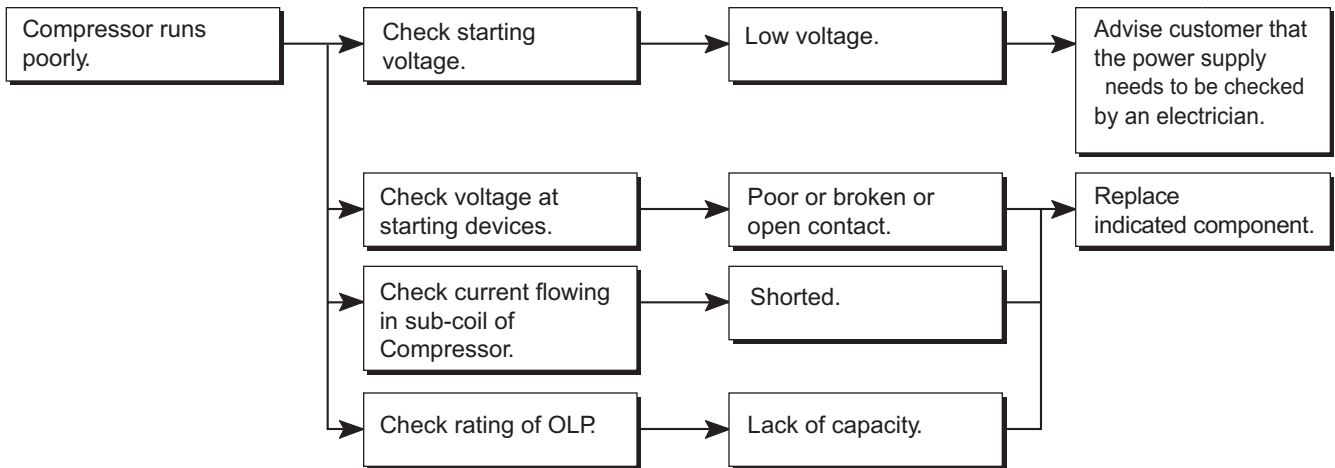
Figure 2

6-3. OTHER ELECTRICAL COMPONENTS

Not cooling at all



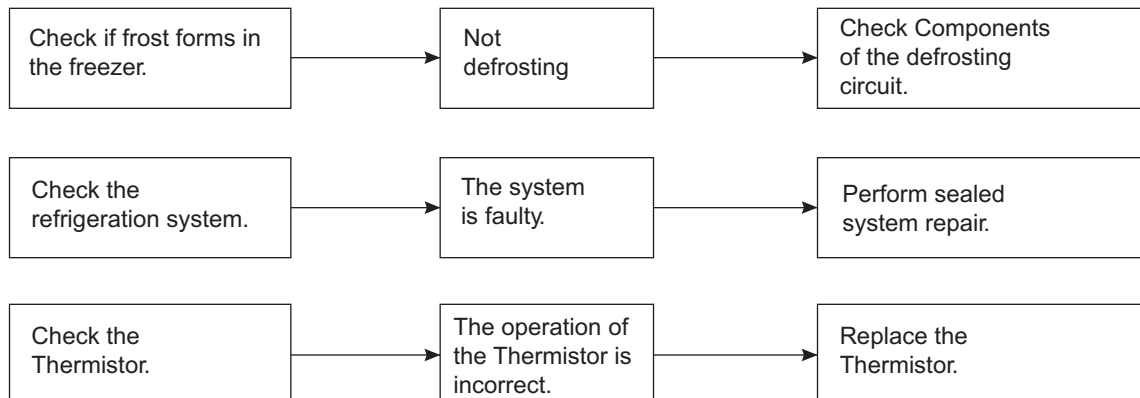
Poor cooling performance



6-4. SERVICE DIAGNOSIS CHART

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

Other possible problems:

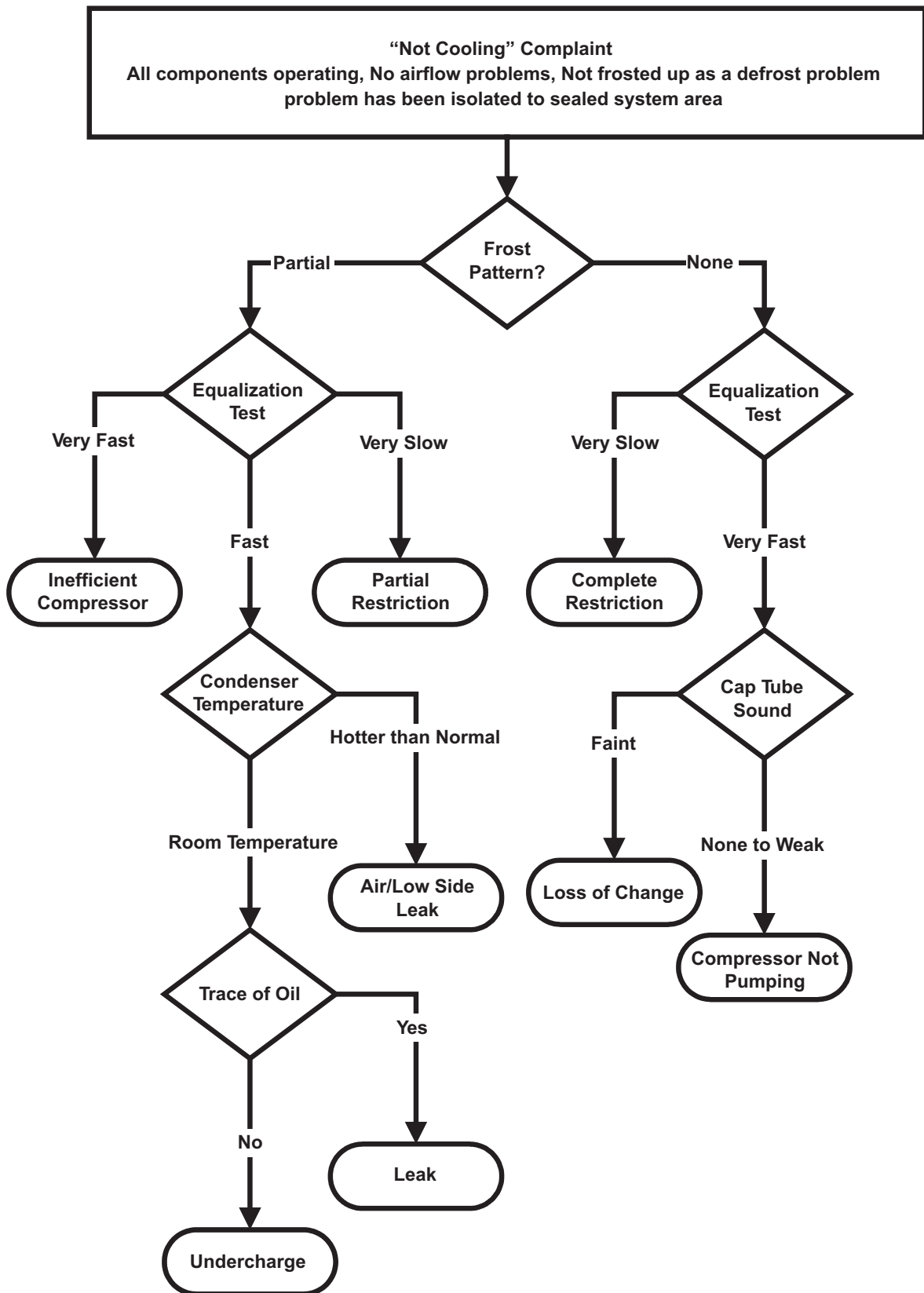


6-5. REFRIGERATION CYCLE

* Troubleshooting Chart

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

6-5-1 SEALED SYSTEM DIAGNOSIS

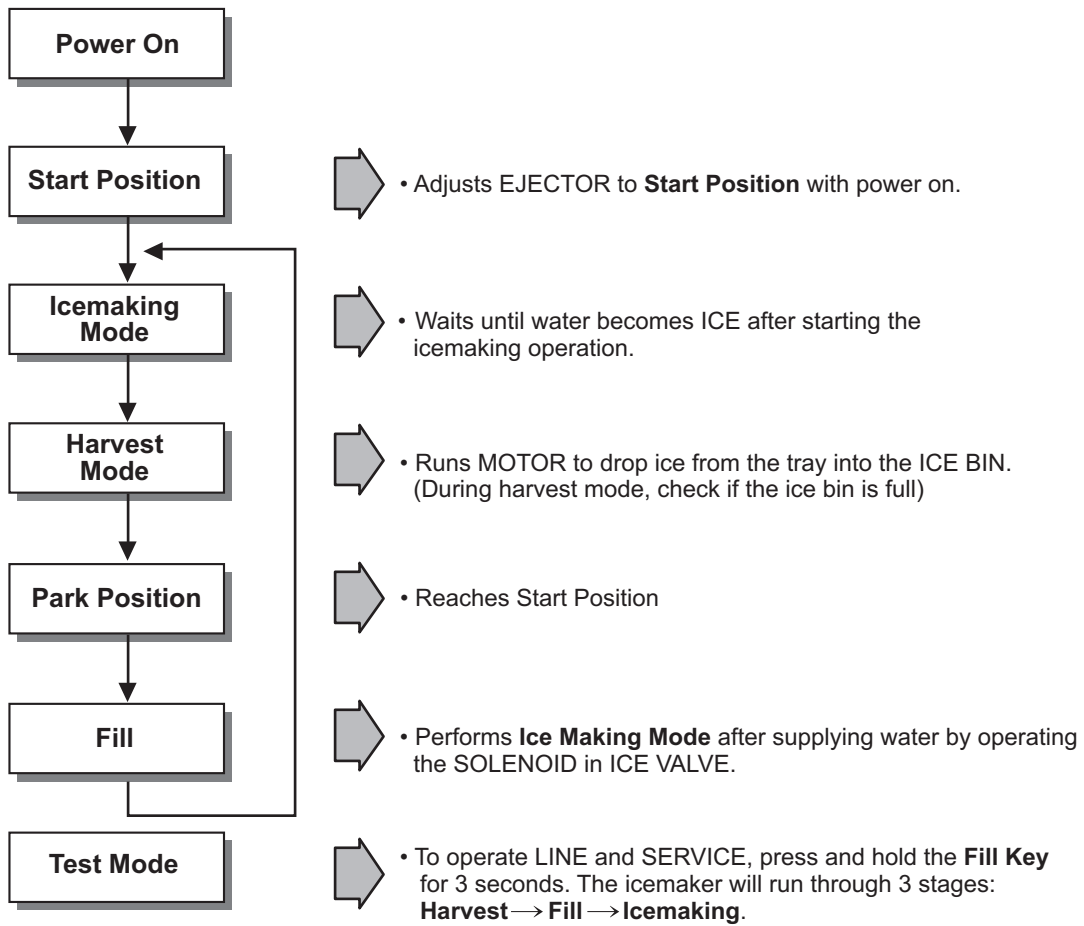


(The equalization test is trying to restart a compressor using a start kit after it has been operating.)

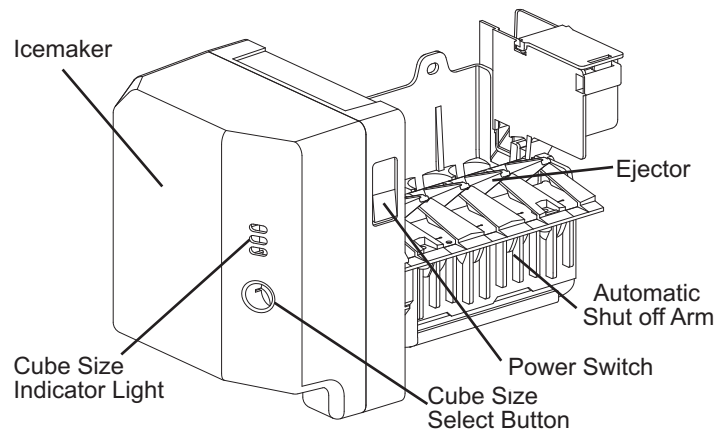
7. OPERATION PRINCIPLE AND REPAIR METHOD OF ICEMAKER

7-1 OPERATION PRINCIPLE

7-1-1 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.



7-2 ICE MAKER FUNCTIONS

7-2-1. 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.

7-2-2. 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.)

7-2-3. 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

| STAGE | TIME TO SUPPLY | INDICATIONS | REMARKS |
|-------|---------------------------|---|--|
| 1 | 3.7 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 | 3.9 sec. (FIRST STAGE) |  | |
| 3 | 4.2 sec. |  | |

7-2-5 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.

Diagnosis TABLE

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

7-3 DEFECT DIAGNOSIS FUNCTION

7-3-1 ERROR CODES shown on Ice Maker 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. |

8. DESCRIPTION OF FUNCTION & CIRCUIT OF MICOM

8-1 FUNCTION

8-1-1 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.

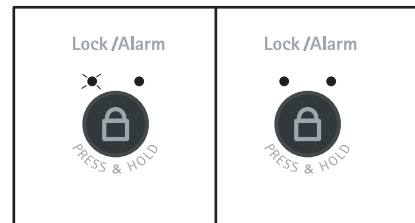


8-1-2 How to Toggle the Display between °F & °C

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.

8-1-3 Lock function (dispenser and display button lock)

1. When the refrigerator is first turned on, the buttons are not locked. The lock indicator light is turn OFF
2. To lock the display, the dispenser, and the control panel, press and hold the LOCK button for 3 seconds. The lock indicator Light is turn 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.





"LOCK"
Function ON

"LOCK"
Function OFF

8-1-4 Filter condition display function

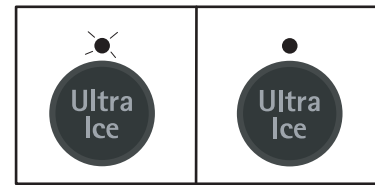
1. There is a replacement indicator light for the filter cartridge on the dispenser.
2. Water filter needs replacement once six months or of using water filter.
3. Water Filter icon turn on to tell you need to replace the filter soon.
4. After replacing the filter, press and hold the lock button more than 3 seconds.
Water Filter icon turn off with reset status.

| | | |
|------------------------------|---|---|
| Classification | In initial Power On / Filter RESET | Replace indicator light on |
| Filter Status Display |  |  |

8-1-5 Ultra Ice selection

Please select this function for quick freezing.

- Function is repeat Ultra Ice Icon whenever pressing Ultra Ice button.
- Ultra Ice function automatically turns off after a fixed time passes.



“Ultra Ice”
Function ON

“Ultra Ice”
Function OFF

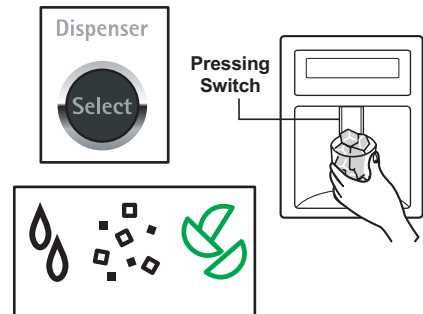
8-1-6 Dispenser use selection

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.

When after initially establishing the water comes out, the water tank inside fills and until at the time of quality the hour is caught.



8-1-7 DISPENSER LIGHT

Please select this function for DISPENSER LIGHT MODE.

1. Normal status (LIGHT icon is OFF): When dispenser is operated, DISPENSER LIGHT is ON.
2. ON status (LIGHT icon is ON): DISPENSER LIGHT is on continuously



8-1-8 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) : Door open conditions.
5. Fan motor stops when refrigerator open.

8-1-9 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.

8-1-10 Ice Compartment Fan

The Icing Fan is controlled by the the sensor on the top of the ice compartment.

The Failure sensing method is the same as in the fan motor of the freezer (refer to failure diagnosis function table for failure display)

8-1-11 Ultra Ice

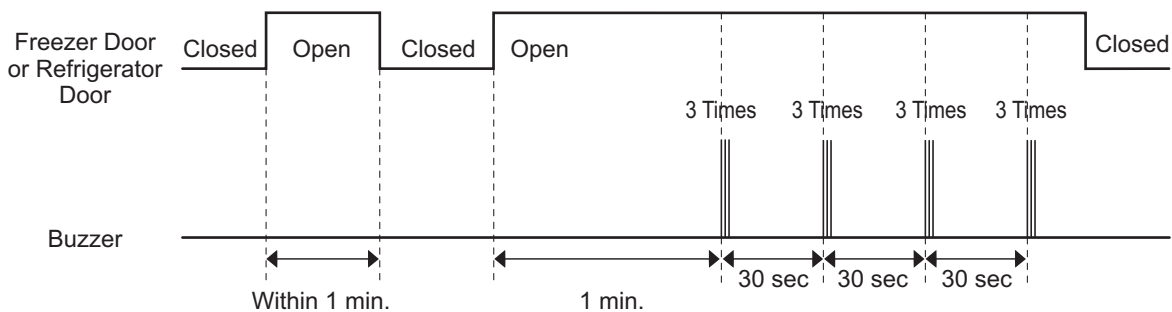
1. The purpose of this function is to intensify the cooling speed of freezer and to increase the amount of ice.
2. Whenever selection switch is pressed, selection/release, the LED will turn ON or OFF.
3. If there is a power outage and the refrigerator is powered on again, Ultra Ice will be canceled.
4. To activate this function, press the Ultra Ice key and the LED 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 Ultra Ice 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 Ultra Ice, the Ultra Ice cycle will complete its cycle after defrosting has ended.
If the defrost cycle begins when Ultra Ice has run for more than 90 minutes, Ultra Ice will run for two hours after the defrost is completed.
 - (3) If Ultra Ice is pressed during defrost, Ultra Ice LED is on but this function will start seven minutes after defrost is completed and it shall operate for three hours.
 - (4) If Ultra Ice 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 Ultra Ice.
6. For the rest of the 21 hours, the freezer will be controlled at the lowest temperature.

8-1-12 FREEZER & 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, also has a thermoprotector as a double protection.

8-1-13 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 1/2 seconds. These tones repeat every 30 seconds.
3. The alarm is cancelled when the freezer or the refrigerator is closed while the buzzer sounds.

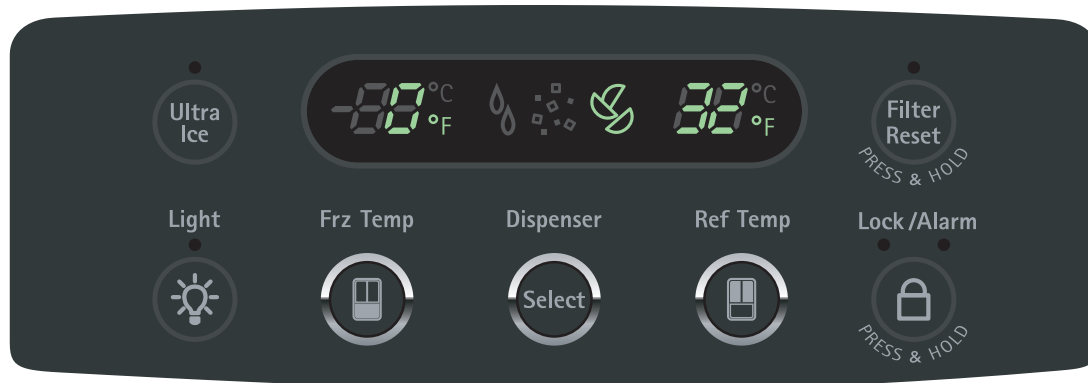


8-1-14 Defrosting (removing frost)

1. Defrosting starts each time the accumulated COMPRESSOR running time is between 7:30 and 50 hours. This time is determined by how often and how long the doors are opened.
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)

8-1-15 Defect Diagnosis Function

1. Automatic diagnosis makes servicing the refrigerator easy.
2. When a defect occurs, the buttons will not operate; but the tones, such as ding, will sound.
3. When defect is repaired the defect code is removed and refrigerator returns to normal operation (RESET).
4. The Defect code is shown on the Display.



LED check function: If simultaneously pressing Ultra Ice button and Frz Temp for a second, display LED graphics on. If releasing the button, the LED graphic displays the previous status.

8-1-16 Display OFF Mode:

To activate this mode press and hold ULTRA ICE and FRZ TEMP key over 5 seconds until the lights turn off. If the Display is touched or any door opens the lights will turn on and after 20 seconds of inactivity the lights will turn off automatically.

To exit Display OFF Mode press and hold ULTRA ICE and FRZ TEMP key over 5 seconds until the lights tilt.

Display OFF Mode does not affect the temperature control settings of the unit.

Note: This Function is activate by default.

ERROR CODE on display panel

| No. | ITEM | ERROR CODE | | CONTENTS | REMARKS |
|-----|---|-----------------------------------|----------|--|---|
| | | FRZ TEMP | REF TEMP | | |
| 1 | Failure of Freezer sensor | Er | FS | Cut or short circuit wire. | Inspect Connecting wires on each sensor |
| 2 | Failure of Refrigerator sensor | Er | rS | Cut or short circuit wire. | |
| 3 | Failure of defrost sensor | Er | dS | Cut or short circuit wire. | |
| 4 | Failure of Room Temperature sensor | When display check mode: Er rt | | Cut or short circuit wire. | |
| 5 | Failure of Icing sensor | Er | IS | Cut or short circuit wire. | |
| 6 | Failure of defrost mode | Er | dH | When defrost sensor doesn't reach 46°F(8°C) within 1 hour after starting defrost | Snapping of defrost heater or Temperature fuse, pull-out of connector (indicated minimum 1 hour after failure occurs) |
| 7 | Failure of BLDC Fan Motor at Freezing Compartment | Er | FF | If there is no fan motor signal for more than 115sec in operation fan motor | Poor motor, hooking to wires of fan, contact of structures to fan, snapping or short circuit of Lead wires |
| 8 | Failure of BLDC Fan Motor for Ice Maker at Freezing compartment | Er | IF | If there is no fan motor signal for more than 114sec in operation fan motor | Poor motor, hooking to wires of fan, contact of structures to fan, snapping or short circuit of Lead wires |
| 9 | Failure of Communication between display and Main PCB | Er | CO | If there is no communication between display and main PCB | check the wires of display connection |

LED check function: If simultaneously pressing Ultra Ice button and Frz Temp for a second, display LED graphics on. If releasing the button, the LED graphic displays the previous status.

8-1-17 TEST Mode

1. The Test mode allows checking the PCB and the function of the product as well as finding out the defective part in case of an error.
2. The test mode is operated by pressing two buttons at Display panel.
3. While in the test mode, the function control button is not recognized, but the recognition tone sounds.
4. After exiting the test mode, be sure to reset by unplugging and then plugging in the appliance.
5. If an error, such as a sensor failure, is detected while in the test mode, the test mode is cleared and the error code is displayed.
6. While an error code is displayed, the test mode will not be activated.

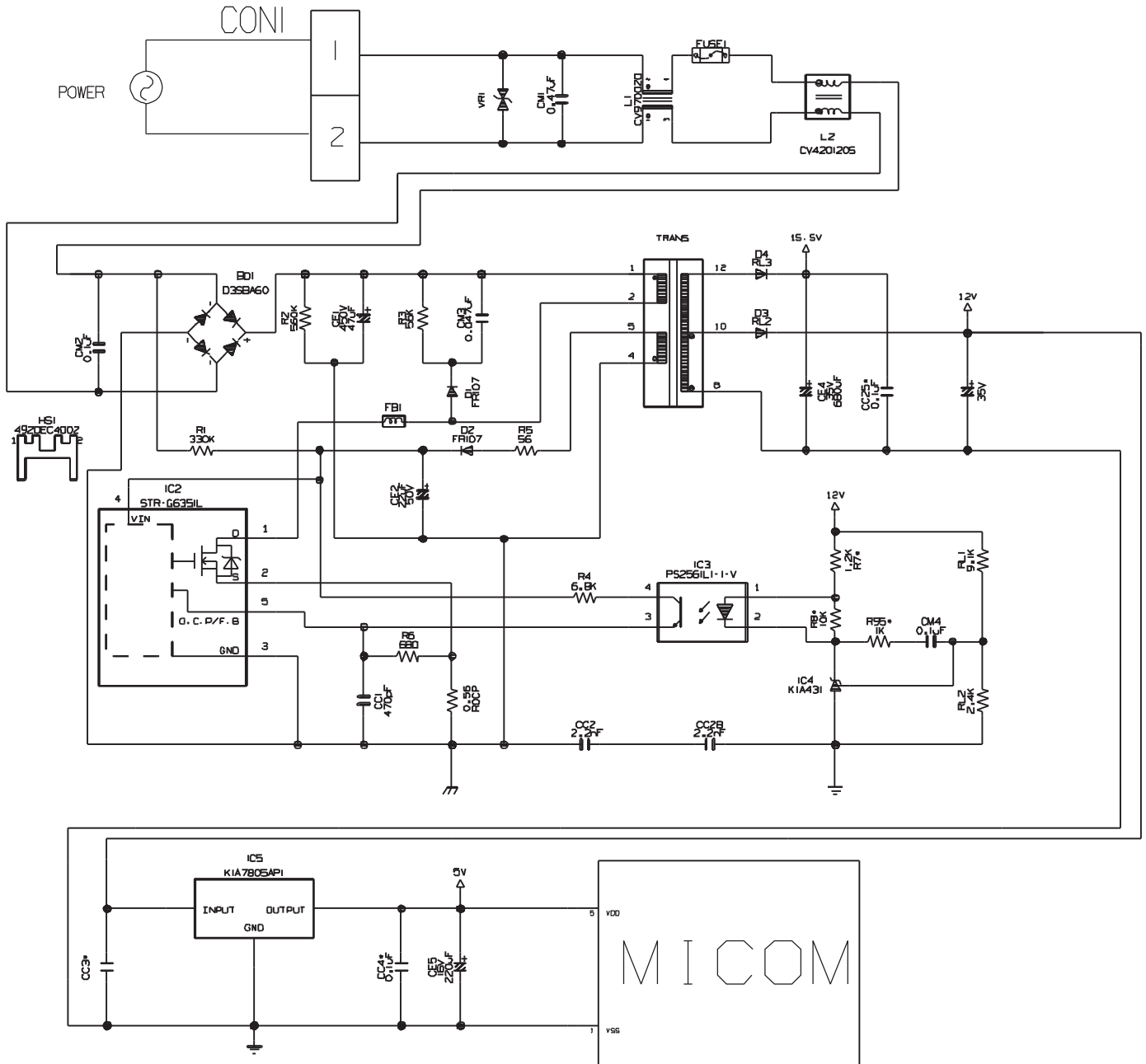
Table 1. Function Test

| MODE | OPERATION | FUNCTION | REMARKS |
|-------|--|---|---|
| TEST1 | Push Test Switch (in the main Board) once. | 1) Continuous operation of the COMPRESSOR and the Freezer fan 2) Stepping DAMPER OPEN 3) Defrosting HEATER OFF 4) DISPLAY LED all ON | Maximum test time: 5 minutes |
| TEST2 | Push TEST Switch once in TEST MODE1. | 1) Continuous operation of the COMPRESSOR and the Freezer fan 2) Stepping DAMPER CLOSE 3) Defrosting HEATER OFF 4) DISPLAY LED shows no. 2 | Maximum test time: 5 minutes |
| TEST3 | Push TEST Switch once in TEST MODE 2. | 1) COMPRESSOR and the Freezer fan OFF 2) Stepping DAMPER CLOSE 3) Defrosting HEATER ON 4) DISPLAY LED shows no. 3 | Reset if the Temperature of the Defrosting Sensor is 46°F(8°C)or more. Maximum test time: 1 hour |
| RESET | Push TEST Switch once in TEST MODE3. | Reset to the previously setting Before TEST MODE. | The compressor will Start after a 7-minute Delay. |

8-2 PCB FUNCTION

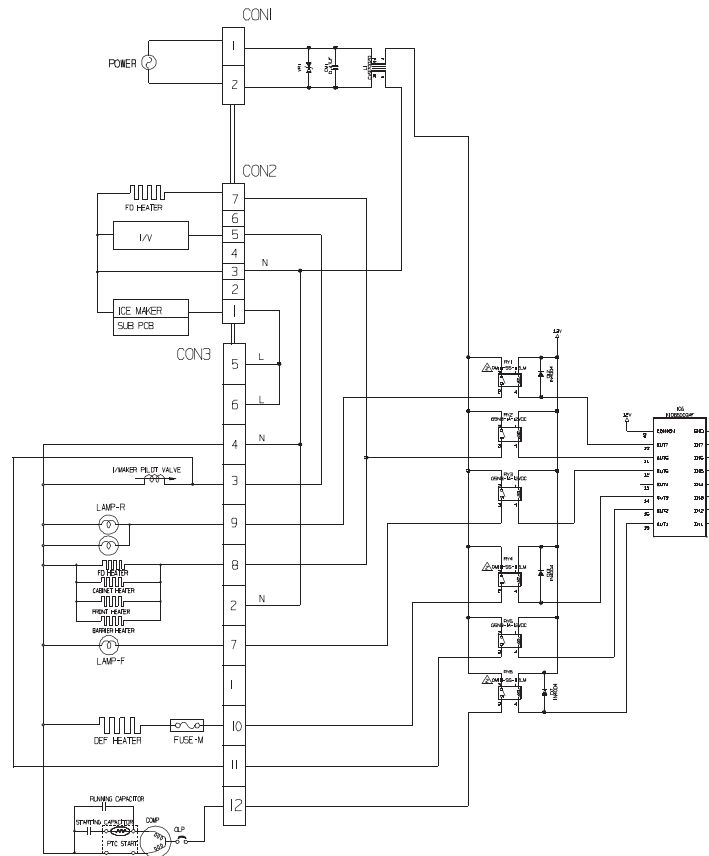
8-2-1 Power Circuit

1. Power is supplied to the control board at pin1 and 3 of connector #1.



8-2-2 Load / Fan & Open Door Detection Circuit

1. Load Drive Condition Check



To measure outputs of the control board, check voltages between the pins for the following components:



*LOAD DRIVE AREA ON MAIN PCB



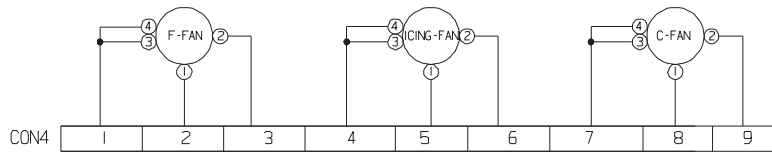
| CONNECTOR 2 | | | | | | | |
|-------------|-----|-----|-----|-----|---|-----|---------|
| PIN | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| | N/C | N/C | N/C | N/C | N | N/C | I/MAKER |

| CONNECTOR 3 | | | | | | |
|-------------|----------|-----------|---------|-------------|--------|--------|
| PIN | 12 | 11 | 10 | 9 | 8 | 7 |
| | 6 | 5 | 4 | 3 | 2 | 1 |
| | REC COMP | Water P/V | DEF HTR | LAMP-R | FD-HTR | LAMP-F |
| | L | L | N | I/MAKER P/V | N | N/C |

Check AC Voltage for loads, regarding following table.

| Circuit | A | B | Voltage between A & B |
|-----------|--------------|-------------|-----------------------|
| LAMP-R | CON 3 PIN 9 | CON 3 PIN 4 | 115 Vac |
| LAMP-F | CON 3 PIN 7 | CON 3 PIN 4 | 115 Vac |
| FD-HTR | CON 3 PIN 8 | CON 3 PIN 4 | 115 Vac |
| DEF-HTR | CON 3 PIN 10 | CON 3 PIN 4 | 115 Vac |
| WATER P/V | CON 3 PIN 11 | CON 3 PIN 4 | 115 Vac |
| REC COMP | CON 3 PIN 12 | CON 3 PIN 4 | 115 Vac |

To measure output of the fans on the control board check voltages between the pins for the following components:

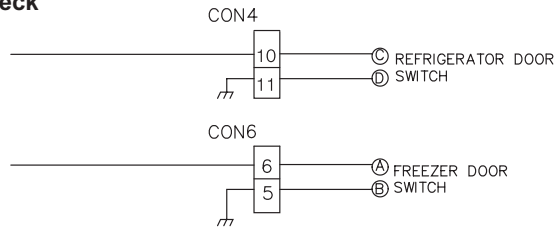


| FAN | PIN NUMBER | PIN NUMBER | OUTPUT VOLTAGE | |
|--------------------------|------------|------------|-----------------|---------------|
| | | | MOTOR ON | MOTOR OFF |
| Freezing compartment fan | Con4 Pin1 | Con4 Pin2 | 13 VDC - 15 VDC | 2 VDC or less |
| Machine compartment fan | Con4 Pin7 | Con4 Pin8 | 13 VDC - 15 VDC | 2 VDC or less |
| Icing compartment fan | Con4 Pin4 | Con4 Pin5 | 13 VDC - 15 VDC | 2 VDC or less |



| CONNECTOR 4 | | | | | | | | | | |
|-------------|-------|---|-----------|---|---|-------|---|---|---------------|-------|
| PIN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 11 |
| | F-FAN | | ICING-FAN | | | C-FAN | | | R-DOOR 8/W | |
| | V | G | F | V | G | F | V | G | F | |

3. Open Door Detection Circuit Check



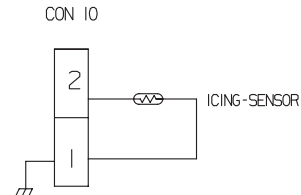
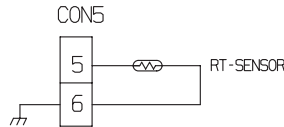
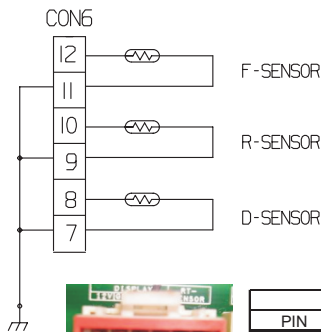
| Measurement Location | Pin 10 & 11 of con4 Ref.Door Pin 5 & 6 of con6 Fre.Door |
|----------------------|--|
| Closed | 5 V |
| Open | 0 V |



| CONNECTOR 4 | | | | | | | | | | | |
|-------------|-------|---|-----------|---|---|-------|---|------------|---|----|----|
| PIN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| | F-FAN | | ICING-FAN | | | C-FAN | | R-DOOR S/W | | | |
| | V | G | F | V | G | F | V | G | F | | |

| CONNECTOR 6 | | | | | | | | | | | | |
|-------------|----------------|---|---|---|------------|---|-------|---|-------|----|-------|----|
| PIN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | Stepping Motor | | | | F-Door S/W | | D-SNR | | R-SNR | | F-SNR | |

8-2-3 Temperature Sensor Circuit



"LOCATED ON DISPLAY PCB"



| CONNECTOR 4 | | | | | | |
|-------------|---------|-----|-----|-----|-----------|---|
| PIN | 1 | 2 | 3 | 4 | 5 | 6 |
| | DISPLAY | | | | RT-SENSOR | |
| | 12V | GND | RXD | TXD | | |



| CONNECTOR 6 | | | | | | | | | | | | |
|-------------|----------------|---|---|---|------------|---|-------|---|-------|----|-------|----|
| PIN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | Stepping Motor | | | | F-Door S/W | | D-SNR | | R-SNR | | F-SNR | |

| TEMPERATURE | RESISTANCE OF FREEZER/Icing SENSOR | RESISTANCE OF REFRIGERATOR & DEFROST SENSOR & ROOM SENSOR |
|------------------|------------------------------------|---|
| - 20 °C (-4 °F) | 22.3 KΩ | 77 KΩ |
| - 15 °C (5°F) | 16.9 KΩ | 60 KΩ |
| - 10 °C (14 °F) | 13.0 KΩ | 47.3 KΩ |
| - 5 °C (23 °F) | 10.1 KΩ | 38.4 KΩ |
| 0 °C (32 °F) | 7.8 KΩ | 30 KΩ |
| + 5 °C (41 °F) | 6.2 KΩ | 24.1 KΩ |
| + 10 °C (50 °F) | 4.9 KΩ | 19.5 KΩ |
| + 15 °C (59 °F) | 3.9 KΩ | 15.9 KΩ |
| + 20 °C (68 °F) | 3.1 KΩ | 13 KΩ |
| + 25 °C (77 °F) | 2.5 KΩ | 11 KΩ |
| + 30 °C (86 °F) | 2.0 KΩ | 8.9 KΩ |
| + 40 °C (104 °F) | 1.4 KΩ | 6.2 KΩ |
| + 50 °C (122 °F) | 0.8 KΩ | 4.3 KΩ |

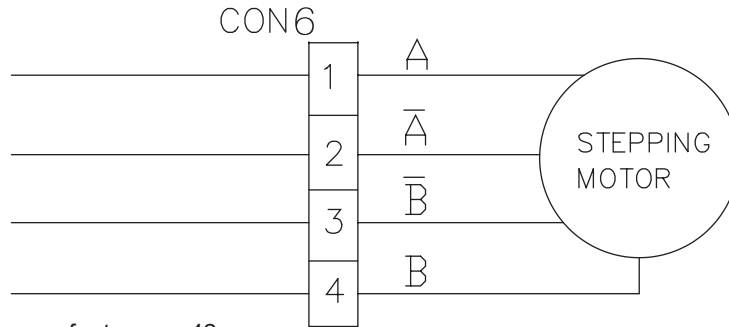
- The resistance of the SENSOR has a ±5% common difference.
- Measure the resistance of the SENSOR after leaving it for over 3 minutes in the measuring temperature. This delay is necessary due to sensor response speed.

8-2-4 Refrigeration Compartment Stepping Motor Damper Circuit

A reversible DC motor is used to open and close the damper.

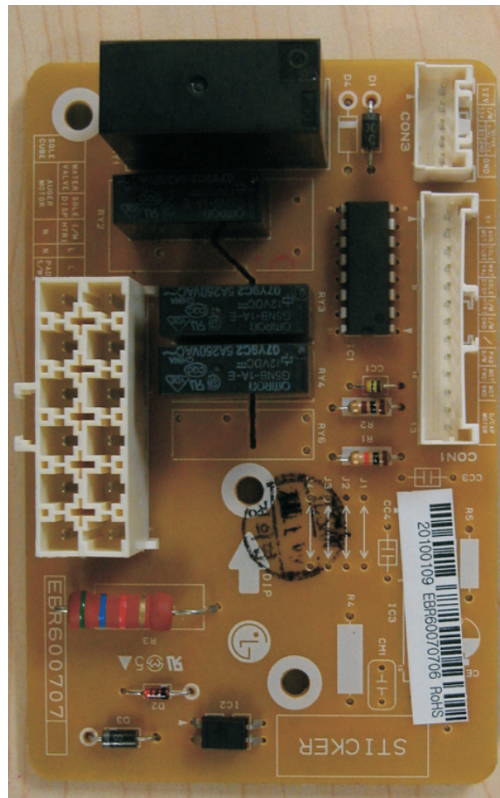
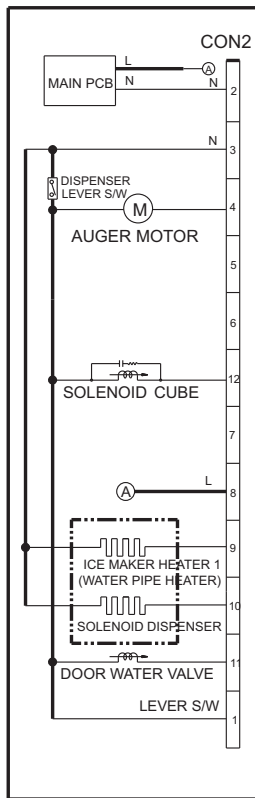
To open the damper, push test button once.

To close the damper, push test button twice.



To see connector 6 picture, refer to page 42

8-2-5 Dispenser Drive Circuit



| CIRCUIT | PIN NUMBER | PIN NUMBER | OUTPUT VOLTAGE |
|--------------------|--------------|-------------|----------------|
| Auger Motor | Con 2 Pin 4 | Con 2 Pin 3 | 115 VAC |
| Solenoid Cube | Con 2 Pin 12 | Con 2 Pin 3 | 115 VAC |
| Pilot/Water Valve | Con 2 Pin 11 | Con 2 Pin 3 | 115 VAC |
| Solenoid Dispenser | Con 2 Pin 10 | Con 2 Pin 3 | 115 VAC |

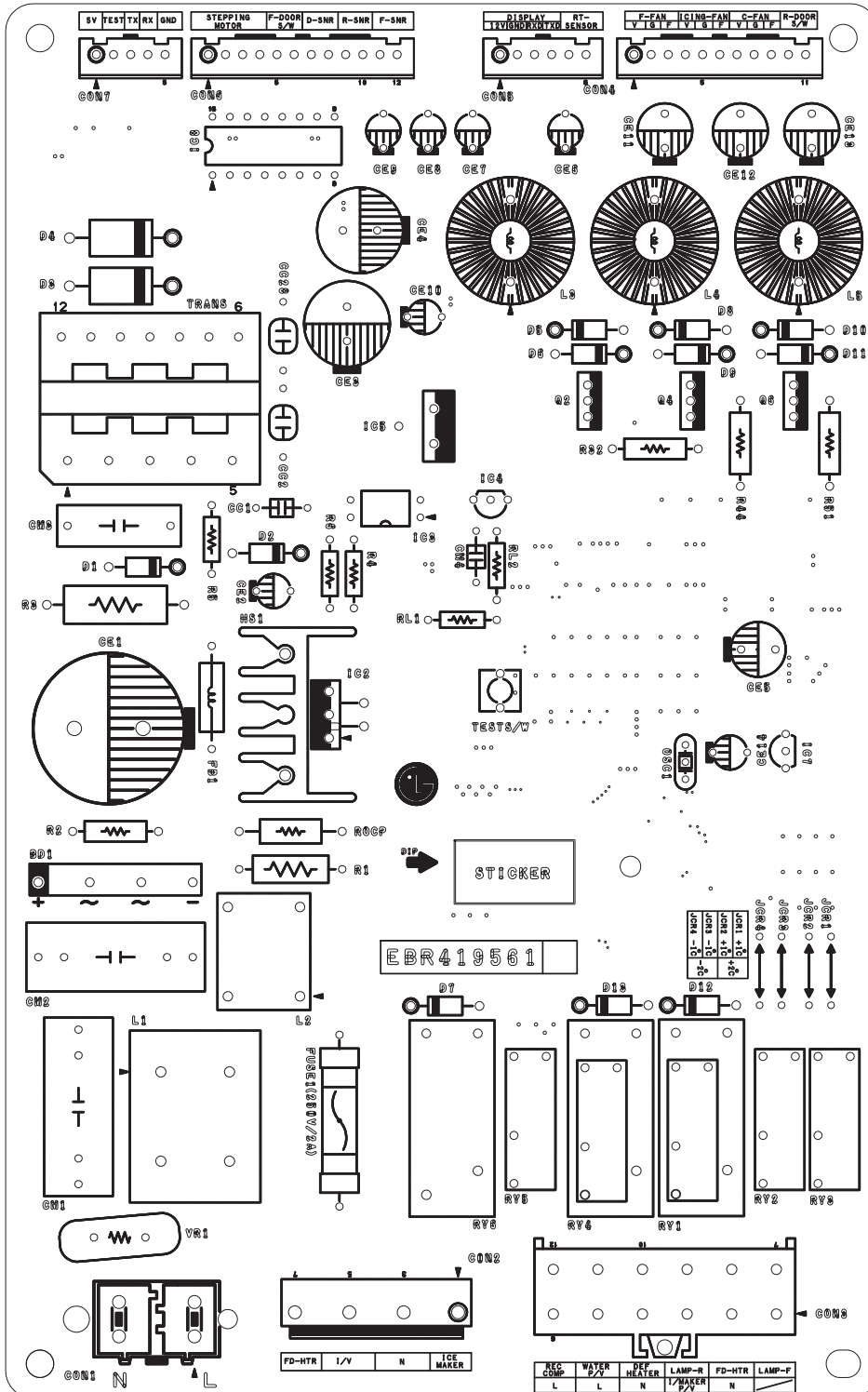
8-3 TROUBLESHOOTING

| PROBLEM | INDICATED BY | CHECK | CHECKING METHOD | CAUSE | SOLUTION |
|-----------------------|-------------------------------|---|---|--|--|
| POWER SOURCE is poor. | 1. The whole | 1. FREEZER/ REFRIGERATOR. | Check if FREEZER/REFRIGERATOR DOOR IS OPEN and check display. | POWER SOURCE is poor. | Replace Main PWB |
| | | 2. If LAMP is dim. | Check visually. | Applied voltage error. | Replace Main PWB |
| | 2. DISPLAY LED | 3. The connection of the MAIN PWB CONNECTOR. | Check connection of CONNECTOR. | CONNECTOR connection is poor. | Reconnect CONNECTOR |
| | | | | TRANS FUSE is open. | Replace Main PWB |
| COOLING is poor. | NO COOLING. | 1. If the COMPRESSOR operate. | USE TEST MODE1 (forced COOLING). If less than 7 minutes pass after compressor shuts off, don't press the KEY and wait. | COMPRESSOR locked or blocked. | Replace OLP, PTC. |
| | | | | OLP, PTC is poor. COMPRESSOR RELAY is poor. | Replace MAIN PWB. |
| | | | | THE CONNECTING WIRE is poor. | Check the connection of the black wire of the MAIN PWB CONNECTOR (CON3). |
| | 2. If refrigerant is leaking. | Measure the amount of frost sticking on EVAPORATOR and the surface temperature of the condenser pipe. | Refrigerant leakage. | Replace the leaking part and replace any lost refrigerant. | |
| | | | | | FREEZER TEMPERATURE is incorrect |
| | CONNECTING WIRE is poor. | Certify the MOTOR and the connection of the wire of the MAIN PWB CONNECTOR (CON4). | | | |
| | 2. If DEFROSTING is normal. | Check the amount of frost sticking on the EVAPORATOR . | DEFROSTING is poor. | See DEFROSTING is poor. | |
| | 3. If SENSOR is normal. | of the Refrigerator SENSOR. | SENSOR RESISTANCE is poor. | Replace SENSOR. | |
| | 4. Door Line contact. | Check the seal when the door is closed. | Door liner damaged. | Replace door liner. | |

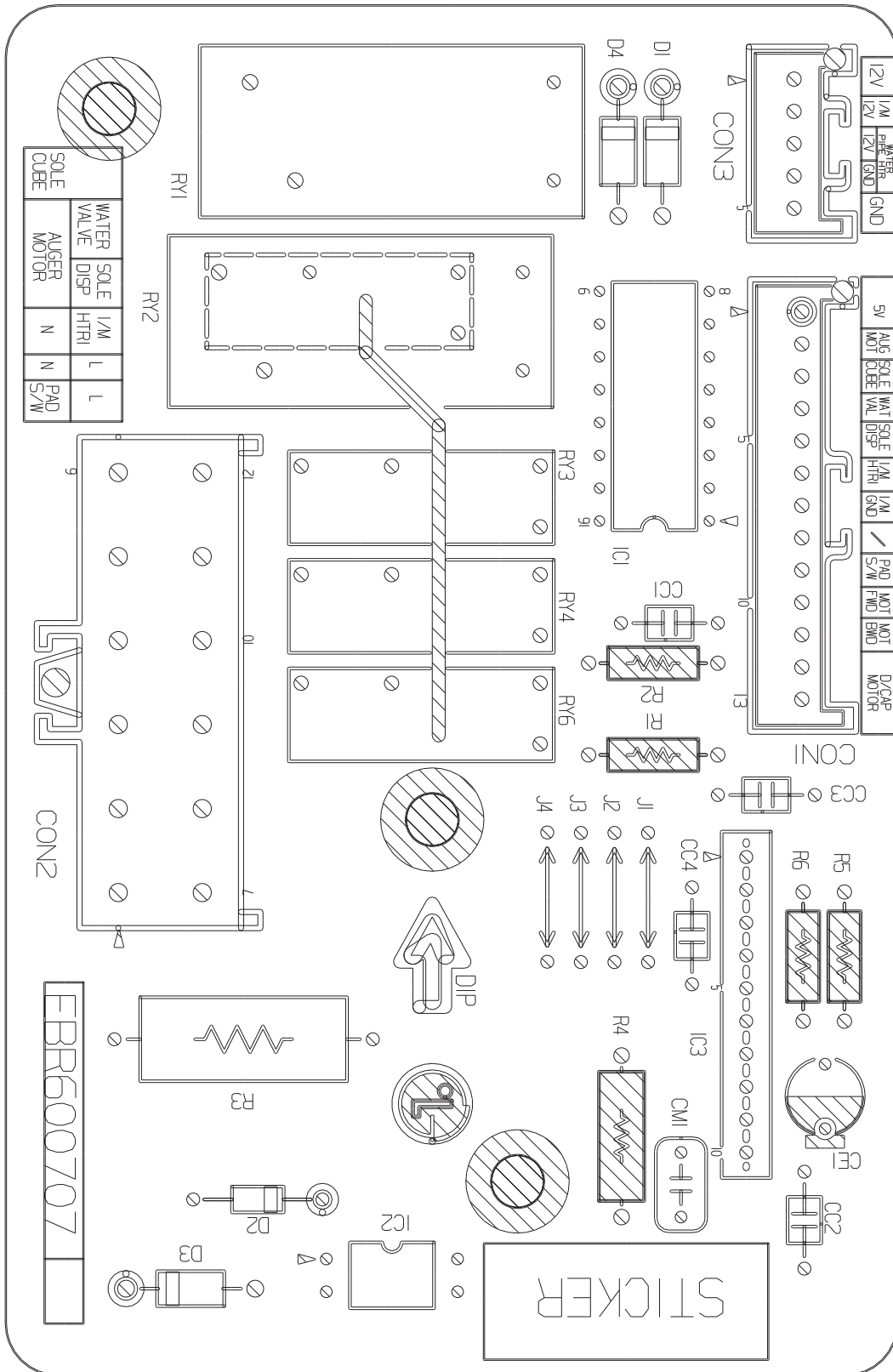
| PROBLEM | INDICATED BY | CHECK | CHECKING METHOD | CAUSE | SOLUTION |
|--|---|--|--|---------------------------------|---|
| COOLING is poor. | If REFRIGERATOR TEMPERATURE is too low. | 1. If FREEZER TEMPERATURE is normal. | Check is FREEZER TEMPERATURE is too low. | | Make sure the DOOR is attached. |
| | | 2. If amount of cool air from FAN MOTOR is sufficient. | Make sure that the amount and speed of cool air are sufficient by touching the check supplied on the REFRIGERATOR. | FAN MOTOR is poor. | Replace FAN MOTOR. |
| | | | | Passage of cool air is blocked. | Remove impurities. |
| | | 3. Door Line contact. | Check door seal when door is closed. | EVA frozen. | See DEFROSTING is poor. |
| Door liner damaged. | Replace Door liner. | | | | |
| DEFROSTING is poor. | NO DEFROSTING. | 1. If HEATER emits heat. | USE TEST MODE3 (forced DEFROSTING). | HEATER disconnection. | Replace HEATER. |
| | | | | TEMPERATURE FUSE disconnection. | Replace TEMPERATURE FUSE. |
| | | | | Connection is poor. | Check EVAPORATOR connection and wire of MAIN PWB CONNECTOR. |
| | | | | DEFROST-SENSOR is poor. | Replace DEFROST-SENSOR. |
| | | | | HEATER RELAY is poor. | Replace RY4 of MAIN PWB. |
| | | 2. If DRAIN PIPE is blocked. | Check DRAIN PIPE. | DRAIN PIPE is blocked. | Remove ice and impurities. |
| | | | | | Check HEATER PLATE resistance. |
| | | 3. If ice remains after DEFROSTING. | Make sure that DEFROST SENSOR is connected. | Connection is poor. | Reassemble the DEFROST-SENSOR. |
| Make sure that FREEZER /REFRIGERATOR DOOR is closed. | DOOR does not close properly. | | | | Reassemble DOOR. Replace GASKET. |

8-4 MAIN PWB ASSEMBLY AND PARTS LIST

8-4-1 Main PWB Assembly



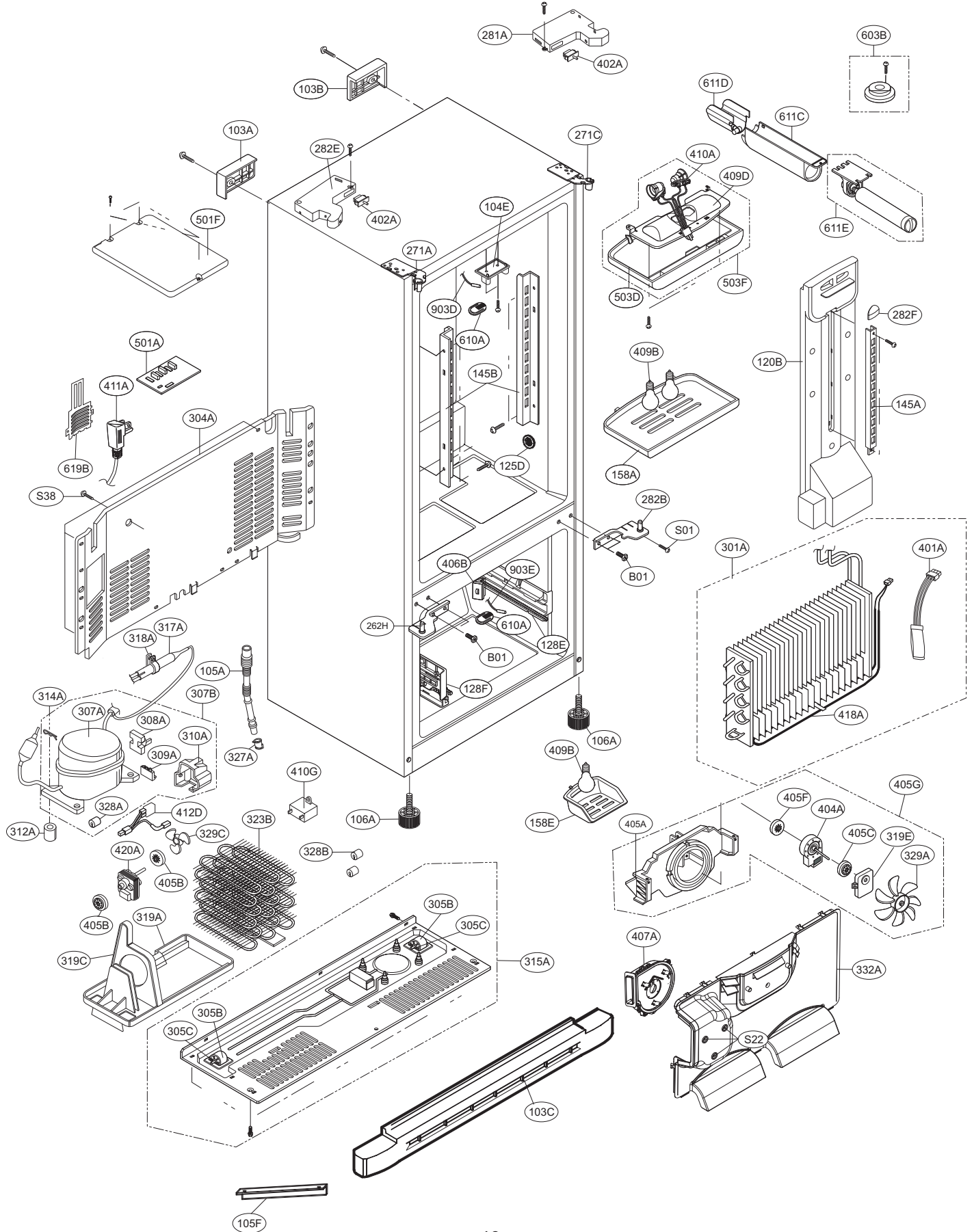
8-4-2 Dispenser Drive PWB Assembly



9. EXPLODED VIEW

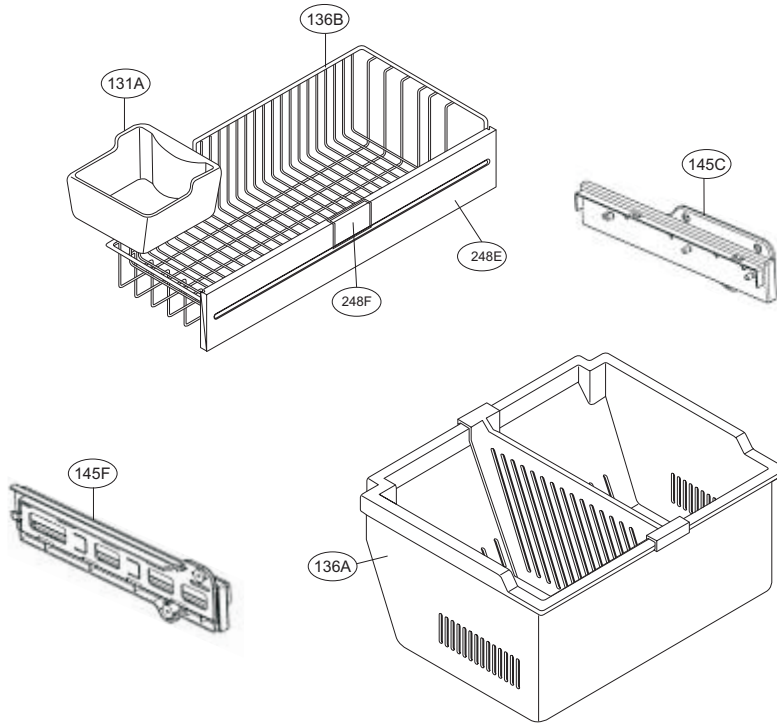
CASE PARTS

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



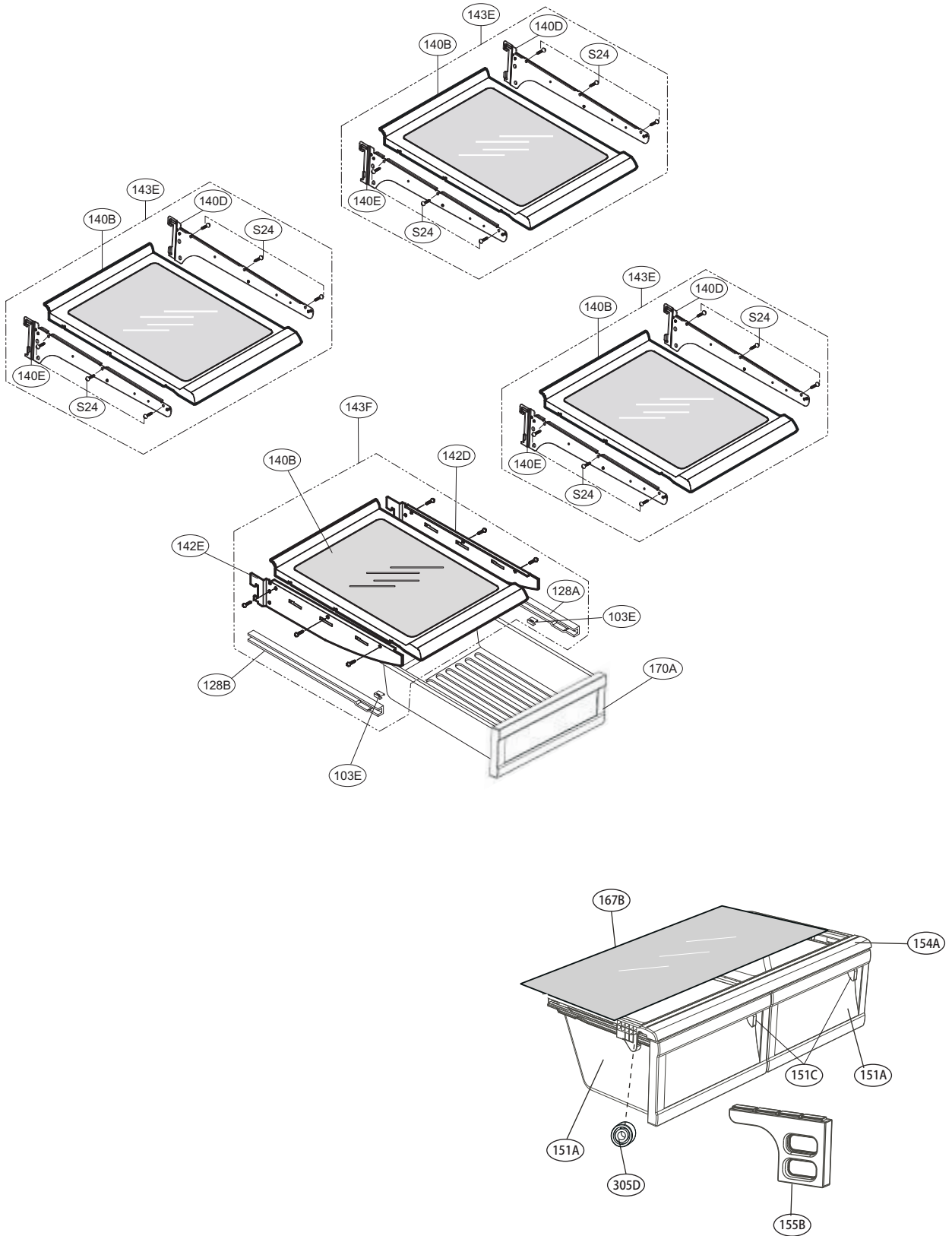
FREEZER PARTS

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



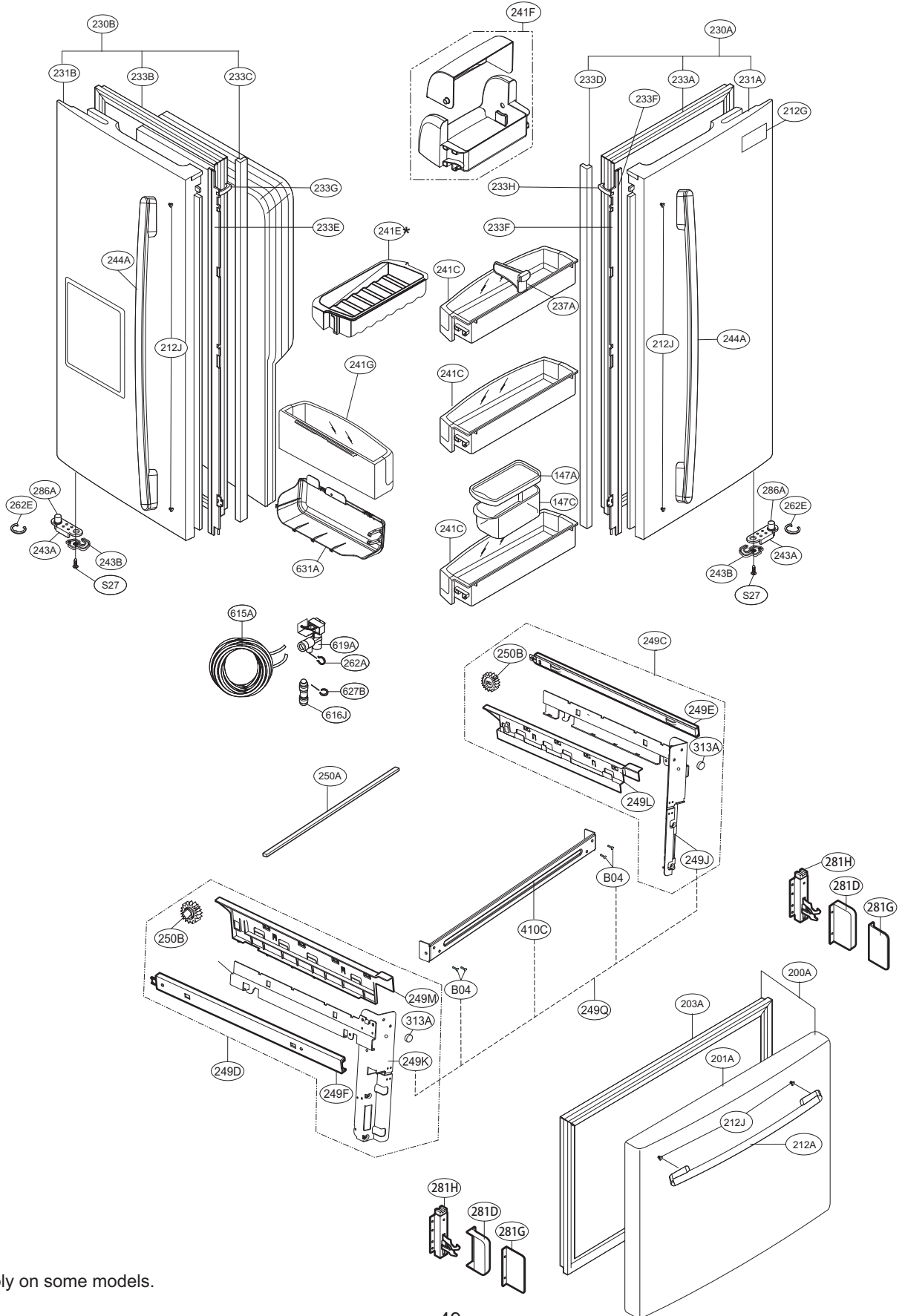
REFRIGERATOR PARTS

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



DOOR PARTS

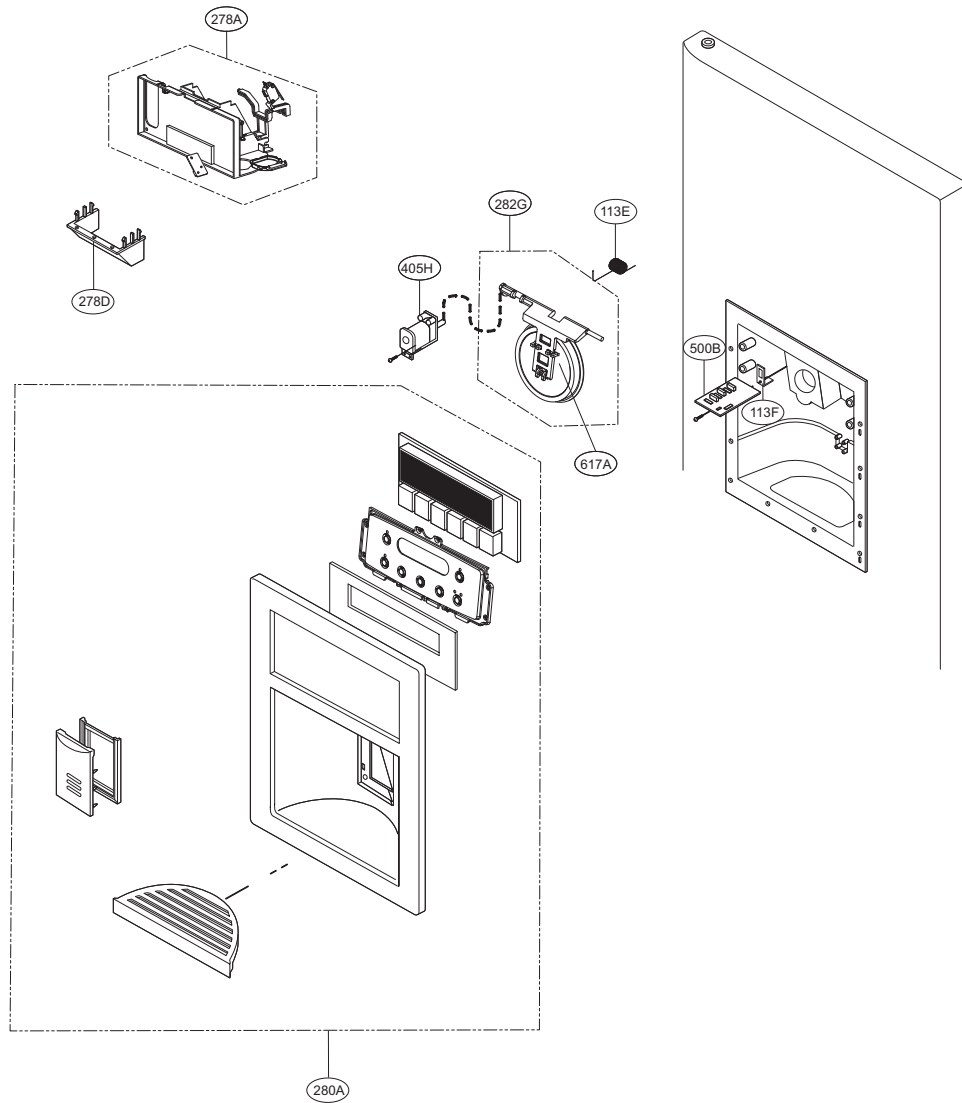
Caution: Use the part number to order part, not the position number.



* Apply on some models.

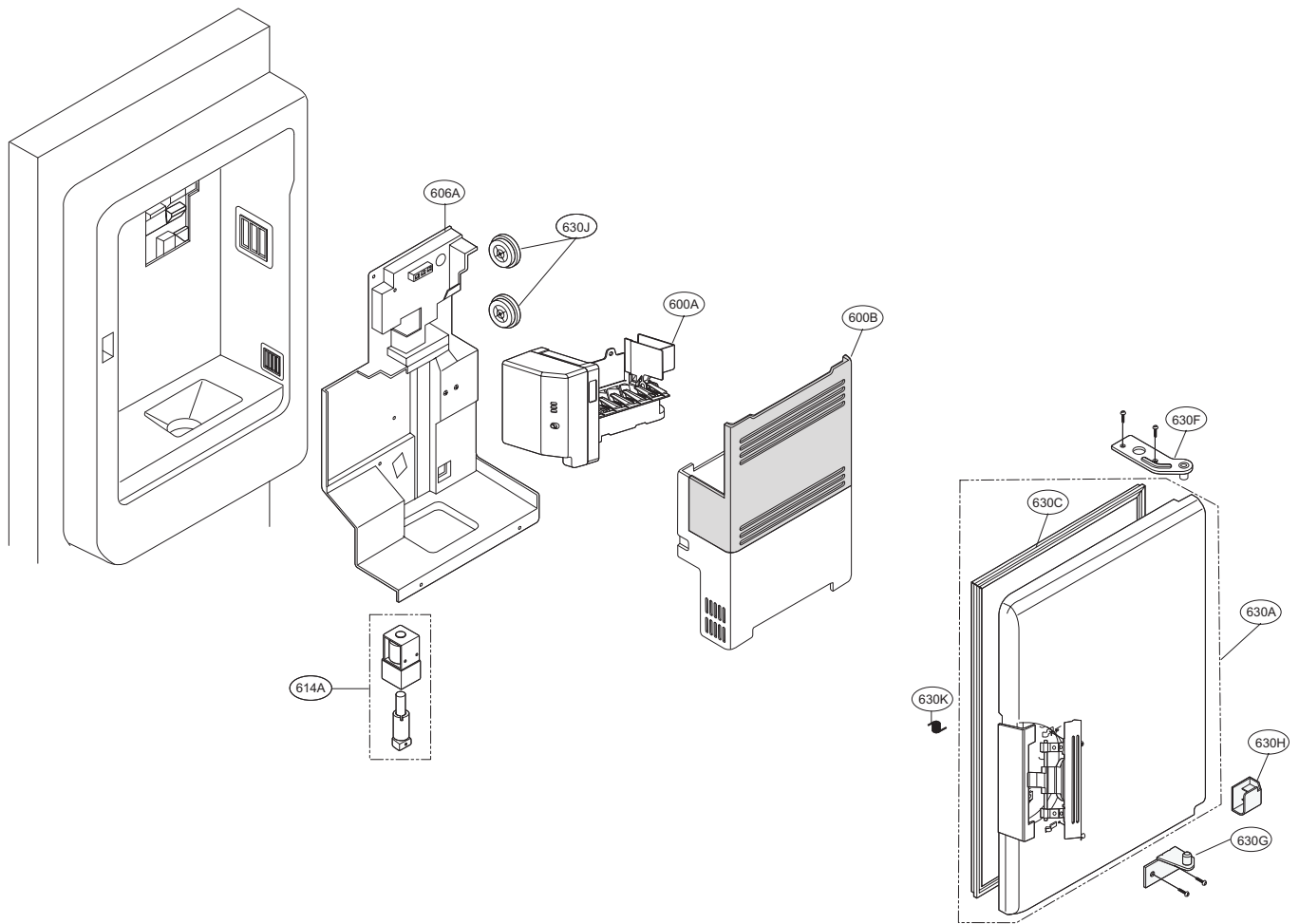
DISPENSER PARTS

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



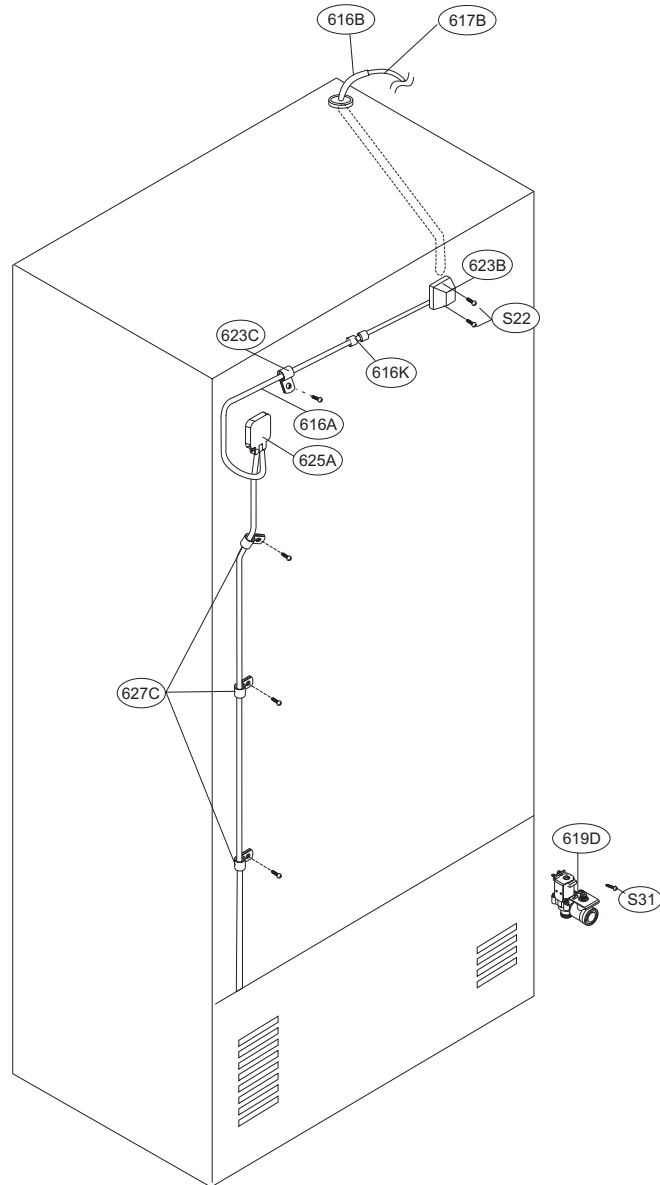
ICE MAKER PARTS

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VALVE & WATER PARTS

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