

# LG TRAINING MANUAL

## Four Door Refrigerator LMX21981 \*\*

Fall 2008



**NOTE**  
▲ CERAMIC capacitor: All ceramic capacitors are above 25V rating  
■ MYLAR capacitor: All mylar capacitors are above 50V rating  
NP: NON-POLAR capacitor  
T: TANTALUM capacitor  
And all capacitors are EEE capacitors, unless otherwise indicated  
Resistance in  $\Omega$ , K =  $k\Omega$   
Resistors: 1/8W,  $\pm 5\%$  rat  
Capacitance in pF  $\mu = \mu F$



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## IMPORTANT SAFETY NOTICE

The information in this training manual is intended for use by persons possessing an adequate background in electrical equipment, electronic devices, and mechanical systems. In any attempt to repair a major appliance, personal injury and property damage can result. The manufacturer or seller maintains no liability for the interpretation of this information, nor can it assume any liability in conjunction with its use. When servicing this product, under no circumstances should the original design be modified or altered without permission from LG Electronics. Unauthorized modifications will not only void the warranty, but may lead to property damage or user injury. If wires, screws, clips, straps, nuts, or washers used to complete a ground path are removed for service, they must be returned to their original positions and properly fastened.

### CAUTION

To avoid personal injury, disconnect the power before servicing this product. If electrical power is required for diagnosis or test purposes, disconnect the power immediately after performing the necessary checks. Also be aware that many household appliances present a weight hazard. At least two people should be involved in the installation or servicing of such devices. Failure to consider the weight of an appliance could result in physical injury.

### ESD NOTICE

Some of the electronics in appliances are electrostatic discharge (ESD) sensitive. ESD can weaken or damage the electronics in these appliances in a manner that renders them inoperative or reduces the time until their next failure. Connect an ESD wrist strap to a ground connection point or unpainted metal in the appliance. Alternatively, you can touch your finger repeatedly to a ground connection point or unpainted metal in the appliance. Before removing a replacement part from its package, touch the anti-static bag to a ground connection point or unpainted metal in the appliance. Handle the electronic control assembly by its edges only. When repackaging a failed electronic control assembly in an anti-static bag, observe these same precautions.

### REGULATORY INFORMATION

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna; Increase the separation between the equipment and the receiver; Connect the equipment to an outlet on a different circuit than that to which the receiver is connected; or consult the dealer or an experienced radio/TV technician for help.

### DISCLAIMER

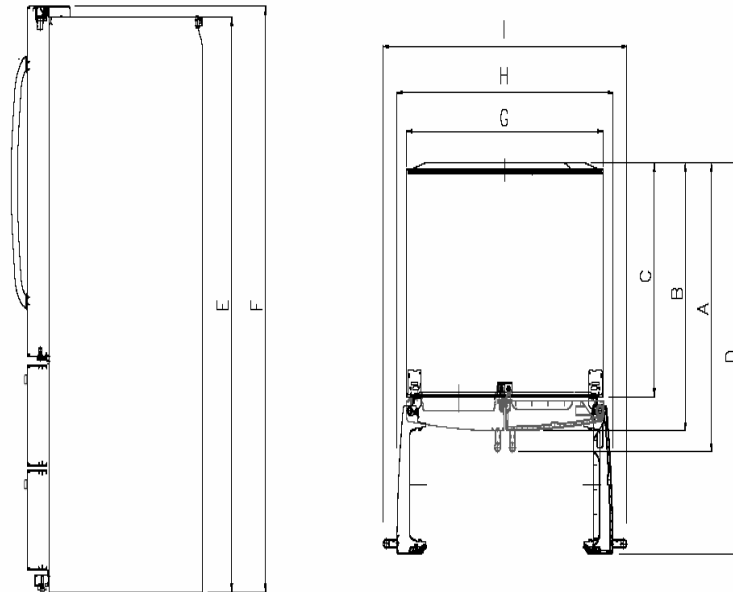
The information in this training manual was accurate at the time of publication. Every effort has been made to ensure accuracy. Updates, changes, etc. are available via GCSC and LGCSacademy. The information in this manual is intended for persons with adequate backgrounds in electronics, mechanical, and electronic servicing. The manufacturer and seller are not to be held responsible for any liability incurred from its use.

### COMPLIANCE

The responsible party for this device's compliance is LG Electronics Alabama, Inc.; 201 James Record Road, Huntsville, AL, 35813.

## SPECIFICATIONS

### DIMENSIONS



Description		LMX21981**	LMX25981**
Depth w/ Handles	A	30 in.	34 1/4 in.
Depth w/o Handles	B	27 1/2 in.	31 3/4 in.
Depth w/o Door	C	23 5/8 in.	27 7/8 in.
Depth (Total with Door Open)	D	42 1/4 in.	46 1/2 in.
Height to Top of Case	E	68 3/8 in.	68 3/8 in.
Height to Top of Door Hinge	F	69 3/4 in.	69 3/4 in.
Width	G	35 3/4 in.	35 3/4 in.
Width (door open 90 deg. w/o handle)	H	39 1/4 in.	39 1/4 in.
Width (door open 90 deg. w/ handle)	I	44 1/4 in.	44 1/4 in.

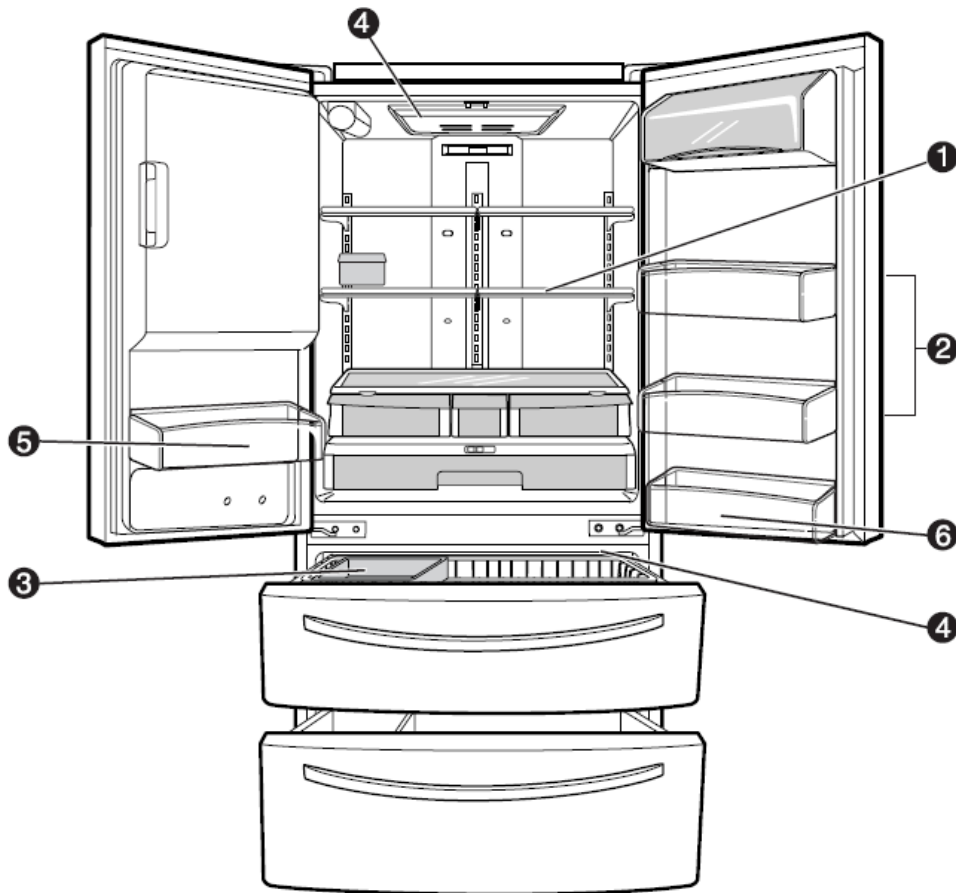


ENERGYSTAR® qualified models use at least 15% less energy than required by current federal standards. LG's Energy Star refrigerators allow consumers to save money, energy and protect the environment.

21 cu. ft. / 25 cu. ft.

ITEMS	SPECIFICATIONS	ITEMS	SPECIFICATIONS	
DOOR DESIGN	Side Rounded	VEGETABLE TRAY	Opaque Drawer Type	
DIMENSIONS (inches)	35 3/4 x 30 1/4 x 69 3/4 (WxDxH) 21cu.ft	COMPRESSOR	Recipro	
	35 3/4 x 34 1/4 x 69 3/4 (WxDxH) 25cu.ft	EVAPORATOR	Fin Tube Type	
NET WEIGHT (pounds)	302.58 (21cu.ft)	CONDENSER	Wire Condenser	
	324.18 (25cu.ft)	REFRIGERANT	R-134a (140 g)	
COOLING SYSTEM	Fan Cooling	LUBRICATING OIL	ISO10 (280 ml)	
TEMPERATURE CONTROL	Micom Control	DEFROSTING DEVICE	SHEATH HEATER	
DEFROSTING SYSTEM	Full Automatic	LAMP	REFRIGERATOR	LED Module(27)
	Heater Defrost		FREEZER	LED Module(9)
DOOR FINISH	Embossed Metal, VCM, Stainless			
HANDLE TYPE	Bar			
INNER CASE	ABS Resin			
INSULATION	Polyurethane Foam			

## PARTS IDENTIFICATION

**1 ADJUSTABLE REFRIGERATOR SHELVING**

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

**2 MODULAR DOOR BINS**

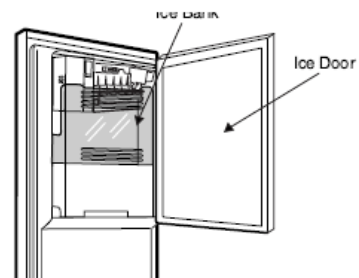
Three interchangeable bins can be arranged to suit your storage needs.

**3 REMOVABLE ICE STORAGE BIN**

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

**4 INTERIOR LAMPS**

Two separate LED arrays light the freezer and refrigerator interiors.

**5 TILTING DOOR BIN****6 FIXED DOOR BIN**



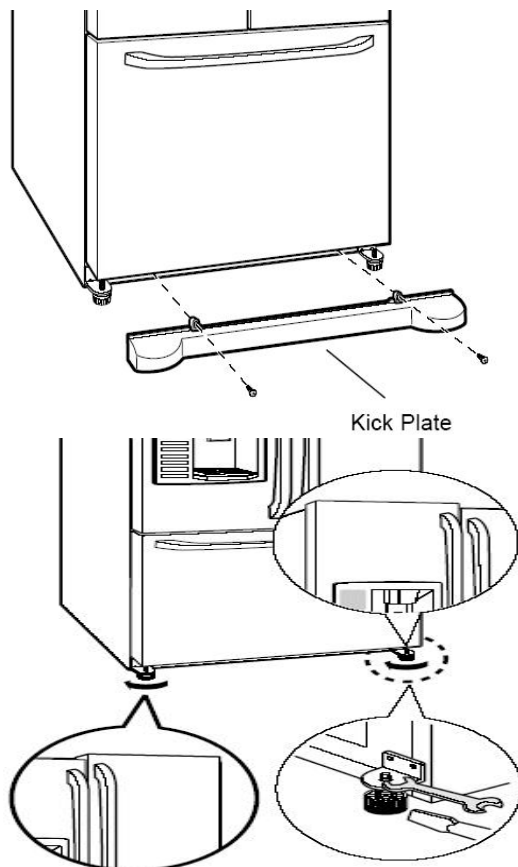
## INSTALLATION

### WEIGHT HAZARD!

The refrigerator weighs as much as 325 pounds (148 kg). We recommend a minimum of two people for moving and servicing this refrigerator.

### LEVELING

Be sure the floor is level and strong enough to support the refrigerator. Unstable installation or unlevelled flooring may cause vibration, noise, and poor door operation. Be sure to level the refrigerator at installation using the height adjusting screws (leveling legs.)



If the base grille (kick plate) is installed, remove it by removing the two screws that hold it on.

When the refrigerator is in place, adjust the leveling legs by turning them counterclockwise to raise or clockwise to lower the refrigerator.

Use an  $1\frac{1}{32}$ " (8 mm) wrench to turn the hex ends of the leveling bolts or stick a flat screwdriver in the slots to turn them. If you have a helper to push against the top of the refrigerator and take the weight off the leveling legs, you can turn them by hand. Be sure to lower them enough to contact the floor and support some of the weight of the refrigerator. It will keep it from moving when you pull the doors open and from tipping forward when the freezer drawer is pulled out.

Replace the base grille.

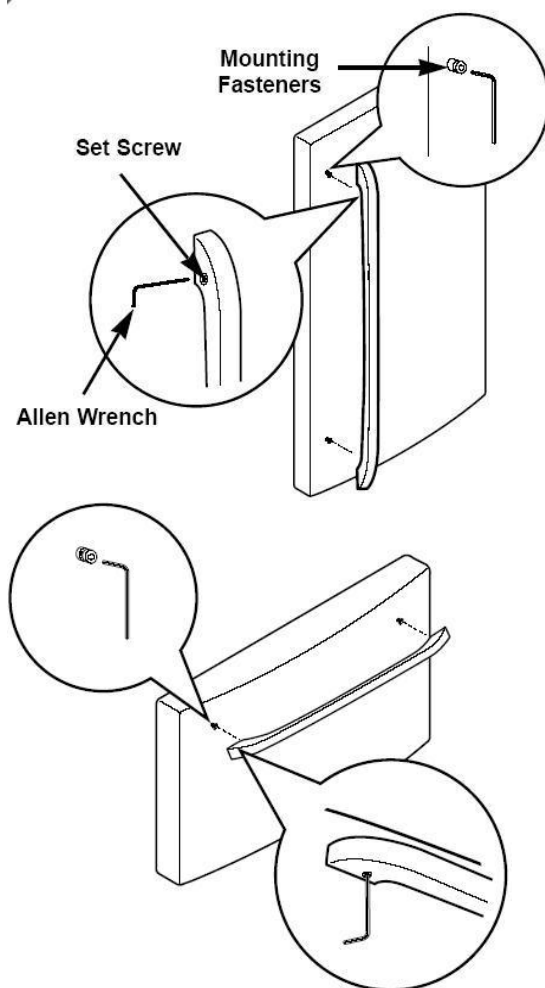
## FLOORING

The refrigerator must be installed on a solidly constructed floor to minimize noise and vibration. The refrigerator must be level. If necessary, adjust the leveling legs under the front of the refrigerator to compensate for variations in the flooring. This is easier if the refrigerator is tipped slightly backward to take the weight off the legs. Turn them clockwise to raise the refrigerator or counterclockwise to lower it.

Never install the refrigerator on a platform or a weakly supported structure.

When moving the refrigerator for cleaning or service, be sure to protect the floor. Pull the refrigerator straight out. Do not walk or wiggle it; floor damage or side panel damage may occur.

## HANDLE REMOVAL



It may be necessary to remove the handles to get the refrigerator through a door.

Loosen the set screws with a  $\frac{3}{32}$ " (2.5 mm) Allen wrench.

Remove the handle.

If the mounting bolts require removal or adjustment, use a  $\frac{1}{4}$ " Allen wrench.

Use extreme caution when removing the handles to avoid scratching the doors. When you remove or replace a handle, push (or pull) firmly but do not damage the handle or the door by using excessive force.

Replace the handles by placing the handles on the mounting bolts and tightening the set screws.

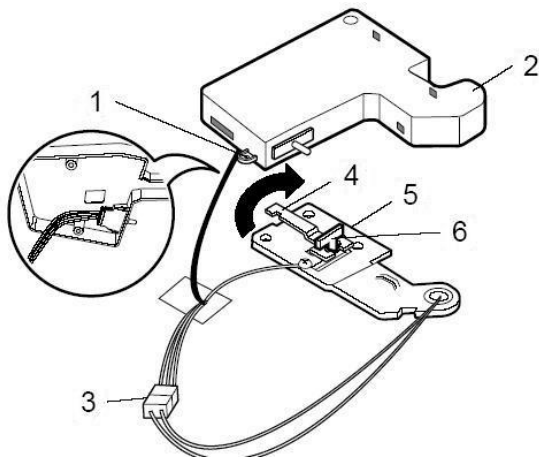
## DOOR REMOVAL

Disconnect the electrical supply and shut off the water to the refrigerator before installing or servicing.

Do not put your hands, feet, fingers, or metal (conductive) items into the air vents, the base grille (kick plate), or bottom of the refrigerator. You could be injured or shocked.

If the entrance door is too small to accommodate the refrigerator, you can remove the doors and pull the refrigerator into the room sideways.

### RIGHT REFRIGERATOR DOOR



Open the door to 90°.

Remove the top hinge cover (1) screw.

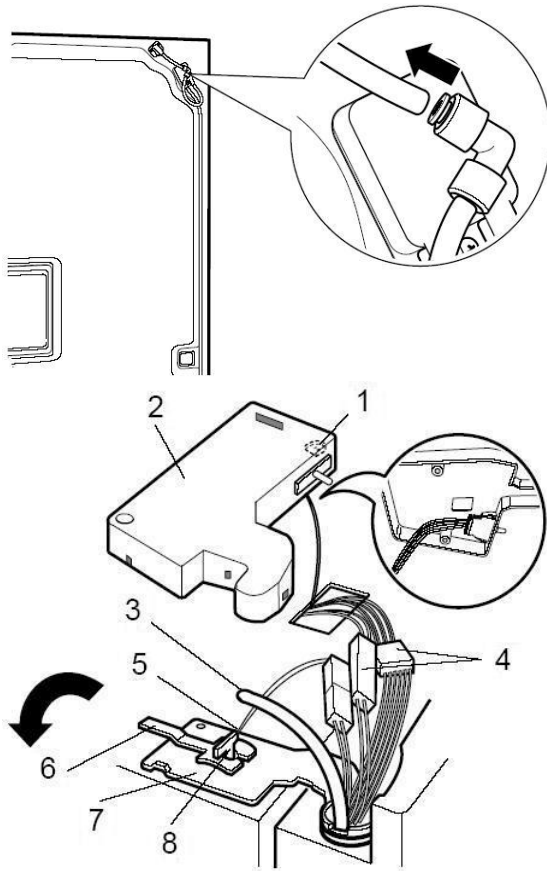
Lift the cover (2).

Disconnect the wire (3) harness.

Rotate the hinge lever (4) clockwise and remove it.

Lift the top hinge (5) clear of the hinge lever latch (6).

## LEFT REFRIGERATOR DOOR



Disconnect the hose at the top right corner (facing the back) by removing the release clip and pressing the release ring. The tube will be pulled out with the door when it is removed.

Open the door to 90°.

The door must be opened to 90° to be removed or reattached.

Remove the screw (1) securing the top hinge cover.

Use a flat screwdriver to pry off (2) the hinge cover. (Hooks not shown.)

Remove the cover and pull the water tube (3) through.

Disconnect all the wiring (4) harnesses.

Remove the ground (5) screws.

Turn the hinge lever (6) counter-clockwise and remove it.

Lift the top hinge (7) free of the latch lever (8).

Be careful the door does not fall forward. With the door open to 90°, lift it off the middle hinge pin.

**CAUTION!**

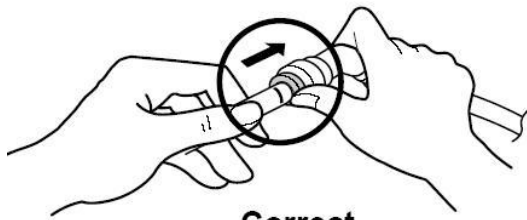
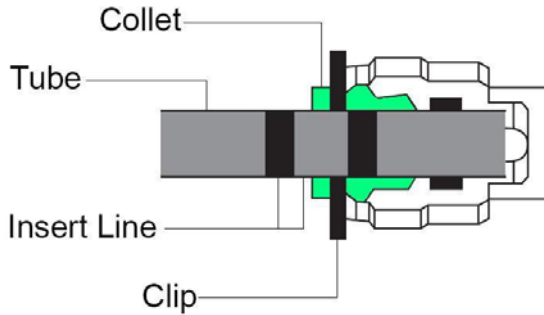
When lifting the hinge free of the latch, be careful the door does not fall forward. After removing the door, lay it on a blanket or other padded protective surface, with the inside facing up.

Replacement of either door is the reverse of the way it was removed.

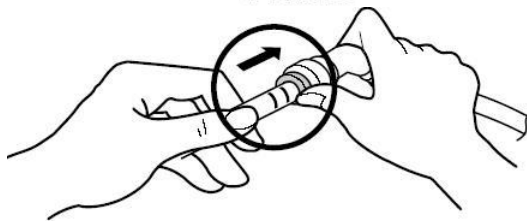


## WATER TUBE CONNECTION

The water tube connections must be properly assembled to avoid leaking.



**Correct**



**Incorrect**

Insert the tube into the connector until only one of the printed lines is visible. Pull on the tube slightly to ensure proper insertion and retention. Insert the retainer clip under the release ring.

If you can see both rings, the tube is not inserted properly. The tube end must be cut squarely.

## WATER LINE CONNECTION

Read ALL the directions thoroughly before you begin. Be certain you understand all the requirements for installing and connecting a water connection for this refrigerator.

**WARNING!** Connect the water supply tube from the refrigerator to a potable water supply only.

The water pressure requirement for this refrigerator is 43 ~ 121 psi (3 ~ 8.5 kgf/cm<sup>2</sup>). If the existing pressure is insufficient, the customer can purchase a separate pressure pump to provide normal ice making and water dispensing operation.

- The total length of the water supply line should not be greater than 26 feet (8 meters).
- Use copper tubing or a braided, reinforced nylon supply line.
- Install the water line in an area where the temperature will not drop below freezing.
- It may take up to 24 hours for the icemaker to begin producing ice.

The icemaker water valve includes a flow washer that is used as a water pressure regulator.

## TOOLS REQUIRED

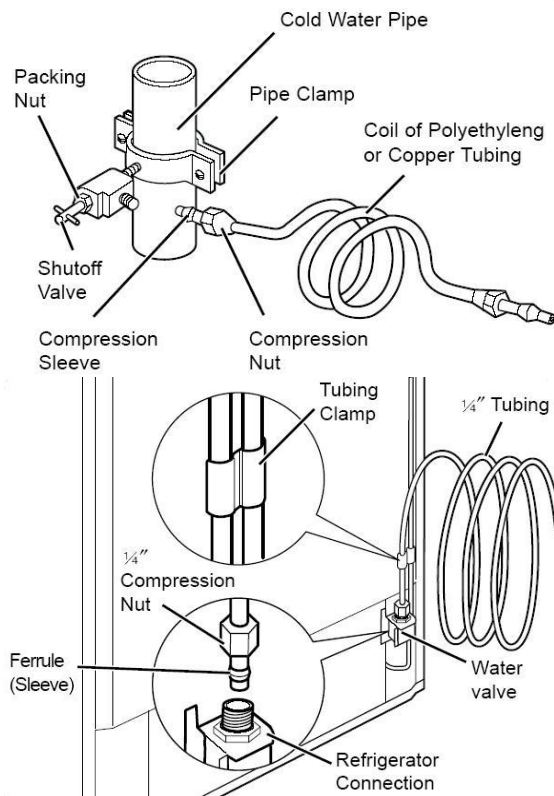
Standard screwdriver  
 $\frac{7}{16}$ " open-end wrench  
 $\frac{1}{4}$ " drill bit

$\frac{1}{4}$ " nut driver  
 $\frac{1}{2}$ " open end wrench  
drill (electric drills must be grounded)

## WATER LINE INSTALLATION KIT

Some dealers sell an installation kit that includes all the parts necessary to connect the refrigerator to a water line. Often, these kits include a piercing saddle-type valve that allows connection to the water line without the need for plumbing skills. LG does not recommend the use of this type valve because it often fails to provide sufficient water flow for the icemaker and dispenser to function properly.

continued on next page



Various connector types are available. These illustrations show a saddle valve with the water line connected using a compression fitting at each end.

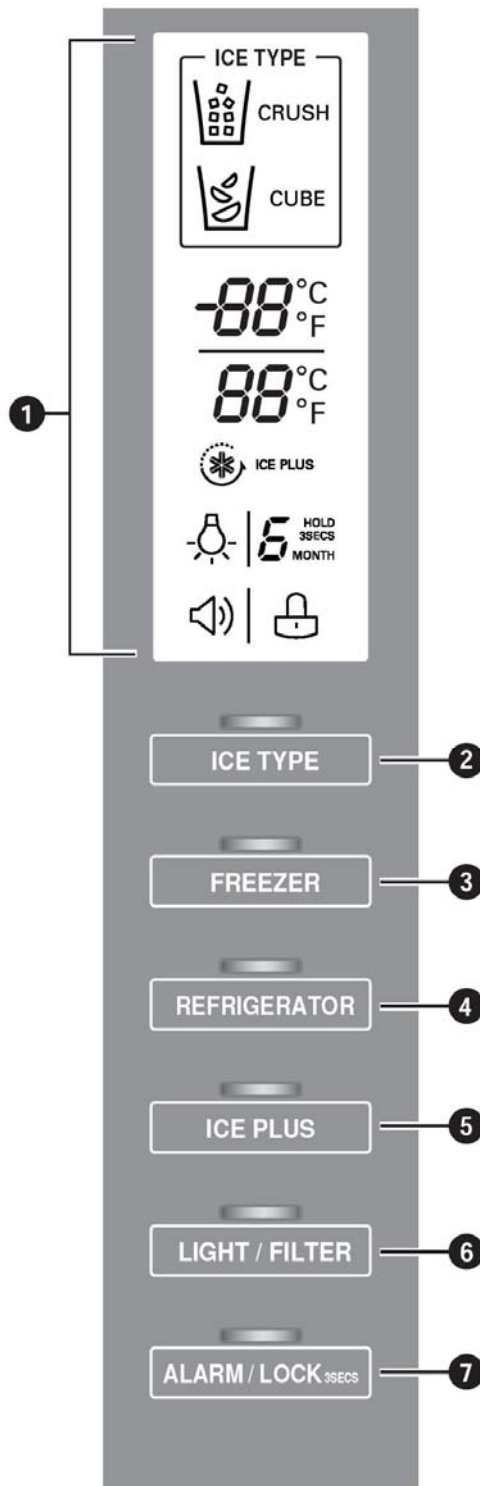
The additional coil of tubing (approximately 7 feet or 2.1 m) is to allow pulling the refrigerator out for servicing or cleaning.

We recommend the use of a pre-assembled braided plastic or nylon line with threaded couplings on both ends to prevent leakage and pop offs.

## CONNECTING THE WATER LINE

We recommend using a flare nut wrench to connect the water line fittings. After the valve has been installed on the water line, it must be flushed before connecting it to the refrigerator. Remove the plastic cap from the water valve on the back of the refrigerator. Attach the water supply line to the valve. Open the valve and flush out the supply line before attaching it to the refrigerator. Attach the supply line to the water valve on the back of the refrigerator. Tighten all connections. Turn on the water and check for leaks. Press the water dispenser button and bleed all the air through the system. When water begins coming out, run another quart to be sure all the air is out of the line. Turn the icemaker on and cycle it manually until water fills the tray to ensure all the air is out of the line.

## OPERATION

**1. LED DISPLAY**

The LED display shows the temperature settings, dispenser options, water filter, door alarm, and locking status messages.

**2. ICE TYPE BUTTON**

The ICE TYPE button is used to select Cubed Ice or Crushed Ice.

**3. FREEZER BUTTON**

Press the FREEZER button to adjust the temperature in the freezer compartment.

**NOTE:** When pressed simultaneously with the REFRIGERATOR button for more than five seconds, the temperature display will change from Fahrenheit to Celsius or vice versa.

**4. REFRIGERATOR BUTTON**

Press the REFRIGERATOR button to adjust the temperature in the refrigerator compartment.

**NOTE:** When pressed simultaneously with the FREEZER button for more than five seconds, the temperature display will change from Fahrenheit to Celsius or vice versa.

**5. ICE PLUS BUTTON**

Press this button to turn on the ICE PLUS feature, which increases ice making capabilities up to about 20 percent.

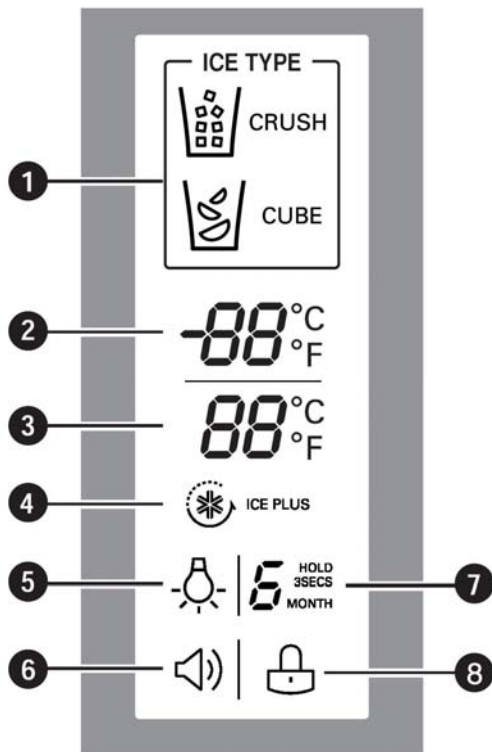
**6. LIGHT/FILTER BUTTON**

The LIGHT/FILTER button controls the lamp in the dispenser. The LIGHT/FILTER button resets the water filter replacement indicator when the water filter has been replaced.

**7. ALARM/LOCK BUTTON**

Press this button to control the door-open alarm. Press this button to lock or unlock all the other function buttons on the control panel, including operation of the dispenser.





## THE LED DISPLAY

The LED display shows the temperature settings, dispenser options, water filter, door alarm, and locking status messages.

### 1. DISPENSER SELECTION INDICATOR

Shows that **Cubed** ice or **Crushed** Ice selection will be dispensed when the push switch is pressed.

### 2. FREEZER TEMPERATURE

Indicates the set temperature of the freezer compartment in degrees Celsius or Fahrenheit.

### 3. REFRIGERATOR TEMPERATURE

Indicates the set temperature of the refrigerator compartment in degrees Celsius or Fahrenheit.

### 4. ICE PLUS

When the **ICE PLUS** button is pressed, the display will indicate the selected function has been activated.

### 5. DISPENSER LIGHT INDICATOR

When the **LIGHT** button is pressed, the display will indicate the selected function. When the dispenser light is on, this indicator will appear on the display panel.

### 6. DOOR ALARM INDICATOR

This indicator shows that the door-open warning alarm is activated.

### 7. WATER FILTER STATUS

This indicator shows the current status for the water filter. See **Resetting the Filter Indicator**.

### 8. LOCK STATUS

This indicator shows the current status for the control panel functions is set to **LOCK**.

## ADJUSTING THE TEMPERATURE AND DISPLAYS



0°F

### Adjust Freezer Temperature

To adjust the temperature in the freezer compartment, press the FREEZER button to cycle through the range of available settings.



37°F

### Adjust Refrigerator Temperature

To adjust the temperature in the refrigerator compartment, press the REFRIGERATOR button to cycle through the range of available settings.

**NOTE:** The actual inner temperature varies depending on the food status, since the indicated temperature setting is the target temperature and not the actual temperature within the refrigerator. Initially set the REFRIGERATOR CONTROL at 37 degrees F and the FREEZER CONTROL at 0 degrees F. Leave them at these setting for 24 hours (one day) to stabilize. Then adjust the compartment temperature as illustrated above.



To change the temperature display from Fahrenheit to Celsius or vice versa, simultaneously **press** and **hold** the **FREEZER** and **REFRIGERATOR** buttons for more than 5 seconds.

### Display Power-Saving Mode

This function places the display into the Power-Saving Mode.



Simultaneously press the **FREEZER** and **ICE PLUS** buttons and hold them for 5 seconds until a tone sounds. All LED lights will turn on and then off. When the Power-Saving Mode is activated, the display will remain off until the next time the door is opened. The display will also turn on when any button is pressed, and it will remain on for 20 seconds after the last door opening or button selection.

To deactivate the Power-Saving Mode, press the FREEZER and ICE PLUS buttons simultaneously and hold them for 5 seconds until the tone sounds.

## OPERATING THE DISPENSER

### DISPENSING CRUSHER OR CUBED ICE



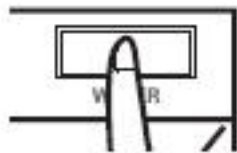
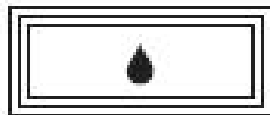
Press the **ICE TYPE** button to illuminate the Crushed Ice icon. Press the push ice switch with a glass or other container and crushed ice will be dispensed.



Press the **ICE TYPE** button to illuminate the Cubed Ice icon. Press the push switch with a glass or other container and cubed ice will be dispensed.

**NOTE:** Hold the glass or other container in place for a couple of seconds after dispensing ice or water to catch the last few cubes or drops. The dispenser is designed to not operate while either refrigerator door is open.

### DISPENSING WATER



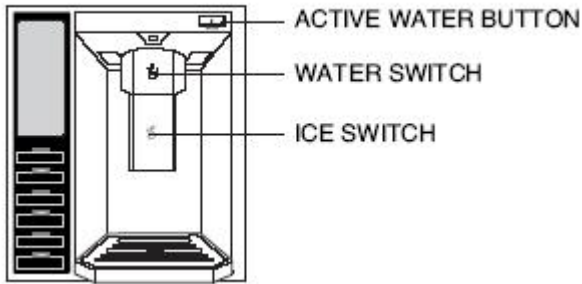
Press the push water switch or active water button with a glass or other container and chilled water will be dispensed. When the water switch or active water switch is pressed, the light will be illuminated.

**NOTE:** When operating the **WATER** button; it does not work when you press both ends and not the center. It works only when you press the center of the button.

### DISPENSER LIGHT

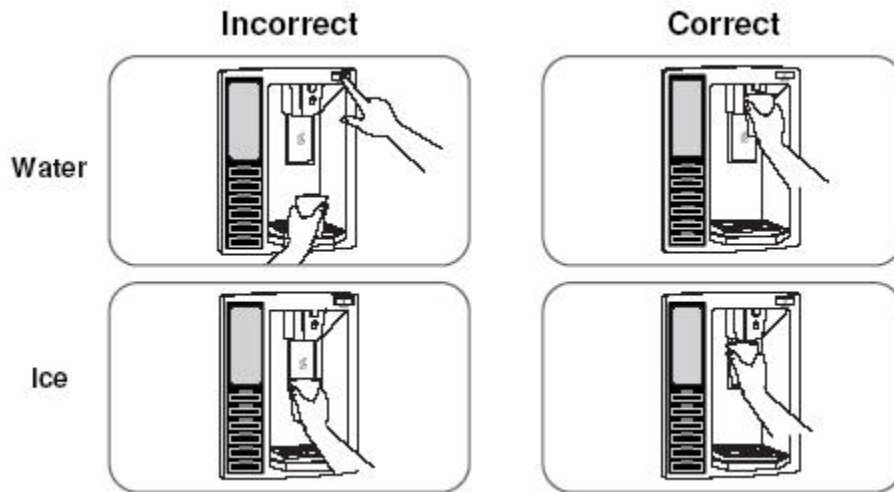


Press the **LIGHT/FILTER** button to turn the dispenser light on and off.



**CAUTION**

When filling the container with a small opening, use it near the opening of the water or ice dispenser as close as possible.



**SETTING THE DISPENSER LOCK**



**Press and hold** the **ALARM/LOCK** button for three seconds to lock the dispenser and all of the other control panel functions. Press and hold again for three seconds to unlock.

**SETTING THE DOOR ALARM**



The **ALARM/LOCK** button also controls the door alarm that sounds three times in 30-second intervals when a compartment door is left open for more than 60 seconds. The alarm stops sounding when the door is closed.



## RESETTING THE FILTER INDICATOR



**6** HOLD  
3 SECS  
MONTH

Press and hold the **LIGHT/FILTER** button for more than 3 seconds to reset the filter indicator after the water filter has been replaced.

**NOTE:** Replace the filter when the water filter indicator light reaches **0** or whenever the water or ice cube taste deteriorate noticeably.

To purchase replacement water filter cartridges, visit your local appliance dealer or parts distributor. You can also call 1-877-714-7486.

The replacement water filter cartridge's part number is **5231JA2006A**.

## ACTIVATING ICE PLUS



Press the **ICE+PLUS** button once to activate the **ICE+PLUS** function. The **ICE+PLUS** icon on the display panel will illuminate when activated. The **ICE+PLUS** function runs the freezer compartment at the coldest setting for a 24-hour period to increase icemaking by up to about 20%, and then turns off automatically.

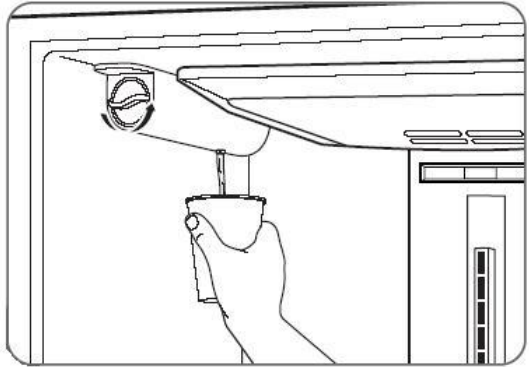
**NOTE:**  
Press the button again to cancel the **ICE+PLUS** function.

## DIAGNOSTIC FAILURE DETECTION

The diagnostic function automatically detects problems with your refrigerator, and a diagnostic code will appear in the display.

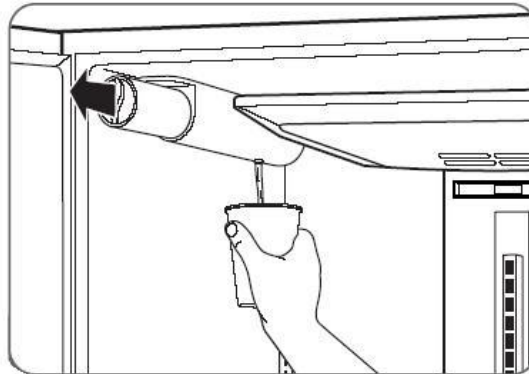
## REPLACING THE WATER FILTER

Replace the filter when the water filter indicator decrements to **0** or the water dispenser or icemaker noticeably decrease production.

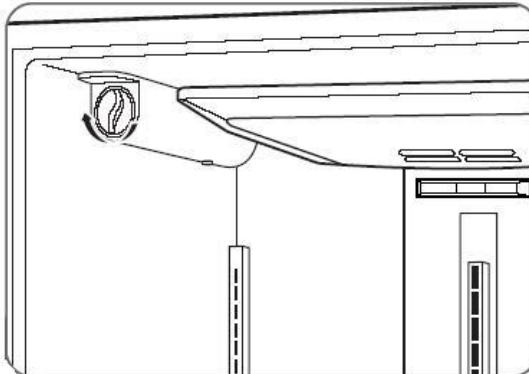


Rotate the knob of the old cartridge counterclockwise. When the cartridge is released, you will feel it click out of place.

**NOTE:** Replacing the filter causes a small amount of water (around 1 oz. or 25 cc) to drain. Place a cup under the filter hole to contain it.



Remove the old cartridge. Take the new cartridge out of its packaging, and remove the protective cover from the o-rings. Hold the cartridge handle in its vertical position, and firmly push the new filter cartridge into place until it stops.



Use the handle to twist the cartridge clockwise about one turn, until the handle is in a horizontal position. You will feel the filter click into place.

**NOTE:** If the filter will not turn from side to side, it isn't fully inserted.



After replacing the filter, dispense for 2 minutes from the water dispenser to purge the water system. Check the filter for leaks.

When the water filter indicator displays the message **0 Filter Month, Hold 3 Seconds**, reset the water filter status display and indicator light by pressing and holding the **LIGHT/FILTER** button for more than 3 seconds.

## DISASSEMBLY

### REMOVING AND REPLACING REFRIGERATOR DOORS

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

#### Left Door – FIGURE 2 (Next Page)

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

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

7. Place the door, inside facing up, onto a non-scratching surface.

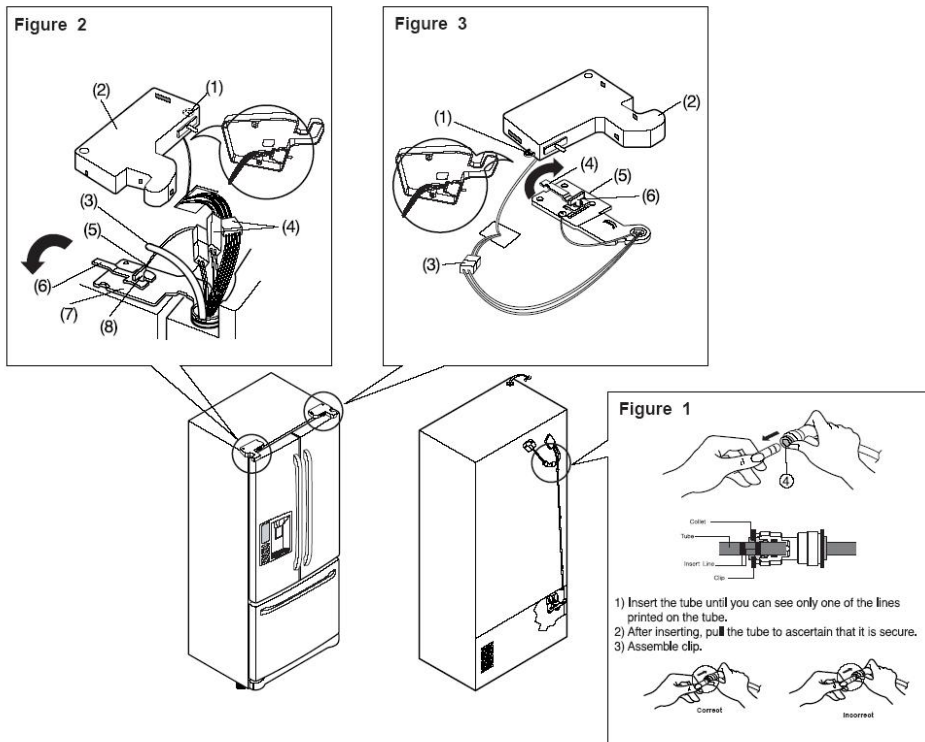
#### Right Door – FIGURE 3 (Next Page)

1. Open the door. Loosen the top hinge cover screw (1). Lift up the cover (3).
2. Disconnect the door switch wire harness (2). Remove the cover.
3. Disconnect the wire harness (5).
4. Rotate the hinge lever (6) clockwise and remove. Lift the top hinge (7) free of the hinge lever latch (8).

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

5. Lift door the up from middle hinge pin (9) and remove the door.
6. Place the door, inside facing up, onto a non-scratching surface.

See drawings, next page.



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

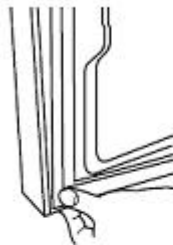


Figure 6

**3. Replace door frame cover**

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

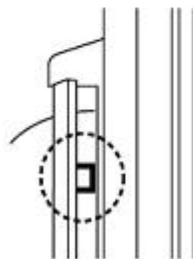


Figure 7

**3-3 DOOR ALIGNMENT**

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

1. With one hand, lift up the door you want to raise at 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 unit.)

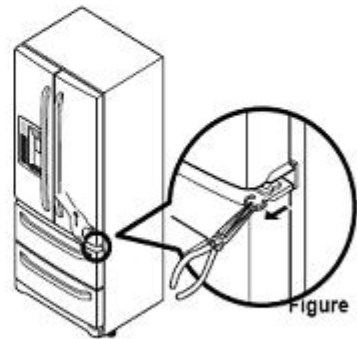


Figure 8

**3-4 FAN AND FAN MOTOR(EVAPORATOR)**

1. Remove the freezer shelf. (If your refrigerator has an icemaker, remove the icemaker first)

**ICEMAKER DOOR**

Loosen the front screw (nearest the hinge) of the bracket.

Lift the hinge with one hand. It might be necessary to loosen the rear screw slightly.

Lift the icemaker door out of the lower hinge with the other hand.

**REMOVE and REPLACE the PULLOUT FREEZER DRAWER**

Open the freezer door.



Remove the lower basket.

**PULLOUT FREEZER DRAWER, continued**

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



Lift the freezer door up to unhook it from the rail support and remove.

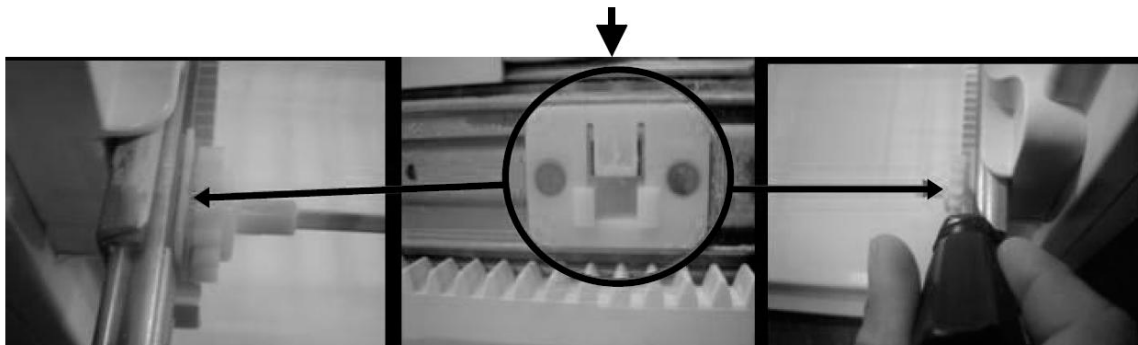
Pull both rails to full extension.

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.

Remove the center rail.

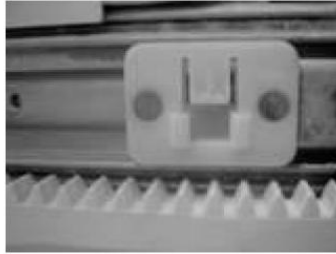
Remove the gear from the right side by following the same steps for the left side.

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



**FOLLOW THESE STEPS TO REINSTALL**

Reinstall the right side gear into the clip.



Insert the rail into the right side gear. The gears do **not** need to be perpendicular to each other.



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

continued on next page



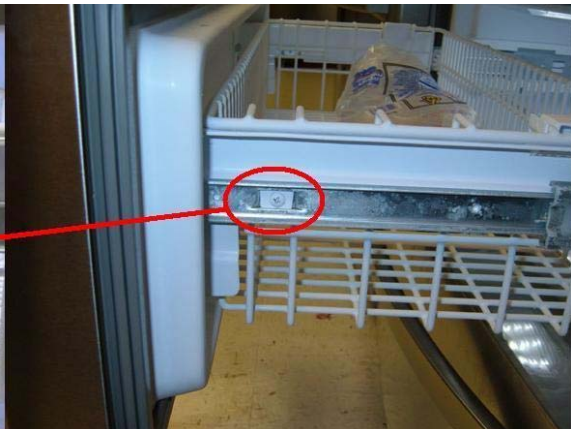
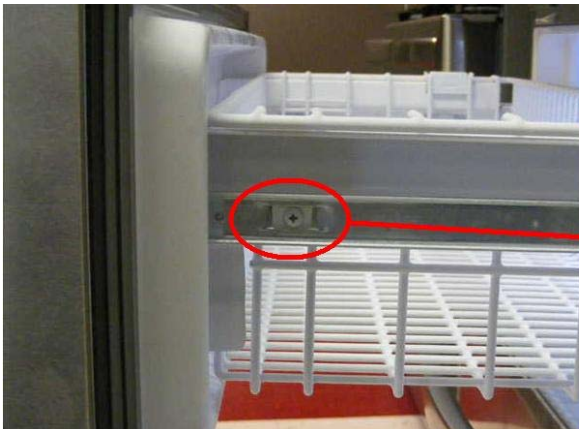
## REINSTALLATION, continued

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.



Reinstall the freezer door by inserting the rail tabs into the guide rail.

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



Reinstall the lower basket, and close the freezer door.

## DISPENSER ASSEMBLY



Remove the tray. Lift out the grate.  
Then pull the tray out past the stops  
without breaking it.



NOTE: Pay close attention to the clip that  
is located under the tray. Look at how it is  
installed in case it comes out while  
removing the dispenser assembly.



Remove the tray.

Lift out the grate.

Then pull the tray out past the stops  
without breaking it.

Release the lower clips.

**DISPENSER ASSEMBLY, continued**

Release the side clips.

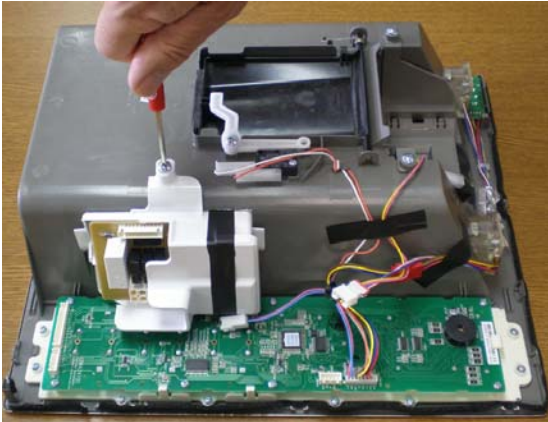


Loosen all four edges.

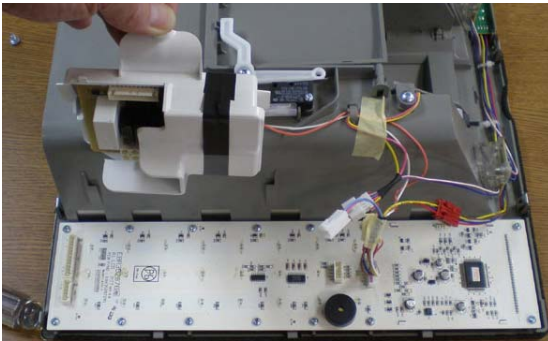


Pull the dispenser assembly forward and remove all the connectors.

## DISPENSER ASSEMBLY, continued



Back view of dispenser.



Display PCB.

## DISPLAY



WHITE/BLACK – 12V<sub>DC</sub> to Display Board

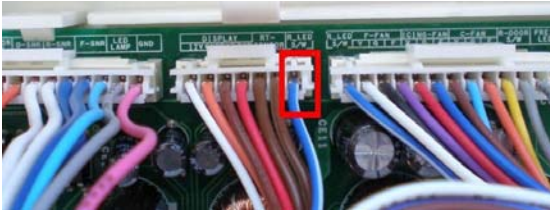
BRIGHT ORANGE – Ground

BROWN – RX (RX to Ground Receives Variable V<sub>DC</sub> Pulse)

RED – TX (TX to Ground Transmits Variable V<sub>DC</sub> Pulse)



## REFRIGERATOR LED



BLUE/WHITE – 12V<sub>DC</sub> from Refrigerator Door Switch (CON 5)

BLU/WH to PK(CON 6) or BOR  
Door CLOSED – 0 V<sub>DC</sub>  
Door OPEN – 12 V<sub>DC</sub>



BLUE/WHITE – 12V<sub>DC</sub> from PC to WHITE on LED (CON 4)

BLUE/WH to PK(CON 6) or BOR  
Door CLOSED – 0 V<sub>DC</sub>  
Door OPEN - 12V<sub>DC</sub>

## REFRIGERATOR DOOR SWITCH



GRAY to GRAY – N.C. Switch – Door OPEN, Switch CLOSED (CON 4)

Door CLOSED – 4.5 V<sub>DC</sub>  
Door OPEN – 0 V<sub>DC</sub>

This is a monitoring circuit.

## FREEZER DOOR SWITCH



Brown to Brown – N.C. Switch – Door Closed, Switch is OPEN (CON 6)

0 VDC – Door OPEN  
4.5 VDC – Door CLOSED

This is a monitoring circuit.

## ICEMAKER

### ICEMAKING MODE

The icemaking cycle begins with the water fill operation. When the water is frozen, as determined by a sensor incorporated in the tray, the cubes are ejected, and the process is repeated. The sensor triggers the cycle when it reaches 16 to 19° F (-7° C), approximately 55 minutes after the start of the cycle.




### HARVEST (EJECTION) MODE

Harvest (ejection) occurs at the end of the cycle when the ice is released from the mold and pushed into the bin. When harvest mode begins, the mold heater operates for 30 seconds; then the motor starts. The feeler arm senses the amount of ice while the ejector rotates. If the bin is full, the heater is turned off and the ejector stops. If the bin is not full, the ejector rotates two turns to eject the ice and begin a new cycle. If the ejector does not rotate at least one full turn within five minutes, a separate heater control mode activates to prevent damage to the icemaker.

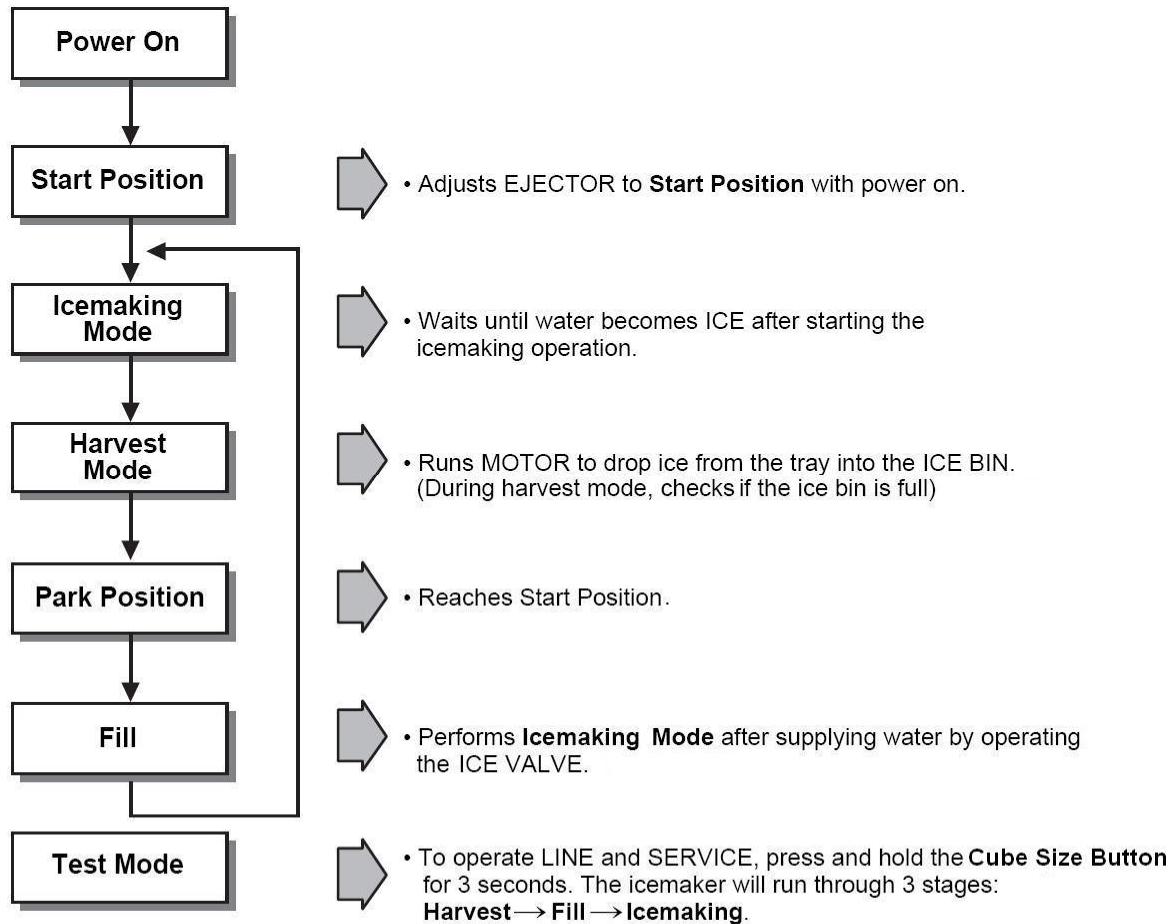
### FILL / PARK MODE

After the harvest mode is complete, the water valve is opened to fill the mold for the next cycle. The amount of water is related to the water pressure, but can be adjusted by changing the time for which the valve is opened. With the icemaker turned on, press the button to increase the size of the cubes to the next available size. Subsequent presses will cycle through all available sizes.

### ICEMAKER INDICATOR LIGHTS

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

## ICEMAKER CYCLE



## TEST MODE

Press and hold the cube size button for more than three seconds to put the icemaker into test mode. The test cycle can be used to diagnose icemaker issues and to clean it. The test mode can be started only in ice making mode; it cannot be accessed while the icemaker is filling or ejecting. Press and hold the cube size button for more than three seconds to put the icemaker into test mode.

The test cycle can be used to diagnose icemaker issues and to clean it.

The test mode can be started only in ice making mode; it cannot be accessed while the icemaker is filling or ejecting.

## CAUTION!






If the icemaker is cycled through test mode before the water already in it has frozen, the ejector will pass through the water and any added water will cause the mold to overflow.




If the icemaker does not operate normally during test mode, turn it off. Check it and repair as necessary or replace.

When the test cycle is complete, the icemaker reverts to MICOM control and assumes the factory default fill setting.

## DIAGNOSTIC CHART

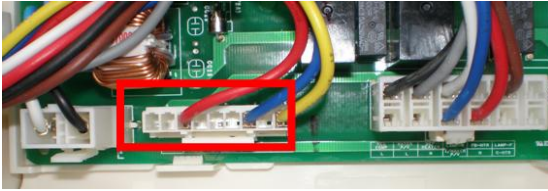
STAGE	ITEMS	INDICATOR	REMARKS
1	HEATER		Five seconds after heater starts, a heater will go off if the temperature by sensor is higher than 10°C
2	MOTOR		Five seconds after heater starts, you can confirm that a motor is moving.
3	HALL IC I		Check if Ice Bin is full or not. If Ice bin is full, the motor 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.

## ERROR CODES

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.

MAIN CONTROL BOARD CONNECTOR REFERENCE



**POWER from BOARD to ICEMAKER**

RED – 120V<sub>AC</sub> supply to icemaker fill valve in the door (when activated)

BLUE – Constant neutral

YELLOW – Constant 120V<sub>AC</sub> supply to icemaker and refrigerator door



BLACK – 120 V<sub>AC</sub> to compressor (when activated)

GREY – 120 V<sub>AC</sub> to water dispenser pilot valve (rear) (when activated)

WHITE – 120 V<sub>AC</sub> to defrost circuit (when activated)

BROWN – 120 V<sub>AC</sub> to heaters (pulsing OFF & ON)

BLUE – Neutral (constant)

RED – 120 V<sub>AC</sub> to icemaker pilot valve (rear) (when activated)

**ICEMAKER REMOVAL**

Remove five AC motor assembly screws.



Remove the entire icemaker assembly.

**ICEMAKER REMOVAL, continued**

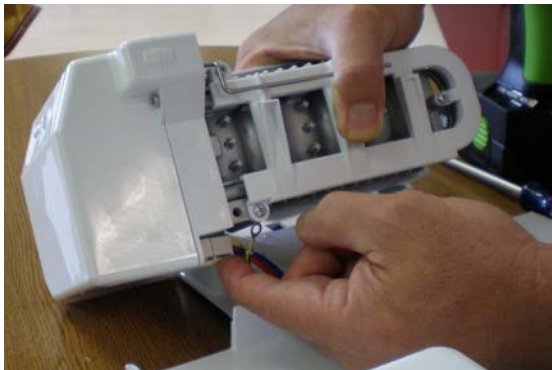
Separate the two electrical connectors.



Remove the upper screws.



Remove the ground screw. Replace it in the icemaker assembly in the event you need to reuse it or require it in the replacement unit.



Separate the 4-pin electrical connector.

ICEMAKER SERVICE BULLETIN

Service Bulletin



<b>No.</b>	CREF20070556
<b>Date</b>	2007-12-12

Model	Factory	Factory Model	Suffix	Model No.	Factory	Factory Model	Suffix	Model No.
	EKHQ	GR-L218DSVA	*****	LFX21980ST	EKHQ	GR-L218SSKA	*****	LFX21960ST
	EKHQ	GR-L258DSVA	*****	LFX25980ST	EKHQ	GR-L258SQJ	ASWCLGA	LFX25960SW
	EKHQ	GR-L258SQKA	*****	LFX25960SW	EKHQ	GR-L258SQLA	ABICSER	77564
	EKHQ	GR-L258SQLA	ASWCSEF	77572	EKHQ	GR-L258SQLA	ASWCSEF	77562
	EKHQ	GR-L258SQLA	AWBCSEF	77579	EKHQ	GR-L258SQLA	AWBCSEF	77569
	EKHQ	GR-L258SQWA	*****	LFX25950SW	EKHQ	GR-L258SQWA	*****	LFX25950SB
	EKHQ	GR-L258SSJ	ASTCLGA	LFX25960ST	EKHQ	GR-L258SSKA	*****	LFX25960ST
	EKHQ	GR-L258SSLA	ASTCSEF	77573	EKHQ	GR-L258SSLA	ASTCSEF	77563
	EKHQ	GR-L258STKA	*****	LFX25960TT	EKHQ	GR-L258STWA	*****	LFX25950TT
	EKHQ	GR-L258SVKA	*****	LFX25960SB				

Buyer	Buyer Name	Buyer Code	Buyer Name	Buyer Code	Buyer Name	Buyer Code
	LGEUS	US000001	LGEAI	US000002		

EFFECTIVE DATE	2007-12-10	EFFECTIVE FROM (SERIAL NO.)	712KR**
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Subject	In Door Icemaker has changed
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No.	Loc No.	Before Change		After Change		Note	K-Code	Remark
		Part No	DESC./SPEC.	Part No	DESC./SPEC.			
1	600A	5989JB0001A	Ice Maker Assembly, Kit / BC HEATING ROW YES R35.0 INDOOR	AEQ36756901	Ice Maker Assembly, Kit / BC HEATING INDOOR YES R35.0 -	C	1	



## Service Bulletin





Reason Of Change
- Condition: In Door Icemaker has been changed  - Correction: 5989JB0001A (Previous icemaker P/No.) is now AEQ36756901 (New icemaker P/No).  -Changed Feature: 1. The stainless lever rolls from bottom of the new icemaker. 2. Three bridges, which cross the legs of heater cover, are added  - Caution: 1. Use the new part number when ordering a replacement icemaker. 2. Check for proper operation of the new icemaker by running the Test (forced harvest) Mode after installation.
CREF20070556 In Door Icemaker.pdf (See page 3 of this bulletin)
<b>** FILE THIS SERVICE BULLETIN WITH YOUR SERVICE MANUAL</b>

NOTE (**): INTERCHANGEABILITY CODE		KEY-WORD CODE			
A	<table style="width: 100%; border: none;"> <tr> <td style="width: 30%; padding: 5px;">Parts</td> <td style="width: 40%; padding: 5px; text-align: center;"> </td> <td style="width: 30%; padding: 5px;">Set</td> </tr> </table>	Parts		Set	Original or new parts may be used in early or late production sets. Use original parts until exhausted, then stock new parts.
Parts		Set			
		1. To improve performance 2. To improve productivity			
B	<table style="width: 100%; border: none;"> <tr> <td style="width: 30%; padding: 5px;">Original</td> <td style="width: 40%; padding: 5px; text-align: center;"> </td> <td style="width: 30%; padding: 5px;">Set</td> </tr> </table>	Original		Set	Original parts may be used in early production sets only. New parts may be used in early or late production sets. Use original parts where possible, then stock new parts.
Original		Set			
		3. To improve reliability 4. Change of material or dimension			
C	<table style="width: 100%; border: none;"> <tr> <td style="width: 30%; padding: 5px;">Original</td> <td style="width: 40%; padding: 5px; text-align: center;"> </td> <td style="width: 30%; padding: 5px;">Set</td> </tr> </table>	Original		Set	New parts only may be used in early or late production sets. Stock new parts.
Original		Set			
		5. Addition 6. Deletion			
D	<table style="width: 100%; border: none;"> <tr> <td style="width: 30%; padding: 5px;">Original</td> <td style="width: 40%; padding: 5px; text-align: center;"> </td> <td style="width: 30%; padding: 5px;">Set</td> </tr> </table>	Original		Set	Original parts only may be used in early production sets. New parts may be used in late production sets only. Stock original and new parts.
Original		Set			
		7. Correction			

CHIEF ENGINEER , *approved*  
 Factory.

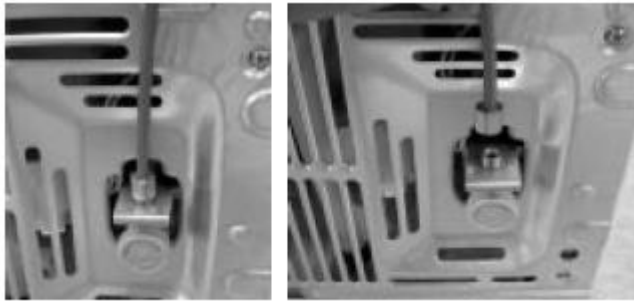


**New Part No. of Icemaker**

Condition	Change Feature															
	BEFORE	AFTER														
P/No. of icemaker has changed	<p><b>ITEM</b></p> <ul style="list-style-type: none"> <li>- Part: Icemaker Assembly Kit</li> <li>- Part No: <b>5989JB0001A ~ F</b></li> <li>- Loc. No: 600A</li> </ul> <p><b>FEATURE</b></p>  <p>1. The stainless lever rolls from the middle of the icemaker.</p>  <p>2. The current icemaker does not have cross braces.</p>	<p><b>ITEM</b></p> <ul style="list-style-type: none"> <li>- Part: Icemaker Assembly Kit</li> <li>- Part No: <b>AEQ36756901 ~ 06</b></li> <li>- Loc. No: 600A</li> </ul> <p><b>FEATURE</b></p>  <p>1. The stainless lever rolls from the bottom of the icemaker.</p>  <p>2. Three braces, which cross the legs of the heater cover, have been added.</p>														
<p><b>Correction</b></p> <table border="1"> <thead> <tr> <th>Old part No.</th> <th>New Part No.</th> </tr> </thead> <tbody> <tr> <td>5989JB0001A</td> <td>→ AEQ36756901</td> </tr> <tr> <td>5989JB0001B</td> <td>→ AEQ36756902</td> </tr> <tr> <td>5989JB0001C</td> <td>→ AEQ36756903</td> </tr> <tr> <td>5989JB0001D</td> <td>→ AEQ36756904</td> </tr> <tr> <td>5989JB0001E</td> <td>→ AEQ36756905</td> </tr> <tr> <td>5989JB0001F</td> <td>→ AEQ36756906</td> </tr> </tbody> </table>	Old part No.	New Part No.	5989JB0001A	→ AEQ36756901	5989JB0001B	→ AEQ36756902	5989JB0001C	→ AEQ36756903	5989JB0001D	→ AEQ36756904	5989JB0001E	→ AEQ36756905	5989JB0001F	→ AEQ36756906		
Old part No.	New Part No.															
5989JB0001A	→ AEQ36756901															
5989JB0001B	→ AEQ36756902															
5989JB0001C	→ AEQ36756903															
5989JB0001D	→ AEQ36756904															
5989JB0001E	→ AEQ36756905															
5989JB0001F	→ AEQ36756906															
<p><b>Caution</b></p> <ul style="list-style-type: none"> <li>● Use the new part number when ordering a replacement icemaker.</li> <li>● Check for proper operation of the new icemaker by running the Test (forced harvest) Mode after installation.</li> </ul>																

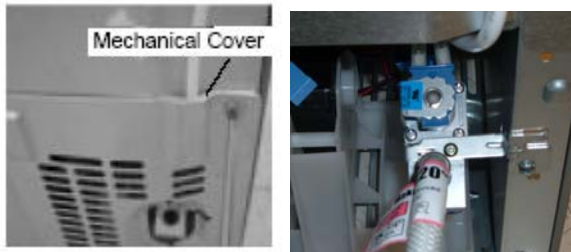


## PILOT VALVE ASSEMBLY

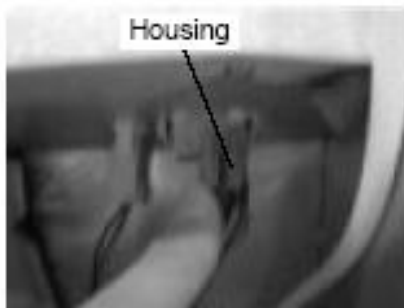


Turn off the water.

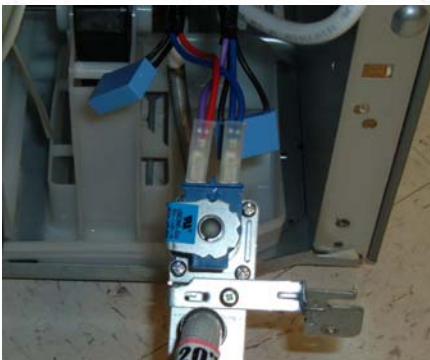
Remove the water line from the valve by removing the release guard clip and pressing the collet (release ring.)



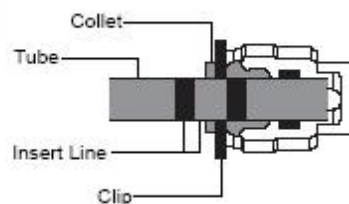
Separate the mechanical cover and remove the screw that holds the valve assembly to the refrigerator.



Separate the housing.



Pull out the valve.



Lay a dry towel on the floor and be ready to spill water from the filter line. Remove the release guard clip and press the collet to separate the tube from the connector. Allow the water to drain from the line until it is empty.

**ICE AND WATER VALVES**

Remove the tilt drawer (door bin.)



Remove the valve access panel.

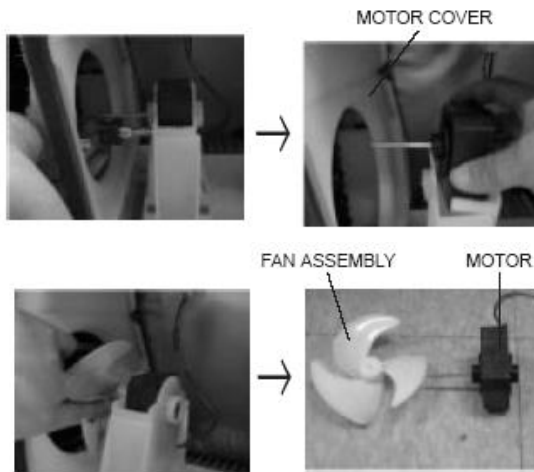


Reservoir (tubing) and valves.



Ice and water valves.

## FAN and MOTOR DISASSEMBLY



Using a short screwdriver, loosen one screw in the drain pipe assembly and another one connected to the motor cover.

Pull the fan blade off its shaft by turning it counterclockwise as you pull.

## NEWS FLASH

The fan motor is a variable speed DC motor. If it becomes jammed, it will try to start every thirty seconds for five minutes, and then once every thirty minutes. The input voltage and signal voltages are measurable.

To clear the ER error code, unplug, repair, and replace the fan motor. Or, if you wait thirty minutes, the situation will clear itself.

The fan speed is controlled by the sensor temperature. If the signal is interrupted, the motor will run for five minutes. After that time, the fan will stop and an error code will be displayed.

## FREEZER FAN



V = Voltage  
G = Ground  
F = Feedback

WHITE – SUPPLY (Positive)  
BLACK – GROUND  
PURPLE - SIGNAL (Positive)

While operating:  
WH to BLK – Approx. 13.9 V<sub>DC</sub>  
(15 V<sub>DC</sub> during ICE+PLUS)  
PR to BLK – Approx. 2 V<sub>DC</sub>  
Door OPEN or OFF – 0 V<sub>DC</sub>

**ICE ROOM FAN**

RED – SUPPLY (Positive)  
 BLUE – GROUND  
 BROWN – SIGNAL (Positive)

While Operating:

RD to BL – Approx. 11.1 V<sub>DC</sub>

BL to BR – 2.5 V<sub>DC</sub>

Door OPEN or OFF – 0 V<sub>DC</sub>

**CONDENSER FAN**

SKY BLUE – SUPPLY (Positive)  
 BRIGHT ORANGE – GROUND  
 YELLOW – SIGNAL – (Positive)

While operating:

SB to BO – Appox. 11.1 V<sub>DC</sub>

Y to BO – 2.5 V<sub>DC</sub>

Door OPEN or OFF – 0 V<sub>DC</sub>

**EVAPORATOR and ICE ROOM FAN ACCESS**

Remove the top drawer rails.

**EVAPORATOR and ICE ROOM FAN ACCESS, continued**

Release the tabs on the back panel and pull the panel out toward you.



Separate the connectors and you can remove the entire panel assembly from the freezer.

**NOTE:**

The ice room fan supplies air to the ice room through ducting in the cabinet. Where the door meets the cabinet, there are gaskets to seal the ducts between them, allowing the air to go into the ice room. The air supply enters through the top and the return is on the bottom.

## FREEZER SECTION MULLION



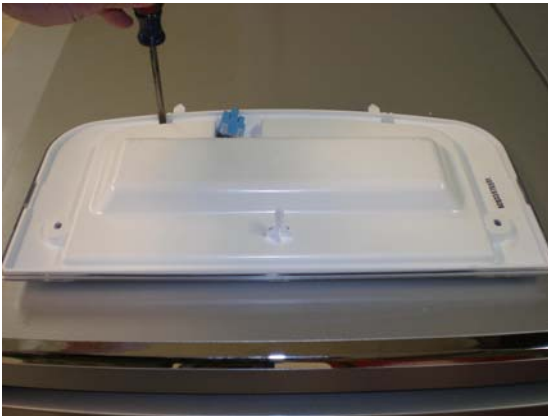
Yoder line heater in mullion (black lines.)

The service manual makes no reference to this loop. It would be very easy for a technician to break these refrigerant lines when attempting to access the fan motors or defrost components.

**CAUTION : DO NOT ATTEMPT TO REMOVE THE MULLION; IT CONTAINS REFRIGERANT LINES!**

The rear panel can be easily removed after removing the left and right upper door supports. The panel can then be slid through the upper door opening above the mullion!

## LED LAMPS (REFRIGERATOR)



If necessary, unload remove the top shelves.

Remove the two screws.

Grasp both ends of the lamp assembly and pull it down and out of the cavity.

Use a flat screwdriver to remove the cover lamp.



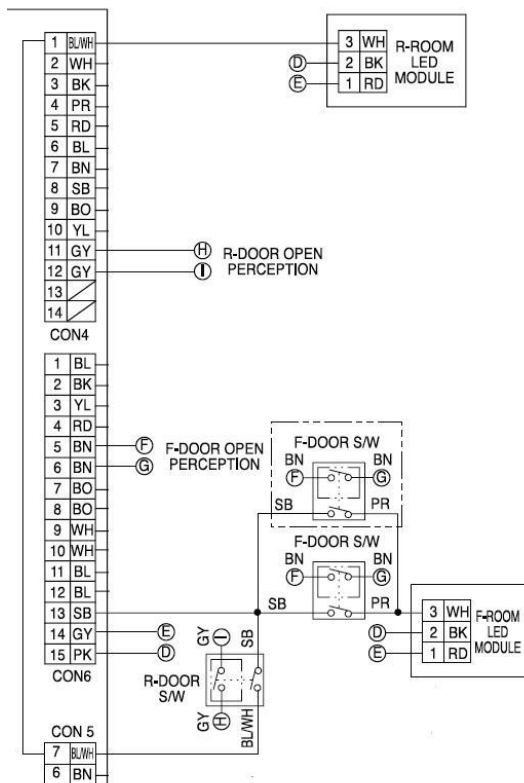
Separate the LED assembly and the cover.



## REFRIGERATOR MODULE CONNECTOR



## HOW IT WORKS



On this new 4-door refrigerator, the LED control board has been incorporated into the main PWB Assembly. The operation and diagnosis is easier than previous refrigerators with a separate LED control board assembly.

This refrigerator has 2 LED modules, one in the refrigerator section and one in the freezer section. They are labeled R-Room LED Module and F-Room LED Module. Each door of this refrigerator has a door switch. Each door switch is 2 switches in one. These door switches have 2 single pole, single throw normally closed (NC) switches. The door open perception switch, shown in CON 4, pins 11 and 12, is a 5 V<sub>DC</sub> refrigerator door monitoring switch. Notice the wire colors connecting these terminals to the refrigerator door switches are gray (GY). These gray wires attach to terminals H & I, shown on the R-Door switch above.

**NOTE:** Only 1 refrigerator door switch is shown in the wiring diagram. There are two refrigerator door switches, one for each door, both wired as shown above. Likewise, in CON 6, pins 5 and 6 these brown (BN) wires connect the 2 freezer door switches on connectors F & G. These are also 5 V<sub>DC</sub> door monitoring switches.



## HOW IT WORKS, continued

Operationally, the door monitoring switches are open when the doors are closed. When doors are closed and monitoring switches for the refrigerator and freezer doors are open, 5 V<sub>DC</sub> will be measured across the control board terminals referenced above and 5 V<sub>DC</sub> will be measured across the open terminals of the perception section of the door switches. When the door or doors are open, the switches will be closed. When this occurs, zero (0) V<sub>DC</sub> will be measured across the door perception terminals on the control board and across the perception terminals of the door switches.

The LED section operates on 12 V<sub>DC</sub> from CON 6, pins 15, 14, and 13. Pin 15 (PK) is marked (D); this terminal is the ground reference for measuring the 12 V<sub>DC</sub> in the LED section of the control board. Pin 14 (GY) is marked (E) and is the 12 V<sub>DC</sub> output to both LED Modules in the refrigerator and freezer sections.

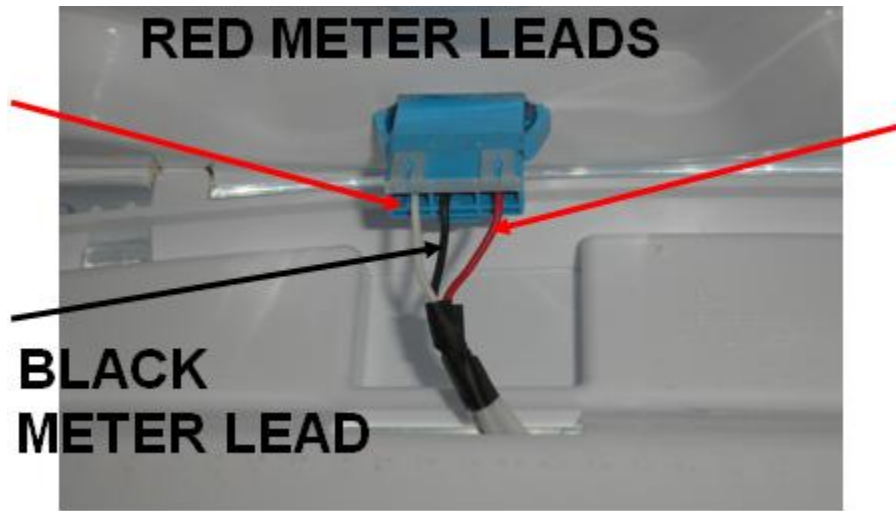
Looking closely at the LED Modules, you will see that (E) is connected to Pin 1 on the LED Modules. This RD lead is the 12 V<sub>DC</sub> from the control board pin 14 (GY). Pin 2 on the LED Module is marked (D) from the control board and is a BK wire, which is the ground reference from Pin 15 (PK). 12 V<sub>DC</sub> should be present at ALL times on pins 1 and 2, RD to BK on both LED modules. This 12 V<sub>DC</sub> will be used to operate the LEDs in each module when the signal voltage arrives on Pin 3 (WH).

Pin 13 (SB) on CON 6 of the main power board is a 12 V<sub>DC</sub> output going to each door switch in the refrigerator and freezer sections. The 2<sup>nd</sup> switch in each door switch supplies this 12 V<sub>DC</sub> when the door is open to the LED Modules terminal 3 (WH). When 12 V<sub>DC</sub> is measured on the LED module of the refrigerator or freezer from BK to WH the LEDs will turn on. (Note: Remember there must be 12 V<sub>DC</sub> from BK to RD also!)

Look closely again at the refrigerator door switch. (Remember there are actually 2 of these switches, 1 for each refrigerator door, wired as the diagram shows!) When either refrigerator door is opened, 12 V<sub>DC</sub> from SB to BL/WH is sent to CON 5, pin 7 on the main control power board. A jumper is placed on the board from CON 5, pin 7 to CON 4, pin 1 (BL/WH). With the refrigerator door open, the 12 V<sub>DC</sub> leaves CON 4, pin 1 (BL/WH) and connects to the white (WH) wire on pin 3 of the refrigerator LED Module. As with the freezer LED Module, when 12 V<sub>DC</sub> is present on pin 3 (WH) the LEDs will turn on!

**FINAL REMINDER:** All LED DC voltages on the main power board are referenced (measured) from CON 6, pin 15 (PK). Pin 15 is the ground reference terminal. Likewise, on the LED modules, pin 2 (BK) is the ground reference when measuring DC voltages to pins 1 and 3.

REFRIGERATOR LED MODULE



White to Black  
Door closed  
0 V<sub>DC</sub>



White to Black  
Door open  
12 V<sub>DC</sub>

## REFRIGERATOR LED MODULE, continued



Red to Black  
12 V<sub>DC</sub> Constant

The freezer LED assembly is similar to the refrigerator, but smaller. The repair procedure is the same.



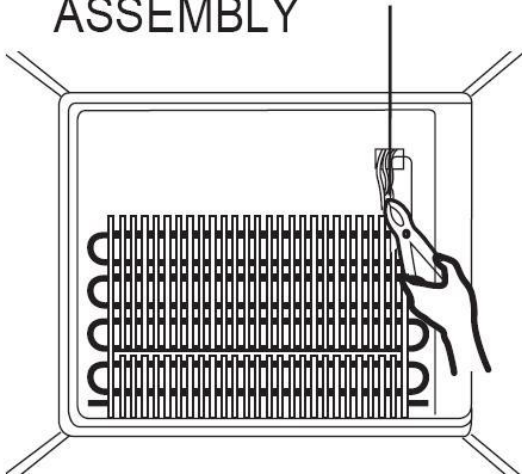
SKY BLUE – 12 VDC supply to all LED  
door switches WHITE Wires

GRAY – 12 VDC supply to all LED  
modules RED Wires

PINK – Negative to all LED door switches  
BLACK wires

## DEFROST CONTROL ASSEMBLY

## DEFROST-CONTROL ASSEMBLY



The defrost sensor consists of a temperature sensor and a thermal fuse. This assembly is attached to the metal side of the evaporator and senses temperature. It turns off the defrost heater at 46 °F (8° C).

The thermal fuse (Fuse-M) is for safety to prevent overheating during the defrost cycle. The thermal fuse is a single-use item; when it blows, it must be replaced as an assembly.



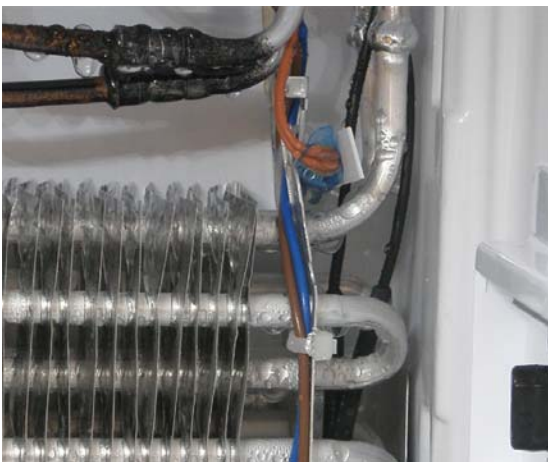
Remove the grille assembly in the freezer.

Unplug the defrost control assembly.

Cut the tie-wrap that holds it in place.

Remove and replace the assembly.

Secure it with a new tie-wrap.



Plug in the new assembly and replace the grille.

In the two photos to the left, the orange leads are the defrost sensor.

The blue and brown leads are the fuse link.

## DEFROST CONTROL ASSEMBLY, continued



The orange leads go to the defrost sensor on CONNECTOR 6.



Using your ohmmeter, read the resistance of the sensor to determine the temperature.

In this example, 60.5 kΩ indicates 5° F. (See thermistor chart, page 74.)

## THERMISTOR TIPS

- The icemaker cycles at 16° F.
- The ice room fan cycles on at +6° F and off at +2° F.
- The defrost cycle terminates at 46° F (8° C)
- There is no defrost cycle if the internal temperatures are above 46° F.

If a sensor fails:

- The refrigerator sensor cycles the damper and evaporator fan every fifteen minutes while the error code **Er rS** is displayed.
- The freezer sensor cycles the compressor, evaporator fan motor, and condenser fan motor every fifteen minutes while the error code **Er FS** is displayed.
- The ice room sensor cycles the ice room fan every fifteen minutes while the error code **Er IS** is displayed.
- The ice sensor will NOT cycle the icemaker.
- The defrost cycle terminates after one hour. After displaying the error code **Er dH**, the cooling operation resumes.
- Error codes are cleared immediately upon the completion of repairs.



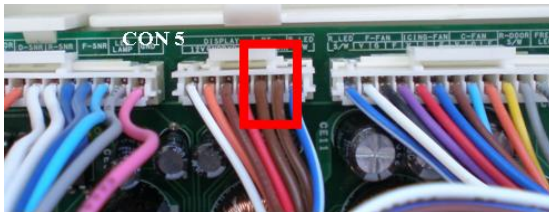
## THERMISTORS (SENSORS)



Orange to Orange – Defrost (0.5 – 4.5 V<sub>DC</sub> or Resistance)  
 White to White – Refrigerator (0.5 – 4.5 V<sub>DC</sub> or Resistance)  
 Blue to Blue – Freezer (0.5 – 4.5 V<sub>DC</sub> or Resistance)

Thermistors are NTC (Negative Temperature Coefficient). As the temperature DECREASES, the resistance INCREASES. As the resistance INCREASES, the voltage DECREASES. Refer to page 74 for the Temperature/Resistance Chart.

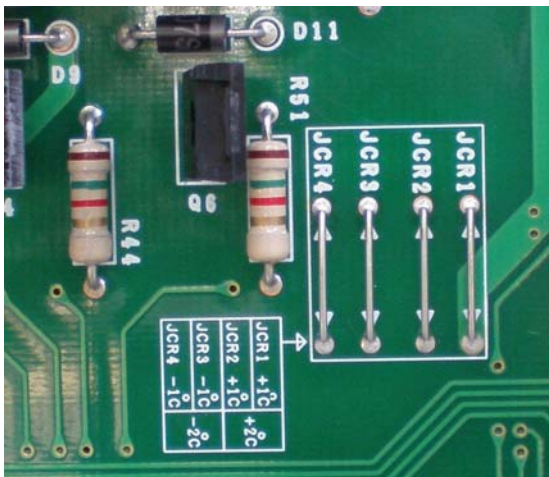
## ROOM THERMISTOR



BROWN to BROWN – (0.5 – 4.5 V<sub>DC</sub>)  
 Resistance:

Disconnect the wire connector. Set the meter to  $\Omega$ . Refer to page 74 for the Temperature/Resistance Chart.

## TEMPERATURE COMPENSATION



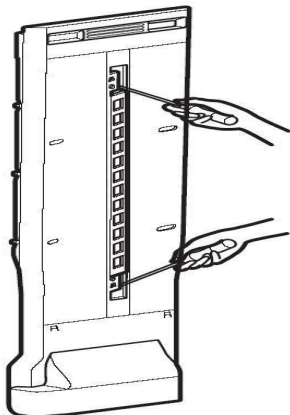
Opening jumpers JCR1 and 2 will increase the refrigerator temperature by 1°C each.

Opening jumpers JCR3 and 4 will decrease the refrigerator temperature by 1°C each.

$$1^{\circ}\text{C} = 1.8^{\circ}\text{F}$$



## MULTI-DUCT



Pry out the upper and lower caps and remove the two screws.



Separate the electrical connectors when the duct is removed.



Replace the foam gasket if it is damaged.

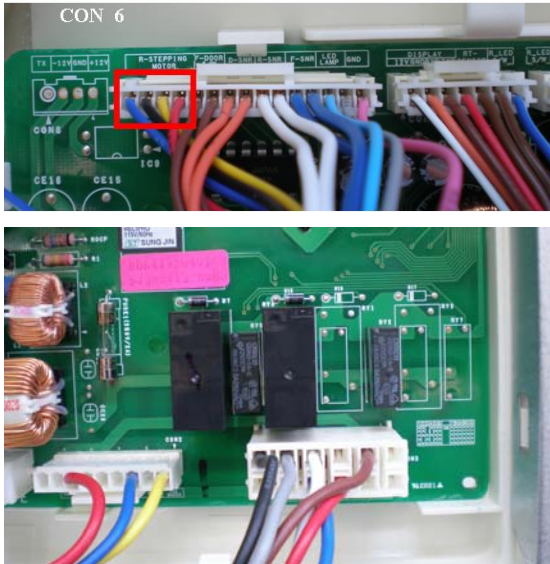


Be sure the newly adhered gasket does not interfere with damper operation.

Store the duct where it will not be damaged or crushed during repairs.

Replacement is the reverse of this procedure.

**STEPPER MOTOR**

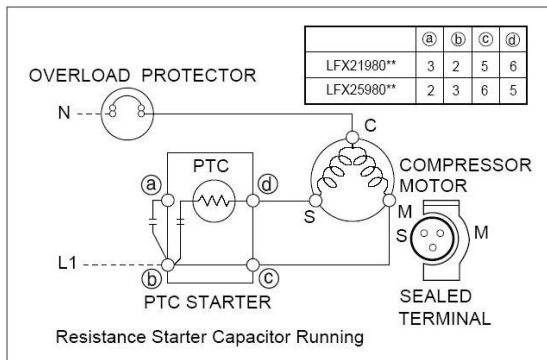


Blue to Black – Pulsing  $mV_{DC}$  @ 75Hz while operating (400  $\Omega$ )

Yellow to Red – Pulsing  $mV_{DC}$  @ 75Hz while operating (400  $\Omega$ )

120  $V_{AC}$  loads switching relays

**COMPRESSOR PTC (Positive Temperature Coefficient)**



The PTC (Positive Temperature Coefficient) is a non-contact ceramic semiconductor that uses  $BaTiO_3$ . The resistance increases as the temperature increases. This part is attached to the compressor case and used to start the compressor and to prevent starting when conditions require. The compressor is a single-phase induction motor.

The PTC allows current to energize both the start and main windings to start the motor.

The PTC must be allowed to cool before the system can be restarted. Within the sealed system, it takes approximately 5 minutes for the pressure to equalize so the compressor can restart. When the PTC cools sufficiently, the compressor can start again. If the compressor attempts to restart before the PTC has cooled, the PTC will allow current to flow to only the main winding and the OLP will open because of the over current condition. This process will repeat itself 3 to 5 times while the compressor tries to restart until the PTC cools sufficiently.

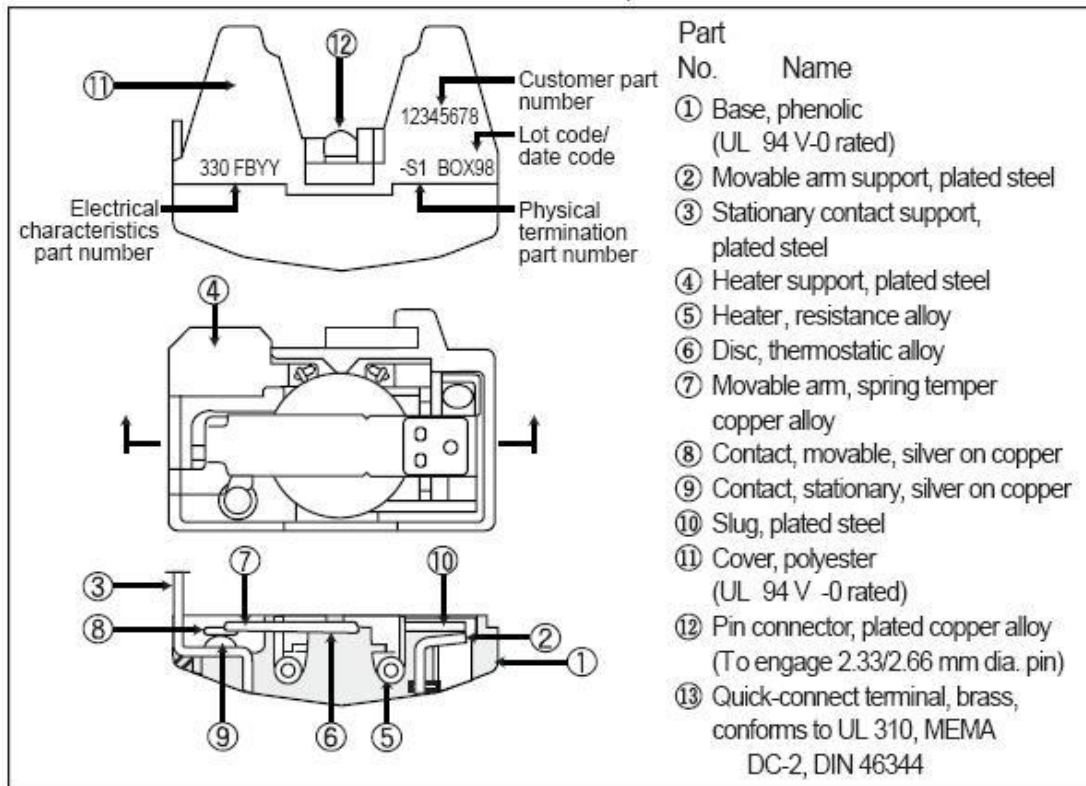
It is critical to use the correct parts when replacing the OLP and PTC or the compressor will be damaged. Parts may appear physically identical but could have different electrical ratings.

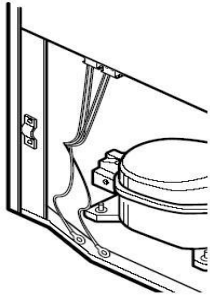
**Order replacement parts by model number and serial number.**

### OVERLOAD PROTECTOR (OLP)

The OLP (Over Load Protector) is attached to the outside of the compressor and protects it by opening the circuit if the temperature exceeds the operating limit. When high current flows to the compressor, the heater inside the OLP causes the bimetal spring to expand, interrupting the current to the compressor.

Do not adjust the OLP in any manner.



**REPLACING THE OLP**

Remove the rear cover of the refrigerator to expose the compressor and mechanical area.

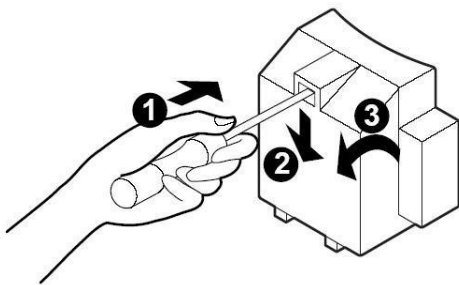
Remove the two screws on the retaining clamp of the compressor.

Loosen two screws on the compressor base.

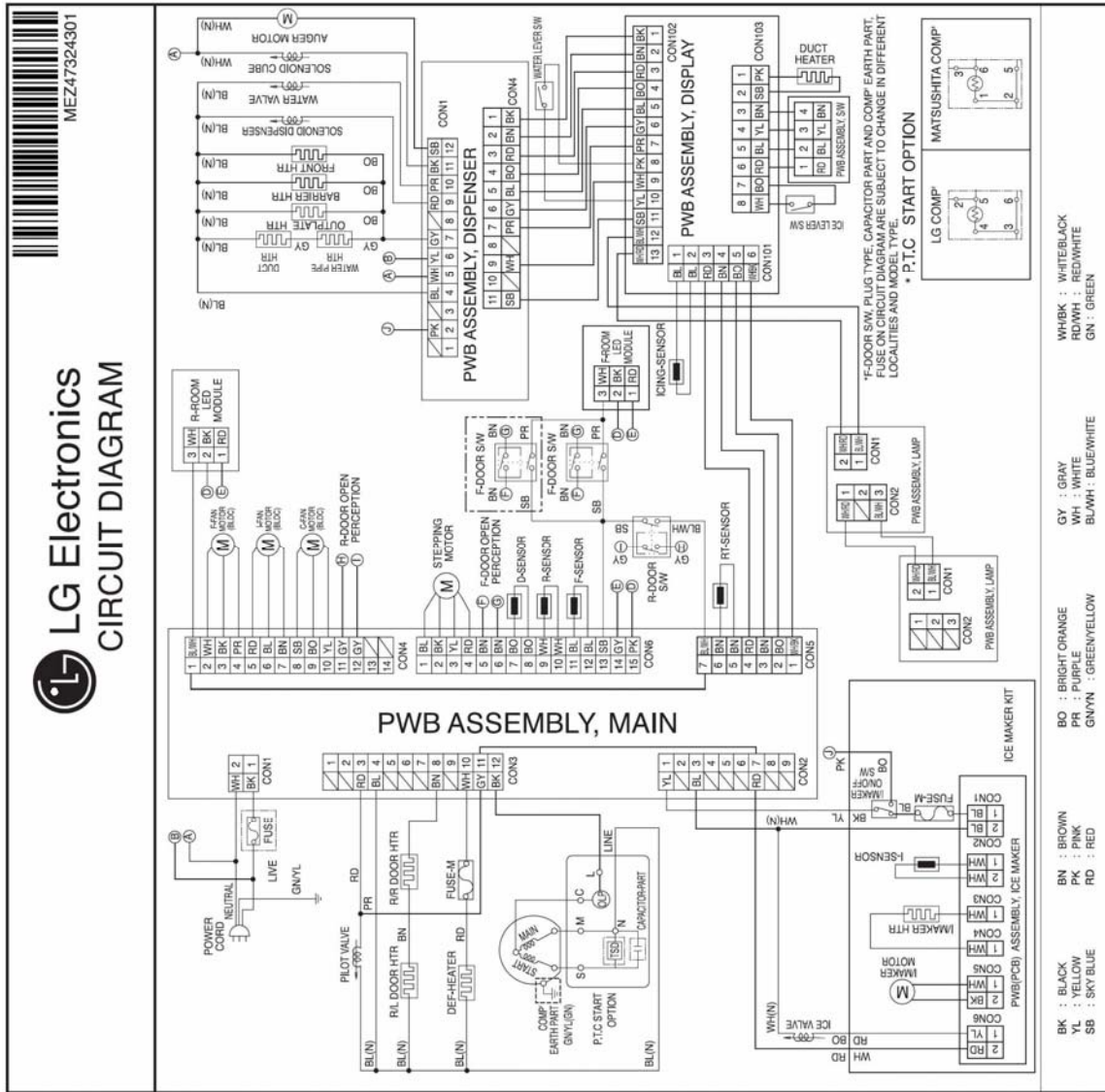
Use a flat screwdriver to pry off the cover.

Remove and replace the OLP and the PLC. (These should be replaced as a set.)

Replace the cover and tighten all screws loosened.



CIRCUIT DIAGRAM



## 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 test button at main PCB controller.
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.

MODE	OPERATION	FUNCTION	REMARKS
TEST1	Push test button one time at main PCB controller.	1) Operation of the COMPRESSOR and FAN(Freezer/Condenser/Icing) 2) Stepping DAMPER OPEN 3) Defrosting HEATER OFF 4) DISPLAY LED all ON	
TEST2	Push Test button one in TEST PCB MODE1.	1) Operation of the COMPRESSOR and FAN(Freezer/Condenser/Icing) 2) Stepping DAMPER CLOSE 3) Defrosting HEATER OFF 4) DISPLAY LED shows "22"	
TEST3	Push Test button one in TEST PCB MODE2.	1) The COMPRESSOR and the FAN(Freezer/Condenser/Icing) OFF 2) Stepping DAMPER CLOSE 3) Defrosting HEATER ON 4) DISPLAY LED shows "33"	Reset if the Temperature of the Defrosting Sensor is 46°F(8°C) or more.
RESET	Push Test button one in TEST PCB MODE3 .	Reset to the previously setting Before TEST MODE.	The compressor will Start after a 7-minute Delay.



## ERROR CODES

NO	Error Detection Category	Error Display		Error Generation Factors	Remark
		Freezer Temperature	Ref. Temperature		
1	Normality			None	Normal operation of Display
2	Freezer Sensor Error	Er	FS	Short or Disconnection of Freezer Sensor	Check the connection at each sensor.
3	Refrigerator Sensor Error	Er	rS	Short or Disconnection of Refrigerator Sensor	
4	Defrosting Sensor Error	Er	dS	Short or Disconnection of Defrosting Sensor	
5	Icing Sensor Error	Er	IS	Short or Disconnection of Icing Sensor	
6	Poor Defrosting	Er	dH	If 1 hour has passed since defrosting began but the sensor is not above 46° F (8° C), the defrost mode has failed.	Temperature Fuse Disconnection, Heater disconnection, DRAIN Jam, Poor Relay for Heater
7	Abnormality of BLDC FAN Motor for Ice Making	Er	IF	No feedback signal for more than 65 seconds during fan motor operation	Defective BLDC fan motor connection, drive IC, or data transmission.
8	Abnormality of BLDC FAN Motor for Freezer	Er	FF	No feedback signal for more than 65 seconds during fan motor operation	Defective BLDC fan motor connection, drive IC, or data transmission.
9	Abnormality of BLDC FAN Motor for Mechanic Room	Er	CF	No feedback signal for more than 65 seconds during fan motor operation	Defective BLDC fan motor connection, drive IC, or data transmission.
10	Communication Error	Er	CO	Communication Error between Micom of Main PCB and Display Micom	Poor communication, faulty transmission or reception of data
11	Room Temperature Sensor Error	Er	rt	ICE PLUS and FREEZER keys pressed together	8888 (Not a defect)

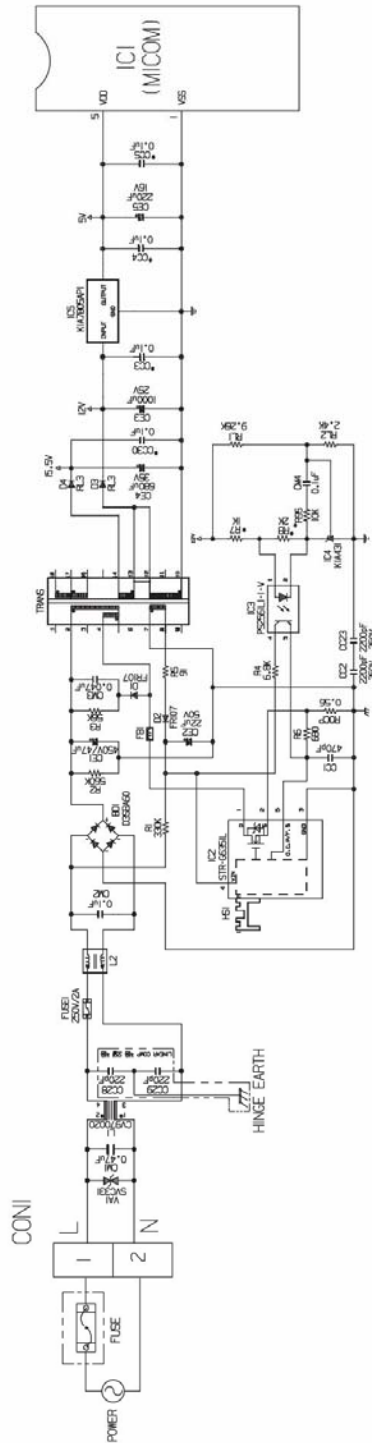
**ERROR CODE Er rt**

The error code **Er rt** will show on the display at the beginning of the test mode if there is a defective ambient sensor reading.

Otherwise, it will not be seen by the customer and does not affect normal operation of the refrigerator.

PCB FUNCTION

POWER CIRCUIT



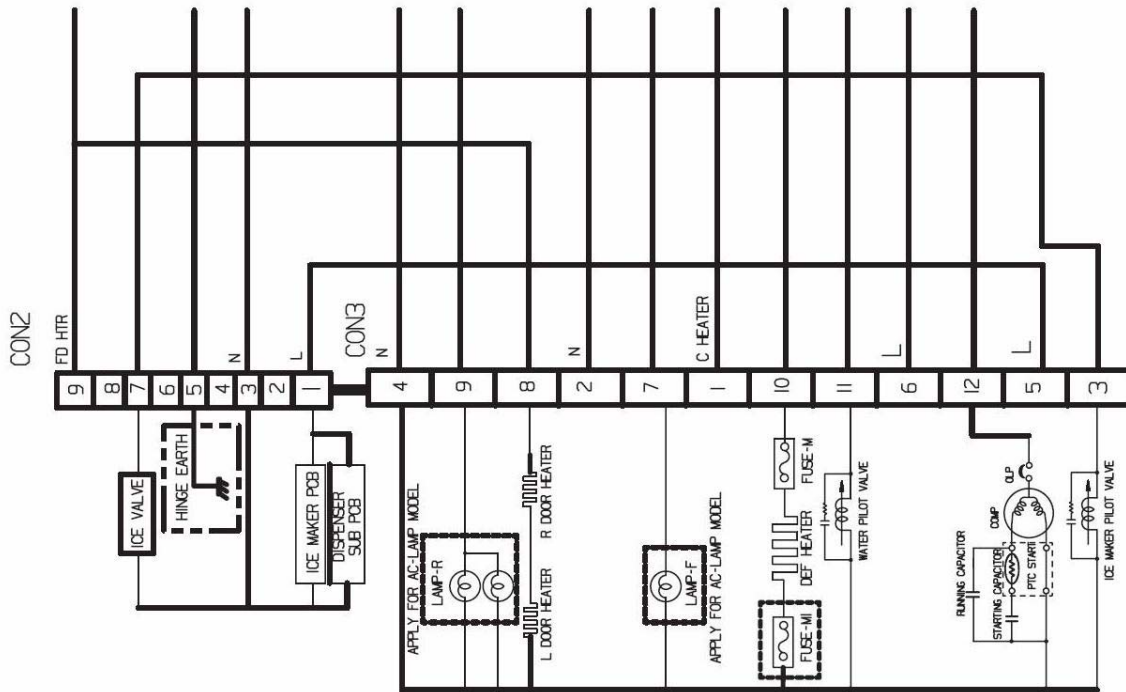
The secondary part of the TRANSFORMER is composed of the power supply for the display, the BLDC FAN Motor drive (15.5 V<sub>DC</sub>), the relay drive (12 V<sub>DC</sub>) and the MICOM and IC (5 V<sub>DC</sub>).

The voltage for each part is as follows: VA1 is a part for preventing over voltage and noise. When 230 V or higher power is applied, the inside elements are short circuited and broken, resulting in blowout of the fuse in order to protect the elements of the secondary part of the TRANSFORMER.

**POWER CIRCUIT, continued**

<b>PART</b>	<b>VA 1</b>	<b>CE 3</b>	<b>CE 4</b>	<b>CE 5</b>
VOLTAGE	115 Vac	12 Vdc	15.5 Vdc	5 V

**LOAD FAN and DOOR OPEN DETECTION CIRCUIT**



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

Circuit	Pin Number	Pin Number	Output Voltage
I/Maker Pilot Valve	Con3 Pin3	Con3 Pin2	115 VAC
R/R Door, R/L Door Heater	Con3 Pin8	Con3 Pin2	115 VAC
Def Heater	Con3 Pin10	Con3 Pin2	115 VAC
Water Pilot Valve	Con3 Pin11	Con3 Pin2	115 VAC
Compressor	Con3 Pin12	Con3 Pin2	115 VAC

**2-1. APPLY For AC Lamp Model(Optional)**

LAMP	Con3 Pin	Con3 Pin	Output Voltage
LAMP-R	Con3 Pin9	Con3 Pin2	115 VAC
LAMP-F	Con3 Pin7	Con3 Pin2	115 VAC

**2-2. Freezing compartment fan**

	Pin2 & 3 of con4
MOTOR OFF	2V or less
MOTOR ON	13V~15V

**2-3. Machine compartment fan**

	Pin8 & 9 of con4
MOTOR OFF	2V or less
MOTOR ON	10V~14V

**2-4. Icing compartment fan**

	Pin5 & 6 of con4
MOTOR OFF	2V or less
MOTOR ON	10V~14V

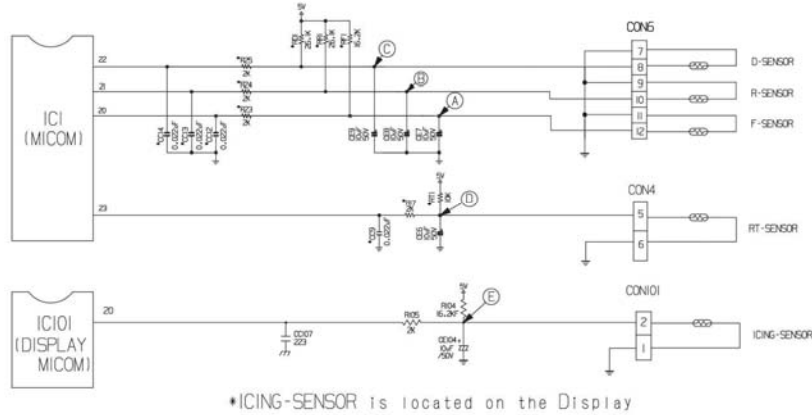
OPEN DOOR DETECTION CIRCUIT CHECK

3. Open Door Detection Circuit Check



Freezer/ Refrigerator Door	Measurement Location	Pin 11 & 12 of con4 Ref.Door Pin 5 & 6 of con6 Fre.Door
Closed		5 V
Open		0V

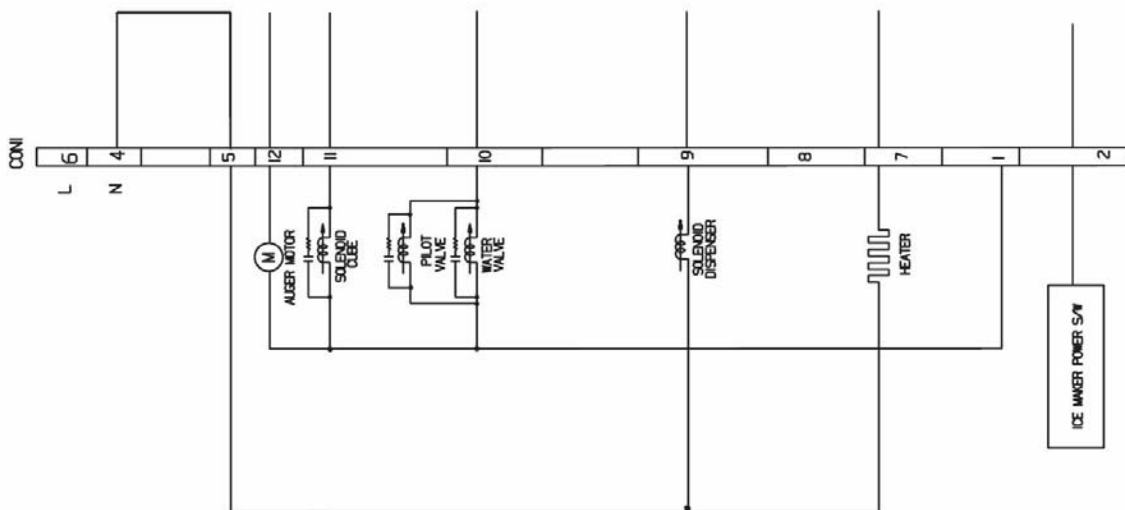
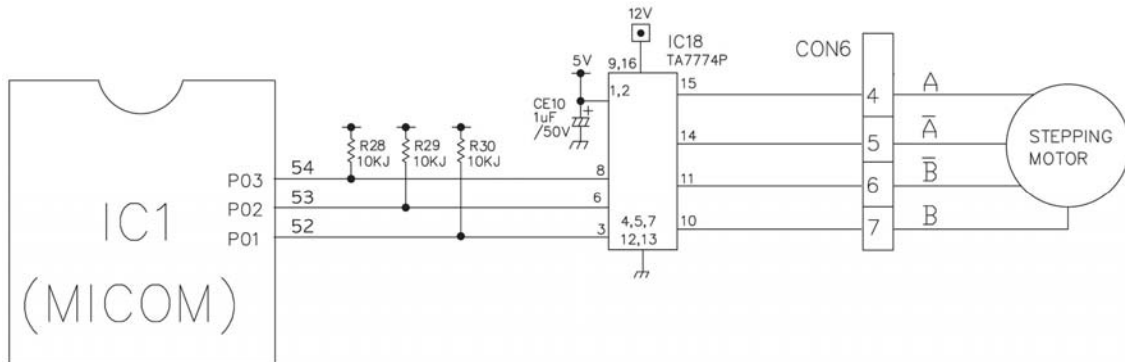
8-2-3 Temperature Sensor Circuit



The upper circuit reads refrigerator temperature, freezer temperature, Icing sensor temperature and defrost sensor temperature for defrosting and the indoor temperature for compensating for the surrounding temperature into MICOM. Opening or short state of each temperature sensor are as follows:

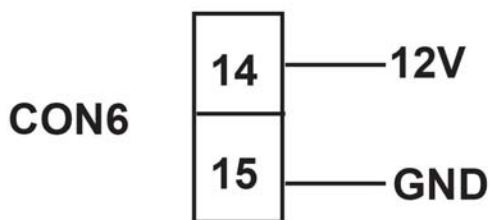
SENSOR	CHECK POINT	NORMAL (-30°C ~ 50°C)	SHORT-CIRCUITED	OPEN
Freezer sensor	POINT (A) Voltage	0.5 V ~ 4.5 V	0 V	5 V
Refrigerator sensor	POINT (B) Voltage			
Defrosting sensor	POINT (C) Voltage			
Room Temperature sensor	POINT (D) Voltage			
Icing sensor	POINT (E) Voltage			

REFRIGERATION COMPARTMENT STEPPING MOTOR DAMPER CIRCUIT



Circuit	Pin Number	Pin Number	Output Voltage
Auger Motor	Con1 Pin12	Con1 Pin4	115 VAC
Solenoid Cube	Con1 Pin11	Con1 Pin4	115 VAC
Pilot/ Water Valve	Con1 Pin10	Con1 Pin4	115 VAC
Solenoid Dispenser	Con1 Pin9	Con1 Pin4	115 VAC
Heater	Con1 Pin7	Con1 Pin4	115 VAC

LED IN REFRIGERATOR / FREEZER (Optional)

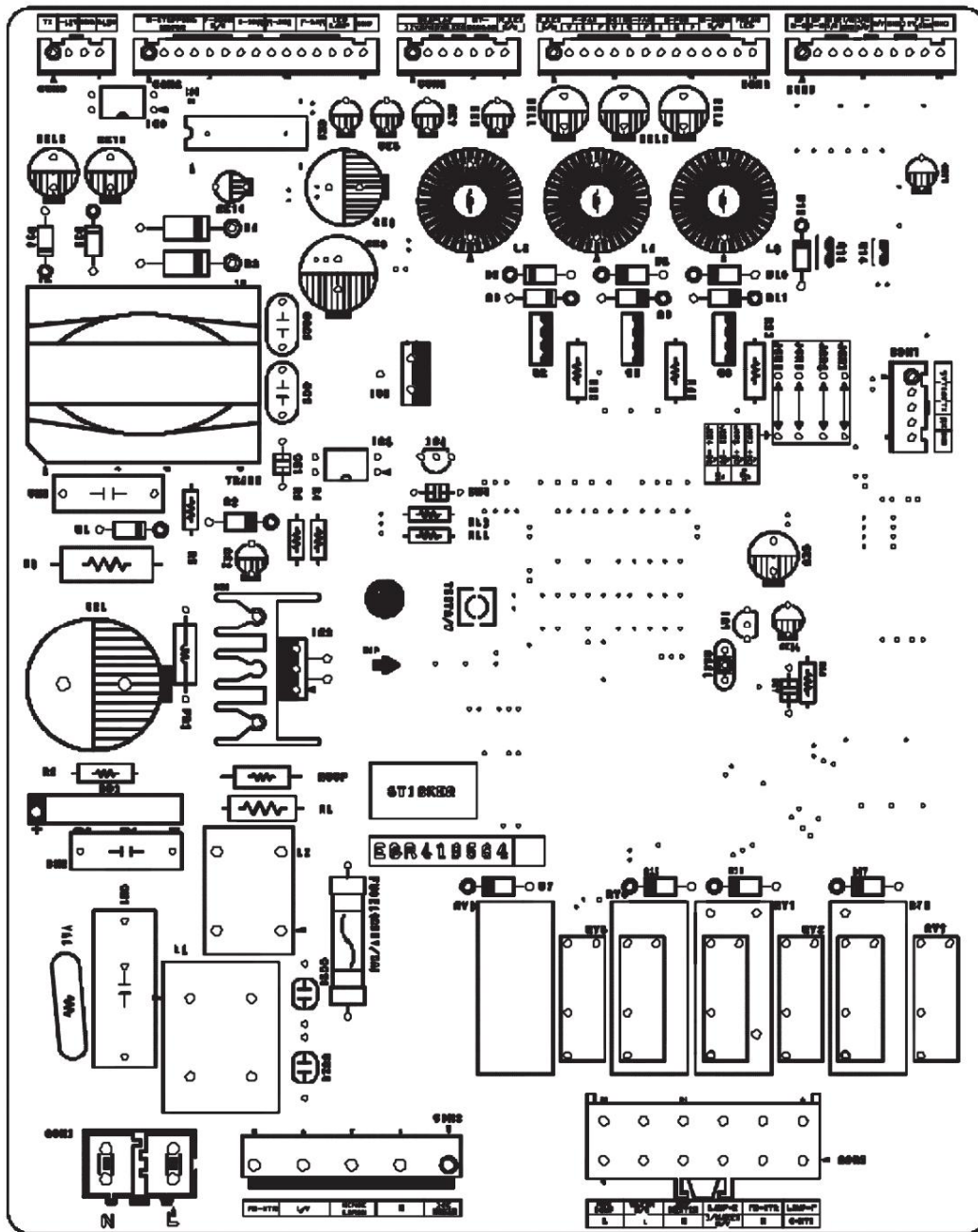




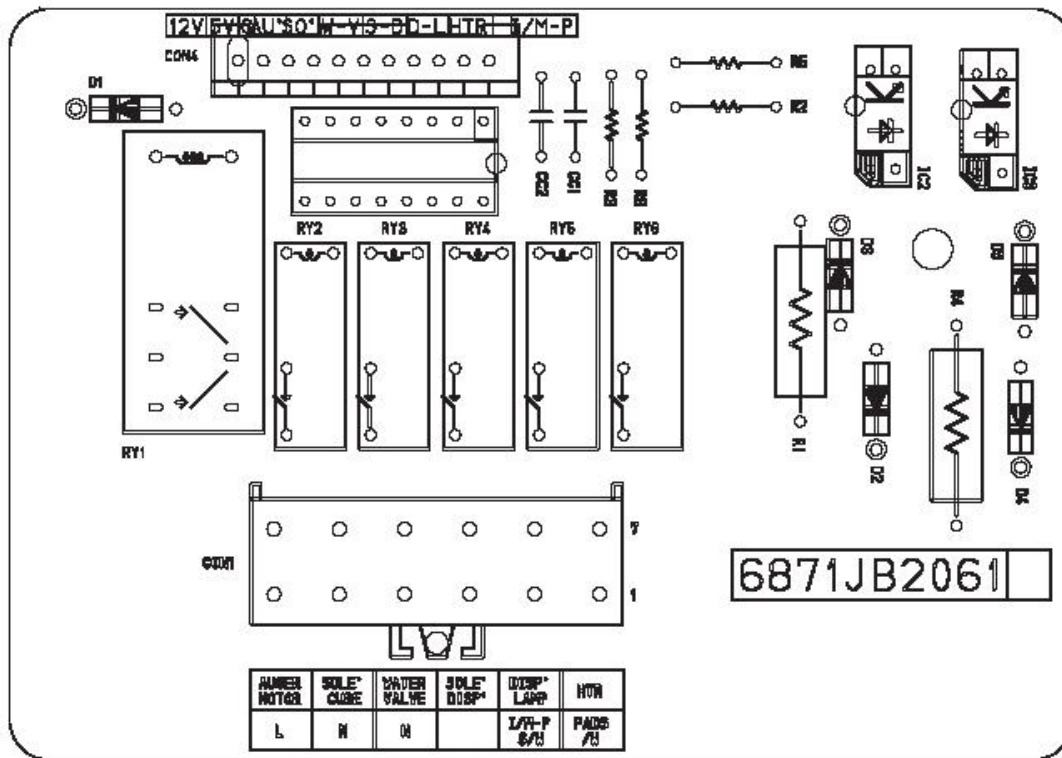
LED IN REFRIGERATOR / FREEZER (Optional), continued

Circuit	Pin Number	Pin Number	Output Voltage
LED Module	Con6 Pin14	Con6 Pin15	12 VDC

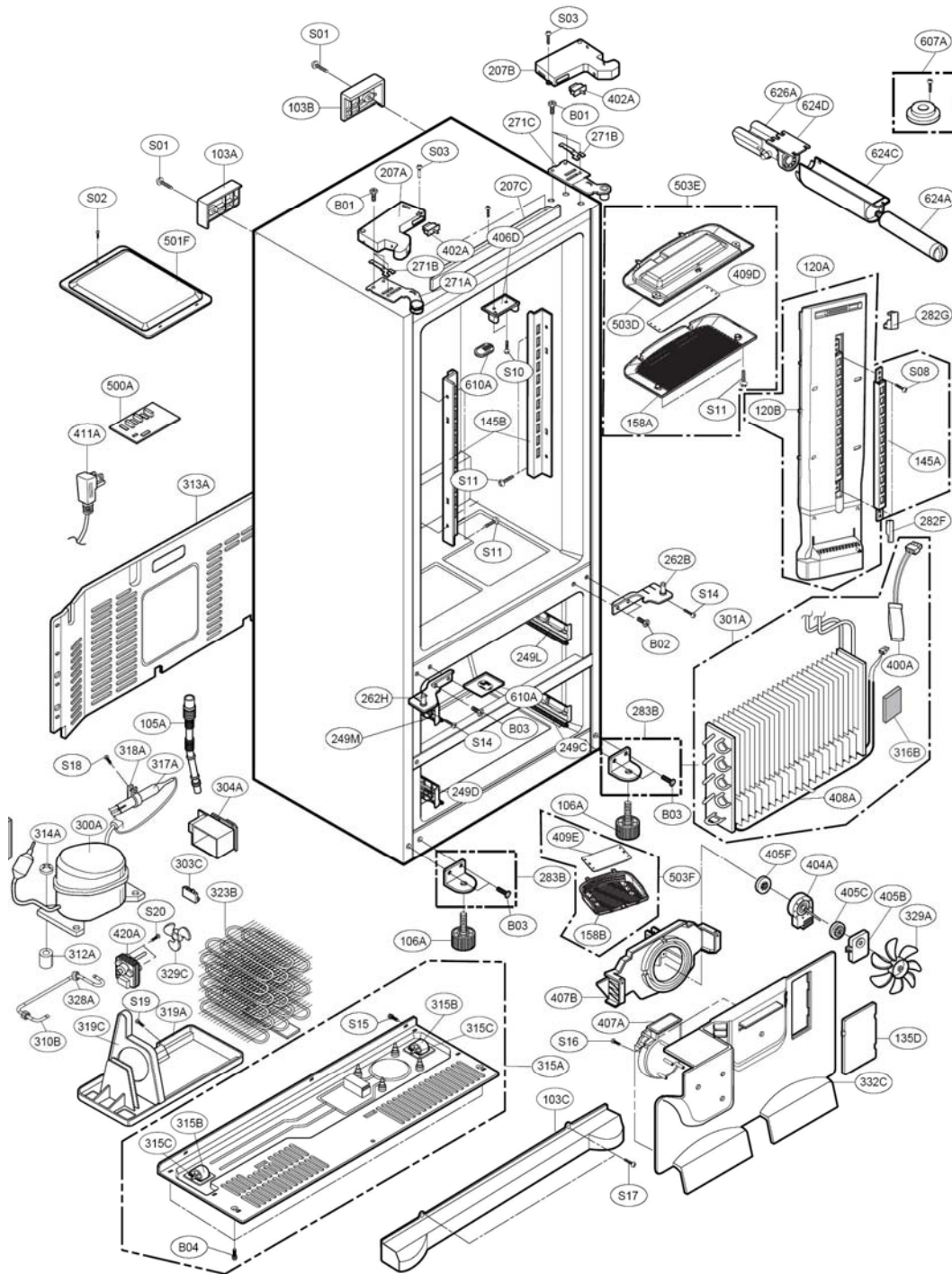
MAIN PWB ASSEMBLY



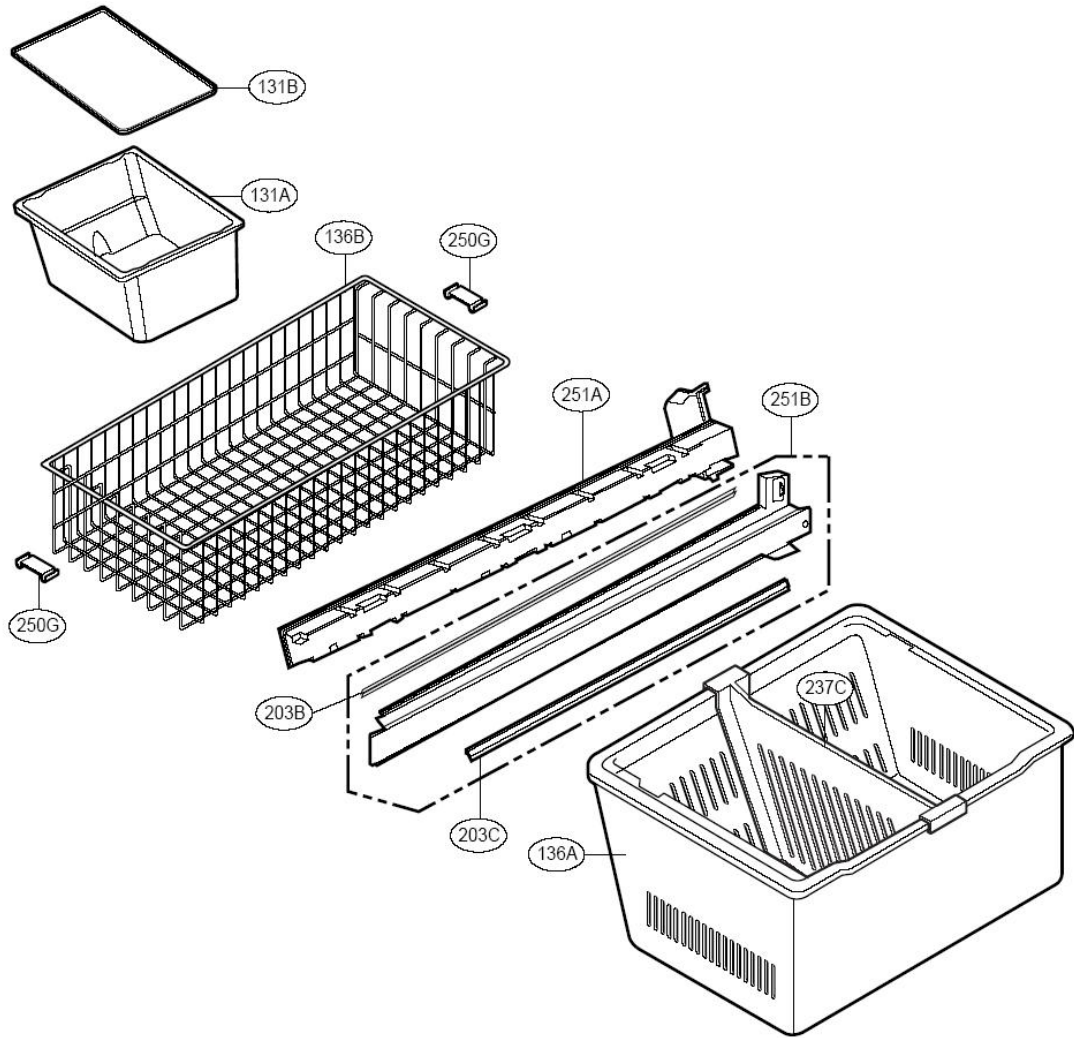
DISPENSER DRIVE PWB ASSEMBLY



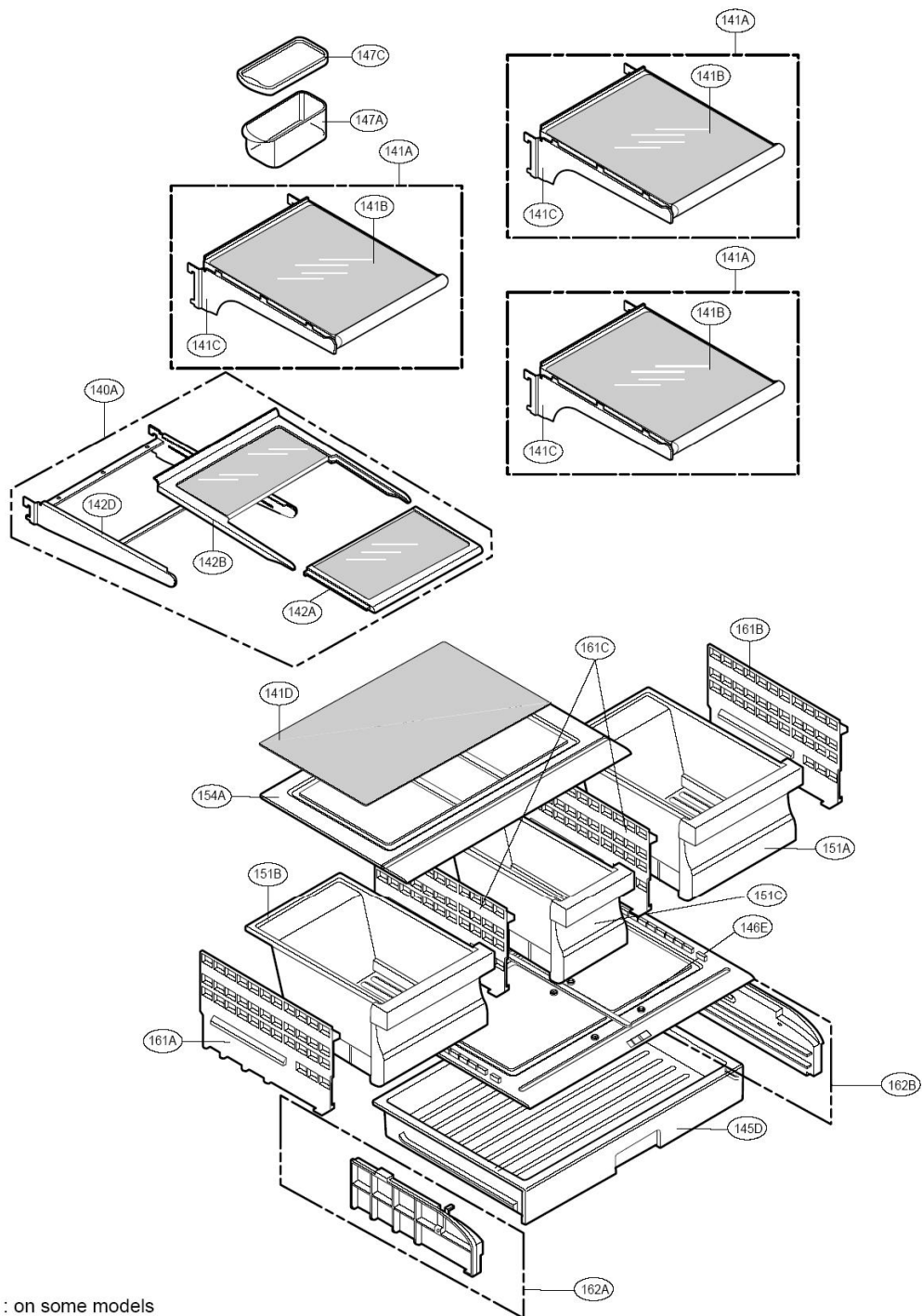
# EXPLODED VIEWS



EXPLODED VIEWS, continued

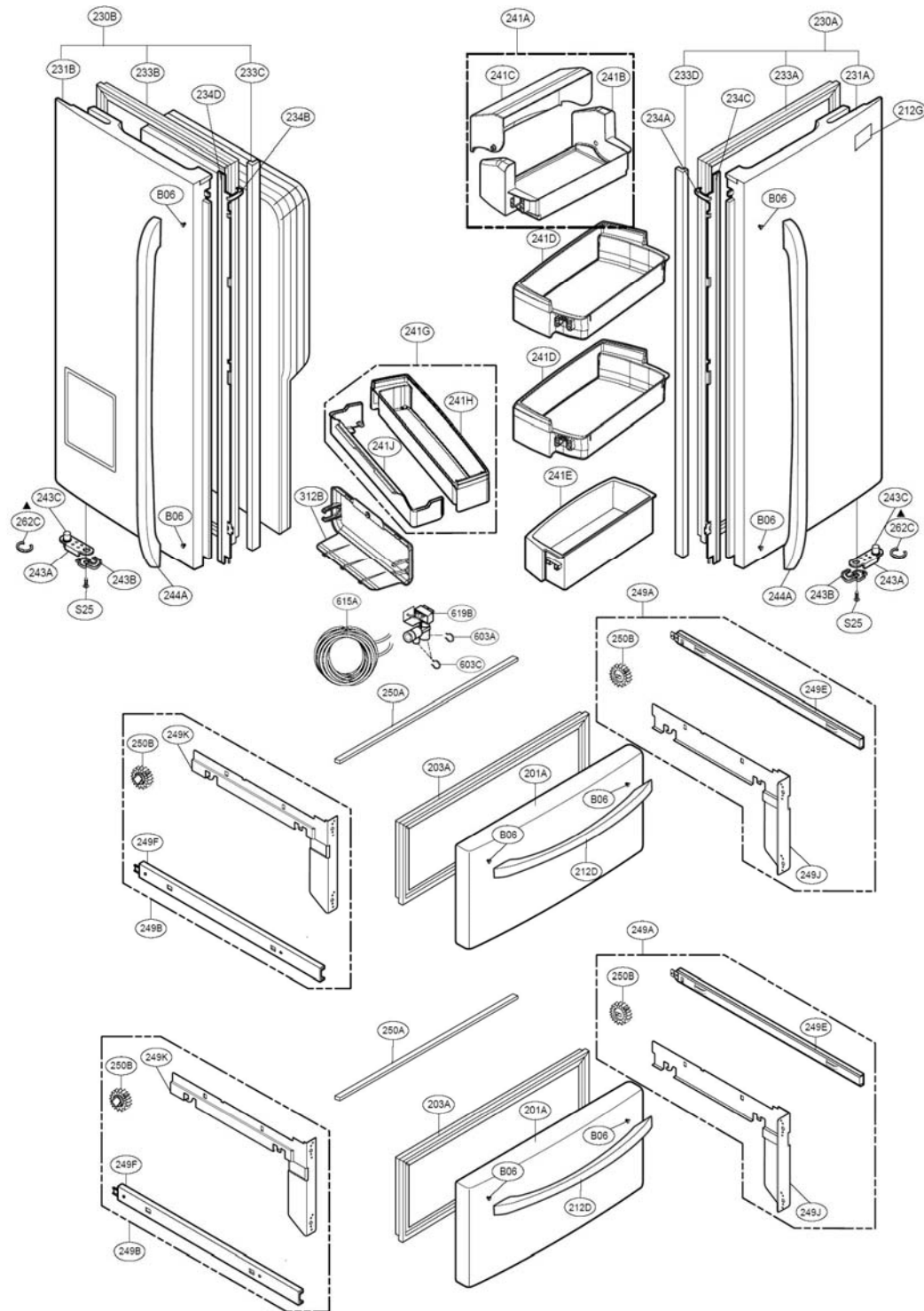


EXPLODED VIEWS, continued





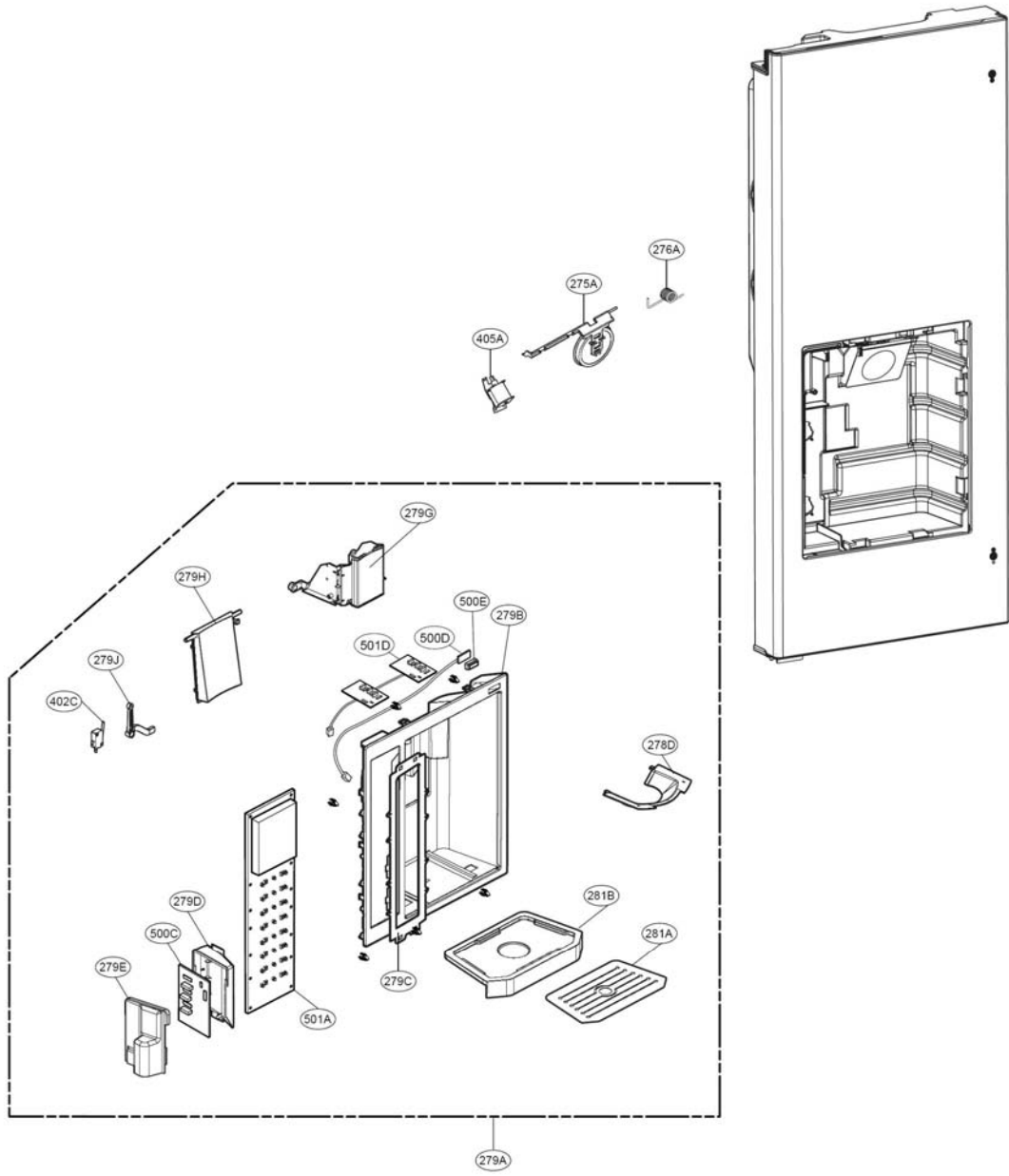
EXPLODED VIEWS, continued



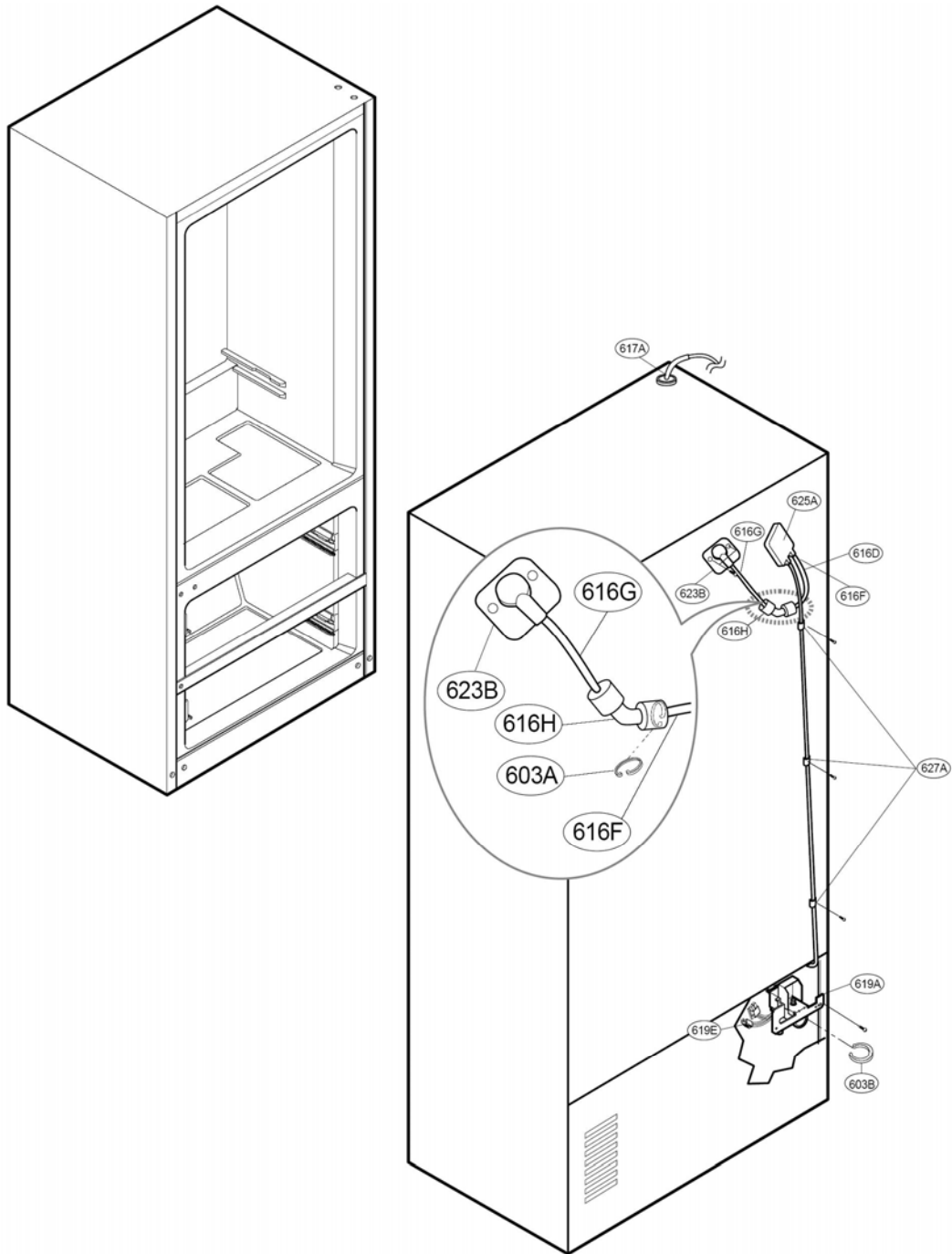
\* : on some models  
 ▲ only for the service



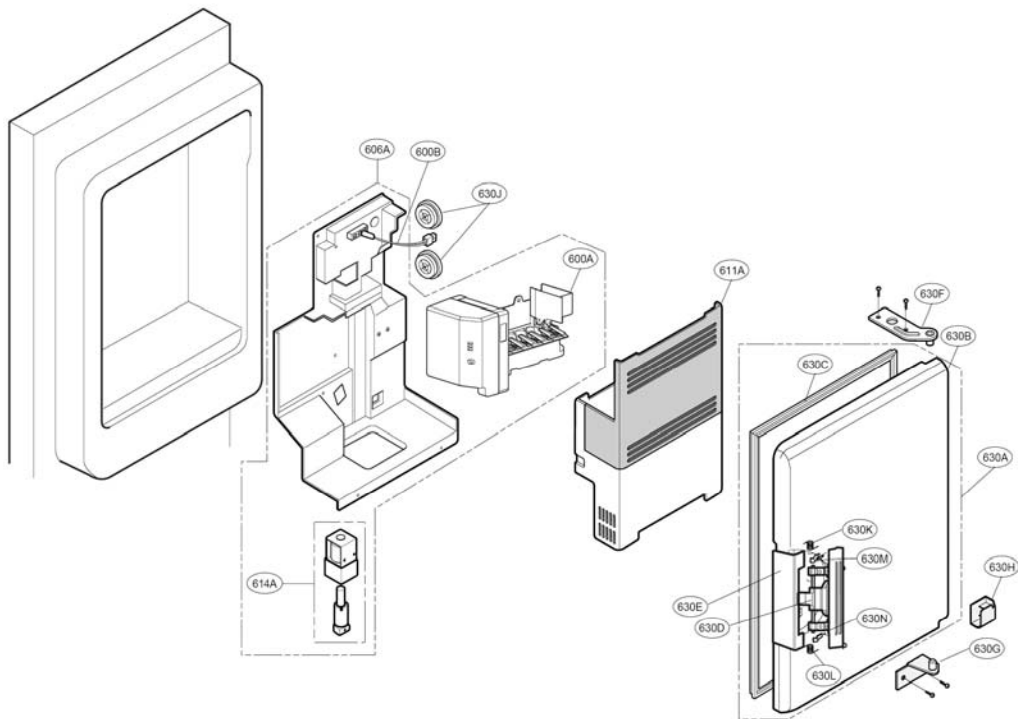
EXPLODED VIEWS, continued



EXPLODED VIEWS, continued



EXPLODED VIEWS, continued



**TEMPERATURE RESISTANCE CHART**

<b>TEMPERATURE</b>	<b>RESISTANCE OF FREEZER/ICING SENSOR</b>	<b>RESISTANCE OF REFRIGERATOR &amp; DEFROST SENSOR &amp; ROOM SENSOR</b>
- 20 °C	22.3 KΩ	77 KΩ
- 15 °C	16.9 KΩ	60 KΩ
- 10 °C	13.0 KΩ	47.3 KΩ
- 5 °C	10.1 KΩ	38.4 KΩ
0 °C	7.8 KΩ	30 KΩ
+ 5 °C	6.2 KΩ	24.1 KΩ
+ 10 °C	4.9 KΩ	19.5 KΩ
+ 15 °C	3.9 KΩ	15.9 KΩ
+ 20 °C	3.1 KΩ	13 KΩ
+ 25 °C	2.5 KΩ	11 KΩ
+ 30 °C	2.0 KΩ	8.9 KΩ
+ 40 °C	1.4 KΩ	6.2 KΩ
+ 50 °C	0.8 KΩ	4.3 KΩ





