

# Product Training

## REFRIGERATOR LFX25980ST





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*LG supplies this training class for the benefit of all in attendance, we ask your assistance in keeping this a professional meeting and to remain focused only on the technical improvement and education of our service network.*

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# Preliminary

IMPORTANT SAFETY NOTICE

DISCLAIMER

MODIFICATIONS

ESD ISSUE

REGULATORY INFORMATION

Slide Number

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# Preliminary

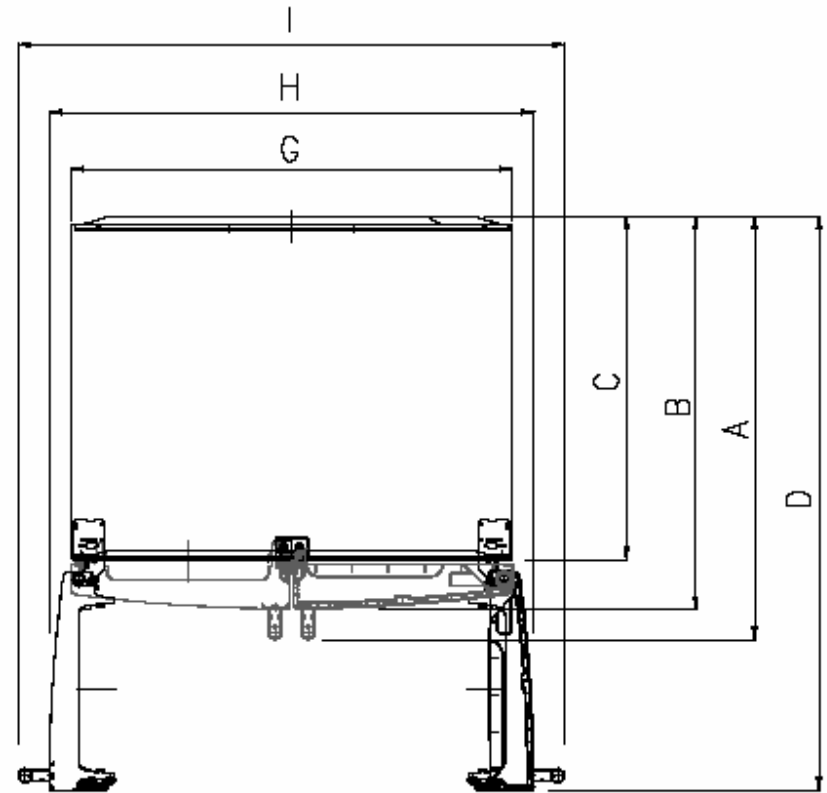
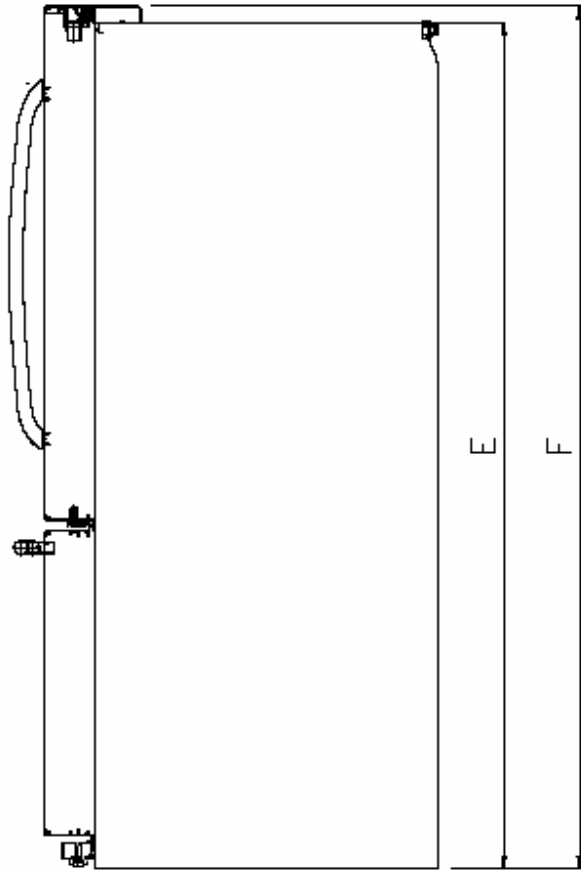
## COMPLIANCE

The responsible party for this device's compliance is:

**LG Electronics Alabama, Inc.**  
**PO Box 240007**  
**Huntsville, AL 35813**

T-4

# Specifications



# Specifications

DESCRIPTION		LFX21980ST	LFX25980ST
Depth with handles	A	30"	34 $\frac{1}{4}$ "
Depth without handles	B	27 $\frac{1}{2}$ "	31 $\frac{3}{4}$ "
Depth without door	C	23 $\frac{5}{8}$ "	27 $\frac{7}{8}$ "
Depth (total, with door open)	D	42 $\frac{1}{4}$ "	46 $\frac{1}{2}$ "
Height to top of case	E	68 $\frac{3}{8}$ "	68 $\frac{3}{8}$ "
Height to top of door hinge	F	69 $\frac{3}{4}$ "	69 $\frac{3}{4}$ "
Width	G	35 $\frac{3}{4}$ "	35 $\frac{3}{4}$ "
Width (door open 90°, w/o handle)	H	39 $\frac{1}{4}$ "	39 $\frac{1}{4}$ "
Width (door open 90°, with handle)	I	44 $\frac{1}{4}$ "	44 $\frac{1}{4}$ "

# Specifications

## Door Design

Side Rounded

## Dimensions (W x D H in inches)

35<sup>3</sup>/<sub>4</sub> x 30 x 69<sup>3</sup>/<sub>4</sub> (21 cu. ft.)

35<sup>3</sup>/<sub>4</sub> x 34 x 69<sup>3</sup>/<sub>4</sub> (25 cu. ft.)

## Net Weight (pounds)

303 (21 cu. ft.)

325 (25 cu. ft.)

## Cooling System

Fan cooling

## Temperature Control

Microprocessor Control

## Defrosting System

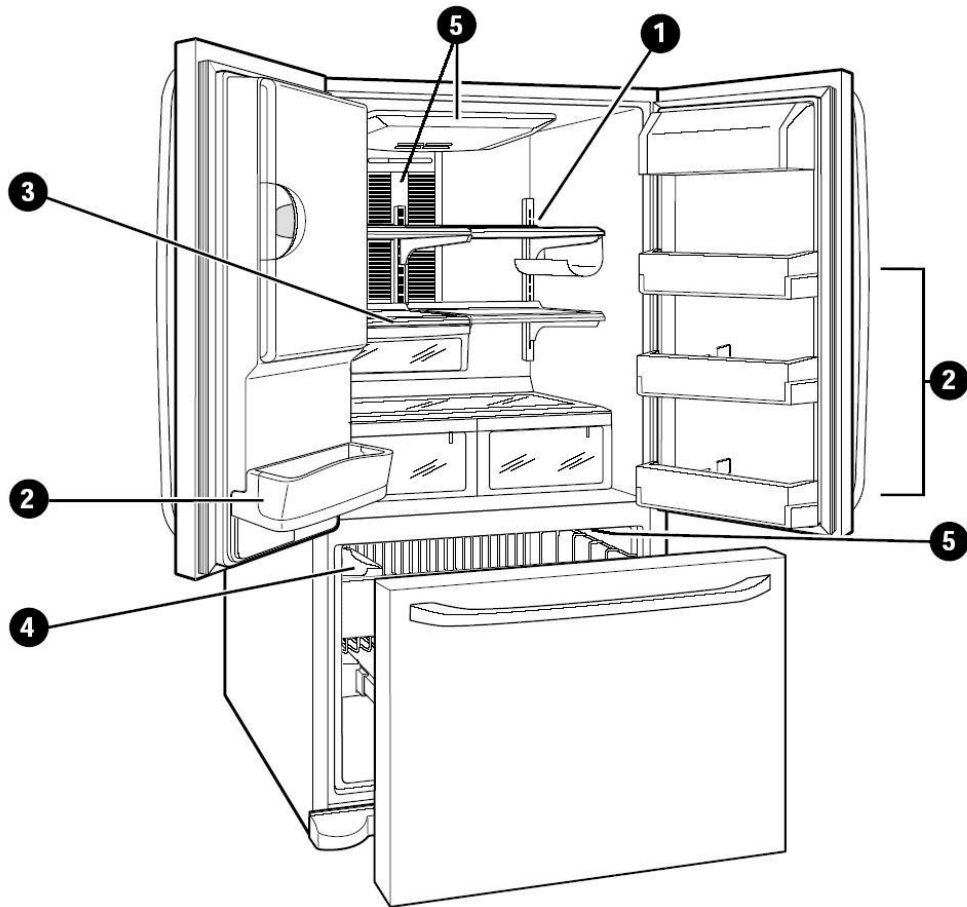
Full Automatic, Heater

## Door Finish

Embossed metal, VCM,  
Stainless

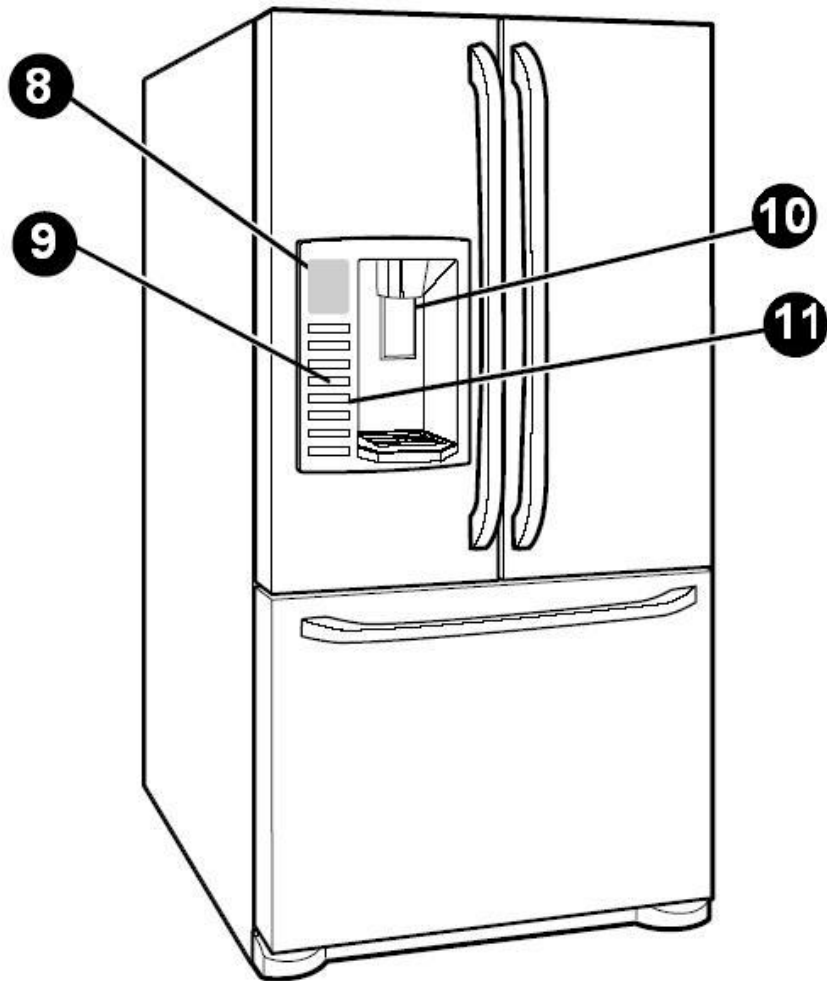


# Parts Identification



1. Adjustable refrigerator shelving
2. Modular door bins
3. Snack pan
4. Removable ice storage bin
5. Interior lamps (LED)
6. Ice door (reveals icemaker and ice bin)

# Parts Identification



8. Control Panel LCD

9. ICE PLUS Button

10. Dispenser  
(Ice and Water)

11. DOOR ALARM  
Button

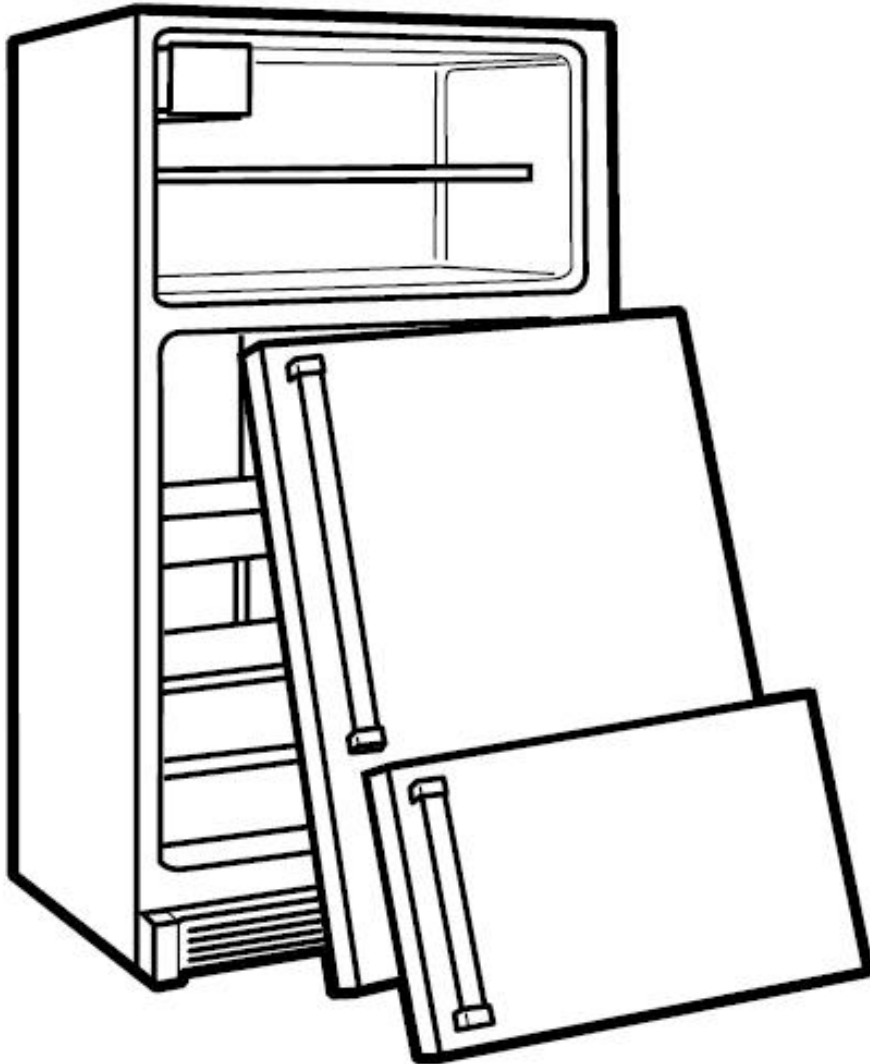
# Introduction

The LFX2x980ST refrigerators are part of the **LG TOTAL KITCHEN PACKAGE** for 2008. They are designed to match the LMVM2277ST Over-The-Range microwave oven, the LDF9810ST Steam Dishwasher, and the LRE30955ST Electric Range.

The tall dispenser provides filtered water and cubed or crushed ice. It allows the filling of larger vessels, including big glasses and pitchers, directly from the dispenser.

The LED control panel displays the set temperatures of freezer and refrigerator sections as well as the ice dispenser settings and indicators to show ALARM ON/OFF, LOCK/UNLOCK, ICE PLUS, and FILTER CHANGE. The touch buttons allow adjusting of these options. Unpublished button combinations allow the refrigerator to be placed into DEMO mode or TEST mode for diagnosis and repair.

# Safety



In the interest of the safety, remove the doors from your old refrigerator when it is stored or disposed.

Junked or abandoned refrigerators are dangerous.

Children may be tempted to play in them, and the result can be fatal.

Remove the doors and store them separately so children cannot become entrapped and suffocate.

Leave the shelving in place so children cannot easily climb inside.

# Warranty



Your LG Refrigerator will be repaired or replaced, at LG's option, if it proves to be defective in material or workmanship under normal use, during the warranty period ("Warranty Period") set forth below, effective from the date ("Date of Purchase") of original consumer purchase of the product. This warranty is good only to the original purchaser of the product and effective only when used in the United States, including Alaska, Hawaii, and U.S. Territories.

<p><b>WARRANTY PERIOD:</b> <b>REFRIGERATOR/FREEZER</b> <b>LABOR:</b> One Year from the Date of Purchase. <b>PARTS:</b> One Year from the Date of Purchase. <b>SEALED SYSTEM</b> (Compressor, Condensor, and Evaporator) <b>LABOR:</b> One Year from the Date of Purchase. <b>PARTS:</b> Seven Years from the Date of Purchase. Replacement Units and Repair Parts are warranted for the remaining portion of the original unit's warranty period.</p>	<p><b>HOW SERVICE IS HANDLED:</b> <b>In-Home Service :</b> Please retain dealer's dated bill of sale or delivery ticket as evidence of the Date of Purchase for proof of warranty, and submit a copy of the bill of sale to the service person at the time warranty service is provided. <b>Please call 1-800-243-0000 and choose the appropriate option to locate your nearest LG Authorized Service Center.</b> Or visit our website at <a href="http://www.lgservice.com">www.lgservice.com</a></p>
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**THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT ANY IMPLIED WARRANTY IS REQUIRED BY LAW, IT IS LIMITED IN DURATION TO THE EXPRESS WARRANTY PERIOD ABOVE. NEITHER THE MANUFACTURER NOR ITS U.S. DISTRIBUTOR SHALL BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY NATURE, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR PROFITS, OR ANY OTHER DAMAGE WHETHER BASED IN CONTRACT, TORT, OR OTHERWISE.** Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above exclusion or limitation may not apply to you. This warranty gives you specific legal rights and you may also have other rights that vary from state to state.

**THIS LIMITED WARRANTY DOES NOT APPLY TO:**

- Service trips to your home to deliver, pick up, and/or install the product, instruct, or replace house fuses or correct wiring, or correction of unauthorized repairs.
- Damages or operating problems that result from misuse, abuse, operation outside environmental specifications or contrary to the requirements of precautions in the Operating Guide, accident, vermin, fire, flood, improper installation, acts of God, unauthorized modification or alteration, incorrect electrical current or voltage, or commercial use, or use for other than intended purpose.
- Repairs when your LG refrigerator is used in other than normal, single-family household use.

The cost of repair or replacement under these excluded circumstances shall be borne by the consumer.

**CUSTOMER INTERACTIVE CENTER NUMBERS**

<p>To obtain Customer Assistance, Product Information, or Dealer or Authorized Service Center location:</p>	<p>Call 1-800-243-0000 (24 hours a day, 365 days a year) and select the appropriate option from the menu. Or visit our Web site at <a href="http://www.lgservice.com">www.lgservice.com</a>.</p>
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**TO CONTACT LG ELECTRONICS BY MAIL:**

LG Customer Interactive Center  
P. O. Box 240007  
201 James Record Road  
Huntsville, Alabama 35824  
ATTN: CIC

**Product Registration Information**

**Model:** \_\_\_\_\_  
**Serial Number:** \_\_\_\_\_  
**Date of Purchase:** \_\_\_\_\_

The model and serial number can be located on the inner case or back of the refrigerator compartment.

# 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.

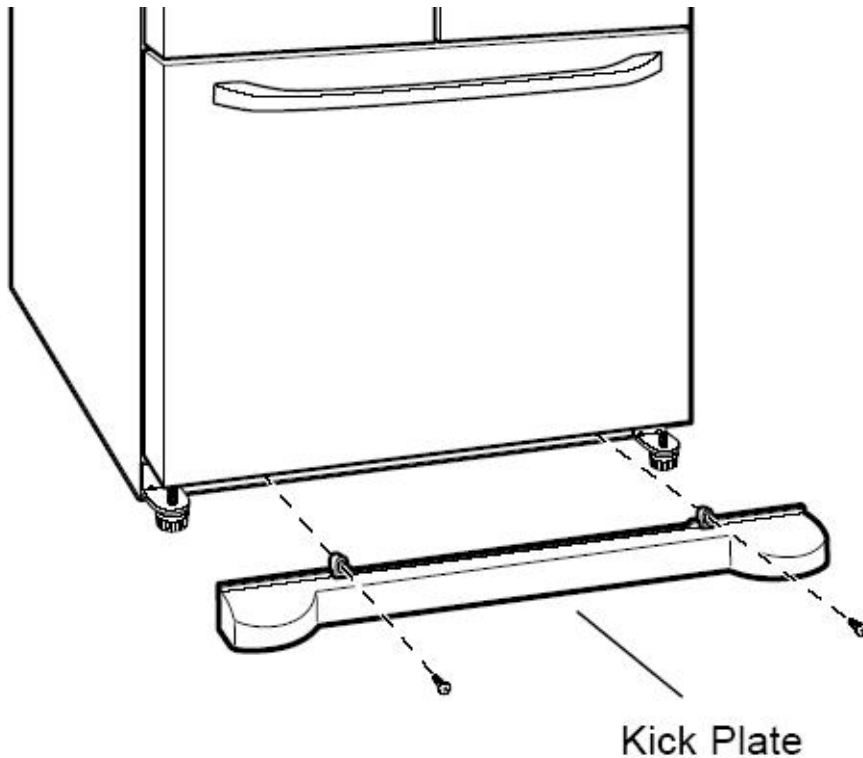
# Leveling

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

# Leveling

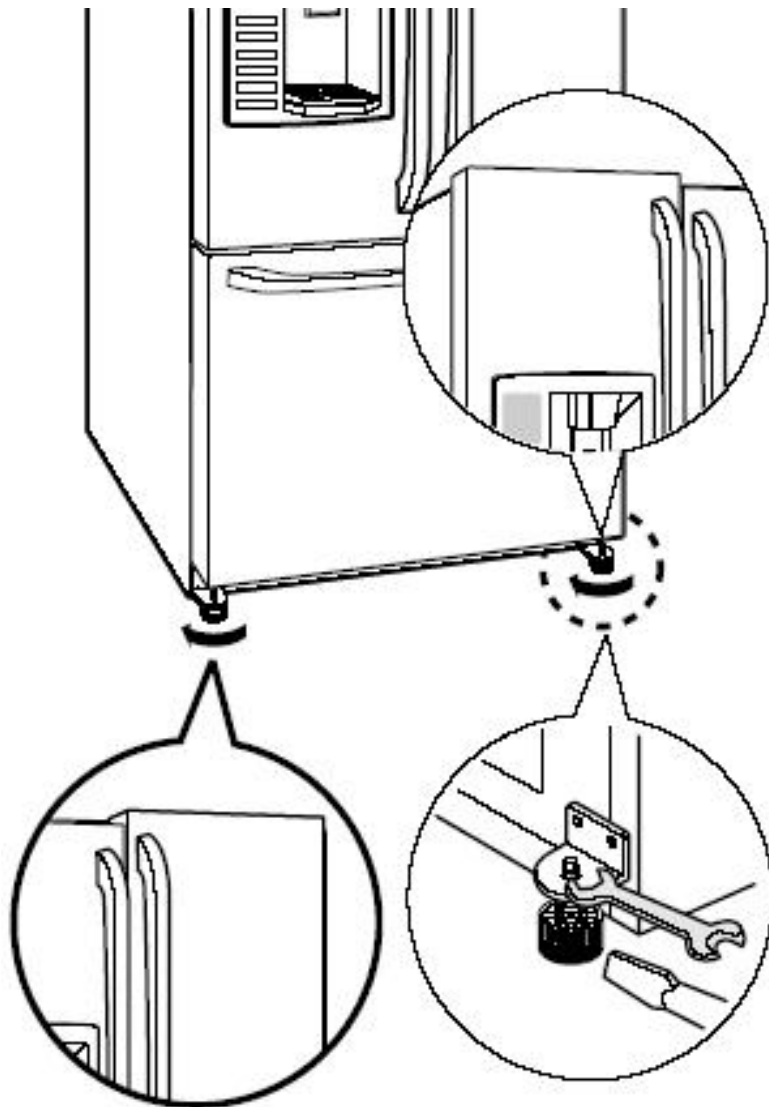
If the base grille (kick plate) is installed, remove it by removing the two screws that hold it on.

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





# Leveling



Use an 11/32" (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.

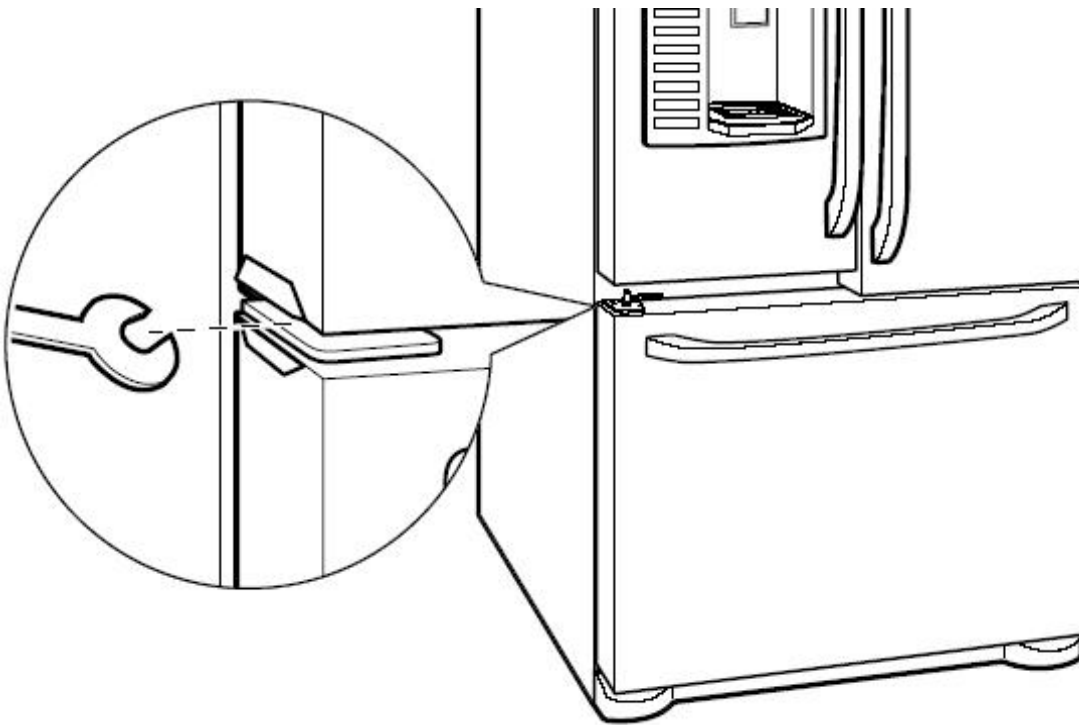
# Door Alignment

The doors can be adjusted to be exactly even.

First, level the refrigerator as described on page 10.

Then, use the small wrench (supplied with the owner's manual) to adjust the bolt in the door hinge.

Turn it counter-clockwise to raise the door or clockwise to lower it.



# Temperature

Store and operate the refrigerator where it will not be exposed to outside weather conditions or extreme temperature conditions. It should be installed in an area where the temperature is between 55° and 110° F (13° ~43° C). If the temperature around the refrigerator is outside this range, the cooling ability may be affected adversely. If the refrigerator is installed where the ambient temperature is greater than 110° F (43° C), its performance will be affected negatively and its use of electricity increases exponentially.

# Wetness and Dampness

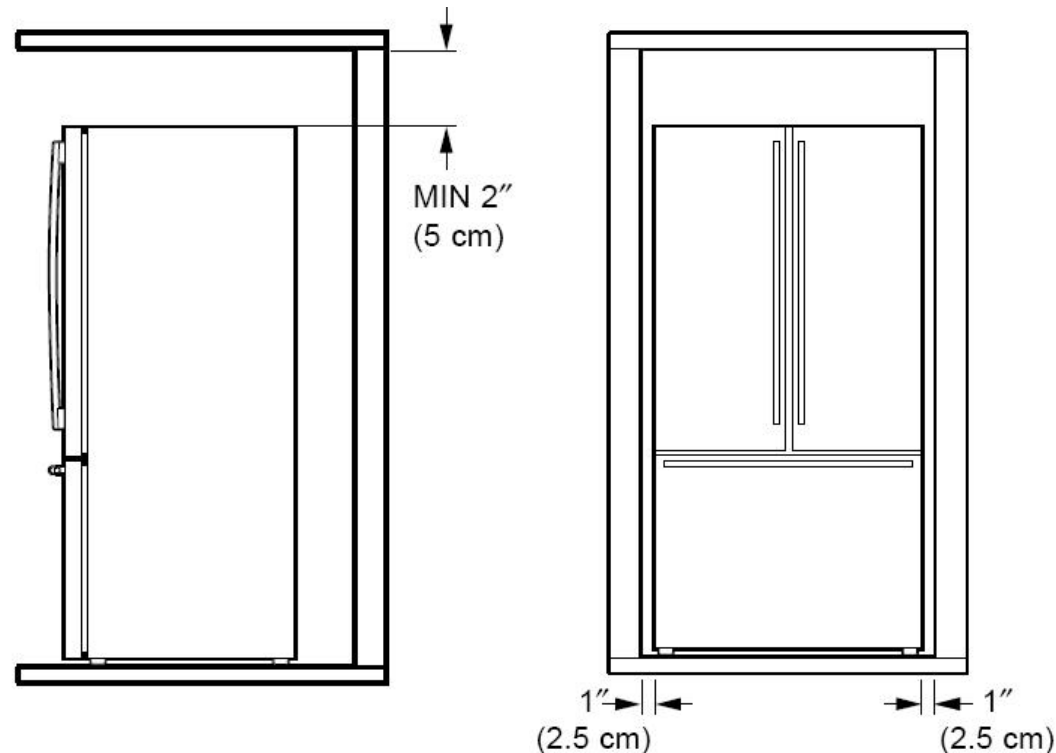
Do not install the refrigerator in a wet or damp area to avoid the potential for electrical shock. Installation must conform to all governing codes and regulations.

# Clearance

Allow 1" (2.5 cm) clearance on both sides and 2" (5 cm) at the top for ventilation, better cooling efficiency, electrical and water connections, and ease of installation and cleaning.

Too little clearance will result in lowered freezing capacity and increased use of electricity.

Allow 24" (61 cm) in front of the refrigerator so the doors can open properly.



# Flooring

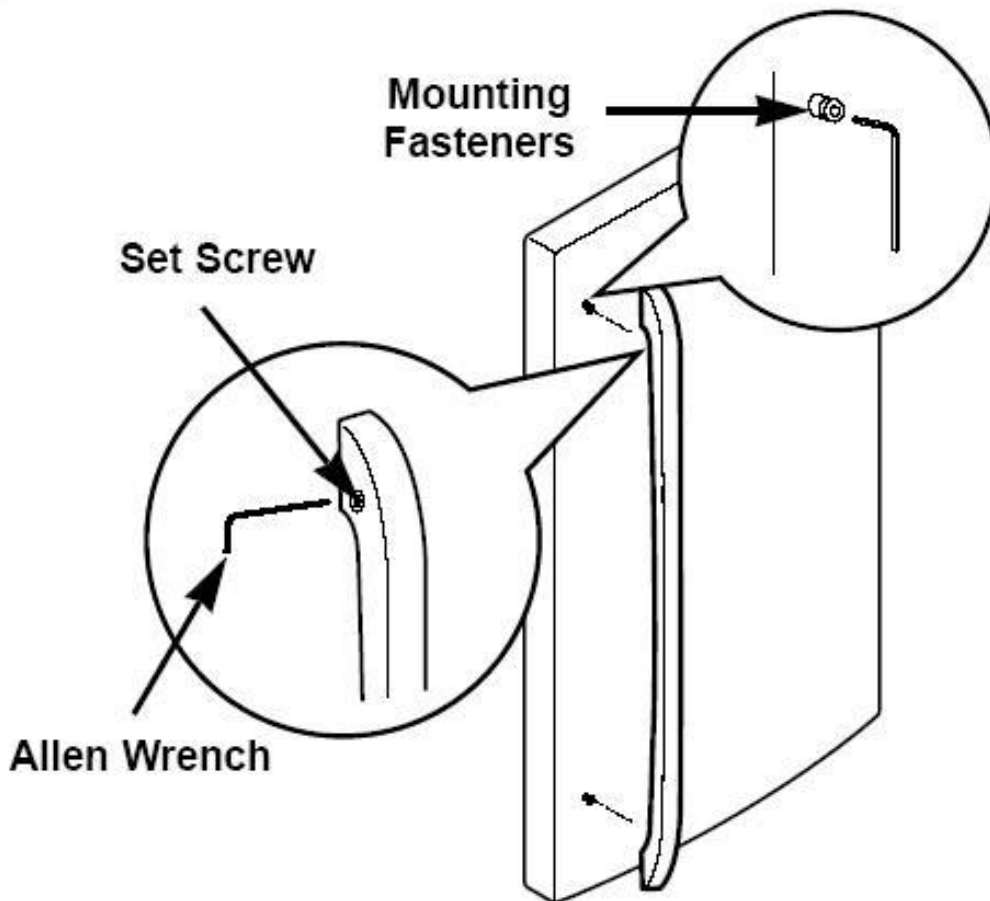
The refrigerator must be installed on a solidly constructed floor to minimize noise and vibration. The refrigerator must be level. If necessary, adjust the leveling legs under the front of the refrigerator to compensate for variations in the flooring. This is easier if the refrigerator is tipped slightly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

Carpet, soft tile, padded linoleum, and similar surfaces are not recommended.

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



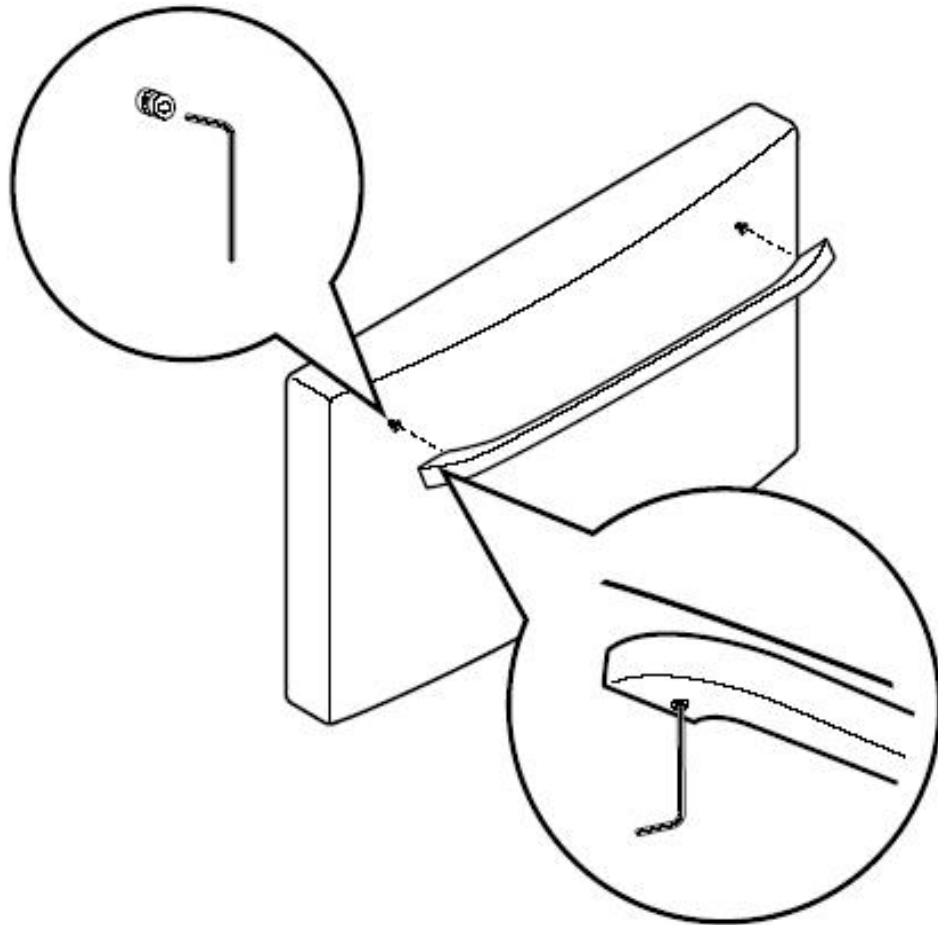
It may be necessary to remove the handles to get the refrigerator through a door.

Loosen the set screws with a 3/32" (2.5 mm) Allen wrench.

Remove the handle.

If the mounting bolts require removal or adjustment, use a 1/4" Allen wrench.

# Handle Removal



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.

# Self-Closing Hinges

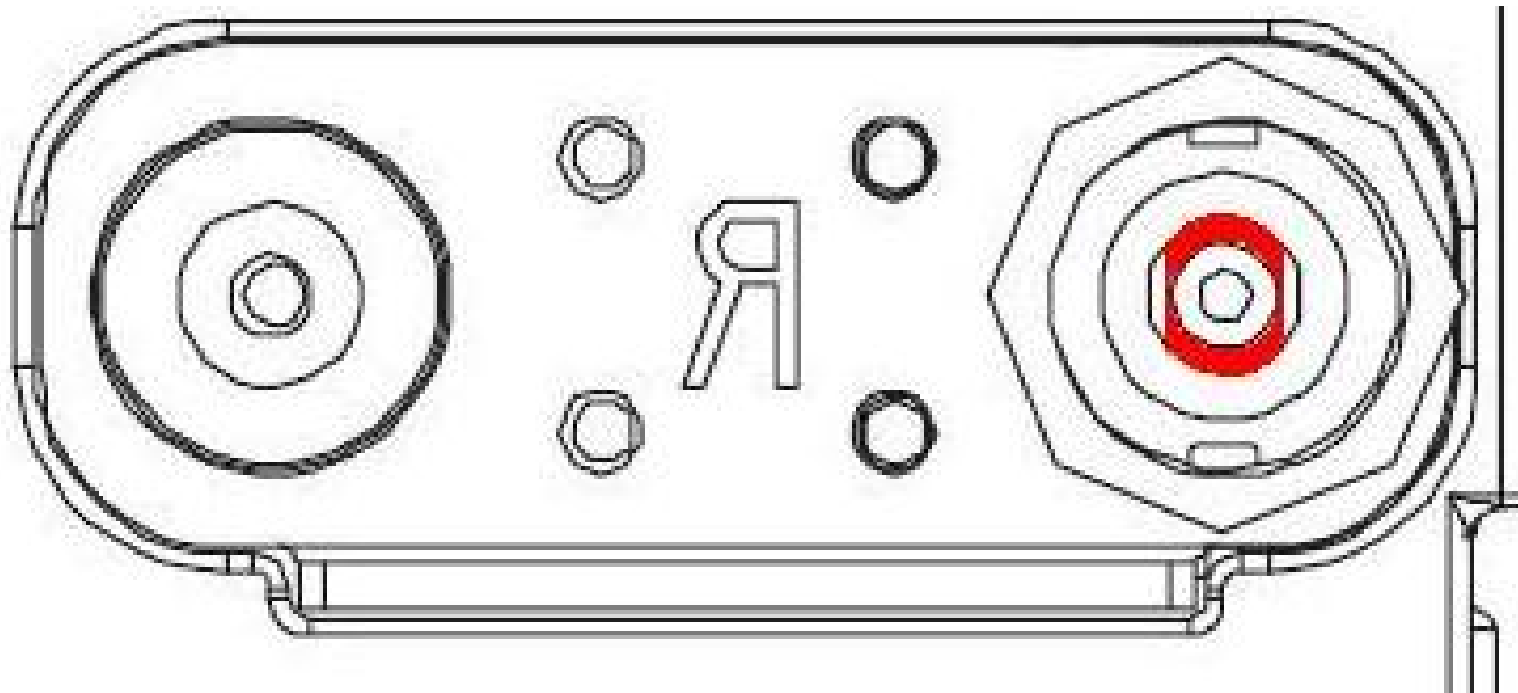
The hinge / closing mechanism is available as a left or right hinge, and they are not interchangeable.

The hinge bracket (gray) is shown attached to the right hinge.



# Self-Closing Hinges

The hinge bracket is marked L (left) or R (right). As the door must be removed or replaced when open at 90°, the hinge cam must be in the correct position when it is installed.



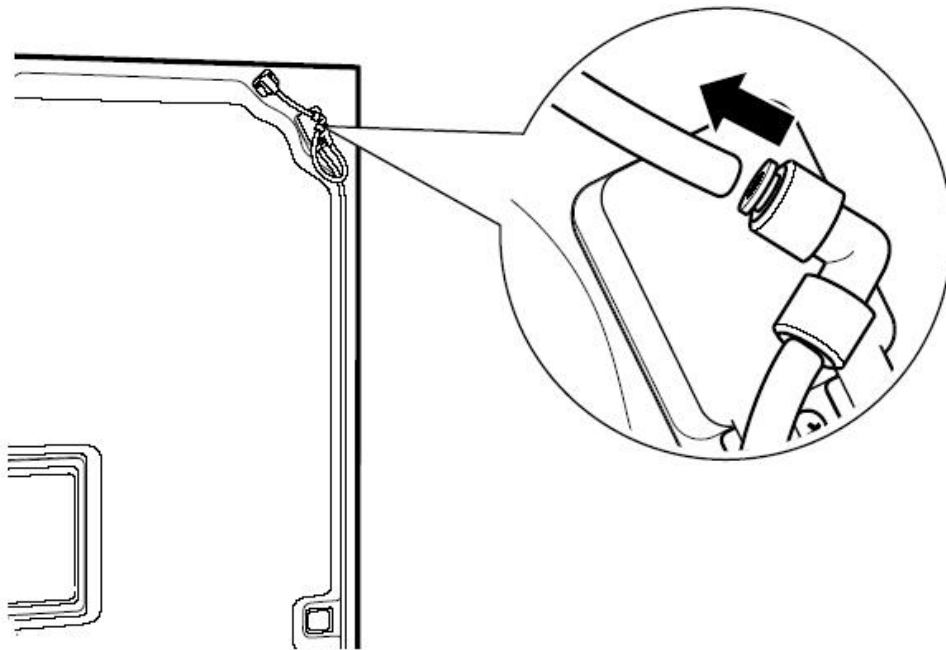
# Self-Closing Hinges

This photo shows the hinge assembly mounted to the hinge bracket (gray).

The speed of closure can be adjusted by turning the small screw in the end of the hinge mechanism.



# 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.

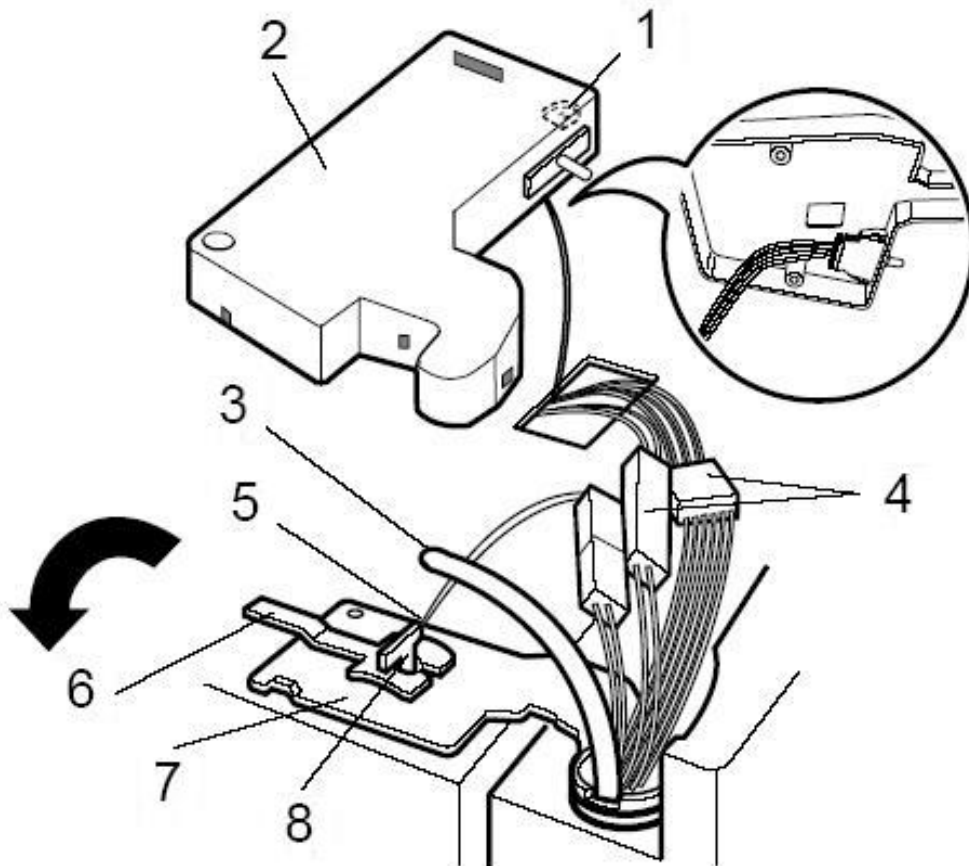
# Left Refrigerator Door

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

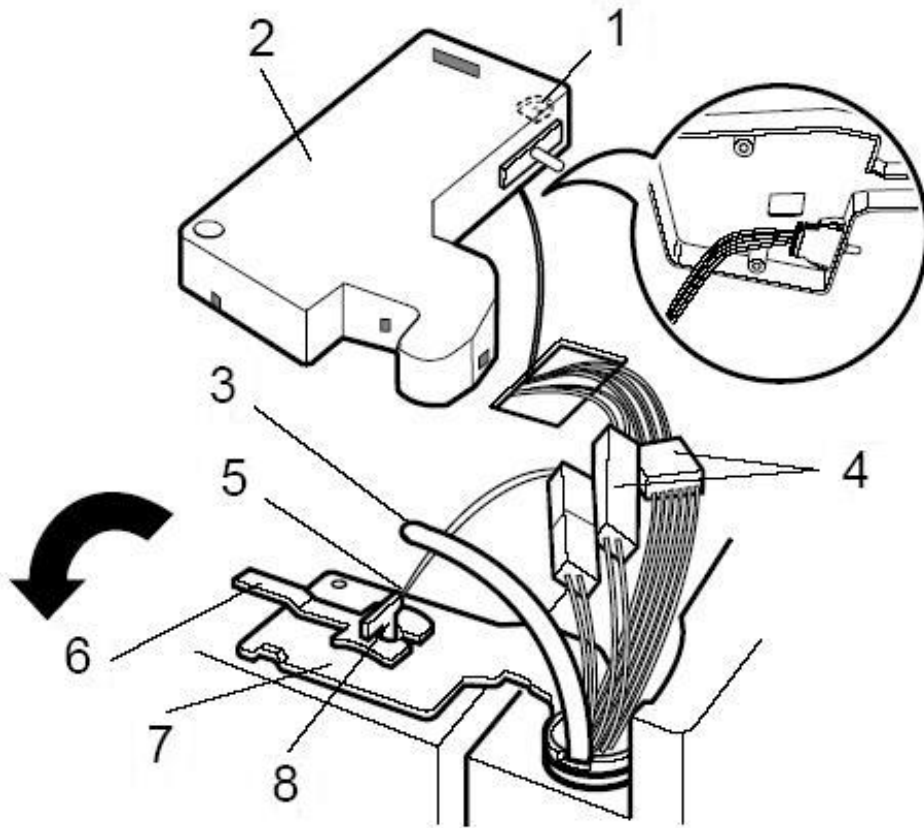
Use a flat screwdriver to pry off (2) the hinge cover.  
(Hooks not shown.)

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

Disconnect all the wiring (4) harnesses.



# Left Refrigerator Door



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.

# Right Refrigerator Door

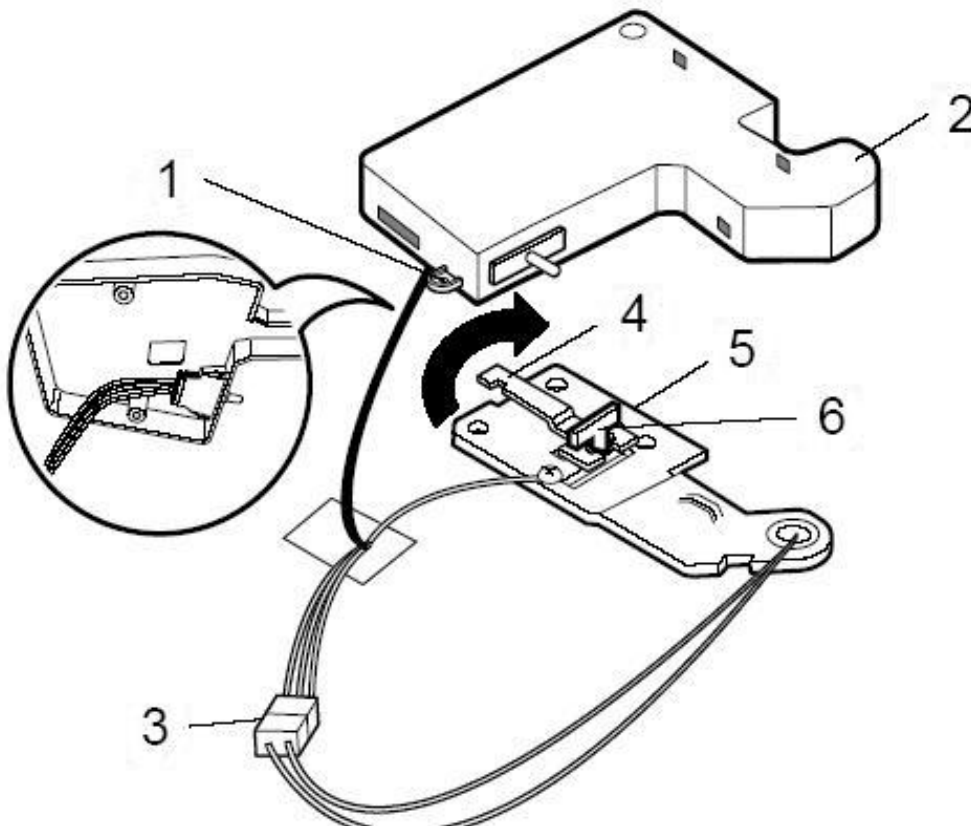
Open the door to 90°.

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).



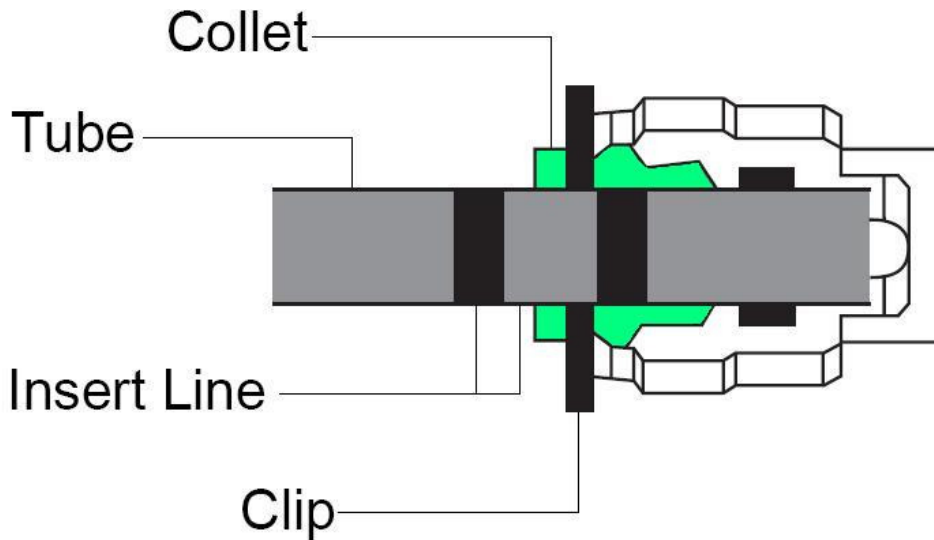


# Caution!

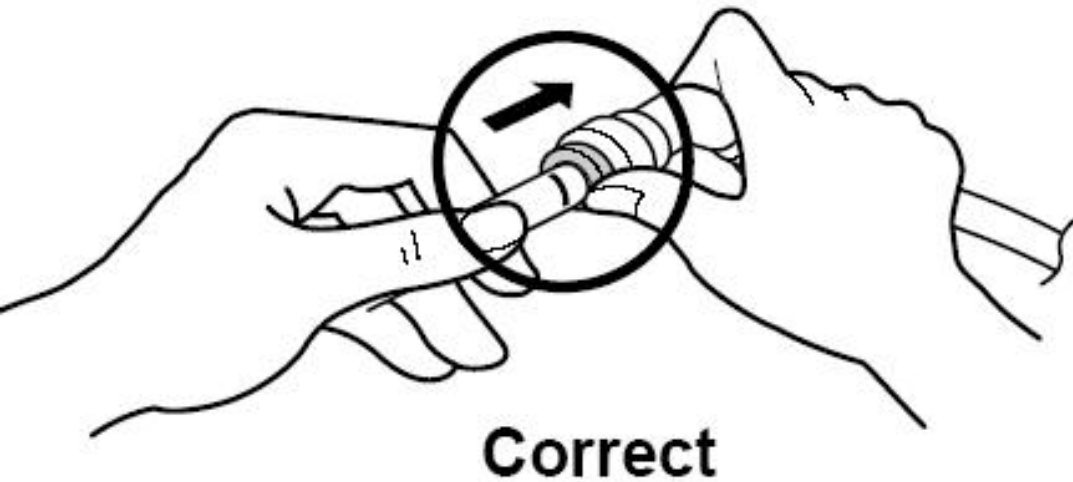
- When lifting the hinge free of the latch, be careful the door does not fall forward.
- After removing the door, lay it on a blanket or other padded protective surface, with the inside facing up.
- Always remove or replace the doors when they are opened to 90°.
- Replacement of either door is the reverse of the way it was removed.

# Water Tube Connection

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

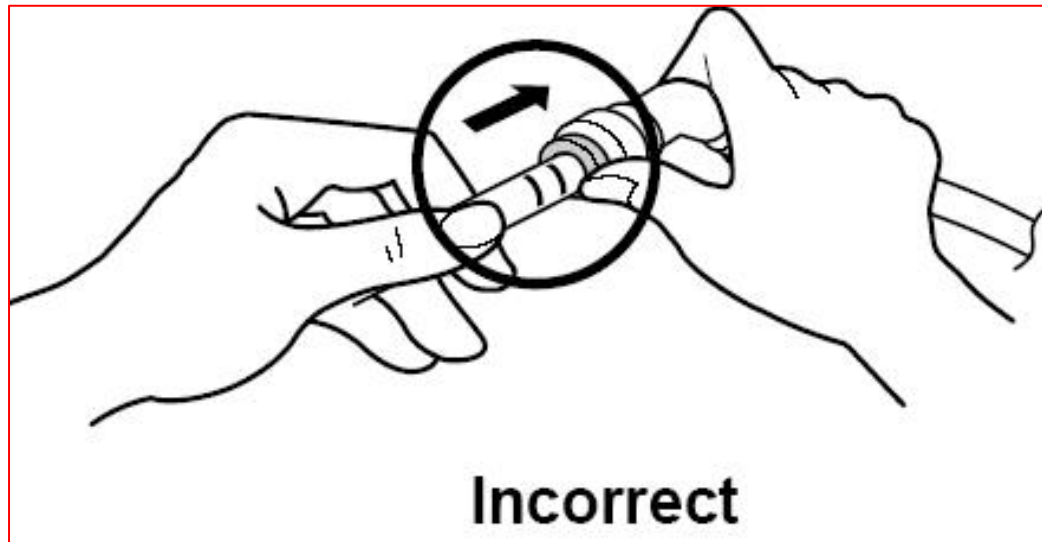


# Preliminary



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.

# Freezer Door Removal

Open the freezer drawer to full extension.

Unload the freezer before repairs begin.

Remove the Durabase® basket by lifting the back of the basket from the rail system and then lifting the entire basket. It is easier if you tilt the door forward.



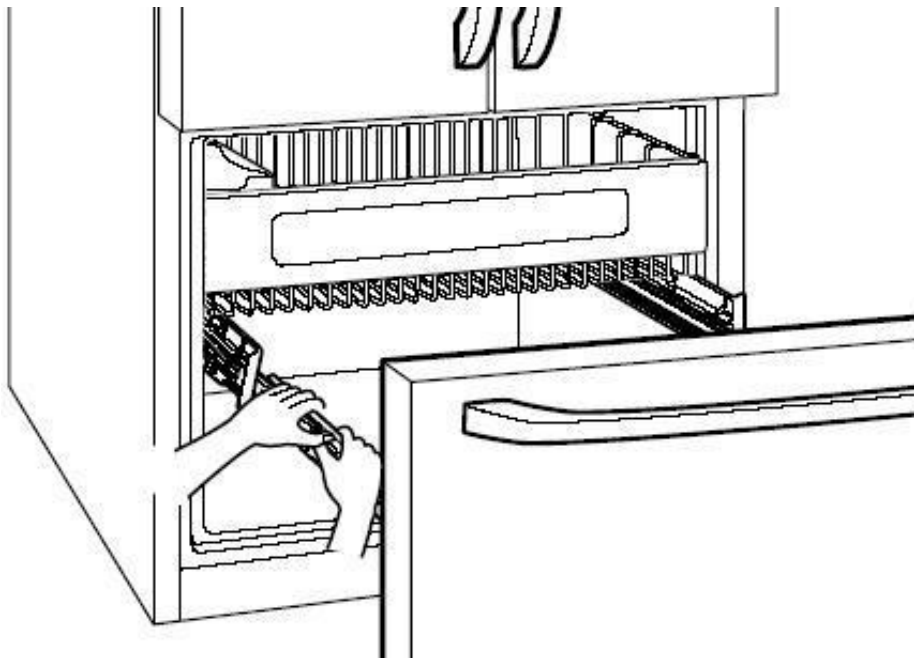
# Freezer Door Removal

Remove the rail covers from the rails.

As shown in the drawing, press the two tabs toward the middle of the drawer and roll the rail cover toward the middle of the drawer.

(See next drawing.)

When replacing them, they must drop nearly vertically into place do the tabs will lock into position and the slots in the top of the rail (invisible) will snap into place.

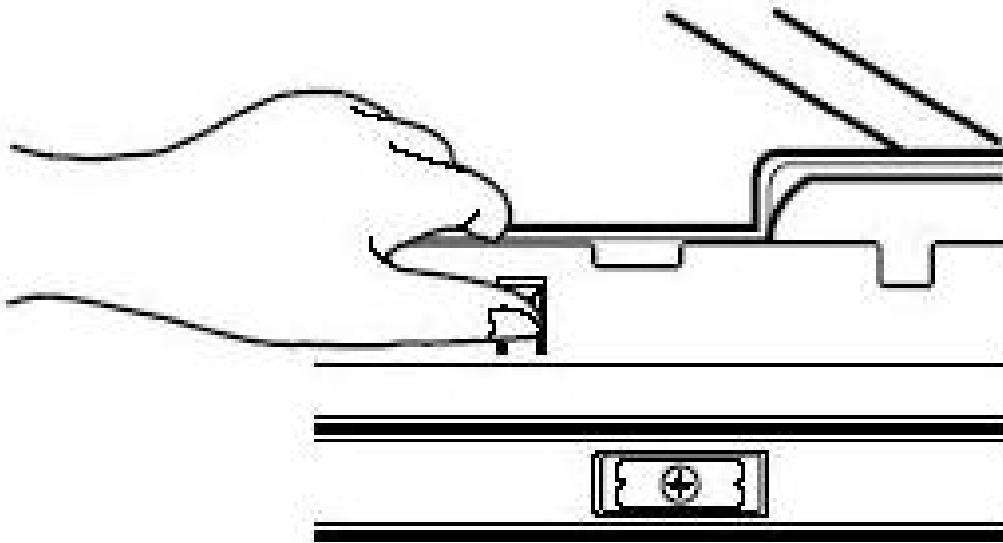


# Freezer Door Removal

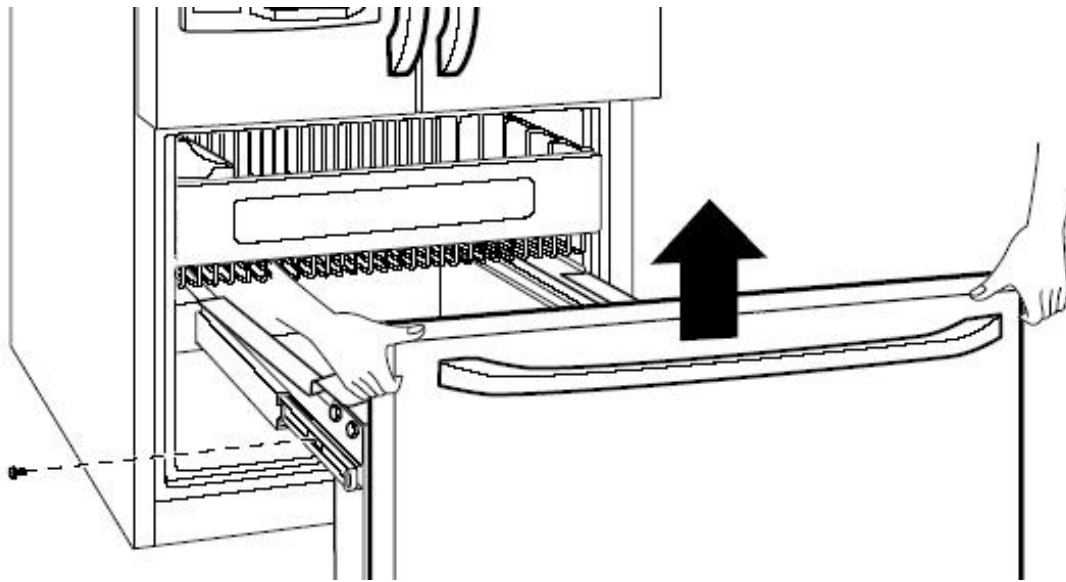
The release tabs are shown here.

Remove the rail screws.

(There is one on each rail.  
The screws are white.)



# Freezer Door Removal



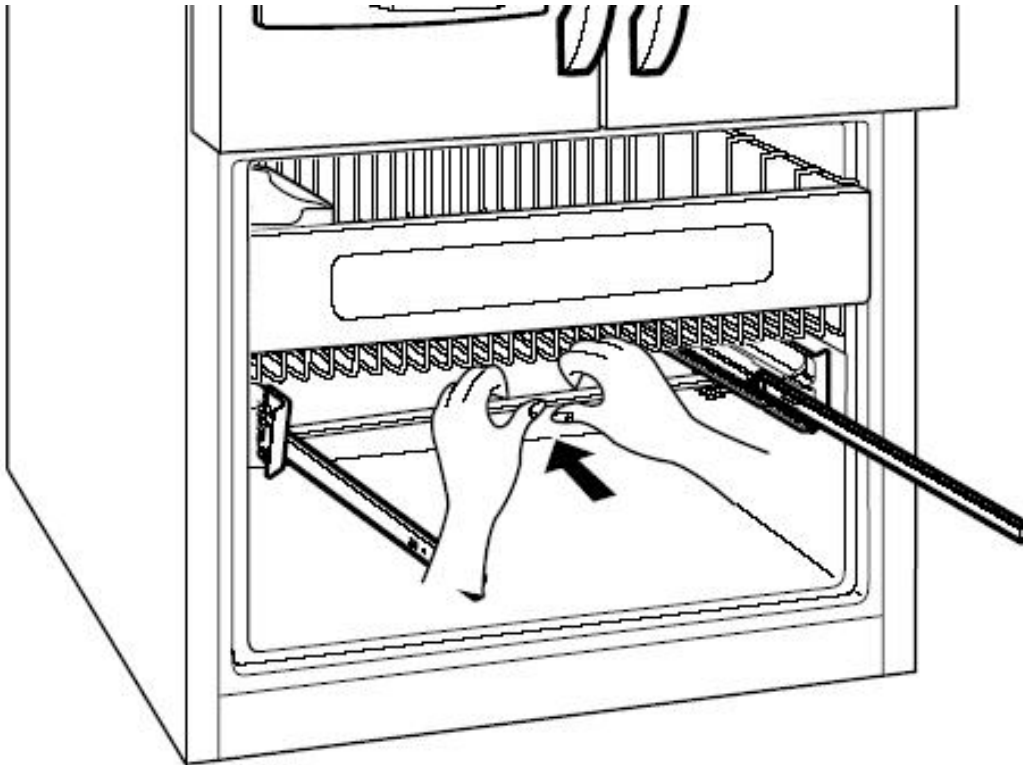
Using both hands, grasp the freezer door by both sides and lift it to separate it from the rails.

Set it on a padded, protective surface, like a blanket, with the inside facing up.

Use caution, because the door is heavy!

Do not drop it on your feet or on the floor.

# Freezer Door Removal



To replace the door, first check to make certain the center bar is aligned.

Hold it in the middle and push it all the way back.

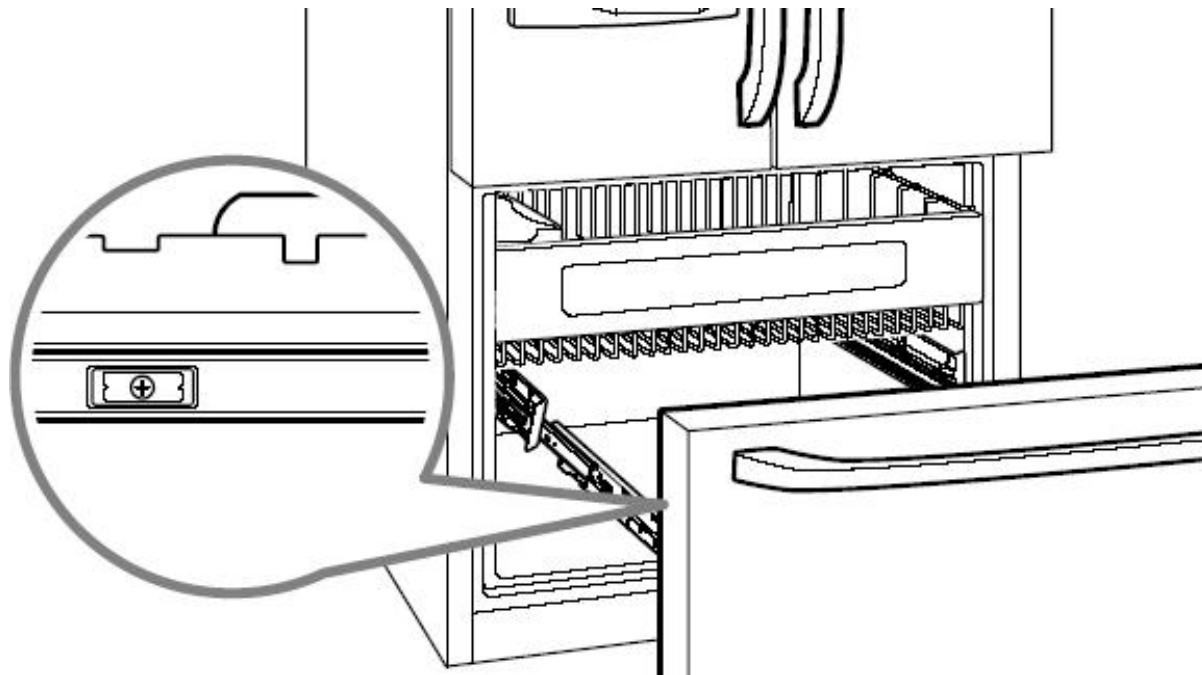
Then pull it out and it will center automatically.



# Freezer Door Removal

Holding the door with both hands, lower it into place on the rails.

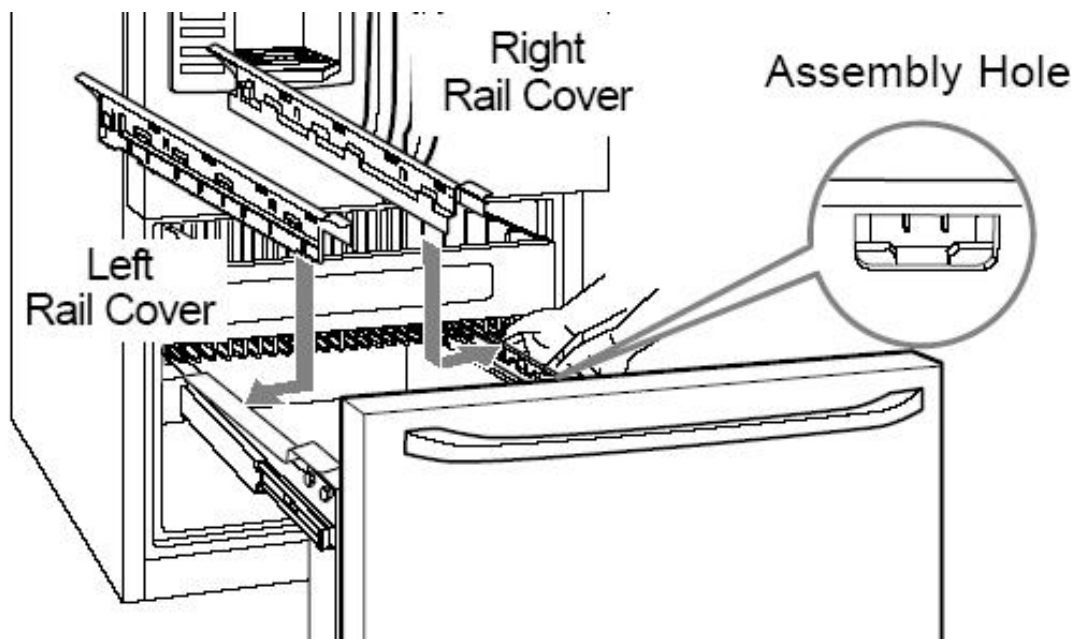
Replace the rail screws, one on each rail. Then tighten the two hex-head bolts.



# Freezer Door Removal

Pull the drawer out to full extension and tilt it forward.

Replace rail covers. (There are a left cover and a right cover.)

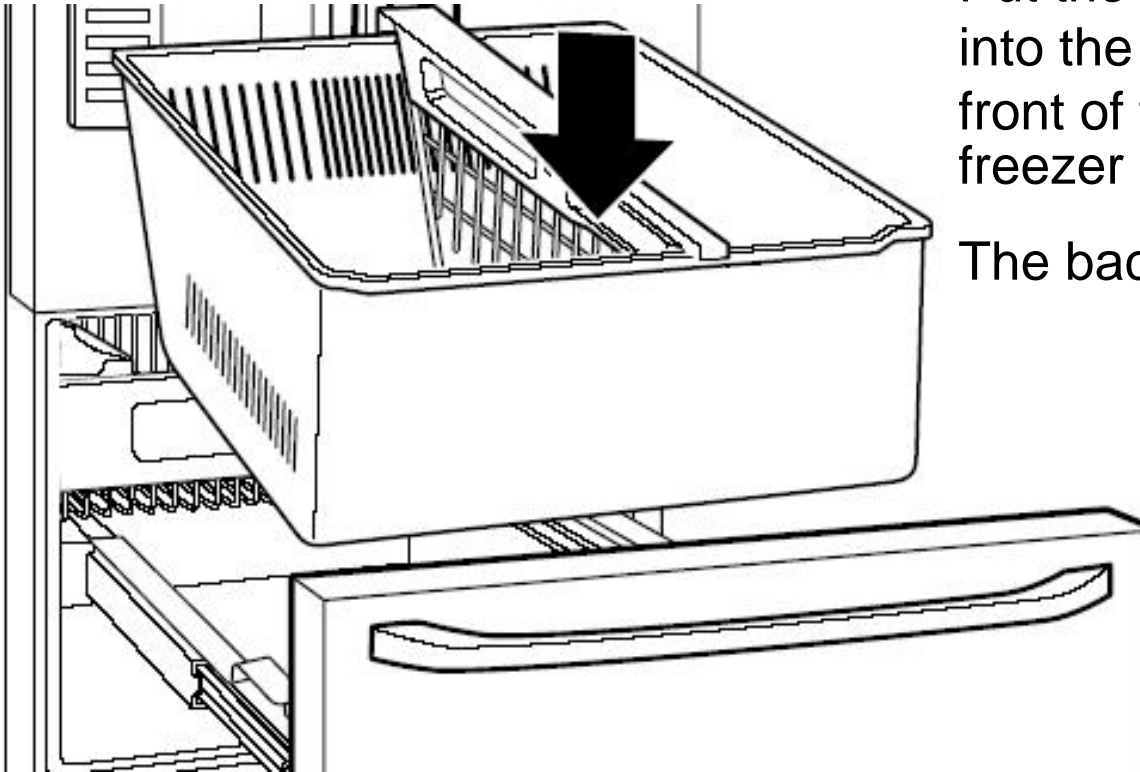


# Freezer Door Removal

Replace the Durabase® basket in the drawer.

Put the basket in with the back into the frame and guide the front of the drawer (by the freezer door) into place first.

The back will follow.



# Preliminary

- To prevent accidental child and pet entrapment and suffocation risk, DO NOT allow pets and children to play inside the freezer drawer.
- DO NOT step or sit on the freezer door.
- Plug the refrigerator into a grounded outlet on a dedicated circuit.

# 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.

# Water Line Connection

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 icemaking 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

7/16" open-end wrench

1/4" drill bit

1/4" nut driver

1/2" open end wrench

drill (electric drills must be grounded)

# Water Line Installation Kit

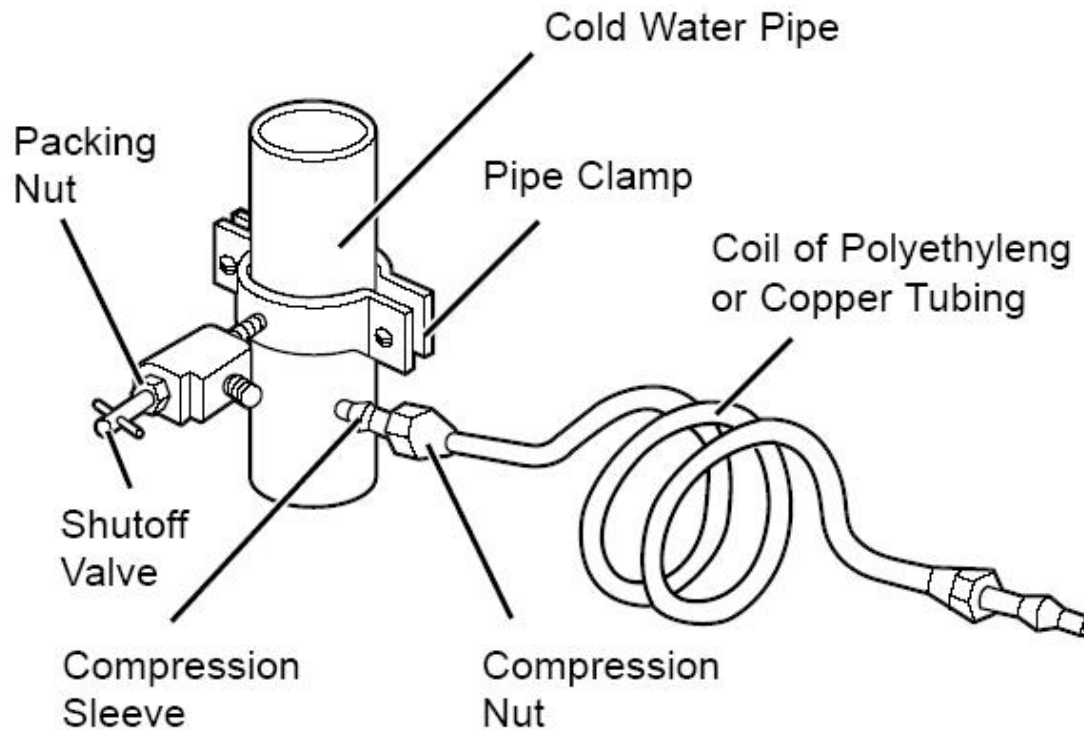
Some dealers sell an installation kit that includes all the parts necessary to connect the refrigerator to a water line. Often, these kits include a piercing saddle-type valve that allows connection to the water line without the need for plumbing skills.

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.

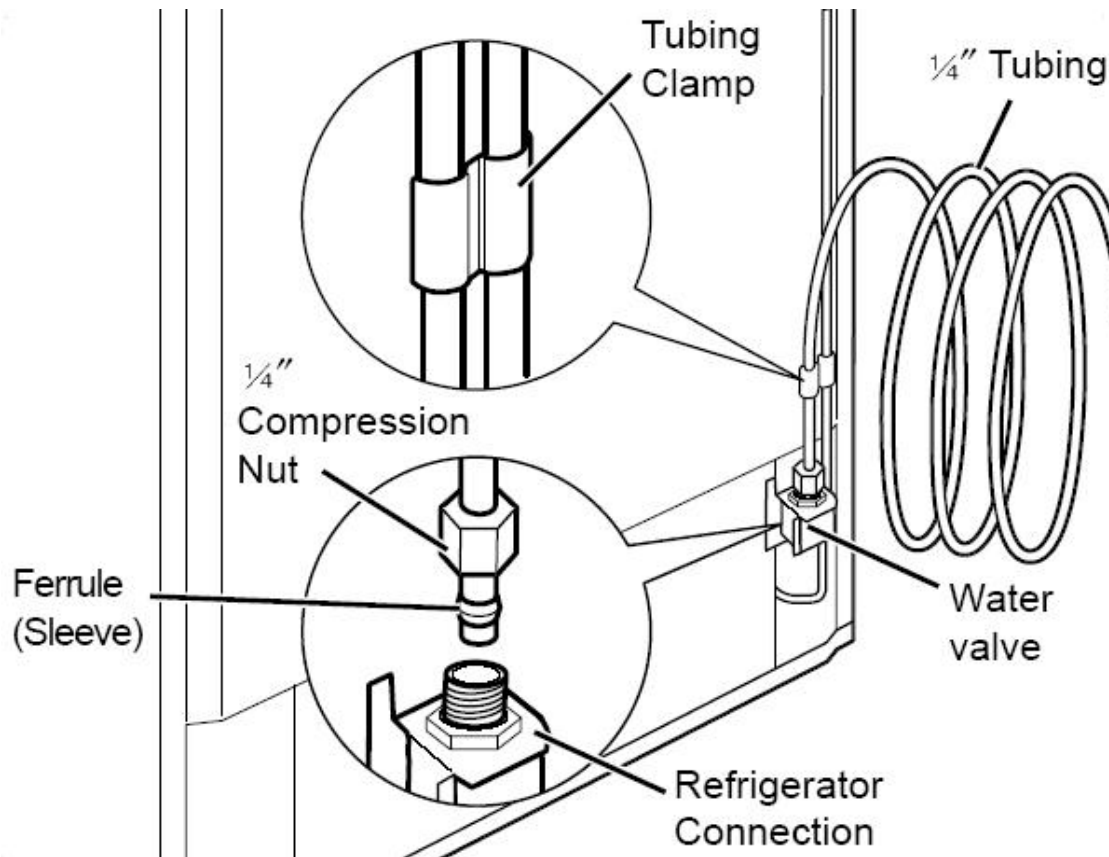


# Water Line Connection

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



# Water Line Connection



The additional coil of tubing (approx. 7' 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 popoffs.

# Water Line Connection

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.

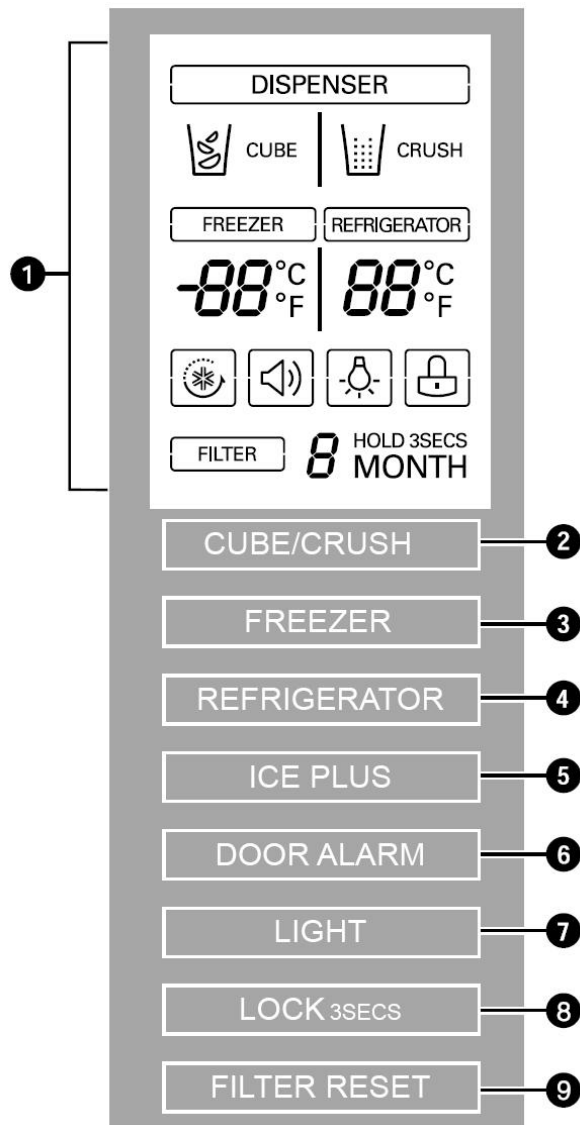
# Water Line Connection

- 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.

# Water Line Connection

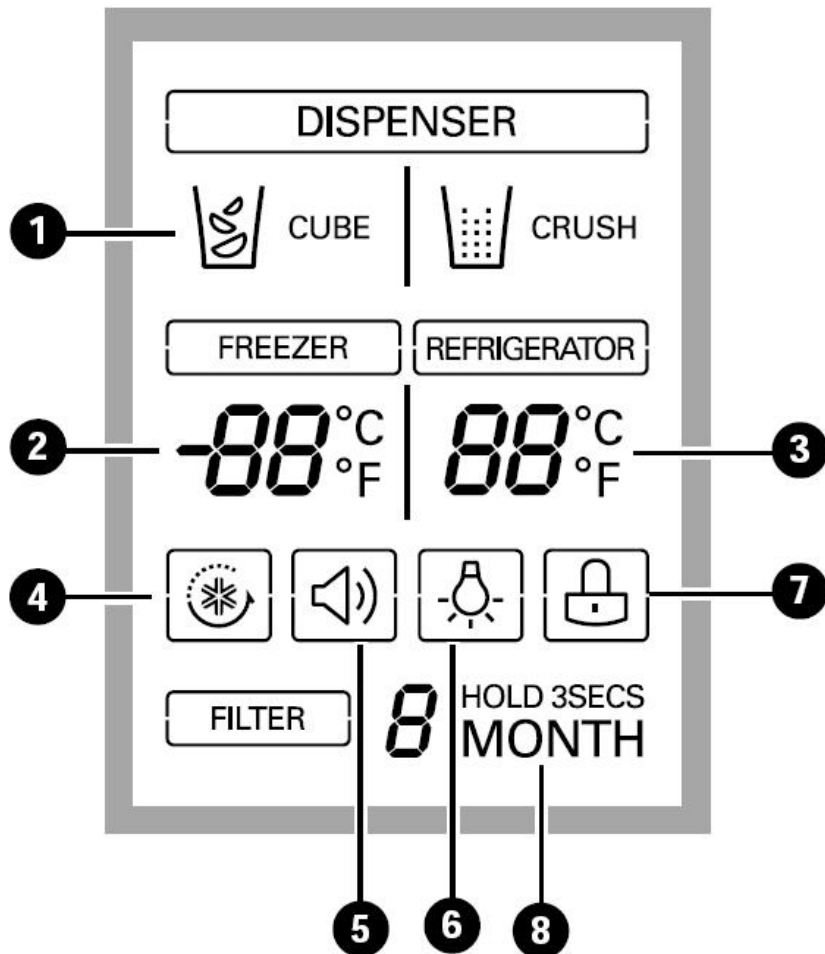
- Press the water dispenser button and bleed all the air through the system. When water begins coming out, run another quart to be sure all the air is out of the line.
- Turn the icemaker on and cycle it manually until water fills the tray to ensure all the air is out of the line.

# Operation



1. **LCD DISPLAY** Shows status of refrigerator and options
2. **CRUSH / CUBE** Selects ice type
3. **FREEZER** Adjusts freezer temperature
4. **REFRIGERATION** Adjusts refrigerator temperature (Push and hold **FREEZER** and **REFRIGERATOR** for 5 seconds to switch display between °F and °C.
5. **ICE PLUS** Increases ice production by about 20%
6. **DOOR ALARM** Controls door alarm
7. **LIGHT** Controls dispenser light
8. **LOCK** Locks and unlocks the control panel
9. **FILTER RESET** Resets the filter indicator when the filter is changed.

# LCD Display



1. DISPENSER SELECTOR
2. FREEZER TEMPERATURE
3. REFRIGERATOR TEMPERATURE
4. ICE PLUS
5. DOOR ALARM
6. DISPENSER LIGHT
7. LOCK STATUS
8. WATER FILTER STATUS

# Operation

FREEZER

0°F

Press **FREEZER** button to cycle through the range of available settings.

REFRIGERATOR

37°F

Press **REFRIGERATOR** to cycle through the range of available settings.

FREEZER

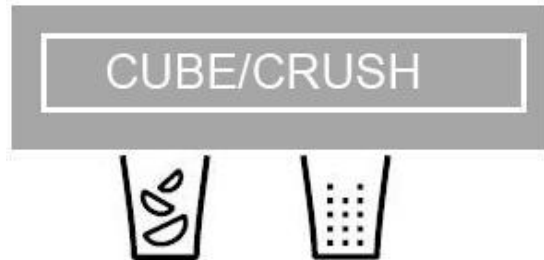
REFRIGERATOR

Press and hold **REFRIGERATOR** and **FREEZER** simultaneously for 5 seconds to change the display between ° Fahrenheit and ° Celsius.

The display shows the set temperature, not the actual temperature. When changing the settings, allow 24 hours for the refrigerator to stabilize before adjusting it further.

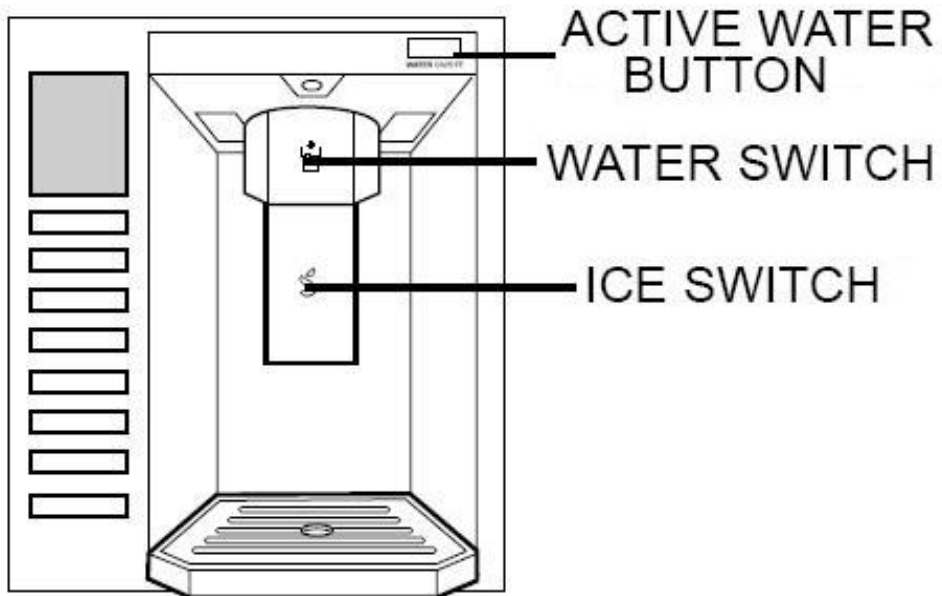


# Dispenser Operation



To dispense crushed or cubed ice, press **CUBE/CRUSH** to light the appropriate icon; then press the glass against the ice switch to receive ice.

# Dispenser Operation



To dispense chilled water, press the glass against the water switch. Alternatively, you can put the glass or other vessel in the dispenser area under the water spout and press the active **WATER** button

# Dispenser Lock



Press and hold the **LOCK** button to lock or unlock the dispenser and other control panel functions.

# Door Alarm



Press the **ALARM** button to turn the door alarm ON or OFF. When the door alarm is ON, the alarm will sound three times at thirty-second intervals.

If the alarm cannot be stopped, call for service.

# Filter Reset



FILTER RESET

**6** HOLD 3SECS  
MONTH

Press and hold **FILTER RESET** to reset the filter indicator after the filter has been replaced.

LG recommends replacing the filter every six months or when water taste and ice cube quality deteriorate.

# Ice Plus



Press **ICE PLUS** to turn the ICE PLUS function ON or OFF.

The icon will illuminate and the controller will set the freezer at the coldest setting.

After 24 hours, ICE PLUS turns off automatically

# Diagnostic Code

If the main control board detects a failure, it will display a diagnostic code on the main display. The owner's manual asks the customer to make a note of the code and then call for service.

Ask if he or she has seen any error codes.

# Demo Mode

The DEMO MODE allows the refrigerator to be run without operating the compressor. Press and hold **ICE PLUS** and **REFRIGERATOR** with either refrigerator door open to turn DEMO MODE on or off.

NOTE: Unplugging the refrigerator will NOT disable the demo mode.

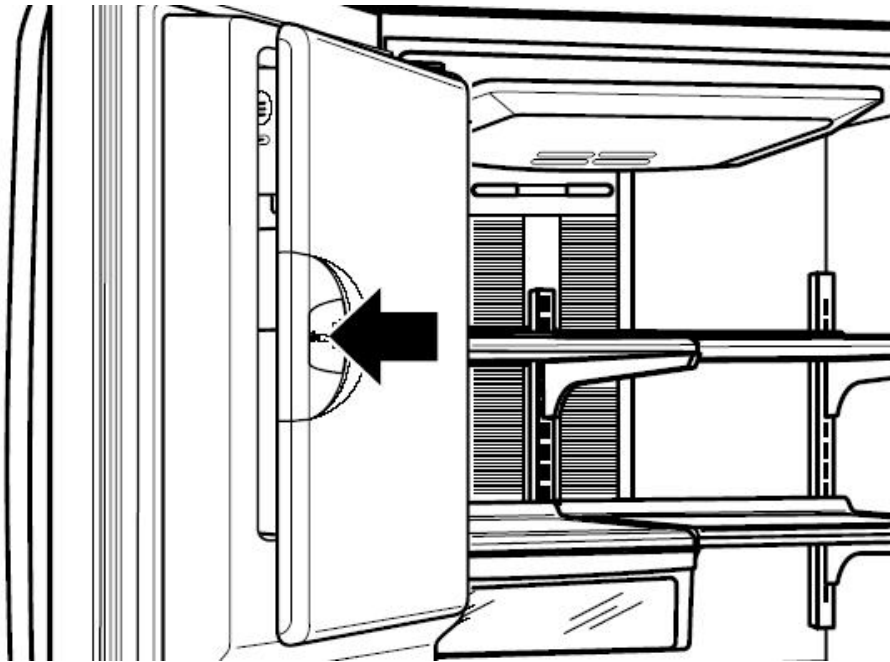


# Ice-In-Door

## CAUTION!

Keep hands, fingers, and tools out of the ice door and dispenser. You can break something or suffer serious personal injury.

# Ice-In-Door

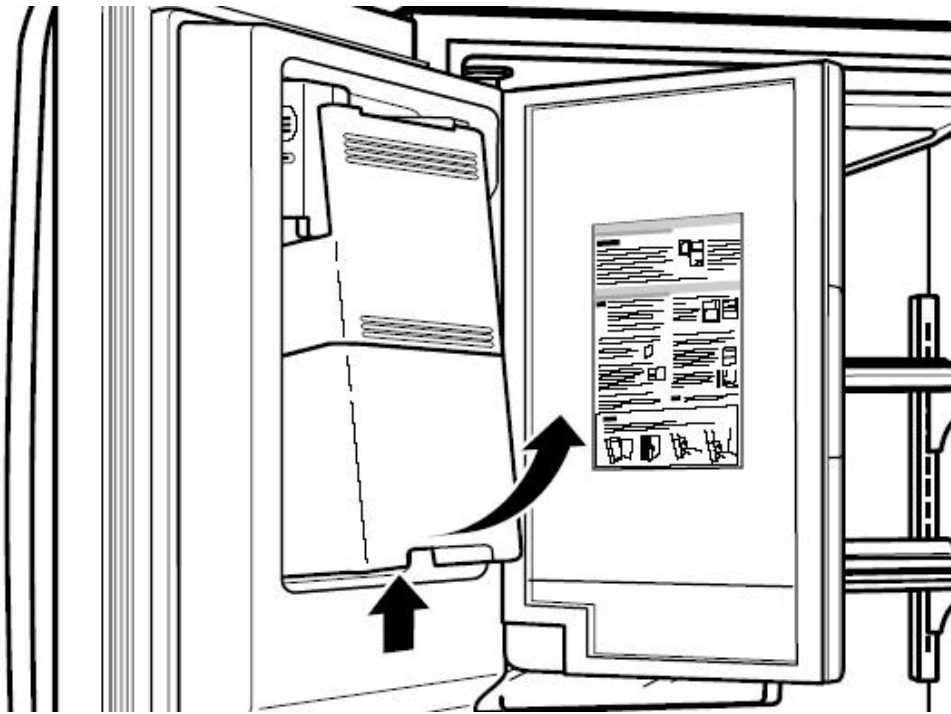


To view or service the icemaker, open the ICE DOOR on the inside of the left refrigerator door.

Shake the ice bin occasionally to keep the ice from clumping and piling near the feeler arm, which causes the icemaker to misinterpret the level of ice and cease production prematurely.

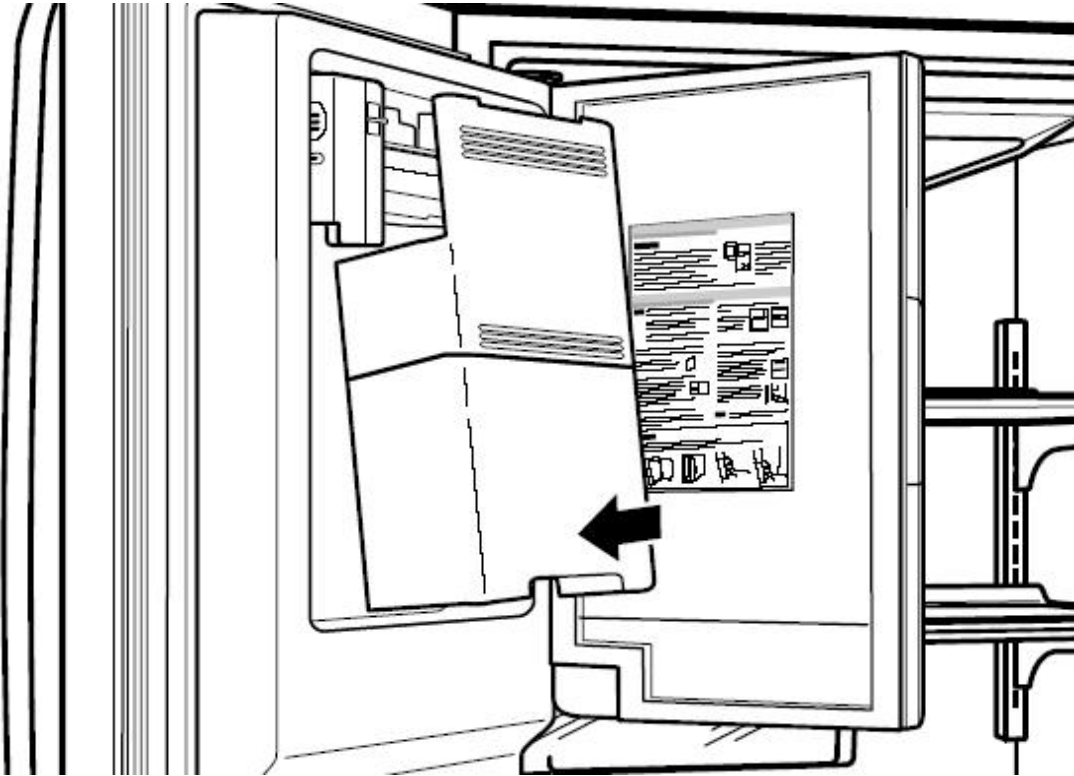
Press by the arrow to latch the door and be sure you hear the click.

# Ice-In-Door



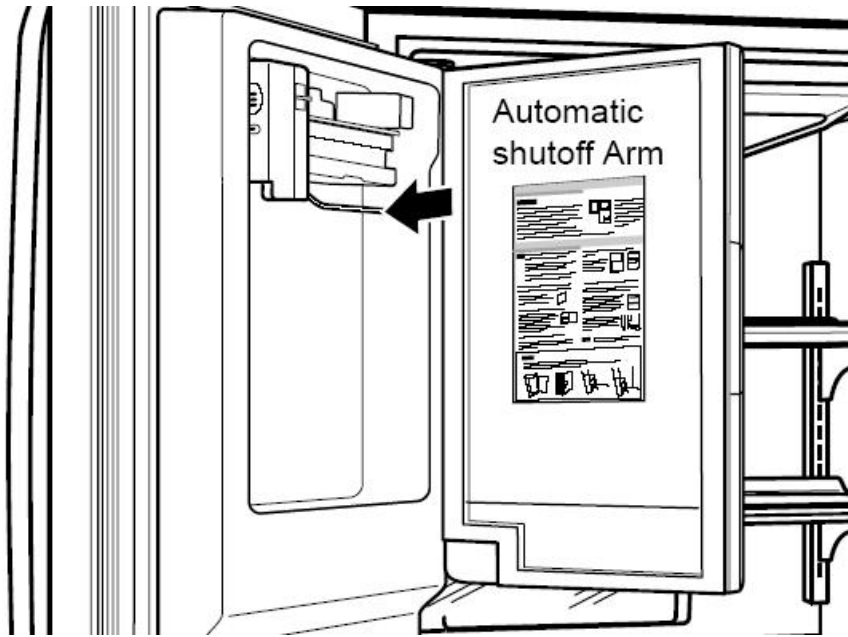
Pull the ice bin out at the bottom and lift slightly to remove it. Be careful to avoid hitting the feeler arm (automatic shutoff arm) when handling the ice bin.

# Ice-In-Door



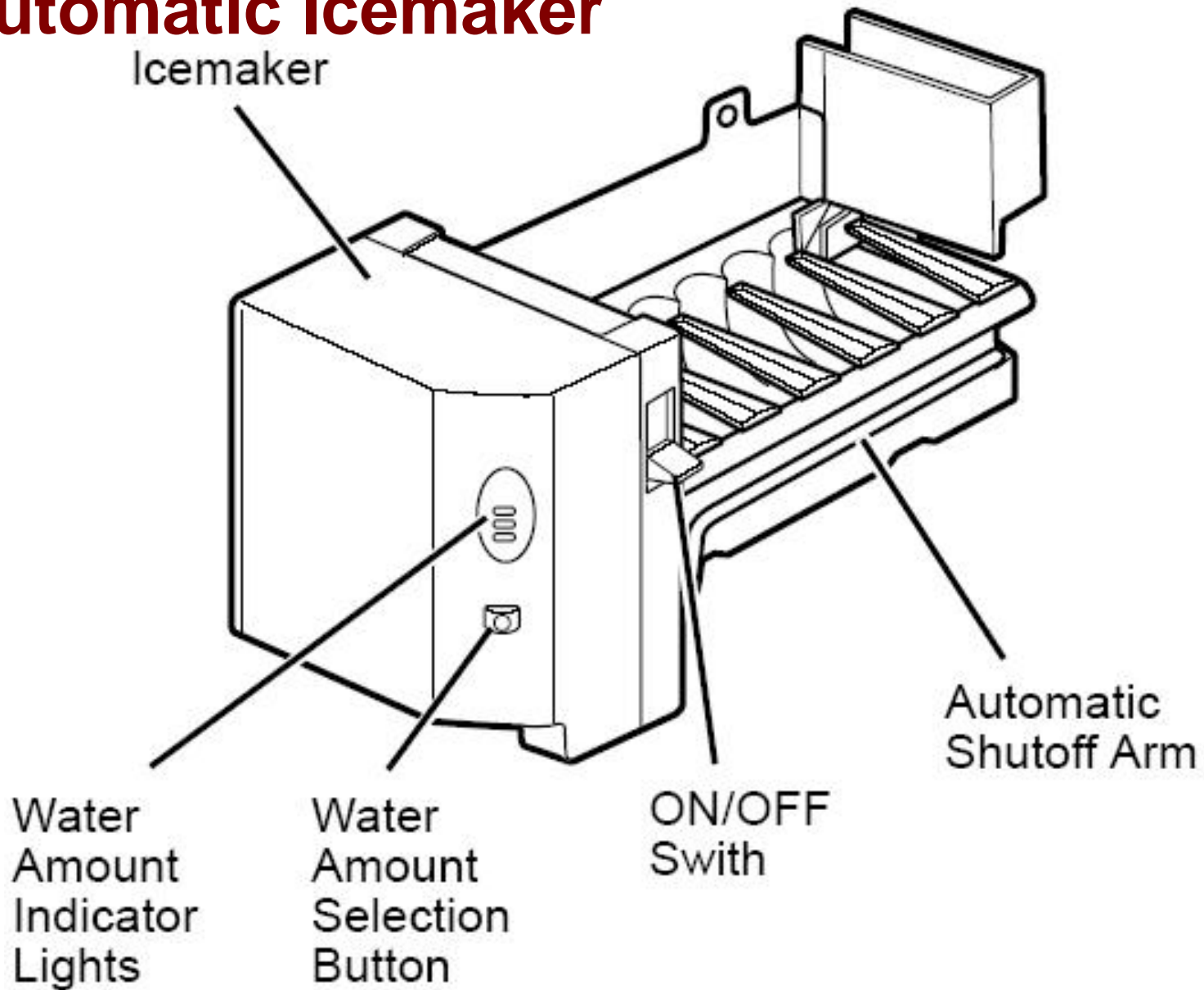
To replace the ice bin, insert the top first and then press the bottom of the bin into place.

# Ice-In-Door



Avoid touching the feeler arm (automatic shutoff arm) when removing or replacing the ice bin. See the instruction label on the inside of the ice door for complete instruction.

# Automatic Icemaker



# Icemaker

Ice is made in the automatic icemaker and dropped into the ice bin, which allows stored ice to pass through the crusher and dispenser. The icemaker produces 100 ~ 130 cubes per day, depending upon freezer temperature, ambient temperature, freezer load, and several other factors.

# Icemaker

It takes 12 ~ 24 hours for the icemaker to begin producing ice.

Use the icemaker switch to turn the icemaker ON or OFF.

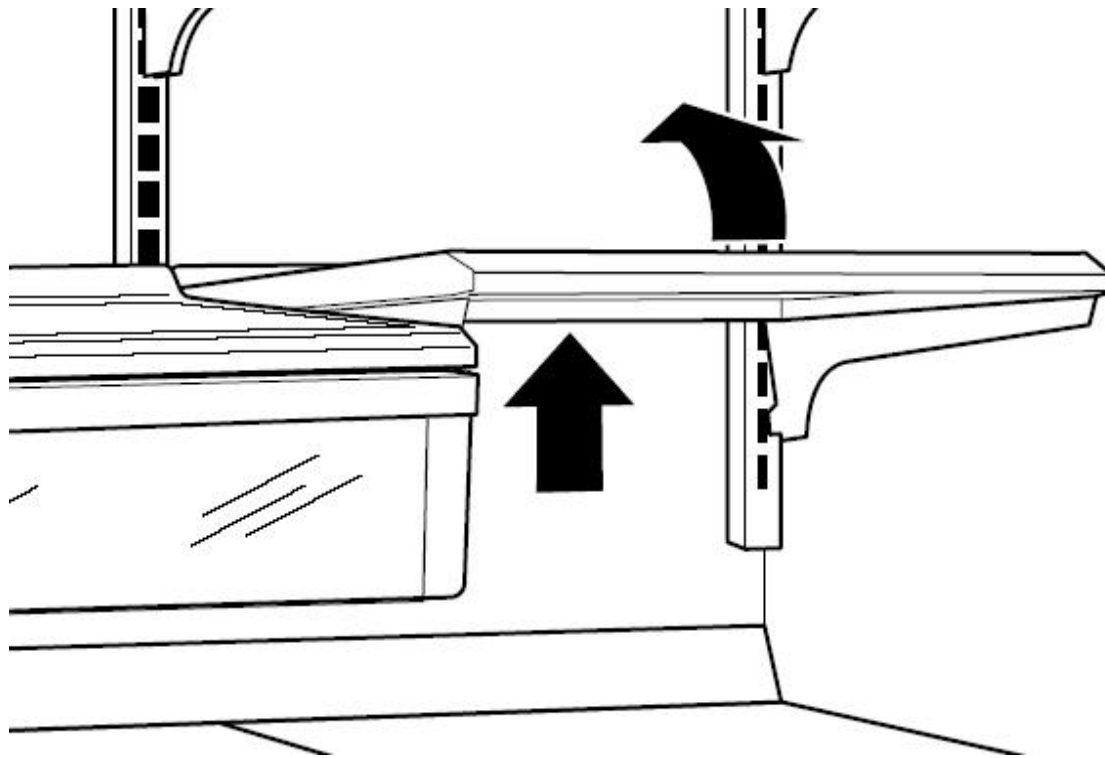
The icemaker stops producing ice if it detects the bin is full.

You can regulate the cube size by pressing the Water Amount Selection Switch.

The size of the cube can also vary depending upon the input water pressure.



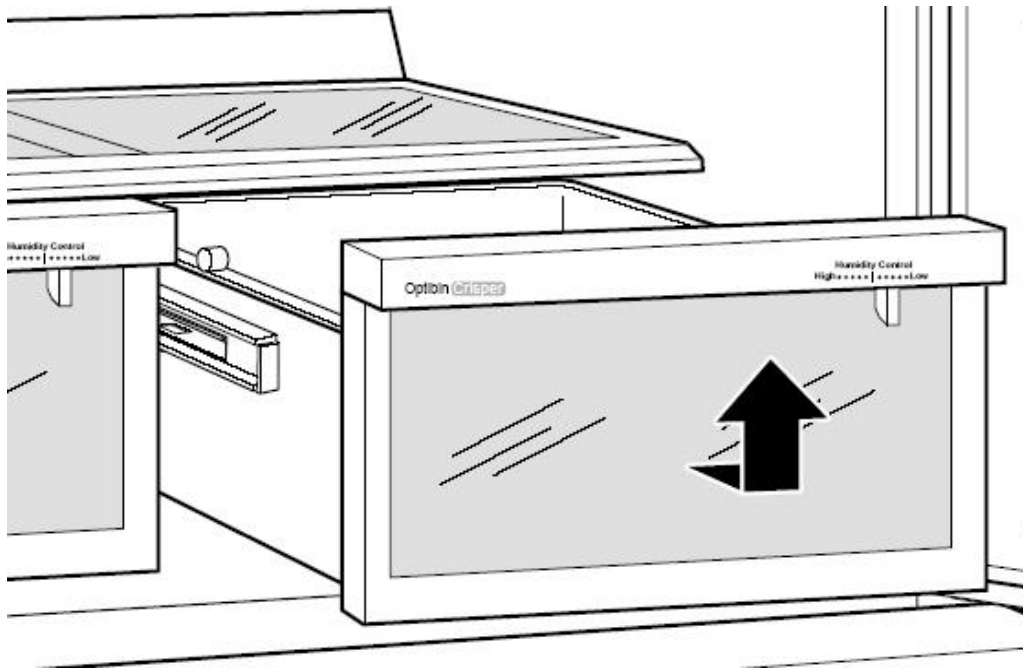
# Shelving



To remove a shelf, lift the front end to disengage the lower hooks. Then lift the shelf out of its place.

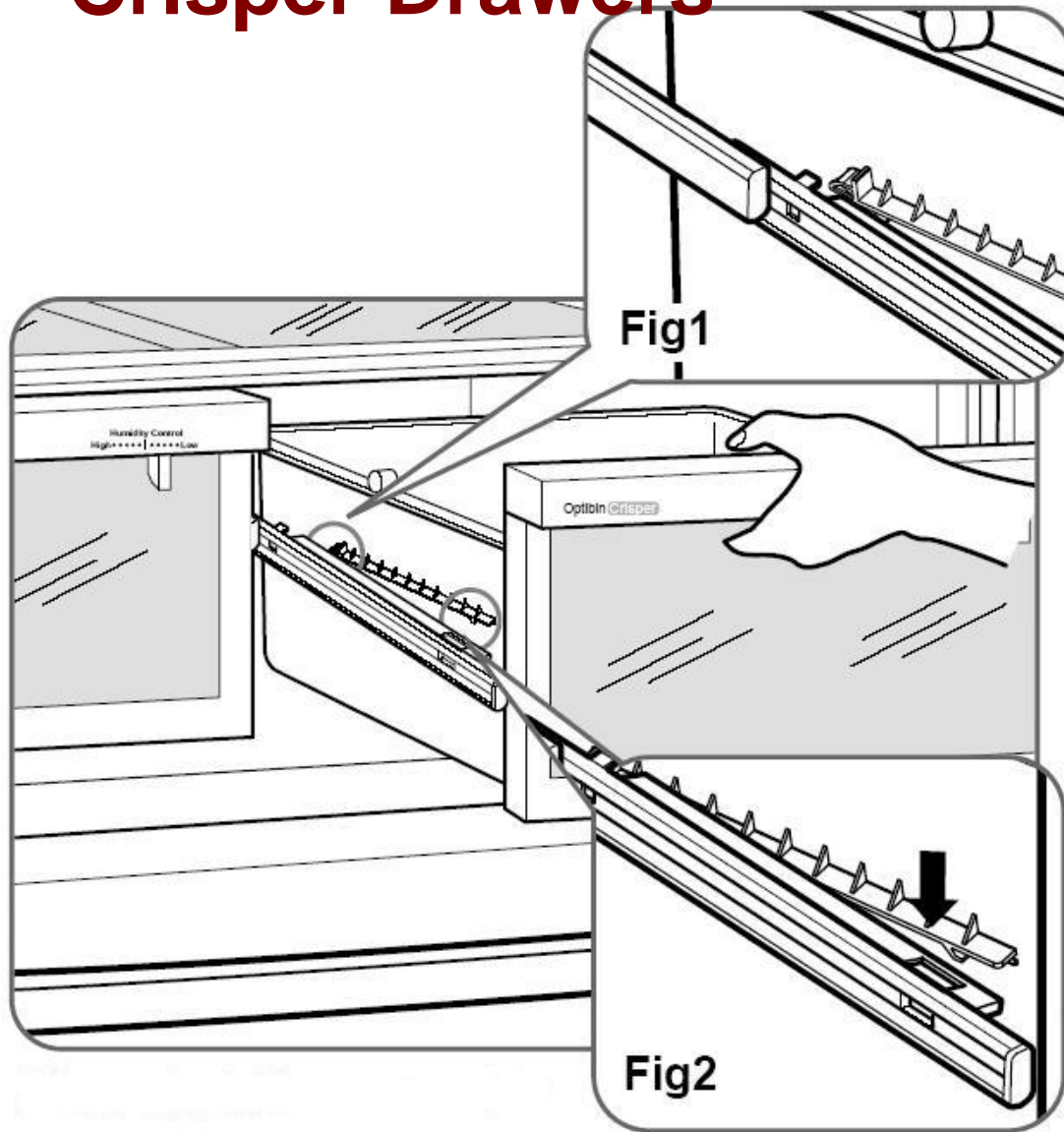
To replace it in any position, hold the shelf at an angle with the front higher and insert the top hooks at the desired level. Then lower the bracket into place so the lower hooks drop into the slots.

# Crisper Drawers



To remove the crisper drawer, pull it out to full extension, lift the front of the drawer slightly, and pull it forward.

# Crisper Drawers



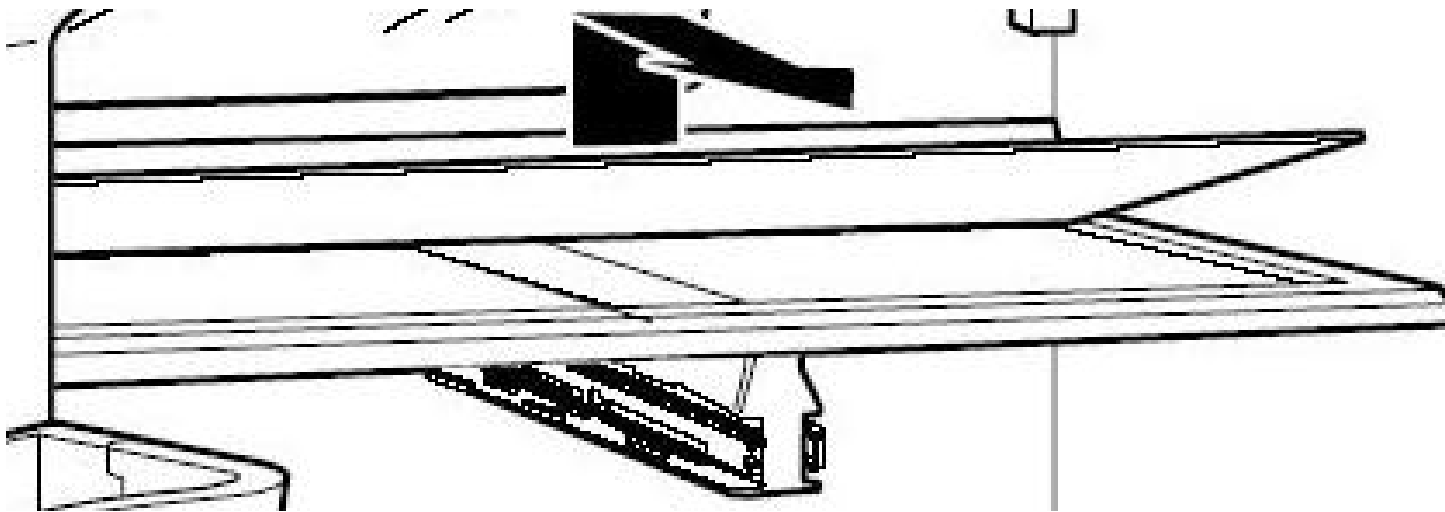
To replace the crisper drawer, pull the rails out to full extension. Insert the back of the drawer rails into the rear hooks on the rail. Lower the front of the drawer and see that the front tabs drop into the slots on the rail.

Pushing the drawer closed and then re-opening it may help seat everything.

# Preliminary

To remove the glass of the crisper cover, reach under the cover and lift the glass.

Pull the glass up and turn it at a slight angle to remove it.



# Water Filter

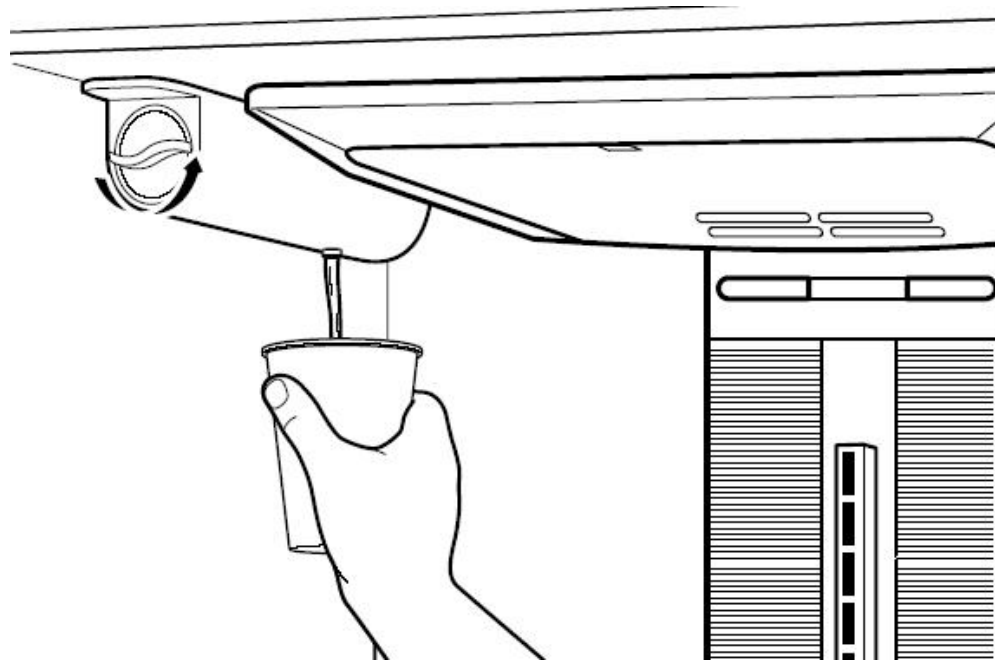
Replace the filter every 6 months or whenever taste and clarity deteriorate.

Hold a cup under the hole at the back of the filter holder to catch any spillage.

Twist the filter counterclockwise until it clicks.

Pull the filter out. Insert a new filter and twist it clockwise until it clicks into place.

Dispense eight glasses of water to purge the line of air and particles.



# Preliminary

Filter Part N<sup>o</sup>. 5231JA2006A.



# Preliminary



Filter receptacle with filter removed.

Because of the valve built into the filter base, the water can still flow (unfiltered) to the icemaker and dispenser.

We recommend using the refrigerator with the filter in place.

# Cleaning - Interior

Clean the inside of the refrigerator and freezer monthly to prevent odors and to ensure cleanliness. Unplug the refrigerator before cleaning. Unload all food items, shelves, and crispers. Use a sponge or a soft cloth and warm water with a solution of baking soda. Allow the soda to dissolve completely so it does not act as an abrasive. Wash, rinse, and dry all surfaces. Plug in the refrigerator. Do not use harsh cleansers. Do not use aerosol or spray cleaners. Be careful to avoid having damp items, including hands, to stick to the frozen surfaces.



# Cleaning - Exterior

Use a commercially available stainless steel cleaner and follow the manufacturer's directions. It is probably not necessary to unload the refrigerator to pull it out to clean behind it.

# Storage

## VACATION

For brief vacations, it is best to leave the refrigerator running. Dump the ice bin and turn off the icemaker.

## INDEFINITE

To store the refrigerator indefinitely, unload it and unplug it. Dump the ice bin and turn off the icemaker. Allow the refrigerator to warm up to room temperature. Clean the interior, as described above. Block the doors open to prevent mold and mildew. Be certain that the refrigerator is stored in a position where it cannot encourage children to play in it and become entrapped.

# Power Failure

Most power failures that are corrected within a few hours' time will not affect the refrigerator or the food stored in it. Minimize the door openings while the power is off. If water drips from the ice bin, remove the bin, turn off the icemaker, and discard the ice.

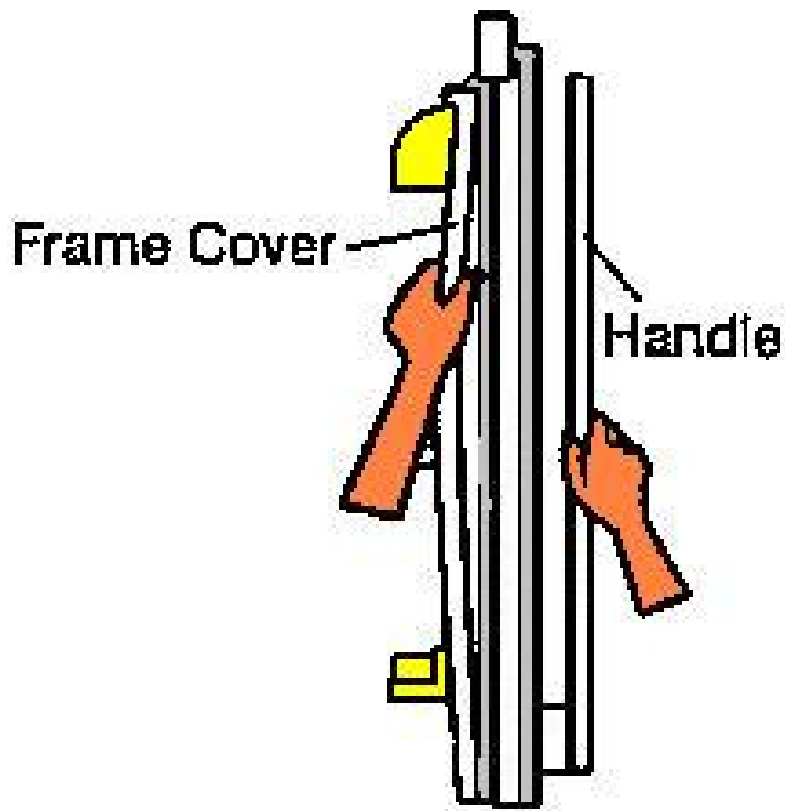
Turn the icemaker on again when the power is restored.

# Disassembly

## DOOR REMOVAL

Removing, adjusting, and replacing the refrigerator doors are covered in another section of this manual. (See pages 13 ~ 14.)

# Door Gasket Removal



Remove the door frame cover.

Start at the top of the frame cover and work down.

Gently pry the frame cover off the door.

Be careful to avoid breaking the small plastic clips.

# Door Gasket Removal



Remove the gasket bracket clips.

Pull the gasket back to expose the bracket clip and door frame. Insert a flat tip screwdriver into the seam between the gasket and the door frame and pry back until the clips snap out.

Continue along the seam until all the clips are released.

# Preliminary



Remove the gasket.

Start at the top of the door and work down.

Push the edge of the gasket aside and grasp the center portion.

Pull it out of the channel and away from the door.

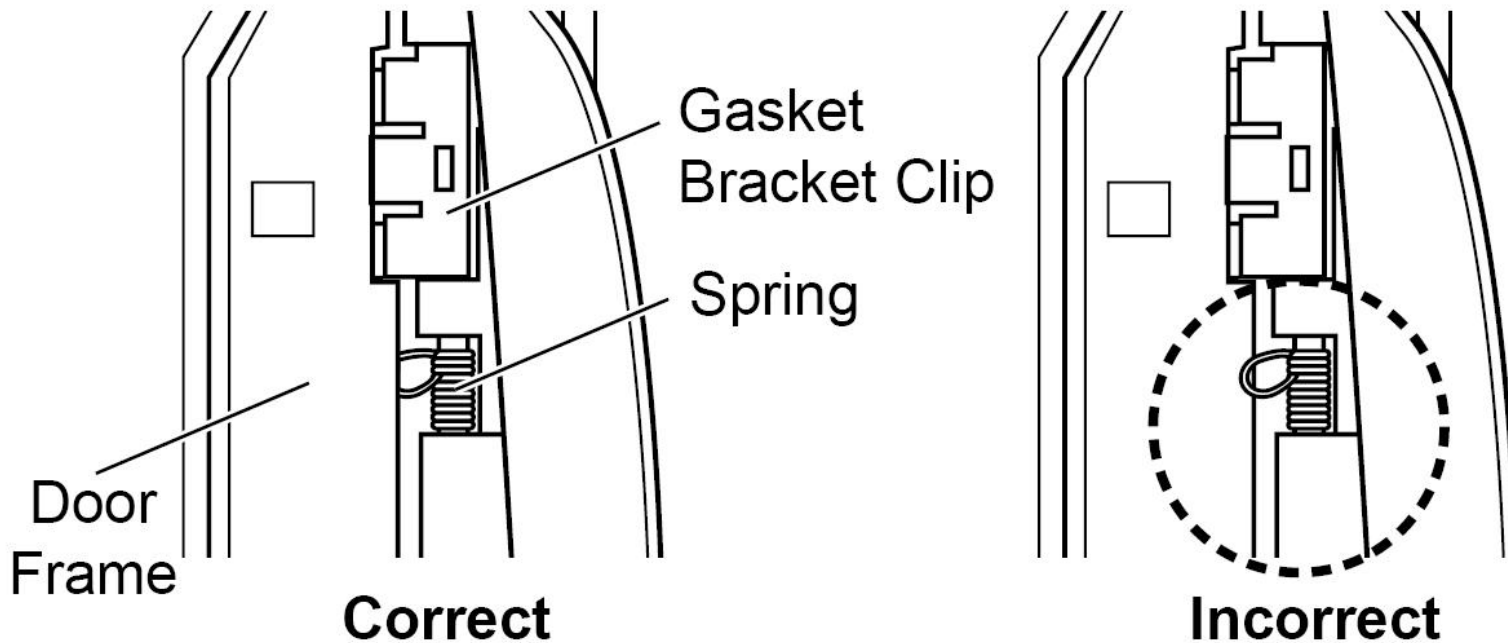
To replace the gasket, start at a top corner and work around the door, going across the top first.

# Door Gasket Replacement

Insert the gasket bracket edge under the door frame.

Turn the upper gasket spring so the ends are in the door channel.

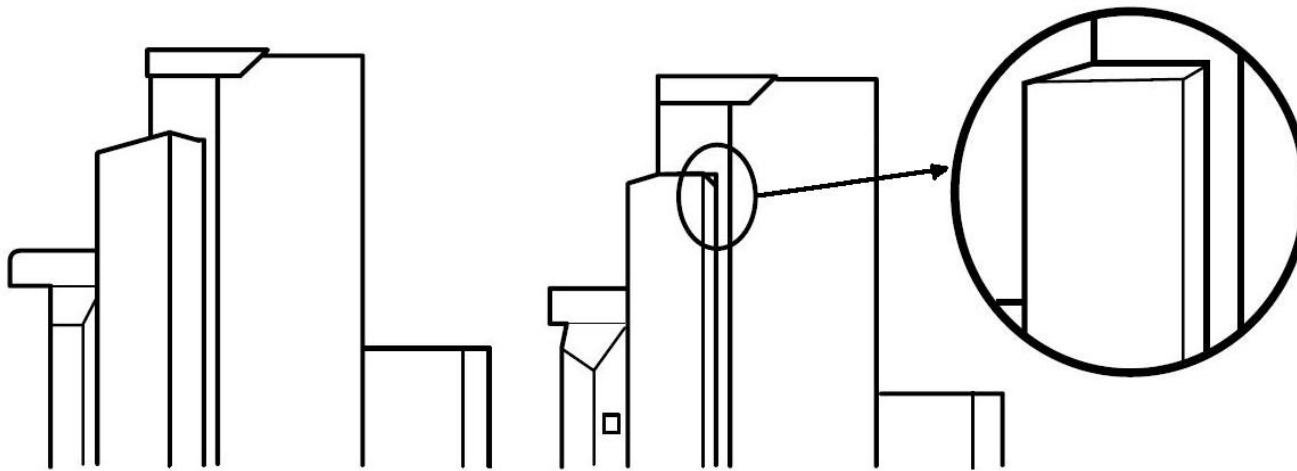
Push in the clip so it snaps into place.





# Door Gasket Replacement

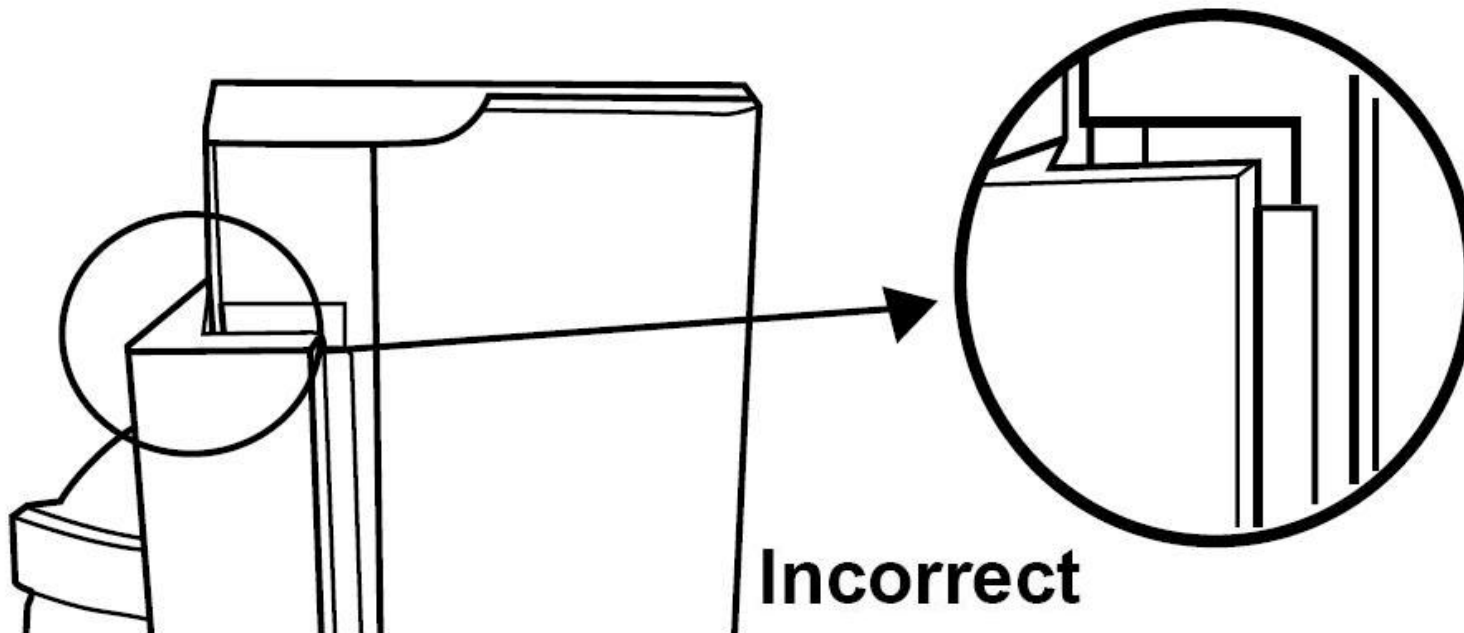
Replace the gasket in the door frame starting with the sealing edge.



**Correct**

# Door Gasket Replacement

Replace the gasket in the door frame starting with the sealing edge.

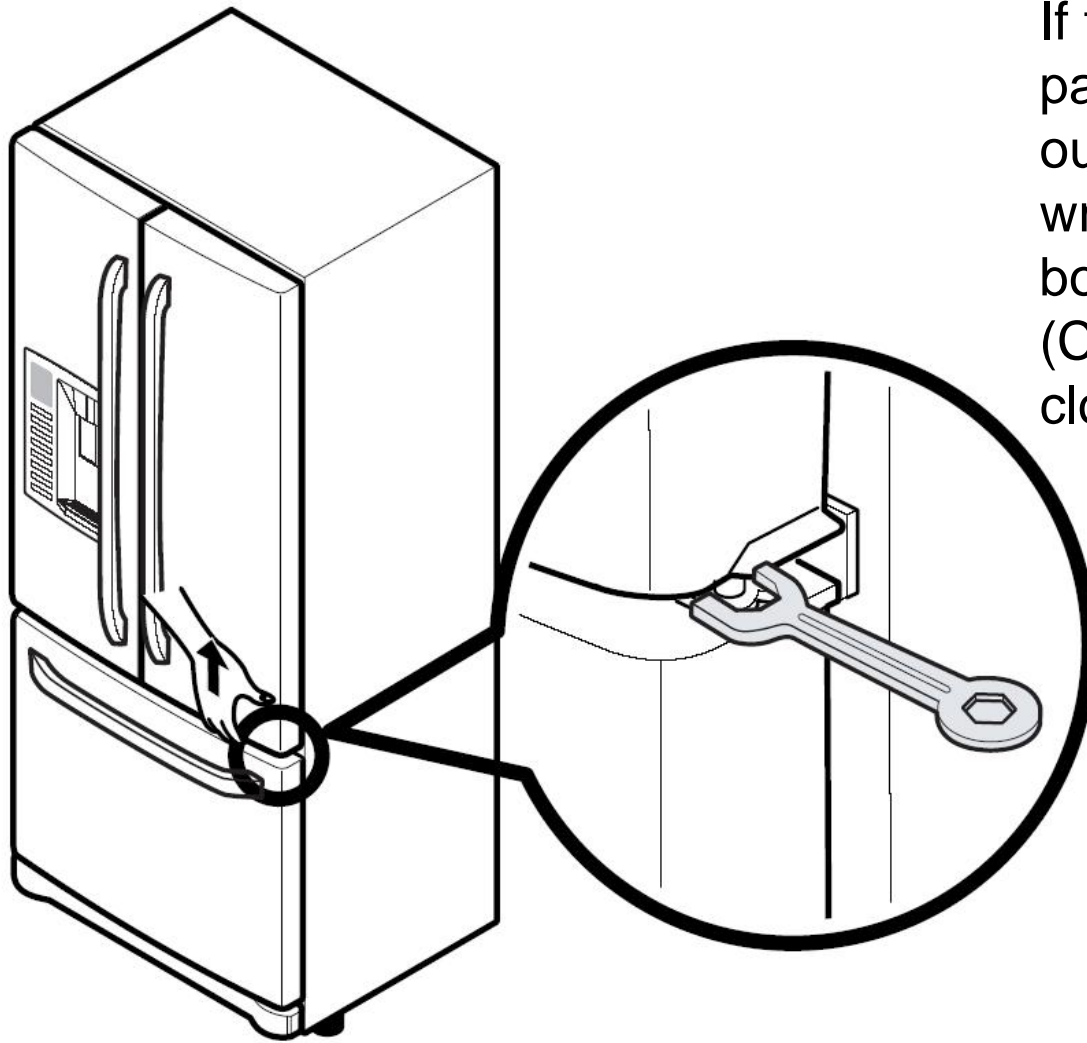


# Door Gasket Replacement

Push the rest of the gasket into place in the groove on the remaining three sides of the door. It is the opposite of removing the gasket

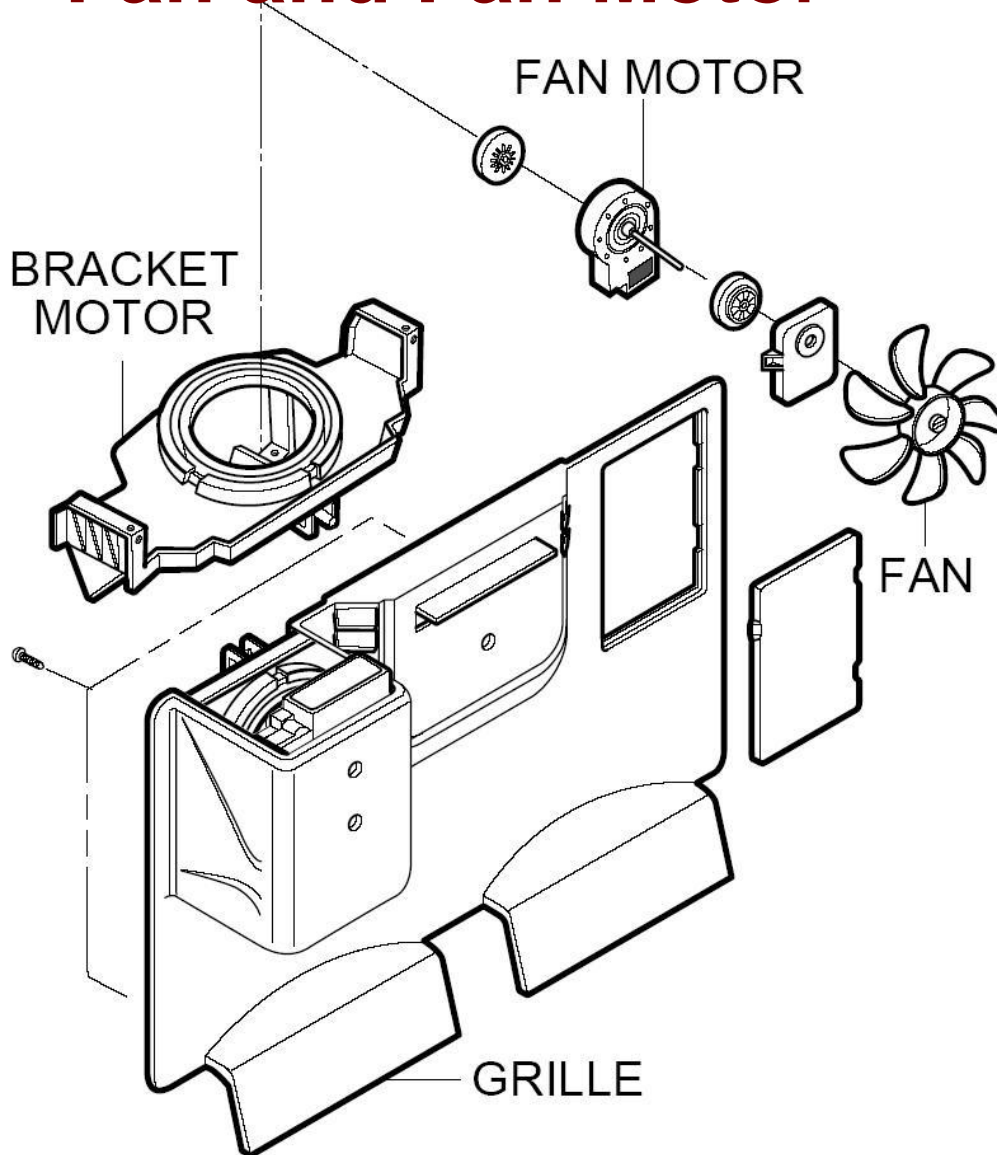


# Door Adjustment



If the refrigerator is level (see page 10) and the doors are still out of alignment, use the small wrench provided and adjust the bolt in the door hinge. (Counterclockwise to raise, clockwise to lower.)

# Fan and Fan Motor



Empty the freezer and remove the drawer and shelf.

Remove the left drawer guide assembly.

Pull the grille forward gently.

Remove two screws to remove the ice scroll fan shroud.

Separate the grille, bracket, and motor

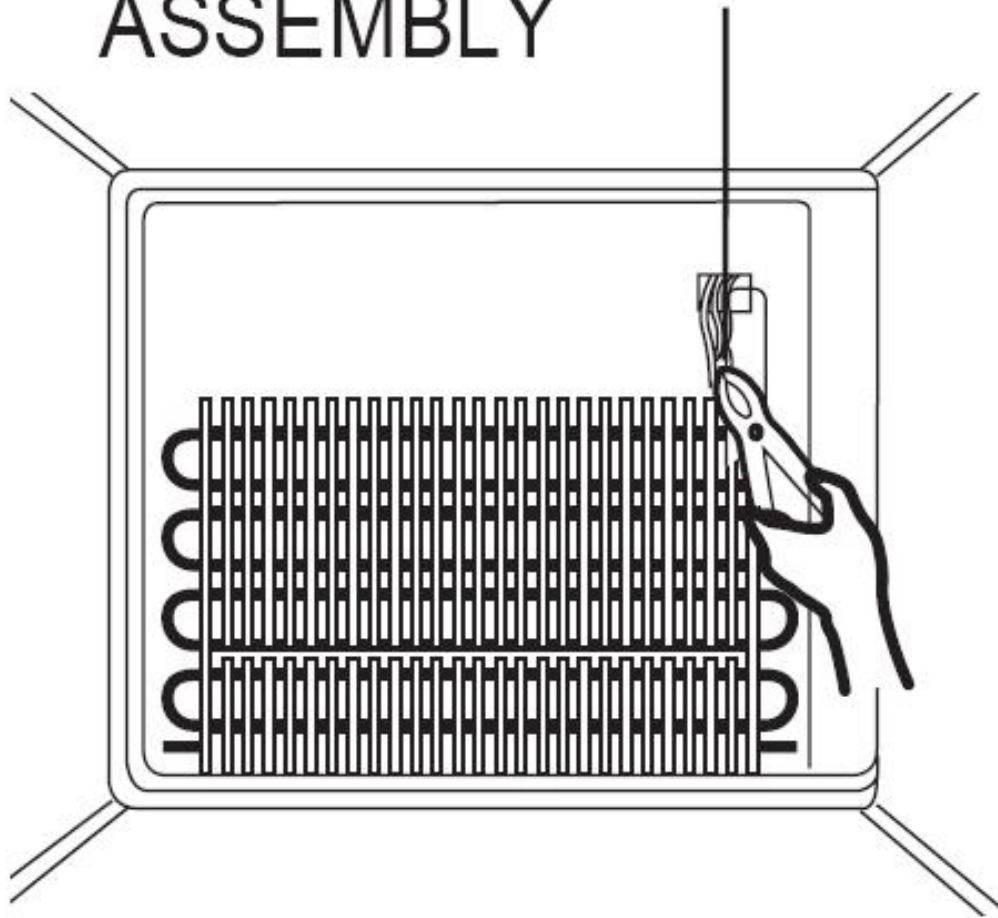
# Defrost Control Assembly

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.

# Defrost Control Assembly

## DEFROST-CONTROL ASSEMBLY



Remove the grille assembly in the freezer.

Unplug the defrost control assembly.

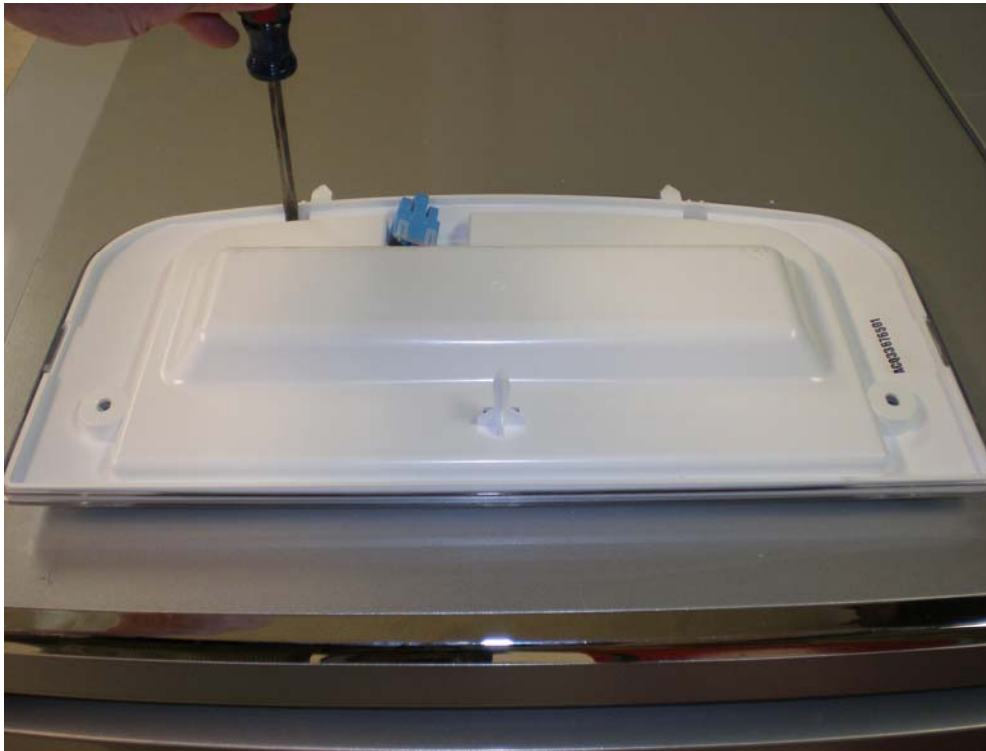
Cut the tie-wrap that holds it in place.

Remove and replace the assembly.

Secure it with a new tie-wrap.

Plug in the new assembly and replace the grille.

# LED Lamp Assembly (Refrigerator)



If necessary, unload remove the top shelves.

Remove the two screws.

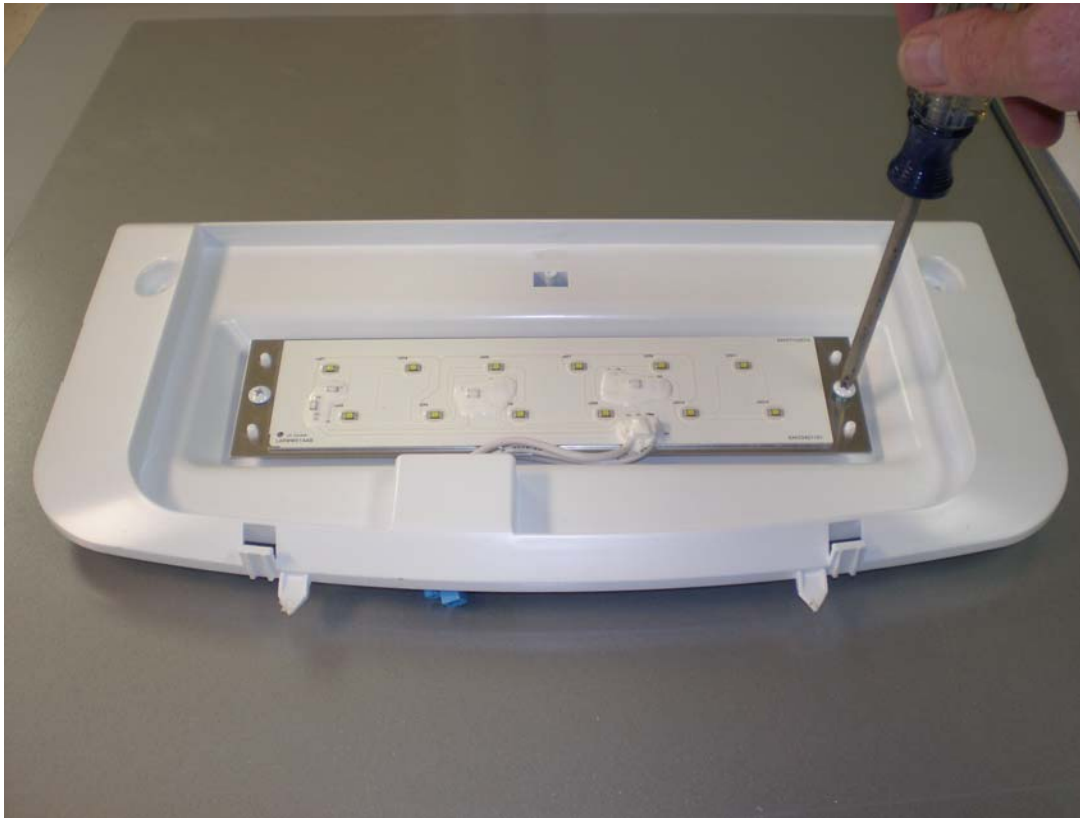
Grasp both ends of the lamp assembly and pull it down and out of the cavity.

Use a flat screwdriver to remove the cover lamp.



# LED Lamp Assembly (Refrigerator)

Separate the LED assembly and the cover.



# LED Lamp Assembly (Freezer)

The freezer LED assembly is similar to that in the refrigerator, but smaller. The repair method is the same.



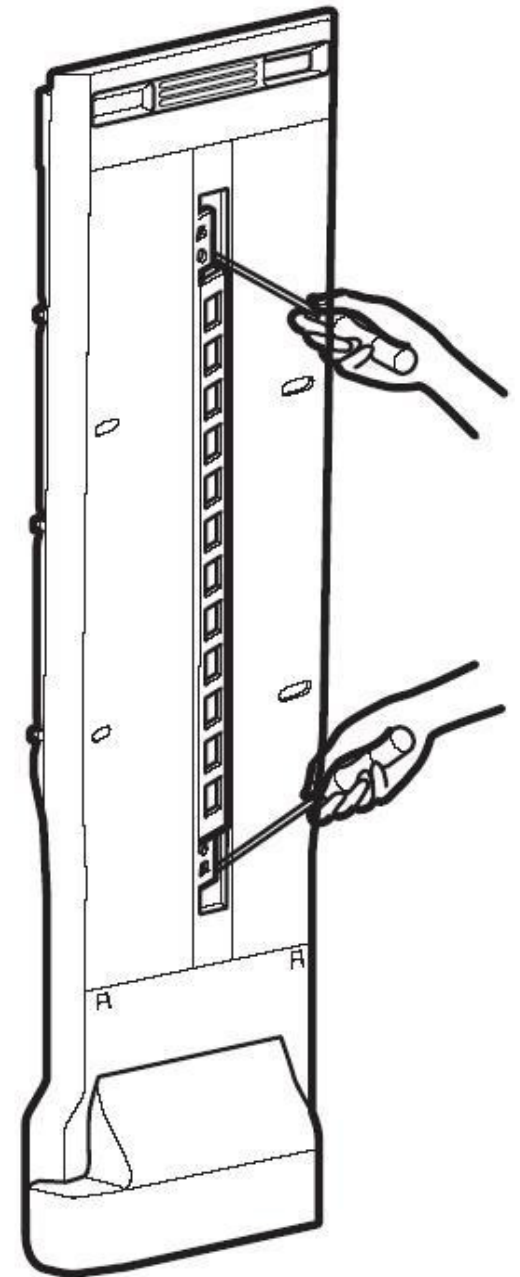
# Multi-Duct

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

Separate the connector at the bottom and remove the duct.

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

Replacement is the reverse of this procedure.



# Main PCB

Remove the three screws on the PCB cover and take it off.

Disconnect the wire harness.

Remove and replace the board.

Reconnect the harness and replace the cover.



# Dispenser

Remove the tray.

Lift out the grate.

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



# Dispenser

Grasp the lower part of the dispenser and pull it out.



# Dispenser

Hold the right side of the dispenser with both hands.

Pull it out and forward.



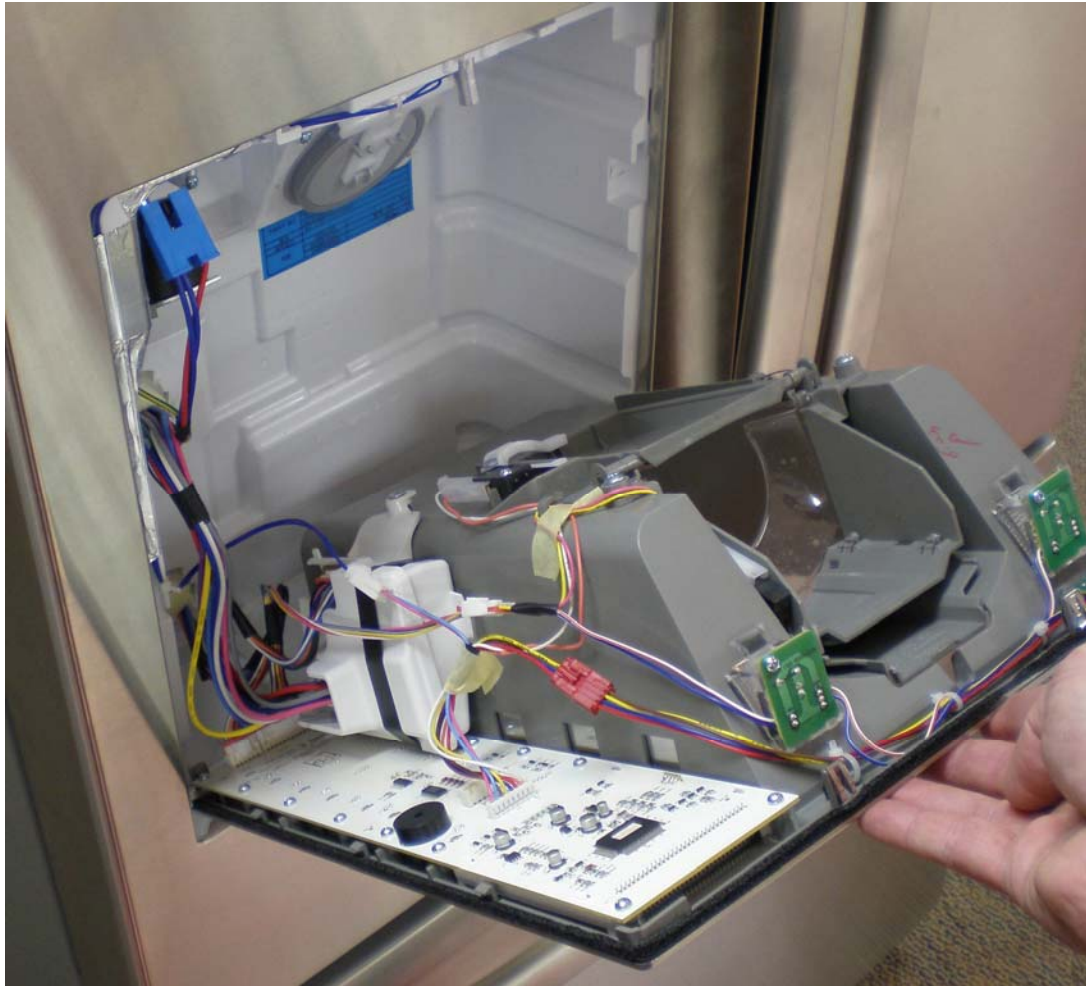
# Dispenser

If the spout is in the way of removal, remove it.



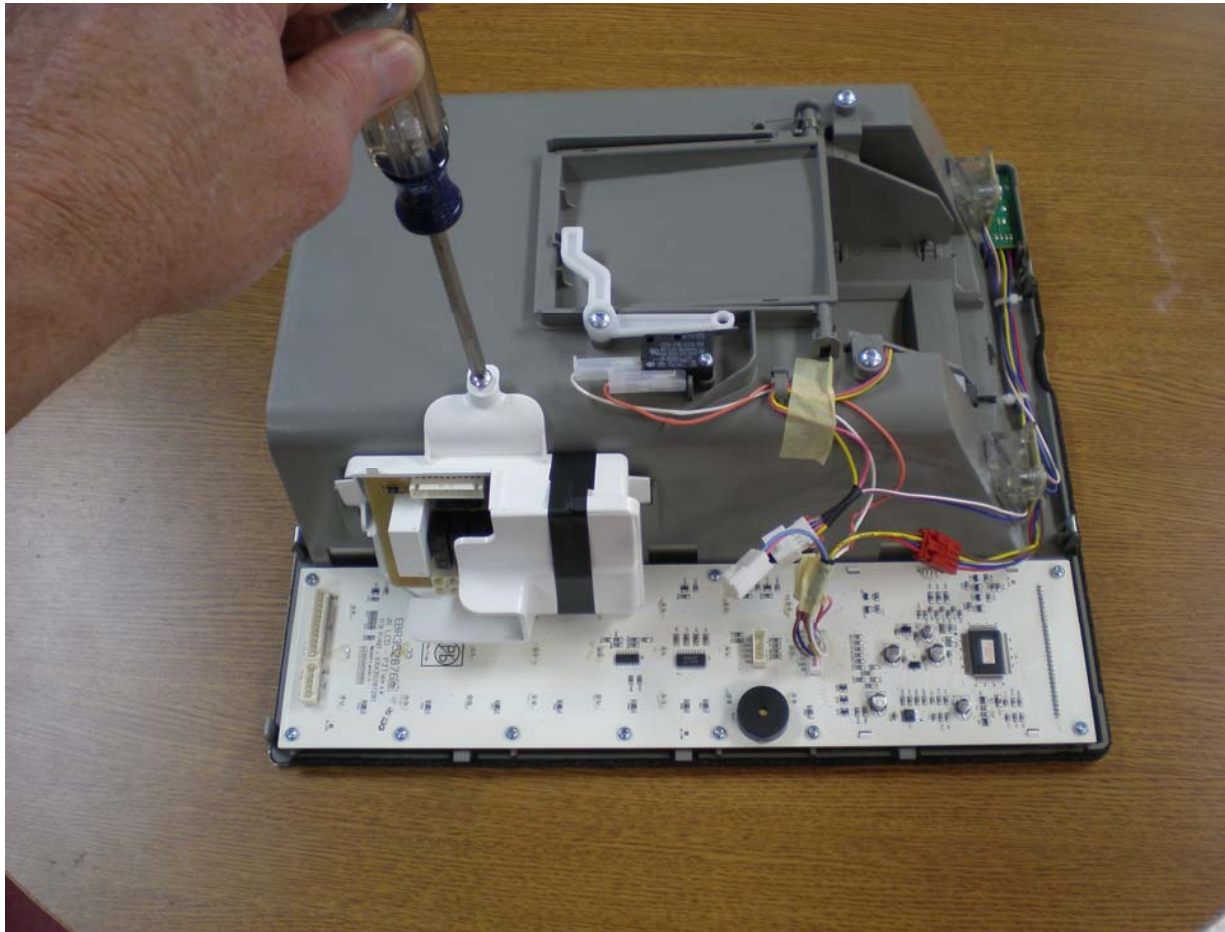


# Dispenser



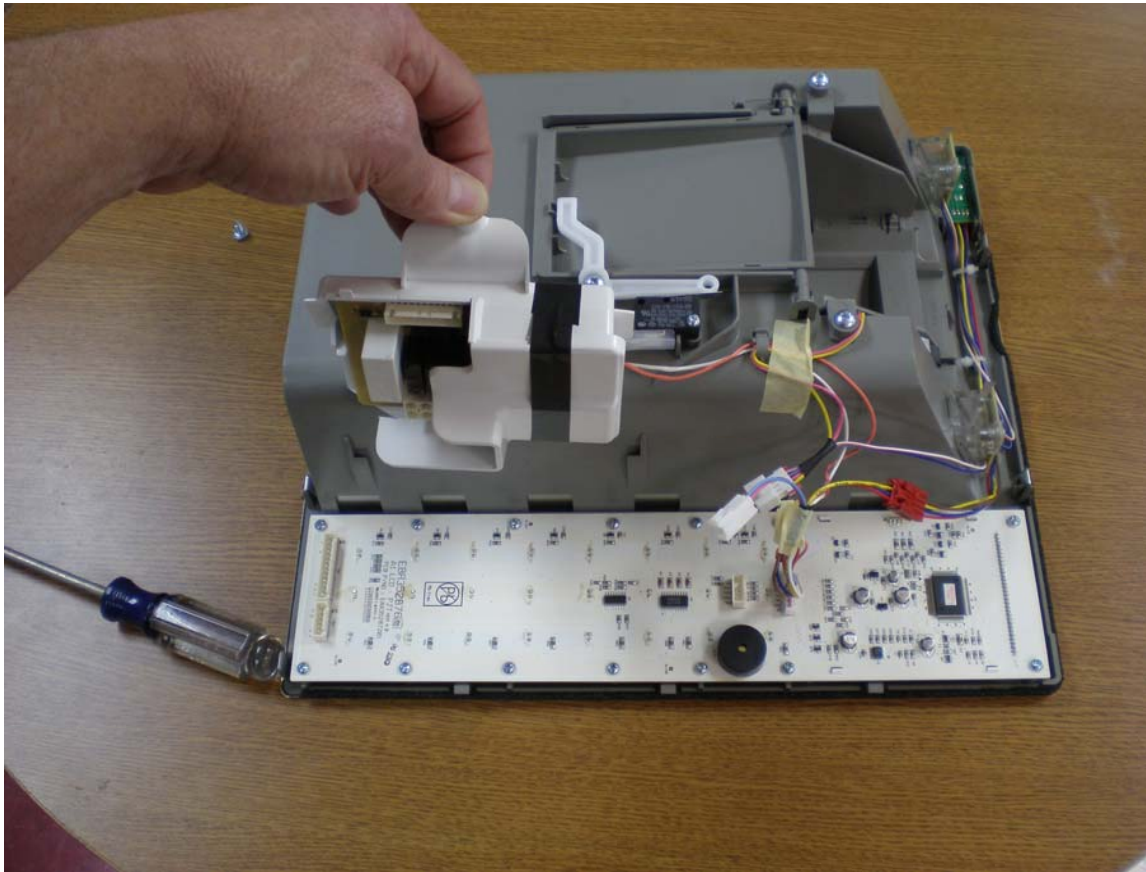
Fold the dispenser assembly down and disconnect the wiring harness.

# Display PCB



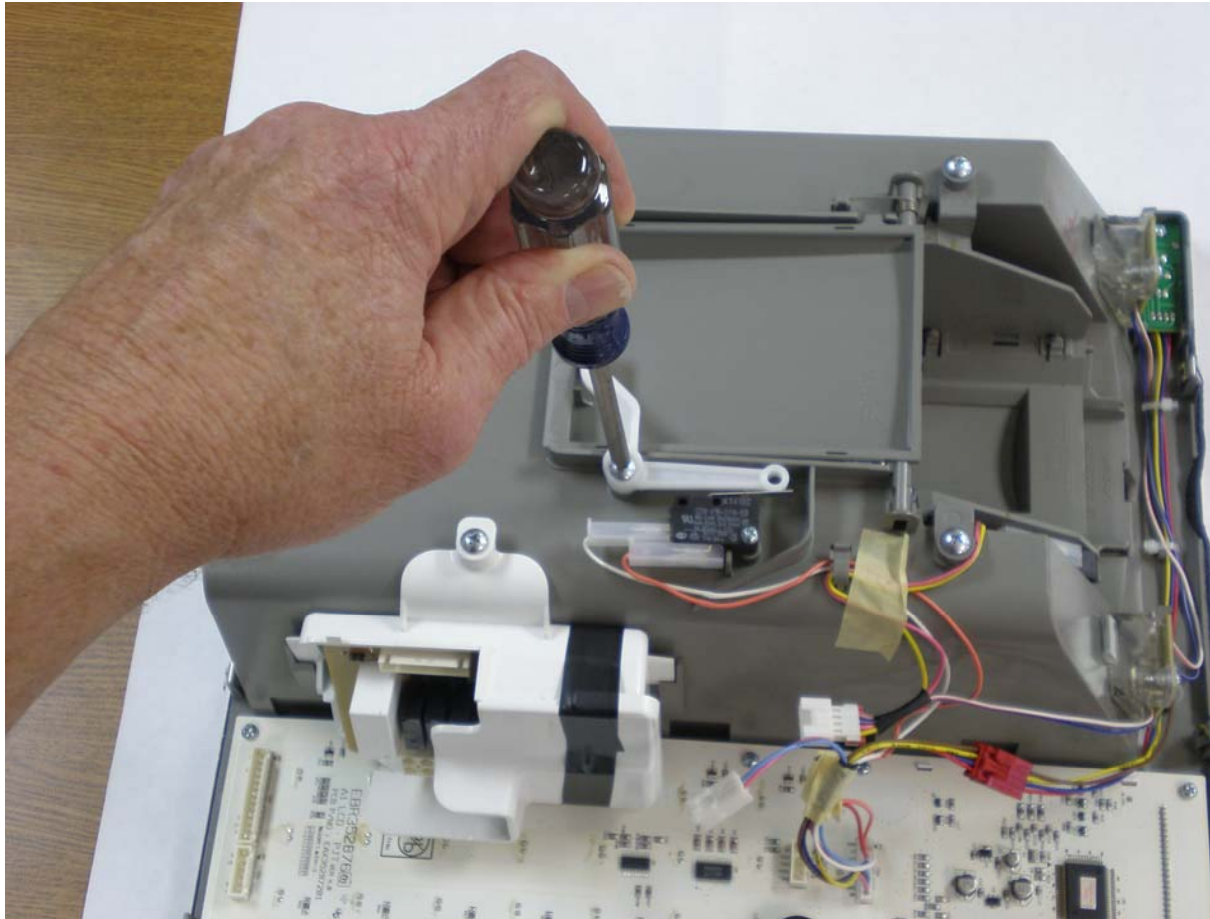
Remove the screw that attaches the case.

# Display PCB



Remove the screw that attaches the display PCB to the case.

# Ice Button



Remove the screw attaching the button lever.

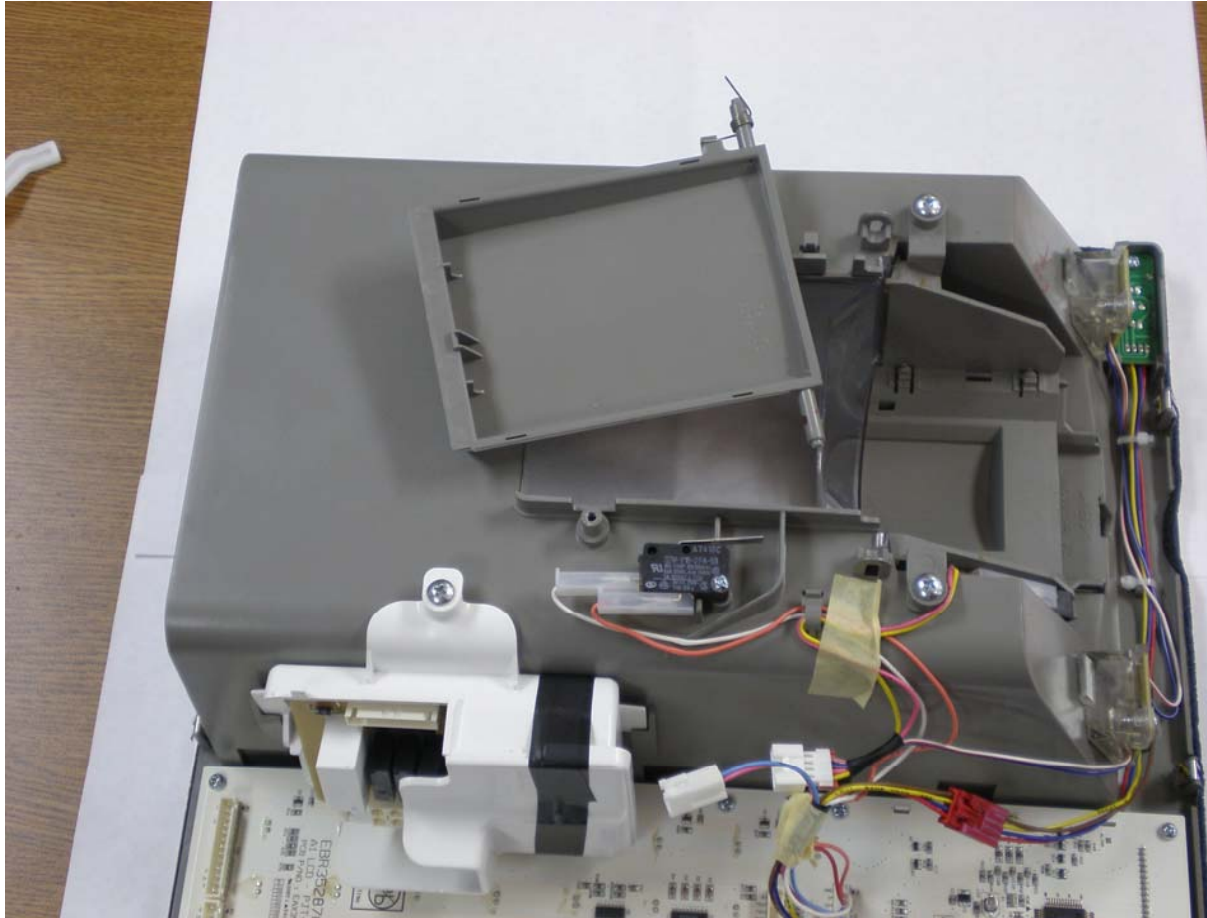
Push the spring from the hanging hook to remove it.

# Funnel Replacement



Grasp the funnel firmly.  
Pull it down and forward.

# Water Button Assembly



Remove the screws.

Lift the button assembly out of the holder.



# Duct Door Replacement



Remove the funnel.  
(See page 35.)



# Icemaker Door Cover



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.

# Icemaker



Loosen the two screws that support the icemaker mounts.

Roll the icemaker over to disconnect the wiring harness.

Then use a Phillips driver to remove the ground screw and connection.

# Auger Motor Cover

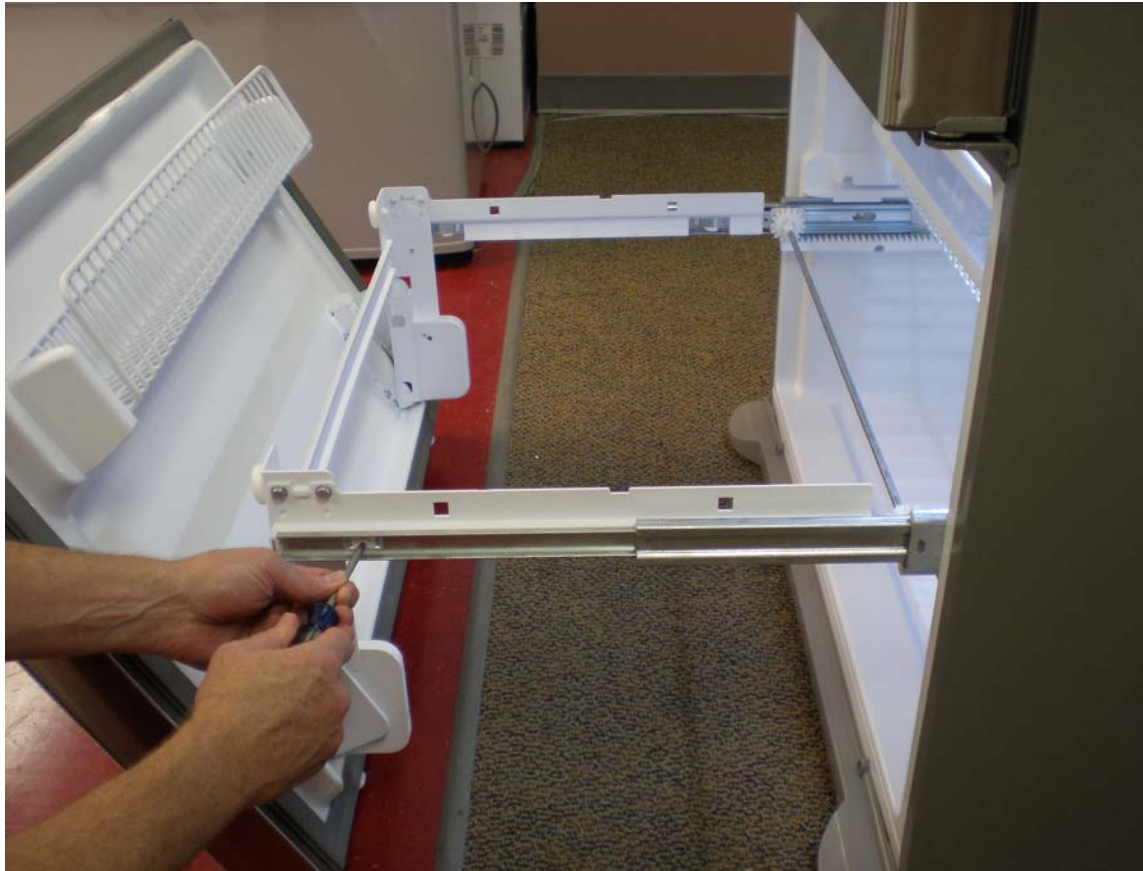
With the icemaker removed, remove the five stainless steel screws that secure the auger motor and cover.

Grasp the bottom of the auger motor cover and pull it out.

Disconnect the auger motor wiring harness.



# Freezer Door Removal



Pull the freezer door open to full extension and empty the freezer.

Remove the basket.

Remove the screws from the guide rails.  
(One from each side.)

# Freezer Door Removal

Remove the rail covers.

Press the tabs and lift them off the rails.

When replacing them, set them on top and press them straight down.

Be sure to avoid mixing up the right and the left covers.



# Freezer Door Removal



Lift the freezer door to separate it from the rail and remove it.

# Freezer Door Removal



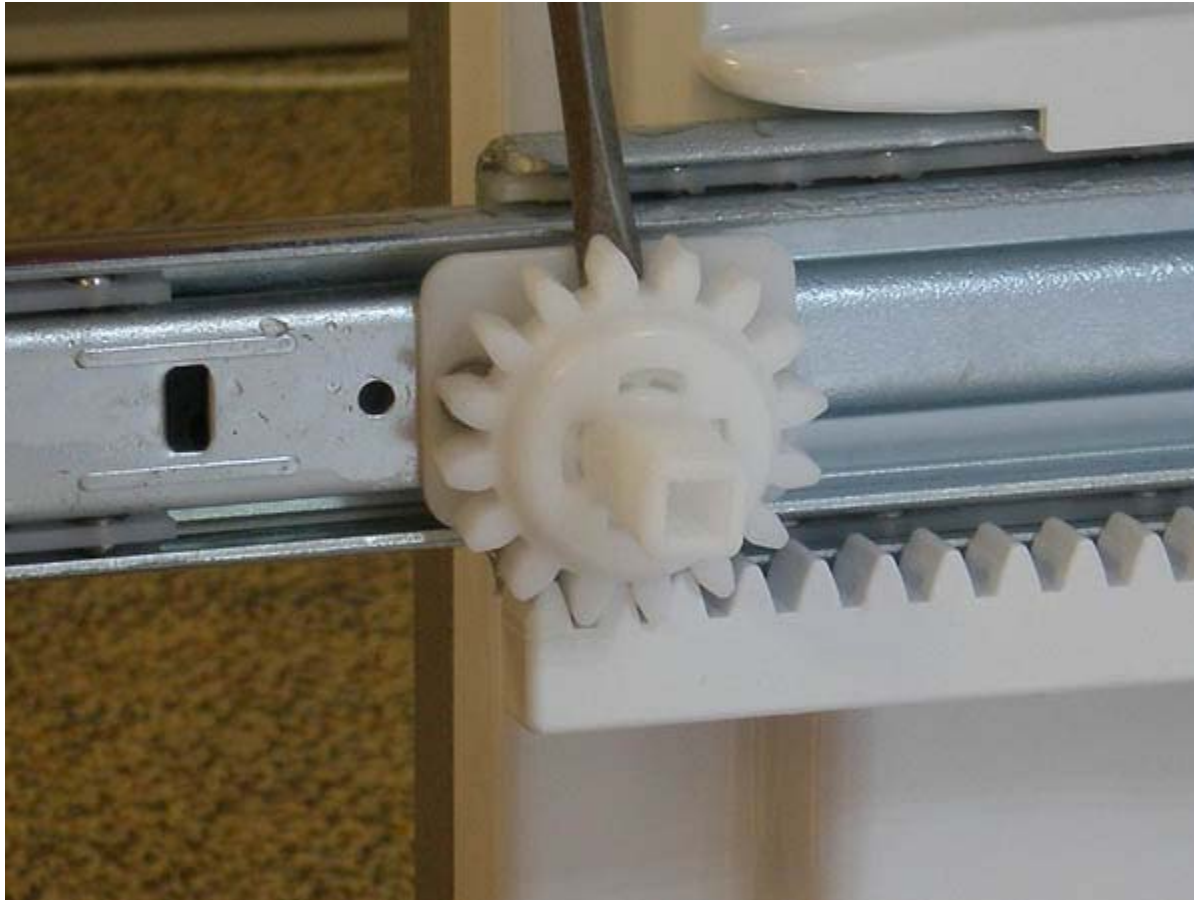
Remove the left gear first by releasing the tab behind the gear.

Place a screwdriver between the gear and the tab, and pull up on the gear.

Remove the center rail.

Remove the right gear just like the left one.

# Freezer Door Replacement



Replace the right gear into the clip.

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

Repeat this process on the left side.

The rail system is self-aligning.

Push the rails all the way in; then pull them out to full extension.



# Freezer Door Replacement

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

Replace the two screws into the guide rails. (One on each side.)

Replace the basket and close the freezer door.



# Pullout Freezer Drawer

To remove the drawer, push up the release tabs (left goes down, right goes up) and pull the drawer off the rails.



The large (main) drawer works the same way as shown in the photo.

To replace the drawer, pull the rails out to full extension and put the drawer guides into the ends of the rails.

Push the drawer closed. The gear mechanism is self-aligning and will right itself immediately.

# Water Valve

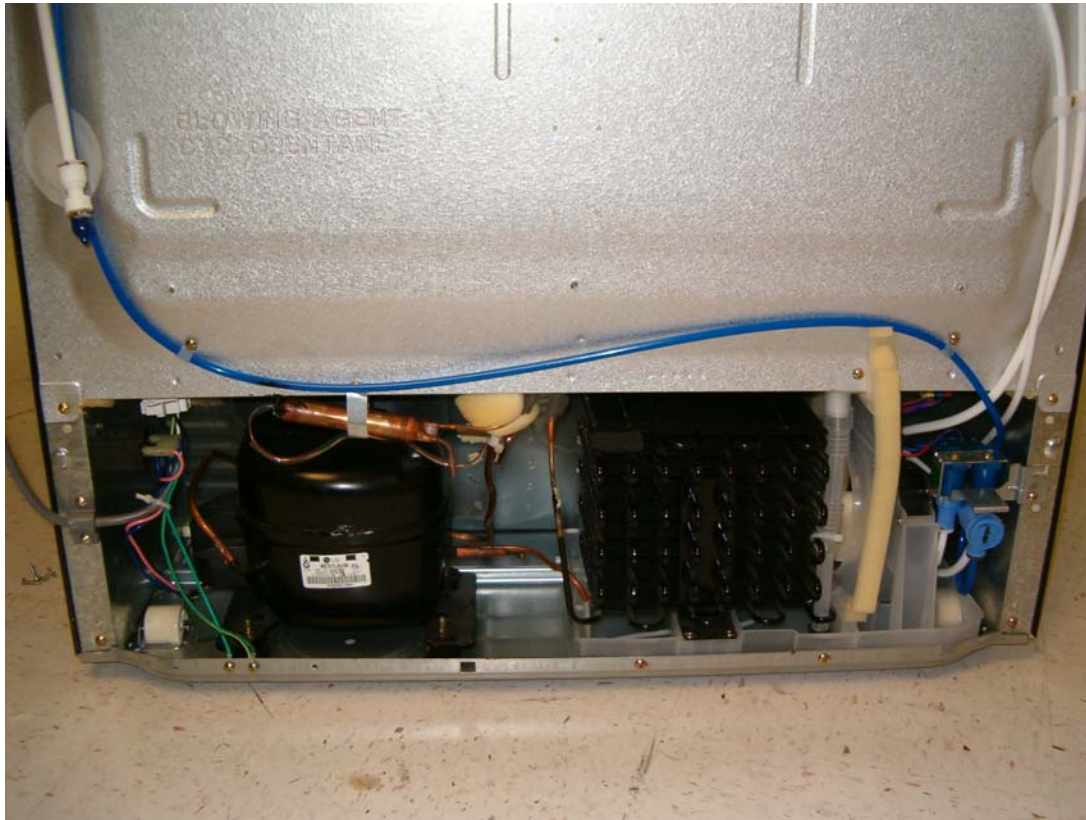


Have a towel and a small container handy to absorb any spillage.

Turn off the water.

Disconnect the water input from the valve.

# Water Valve



Remove the cover to the mechanical area.

# Water Valve



Remove the screw that holds the valve assembly to the frame of the refrigerator.

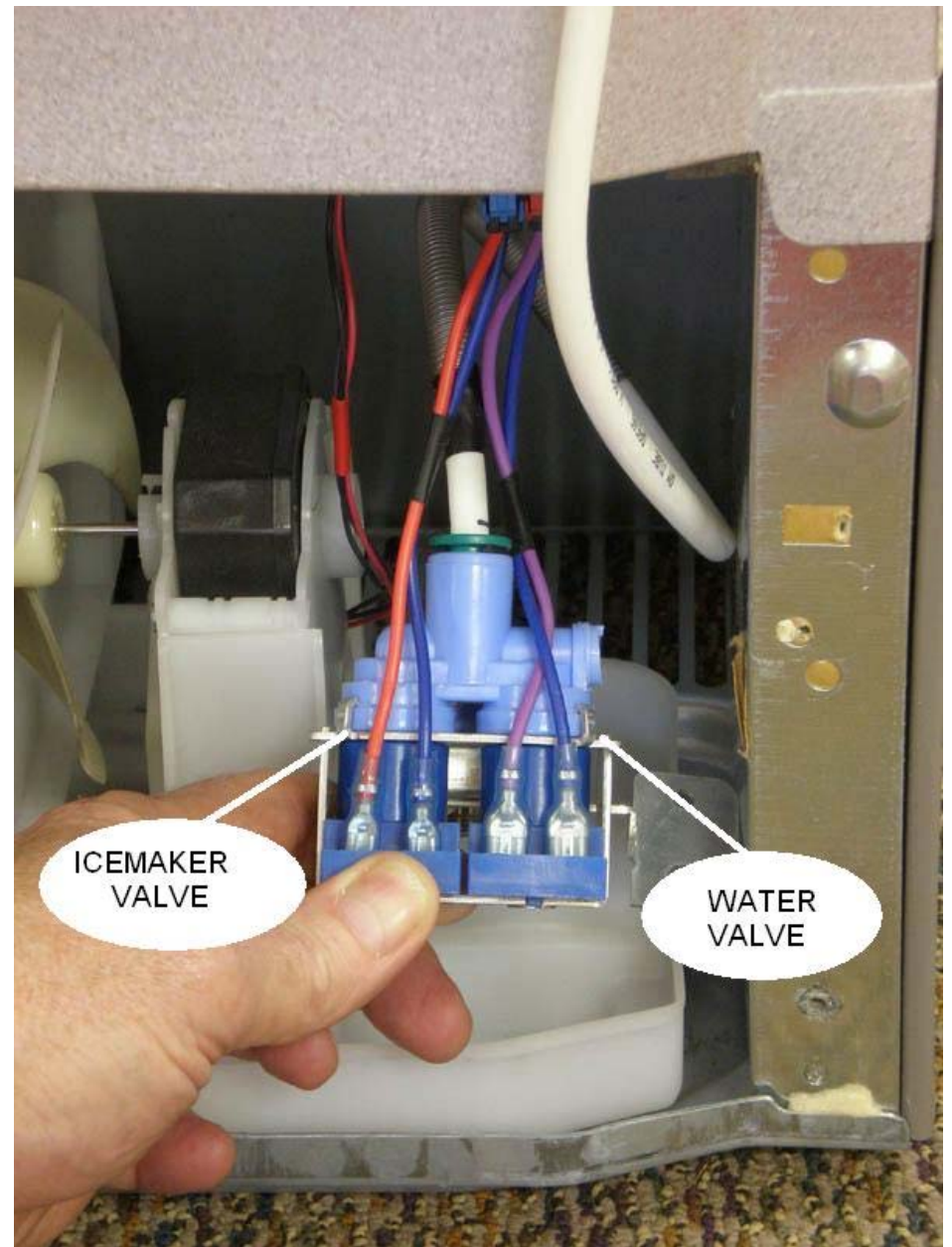
# Water Valve

Pull out the valve.

Remove and save the retainer clip.

Press the collet to release the tension and pull the water tube out of the valve. Be ready for water leakage.

Allow the tube to drain into the container.



# Water Valve

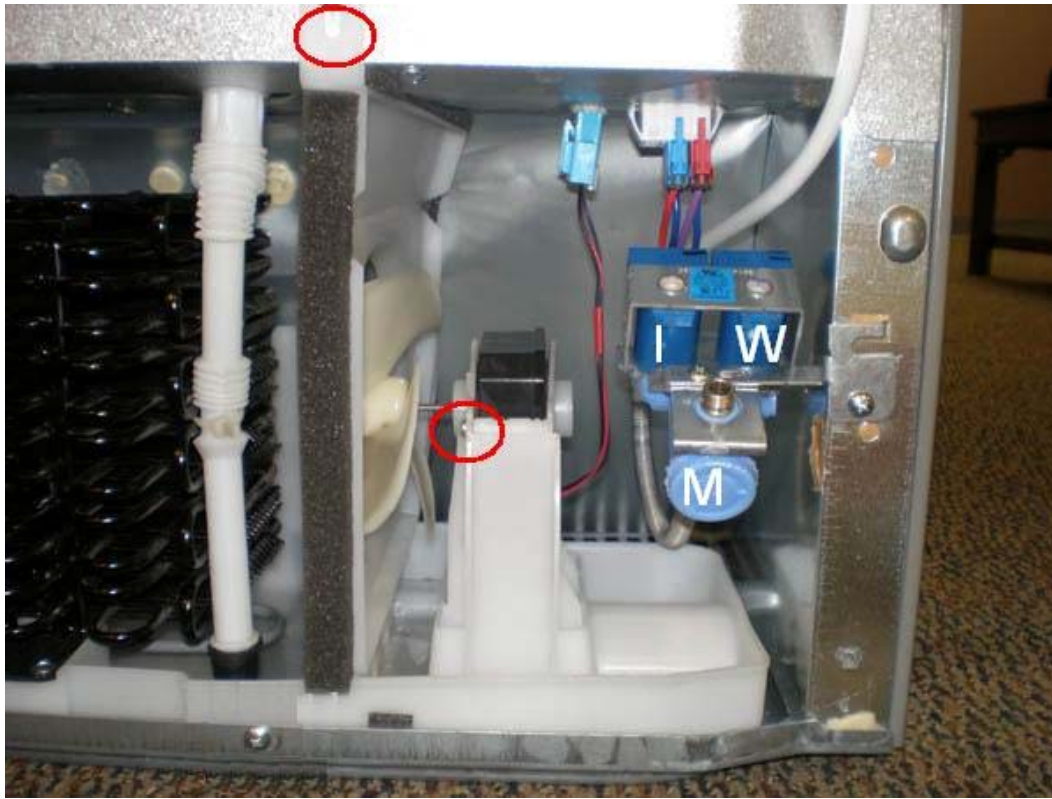


Replacement is the reverse order of these steps. Take extra care to avoid bending the water tube during assembly.

Turn the water on and check for leaks.

Purge the air from the system as described on page 19 of the training manual.

# Condenser Fan and Motor



Remove the screw at the top of the fan housing.

Remove two screws that attach the fan motor to the housing.

Remove the motor and fan assembly by twisting the motor counterclockwise out of the base.

The valves are labeled Icemaker, Water, and Main.

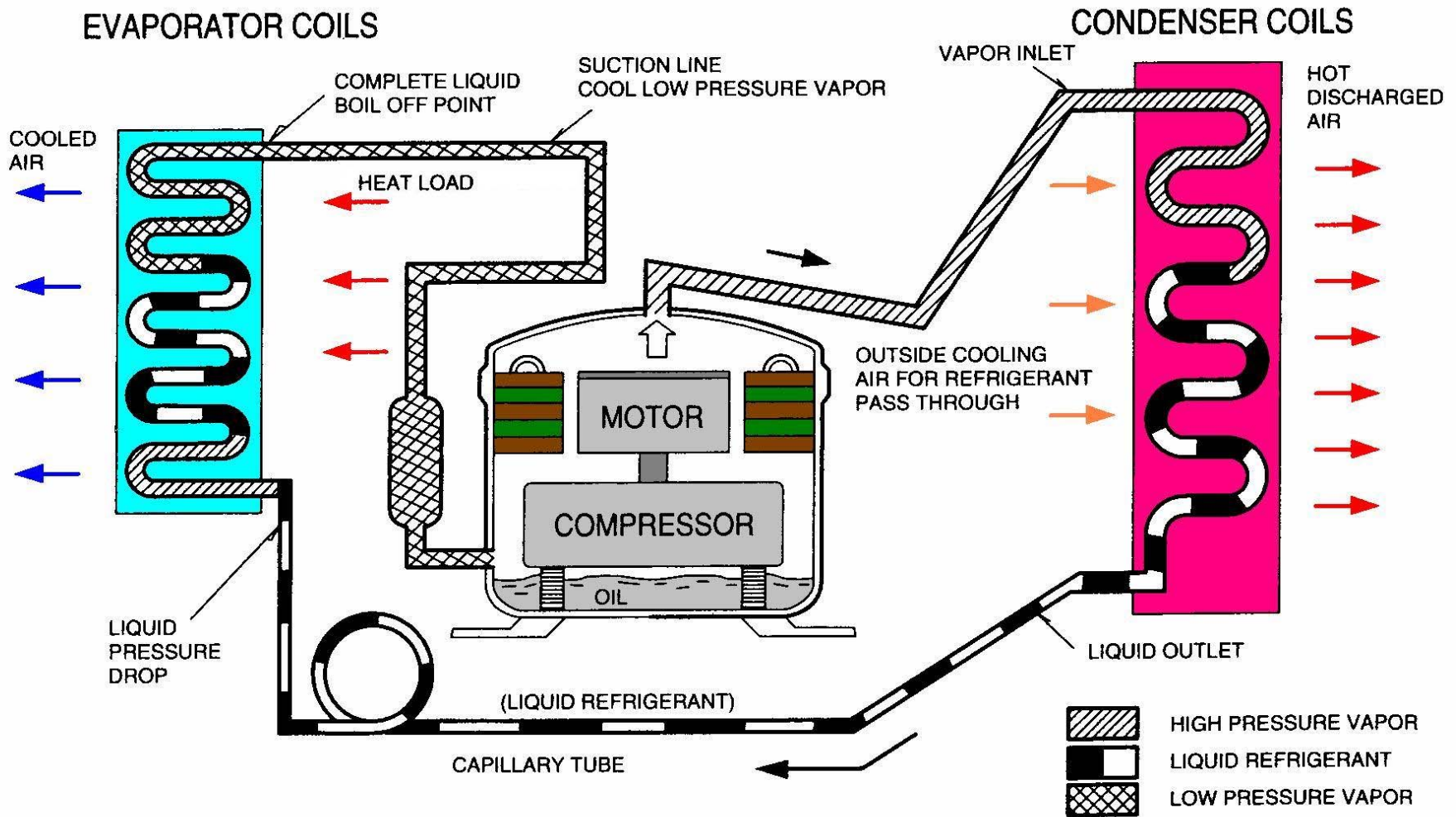


# Compressor

The compressor intakes low-temperature, low-pressure refrigerant from the evaporator and compresses it to supply high-temperature, high-pressure refrigerant to the condenser.

The compressor includes overload protection. The PTC (Positive Temperature Coefficient) starter and OLP (OverLoad Protector) are attached to the outside of the compressor. 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 the compressor and sealed system to avoid introducing contamination to the system.

# Sealed System



# Compressor

Do not apply voltage other than that specified on the rating plate of the compressor.

Do not drop, shock, or otherwise mishandle the compressor to avoid causing internal damage which would cause noisy operation and premature failure.

Be sure the related replacement parts (OLP, PTC, starting capacitor, et al.) are exact replacements. They must be matched to the compressor.

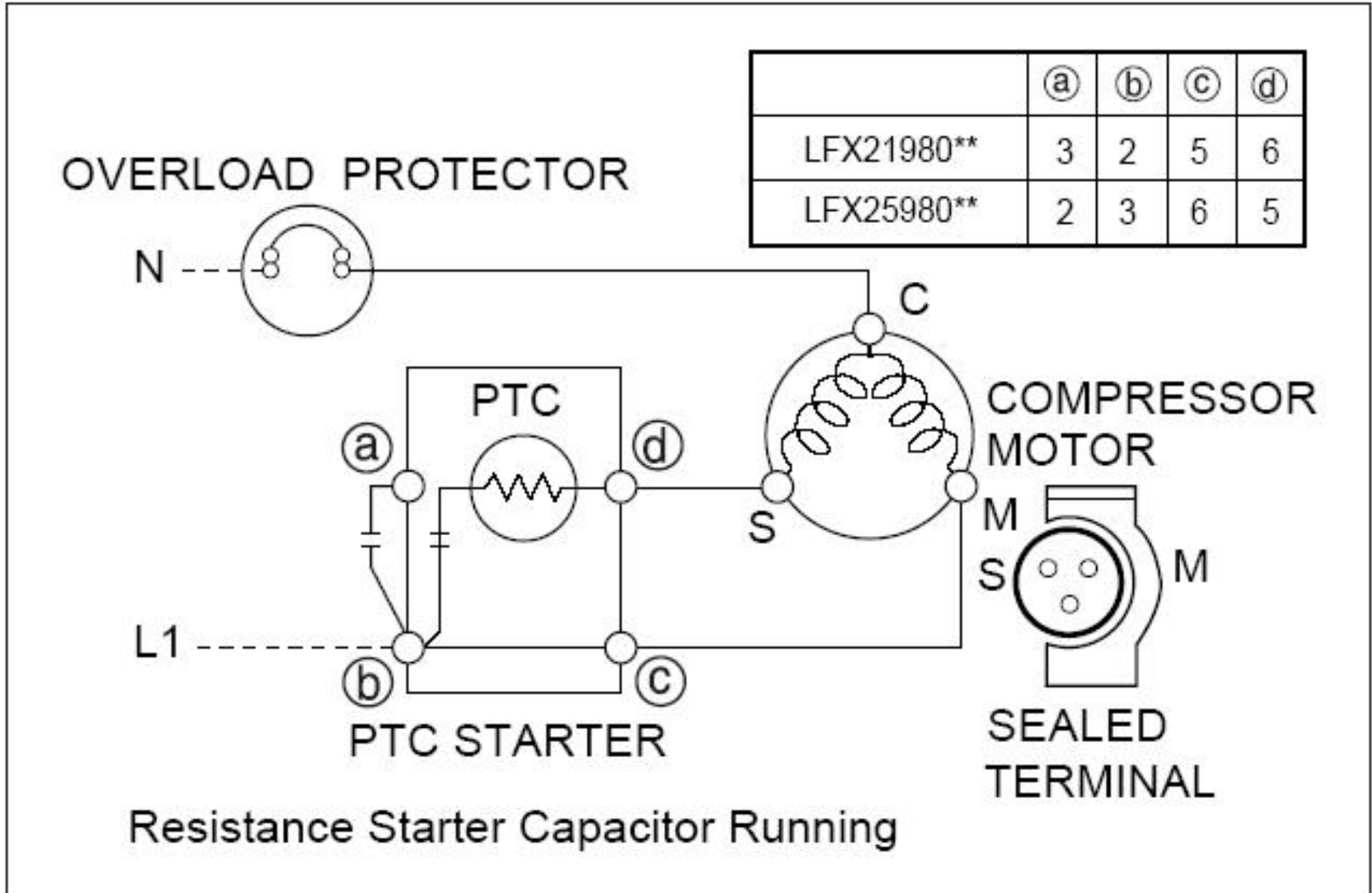
Keep the compressor dry. If it becomes wet, rust can form in the pins of the hermetic connector. Poor connections and refrigerant leaks can occur, causing faulty operation and product failure.

# PTC (Positive Temperature Coefficient)

The PTC (Positive Temperature Coefficient) is a non-contact ceramic semiconductor that uses  $\text{BaTiO}_3$ . 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.

# PTC - Starter



# PTC

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 overcurrent 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.**

# PTC - Rules

Avoid over-voltage and over-current.

Do not drop or mishandle the parts.

Keep the parts dry. If the PTC is contaminated by liquid, corrosion could result or the parts may fail due to the breakdown of their electrical and insulating capacities.

If the exterior of the PTC is damaged, its resistance value could be altered. This could cause compressor damage or a no-start or hard-start condition.

Always order parts by model number and serial number. Parts may appear physically identical but could have different electrical ratings.

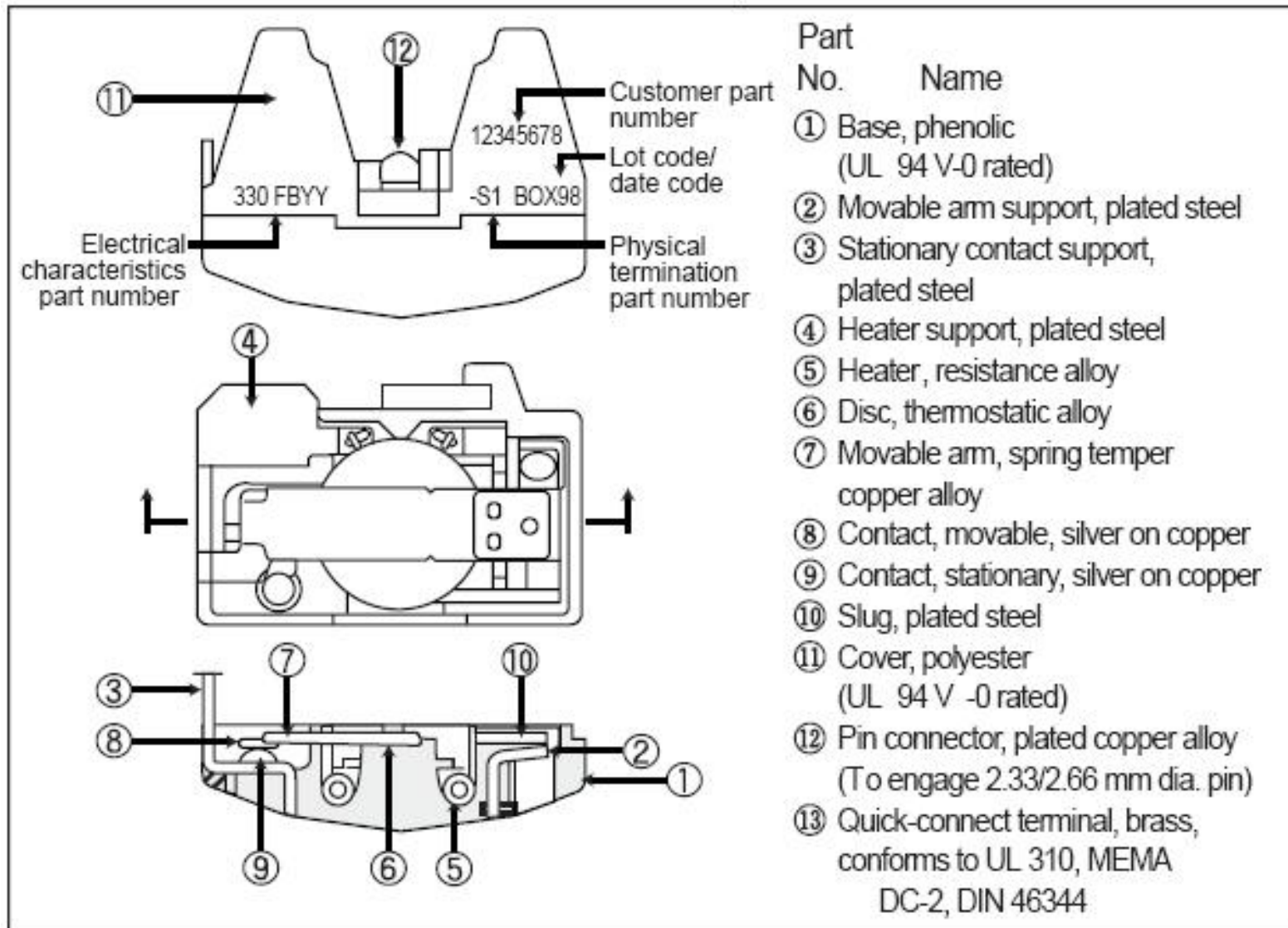
# OLP (OverLoad Protector)

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.

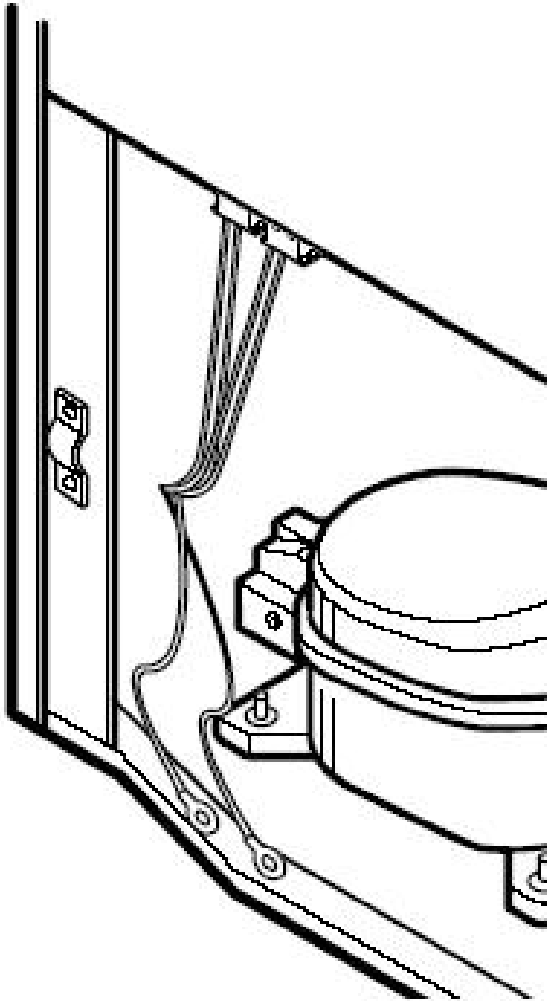
Do not adjust the OPL in any manner.



# OLP



# 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.

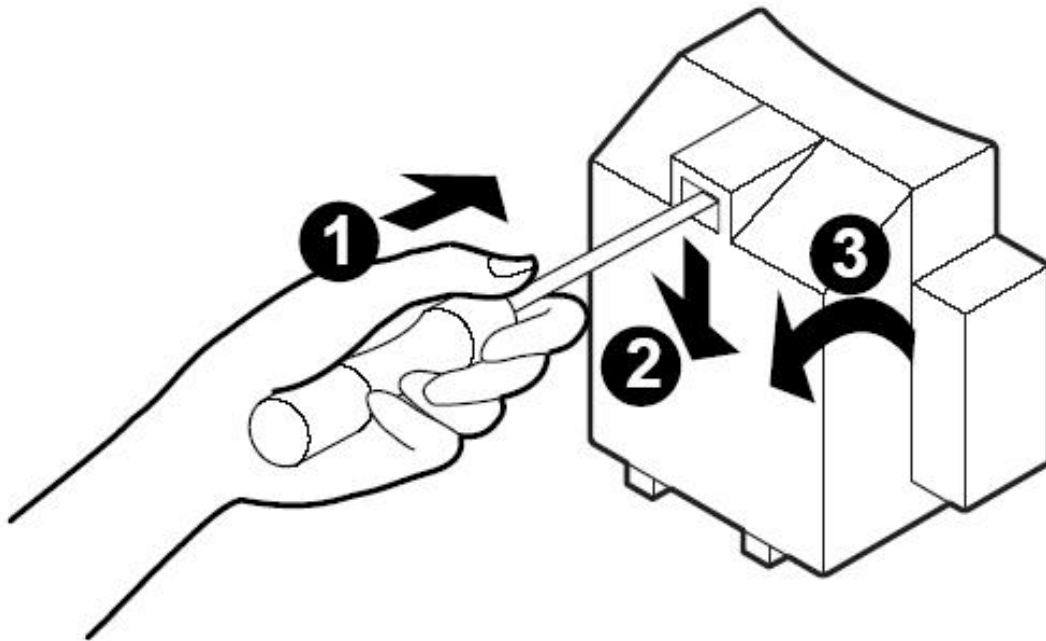
Loosen two screws on the compressor base.

# Replacing the OLP

Use a flat screwdriver to pry off the cover.

Remove and replace the OLP and/or the PLC.  
(Often these are replaced as a set.)

Replace the cover and tighten all screws loosened.



# Icemaker

Turn the icemaker switch to **OFF (O)** to stop making ice.

Turn the switch **OFF** and then **ON** to reset the icemaker control.

The chart is followed by explanations of each stage of the icemaker cycle.

# Icemaker

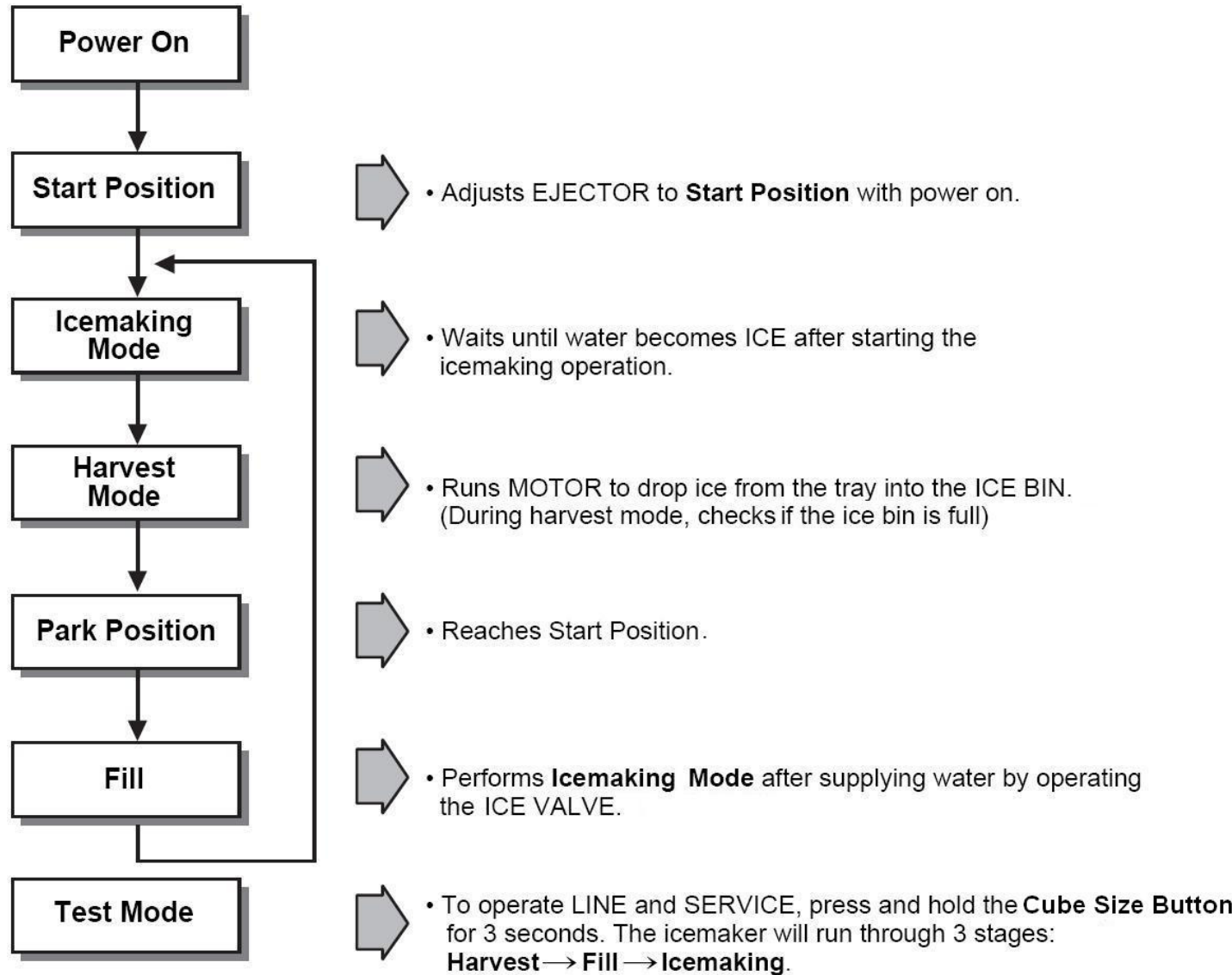


# Icemaker



Icemaker location inside left refrigerator door.

# 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 19° F (-7° C), approximately 55 minutes after the start of the cycle.

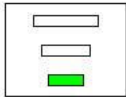
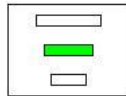
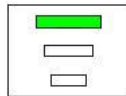


# Harvest (Ejection) Mode

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.

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.		

# 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 icemaking 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 icemaking mode; it cannot be accessed while the icemaker is filling or ejecting.

# Icemaker

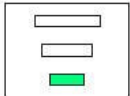
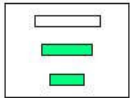
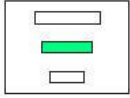
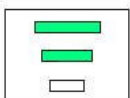
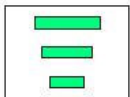
**CAUTION!** If the icemaker is cycled through test mode before the water already in it has frozen, the ejector will pass through the water and any added water will cause the mold to overflow.

If the icemaker does not operate normally during test mode, turn it off.

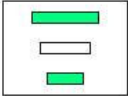
Check it and repair as necessary or replace.

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

# Diagnostic Chart

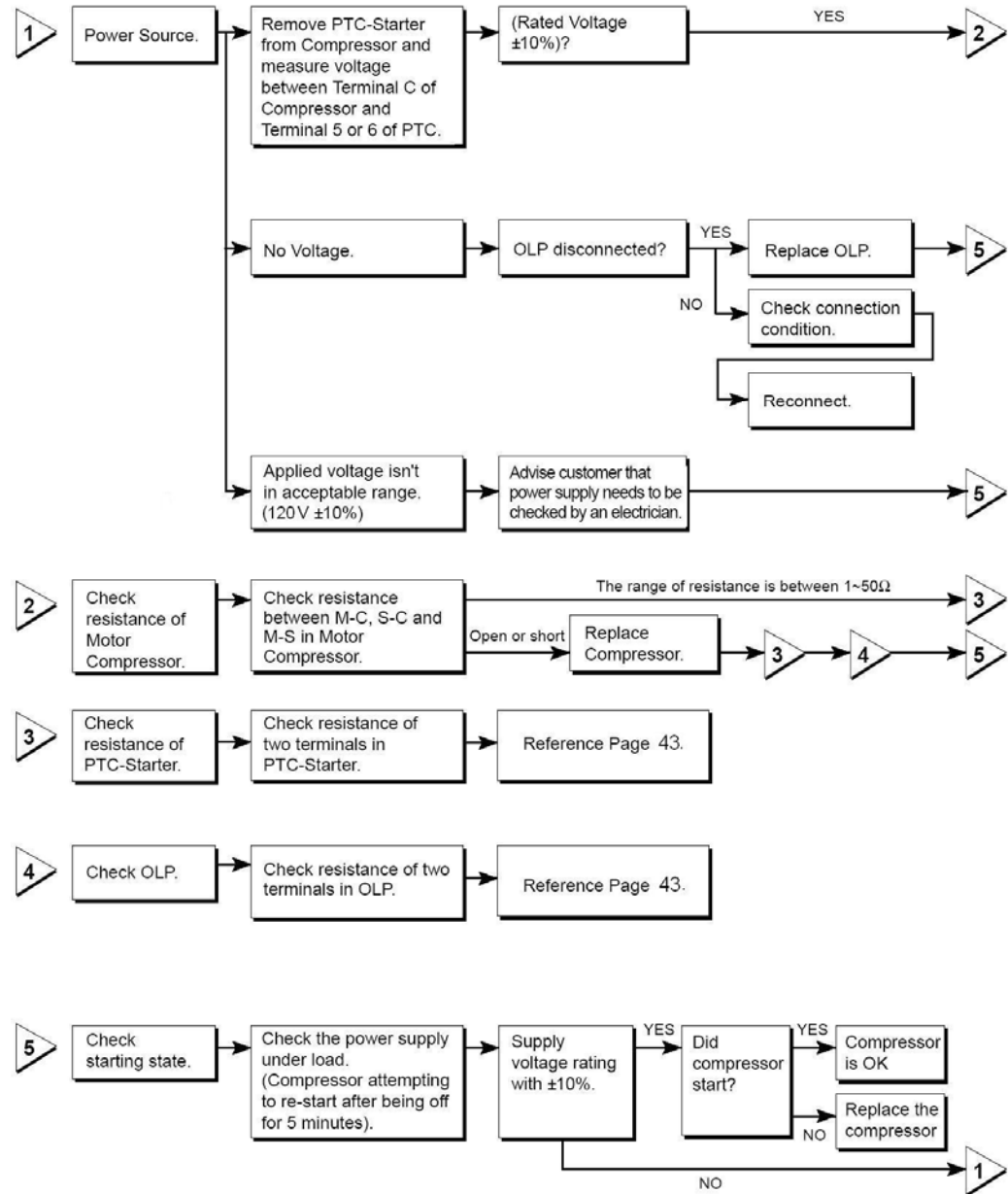
STAGE	ITEMS	INDICATOR	REMARKS
1	HEATER		Five seconds after heater starts, a heater will go off if the temperature by sensor is higher than 10°C
2	MOTOR		Five seconds after heater starts, you can confirm that a motor is moving.
3	HALL IC I		Check if Ice Bin is full or not. If Ice bin is full, the motor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

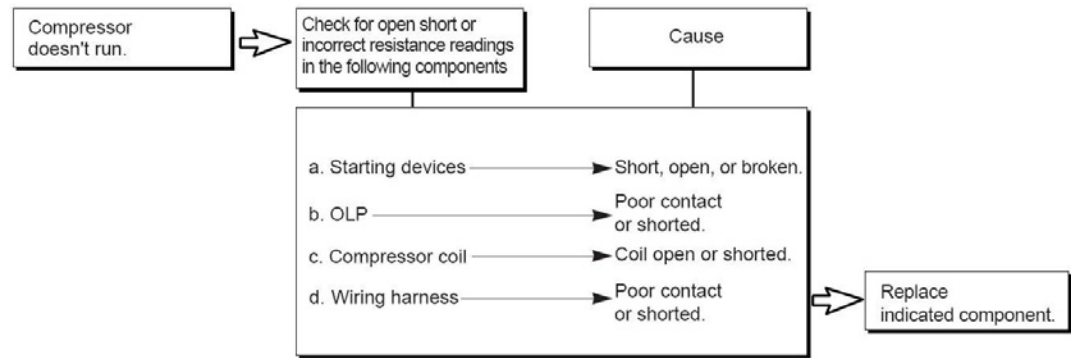
# Troubleshooting

## Compressor and Related Parts

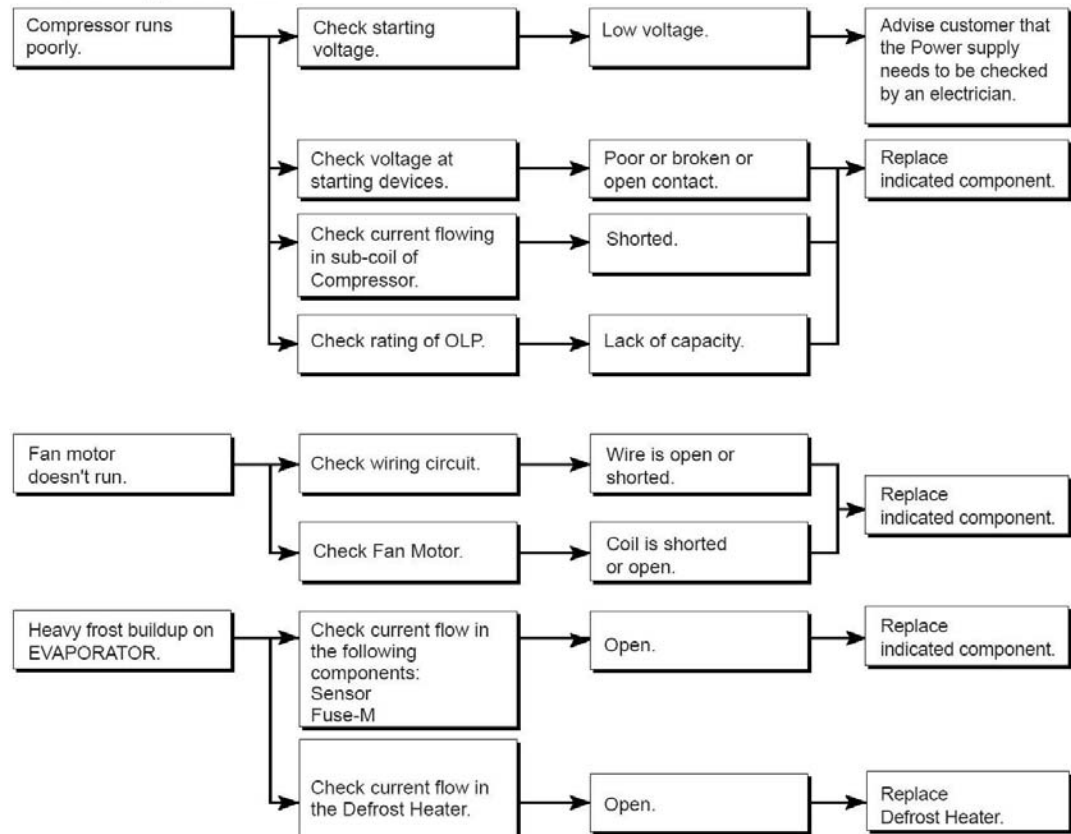


# Troubleshooting

## Other Electrical Components



### ▼ Poor cooling performance

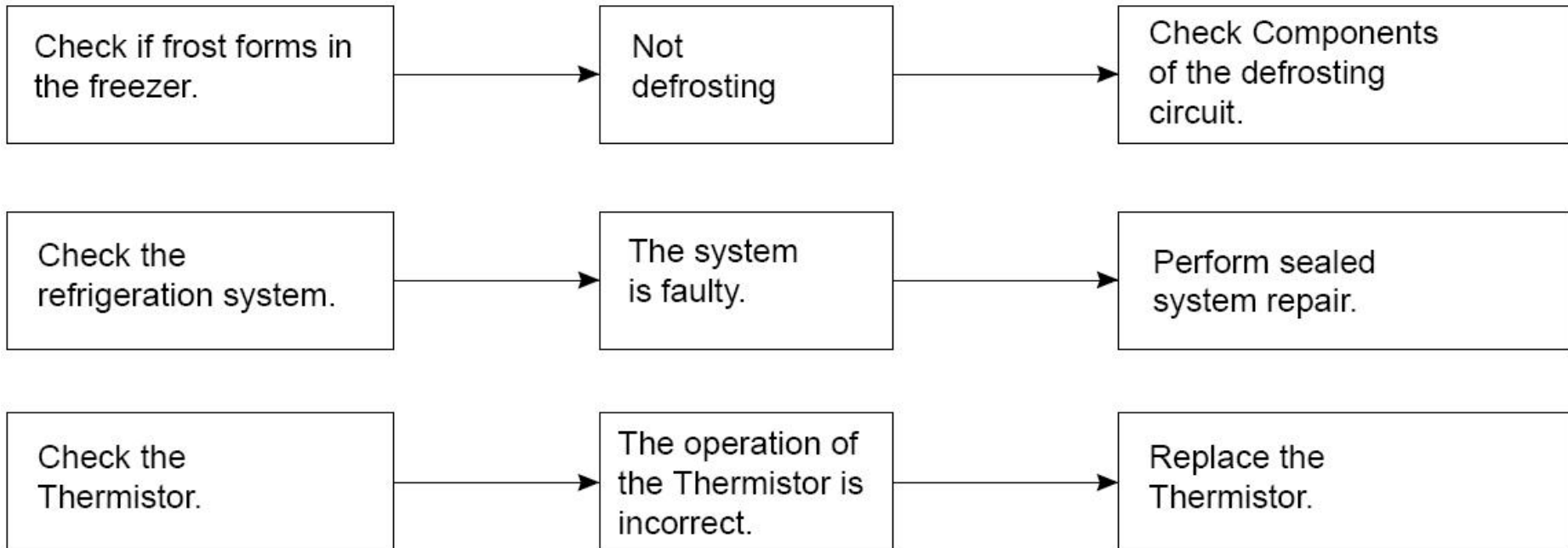




# Service Diagnosis Chart

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

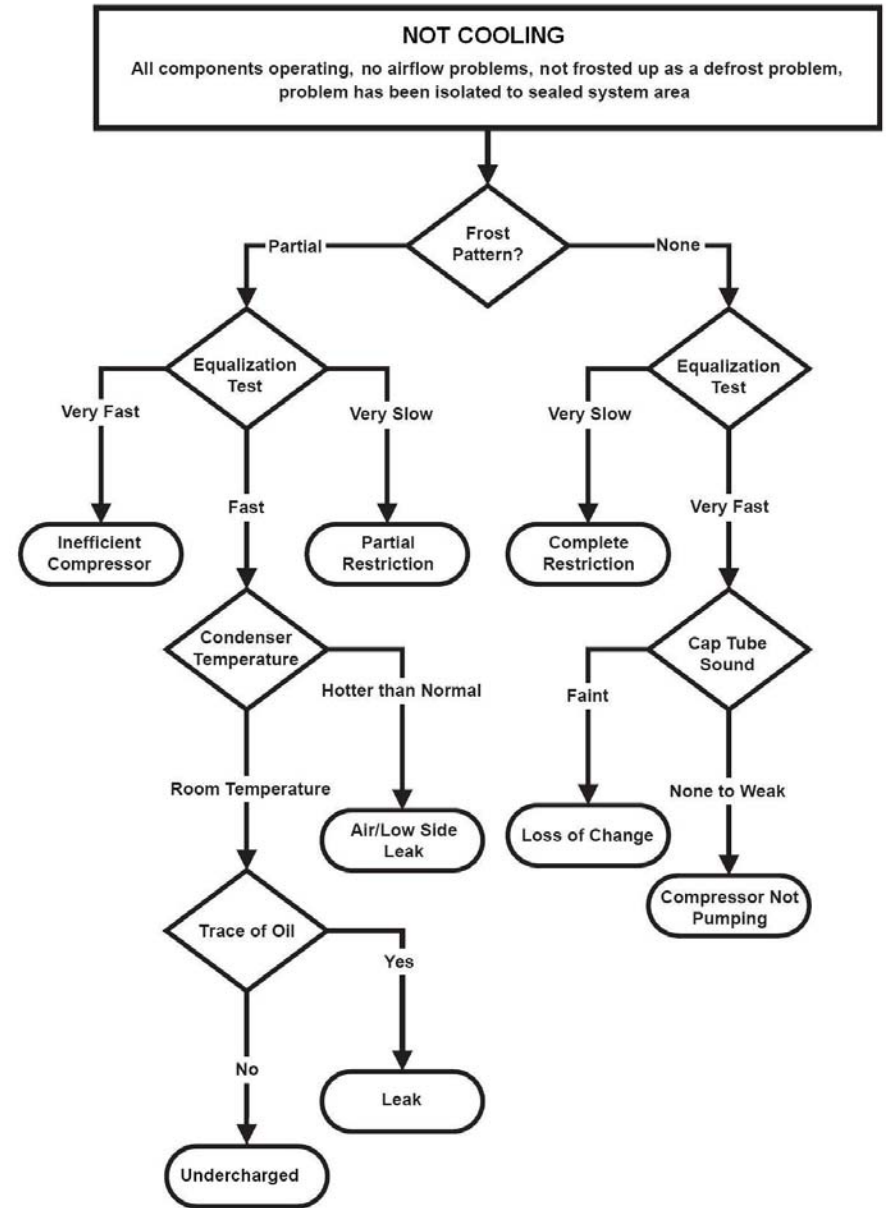
# Other Possibilities



# Refrigeration Cycle

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

# Sealed System Diagnosis



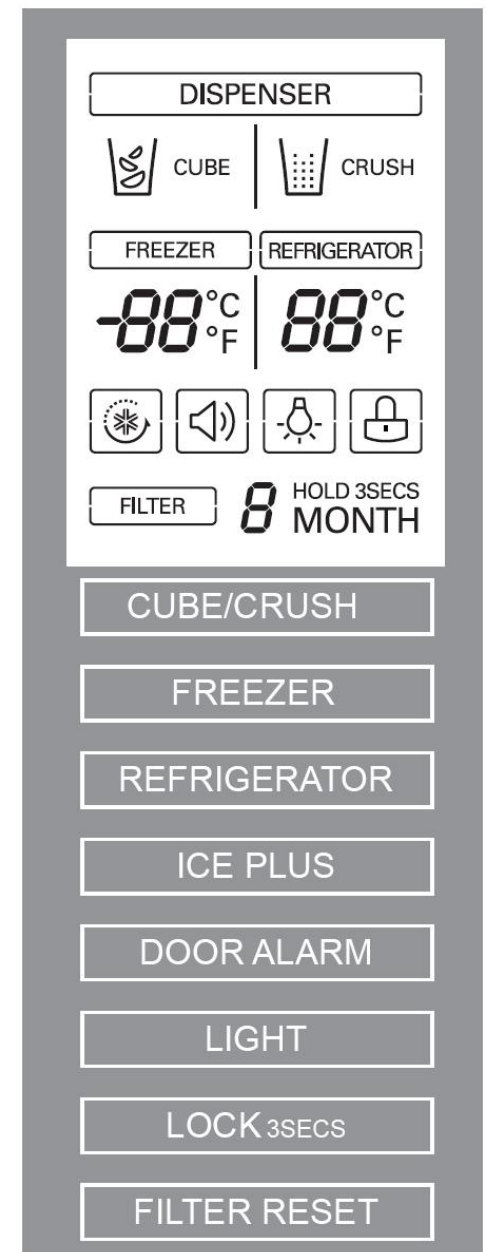
# Controls - Temperature

When the refrigerator is plugged in, the set temperatures are defaulted to 37° F (3° C) for the refrigerator and 0° F (-17 C) for the freezer.

Press **REF TEMP** repeatedly to cycle through the available settings for the refrigerator. Allow the refrigerator 24 hours to stabilize at the set temperature before attempting further adjustments.

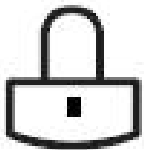
Press **FRZ TEMP** repeatedly to cycle through the available settings for the freezer. Allow the freezer 24 hours to stabilize at the set temperature before attempting further adjustments.

Press and hold **FRZ TEMP** and **REF TEMP** to toggle between Fahrenheit and Celsius.



# Controls - Lock

When the refrigerator is powered up, the controls default to UNLOCKED. Press and hold **LOCK** to toggle between LOCKED and UNLOCKED. The LOCK icon will show whether the refrigerator controls are locked.





Press & Hold

Press & Hold

# Controls - Filter

LG recommends changing the filter at least every six months. The number in the icon counts down based on a signal from the microprocessor and clock. When the filter is replaced, press and hold **FILTER RESET** to reset the counter.

In initial Power On / Filter RESET	Replace indicator light on
 HOLD 3 SECS MONTH	 MONTH

# Controls – Ice Plus

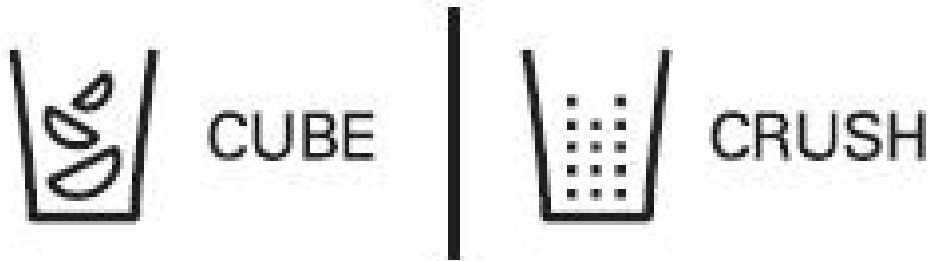
Press **ICE PLUS** to cause the freezer to run at its coldest setting for 24 hours, after which it will revert to its usual setting.



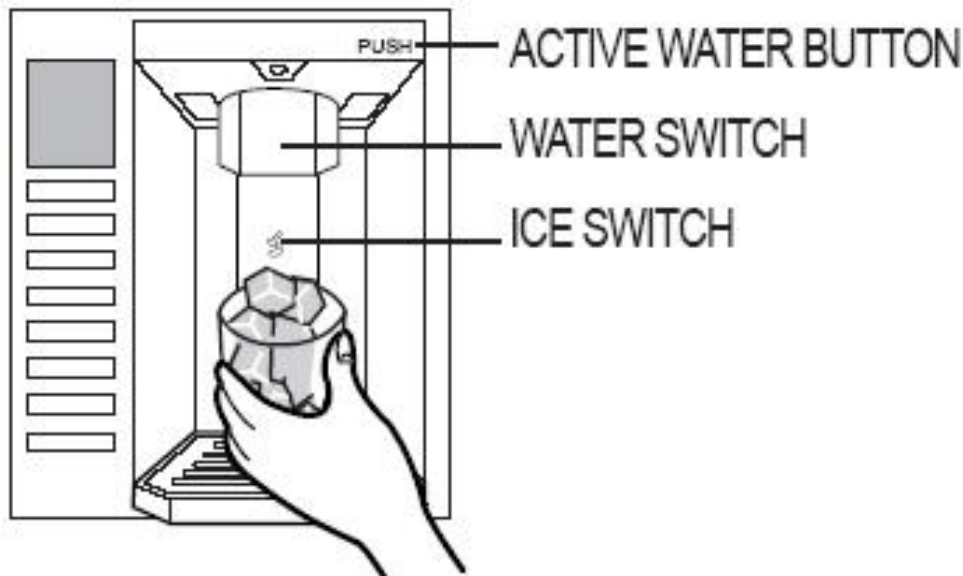
If ICE PLUS is operating, press ICE PLUS to turn it off before the end of the 24-hour period.



# Controls – Dispenser / Selector



For crushed or cubed ice, press the appropriate icon.



For water, press the water switch with the glass, or hold the glass in place and press the **WATER** button.

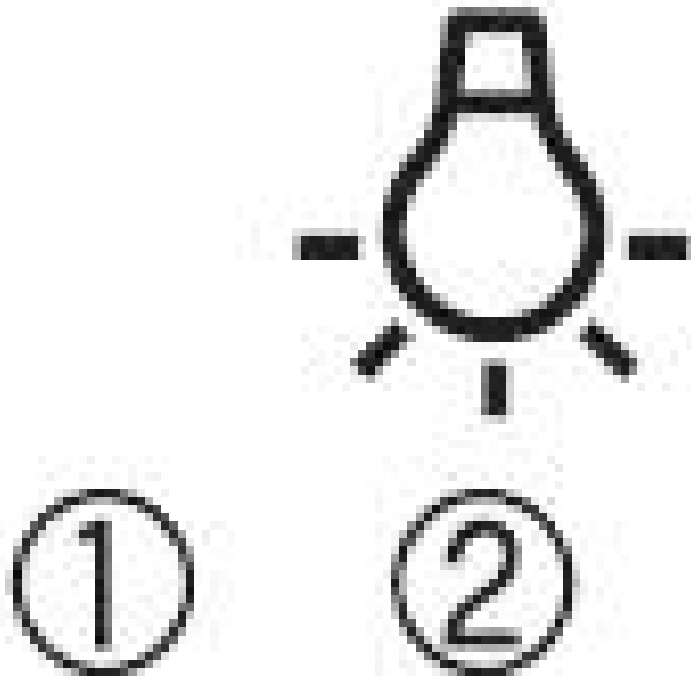
Hold the glass under the dispenser for a few seconds after dispensing is complete to catch the last few pieces of ice and drops of water.

# Controls – Dispenser Light

Pressing the LIGHT button toggles between the settings.

In setting ① the light operates when the dispenser is in use.

In setting ②, the light remains on all the time.



# Circuit Descriptions

# Freezer Fan Motor

The freezer fan operates at two speeds, high (2,700 rpm) and regular (2,400 rpm). The fan remains on whenever the freezer door is opened, but the speed is reduced from high to regular when the door is opened. High speed is used at power-up, for ICE PLUS, to improve the cooling speed, and when the refrigerator is overloaded. Standard speed is for general usage.

# Cooling Condenser Fan

The cooling (condenser) fan is a single-speed motor that is switched on and off in conjunction with the compressor

# Ice Room Fan

The ice room fan is controlled by a sensor on the top of the ice compartment.

# Ice Room Fan

ICE PLUS intensifies the cooling speed of the freezer and increases ice production. Press ICE PLUS to turn this function on or off. In the event of a power outage, ICE PLUS is cancelled.

During the first three hours when ICE PLUS is activated, the compressor and freezer fan run continuously for three hours. If a defrost cycle is triggered during this time, the ICE PLUS cycle will resume at the end of the defrost cycle. If ICE PLUS is pressed while the refrigerator is defrosting, the ICE PLUS icon will light but the cycle will not begin until seven minutes past the defrost cycle is completed. If ICE PLUS is pressed during the seven-minute delay for compressor restarting, the ICE PLUS cycle will not begin until the remainder of the seven-minute delay has expired.

During ICE PLUS, the freezer fan runs at high speed and the freezer is set to its lowest temperature setting. At the end of the 24-hour ICE PLUS cycle, the freezer reverts to its normal setting.

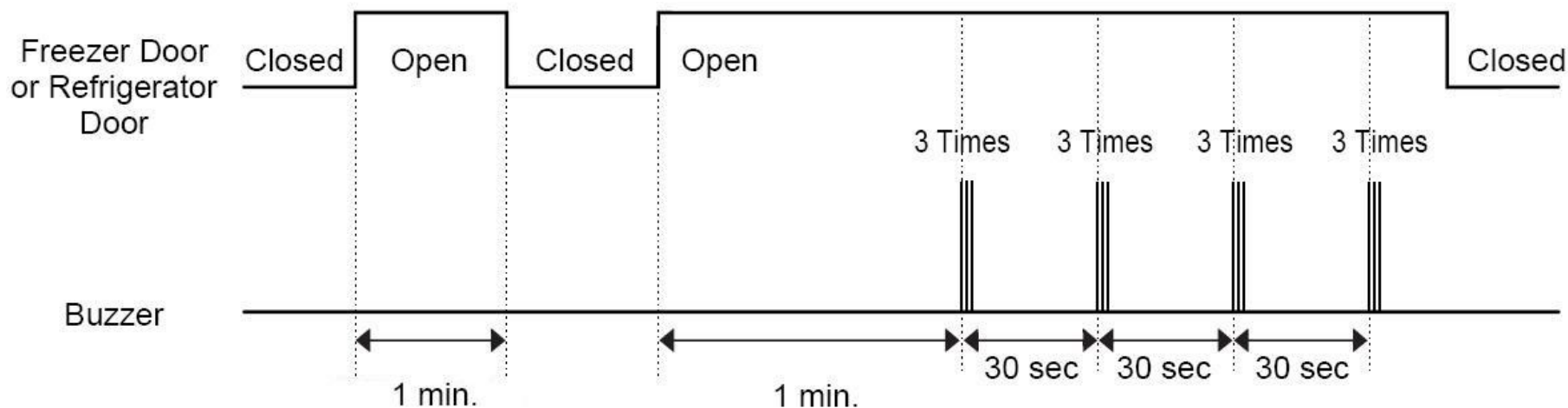
# Defrost Cycle

A defrost cycle is triggered every time the compressor accumulates 7 hours' run time. When the refrigerator is powered up initially, the first defrost cycle is triggered at 4 hours' run time. The defrost cycle stops if the temperature sensor reaches 46° F (8° C) or higher. If the sensor does not reach 46° F (8° C) within one hour, the defrost mode is malfunctioning. Additionally, the defrost mode will not operate if the sensor is defective (open or shorted).



# Door Alarm

The alarm sounds whenever a door has been left open for longer than one minute. After the initial one-minute period, the alarm sounds three times for one half second each and repeats these three tones at 30-second intervals until the door is closed.



# Test Mode

The TEST MODE allows the servicer to check the PCB and the product functions and to diagnose a failed part when an error code may not display.

Press the TEST button on the main board (see page 67) to start the test. When in test mode, the buttons may activate the tone, but they do not function.

To exit the text mode, unplug the refrigerator for 7½ seconds and restart it. If a sensor failure is discovered during TEST mode, an error code will be displayed and the test mode will be aborted.

If an error code is displayed, TEST mode will not be activated.

# Test Chart

MODE	OPERATION	FUNCTION	REMARKS
TEST1	Push the TEST button on the main PCB to enter the TEST MODE.	<ol style="list-style-type: none"> <li>1. Continuous operation of compressor</li> <li>2. Continuous operation of freezer fan</li> <li>3. Stepping damper is OPEN</li> <li>4. Defrost heater is OFF</li> <li>5. All LEDs in display are ON</li> </ol>	
TEST2	Push the TEST button again to advance to TEST MODE 2.	<ol style="list-style-type: none"> <li>1. Continuous operation of compressor</li> <li>2. Continuous operation of freezer fan</li> <li>3. Stepping damper is CLOSED</li> <li>4. Defrost heater is OFF</li> <li>5. LED display shows the number 2</li> </ol>	
TEST3	Push the TEST button again to advance to TEST MODE 3	<ol style="list-style-type: none"> <li>1. Compressor is OFF</li> <li>2. Freezer fan is OFF</li> <li>3. Stepping damper is CLOSED</li> <li>4. Defrosting heater is ON</li> <li>5. Display shows the number 3</li> </ol>	Reset if the temperature of the defrosting sensor is over 46° F (8° C).
RESET	Push the TEST button again to EXIT the TEST PROGRAM.	Resets to pre-test conditions.	The compressor will restart after the usual 7-minute delay.

# Error Codes

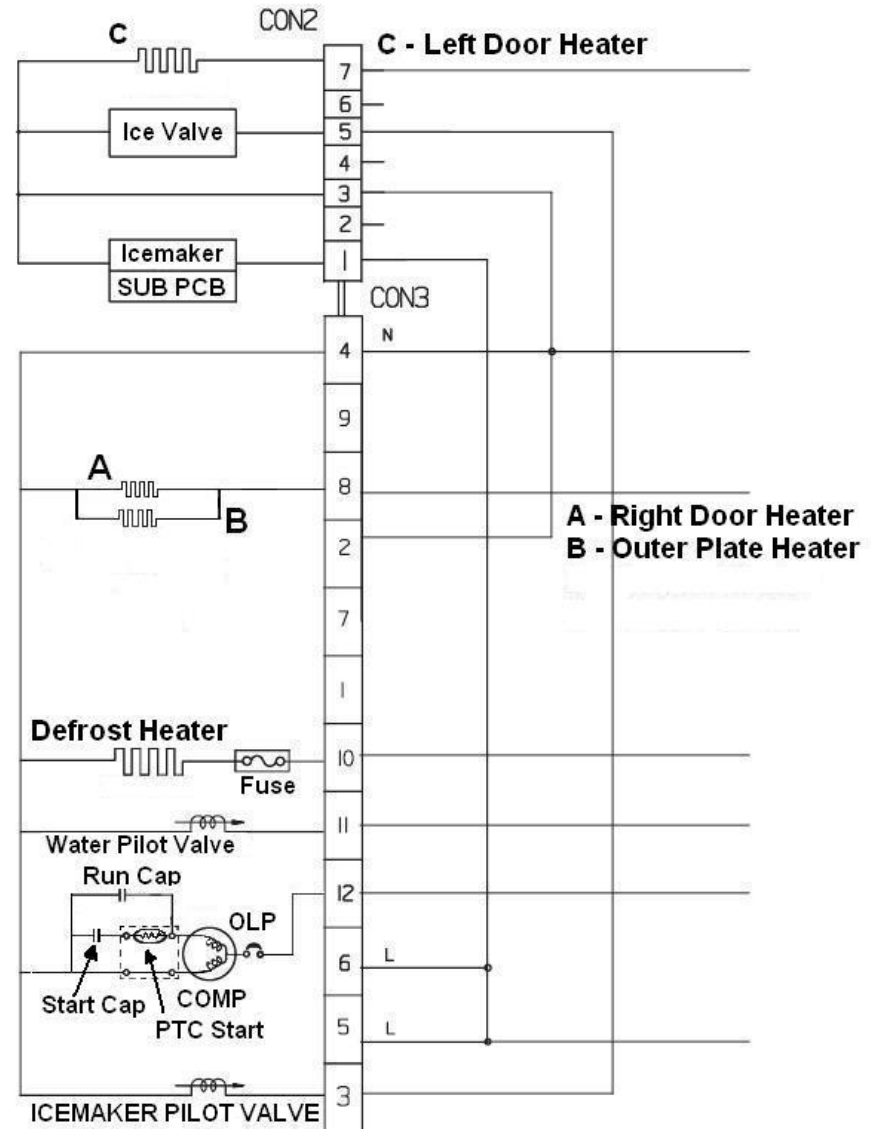
NO	Error Detection Category	Error Display		Error Generation Factors	Remark
		Freezer Temperature	Ref. Temperature		
1	Normality			None	Normal operation of Display
2	Freezer Sensor Error	Er	FS	Short or Disconnection of Freezer Sensor	Check the connection at each sensor.
3	Refrigerator Sensor Error	Er	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	Not a defect.

# Circuit Diagrams and Explanations

# Load, Fan, and Open Door Detection

To measure the control board outputs, check the voltages between the pins of these two connectors to test the following components.

(See chart, next slide.)



# Preliminary

<b>CIRCUIT</b>	<b>CONN/PIN NUMBER</b>	<b>CONN/PIN NUMBER</b>	<b>OUTPUT VOLTAGE</b>
Icemaker Valve	Con 3 / Pin 3	Con 3 / Pin 4	120 V <sub>AC</sub>
Right Door Heater	Con 3 / Pin 8	Con 3 / Pin 4	120 V <sub>AC</sub>
Defrost Heater	Con 3 / Pin 10	Con 3 / Pin 4	120 V <sub>AC</sub>
Water Valve	Con 3 / Pin 11	Con 3 / Pin 4	120 V <sub>AC</sub>
Compressor	Con 3 Pin 12	Con 3 / Pin 4	120 V <sub>AC</sub>
Left Door Heater	Con 2 / Pin 7	Con 2 / Pin 3	120 V <sub>AC</sub>

# Freezer Fan

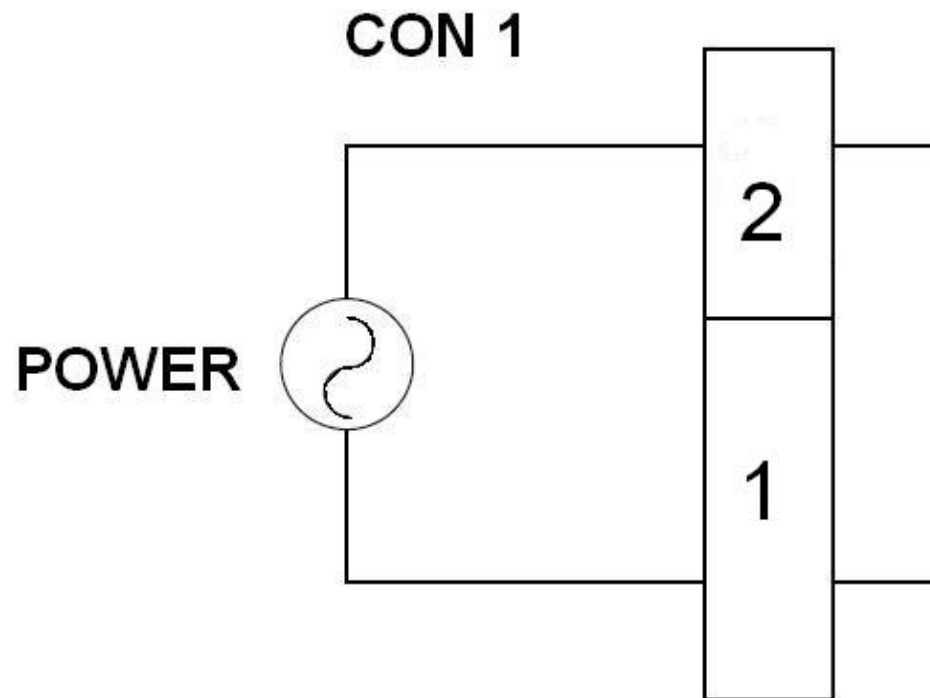
Measure the voltage across Pins 1 and 2 of Connector 4 to determine if the freezer fan is receiving sufficient voltage for proper operation.

	<b>VOLTAGE</b>
<b>Motor ON</b>	<b>7 ~ 15 V<sub>DC</sub></b>
<b>Motor OFF</b>	<b>2 V<sub>DC</sub> or less</b>



# PCB Power

Check across Pins 1 and 2 to verify the main board has power.  
(120 VAC)



# Mechanical Area (Condenser Fan)

Measure the voltage across Pins 7 and 8 of Connector 4 to determine if the condenser fan is receiving sufficient voltage for proper operation.

	<b>VOLTAGE</b>
Motor ON	7 ~ 15 V <sub>DC</sub>
Motor OFF	2 V <sub>DC</sub> or less

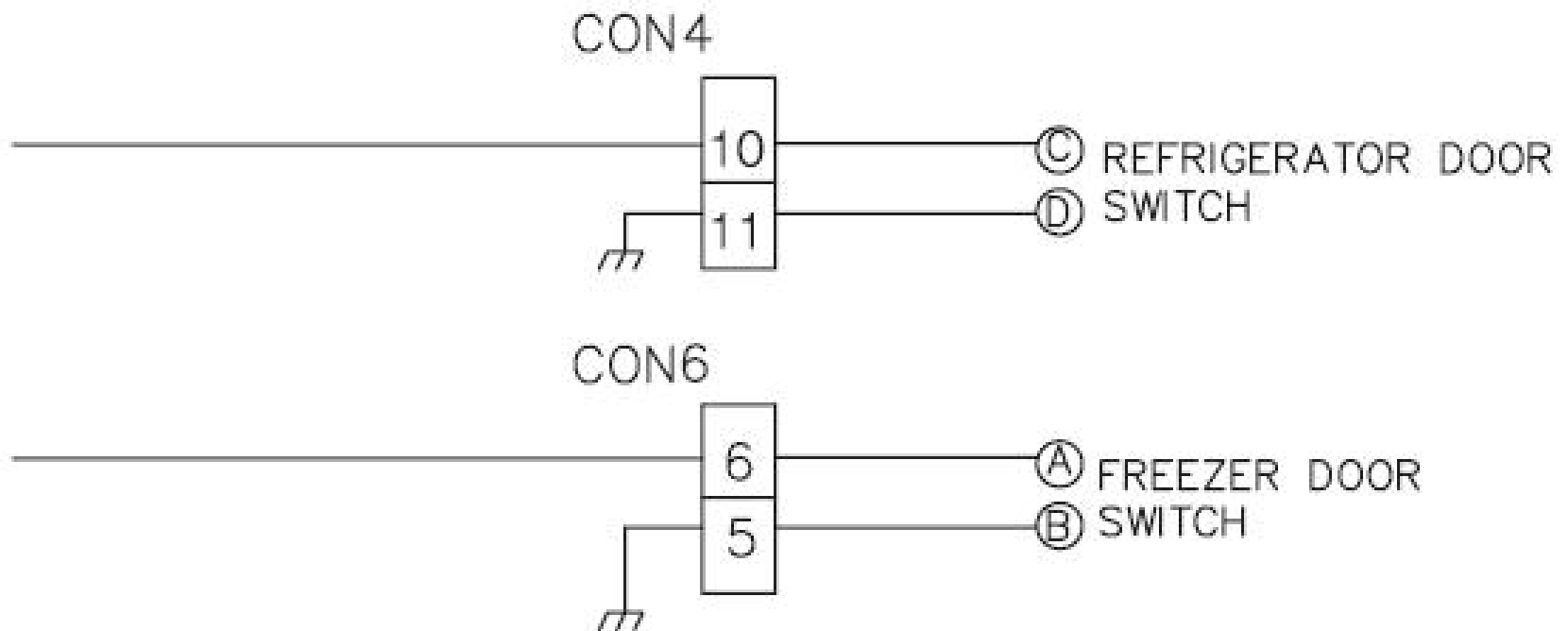
# Ice Compartment Fan

Measure the voltage across Pins 4 and 5 of Connector 4 to determine if the icemaker fan is receiving sufficient voltage for proper operation

	<b>VOLTAGE</b>
Motor ON	7 ~ 15 V <sub>DC</sub>
Motor OFF	2 V <sub>DC</sub> or less

# Open Door Detection Circuit

Check the indicated pins to determine whether the open door detection is working properly. (See chart, next slide.)



# Open Door Detection Circuit

	<b>CONNECTOR and PINS</b>	<b>VOLTAGE</b>
Freezer Door OPEN	Con 6 / Pins 5 and 6	0 V <sub>DC</sub>
Freezer Door CLOSED	Con 6 / Pins 5 and 6	5 V <sub>DC</sub>
Refrigerator Door OPEN	Con 4 / Pins 10 and 11	0 V <sub>DC</sub>
Refrigerator Door CLOSED	Con 4 / Pins 10 and 11	5 V <sub>DC</sub>

# Temperature Sensor Circuit

Measure the resistance of the sensors (five) to determine whether they are providing correct data to the microprocessor. Using a calibrated thermometer, place it next to the sensor in question.

Allow it five minutes to stabilize before taking a reading.

Readings are  $\pm 5\%$ .

# Temperature Chart

TEMP	FRZ	REF DEF
-20° C (-4° F)	22.3k $\Omega$	77 k $\Omega$
-15° C (5° F)	16.9 k $\Omega$	60 k $\Omega$
-10° C (14° F)	13.0 k $\Omega$	47.3 k $\Omega$
-5° C (23° F)	10.1 k $\Omega$	38.4 k $\Omega$
0° C (32° F)	7.8 k $\Omega$	30 k $\Omega$
+5° C (41° F)	6.2 k $\Omega$	24.1 k $\Omega$
+10° C (50° F)	4.9 k $\Omega$	19.5 k $\Omega$

# Power To LED Panels

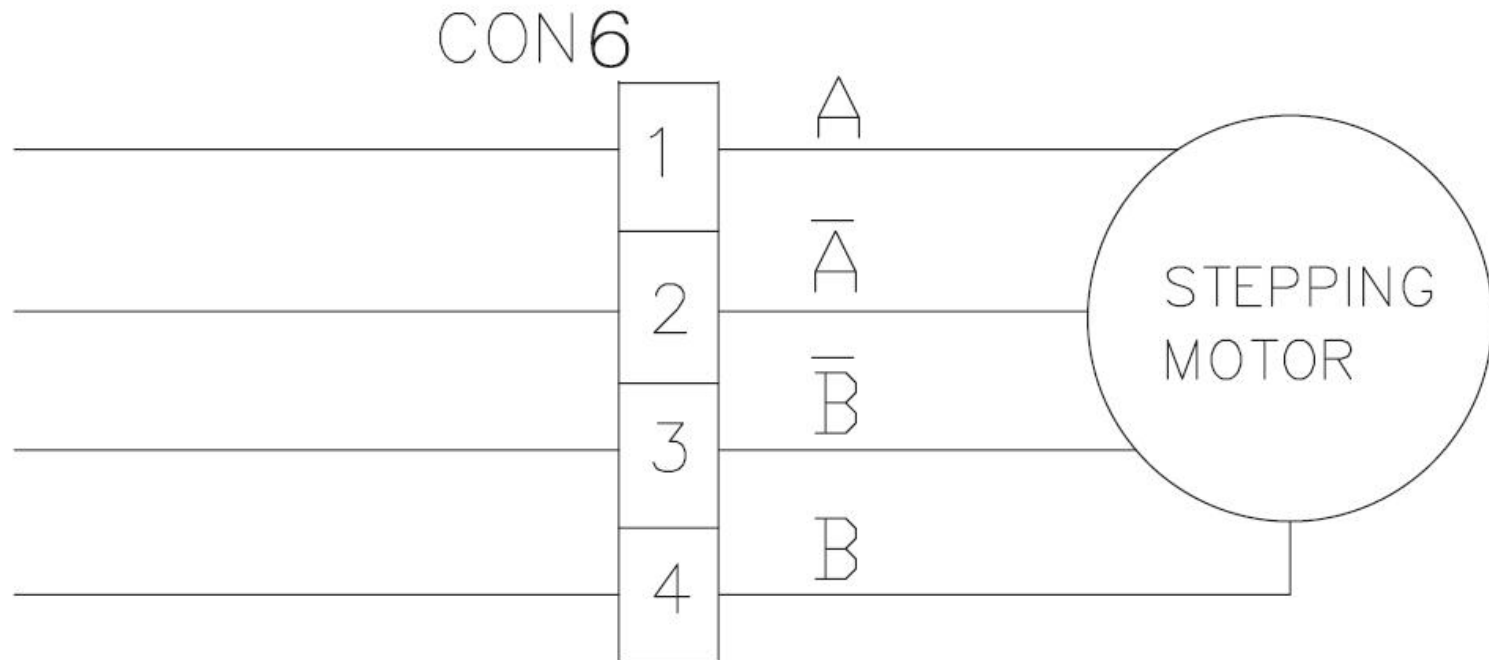
Check across Pins 1 and 2 of connector 1 to verify 120 V<sub>AC</sub>.

Check across Pins 1 and 2 of connector 2 to verify 12 V<sub>DC</sub>.

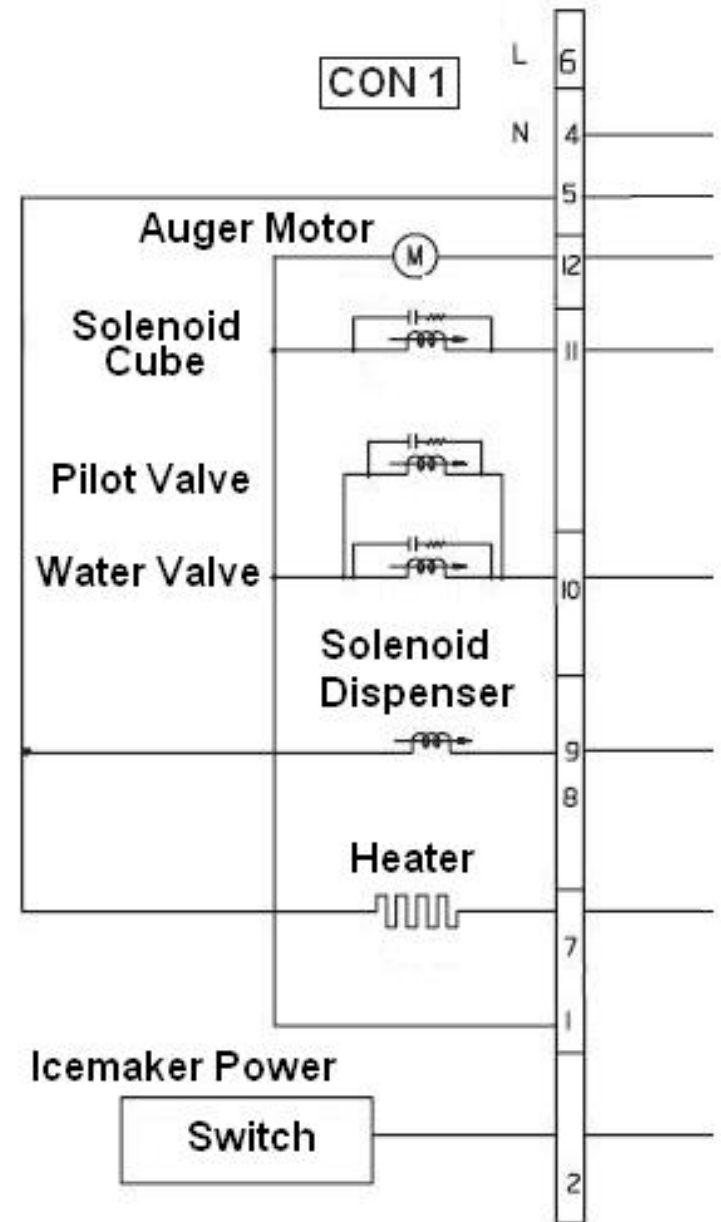


# Damper Motor Circuit

A reversible DC motor is used to open and close the damper. Test it using the TEST button on the main board. Press the TEST button once to open the damper, and again to close it. Be certain to unplug the refrigerator to exit the test mode upon completion.



# Dispenser Drive Circuit



# Dispenser Drive Circuit Chart

<b>CIRCUIT</b>	<b>CONNECTOR and PINS</b>	<b>VOLTAGE</b>
Auger Motor	Con 1 / Pins 12 and 4	120 V <sub>AC</sub>
Solenoid – Cubes	Con 1 / Pins 11 and 4	120 V <sub>AC</sub>
Pilot – Water Valve	Con 1 / Pins 10 and 4	120 V <sub>AC</sub>
Solenoid – Dispenser	Con 1 / Pins 9 and 4	120 V <sub>AC</sub>
Heater	Con 1 / Pins 7 and 4	120 V <sub>AC</sub>

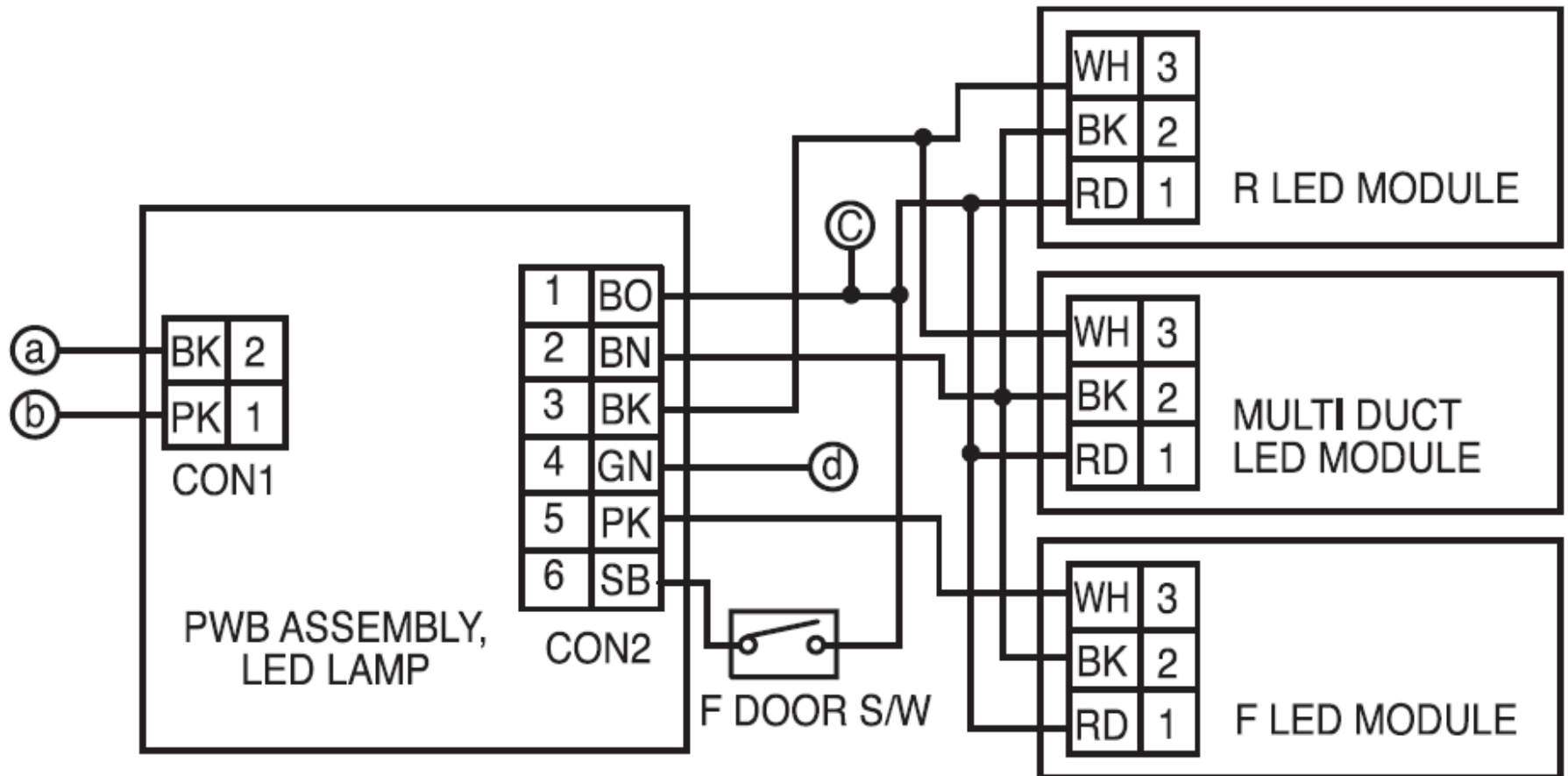
# Troubleshooting Chart

PROBLEM	INDICATED BY	CHECK	CHECKING METHOD	CAUSE	SOLUTION
POWER SOURCE is poor.	1. In general	1. FREEZER/ REFRIGERATOR.	Check if FREEZER/REFRIGERATOR DOOR IS OPEN and check display.	Low input voltage Bad power board	Check or replace main PWB.
	2. Display LED	2. LAMP is dim.	Check visually.	Low input voltage	Check or replace main PWB.
		3. MAIN PWB CONNECTOR.	Check connection	Connector loose or corroded Transformer fuse has blown	Reconnect, clean if necessary. Replace main board
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.
				Bad or loose connection	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	1. If FAN MOTOR operates.	USE TEST MODE1 (forced COOLING).	FAN MOTOR is poor.	Replace the FAN MOTOR.
				CONNECTING WIRE is poor.	Check the motor. Check the black wire at the MAIN PCB. (CON 4)
	2. If DEFROSTING is normal.	Check for frost on the evaporator.	Failed defrost heater.	Check wiring and connections before replacing heater assembly.	
	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.		

# Troubleshooting Chart

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 RY1 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.

# LED Power Board Assembly And LED Modules



# LED Test Information

## TERMINAL IDENTIFICATION / LED LAMP PWB ASSEMBLY

### CON 1

Pin 2 BK – L1

Pin 1 PK – N

### CON 2

Pin 1 BO – 12 VDC (B+)

Pin 2 BN – Ref Line (-)

Pin 3 BK – 5 VDC Refrigerator & Multiduct PWM PCB LED Output

Pin 4 GN – 12 VDC Refrigerator Door Switch Input

Pin 5 PK – 5 VDC Freezer PWM PWB LED Output

Pin 6 SB – 12 VDC Freezer Door Switch Input

# LED Test Information

## TESTING

CON 1 Pin 1 to Pin 2 - 120 VAC AC Line Input

CON 2 Pin 1 to Pin 2 – 12 VDC DC Output

## REFRIGERATOR DOOR OPEN CON2

Pin 2 to Pin 4 – 12 VDC Door Switch Input (Door Switch Closed)

Pin 2 to Pin 3 – 0 VDC PWM R & M LED Module Output Closed to Ground



# LED Test Information

## REFRIGERATOR DOOR CLOSED CON2

Pin 2 to Pin 4 – 0 VDC Door Switch Input (Door Switch Open)

Pin 2 to Pin 3 – 5 VDC PWM R & M LED Module Output Open to Ground

## FREEZER DOOR OPEN CON 2

Pin 2 to Pin 6 – 12 VDC Door Switch Input (Door Switch Closed)

Pin 2 to Pin 5 – 0 VDC PWM F LED Module Output Closed to Ground

## FREEZER DOOR CLOSED CON 2

Pin 2 to Pin 6 – 0 VDC Door Switch Input (Door Switch Open)

Pin 2 to Pin 5 – 5 VDC PWM F LED Module Output Open to Ground

# LED Test Information

## TERMINAL IDENTIFICATION / LED MODULES

### (R and M Modules- Refrigerator & F Module - Freezer)

Pin 1 RD – 12 VDC

Pin 2 BK – Ref Line (-)

Pin 3 WH - 5 VDC PWM Input from LED PWB Assembly

### LED MODULE TESTING (See diagram)

Pin1 to Pin 2 – 12 VDC

Pin 2 to Pin 3 – 5 VDC Door Closed / 0 VDC Door Open

# How It Works

Each of the 3 LED modules receives 12 VDC from the LED Lamp PWB Assembly at all times between pins 1 RD & 2 BK. When the refrigerator & freezer doors are closed 5 VDC will be measured between pins 2 BK & pins 3 WH on each LED Module.

When the refrigerator door opens, the 12 VDC input from the refrigerator door switch on pin 4 of the PWB causes the LED PWB circuitry to ground the 5 VDC on pin 3 BK on the PWB & pin 3 WH on the LED R & M modules.

With this voltage dropping to zero (0), the LED module will turn on the LED's to illuminate the refrigerator. The opposite occurs when the refrigerator door is closed!

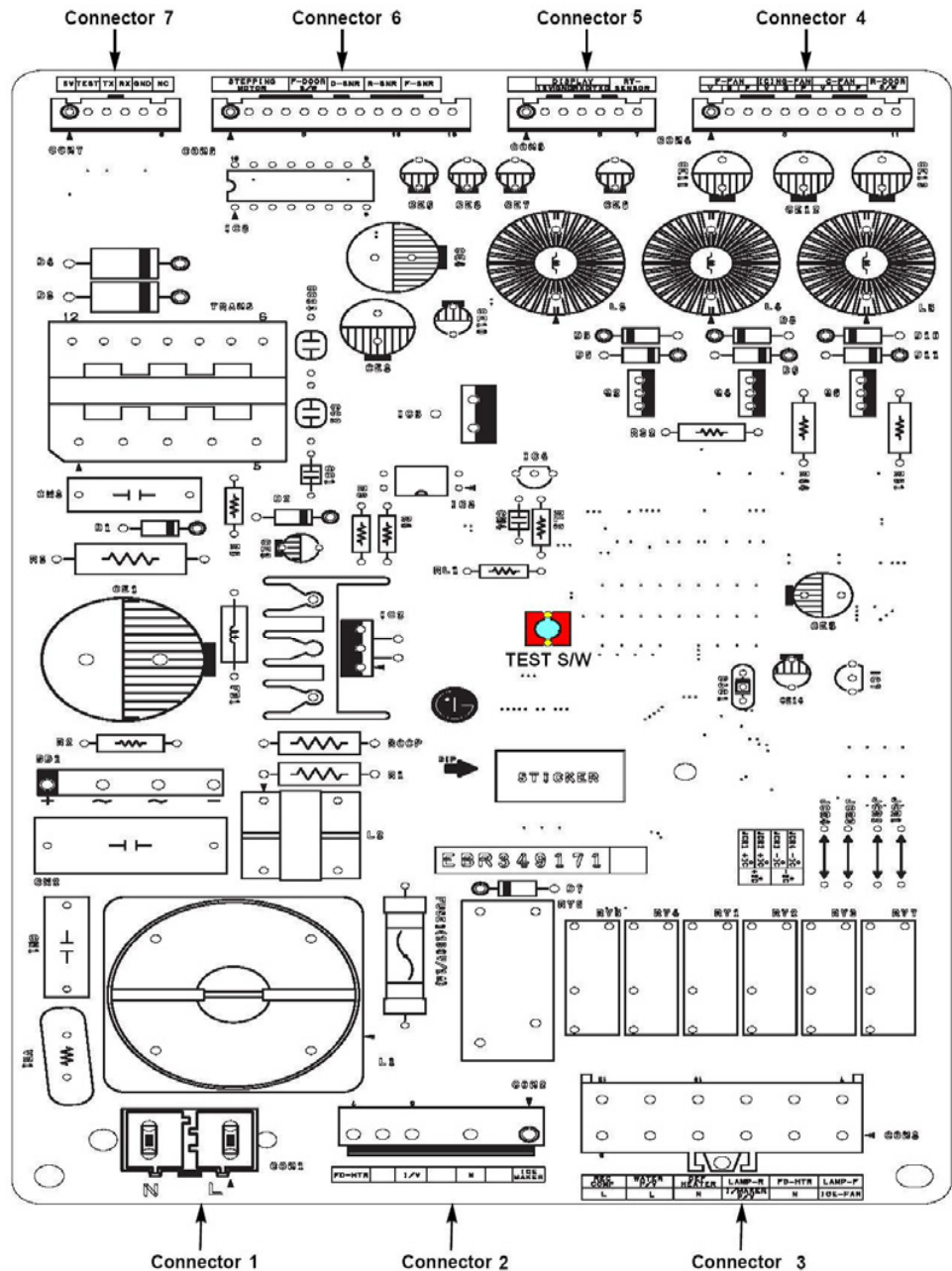
# How It Works, continued

Likewise, when the freezer door opens, the 12 VDC input from the freezer door switch on pin 6 of the PWB causes the LED PWB circuitry to ground the 5 VDC on pin 5 PK on the PWB & pin 3 WH on the LED F module.

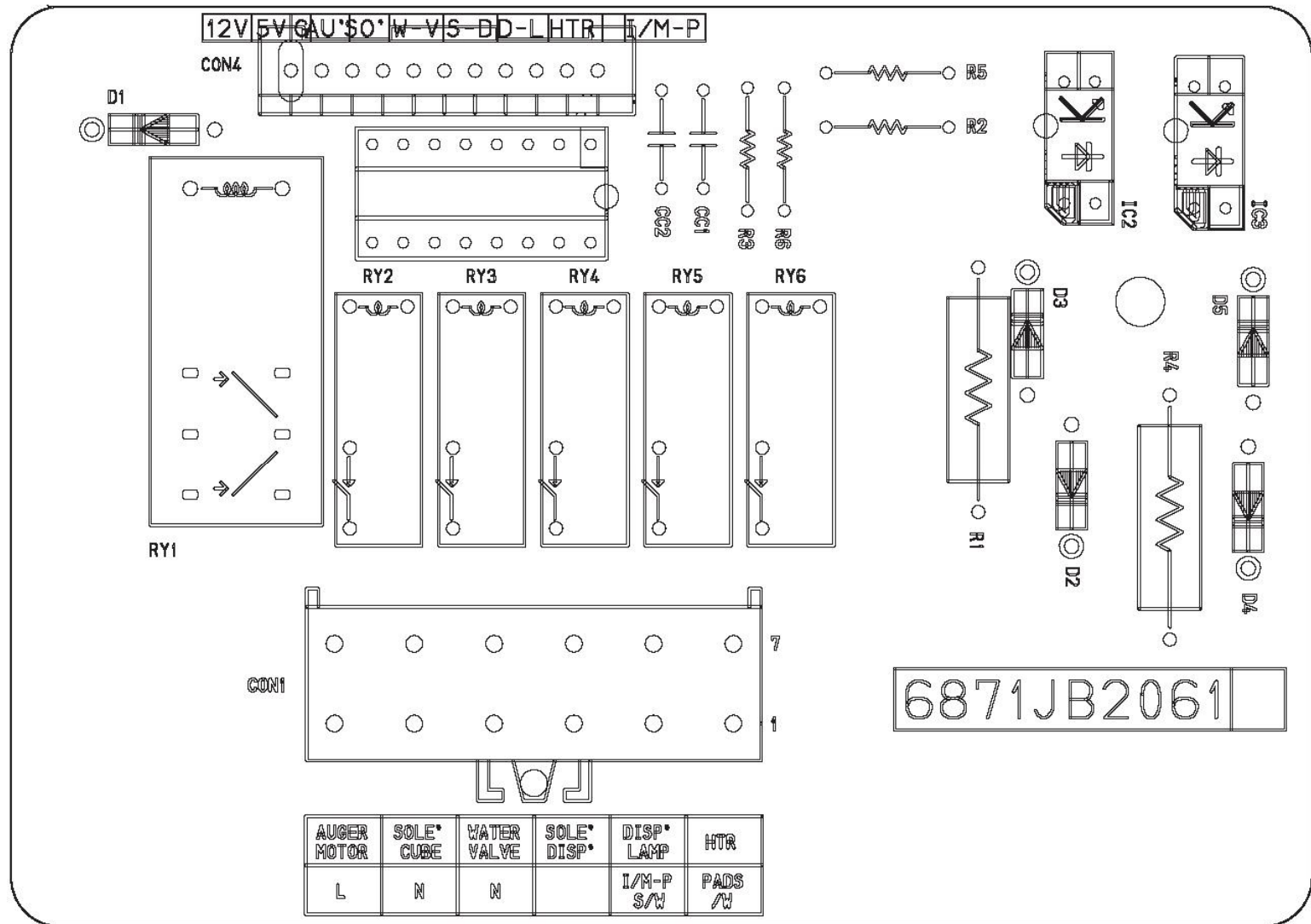
With this voltage dropping to zero (0), the LED module will turn on the LED's to illuminate the freezer.

The opposite occurs when the freezer door is closed.

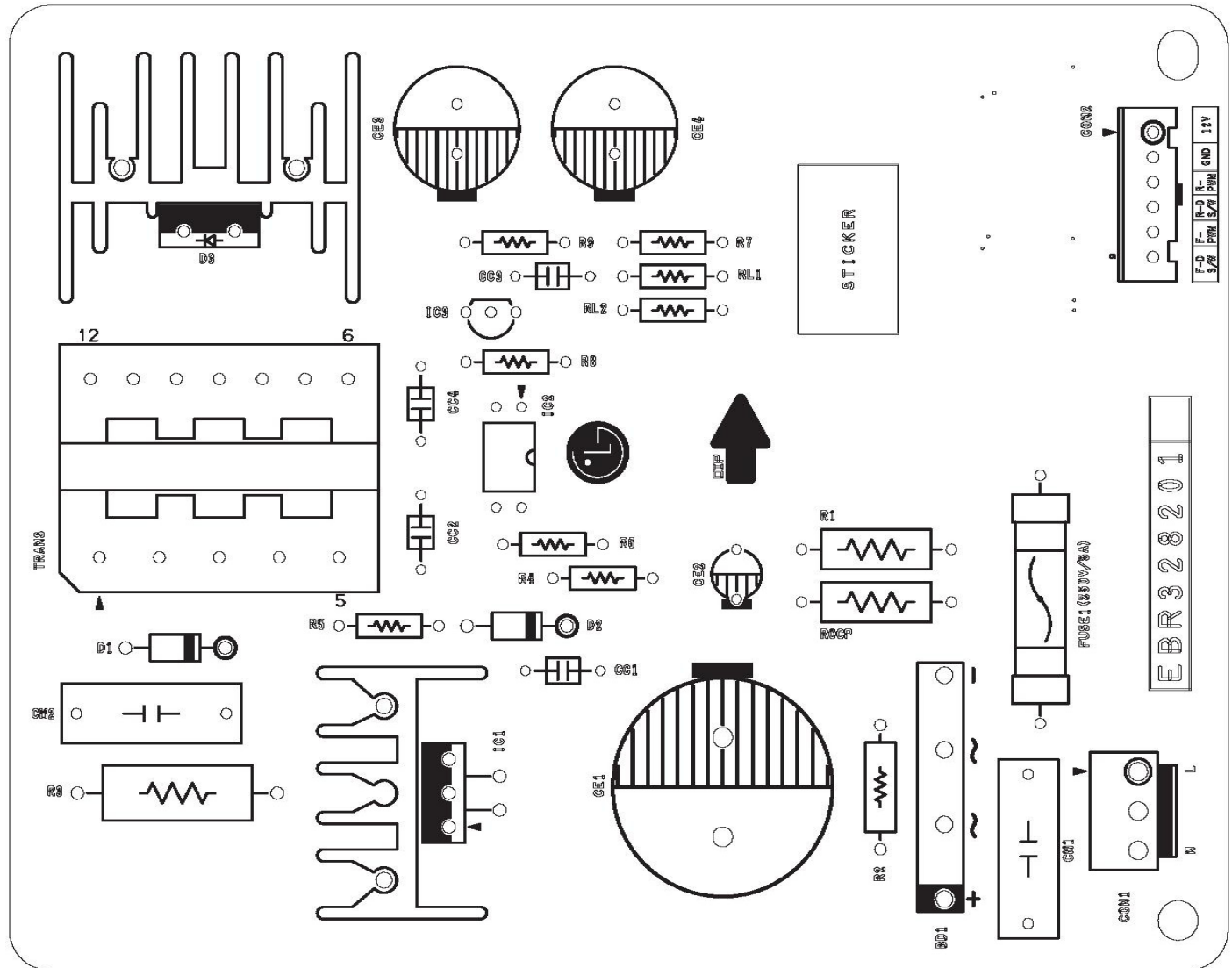
# Main PCB (and Test Switch)



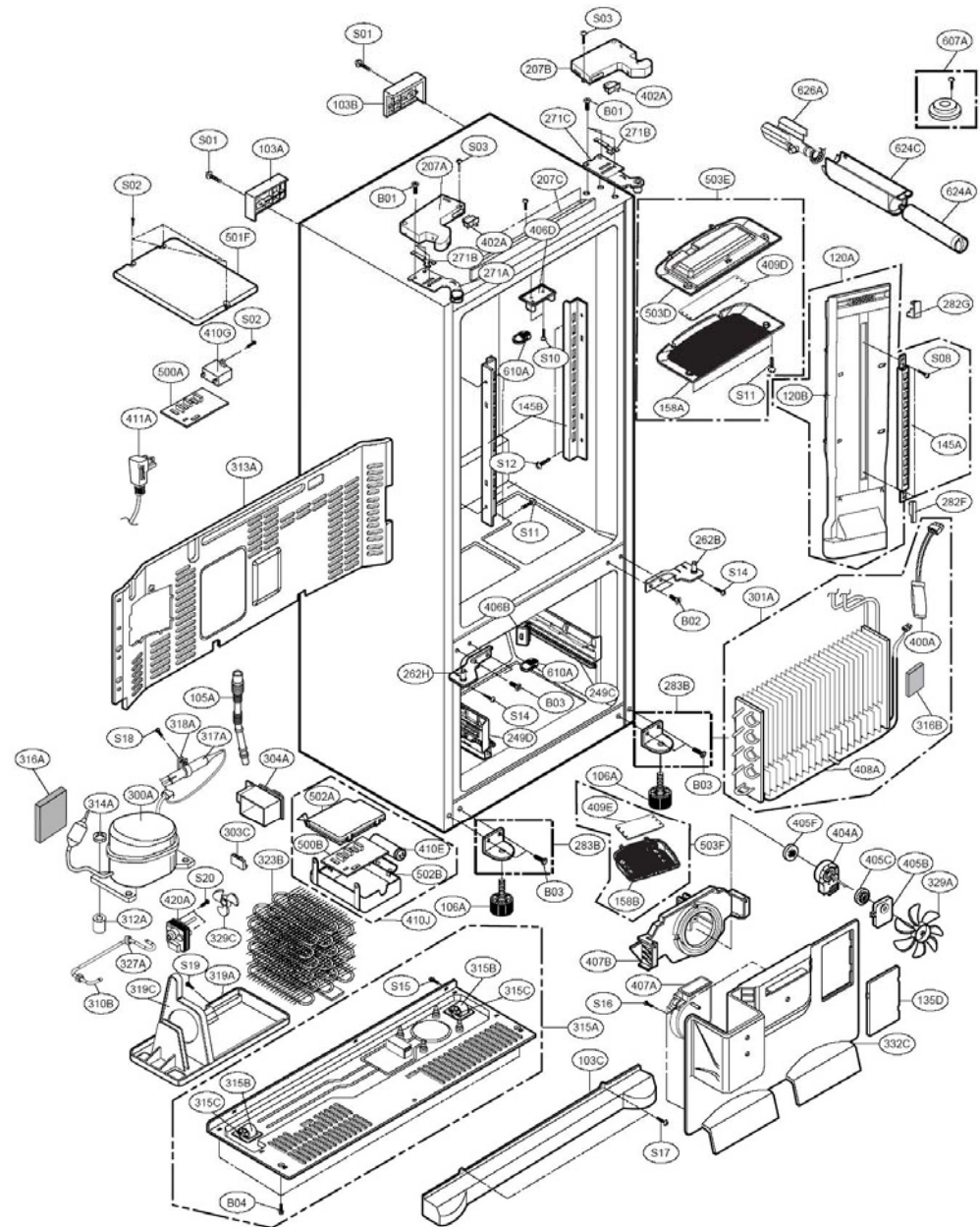
# Display PCB



# Power LED Drive Board



# Exploded Views





# Parts List

<b>Loc</b>	<b>#Part No</b>	<b>Description</b>
103A	3650JA2061W	Handle, Rear (right, facing it)
103B	3650JA2061X	Handle, Rear (left, facing it)
103C	3550JJ0008L	Grille, Lower (Kick plate)
105A	5251JA3003B	Tube Assembly, Drain
106A	4779JJ2001B	Leg Assembly, Adjust
120A	ADJ33675301	Duct Assembly, Multi
120B	ADJ33675302	Duct, Multi (no aux. parts)
131A	5074JA2004A	Bucket, Ice
135D	3551JJ2028A	Cover Assembly, Grille Fan

# Supplementary Materials

# Ohm's Law / Watts Law

## P = WATTS

$$\text{Watts} = \text{Volts}^2 \times \text{Ohms}$$

$$\text{Watts} = \text{Amperes}^2 \times \text{Ohms}$$

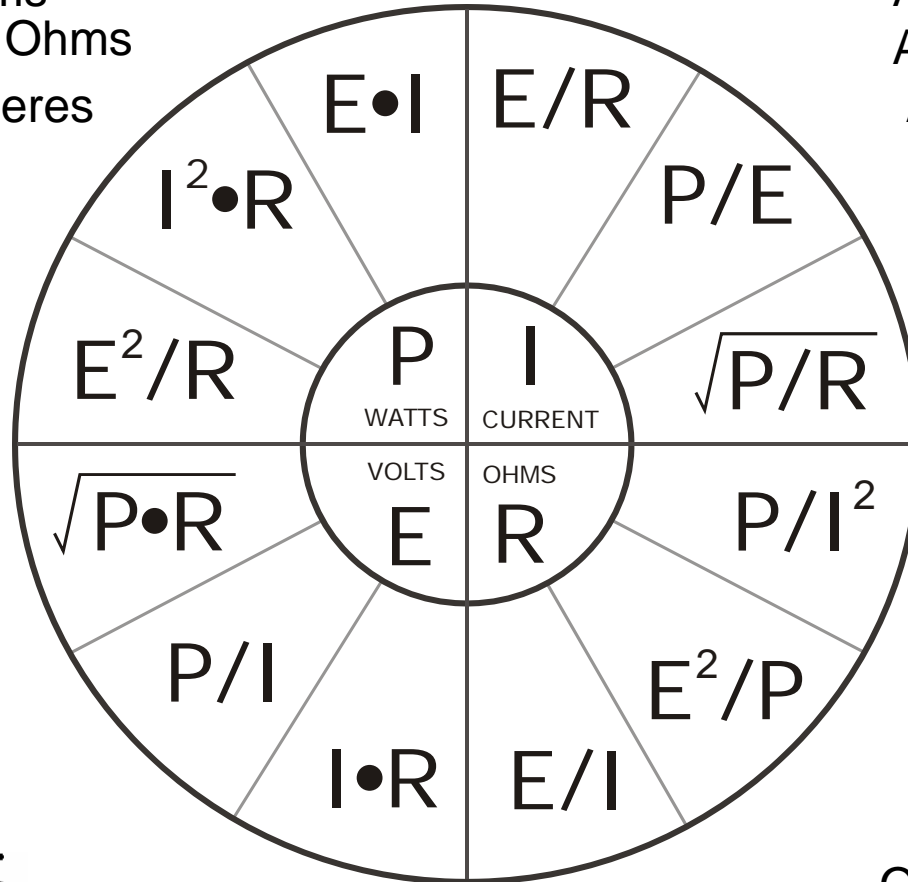
$$\text{Watts} = \text{Volts} \times \text{Amperes}$$

## I = AMPERES

$$\text{Amperes} = \text{Volts} / \text{Ohms}$$

$$\text{Amperes} = \text{Watts} / \text{Volts}$$

$$\text{Amperes} = \sqrt{\text{Watts} / \text{Ohms}}$$



## E = VOLTS

$$\text{Volts} = \sqrt{\text{Watts} \times \text{Ohms}}$$

$$\text{Volts} = \text{Watts} / \text{Amperes}$$

$$\text{Volts} = \text{Amperes} \times \text{Ohms}$$

## R = OHMS

$$\text{Ohms} = \text{Volts} / \text{Amperes}$$

$$\text{Ohms} = \text{Volts}^2 / \text{Watts}$$

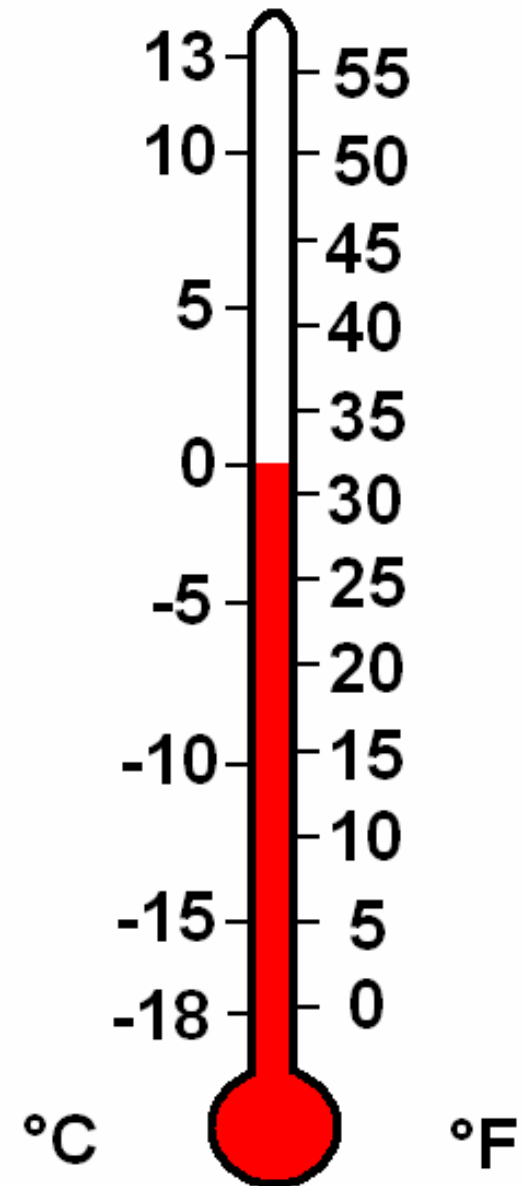
$$\text{Ohms} = \text{Watts} / \text{Amperes}^2$$

# Temperature Conversion (°F vs. °C)



## FORMULAE

$$^{\circ}\text{F} = \left(\frac{9}{5}\right) ^{\circ}\text{C} + 32$$

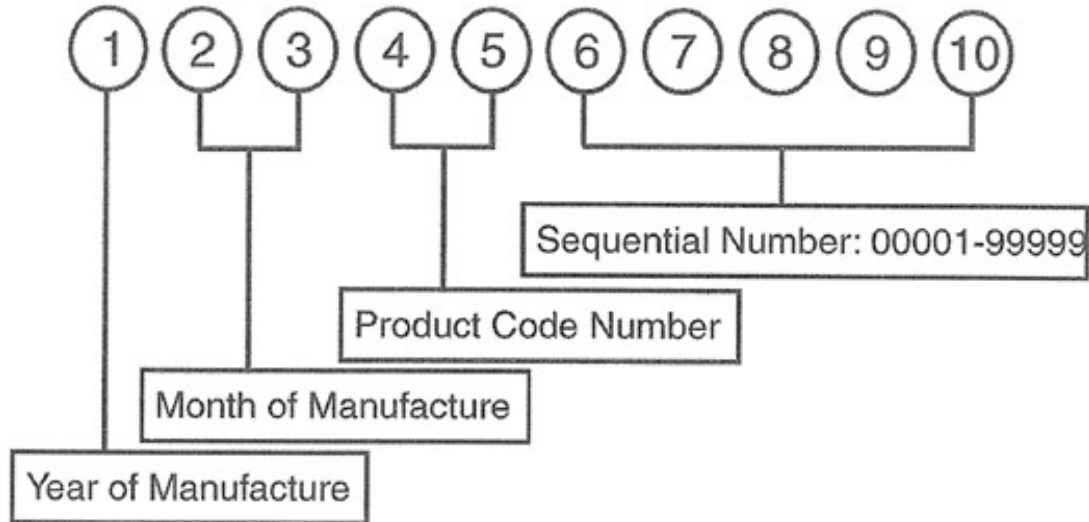
$$^{\circ}\text{C} = \left(\frac{5}{9}\right) \times (^{\circ}\text{F} - 32)$$



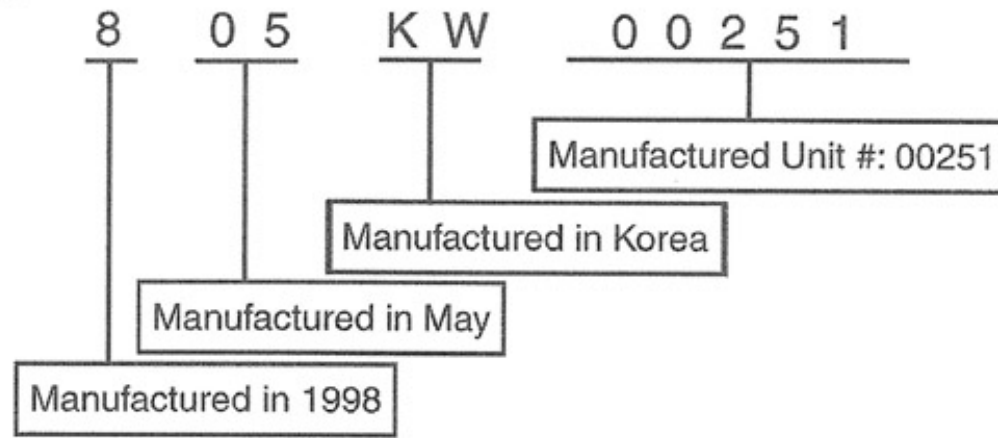
# Service Bulletins

<b>1. Title: SVC Technical Info. for DRIER ASSEMBLY Individual Evacuated Packaging</b>	
<b>2. Model: GR-00</b>	<b>3. S/NO: 2007.03.28</b>
<b>4. Info: Modification, Quality Improvement, Temporary Countermeasure, etc.</b>	
<b>5. Modification Summary:</b> DRIER 25 ea. in use (SVC 2 types), Separate Evacuated Packaging.	
<b>6. Modification Reason:</b> Improve SVC DRIER by Evacuated Packaging, Classify into 2 types to avoid varied types	
<b>7. Modification (Improvement) Detail:</b>	
<p><b>Before</b></p>  <p><b>1. Model;</b> GR-197~277** GR-332~712 GR-122, 142, 182</p> <p><b>2. P/NO:</b> 5851JA2002M, P, R, U 5851JA2006G, L 5851JA2007E,F,J,K,L,W,X 5851JA2008A → Interior diameter in outlet (Φ2.2)</p>	<p><b>After</b></p>  <p><b>P/NO:</b> 5851JA2008R (for 1-EVA) → Interior diameter in outlet (Φ2.2)</p>
<b>8. SVC Solution (in agreement with existing one):</b> XH-9, Inlet 4.9, desiccant amount: 12 grams, Outlet 2.2 → 1-EVA (1 type in use)	
<b>9. Action Before Modification</b> ( <input type="checkbox"/> Discard all <input type="checkbox"/> Use without Modification <input type="checkbox"/> Use with Modification <input checked="" type="radio"/> Others: No action) ☞ No modification	
<b>10. Action for Products Sold Out</b> ( <input type="checkbox"/> Recycling <input type="checkbox"/> 1:1 Exchange with the Modified <input type="checkbox"/> Recall and Repair <input checked="" type="radio"/> Others) ☞ No Change	
<b>11. Issuer:</b> H. Yang	
<b>12. Info. Provider:</b> GSC	

# Serial Number



## Example



# Serial Number



**12345KR406YP000002 + Option**

**Model ID    District    Year    Secret    Sequence**  
**Month    Code**

