Multimedia Enhanced

KitchenAid®

TECHNICAL EDUCATION

36” & 42” BUILT-IN BOTTOM MOUNT DUAL EVAPORATOR REFRIGERATOR

FORWARD

This KitchenAid Job Aid, Built-In Bottom Mount Dual Evaporator Refrigerator" (Part No. W10768110), provides the In-Home Service Professional with information on the installation, operation, and service of the “Bottom Mount Refrigerator" with dual evaporators. For specific operating information on the model being serviced, refer to the “Use and Care Guide” provided with the Built-In Refrigerator

GOALS AND OBJECTIVES

The goal of this Job Aid is to provide information that will enable the In-Home Service Professional to properly diagnose malfunctions and repair the "KitchenAid Built-In Bottom Mount Refrigerator.”

The objectives of this Job Aid are to:

- Understand and follow proper safety precautions.
- Successfully troubleshoot and diagnose malfunctions.
- Successfully perform necessary repairs.
- Successfully return the Refrigerator to its proper operational status.

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PRODUCT SPECIFICATIONS & WARRANTY INFORMATION SOURCES (inside back cover)

Section 1: General Information

This section provides general Refrigeration Safety, service information, installation and some Troubleshooting tips used for servicing the Built-In Bottom Mount Dual Evaporator Refrigerator.

- Refrigeration Safety Information
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Refrigerator Safety

Your safety and the safety of others are very important.

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety **messages.**

This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and either the word “DANGER” or “WARNING.” These words mean:

⚠DANGER — **You can be killed or seriously injured if you don't immediately follow instructions.**

⚠WARNING — **You can be killed or seriously injured if you don't follow instructions.**

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

IMPORTANT SAFETY INSTRUCTIONS

WARNING: To reduce the risk of fire, electric shock, or injury when using your refrigerator, follow these basic precautions:

- Plug into a grounded 3 prong outlet.
- Do not remove ground prong.
- Do not use an adapter.
- Do not use an extension cord.
- Disconnect power before servicing.
- Replace all parts and panels before operating.
- Remove doors from your old refrigerator.
- Use nonflammable cleaner.
- Keep flammable materials and vapors, such as gasoline, away from refrigerator.
- Use two or more people to move and install refrigerator.
- Disconnect power before installing ice maker (on ice maker kit ready models only).
- Use a sturdy glass when dispensing ice (on some models).
- Do not hit the refrigerator glass doors (on some models).

SAVE THESE INSTRUCTIONS

NOTICE TO THE TECHNICIAN

It is the responsibility of the Service Technician to comply with all EPA Regulations and Standards and posses all necessary State and Federal licenses when servicing refrigerators.

Federal regulations and Standards can be found on the United States Government EPA Web Site.

State Regulations and Standards and licensing requirements, in most cases, can be found on the State Government Web Site.

Refrigerator Safety (cont.)

⚠WARNING

Excessive Weight Hazard

Use two or more people to move and install refrigerator.

Failure to do so can result in back or other injury.

When Moving Your Refrigerator:

Your refrigerator is heavy. When moving the refrigerator for cleaning or service, be sure to cover the floor with cardboard or hardboard to avoid floor damage. Always pull the refrigerator straight out when moving it. Do not wiggle or "walk" the refrigerator when trying to move it, as floor damage could occur.

Important information to know about glass shelves and covers:

Do not clean glass shelves or covers with warm water when they are cold. Shelves and covers may break if exposed to sudden temperature changes or impact, such as bumping. Tempered glass is designed to shatter into many small, pebble-size pieces. This is normal. Glass shelves and covers are heavy. Use both hands when removing them to avoid dropping.

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

⚠WARNING

Electrical Shock Hazard

Plug into a grounded 3 prong outlet.

Do not remove ground prong.

Do not use an adapter.

Do not use an extension cord.

Failure to follow these instructions can result in death, fire, or electrical shock.

ELECTRICAL: A 115-volt, 60-Hz, AC-only, 15- or 20-amp fused, grounded electrical supply is required. It is recommended that a separate circuit serving only your refrigerator be provided. Use an outlet that cannot be turned off by a switch. Do not use an extension cord.

NOTE: Before performing any type of installation, cleaning, or removing a light bulb, turn the control (Thermostat, Refrigerator or Freezer Control depending on the model) to OFF and then disconnect the refrigerator from the electrical source. When you are finished, reconnect the refrigerator to the electrical source and reset the control (Thermostat, Refrigerator or Freezer Control depending on the model) to the desired setting. See "Using the Controls."

WATER: A cold water supply with water pressure between 35 and 120 psi (241 and 827 kPa) is required to operate ice maker and water dispenser. If you have questions about your water pressure, call a licensed, qualified plumber.

IMPORTANT: The pressure of the water coming out of a reverse osmosis system going to the water inlet valve of the refrigerator needs to be between 35 and 120 psi (241 and 827 kPa).

REVERSE OSMOSIS WATER SUPPLY: If a reverse osmosis water filtration system is connected to your cold water supply, the water pressure to the reverse osmosis system needs to be a minimum of 40 to 60 psi (276 to 414 kPa).

Proper Disposal of Your Old Refrigerator

⚠WARNING

Suffocation Hazard

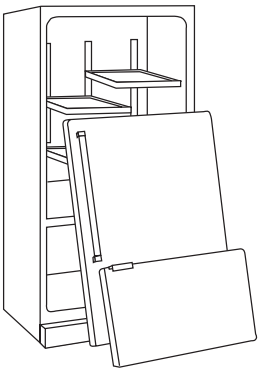
Remove doors from your old refrigerator.

Failure to do so can result in death or brain damage.

IMPORTANT: Child entrapment and suffocation are not problems of the past. Junked or abandoned refrigerators are still dangerous – even if they will sit for "just a few days." If you are getting rid of your old refrigerator, please follow these instructions to help prevent accidents.

Before You Throw Away Your Old Refrigerator or Freezer:

- Take off the doors.
- Leave the shelves in place so that children may not easily climb inside.



Important information to know about disposal of refrigerants:

Dispose of refrigerator in accordance with Federal and Local regulations. Refrigerants must be evacuated by a licensed, EPA certified refrigerant technician in accordance with established procedures.

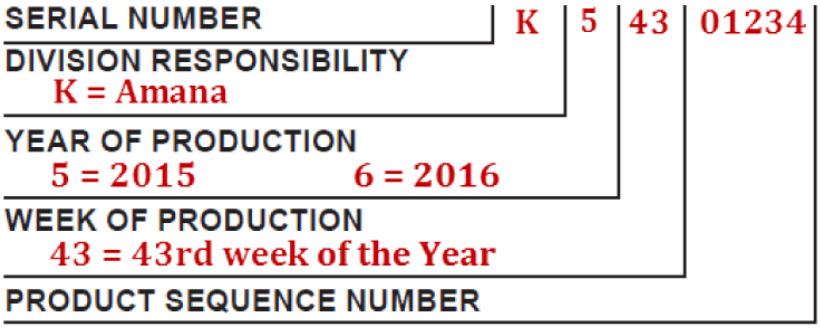
Model Number Breakdown

KitchenAid Model Number Breakdown

Position 1	2	3	4	5 6	7	8	9 10
Brand	**Categories**	**Configuration/fuel**	**Product detail**	**Feature pack**	**Capacity/width**	**Year**	**Color**
K KitchenAid	R Free-standing Refrigeration	B 2-door BM	R Right-swing door L Left-swing door X Reversible door	10 Non-dispense 30 Internal water dispenser 50 External water only	0 20 cu ft 2 22 cu ft 3 23 cu ft	D 2014 E 2015 F 2016	BL Black BT Biscuit BW Premium black with watermarks
		F French door (3-door) M Multi door (4+ door)	F Full-depth C Counter-depth	70 Dispense ice & water	4 24 cu ft 5 25 cu ft		OB Overlay with black cabinet
		S Side by Side	F Full-depth C Counter-depth	10 No Dispensing 50 In-door-ice	6 26 cu ft 9 19 or 29 cu ft		OV Overlay
	B Built-in Refrigeration	B Bottom Mount	R Right-swing door L Left-swing door	10 30	6 36 in 2 42 in		PA Panel-ready SB Stainless door with black cabinet
		F French door (3-door) M Multi door (4+ door) S Side by Side	D External dispenser I Internal water dispenser N No dispenser	50 70	8 48 in		SP Stainless Steel with Pro-Line handle
	U Undercounter Refrigeration	B Beverage center I Icemaker R Refrigerator W Wine cellar	R Right-swing L Left-swing D Drop-down	30 Base model >=40 Pump model	5 15 in 8 18 in 4 24 in		SS Stainless Steel WH White
		D Double drawer	R Refrigerator F Freezer/refrigerator				
K	**B**	**F**	**N**	**50**	**6**	**E**	**SS**

Model/Serial Tag location
(Right Side Back)

Serial Number Break Down



Sales Specifications

Model	36" Bottom Mount Refrigerator			
Model Number	KBBL206EPA, SS	KBBL306EPA, SS	KBBR206EPA, SS	KBBR306EPA, SS
Material Master Description	36 BM LH Swing	36 BM LH Swing	36 BM RH Swing	36 BM RH Swing
Fuel Type	Electric	Electric	Electric	Electric
Total Volume (Cu Ft)	20.86	20.86	20.86	20.86
Refrigerator Volume (Cu Ft)	15.3	15.3	15.3	15.3
Freezer Volume (Cu Ft)	5.56	5.56	5.56	5.56
Total AHAM Shelf Area (Sq Ft)	22.7	22.7	22.7	22.7
Base Grille Type	Height Adjustable Grille			
Door				
RC Door Type (Single)	Bottom Freezer	Bottom Freezer	Bottom Freezer	Bottom Freezer
FC Door Type (Door / Drawer)	BM Drawer	BM Drawer	BM Drawer	BM Drawer
Door Stop Positions	90 / 110 / 130	90 / 110 / 130	90 / 110 / 130	90 / 110 / 130
Installation Dimensions				
Cutout Depth (in)	24	24	24	24
Cutout Height (in)	83.5	83.5	83.5	83.5
Cutout Width (in)	35.5	35.5	35.5	35.5
Height To Top Of Cabinet	83.375	83.375	83.375	83.375
Filters				
Water Filter Type	PB Large	PB Large	PB Large	PB Large
Water Filter Location	Base Grille	Base Grille	Base Grille	Base Grille
Water Filter Gallon Rating	200 Gallons	200 Gallons	200 Gallons	200 Gallons
Air Filter Location	Back Center of RC Evap cover			
Air Filter Replacemnt Intrvl	6 Months	6 Months	6 Months	6 Months
Controls				
Control Type	New! Dead Front	New! Dead Front	New! Dead Front	New! Dead Front
Control Location	Interior Up Front	Interior Up Front	Interior Up Front	Interior Up Front
Cooling On/Off	Cooling On/Off	Cooling On/Off	Cooling On/Off	Cooling On/Off
Temp Settings (0/37)	-5/+5 FC 33/45 RC			
Star K Compliant	Yes	Yes	Yes	Yes
Defrost Type	On Demand Pulsed Defrost System			
Over Temp Alarm	Yes	Yes	Yes	Yes
Door Open Alarm	Yes	Yes	Yes	Yes
Water Filter Indicator/Reset	Yes	Yes	Yes	Yes
RC Interior				
RC Cabinet Liner	White	Chromium Frost	White	Chromium Frost
Lighting	8 Point LED - chrome			
Shelving Style	Cantilever	Cantilever	Cantilever	Cantilever
Ladder Type	BIR Ladders	BIR Ladders	BIR Ladders	BIR Ladders
Pan Lighting	Yes	Yes	Yes	Yes
Pan Description	Deli Drawer	Deli Drawer	Deli Drawer	Deli Drawer
Pan Quantity	1	1	1	1
Divider	Tool Removable	Tool Removable	Tool Removable	Tool Removable
Icemaker				
Icemaker Type	Large cube 8 Icemaker			
Production Rate/ Claim	Standard Ice Rate			
Icemaker Location	BM Upper LH FC	BM Upper LH FC	BM Upper LH FC	BM Upper LH FC
Bucket Type	Ice Drawer	Ice Drawer	Ice Drawer	Ice Drawer
Bucket Location	Interior FC	Interior FC	Interior FC	Interior FC
Glides	Regular - Non Soft Close			
Freezer Door - Interior				
Liner Type	FC BM Drawer Liner			
Voltage	120	120	120	120
Amperage	15	15	15	15
Frequency	60	60	60	60
Literature				
Use & Care	W10721179			
Installation Instruction	W10721177			
Tech Sheet English/French	W10600683/W10717764			
Service and Wiring Sheet	W10685561			
Main Control Service Sheet	W10469187			

⚠WARNING

Tip Over Hazard

Refrigerator is top heavy and tips easily when not completely installed.

Keep doors taped closed until refrigerator is completely installed.

Use two or more people to move and install refrigerator.

Failure to do so can result in death or serious injury.

Install Anti-Tip Boards

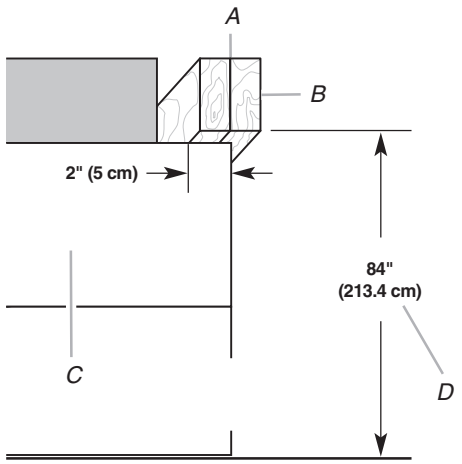
IMPORTANT:

- If a solid soffit is not available, anti-tip boards must be installed.
- It is recommended that boards be installed before the refrigerator is installed.
- Boards must be long enough to fully cover the width of the compressor cover.
- Place the boards so that the bottom surfaces of the boards are 84" (213 cm) from the floor.
- During installation, raise the refrigerator up until the top of the refrigerator is making contact with the bottom of the anti-tip boards. Do not crush the compressor cover when raising the rear leveling legs.

  NOTE: The foam gasket, on top of the compressor cover, will compress to fit under the anti-tip board(s). There is no need to trim the gasket.

To Install Anti-tip Boards

1. Mark the stud locations on rear wall.
2. Securely attach two 2" x 4" x 32" (5 cm x 10 cm x 81 cm) boards to wall studs behind refrigerator. Use six #8 x 3" (7.6 cm) (or longer) wood screws. The wood screws must be screwed into the studs at least 1½" (3.8 cm). The boards must overlap the compressor cover.



A. Two 2" x 4" x 32" (5 cm x 10 cm x 81 cm) boards
B. Attach to studs with six #8 x 3" (7.6 cm) screws.
C. Compressor cover
D. Distance from bottom of anti-tip boards to floor

Connect the Water Supply

Read all directions before you begin.

IMPORTANT: If you turn the refrigerator on before the water line is connected, turn the ice maker OFF.

Connect to Water Line

Parts Needed

- Minimum 7 ft (2.13 m) flexible, codes approved water supply line

Style 1—Shutoff Valve Connection

NOTE: If your water line connection does not look like Style 1, see "Style 2—Copper Line Connection."

1. Unplug refrigerator or disconnect power supply.

IMPORTANT:

- There is not enough clearance to achieve a flush installation if a water shutoff valve is located in the wall behind the refrigerator. The water shutoff should be located in the base cabinet on either side of the refrigerator.
- Before attaching the tubing to shutoff valve, flush the main water supply line to remove particles and air in the water line. Allow enough flow so that water becomes clear. Flushing the water line may help avoid filters and/or water valves from becoming clogged.

Water Supply Requirements

Read all directions before you begin.

IMPORTANT:

- When your refrigerator was installed, the water connection from the water source should have been connected to your refrigerator. If your refrigerator is not connected to a water source, see “Connect to Water Line” in the Installation Instructions. If you have any questions about your water connection, see “Troubleshooting” or call a licensed, qualified plumber.
- If you turn the refrigerator on before the water line is connected, turn the ice maker OFF. See “Ice Maker and Storage Bin.”
- All installations must meet local plumbing code requirements.

Water Pressure

A cold water supply with water pressure between 30 and 120 psi (207 and 827 kPa) is required to operate the water dispenser and ice maker. If you have questions about your water pressure, see “Troubleshooting” or call a licensed, qualified plumber.

Reverse Osmosis Water Supply

IMPORTANT: The pressure of the water supply coming out of a reverse osmosis system going to the water inlet valve of the refrigerator needs to be between 30 and 120 psi (207 and 827 kPa).

If a reverse osmosis water filtration system is connected to your cold water supply, the water pressure to the reverse osmosis system needs to be a minimum of 40 psi (276 kPa).

If the water pressure to the reverse osmosis system is less than 40 psi (276 kPa):

- Check to see whether the sediment filter in the reverse osmosis system is blocked. Replace the filter if necessary.
- Allow the storage tank on the reverse osmosis system to refill after heavy usage.

Level and Align Refrigerator

⚠WARNING

Tip Over Hazard

Refrigerator is top heavy and tips easily when not completely installed.

Keep doors taped closed until refrigerator is completely installed.

Use two or more people to move and install refrigerator.

Failure to do so can result in death or serious injury.

IMPORTANT: All four leveling legs must contact the floor to support and stabilize the full weight of refrigerator. Rollers are for moving refrigerator and not for permanent support.

After moving the refrigerator to its final location:

1. Use a 5/16" socket driver to turn the leveling bolts clockwise to extend the legs to the floor as shown. The rollers should be off the floor.

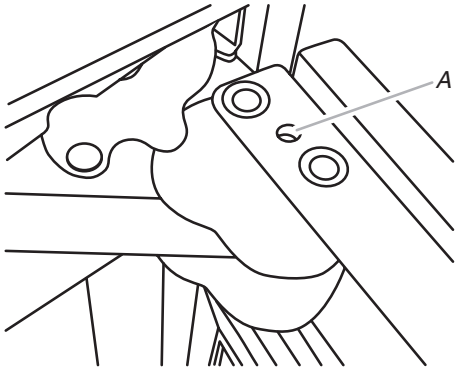
A. Rear leveling bolt
B. Front leveling bolt

2. Adjust the leveling legs to level and align the refrigerator from left to right and front to back so that the refrigerator is level and aligned with the cabinets.
3. Continue adjusting the leveling legs until the top of the refrigerator is making contact with the bottom of the solid soffit, or the bottom of the anti-tip boards, if anti-tip boards were used. Do not crush the compressor cover.

Door Swing Adjustment

It may be necessary to adjust the swing of the door(s). Make sure the refrigerator door(s) can open freely. If the door(s) opens too wide, install the door stop pin (provided with refrigerator).

1. Hold the door open to a position that is less than 90°.
2. Insert the door stop pin into the top hinge in the hole shown.
3. Using a 5⁄32" hex key, tighten the door stop pin.



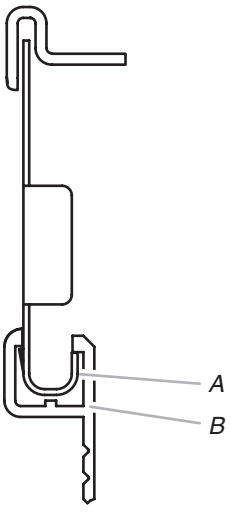
A. Door stop pin hole

Install Base Grille

There are 2 pieces to the base grille to allow for a custom fit: the base grille itself and the skirt. The skirt can be added to the base grille in order to extend it all the way to the floor.

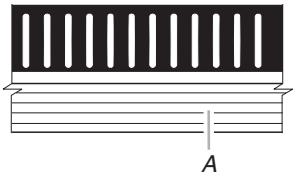
1. To see whether the skirt is needed, place the base grille into position. Do not attach the base grille to the refrigerator. Measure the distance between the bottom of the base grille and the floor. The gap must be a minimum of ½" (1.27 cm) in order to add the skirt.

   NOTE: If the gap measures less than ½" (1.27 cm), skip steps 3 and 4 of the instructions, and install the base grille only.
2. Remove the film from the base grille.
3. Snap the skirt onto the base grille.



A. Base grille
B. Skirt

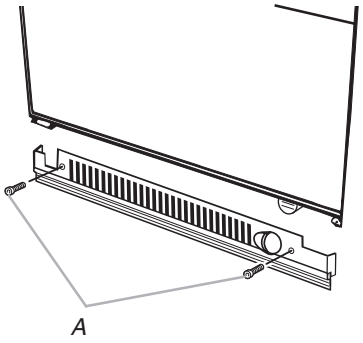
4. Trim the skirt by scoring the proper “V” groove with a utility knife. Break the skirt at the score line.



A. “V” groove

5. Using the 2 screws, attach the base grille assembly to the refrigerator as shown.

   NOTE: Drive in the right side screw first.



A. Screws (2)

Standard Integrated Grille Installation

To remove the top grille panel:

1. Open the door(s).
2. Pull out on the bottom of the panel, and then lift up. Place the panel on a soft surface.

To replace the top grille panel:

1. Hook the panel brackets onto the mounting bolts extending from the top of the refrigerator.
2. Tilt the bottom of the grille panel down slightly to lock into place.

Fully Integrated Grille Installation

To install the grille panel to the refrigerator:

1. Slide the upper and lower slots in each bracket onto the mounting pins extending upward from the top of the refrigerator.
2. Push the grille panel forward to fully engage the spring clips and fasten the grille panel.

To remove the grille panel from the refrigerator:

1. Open the door(s).
2. Place both hands under the grille panel, grasping the bottom edge between your fingers and thumbs.
3. Pull the grille panel straight out until the grille stops. Then, lift up on the grille panel to remove.

Power On or Off Switch

⚠WARNING

Electrical Shock Hazard

Plug into a grounded 3 prong outlet.

Do not remove ground prong.

Do not use an adapter.

Do not use an extension cord.

Failure to follow these instructions can result in death, fire, or electrical shock.

⚠WARNING

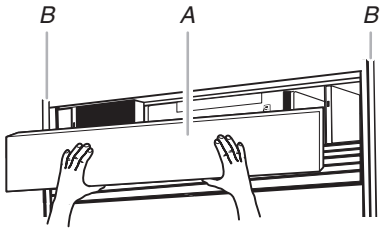
Explosion Hazard

Keep flammable materials and vapors, such as gasoline, away from refrigerator.

Failure to do so can result in death, explosion, or fire.

Power On/Off Switch

If you need to turn the power to your refrigerator On or Off, you must remove the top grille panel to access the power switch. Turn the power to the refrigerator Off when cleaning your refrigerator or changing light bulbs.



A. Top grille
B. Cabinet sides

Standard Integrated Grille Installation

To remove the top grille panel:

1. Open the door(s).
2. Pull out on the bottom of the panel, and then lift up. Place the panel on a soft surface.

To replace the top grille panel:

1. Hook the panel brackets onto the mounting bolts extending from the top of the refrigerator.
2. Tilt the bottom of the grille panel down slightly to lock into place.

Fully Integrated Grille Installation

To install the grille panel to the refrigerator:

1. Slide the upper and lower slots in each bracket onto the mounting pins extending upward from the top of the refrigerator.
2. Push the grille panel forward to fully engage the spring clips and fasten the grille panel.

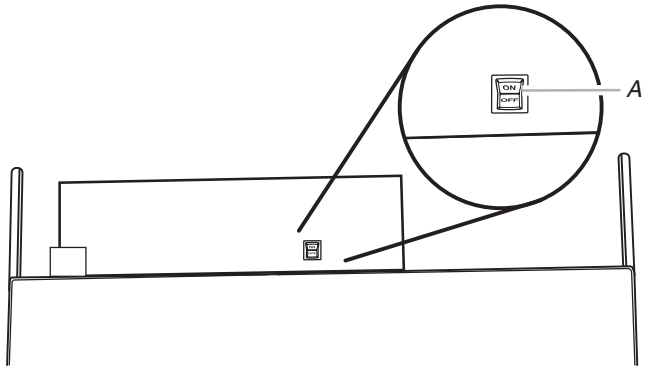
To remove the grille panel from the refrigerator:

1. Open the door(s).
2. Place both hands under the grille panel, grasping the bottom edge between your fingers and thumbs.
3. Pull the grille panel straight out until the grille stops. Then, lift up on the grille panel to remove.

Power On or Off Switch

1. Remove the top grille panel.
2. Press power switch to the On or Off position.
3. Replace the top grille panel.

IMPORTANT: Be sure the power switch is set to the On position after cleaning refrigerator or changing light bulbs.



A. Power switch

Turning On Cooling and Viewing Set Points

The factory recommended set points are 0°F (-18°C) for the freezer and 37°F (3°C) for the refrigerator

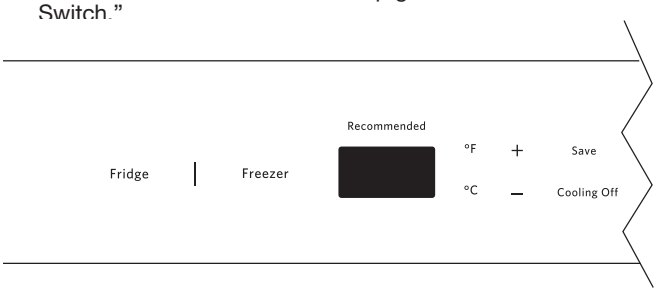
1. Press the FRIDGE or FREEZER touch pad.

   NOTE: After the refrigerator is turned on, the Over Temperature audio alarm and indicator light may activate every 1½ hours until the refrigerator and freezer temperatures are below 48°F (9°C) and 15°F (-9°C), respectively, or until the alarm is turned off. To turn off the audio alarm and indicator light, see “Alarm Reset.”

Turning Off Cooling

1. Press the FRIDGE or FREEZER touch pad.
2. Press and hold the COOLING OFF touch pad for 3 seconds.

   NOTE: To turn off the power completely, use the power ON/OFF switch located behind the top grille. See “Power On/Off Switch.”



Viewing the Temperature in Degrees Celsius

1. Press °C touch pad. To redisplay degrees Fahrenheit, press °F touch pad.

   NOTE: If the freezer temperature is below zero, the negative sign next to the freezer display will light up. This is normal.

Adjusting Controls

NOTE: Wait at least 24 hours between adjustments. Recheck the temperatures before other adjustments are made.

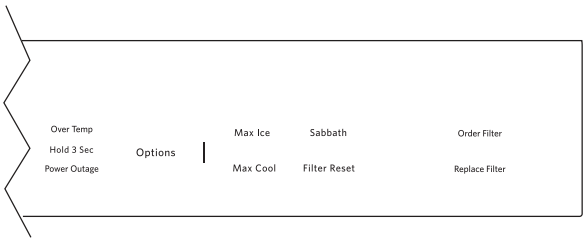
To Adjust Set Point Temperatures:

- Press the FRIDGE or FREEZER touch pad, and then press the Plus (+) or Minus (-) touch pad until the desired temperature is reached.
- Press the SAVE touch pad to program the desired temperature.

NOTE: The set point range for the freezer is -5°F to 3°F (-21°C to -16°C). The set point range for the refrigerator is 34°F to 42°F (1°C to 6°C).

- The recommended settings should be correct for normal household usage. The controls are set correctly when milk or juice is as cold as you like and when ice cream is firm.
- The actual temperature may differ from the display when a door is open for an extended period of time.

CONDITION/REASON:	TEMPERATURE ADJUSTMENT:
REFRIGERATOR too cold Not set correctly for conditions	REFRIGERATOR Control 1° higher
REFRIGERATOR too warm High use or room very warm	REFRIGERATOR Control 1° lower
FREEZER too cold Not set correctly for conditions	FREEZER Control 1° higher
FREEZER too warm/too little ice High use or heavy ice use	FREEZER Control 1° lower



TROUBLESHOOTING

Refrigerator Operation

The refrigerator will not operate

⚠WARNING

Electrical Shock Hazard

Plug into a grounded 3 prong outlet.

Do not remove ground prong.

Do not use an adapter.

Do not use an extension cord.

Failure to follow these instructions can result in death, fire, or electrical shock.

- **Power cord unplugged?** Plug into a grounded 3 prong outlet.
- **Is outlet working?** Plug in a lamp to see if the outlet is working.
- **Household fuse blown or circuit breaker tripped?** Replace the fuse or reset the circuit breaker. If the problem continues, call an electrician.
- **Are controls on?** Make sure the refrigerator controls are on. See “Using the Controls.”
- **Is refrigerator defrosting?** Your refrigerator will regularly run an automatic defrost cycle. Recheck in 30 minutes to see if it is operating.
- **New installation?** Allow 24 hours following installation for the refrigerator to cool completely.

  NOTE: Adjusting the temperature controls to the coldest setting will not cool either compartment more quickly.

The motor seems to run too much

Your new refrigerator may run longer than your old one due to its high-efficiency compressor and fans. The unit may run even longer if the room is warm, a large food load is added, doors are opened often, or if the doors have been left open.

The refrigerator is noisy

Refrigerator noise has been reduced over the years. Due to this reduction, you may hear intermittent noises from your new refrigerator that you did not notice from your old model. Below are listed some normal sounds with an explanation.

- **Buzzing** - heard when the water valve opens to fill the ice maker
- **Pulsating** - fans/compressor adjusting to optimize performance
- **Rattling** - flow of refrigerant, water line, or from items placed on top of the refrigerator
- **Sizzling/Gurgling** - water dripping on the heater during defrost cycle
- **Popping** - contraction/expansion of inside walls, especially during initial cool-down
- **Water running** - may be heard when ice melts during the defrost cycle and runs into the drain pan
- **Creaking/Cracking** - occurs as ice is being ejected from the ice maker mold

There is no audible door open alarm

Has the door been open less than 5 minutes? The door open alarm will only flash when the door has been open for 5 minutes. The audible alarm will sound the first time the door is left open for more than 5 minutes. Subsequent door open alarms will only flash. You must reset the audible alarm each time. See "Using the Control(s)."

The doors will not close completely

- **Door blocked open?** Move food packages away from door.
- **Bin or shelf in the way?** Push bin or shelf back in the correct position.

The doors are difficult to open

⚠WARNING

Explosion Hazard

Use nonflammable cleaner.

Failure to do so can result in death, explosion, or fire.

- **Are the gaskets dirty or sticky?** Clean gaskets with mild soap and warm water.

The lights do not work

- **Is the refrigerator in Sabbath mode?** See "Using the Controls."
- **Has the door been open more than 10 minutes?** See "Using the Controls."

Temperature and Moisture

Temperature is too warm

- **New installation?** Allow 24 hours following installation for the refrigerator to cool completely.
- **Door(s) opened often or left open?** Allows warm air to enter refrigerator. Minimize door openings and keep doors fully closed.
- **Large load of food added?** Allow several hours for refrigerator to return to normal temperature.
- **Controls set correctly for the surrounding conditions?** Adjust the controls to a colder setting. Check temperature in 24 hours. See "Using the Controls."
- **Refrigerator not cooling?** For models with digital controls, turn the refrigerator OFF and then ON to reset. If this does not correct the problem, call for service.
- **Air vents blocked?** Remove any item from in front of the air vents.

There is interior moisture buildup

NOTE: Some moisture buildup is normal.

- **Humid room?** Contributes to moisture buildup.
- **Door(s) opened often or left open?** Allows humid air to enter refrigerator. Minimize door openings and keep doors fully closed.

Ice and Water

The ice maker is not producing ice or not enough ice

- **Refrigerator connected to a water supply and the supply shutoff valve turned on?** Connect refrigerator to water supply and turn water shutoff valve fully open.
- **Kink in the water source line?** A kink in the line can reduce water flow. Straighten the water source line.
- **Ice maker turned on?** Make sure wire shutoff arm or switch (depending on model) is in the ON position.
- **New installation?** Wait 24 hours after ice maker installation for ice production to begin. Wait 72 hours for full ice production.
- **Large amount of ice recently removed?** Allow 24 hours for ice maker to produce more ice.
- **Ice cube jammed in the ice maker ejector arm?** Remove ice from the ejector arm with a plastic utensil.
- **Reverse osmosis water filtration system connected to your cold water supply?** This can decrease water pressure. See "Water Supply Requirements" in either the Installation Instruction booklet or the Use & Care Guide.

The ice cubes are hollow or small

NOTE: This is an indication of low water pressure.

- **Water shutoff valve not fully open?** Turn the water shutoff valve fully open.
- **Kink in the water source line?** A kink in the line can reduce water flow. Straighten the water source line.
- **Reverse osmosis water filtration system connected to your cold water supply?** This can decrease water pressure. See "Water Supply Requirements."
- **Questions remain regarding water pressure?** Call a licensed, qualified plumber.

Ice is sticking together in the ice storage bin

- It is normal for frost to be on top of the ice storage bin due to normal opening and closing of the freezer.
- It is normal for ice to stick together when it is not dispensed or used frequently. It is recommended that the ice storage bin be emptied and cleaned as needed. See "Ice Maker and Storage Bin."

Off-taste, odor or gray color in the ice

- **New plumbing connections?** New plumbing connections can cause discolored or off-flavored ice.
- **Ice stored too long?** Discard ice. Wash ice bin. Allow 24 hours for ice maker to make new ice.
- **Odor transfer from food?** Use airtight, moisture-proof packaging to store food.
- **Are there minerals (such as sulfur) in the water?** A water filter may need to be installed to remove the minerals.
- **Is there a water filter installed on the refrigerator?** Gray or dark discoloration in ice indicates that the water filtration system needs additional flushing.

Section 2: Operation

This section provides a breakdown of all electrical circuits onthe wiring diagram. It also shows all electrical power operations of each circuit.

- How the Refrigerator Works
- Voltage Distribution Chart
- Wiring Diagram
- Receiving and Distributing Electricity
  - The Power Supply Board
  - The Main Control Board
  - The User Interface
- Dual Evaporator Refrigerant Cooling System Operation
  - Parts Layout
  - Cooling Operation
  - Cooling Freezer
  - Normal Cooling
- Thermistors

How this Refrigerator works.

We will start talking about the electrical system on this refrigerator and what the electrical components do to make this system operate correctly. We will be working through the wiring diagram and looking at each of the electronic boards to see how they receive electrical power and how electricity is distributed throughout the system. We can look at the Voltage Distribution Chart and the Wiring Diagram, but until we break everything down by pin connectors we sometimes don't get the full picture or understand how component operates with each other.

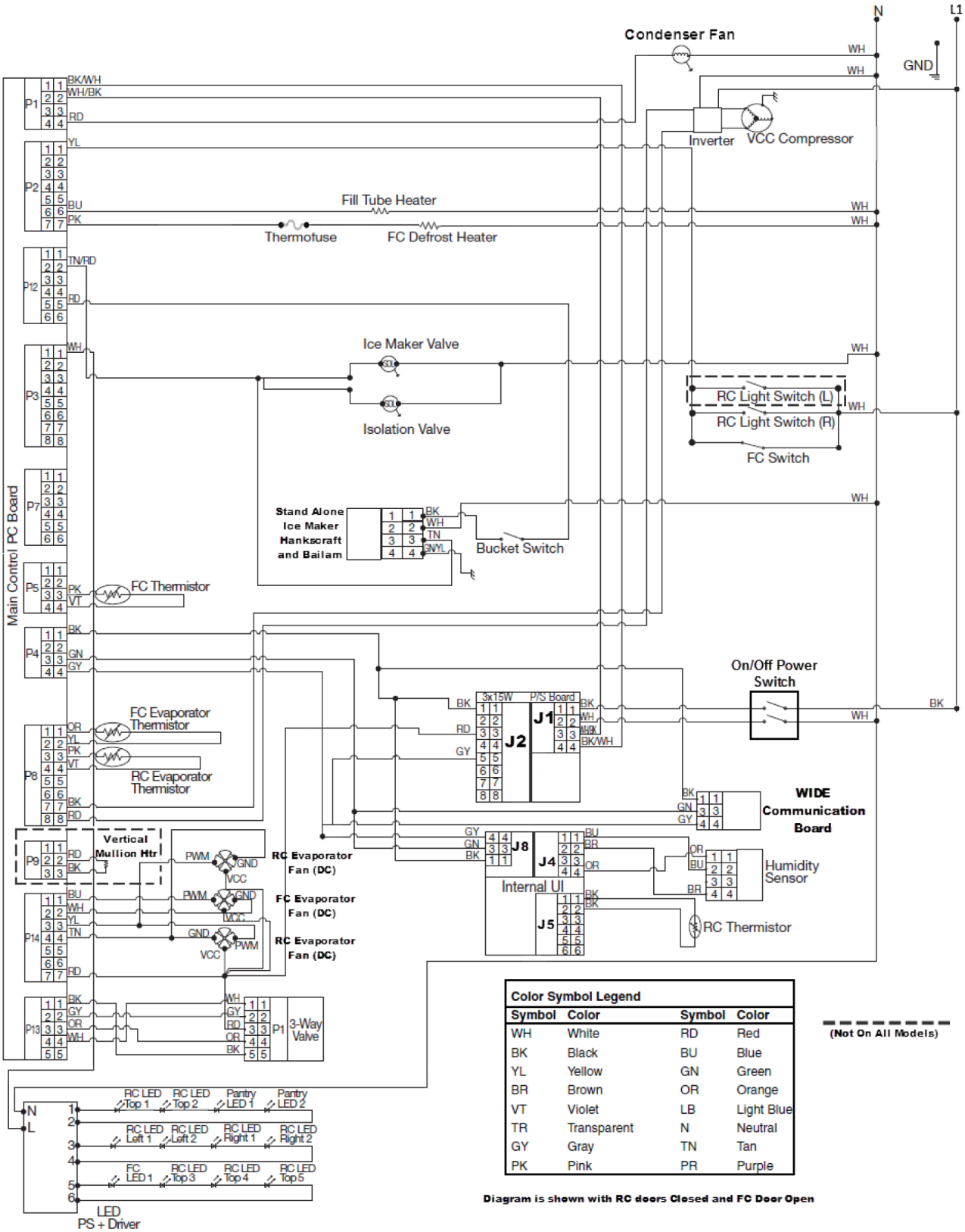
These two pieces of literature can be very helpful while diagnosing the refrigerator. Both are part of the Service and Wiring Sheet located just outside the compressor area on the component unit cover.

Voltage Distribution Chart

Component		From	To	Voltage	Conditions
Power Supply	J1	J1-1	J1-2	115 VAC	Constant 115 VAC.
		J1-3	J1-4	115 VAC	Constant 115 VAC.
	J2	J2-1	J2-5	12.7 VDC	Constant 12.7 V.
		J2-2	J2-6	12.7 VDC	Constant 12.7 V.
		J2-3	J2-6	12.7 VDC	Constant 12.7 V.
Main Control	P1	P1-1	P1-2	115 VAC	Constant 115 VAC.
		P1-4	P1-2	115 VAC	Compressor/Condenser Fan. Service Test 4. (01 = 115 VAC. 02 = 0 V.)
	P2	P2-1	P1-2	115 VAC	RC or FC door open = 115 V. Doors closed = 0 V.
		P2-6	P1-2	115 VAC	Fill Tube, Fascia Heater output. Service Test 7. (01 = 115 V. 02 = 0 V. R = Approx. 34K ohms across heater.)
		P2-7	P1-2	115 VAC	FC Defrost Heater output with Bi-metal. Service Test 12. (115 V. R = Approx. 24 ohms across heater.)
	P3	P3-1	P2-1	115 VAC	RC or FC door open = 115 V. Doors closed = 0 V.
	P4	P4-1	P4-4	12.7 VDC	User Interface. Constant 12 V.
		P4-3	Communication		Not used.
	P5	P5-3	P5-4	5 VDC	FC Thermistor output = 1.5 to 5 VDC.
	P6	P6-2	P6-1	12.7 VDC	Constant 12.7 V.
	P8	P8-1	P8-2	5 VDC	FC Evaporator Sensor
		P8-3	P8-4	5 VDC	RC Evaporator Sensor
		P8-7	P8-8	3-4 VDC	Inverter input across black and white wires is 120 VAC.
	P9	P9-2	P9-3	12.7 VDC	Vertical mullion heater. R = Approx. 16.1 ohms across heater.
	P12	P12-2	P1-2	110 V	Ice maker feedback only when harvest cycle is completed.
		P12-5	P1-2	110 V	Ice maker output only when ice maker is on.
	P13	P13-1	P13-2		3-way refrigerant. Cannot check voltage output.
		P13-3	P13-4		3-way refrigerant. Cannot check voltage output.
	P14	P14-1	P14-2	12.7 VDC	FC Fan Motor. Output activate Service Test 3, Step 2.
		P14-3	P14-4	12.7 VDC	RC Fan Motor.
		P14-7		12.7 VDC	Constant.
User Interface	J8	J8-4	J8-1	12.7 VDC	User Interface.
		J8-3			Wide communication.
	J4	J4-1	J4-3	1.5 to 5 VDC DC	Humidity Sensor.
	J5	J5-1	J5-2	1.5 to 5 VDC RC	Thermistor output.
LED PS + Driver	P1	P1-2	P1-1	115 VAC	All doors opened.
	P2	P2-2	P2-1	11.4 VDC (±10%)	All doors opened.
		P2-4	P2-3	11.4 VDC (±10%)	All doors opened.
		P2-6	P2-5	11.4 VDC (±10%)	All doors opened.

Wiring Diagram

This is a built in refrigerator wiring diagram. It may not be the one for the unit you are servicing but the theory this diagram provides will give you the knowledge to understand other built-in refrigerator diagrams and how components work to make your refrigerator operate efficiently.



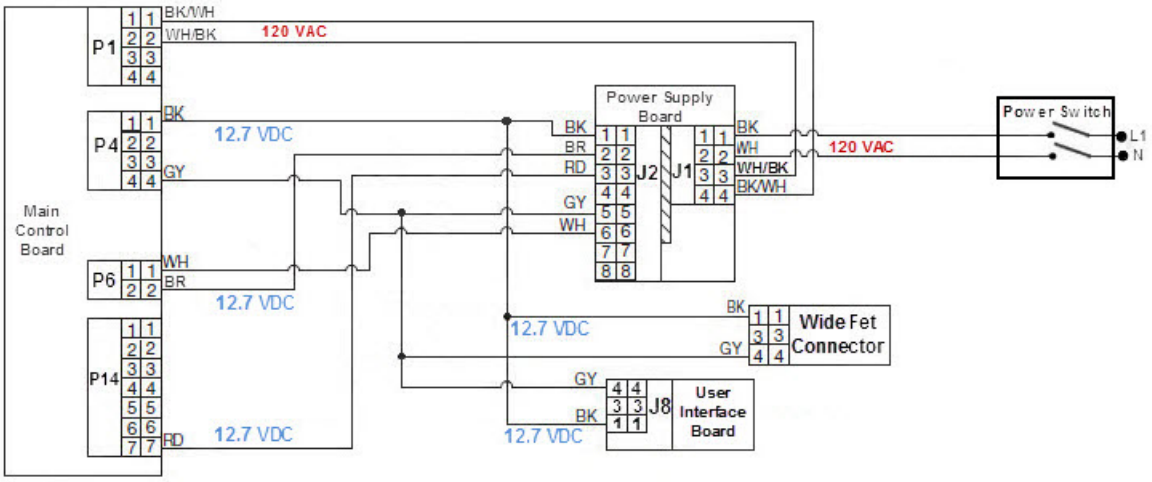
Color Symbol Legend			
Symbol	Color	Symbol	Color
WH	White	RD	Red
BK	Black	BU	Blue
YL	Yellow	GN	Green
BR	Brown	OR	Orange
VT	Violet	LB	Light Blue
TR	Transparent	N	Neutral
GY	Gray	TN	Tan
PK	Pink	PR	Purple

Diagram is shown with RC doors Closed and FC Door Open

Receiving and Distributing Electricity

The Power Supply Board

As this refrigerator is plugged in, 120 VAC is sent to the Power Supply Board at the J1 Connector Pins 1 & 2. The Power Supply board Connector J1 pin 3 & 4 provide a continuous 120 VAC to the Main Control Board at Connector P1, pins 1&2.



The other side of the Power Supply board provides low voltage power to serveral different locations throughout the Main Control board, the User Interface board and the Wide Communication board as shown in the diagram above. Below is the information from the Voltage Distribution Chart for the Power Supply Board.

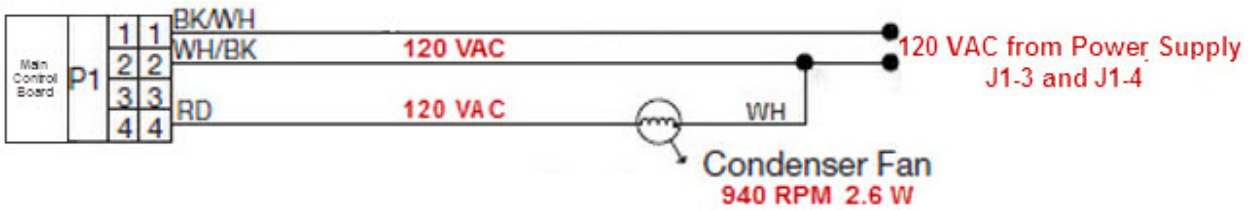
Connector		From	To	Voltage	Conditions
Power Supply	J1	J1-1	J1-2	115 VAC	Constant 115 VAC.
		J1-3	J1-4	115 VAC	Constant 115 VAC.
	J2	J2-1	J2-5	12.7 VDC	Constant 12.7 V.
		J2-2	J2-6	12.7 VDC	Constant 12.7 V.
		J2-3	J2-6	12.7 VDC	Constant 12.7 V.

Main Control Board P1 Connector & The Condenser Fan Motor

From the diagram above we know how the Main Control Board receives power. Now let's look at what the Main Control Board does with the 120 VAC and the 12.7 VDC.

The P1 connector receives 120 VAC from the output of the Power Supply Board (Pins J1-3 and J1-4). From the P1 connector (P1-4), 120 VAC is supplied to the Condenser Fan Motor and the neutral side of the line (P1-2).

The Condenser Fan Motor receives 120 VAC from the P1-4 connector any time the compressor is operating. It cools the compressor area and helps evaporate water collected during the freezer evaporator defrost operation.



The chart below, from the Voltage Distribution Chart, shows the information about the Main Control Board P1 Connector and the Condenser Fan Motor

Connector		From	To	Voltage	Conditions
Main Control Board	P1	P1-1	P1-2	115 VAC	Constant 115 VAC.
		P1-4	P1-2	115 VAC	Compressor/Condenser Fan. Service Test 4. (01 = 115 VAC. 02 = 0 V.)

Main Control Board P2 Connector, Door Light Switches, Fill Tube Heater and the Freezer Compartment Defrost Heater and Thermofuses

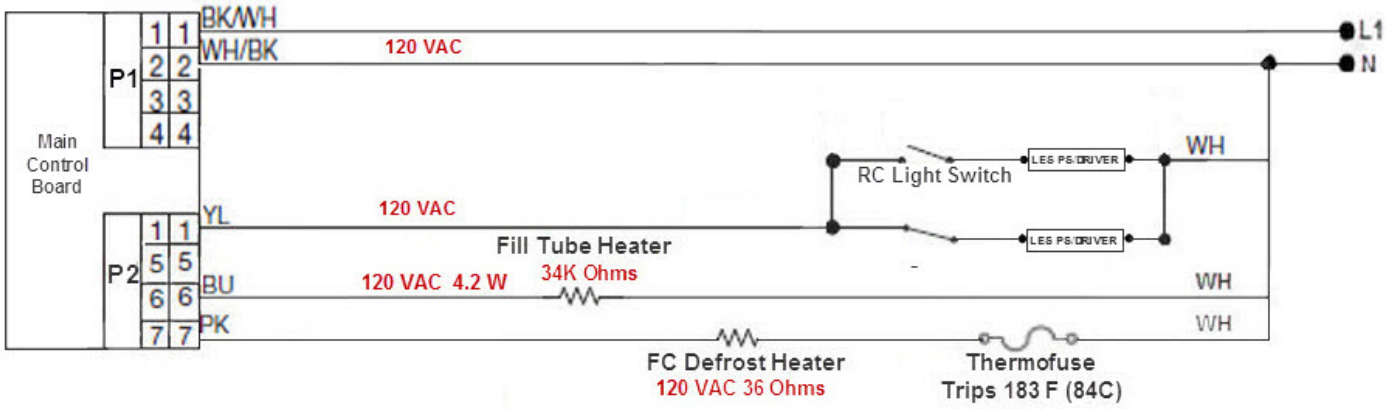
A lot of activity happens at the P2 connector. (P2-1) supplies a constant 120 VAC to the Refrigerator Compartment Normally Closed Light switch and the Freezer Compartment Normally Closed Light Switch. The Light switches are operated by opening and closing the refrigerator or freezer doors. Once the door opens the switch CLOSES and sends a signal (0 Ohms resistance across the light switch circuit) to the main control board. The main control board registers this information and closes the light relay at Connector P3-1 to complete a circuit to the LED Power Supply & Driver to activate the appropriate LED Lights. This diagram below shows the refrigerator door closed and the Freezer Door open.

Still at the P2 connector P2-6 supplies 120 VAC to the Fill Tube Heater (34K Ω resistance) to the neutral side of the circuit (P1-2). The Ice Maker Fill Tube Heater is activated anytime water is entering the Ice maker from the water inlet valve to keep water from icing up at the entrance to the ice maker.

One more terminal at the P2 connector P2-7 supplies 120 VAC to the Freezer Compartment Defrost Heater (24 Ω resistance). This heater is regulated by an inline THERMOFUSE that trips at a temperature of 183° F (84° C).

The Freezer Compartment defrost heater operates when the Main Control board closes the defrost relay at terminal P2-7. This relay closes because the control board receives a signal from the Freezer Evaporator Thermistor that the air flow through the evaporator is not providing temperatures cold enough to keep food frozen. The FC evaporator thermistor provides the signal to the main control board at control board connector P8-1 - P8-2. As the thermistor starts to sense warmer temperatures the Ohms resistance drop across the circuit is the signal that starts the control board activity.

Once the Defrost heater is activated with 120 VAC through circuit P2-7 - P1-2 the 34 Ohm resistance heater starts to melt the ice buildup on the evaporator. The heater is activated for as little as 3 minutes to a maxinum 25 minutes, depending on the information provided from the FC evaporator thermister. If the temperature in the evaporator compartment reaches 183 degrees F, one or both of the thermofuses will open and stop any other heat build up. If these thermofuses fail, the defrost heater will not operate again until service can identify why temperatures reached the higher than normal set point and the thermofuses are replaced.

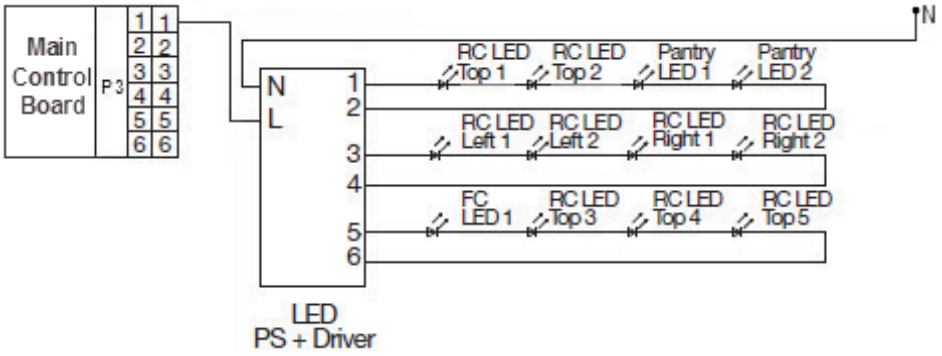


The chart below from the voltage distribution chart confirms the information just discussed.

Connector		From	To	Voltage	Conditions
Main Control	P1	P1-1	P1-2	115 VAC	Constant 115 VAC.
	P2	P2-1	P1-2	115 VAC	RC or FC door open = 115 V. Doors closed = 0 V.
		P2-6	P1-2	115 VAC	Fill Tube, Fascia Heater output. Service Test 7. (01 = 115 V. 02 = 0 V. R = Approx. 34K ohms across heater.)
		P2-7	P1-2	115 VAC	FC Defrost Heater output with Bi-metal. Service Test 12. (115 V. R = Approx. 24 ohms across heater.)

Main Control Board P3 Connector

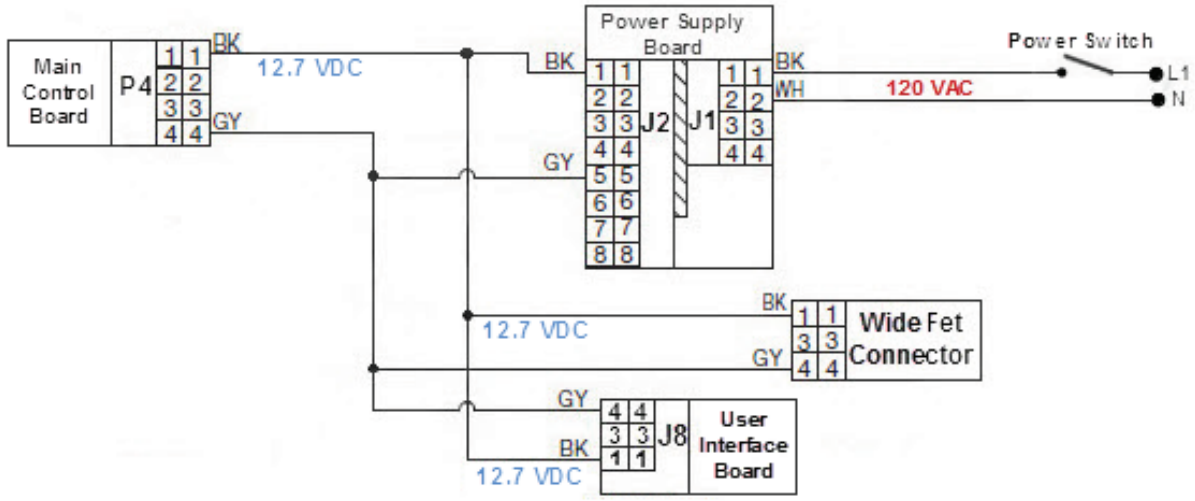
Only one thing going on at the P3 connector. P3-1 provides 120 VAC to the LED Power Supply and Driver. The voltage is sent when the control board senses zero resistance across either one of the light switch circuits. As a RC door or FC door is open, power is sent to activate the LED lights in the refrigerator or freezer.



Main Control Board	P2	P2-1	P1-2	115 VAC	RC or FC door open = 115 V. Doors closed = 0 V.
	P3	P3-1	P2-1	115 VAC	RC or FC door open = 115 V. Doors closed = 0 V.

Main Control Board P4 Connector

The P4 Connector receives 12.7 VDC from the Power Supply Board between pins P4-1 and P4-4. The P4-3 pin is a communication terminal and not used. As we look at the wiring diagram we can also see that 12.7 VDC is also supplied to the User Interface Connector J8 -1 and J8-4. One other feed of 12.7 VDC is also sent to the Wide Fet Connector Board at pins 1 and 3.



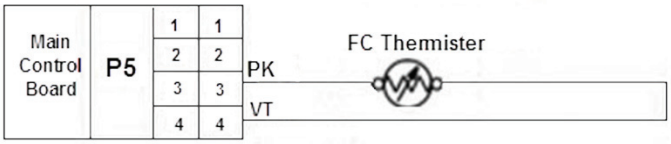
Not much is happening at the P4 Connector, it just receives 12.7 VDC from the power supply board. No distrubution of power is being provided. This connection just receives the low voltage power supply for internal distribution of the main control board.

Connector		From	To	Voltage	Conditions
Main Control Board	P4	P4-1	P4-4	12.7 VDC	User Interface. Constant 12 V.
		P4-3	Communication		Not used.

Main Control Board P5 Connector and Refrigerator and Freezer Thermistors

P5 Connector provides a logic circuit to the Main Control board. Pins P5 -3 and P5-4 monitor the output of the Freezer Compartment Thermistor per the chart below. NOTE: The set point range for the freezer is -5°F to 3°F (-21°C to -16°C).

As the Freezer temperature changes the resistance of the thermistor changes and provides the information to the main control board at Connector P5-3 and P5-4. This resistance change will initiate some response from the Main Control board. If the temperature is getting to warm, a signal will be sent to the three way valve relay P13 to switch refrigerant flow to the freezer evaporator and start cooling the FC.

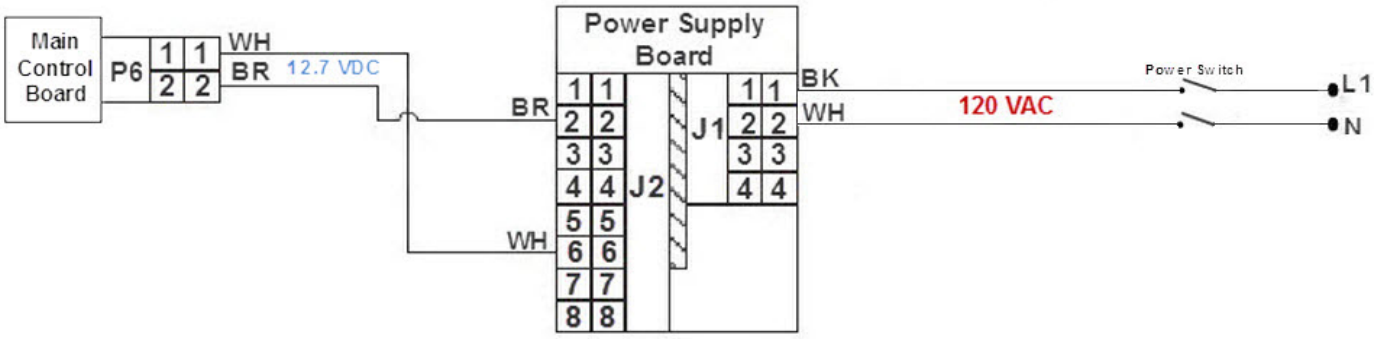


TEMP °F (°C)	RESISTANCE Ω (APPROX)	TEMP °F (°C)	RESISTANCE Ω (APPROX)
-5 (-20)	25900-27500	25 (-4)	10400-11000
0 (-18)	22100-23500	30 (-1)	8990-9550
5 (-15)	18900-20000	32 (0)	8750
10 (-12)	16200-17200	35 (2)	7800-8290
15 (-9)	13900-14800	40 (4)	6800-7220
20 (-6)	12000-12800	45 (7)	5930-6300

Connector		From	To	Voltage	Conditions
Main Control Board	P5	P5-3	P5-4	5 VDC	FC Thermistor output = 1.5 to 5 VDC.

Main Control Board P6 Connector

Just as the P4 Connector not much is happening at the P6 connector. P6-1 and P6-2 receives a constant 12.7 VDC from the Power Supply board. No external distribution of the low voltage power, just internal to the main control board.



Connector		From	To	Voltage	Conditions
Main Control Board	P6	P6-2	P6-1	12.7 VDC	Constant 12.7 V.

Main Control Board P8 Connector, the Refrigerator and Freezer Evaporator Thermistors and the Compressor Inverter circuit.

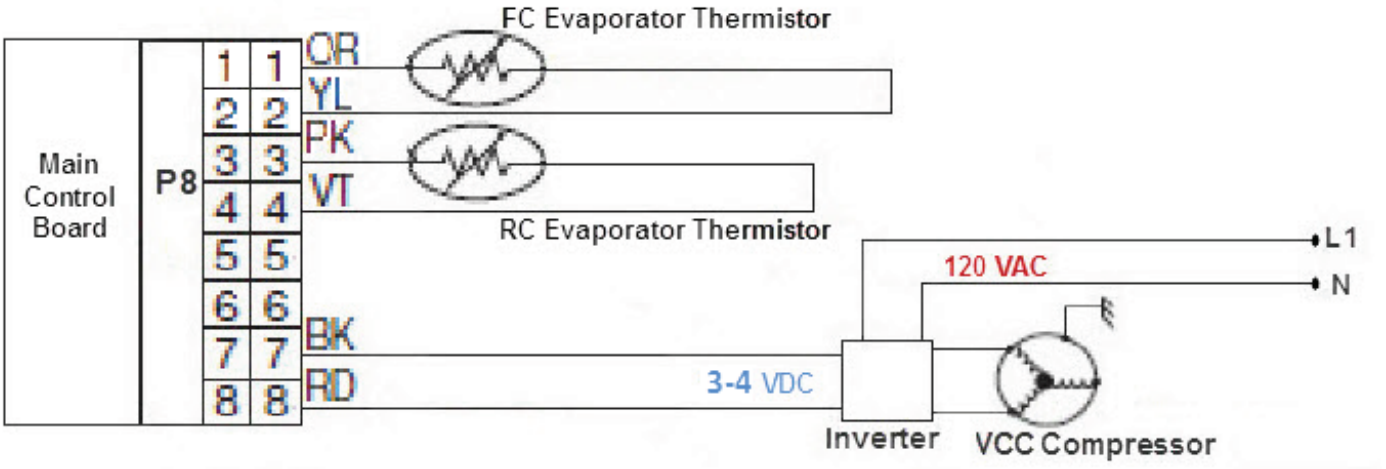
The Main Control Board P8 connector is a very important area. The P8 Connector provides two logic circuits to the Main Control Board. The Freezer and Refrigerator Evaporator Thermistors monitor the temperature of the evaporator areas and provide an OHMs resistance change to the main control board when temperatures change.

As the Freezer evaporator temperature changes the resistance of the thermistor changes and provides the information to the main control board at Connector P8-1 and P8-2. This resistance change will initiate activity from the Main Control board. If the Freezer evaporator temperature is getting to warm, a signal will be sent to the defrost heater (P2-7) to defrost the evaporator. We discussed this earlier in the P2 Connector section.

As the Refrigerator evaporator temperature changes the resistance of the thermistor changes and provides the information to the main control board at Connector P8-3 and P8-4. This resistance change will also initiate activity from the Main Control board. If the temperature is getting to warm, a signal will be sent to the three way valve relay P13 to switch refrigerant flow to the RC evaporator and start cooling the refrigerator compartment.

These two circuits are largely responsible for how the main control board operates and are also a big reason for mis-diagnostics in the field. Most often if the refrigerator or freezer is not working correctly it is because the main control board is not being given the correct information from the logic circuits (FC Thermistors at the P5 Connector, RC and FC Evaporator Thermistors at Connector P8 and the RC Thermistor at Connector J4 of the User Interface). Each of these thermistors operate identically from the information on the Thermistor Chart at the P5 Connector section. Temperature change and resistance change from the thermistors make refrigerators operate properly.

The P8 Connector also supplies low voltage power (12.7 VDC) to the compressor inverter. The inverter also is supplied 120 VAC from the home power supply, this 120 VAC does not go through the Power Supply board.



Connector		From	To	Voltage	Conditions
Main Control Board	P8	P8-1	P8-2	5 VDC	FC Evaporator Sensor
		P8-3	P8-4	5 VDC	RC Evaporator Sensor
		P8-7	P8-8	3-4 VDC	Inverter input

Main Control Board P9 Connector and Mullion Heater

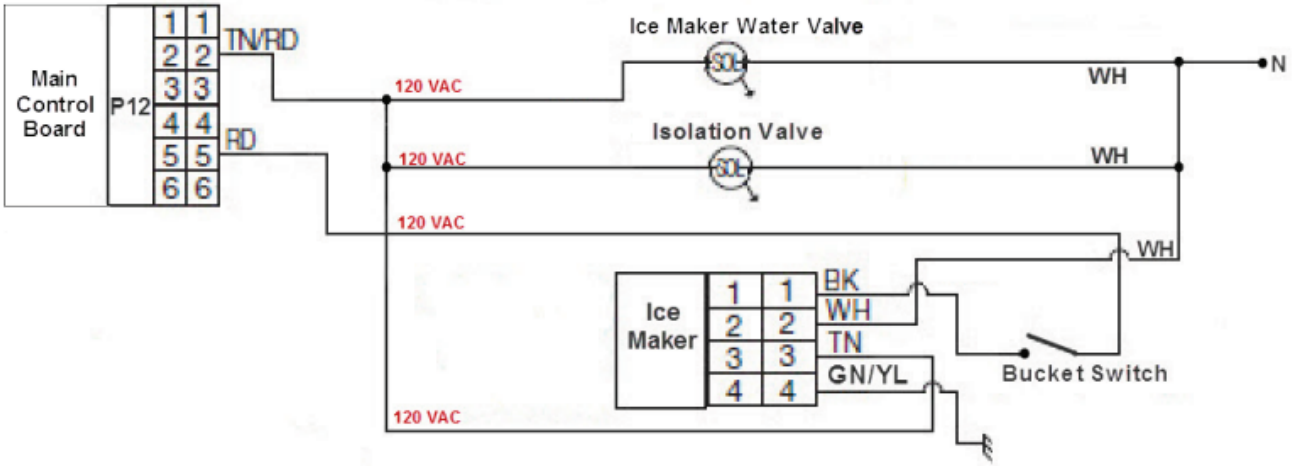
Connector P9 controls the operation of the mullion heater. 12.7 VDC is supplied across a 25 Ohm heater. The mullion heater is activated when the Humidity sensor senses that the ambient humidity is to high.

Main Control Board	P9	P9-2	P9-3	12.7 VDC	Vertical mullion heater. R = Approx. 25 ohms across heater.

Main Control Board P12 Connector, the Ice Maker Water inlet Valve and the Isolation Valve

P12 Connector P12-2 provides 120 VAC to both the Isolation Valve that receives incoming water from the home and the Ice Maker Water inlet valve that receives water that has passed through the water filter.. Water enters the refrigerator through the Isolation Valve to the water filter. As the water exits the water filter is passes through the Ice Maker Water Inlet Valve to the Ice Maker.

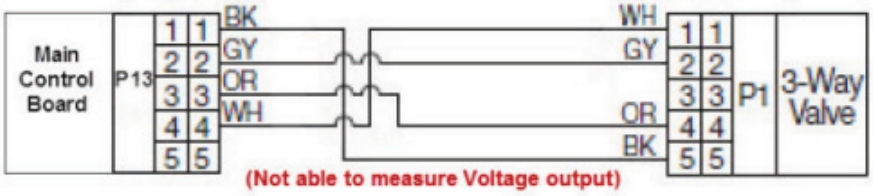
Pin P12-5 supplies 120 VAC to the Ice Maker for normal operation. The neutral side of the circuit is activated through a Normally Open Bucket Switch that opens the circuit when the ice bucket is pulled out of the freezer, or not in position. This diagram shows the Ice Bucket removed or pulled out far enough to deactivate the Bucket Switch.



Connector		From	To	Voltage	Conditions
Main Control Board	P12	P12-2	P1-2	110 V	Ice maker feedback only when harvest cycle is completed.
		P12-5	P1-2	110 V	Ice maker output only when ice maker is on.

Main Control Board P13 Connector, the 3 way refrigeration valve

The P13 connector receives signals from the Main Control Board when the FC thermistor or RC evaporator thermistor senses warm temperature changes (A resistance change across the thermistor). The main control board closes the P13 relay to activate the refrigerant 3-Way Valve. The valve will send refrigerant to the refrigerator side to cool the refrigerator compartment first before sending to the freezer side. The voltage output from the P13 terminals cannot be measured.

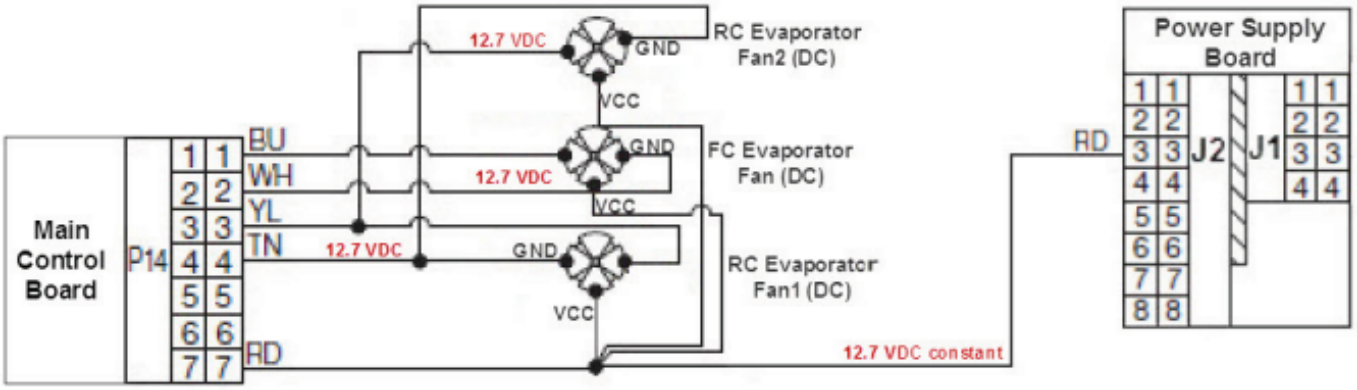


Connector		From	To	Voltage	Conditions
Main Control Board	P13	P13-1	P13-2		3-way refrigerant. Cannot check voltage output.
		P13-3	P13-4		3-way refrigerant. Cannot check voltage output.

Main Control Board P14 Connector, the Refrigerator and Freezer Evaporator Fan Motors

The P14 Connector is another important connector because it controls the evaporator fans that circulates air across the Refrigerator and Freezer evaporator compartments. Without the circulation of air in these areas, thermistors can not correctly monitor the temperature changes and will not be able to provide accurate information to the main control board. Again the main control board will only react when it is supplied with accurate information. This is another opportunity for mis-diagnostics in the field. These are low voltage (12.7 VDC) circuits.

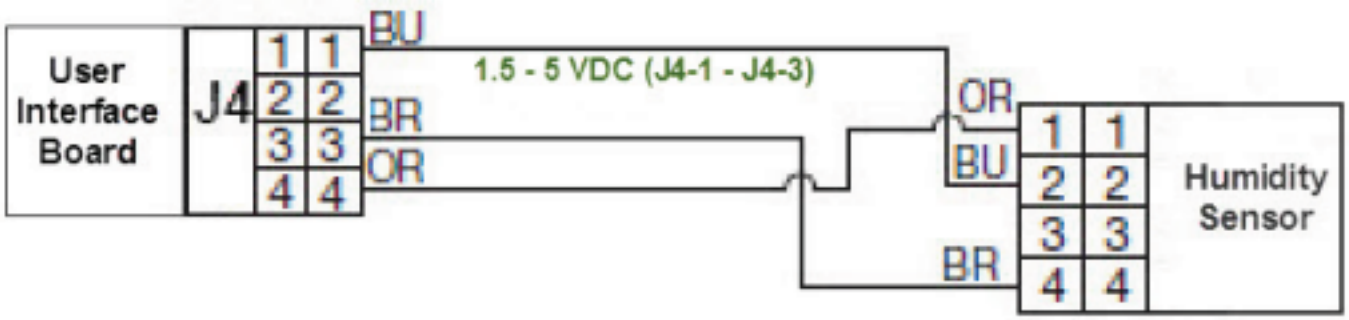
The P14 connector also provides a constant low voltage signal back to the Power Control board through pin P14- 7.



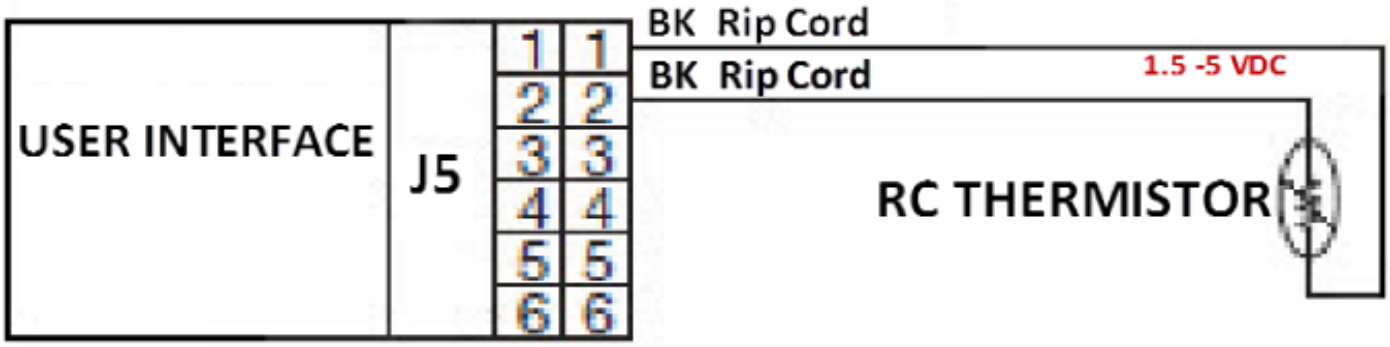
Connector		From	To	Voltage	Conditions
Main Control Board	P14	P14-1	P14-2	12.7 VDC	FC Fan Motor. Output activate Service Test 3, Step 2.
		P14-3	P14-4	12.7 VDC	RC Fan Motor.
		P14-7		12.7 VDC	Constant.

User Interface J4, J5 & J8 Connectors

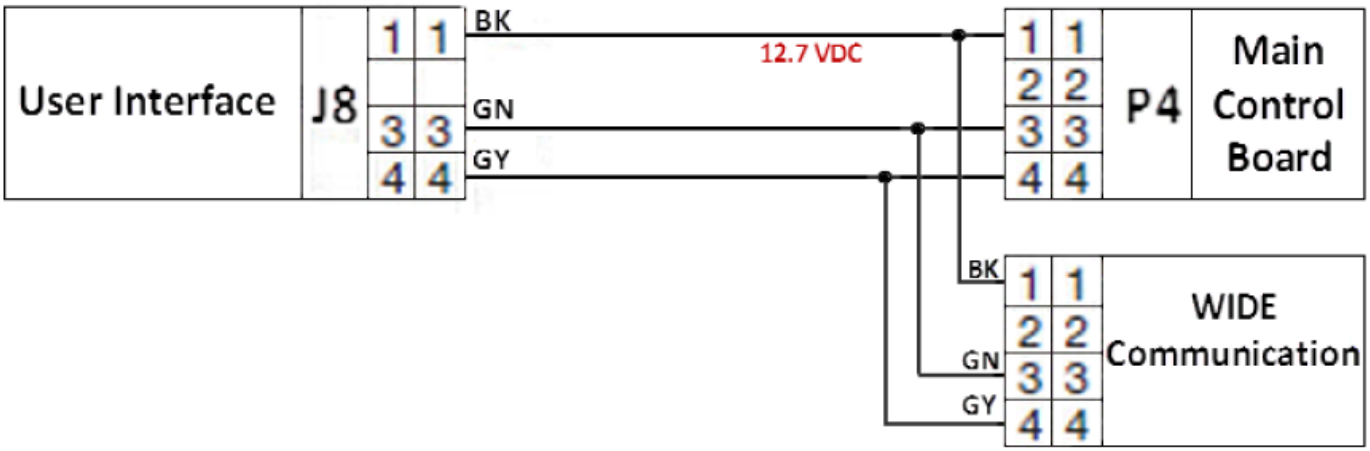
The J4 Connector is located on the User Interface. The J4 connector monitors the ambient humidity and activates the mullion heater until the humidity is stabilized. The mullion heater reduces moisture that accumulates when the refrigerator door is opened.



The J5 connector is also located on the User Interface board. It monitors the refrigerator compartment temperature using the RC Thermistor. If the RC thermistor ohms reading drops the Main Control Board will use the information to start refrigerator coolant flowing.



One final connector on the User Interface, the J8 connector provides information to the Main control board at the P4-1 terminal. The WIDE Communication board helps provide the link between the Main Control Board and the User Interface. 12.7 VDC Is shown between the User interface J8-1 and J8-4. Main Control Board P4-1 to J8-4 and the WIDE Communication Board terminal 1 to J8-4.

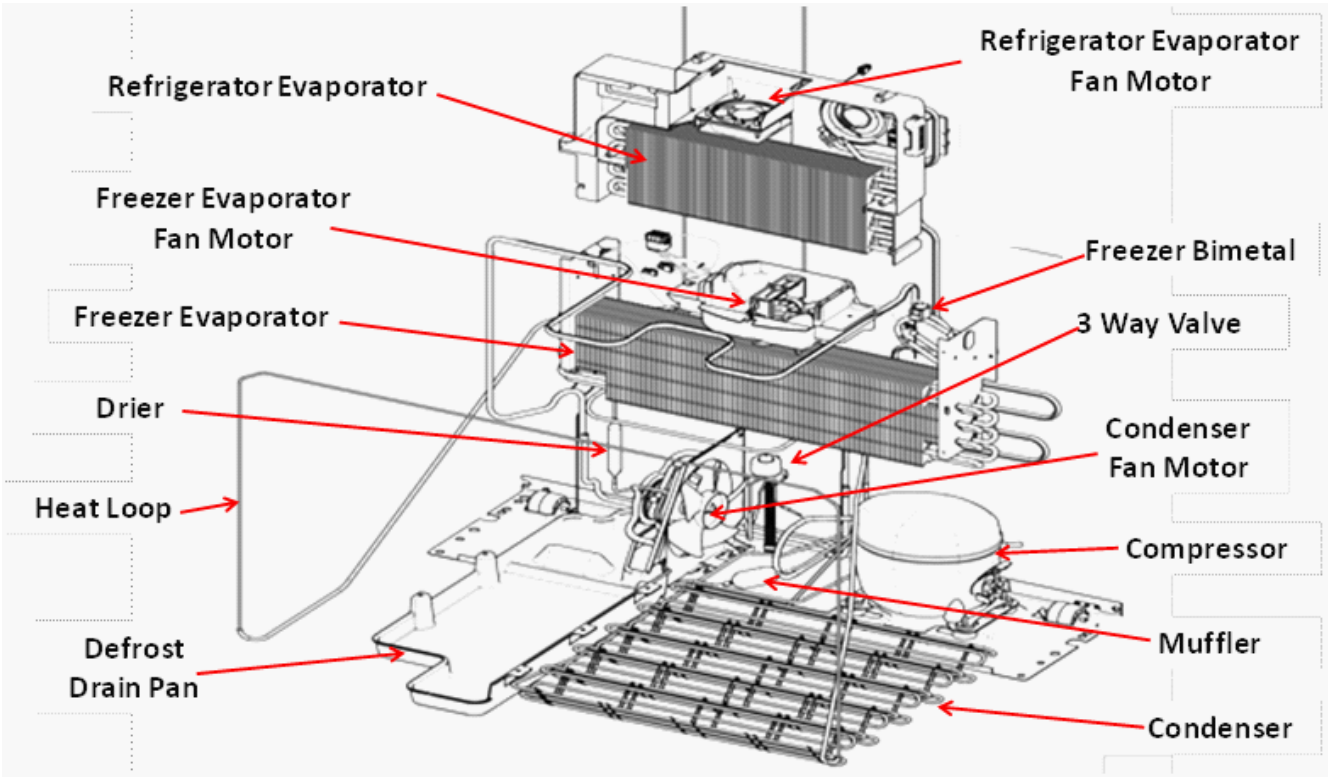


Voltqage distribution from the User Interface 3 connectors.

User Interface	J8	J8-4	J8-1	12.7 VDC	User Interface.
		J8-3			Wide communication.
	J4	J4-1	J4-3	1.5 to 5 VDC DC	Humidity Sensor.
	J5	J5-1	J5-2	1.5 to 5 VDC RC	Thermistor output.

Dual Evaporator Refrigerant Cooling System Operation

PARTS LAYOUT

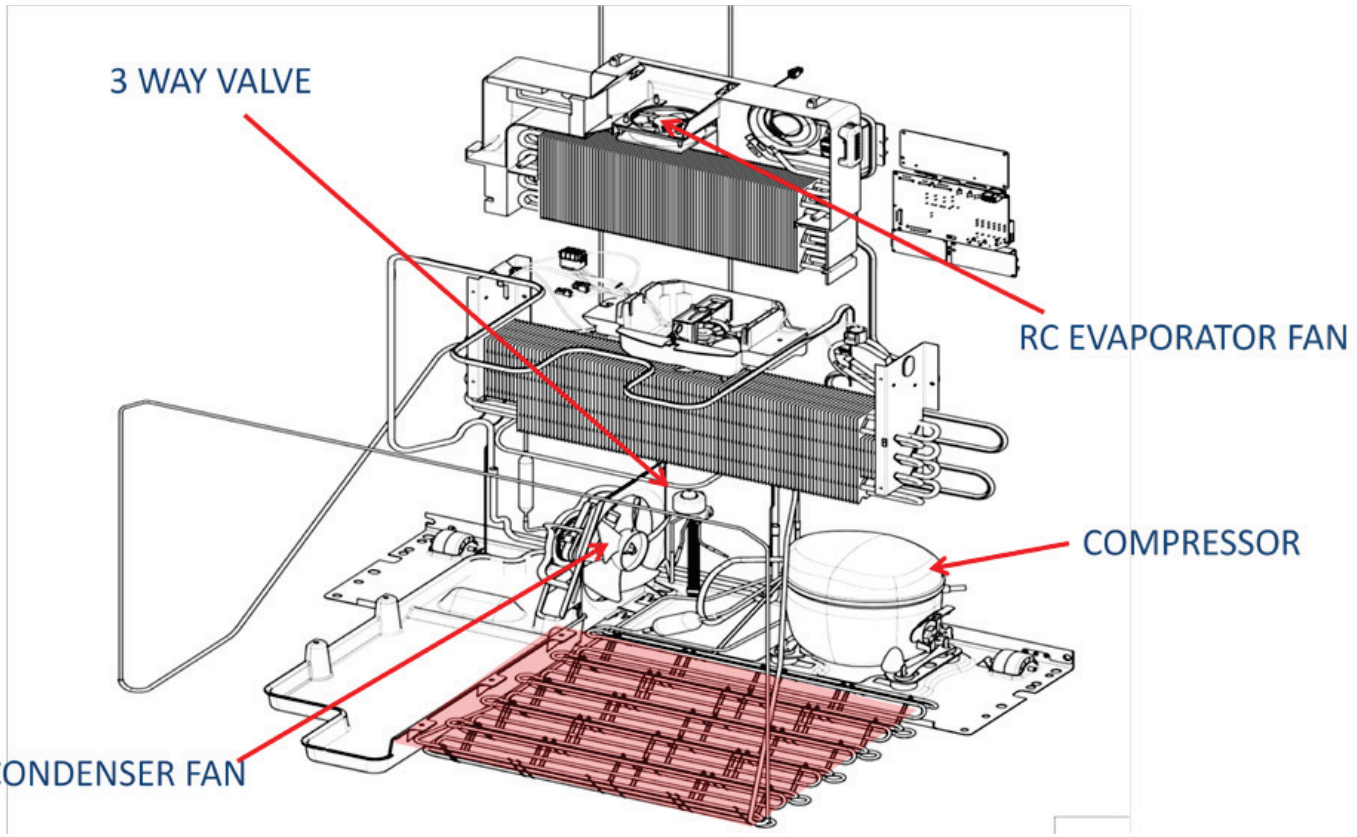


This is what a typical Refrigerator Dual Evaporator Cooling system would look like. Depending on the design of the refrigerator, other systems will look different. This picture shows the operational components used in every dual evaporator cooling system.

Two separate evaporators and capillary tubes - one for the refrigerator and one for the freezer.

A 3 way valve is used to direct refrigerant flow to either the refrigerator or freezer evaporator coil depending on the compartment in need of cooling. Refrigerant flow is only directed through one evaporator at a time.

COOLING OPERATION

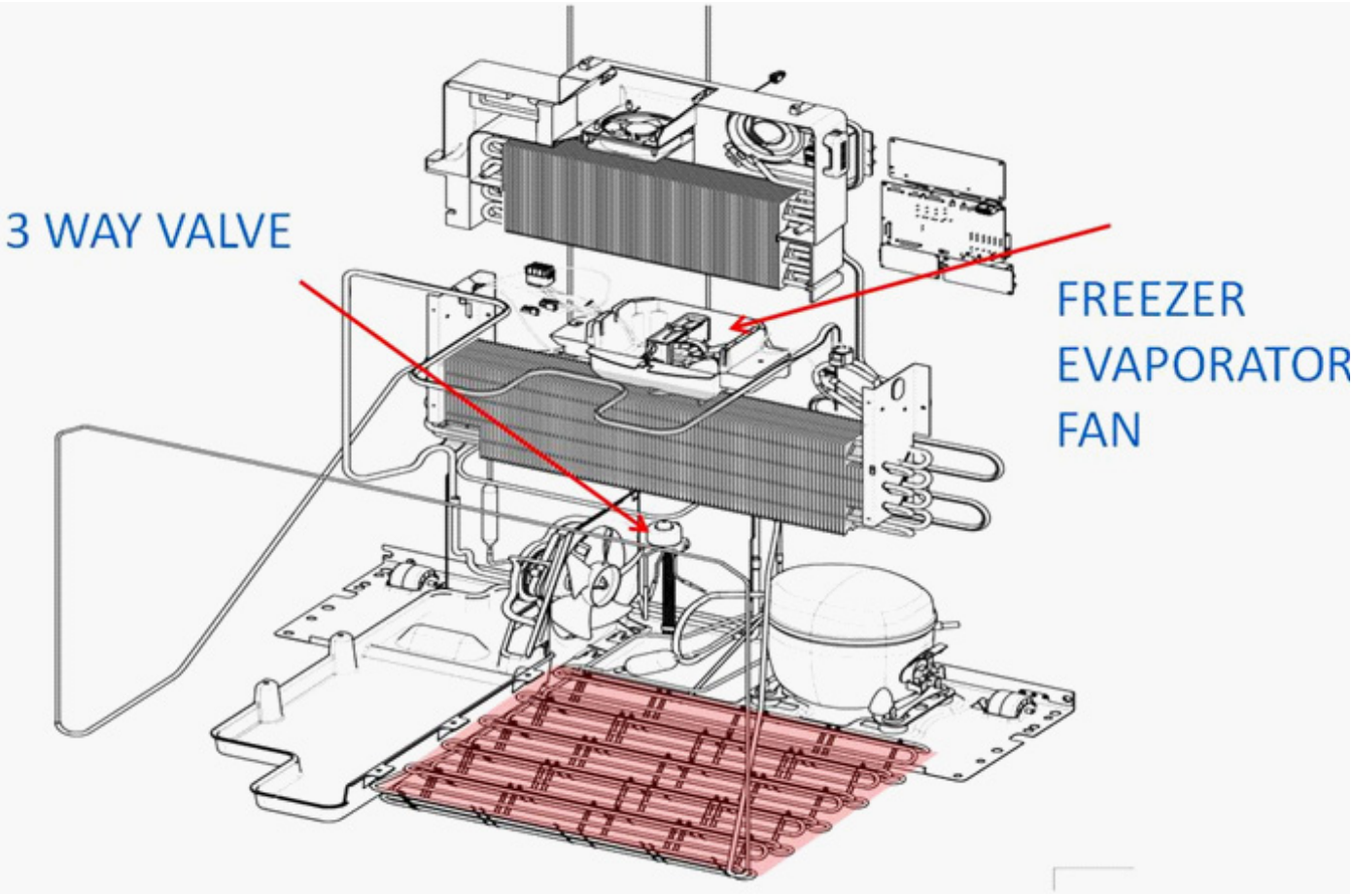


COOL REFRIGERATOR FIRST - When the refrigerator is first plugged in, the system will automatically direct all refrigerant to the refrigerator side through the 3 way valve

Compressor, condenser fan, refrigerator evaporator fan turn on.

The compressor evacuates the refrigerant from the low side of the system and pumps it into the high side of the refrigerant system. The 3 way valve changes position allowing refrigerant to flow from the high side, through a capillary tube, and into the refrigerator evaporator coil. The condenser fan filters ambient air around the compressor area to keep it cool. The refrigerator evaporator fan circulates air across the evaporator coil allowing cooling of the refrigerator compartment. The refrigerator compartment cooling will always happen first.

COOLING FREEZER

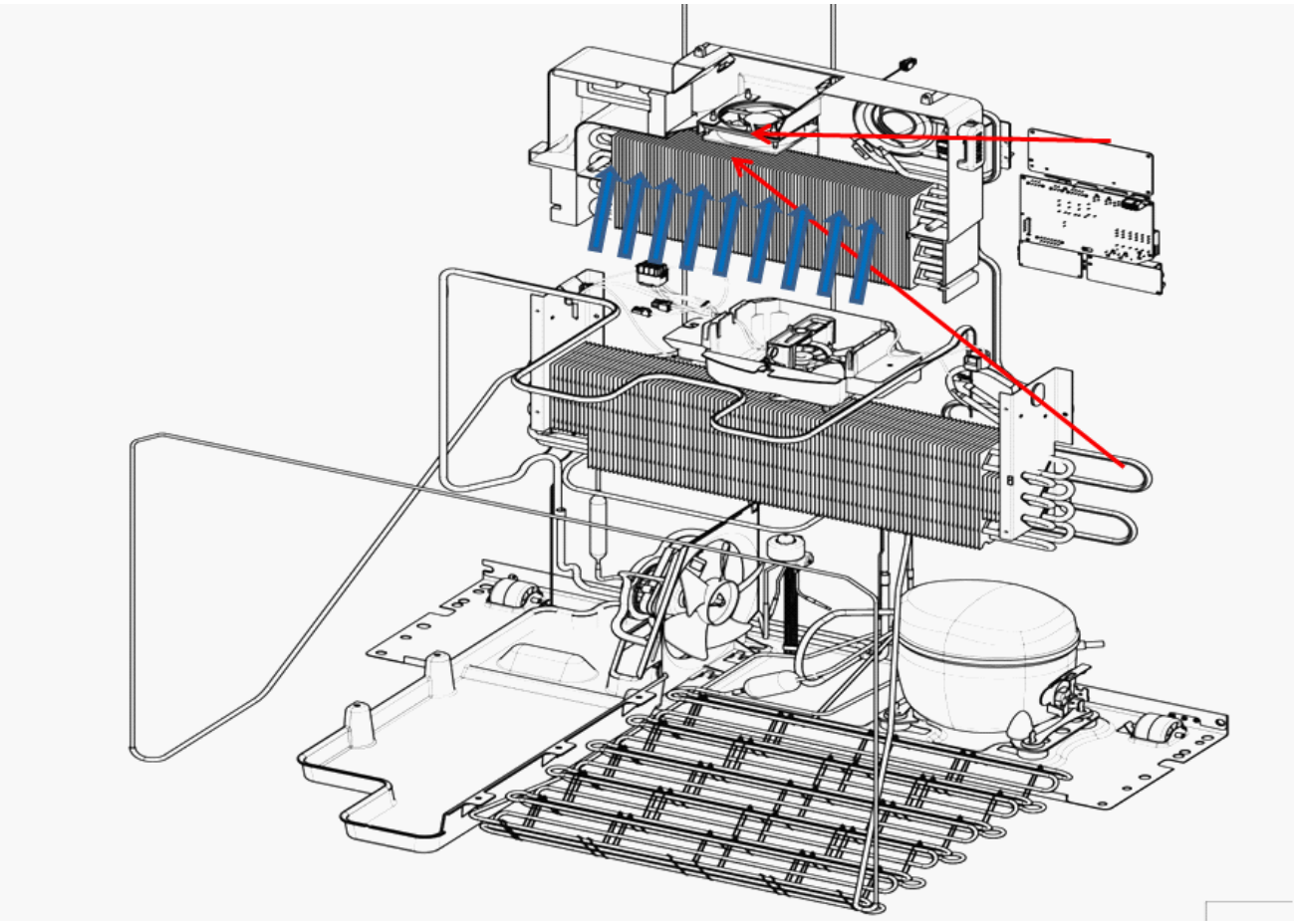


REFRIGERATOR COOL SYSTEM CHANGES TO FREEZER

Once the RC thermistor notifies the Control Board that the refrigerator is cool, the system changes over to cool the freezer. The 3 way valve changes position from cooling the refrigerator to cooling the freezer. At this point refrigerant flows from the high side, through a capillary tube, and into the freezer evaporator coil allowing the cooling of the freezer compartment. The freezer evaporator fan also turns on and circulates air across the evaporator coil. Cooling of the freezer compartment continues for 15 minutes and then switches back to the refrigerator.

This operation continues until each compartment is satisfied at which point the normal cooling mode begins.

NORMAL COOLING – after initial startup and both compartments have been cooled.



Note: All four thermistors in the refrigerator and freezer compartments (RC Thermistor, RC Evaporator Thermistor, FC thermistor and FC Evaporator Thermistor) operate as shown in the Temp/Resistance chart seen here. These 4 readings are constantly supplied to the Control board.

TEMP °F (°C)	RESISTANCE Ω (APPROX)	TEMP °F (°C)	RESISTANCE Ω (APPROX)
-5 (-20)	25900-27500	25 (-4)	10400-11000
0 (-18)	22100-23500	30 (-1)	8990-9550
5 (-15)	18900-20000	32 (0)	8750
10 (-12)	16200-17200	35 (2)	7800-8290
15 (-9)	13900-14800	40 (4)	6800-7220
20 (-6)	12000-12800	45 (7)	5930-6300

The Refrigerator Compartment (RC) Thermistor supplies a resistance (Ω) reading less than the normal reading of 78KΩ (which represents 35°F) to the Control Board. At this point the Control Board is checking the RC Evaporator Thermistor to see if the warm condition is due to ice build up on the RC evaporator (blocking air flow) or if the door has been left open or opened and closed too often.

RC Evaporator Thermistor provides the control board with a reading of less than the normal reading of 78K Ω . This ohms reading indicates to the control that the air blowing over the Evaporator Thermistor is being blocked most likely because of an ice buildup on the evaporator. There is not a defrost heater on the evaporator in the refrigerator. The control board opens the circuit to the compressor 3 way valve so no refrigerant is being sent to the refrigerator. The control board turns on the evaporator fans which pulls warmer air from the refrigerator compartment to flow over the inactive evaporator and melt the ice buildup. As the warmer air is being pulled from the refrigerator compartment and cycling over the evaporator ice the refrigerator compartment actually gets a little cooler. Once the refrigerator starts to warm up (ice buildup cleared and fan blowing warm air into the refrigerator compartment), the RC thermistor shifts priority to getting the refrigerator compartment cooler. The control board senses the lower ohms reading from the RC thermistor and sends a signal to the compressor 3 way valve to start flow of coolant to the RC evaporator.

RC Thermistor provides control board a reading of less than 78K Ω

Because of the information it receives, the Control Board reacts.

The Control Board determines that the refrigerator is warm but the evaporator is operating efficiently.

The Control Board communicates to the 3 Way Valve to open the RC cooling system.

The Control Board tells the Condenser Fan to turn on to circulate air to keep the compressor area cool, and evaporate any water left in the defrost pan.

Control Board directs information to the Compressor through the Inverter to start pushing the coolant from the condenser to the RC evaporator.

Control Board informs the RC evaporator fan to start operating because refrigerant is on the way to the evaporator.

The Evaporator Fan circulates air through the evaporator into the RC. The cooler air passing over the thermistor changes the ohms reading of the thermistor and as it approaches 78K Ω (approximately 35°) and maintains that reading for 15 minutes the cycle stops.

Freezer calling for cooling

As the refrigerator compartment cycle is completed, the Control Board is continually monitoring temperatures in the Freezer Compartment. The same operation as described above is put into action when the FC thermistor provides an ohm reading less than 189K (approximately 5°F). The control board accepts what the FC thermistor is indicating and reacts just like it did in the refrigerator.

In this case the Control Board check of the Freezer Evaporator Thermistor indicates that it is providing ohm readings of less than 189K. The low temperature registered by the FC Evaporator Thermistor usually means that the evaporator is iced up and the evaporator fan can't cycle cool air through the evaporator or into the Freezer.

From the information collected from the two thermistors, the control board realizes that a Defrost cycle is required.

The Control Board informs the Defrost Heater (by closing the defrost heater relay and sending 120 VAC to the heater) that the ice build up around the FC evaporator needs to be cleared. Once the Defrost heater is activated with 120 VAC, the 34 Ohm resistance heater starts to melt the ice buildup on the evaporator. The heater is activated for as little as 3 minutes to a maximum 25 minutes, depending on the information provided from the FC evaporator thermister.

If the defrost heater is on too long and the temperature in the evaporator compartment reaches 183 degrees F, the thermofuse will open and stop any other heat buildup. If the thermofuse fails, the defrost heater will not operate again until service can identify why temperatures reached the higher than normal set point and the thermofuse is replaced.

NOTES

Section 3: Electronic Control Boards with Voltage Checks and Terminal Colors

This section provides a look at all the control boards used on this refrigerator, voltage checks and wire colors for all connectors.

- Power Supply Board
- Main Control Board
- L.E.D. and Power Supply Driver Board
- User Interface

⚠ DANGER

Electrical Shock Hazard

Only authorized technicians should perform diagnostic voltage measurements.

After performing voltage measurements, disconnect power before servicing.

Failure to follow these instructions can result in death or electrical shock.

⚠ WARNING

Electrical Shock Hazard

Plug into a grounded 3 prong outlet.

Do not remove ground prong.

Do not use an adapter.

Do not use an extension cord.

Failure to follow these instructions can result in death, fire, or electrical shock.

Voltage Measurement Safety Information

When performing live voltage measurements, you must do the following:

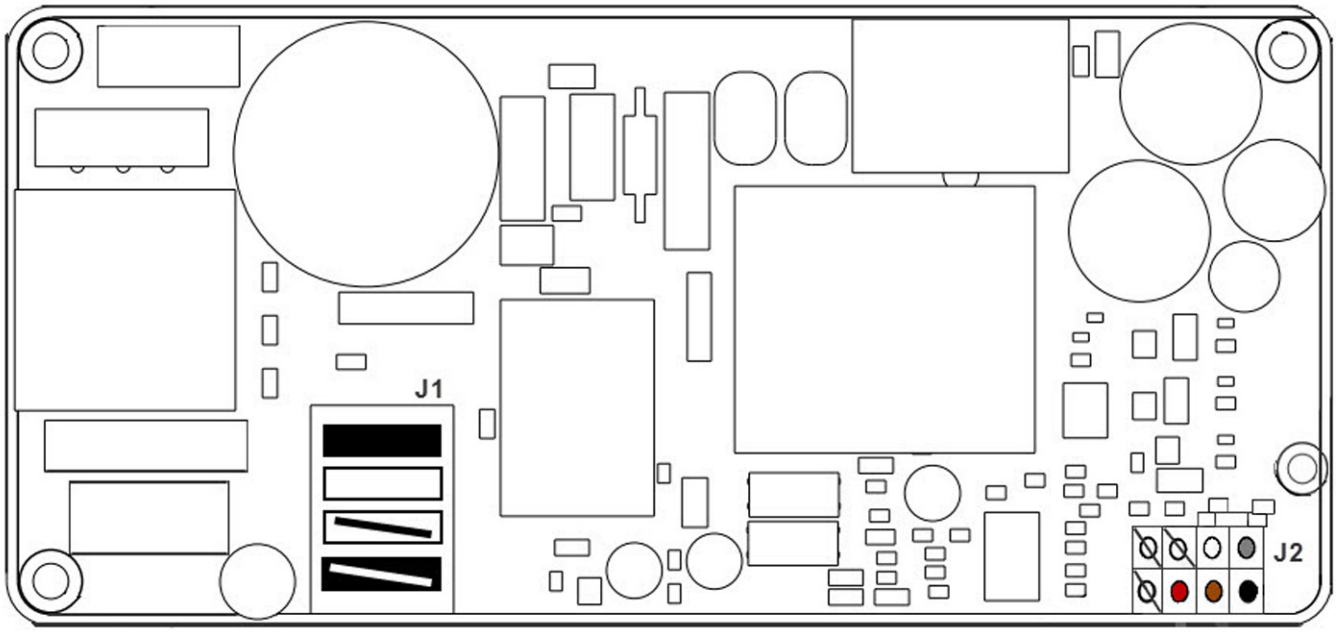
- **Verify the controls are in the off position so that the appliance does not start when energized.**
- **Allow enough space to perform the voltage measurements without obstructions.**
- **Keep other people a safe distance away from the appliance to prevent potential injury.**
- **Always use the proper testing equipment.**
- **After voltage measurements, always disconnect power before servicing.**

Electronic Control Boards with Voltage Charts

Power Supply Board

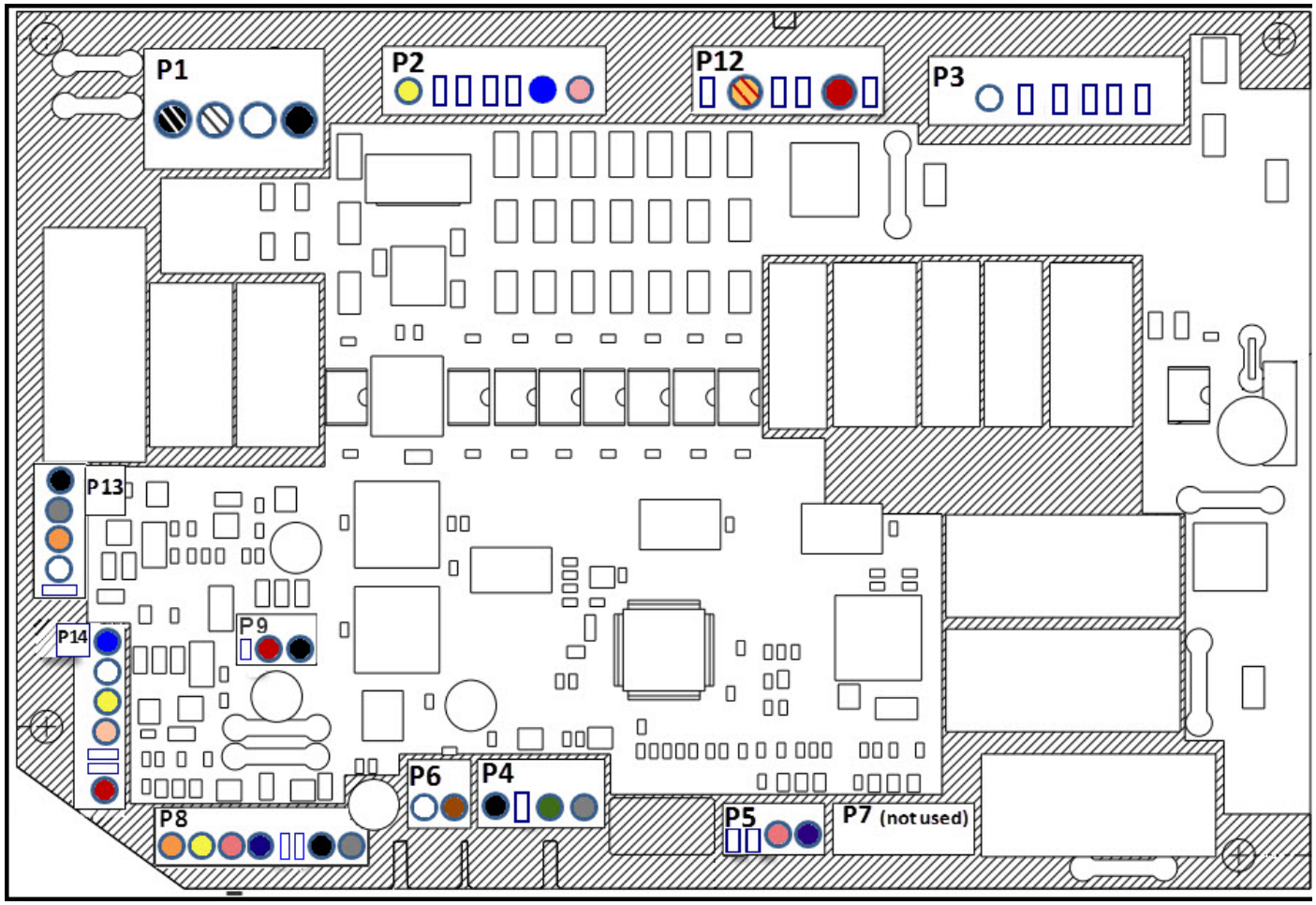
To check for proper voltage, complete the following steps:
1. Unplug refrigerator or disconnect power.
2. Connect voltage measurement equipment to proper connectors.
3. Plug in refrigerator or reconnect power and confirm voltage readings.
4. Unplug refrigerator or disconnect power after performing voltage checks.

Component		From	To	Voltage	Conditions
Power Supply	J1	J1-1	J1-2	115 VAC	Constant 115 VAC.
		J1-3	J1-4	115 VAC	Constant 115 VAC.
	J2	J2-1	J2-5	12.7 VDC	Constant 12.7 V.
		J2-2	J2-6	12.7 VDC	Constant 12.7 V.
		J2-3	J2-6	12.7 VDC	Constant 12.7 V.



J1-1 Black
J1-2 White
J1-3 White/Black
J1-4 Black/White

J2-1 Black
J2-2 Brown
J2-3 Red
J2-4 ---
J2-5 Gray
J2-6 White
J2-7 ---
J2-8 ---



P1-1 Black/White
P1-2 White/Black
P1-3 ---
P1-4 Red

P2-1 Yellow
P2-2 ---
P2-3 ---
P2-4 ---
P2-5 ---
P2-6 Blue
P2-7 Pink

P3-1 White
P3-2 ---
P3-3 ---
P3-4 ---
P3-5 ---
P3-6 ---

P4-1 Black
P4-2 ---
P4-3 Green
P4-4 Gray

P5-1 ---
P5-2 ---
P5-3 Pink
P5-4 Violet

P6-1 White
P6-2 Brown

P8-1 Orange
P8-2 Yellow
P8-3 Pink
P8-4 Violet
P8-5 ---
P8-6 ---
P8-7 Black
P8-8 Red

P9-1 ---
P9-2 Red
P9-3 Black

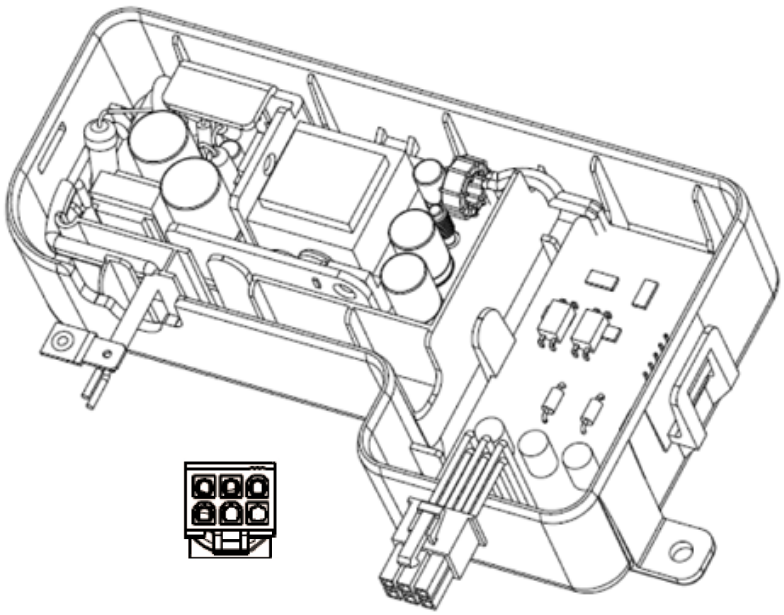
P12-1 ---
P12-2 Tan/Red
P12-3 ---
P12-4 ---
P12-5 Red
P12-6 ---

P13-1 Black
P13-2 Gray
P13-3 Orange
P13-4 White

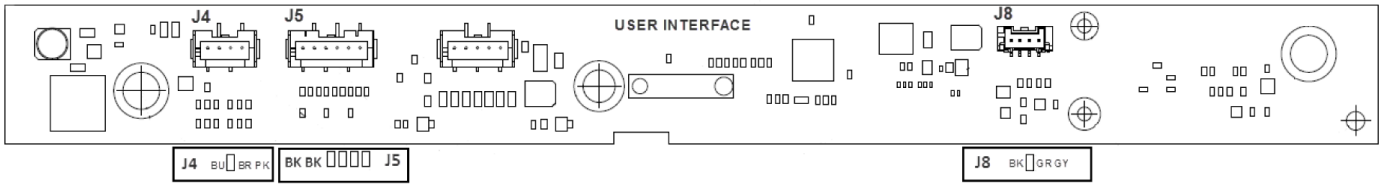
P14-1 Blue
P14-2 White
P14-3 Yellow
P14-4 Tan
P14-5 ---
P14-6 ---
P14-7 Red

Component		From	To	Voltage	Conditions
Main Control	P1	P1-1	P1-2	115 VAC	Constant 115 VAC.
		P1-4	P1-2	115 VAC	Compressor/Condenser Fan. Service Test 4. (01 = 115 VAC. 02 = 0 V.)
	P2	P2-1	P1-2	115 VAC	RC or FC door open = 115 V. Doors closed = 0 V.
		P2-6	P1-2	115 VAC	Fill Tube, Fascia Heater output. Service Test 7. (01 = 115 V. 02 = 0 V. R = Approx. 34K ohms across heater.)
		P2-7	P1-2	115 VAC	FC Defrost Heater output with Bi-metal. Service Test 12. (115 V. R = Approx. 24 ohms across heater.)
	P3	P3-1	P2-1	115 VAC	RC or FC door open = 115 V. Doors closed = 0 V.
	P4	P4-1	P4-4	12.7 VDC	User Interface. Constant 12 V.
		P4-3	Communication		Not used.
	P5	P5-3	P5-4	5 VDC	FC Thermistor output = 1.5 to 5 VDC.
	P6	P6-2	P6-1	12.7 VDC	Constant 12.7 V.
	P8	P8-1	P8-2	5 VDC	FC Evaporator Sensor
		P8-3	P8-4	5 VDC	RC Evaporator Sensor
		P8-7	P8-8	12.7 VDC	Inverter input across black and white wires is 120 VAC.
	P9	P9-2	P9-3	12.7 VDC	Vertical mullion heater. R = Approx. 16.1 ohms across heater.
	P12	P12-2	P1-2	110 V	Ice maker feedback only when harvest cycle is completed.
		P12-5	P1-2	110 V	Ice maker output only when ice maker is on.
	P13	P13-1	P13-2		3-way refrigerant. Cannot check voltage output.
		P13-3	P13-4		3-way refrigerant. Cannot check voltage output.
	P14	P14-1	P14-2	12.7 VDC	FC Fan Motor. Output activate Service Test 3, Step 2.
		P14-3	P14-4	12.7 VDC	RC Fan Motor.
		P14-7		12.7 VDC	Constant.

Component		From	To	Voltage	Conditions
LED PS + Driver	P1	P1-2	P1-1	115 VAC	All doors opened.
	P2	P2-2	P2-1	11.4 VDC (±10%)	All doors opened.
		P2-4	P2-3	11.4 VDC (±10%)	All doors opened.
		P2-6	P2-5	11.4 VDC (±10%)	All doors opened.



Component		From	To	Voltage	Conditions
User Interface	J8	J8-4	J8-1	12.7 VDC	User Interface.
		J8-3			Wide communication.
	J4	J4-1	J4-3	1.5 to 5 VDC DC	Humidity Sensor.
	J5	J5-1	J5-2	1.5 to 5 VDC RC	Thermistor output.



J4-1 Blue
J4-2 ---
J4-3 Brown
J4-4 Orange

J5-1 Black
J5-2 Black
J5-3 ---
J5-4 ---
J5-5 ---
J5-6 ---

J8-1 Black
J8-2 ---
J8-3 Green
J8-4 Gray

NOTES

Section 4: Component Access

This section provides service parts access, removal, and replacement instructions for the “KitchenAid Built-In Dual Evaporator Bottom Mount Refrigerator.

Complete Component Access Video

■ Top of Refrigerator

- Front Decorative Panel
- On/Off Power Switch
- RC Light Switch
- Humidity Sensor & Wide Communication Board
- Main Control & Power Supply Boards
- 3-Way Refrigeration Valve
- Condenser Fan Motor
- Compressor Inverter

■ Inside the Refrigerator Compartment (RC)

- User Interface Board
- Evaporator Cover
- Evaporator Thermistor
- RC Thermistor
- Evaporator Fan Motor (2)
- Replacing the Evaporator Cover
- RC Evaporator
- LED Light Assemblies

■ Inside the Freezer Compartment (FC)

- Freezer Door/Drawer
- Replacing the Freezer Door/Drawer
- Ice Bucket & Freezer Pan
- Freezer Parts Layout
- Ice Bucket Switch and Slide Assembly
- Air Flow Duct
- Evaporator Grille
- Ice Maker Assembly
- Fill Tube Heater

■ Under Refrigerator

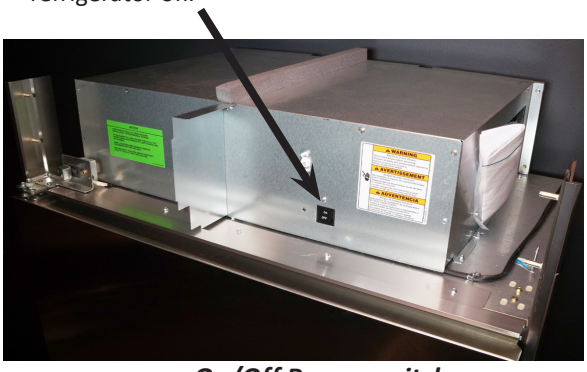
- **Ice Maker Water Inlet & Isolation Valves**

TOP OF THE REFRIGERATOR

REMOVING THE FRONT DECORATIVE COVER

1. Pull out on the cover bottom corners to loosen the cover. Pull the bottom of the cover out and lift up to clear the cover mounting pins.

2. Unplug the refrigerator or use the On/Off power switch located behind the Decorative Cover to turn the refrigerator off.



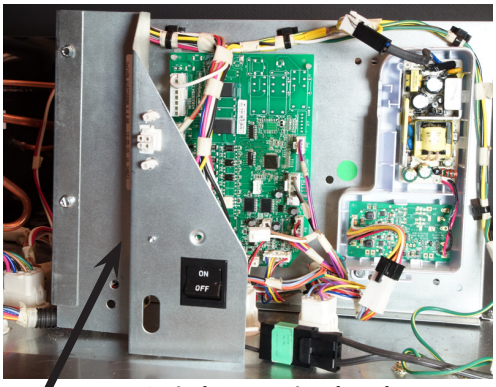
On/Off Power switch

REMOVING THE ON/OFF POWER SWITCH

1. Remove eight ¼" hex head screws fron the component area front access panel. It is not necessary to remove the divider panel.

Front Access Panel

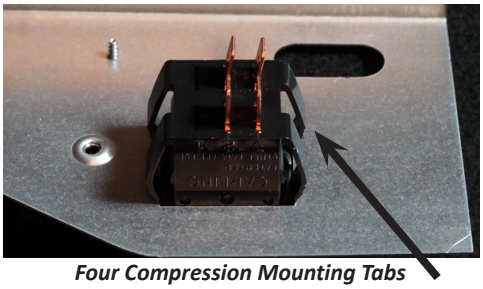
2. Remove two ¼" hex head screws from the power switch mounting bracket.



Power Switch mounting bracket

3. Remove 4 individual wire connections from the back of the switch.

4. The switch is mounted in place by compression tabs, squeeze the tabs and push the switch out the front of the bracket.



Four Compression Mounting Tabs

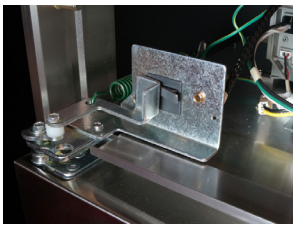
TOP OF THE REFRIGERATOR

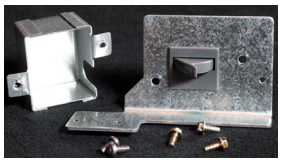
⚠WARNING

Electrical Shock Hazard
Disconnect power before servicing.
Replace all parts and panels before operating.
Failure to do so can result in death or electrical shock.

REMOVING THE REFRIGERATOR COMPARTMENT LIGHT SWITCH

1. Remove the front decorative cover (see removing the front decorative cover).
2. Locate the Light switch on the hinge side of the door.
3 Remove two phillips head mounting screws and remove the switch mounting bracket.
4. Remove two ¼" hex head screws from the front of the mounting bracket to release the switch.



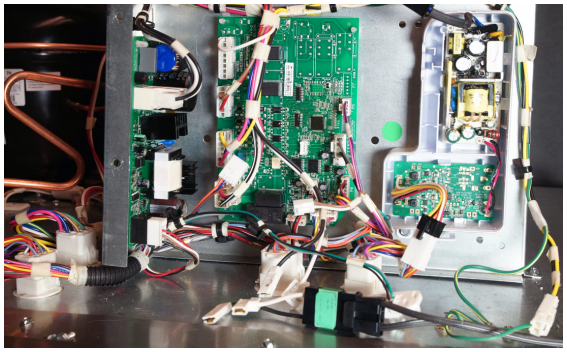


Light Switch mounting bracket and cover.

5. The switch is mounted in place by compression tabs, squeeze the tabs and push the switch out the front of the bracket.

REMOVING THE HUMIDITY SENSOR AND THE WIDE COMMUNICATION BOARD

1. Remove the front decorative cover (see removing the front decorative cover) and the front access panel.
2. Push the release tab on the left side of the each board and unsnap each board out of the mounting brackets.



All Electronic Boards

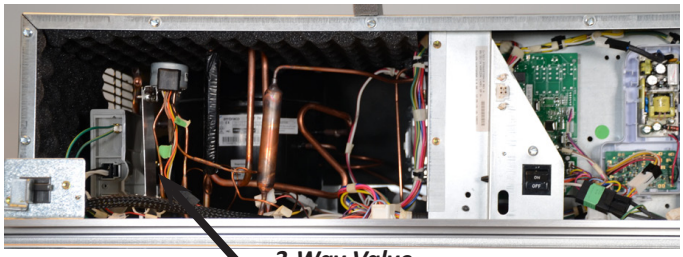
REMOVING THE MAIN CONTROL BOARD AND THE POWER SUPPLY BOARD.

1. Remove the front decorative cover (see removing the front decorative cover) and the front access panel.
3. Disconnect all the wire connections.
4. Each board is mounted by 4 spacer tabs located at each corner of the board. Squeeze each spacer tab and lift the board out.

TOP OF THE REFRIGERATOR

REMOVING THE 3 WAY REFRIGERATION VALVE

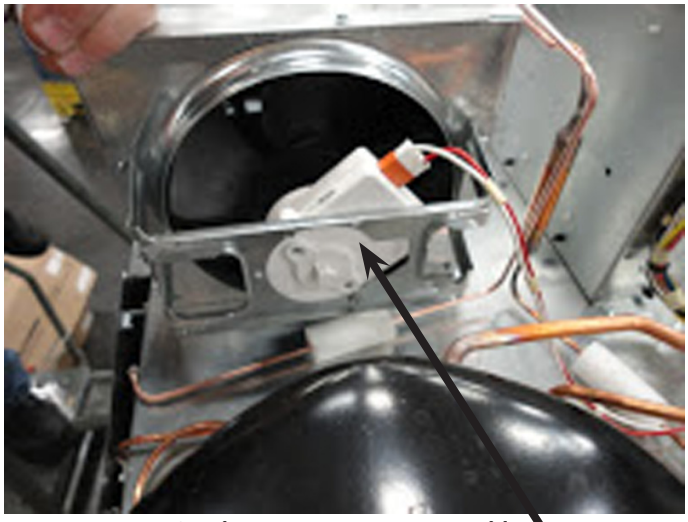
1. Remove the front decorative cover (see removing the front decorative cover) and the front access panel.
2. Locate the 3-Way Valve just left of top center.
3. Remove the quick disconnect plug.
4. Remove two ¼" hex head screws from the valve mounting bracket.
5. Release the valve mounting tab and lift the valve off of the mounting pin.



3-Way Valve

REMOVING THECONDENSER FAN MOTOR ASSEMBLY.

1. Remove the front decorative cover (see removing the front decorative cover) and the compontent compartment front access panel.
2. Remove six ¼" hex head screws that mount the component compartment cover and remove the cover.
3. Locate the condenser fan/motor assembly in the back of the compartment, to the right of the compressor.
4. The Motor is mounted with two ¼" hex head screws into a support bracket.
5. Remove the quick disconnect plug and the two 1/4" hex head screws that mount the fan motor.
6. The support bracket will need to be moved slightly to get the fan motor and fan blade assembly freed.
7. Remove the two ¼" hex head screws from the front of the support bracket and move the bracket just enough to free the motor and fan blade.



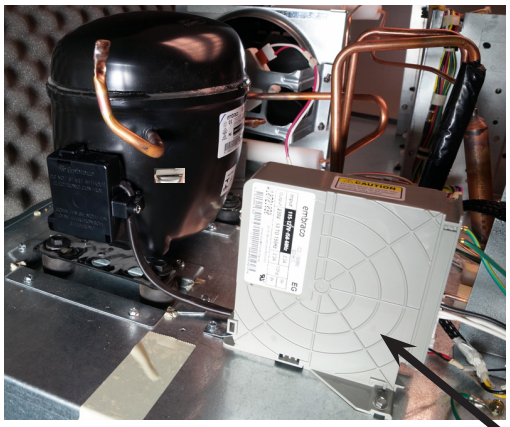
Condenser Fan Motor Assembly

TOP OF THE REFRIGERATOR

Compressor electrical cover

REMOVING THECOMPRESSOR INVERTER.

1. Remove the front decorative cover (see removing the front decorative cover) and the compontent compartment front access panel.
2. Remove six ¼” hex head screws that mount the component compartment cover and remove the cover.
3. Locate the inverter in front of the compressor.
4. Remove wire connections including the electrical cover from the compressor.
5. Remove 3 1/4” hex head mounting screws from the base of the inverter.



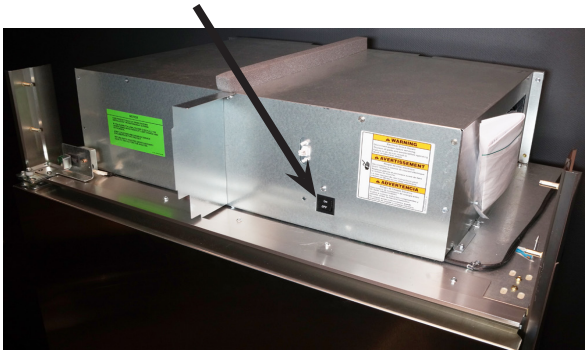
Inverter Box and Compressor electrical cover

INSIDE THE REFRIGERATOR COMPARTMENT

REMOVING THE FRONT DECORATIVE COVER

1. Pull out on the cover bottom corners to loosen the cover. Pull the bottom of the cover out and lift up to clear the cover mounting pins

2. Unplug the refrigerator or use the On/Off power switch located behind the Decorative Cover to turn the refrigerator off.



On/Off Power switch

THE EVAPORATOR COVER WILL NEED TO BE REMOVED TO GAIN ACCESS TO THE FOLLOWING COMPONENTS

REMOVING THE USER INTERFACE BOARD

1. The user Interface or U I is mounted inside the refrigerator compartment. Open the refrigerator door and locate the UI at the top of the refrigerator compartment.

2. The UI is held in place by three retainer clips. Use a small screwdriver to insert into the retainer clip access holes and push up on the retainer.

Retainer Clip Access Hole (3)

Electrical Connections (3)

INSIDE THE REFRIGERATOR COMPARTMENT

REMOVING THE RC EVAPORATOR COVER

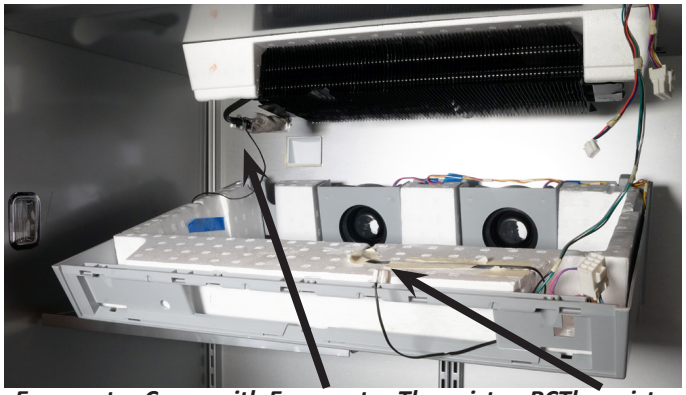
1. Remove the Uer Interface (See Removing the User Interface Board).
2. Locate and remove the 1/4” hex head screws at the top of the evaporator cover.

Evaporator Cover mounting screws (5)

3. Lower the evaporator cover.
4. Disconnect the quick disconnect plug and the RC evaporator thermister.

Note: See Removing the RC Evaporator Thermister in next step.

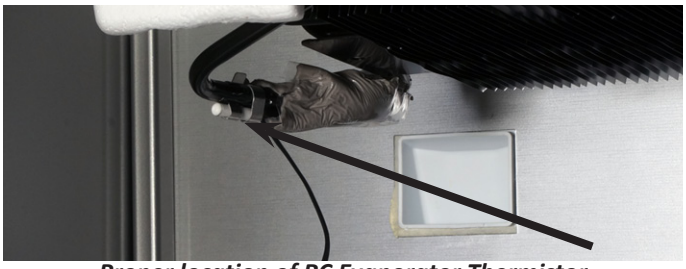
It may be helpful to have a refrigerator shelf in place to support the cover when lowered.



Evaporator Cover with Evaporator Thermistor, RCThermistor and evaporator fans (at back)

REMOVING THE RC EVAPORATOR THERMISTOR

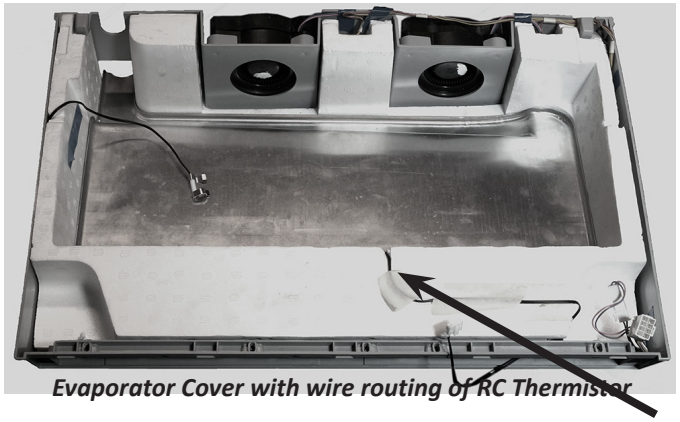
1. The Refrigeration Compartment Evaporator Thermistor is located on the left side of the evaporator cover. It is attached with a clip onto the inlet line of the evaporator. If the evaporator cover is lowered to quickly the clip will release before you are able to confirm the proper location. It is important that the thermistor be located in the same position during reassembly.



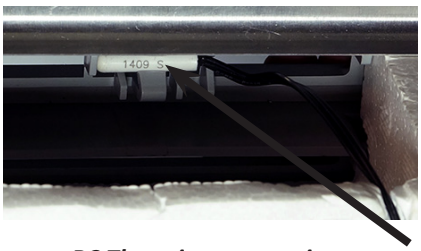
Proper location of RC Evaporator Thermistor

REMOVING THE RC THERMISTOR

1. Locate the RC thermister mounter in the thermal insulation foam



Evaporator Cover with wire routing of RC Thermistor

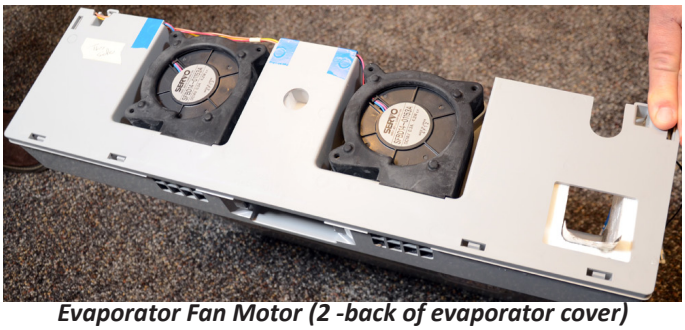


RC Thermistor mounting

INSIDE THE REFRIGERATOR COMPARTMENT

REMOVING THE EVAPORATOR FAN MOTOR (2)

1. Locate the fan motors at the back of the evaporator cover.

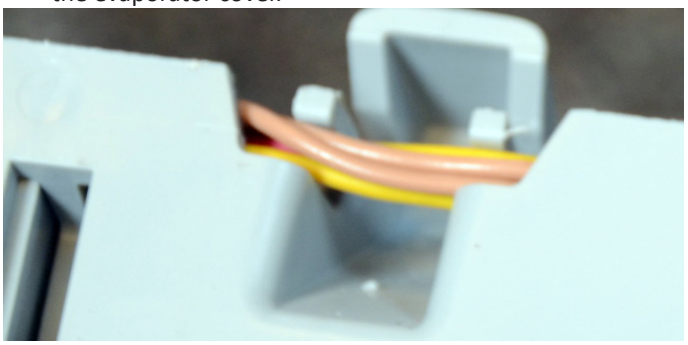


Evaporator Fan Motor (2 -back of evaporator cover)

2. Remove the rubber mounting from top of fan motor.
3. Disconnect the wire connection(s).

REPLACING THE EVAPORATOR COVER

1. Locate the evaporator cover mounting clips on the back of the evaporator cover.

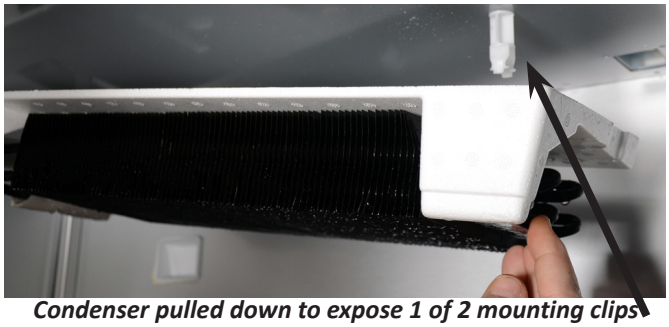


Retainer Clip at back of Evaporator Cover (one on each side)

2. These clips fit into mounting holes on the ceiling of the refrigerator just beside the evaporator.

ACCESSING THE RC EVAPORATOR

1. Remove the evaporator cover (See “Removing the evaporator cover”).
2. Pull the evaporator down to dismount it from 2 rubber condenser clips

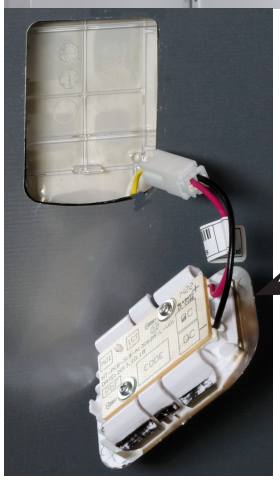


Condenser pulled down to expose 1 of 2 mounting clips

REMOVING THE LED LIGHT ASSEMBLIES

1. There are two LED light assemblies mounted on the bottom side of the evaporator cover. These lights can be removed from the evaporator cover by protecting the liner and using a putty knife to pry the light assemblies and unsnapping them from the outside of the cover. There are also LED lights in the refrigeration compartment that can be removed in the same manner.

Refrigerator LED Lights



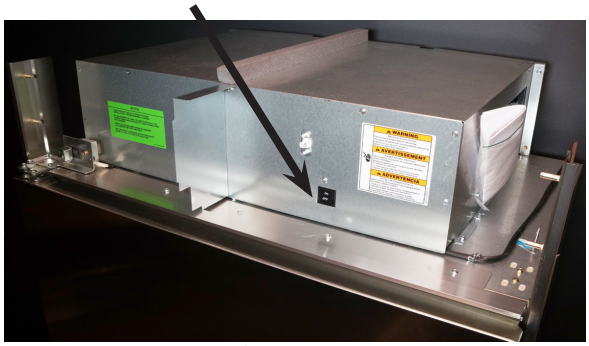
Refrigerator LED Light removed

INSIDE THE FREEZER COMPARTMENT

REMOVING THE FRONT DECORATIVE COVER

1. Pull out on the cover bottom corners to loosen the cover. Pull the bottom of the cover out and lift up to clear the cover mounting pins.

2. Unplug the refrigerator or use the On/Off power switch located behind the Decorative Cover to turn the refrigerator off.

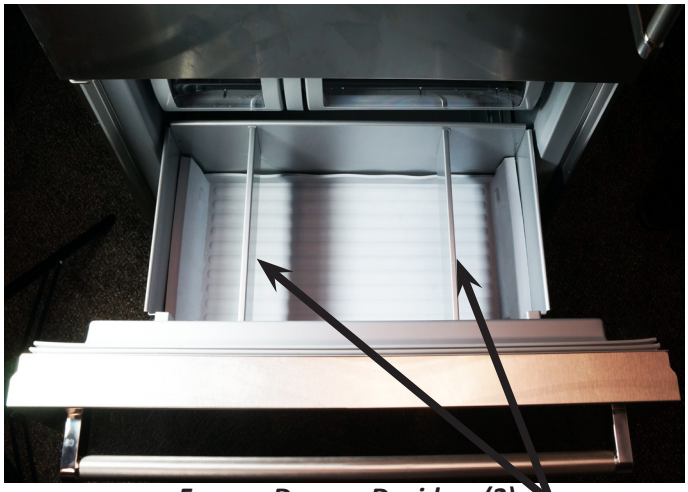


On/Off Power switch

REMOVING THE FREEZER COMPARTMENT DOOR/DRAWER

REMOVING THE FREEZER DOOR

1. There are two freezer drawer bin dividers locater in the freezer drawer. These dividers are required to be in place at all times as a safety devise. Do not forget to place them back in the drawer after service is completed.
2. To remove these dividers for service, remove two ¼' hex head screws that mount the dividers at the back of the freezer drawer.
3. Pull the front tabs out of the retainer slots at the front of the drawer and remove.
4. After the dividers are removed, remove the rubber mat from the drawer.

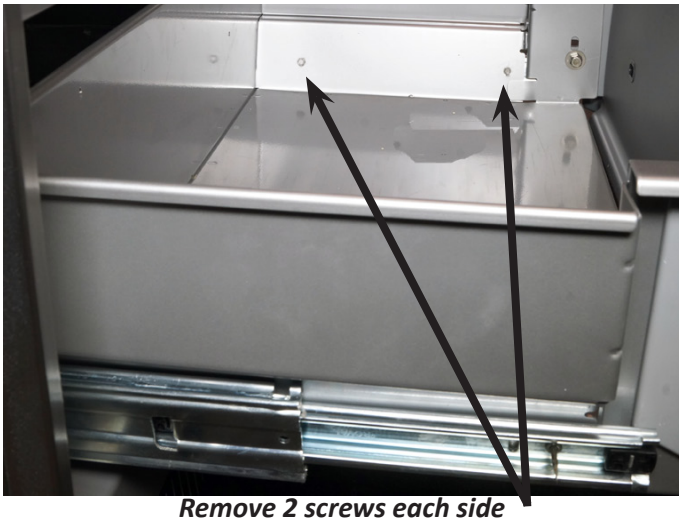


Freezer Drawer Deviders (2)

5. Remove four 5/16" hex head screws (2 from each side) of the drawer.
6. Lift the Door off the slide assemblies and out of the freezer.

NOTE: When reassembling the drawer back into the freezer it would be helpful to use two small screwdrivers to line up the two front screw holes to the slide assembly and then lowering the back of the drawer onto the slide bracket.

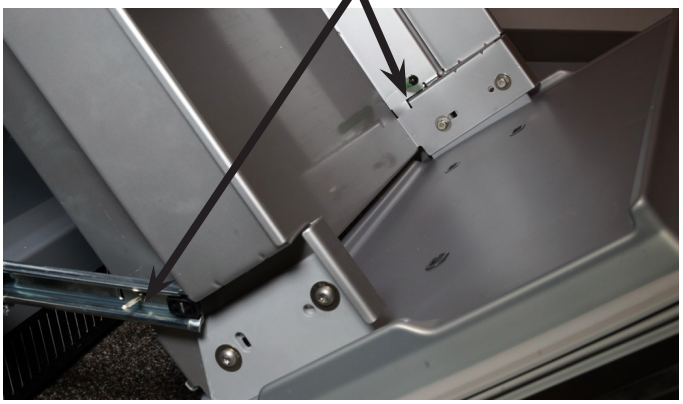
INSIDE THE FREEZER COMPARTMENT



Remove 2 screws each side

REPLACING THE FREEZER COMPARTMENT DOOR/DRAWER

1. Pull out the slide assemblies and set the door/drawer between the 2 slides.
2. Tilt the door toward you and align the front two mounting holes onto the slide assemblies.
3. Use two small screwdrivers to maintain the alignment of the front mounting holes.

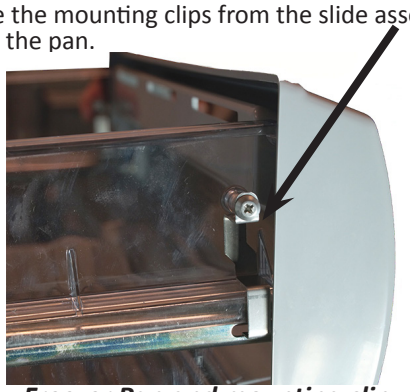


4. Lift the door and pivot it onto the slide assemblies.
5. Align the back mounting screws to the slide assembly mounting holes.
6. Replace four 5/16” hex head screws into the four mounting holes.

REMOVING THE ICE BUCKET& FREEZER PAN

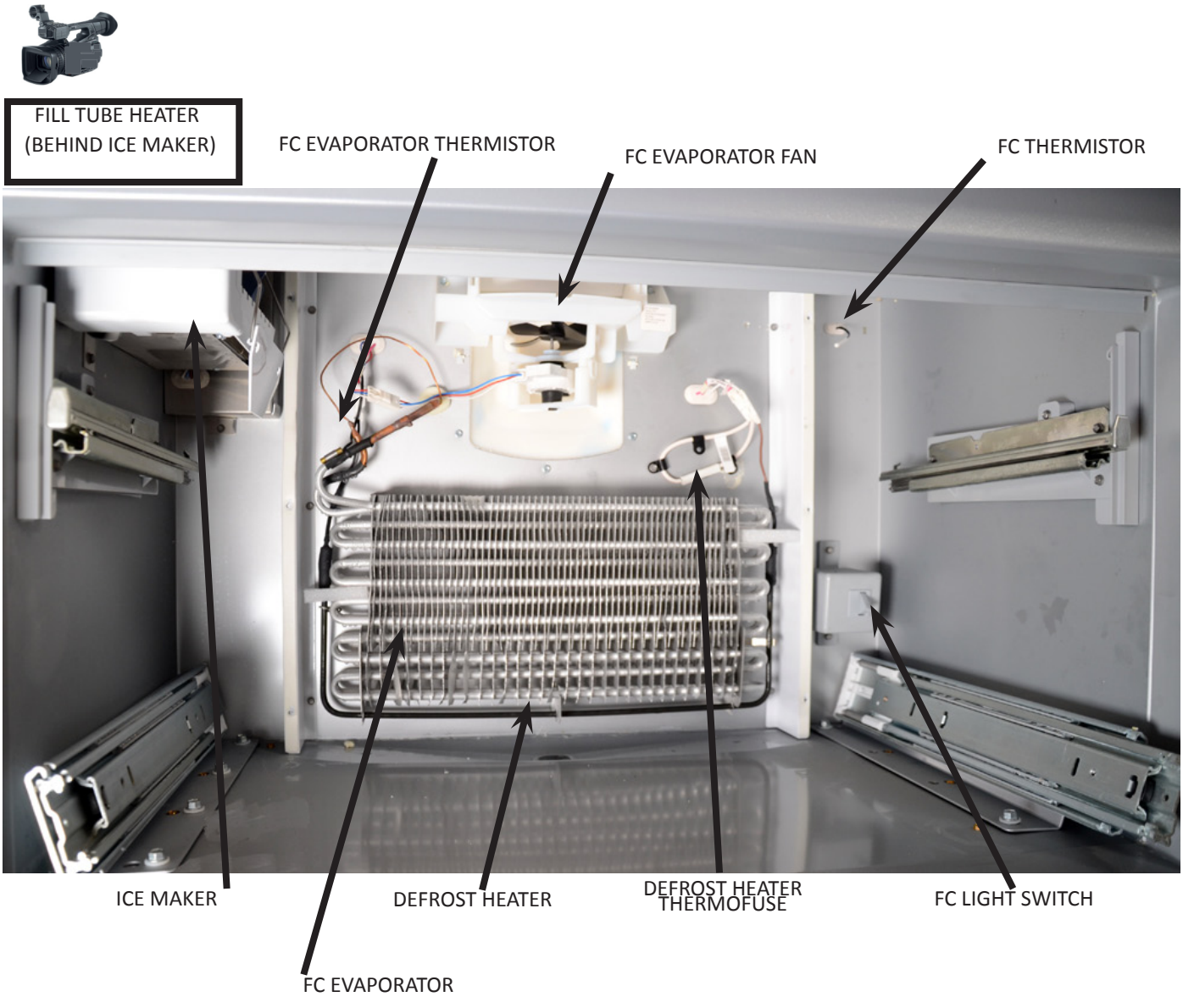
1. Remove the Ice bucket by pulling the bucket out and up off the slide assembly.

2. Pull the freezer pan out;
3. Remove a Phillips head screw from the freezer pan mounting clip at the front of the pan - one on each side.
4. Remove the mounting clips from the slide assemblies and remove the pan.



Freezer Pan and mounting clip

INSIDE THE FREEZER COMPARTMENT



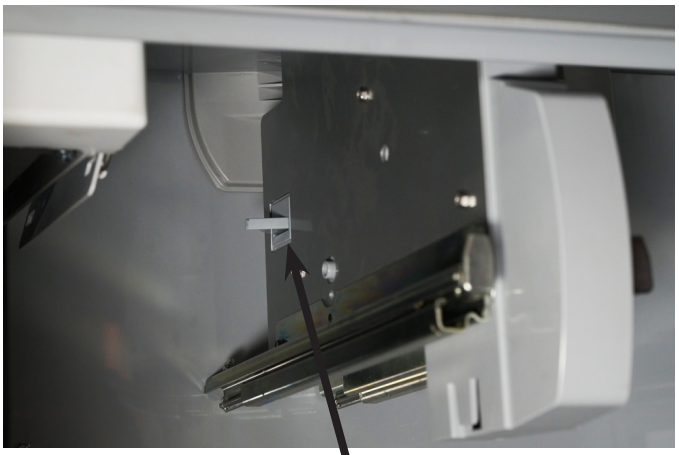
INSIDE THE FREEZER COMPARTMENT

⚠WARNING

Electrical Shock Hazard
Disconnect power before servicing.
Replace all parts and panels before operating.
Failure to do so can result in death or electrical shock.

REMOVING THE ICE BUCKET SWITCH & TRACK ASSEMBLY

1. Remove two ¼" hex screws from the ceiling at the front of the assembly.
2. **Loosen** two 1/4" hex head screws from the ceiling at the back of the assembly.
3. Slide and Lower the assembly to disconnect the wiring harness and then remove from the freezer.



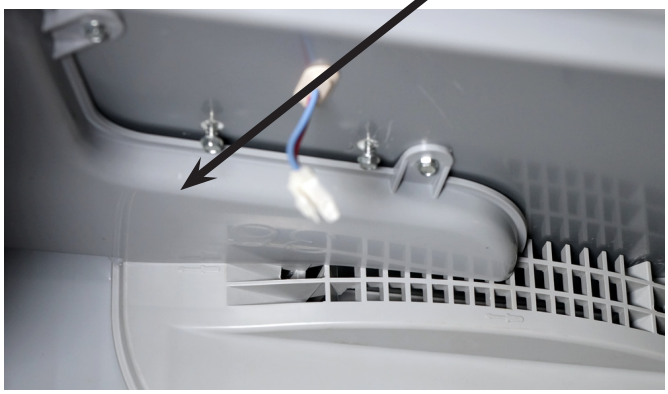
4. Remove the Ice Bucket switch from the right side of the assembly

Bucket Switch and Wiring Harness

REMOVING THE FC AIR FLOW DUCT

1. Remove three ¼" hex head mounting screws.
2. Lower the duct out of the freezer.

(Two Hex Head screws and wiring harness are from the Ice Bucket switch and Track Assembly)

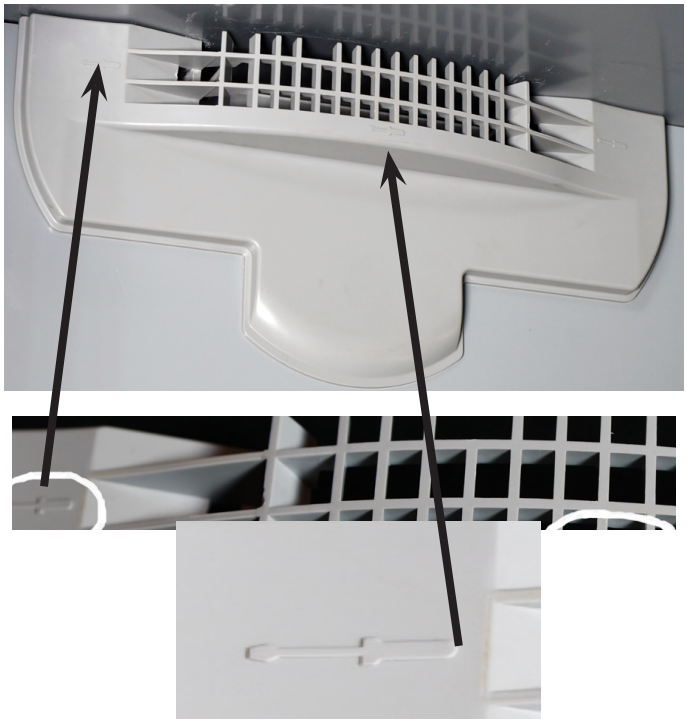


REMOVING FC EVAPORATOR GRILLE

1. Locate the grille at the top of the FC evaporator cover.
2. Use a small screwdriver to unsnap three grille retainers that mount the grille.

Note: There are small inscriptions on the grille to indicate where the screwdriver should be used.

3. Pull the grille away from the condenser cover as you loosen each retainer



Small Inscription (3 Places)

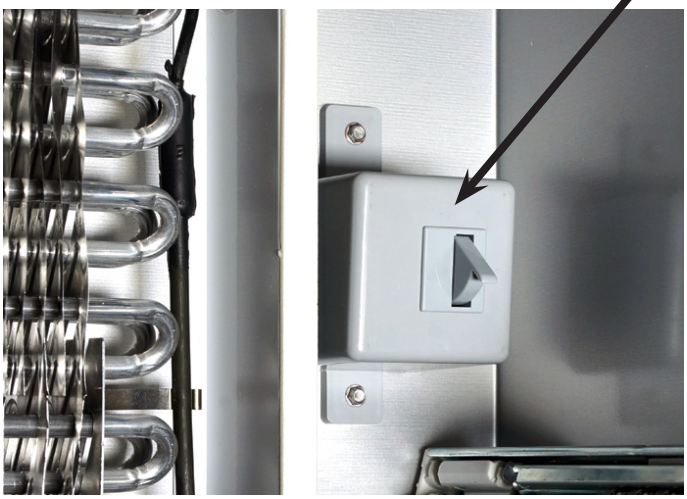
INSIDE THE FREEZER COMPARTMENT

REMOVING THE FC EVAPORATOR COVER

1. Remove SIX ¼" hex head mounting screws.
2. Remove the cover from the freezer.

REMOVING THE FC LIGHT SWITCH

1. Remove two ¼" hex head mounting screws from the light switch cover.
2. Pull the cover out far enough to disconnect the switch wire connections.
3. The switch is mounted in the box and held in place by a compression tab.
4. Squeeze the tab and push the switch out the front of the box.



REMOVING THE FC THERMISTER

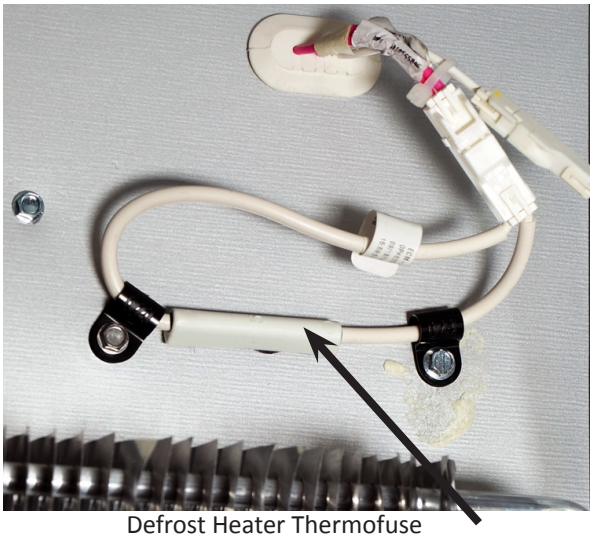
1. Remove two 1/4" hex head screws from the thermistor cover.
2. The Thermistor will need to be cut off the wiring harness and spliced onto a new thermistor if replacing.

NOTE: Servicing this thermistor will require a thermister kit which has components available to splice into the existing thermistor harness.

FC Thermistor (Cover Removed)

REMOVING THE FC DEFROST HEATER THERMOFUSE

1. Remove the EvaporatorCover.
2. Remove the ¼" hex head mounting screws.
3. Disconnect the harness and remove the complete thermofuse harness.

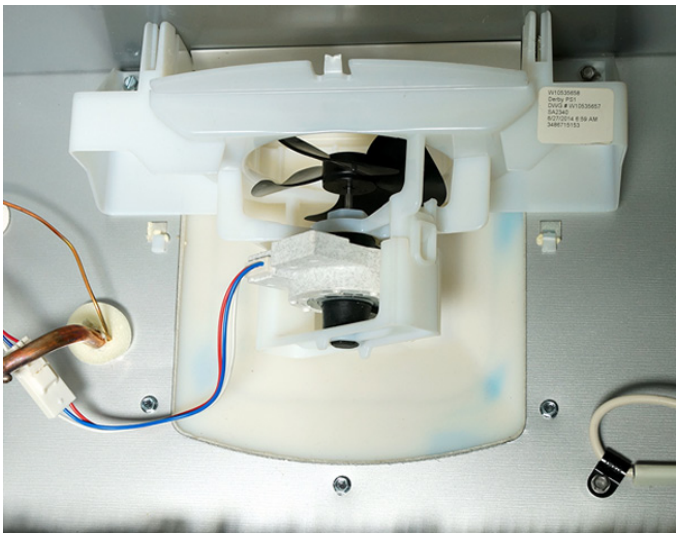


Defrost Heater Thermofuse

INSIDE THE FREEZER COMPARTMENT

⚠WARNING

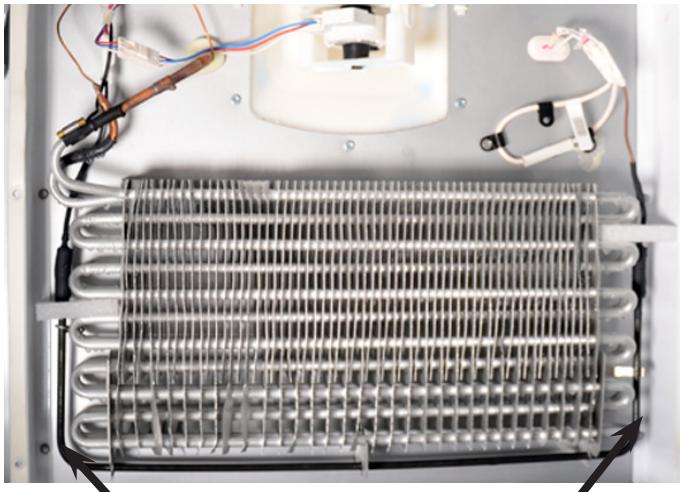
Electrical Shock Hazard
Disconnect power before servicing.
Replace all parts and panels before operating.
Failure to do so can result in death or electrical shock.



FC Evaporator Fan Motor (two mounting screws at top)

REMOVING THE FC DEFROST HEATER

1. Remove the Evaporator Cover.
2. The Freezer Compartment Defrost heater is held in position around the evaporator with two mounting brackets with retainer tabs.
3. Bend the tabs out of the way to remove the heater.
4. On the left side there is also a clamp that will need to be removed.
5. Disconnect two wire harness connectors and remove the heater.



Defrost Heater (around evaporator)

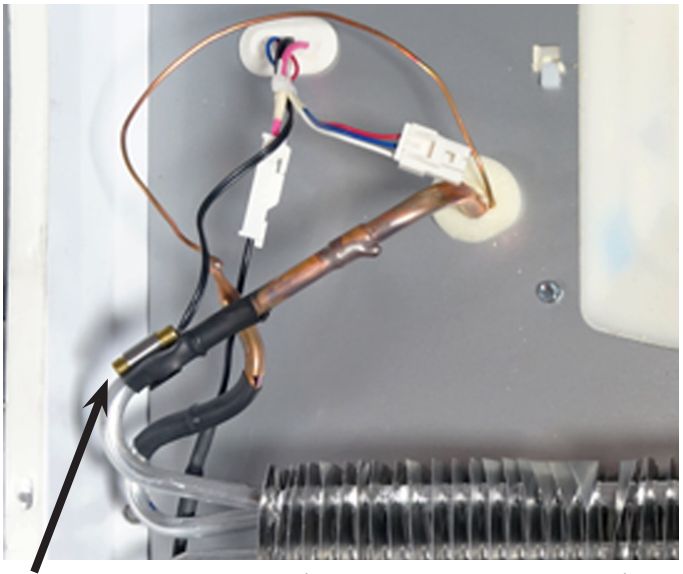
REMOVING THE FC EVAPORATOR FAN MOTOR

1. Remove the Evaporator Cover.
2. Remove two ¼" hex head mounting screws.
3. Disconnect the wiring harness
4. Remove the motor and fan blade assembly.

REMOVING THE FC EVAPORATOR THERMISTOR

1. Remove the FC Evaporator Cover
2. The thermistor is mounted on the left side of the evaporator on the inlet line. Positioning is critical so when replacing the thermistor, mount in the same position.

NOTE: Servicing this thermistor will require a thermister kit which has components available to splice into the existing thermistor harness.



Evaporator Thermistor (mounting position important)

INSIDE THE FREEZER COMPARTMENT

⚠WARNING

Electrical Shock Hazard

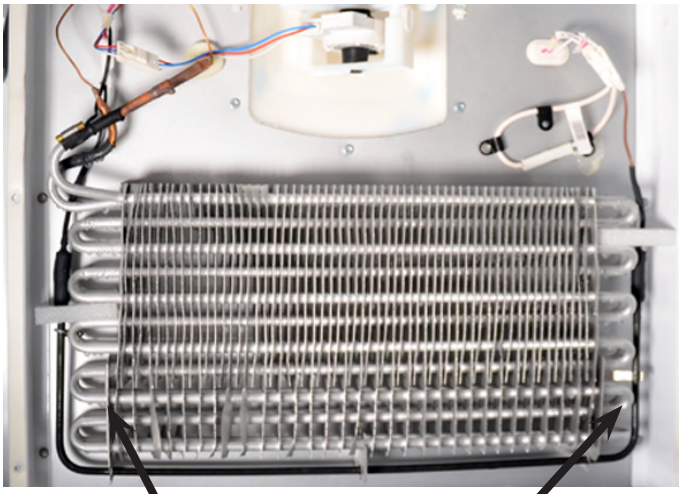
Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

ACCESSING THE FC EVAPORATOR

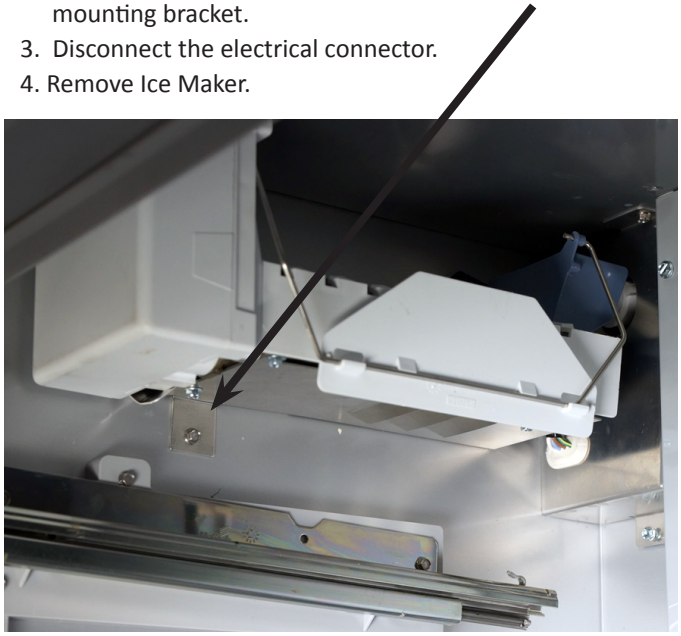
1. Remove the Evaporator Cover.
2. Remove two 1/4” mounting screws one on each side at the lower part of the evaporator.



FC Evaporator mounting screws

REMOVING THE ICE MAKER ASSEMBLY

1. Loosen two ¼” hex head screws on top of the Ice make
2. Remove one ¼” hex head screw from the ice maker mounting bracket.
3. Disconnect the electrical connector.
4. Remove Ice Maker.



Ice Maker Assembly (Left side of Freezer)

INSIDE THE FREEZER COMPARTMENT

REMOVING THE FILL TUBE HEATER

1. Remove the Ice Maker Assembly.
2. **Remove** two ¼" hex head screws from the Fill Tube Heater cover.
3. Lower the cover and remove two ¼" hex head screw from Fill TubeHeater.
3. Disconnect the electrical connector.
4. Remove Heater

Fill Tube Heater Cover (2 mounting screws)

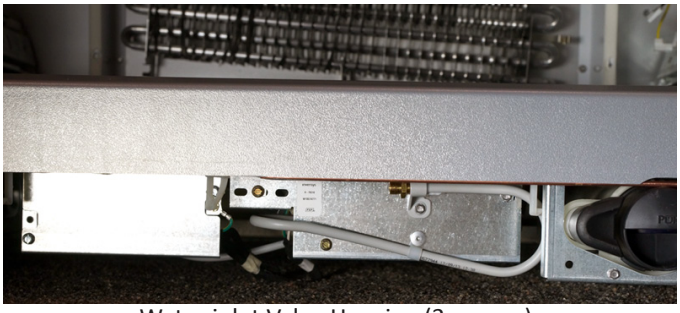
UNDER THE REFRIGERATOR

John Guest Fittings

REMOVING THE ICE MAKER WATER INLET & ISOLATION VALVES

1. Beneath the refrigerator behind the front grill are the water inlet valves. There are two possibly three valves located together in a mounting bracket.

   An isolation water valve receives incoming water and pushes the water to the water filter. Water from the water filter returns to the ice maker water inlet valve and if available a 3rd water valve that provides water to the water dispenser.
2. Remove two ¼" hex head mounting screws from the front of the water valve housing.
3. Disconnect the wire connector and the john guest water line connections to pull the valve housing out of the refrigerator.



Water inlet Valve Housing (3 screws)

Section 5:
Using the Diagnostic Mode (Tech Sheet)

- This section provides the steps for using and understanding the Diagnostic Mode built into the Electronic Controls used in the “KitchenAid Built-In Dual Evaportator Bottom Mount Refrigerator

- Safety Information
- Component Specifications
- Entering and exiting the Diagnostic Mode
- Testing
  - Thermistors Test
  - Compartment Temperature History
  - Fans Test
  - DC Heaters Test
  - Door Switch Test
  - DC Heater Activation Mode
  - Cooling System Functionality Testing
  - Set Compressor Speed Test
  - AC Defrost Heater
  - All User Interface LEDs Test
  - All UI Buttons Test
  - Ice and Water System Test
  - Software Version for Control Boards
  - Design for Diagnostics
- Troubleshooting Tips

- Diagnostic Video 

For Service Technician Use Only

IMPORTANT SAFETY NOTICE — "For Technicians only"

This service data sheet is intended for use by persons having electrical, electronic, and mechanical experience and knowledge at a level generally considered acceptable in the appliance repair trade. Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible, nor assume any liability for injury or damage of any kind arising from the use of this data sheet.

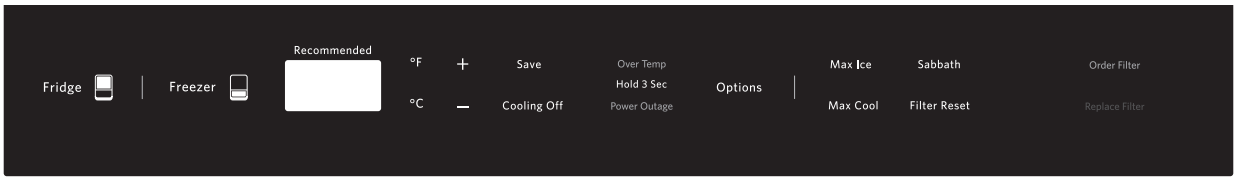
For Service Technician Use Only

Component Specif ications

Component	Specifications All Parts - 115 VAC/60Hz unless noted	
Cooling		
Compressor	BTUH Wattage Current lock rotor Current full load Resistance run windings Resistance start windings Inverter	Variable VEGZ7H 60 Hz/194.8 watts @ 4500 RPM
Condenser Motor	Rotation (facing end opposite shaft) RPM Wattage **NOTE:** Fan blade must be fully seated on shaft to achieve proper airflow.	Clockwise 9400 RPM 2.6 ± 1 watt @ 115 VAC
Refrigerator Evaporator Fan Motor	Rotation (facing end opposite shaft) RPM Wattage	Clockwise Minimum 3200 RPM @ 14 VDC and 100% duty cycle Maximum 5.3 watts @ 14 VDC and 100% duty cycle
Freezer Evaporator Fan Motor	Rotation (facing end opposite shaft) RPM Wattage **NOTE:** Fan blade must be fully seated on shaft to achieve proper airflow.	Clockwise 3450 RPM @ 12 VDC and 100% duty cycle Maximum 4.2 watts @ 12 VDC and 100% duty cycle
Freezer Evaporator Heater	Volts Wattage Resistance	120 VAC 435 watts 36 ohms ± 5%
Controls		
Control Board	Volts See control board section for diagnostics.	120 VAC, 60Hz
Thermistor	Temperature 77°F/25°C 36°F/2°C 0°F/-18°C	Resistance 2700 ohms ± 5.0% 7964 ohms ± 1.0% 23,345 ohms ± 2.0%
Light Switch	Type Volts Current	SPDT NO/NC 125/250 VAC 8/4 amps
Ice and Water		
Dual Water Valve	Wattage	Green side: 20 watts Red side: 35 watts
Isolation Valve	Wattage	20 watts (Green)
Ice Maker Valve	Wattage	Red side: 35 watts

For Service Technician Use Only

Control Board Troubleshooting



Entering Service Diagnostics Mode

To Enter Service Diagnostics Mode

NOTE: Ensure that the refrigerator is not in a lockout mode prior to entering Service Diagnostics. Lockout modes include: Showroom Mode, Cooling Off, and Sabbath Mode.

1. Press both FREEZER and OPTIONS keys simultaneously for 3 seconds.
2. Release both keys when you hear an audible chime. The display will show a "01" to indicate that the control is at Step 01 of the diagnostics routine.

Display upon entering Service Diagnostics Mode

Exiting Service Diagnostics Mode

To Exit Service Diagnostics Mode

The preferred method of exiting Service Diagnostics Mode is to remove the grille of the unit and turn the power switch to the Off position for a minimum of 3 seconds. After 3 seconds, turn the switch back to the On position to start the unit again.

If removing the grille is not feasible, the alternative method is to press the location where Freezer and Options were located on the display for a minimum duration of 3 seconds.

NOTES:

- This method may be difficult for some, as the locations of these icons will not be lit. Waiting for the 20 minute time-out is advised.
- Service Diagnostics Mode will time-out after 20 minutes. In the event this occurs, repeat steps to enter Service Diagnostics Mode to continue diagnostics steps.
- The LEDs within the unit automatically power down after 10 minutes. To reactivate the LEDs, closing and reopening the doors, or holding the switches closed for 5 seconds, will turn On the LEDs.

Service Diagnostics

Step 01: Thermistors Test

This test allows a technician to diagnose if the thermistors in the unit are properly functioning.

Service Diagnostics Step 01 measures a thermistor temperature and displays this temperature in either degrees F or C, depending on user selection.

Available substeps are:

- "01" - FC Thermistor
- "02" - RC Thermistor
- "03" - FC Evaporator Thermistor
- "04" - RC Evaporator Thermistor
- "07" - Ambient Thermistor
- "08" - Onboard Thermistor

At any time, if the expected display does not show what is detailed, press COOLING OFF 3 times to return to the Main Menu where the desired navigation steps can be repeated.

Error Code Definitions

Inside a substep, the measured temperature xxx in C or F is displayed. If the measurement is higher than the HOT limit, SH (for short circuit) will be displayed. If the reading is lower than the COLD limit, OP (for open circuit) will be displayed.

Navigation Steps	Display Image
Press "+" (plus) or "-" (minus) to navigate between steps until Step 01 is displayed at the Main Menu. **NOTE:** At the Main Menu, Over Temp icon is not lit or blinking. The 7-segment display is On but not flashing. If this description does not match display screen, press COOLING OFF until the correct display is shown.	
Press SAVE to confirm the step. **NOTE:** "Over Temp" will turn On. Press "+" (plus) or "-" (minus) to navigate between available substeps: ■ "01" - FC Thermistor ■ "02" - RC thermistor ■ "03" - FC evaporator thermistor ■ "04" - RC evaporator thermistor ■ "07" - Ambient thermistor ■ "08" - Onboard thermistor	
Press SAVE to read the thermistor temperature/error code. Temperature reading will be displayed. **NOTE:** "Over Temp" will begin to flash.	

For Service Technician Use Only

Step 01: Thermistors Test (continued)

Press COOLING OFF to return to the Substep Menu.
NOTE: "Over Temp" will stop flashing and be On.

Press "+" (plus) or "-" (minus) to navigate between other substeps (available thermistors).
Press SAVE.

Press COOLING OFF to return to Main Menu.
NOTE: "Over Temp" will turn Off.

Step 02: Compartment Temperature History

This step allows the technician to view the temperature for the past 6 hours for both the RC and FC compartment, possibly verifying consumer complaints of warm or cold temperatures. Service Diagnostics Step 02 displays minimum, maximum, and average temperatures.
Available substeps are:

- "01" - RC Maximum temperature
- "02" - RC Average temperature
- "03" - RC Minimum temperature
- "04" - FC Maximum temperature
- "05" - FC Average temperature
- "06" - FC Minimum temperature

NOTE: Average is calculated with a running average filter. Maximum and minimum are saved and restarted every hour keeping the last 6 analyses saved in the memory. The maximum and minimum shown in the UI screen are the maximum and minimum of the last 6 hours saved.

At any time, if the expected display does not show what is detailed, press COOLING OFF 3 times to return to the Main Menu where the desired navigation steps can be repeated.

Error Code Definitions

Inside the Substeps, the measured temperature xxx in C or F is displayed. If the measurement is higher than the HOT limit, SH (for short circuit) will be displayed. If the reading is lower than the COLD limit, OP (for open circuit) will be displayed.

Navigation Steps	Display Image
Press "+" (plus) or "-" (minus) to navigate between steps until Step 02 is displayed at the Main Menu. **NOTE:** At the Main Menu, Over Temp icon is not lit or blinking. The 7-segment display is On but not flashing. If this description does not match display screen, press COOLING OFF until the correct display is shown.	
Press SAVE to confirm the step. **NOTE:** "Over Temp" will turn On. Press "+" (plus) or "-" (minus) to navigate between substeps as mentioned above to read specific thermistor history. Available substeps are: ■ "01" - RC Maximum temperature ■ "02" - RC Average temperature ■ "03" - RC Minimum temperature ■ "04" - FC Maximum temperature ■ "05" - FC Average temperature ■ "06" - FC Minimum temperature	
Press SAVE to read the thermistor temperature history. Temperature reading will be displayed. **NOTE:** "Over Temp" will begin to flash.	
Press COOLING OFF to return to the main Substep Menu. **NOTE:** "Over Temp" will stop flashing and be On.	

For Service Technician Use Only

Step 02: Compartment Temperature History (continued)

Press "+" (plus) or "-" (minus) to navigate between other substeps (available thermistor history).
Press SAVE.

Press COOLING OFF to return to Main Menu.
NOTE: "Over Temp" will turn Off.

Step 03: Thermistor Calibration

The codes displayed in this step are for internal use only. Press COOLING OFF to return to the Main Menu.

Step 06: Fans Test

Service Diagnostics Step 06 allows a technician to independently turn a fan On or Off at 100%. The technician must then verify functionality by monitoring airflow or checking the voltage level applied at the control boards pins.
For expected fan voltages, refer to Service Wiring Diagram.
Available substeps are:

- "01" - FC Fan
- "02" - Condenser Fan
- "03" - RC Fan

Inside the Substep Edit Mode, use cursor keys to change from On to Off.

- "00" - Off
- "01" - On

At any time, if the expected display does not show what is detailed, press COOLING OFF 3 times to return to the Main Menu where the desired navigation steps can be repeated.

Navigation Steps	Display Image
Press "+" (plus) or "-" (minus) to navigate between steps until Step 06 is displayed at the Main Menu. **NOTE:** At the Main Menu, Over Temp icon is not lit or blinking. The 7-segment display is On but not flashing. If this description does not match display screen, press COOLING OFF until the correct display is shown.	
Press SAVE to confirm the step. **NOTE:** "Over Temp" will turn On. Press "+" (plus) or "-" (minus) to navigate between the substeps to select the desired fan. Available substeps are: ■ "01" - FC fan ■ "02" - Condenser fan ■ "03" - RC fan	
Press SAVE to read the fans current state. State will be displayed. ■ "00" - Off ■ "01" - On **NOTE:** "Over Temp" will begin to flash.	
Press and hold SAVE for 3 seconds to enter Edit Mode. **NOTE:** "Over Temp" will turn Off. Display will start flashing.	
Press "+" (plus) or "-" (minus) to navigate between On and Off. Inside the Edit Mode, use cursor keys to toggle between On and Off. ■ "00" - Off ■ "01" - On	
Press COOLING OFF to return to the main Substep Menu. State will be displayed. **NOTE:** "Over Temp" will begin to flash.	

For Service Technician Use Only

Step 06: Fans Test (continued)

Press COOLING OFF to return to the Substep Menu.
NOTE: "Over Temp" will stop flashing and be On.

Press "+" (plus) or "-" (minus) to navigate between the substeps (available fans).
Press SAVE.

Press COOLING OFF to return to Main Menu.
NOTE: "Over Temp" will turn Off.

Step 07: DC Heaters Test

This test allows a technician to independently turn on a DC heater in the system at 100% to test each DC heater in the system.
NOTE: For French Door Bottom Mount units only, please close the RC left-hand door in order to activate the heaters for testing. Alternatively, if the voltage being applied to the heater is in question, check the voltage across the 2 contacts at the top and bottom of the RC compartment. The voltage present should be approximately 12.7 volts.
Available substeps are:

- "01" - Ice Maker Fill Tube Heater
- "02" - Vertical Mullion Heater (For FDBM Units Only)

Inside the Substep Edit Mode, use cursor keys to toggle between On and Off.

- "00" - Off
- "01" - On

At any time, if the expected display does not show what is detailed, press COOLING OFF 3 times to return to the Main Menu where the desired navigation steps can be repeated.

Navigation Steps	Display Image
Press "+" (plus) or "-" (minus) to navigate between other steps until Step 07 is reached from Main Menu. **NOTE:** At the Main Menu, Over Temp icon is not lit or blinking. The 7-segment display is On but not flashing. If this does not match display screen, press COOLING OFF until the correct display is shown.	
Press SAVE to confirm the step. **NOTE:** "Over Temp" will turn On. Press "+" (plus) or "-" (minus) to navigate between the substeps to choose desired heater. Available substeps are: ■ "01" - Ice Maker Fill Tube Heater ■ "02" - Vertical Mullion Heater	
Press SAVE to read the chosen heater's current state. State will be displayed. **NOTE:** "Over Temp" will begin to flash.	
Press and hold SAVE for 3 seconds to enter Edit Mode. **NOTE:** "Over Temp" will turn Off. Display will start flashing.	
Press "+" (plus) or "-" (minus) to navigate between On and Off. Inside the Substep Edit Mode, use cursor keys to toggle between On and Off. ■ "00" - Off ■ "01" - On	
Press COOLING OFF to return to the main Substep Menu. "00" for Off or "01" for On will be displayed. **NOTE:** "Over Temp" will begin to flash.	

For Service Technician Use Only

Step 07: DC Heaters Test (continued)

Press COOLING OFF to return to the Substep Menu.
NOTE: "Over Temp" will stop flashing and be On.

Press "+" (plus) or "-" (minus) to navigate between other substeps (available fans).
Press SAVE.

Press COOLING OFF to return to Main Menu.
NOTE: "Over Temp" will turn Off.

Step 8: Door Switch Test

This test allows a technician to test the functionality of the door switches on the unit. For the Parma II unit, all switches are connected in parallel in order to properly test each switch. Holding 2 of the 3 switches in the closed state is required while the third is being tested. A suggested method of testing is to use tape to close 2 of the switches.

NOTE: The switches are in parallel testing, so choosing a substep is irrelevant.

Available substeps are:

- "01" - RC Door
- "02" - FC Door

Inside the Substep Edit Mode, use cursor keys to toggle between Door Open and Door Closed.

- "00" - Door Open
- "01" - Door Closed

NOTE: It may take up to 5 seconds for the door state to update.

At any time, if the expected display does not show what is detailed, press COOLING OFF 3 times to return to the Main Menu where the desired navigation steps can be repeated.

Navigation Steps	Display Image
Press "+" (plus) or "-" (minus) to navigate between other steps until Step 08 is reached from Main Menu. **NOTE:** At the Main Menu, Over Temp icon is not lit or blinking. The 7-segment display is On, but not flashing. If this does not match display screen, press COOLING OFF until the correct display is shown.	
Press SAVE to confirm the step. **NOTE:** "Over Temp" will turn On. Press "+" (plus) or "-" (minus) to navigate between the substeps to choose the door switch to test. Available substeps are: ■ "01" - RC door ■ "02" - FC door	
Press SAVE to read whether switch is Open or Closed. Display will show: ■ "00" - Switch Open ■ "01" - Switch Closed This information shall be dynamically updated every 5 seconds. **NOTE:** "Over Temp" will begin to flash.	
Press COOLING OFF to return to the Substep Menu. **NOTE:** "Over Temp" will stop flashing and be On.	
Press "+" (plus) or "-" (minus) to navigate between the other substeps (available switches). Press SAVE.	
Press COOLING OFF to return to Main Menu. **NOTE:** "Over Temp" will turn Off.	

For Service Technician Use Only

Step 9: DC Heater Activation Mode (FDBM Only)

This test allows a technician to change how the DC Vertical Mullion Heater operates. By default, the sensor measures the ambient humidity and adjusts the duty cycle of the heater to prevent condensation from occurring on the mullion. If condensation is present, a technician can opt to indefinitely run the heater at 100%.

Available substep:

- "01" - Vertical Mullion Heater

Inside the Substeps Edit Mode, use cursor keys to toggle between On and Off.

- "00" - Off
- "01" - On

NOTE: When the DC Vertical Mullion Heater is set to Off, it is not dependent upon current humidity measurement, and will run at 100%. When the DC Vertical Mullion Heater is set to On, it will run dependent upon the humidity measurement.

At any time, if the expected display does not show what is detailed, press COOLING OFF 3 times to return to the Main Menu where the desired navigation steps can be repeated.

Navigation Steps	Display Image
Press "+" (plus) or "-" (minus) to navigate between other substeps until Step 09 is reached from Main Menu. **NOTE:** At the Main Menu, Over Temp icon is not lit or blinking. The 7-segment display is On, but not flashing. If this does not match the display screen, press COOLING OFF until the correct display is shown.	
Press SAVE to confirm the step. **NOTE:** "Over Temp" will turn On.	
Press "+" (plus) or "-" (minus) to navigate to the substep to choose Heater Mode. Available substep:. "01" - Vertical Mullion Heater	
Press and hold SAVE for 3 seconds to enter Edit Mode. **NOTE:** "Over Temp" will turn Off. Display will start flashing.	
Press "+" (plus) or "-" (minus) to navigate between On and Off.	
Press COOLING OFF to return to the main Substep Menu. State will be displayed. **NOTE:** "Over Temp" will begin to flash.	
Press COOLING OFF to return to the Substep Menu. **NOTE:** "Over Temp" will stop flashing and be On.	
Press COOLING OFF to return to Main Menu. **NOTE:** "Over Temp" will turn Off.	

For Service Technician Use Only

Step 10: Cooling System Functionality Testing

This test allows a technician to execute a complete cooling routine to test various portions of the cooling system. This step has no selectable substeps upon pressing the Save button.

At the start of this step, the fans are turned off if they were turned on from a previous step. There will be a delay of 3 seconds before the start of Substep 01. Each substep is timed and will automatically go to the next substep. User will not be allowed to substep routine; it takes at minimum 8 minutes to complete. If exit is attempted, an invalid chime will be produced. At end of Substep 05, technician can exit this step by pressing COOLING OFF.

NOTES:

- For dual evaporator models, the dual evaporator valve will always open to both sides until Step 04, when it is requested to drive to a specific position. At initial entry, the UI will send digital "1" to output of dual evaporator valve drives.
- If the compressor was running prior to test, there may be an internal protection on the compressor which keeps the compressor from starting for 7 minutes.

Substep Routine:

- "01" - Initializes dual evaporator valve in home position (4 min).
- "02" - Closes both RC and FC dual evaporator valve (1 min).
- "03" - Turns compressor on (1 min).
- "04" - Keeps compressor on, drives the valve to RC position and turns the RC fan on (2 min).
- "05" - Keep compressor on, drive the valve to FC position and turns the FC fan on (technician confirms before advancing to next step; compressor off, fans off, drive dual evaporator valve to home position at advance of next step).

NOTE: Home position for the dual evaporator valve is open to both sides.

At any time, if the expected display does not show what is detailed, press COOLING OFF 3 times to return to the Main Menu where the desired navigation steps can be repeated.

Navigation Steps	Display Image
Press "+" (plus) or "-" (minus) to navigate between other steps until Step 10 is reached from Main Menu.	
Press SAVE to start the test. Display will show each step of the Substep Routine for the compressor. **NOTE:** "Over Temp" will begin to flash.	

Step 11: Set Compressor Speed Test

This test allows a technician to run the compressor at different speeds.

NOTE: If the compressor was running prior to test, there may be an internal protection on compressor which keeps the compressor from starting for 7 minutes.

Available substeps:

- "01" - Compressor speed change without ramp
- "02" - Compressor speed change with ramping

Inside the Substeps Edit Mode, the percentage of the maximum allowable compressor speed can be selected on the User Interface (UI). The allowable range is 0 to 100%.

Press SAVE. The compressor speed will be executed.

NOTE: In the ramping mode, the RPM/second relation will be captured from flashmap. Without ramp, the speed changes instantaneously.

At any time, if the expected display does not show what is detailed, press COOLING OFF 3 times to return to the Main Menu where the desired navigation steps can be repeated.

Navigation Steps	Display Image
Press "+" (plus) or "-" (minus) to navigate between other substeps until Step 11 is reached from Main Menu. **NOTE:** At the Main Menu, Over Temp icon is not lit or blinking. The 7-segment display is On, but not flashing. If this does not match display screen, press Cooling Off until the correct display is shown.	
Press SAVE to confirm the step. **NOTE:** "Over Temp" will turn On. Press "+" (plus) or "-" (minus) to navigate between the substeps to select compressor speed change with or without ramping.	
Press SAVE again to read the compressor speed change with or without ramping. State will be displayed. **NOTE:** "Over Temp" will begin to flash.	

For Service Technician Use Only

Step 11: Set Compressor Speed Test (continued)

Press and hold SAVE for 3 seconds to enter Edit Mode.
NOTE: "Over Temp" will turn Off. Display will start flashing.

Press "+" (plus) or "-" (minus) to toggle between On and Off.

Press COOLING OFF to return to the main Substep Menu. State will be displayed.
NOTE: "Over Temp" will begin to flash.

Press COOLING OFF to return to the Substep Menu.
NOTE: "Over Temp" will stop flashing and be On.

Press "+" (plus) or "-" (minus) to toggle between speed change with and without ramping.
Press SAVE.

Press COOLING OFF to return to Main Menu.
NOTE: "Over Temp" will turn Off.

Step 12: AC Defrost Heater

This test allows the technician to run the defrost heater, set the defrost mode, or force a defrost upon leaving service mode. These steps should be used if the evaporators are clogged or if functionality of heater is in question.
After setting the Defrost Mode, this value shall be stored on EEPROM. The next time the unit is powered up, the Defrost Mode shall be initialized according to this setting.
NOTE: To protect the defrost system, if the temperature in the evaporator during the test measures higher than 60°F (15.6°C), defrost automatically turns Off.
At any time, if the expected display does not show what is detailed, press COOLING OFF 3 times to return to the Main Menu where the desired navigation steps can be repeated.

Navigation Steps	Display Image
Navigation Steps (Substep 01) This test allows a technician to execute a 5-minute FC defrost. This test can be used to ensure proper functionality of the defrost heater. Press "+" (plus) or "-" (minus) to navigate between other steps until Step 12 is reached from main menu.	
Press SAVE to confirm the step.	
Press SAVE again to read the current state. Heater will turn On, and Thermofuse feedback will be displayed on the screen. **NOTE:** The Thermofuse status is shown if the controls system has a Thermofuse feedback. If no feedback is available, the display should show: "- -." ■ "01" - Heater running and Bi-metal or Thermofuse closed ■ "02" - Heater running and Bi-metal or Thermofuse open Reading will be displayed.	

For Service Technician Use Only

Step 12:
AC Defrost Heater (continued)

Press COOLING OFF to return to the main Substep Menu.

Press "+" (plus) or "-" (minus) to navigate between substeps.

Press SAVE.
Press COOLING OFF to return to Main Menu.

Navigation Steps (Substep 03)
The codes displayed in this step are for internal use only. Press COOLING OFF to return to the Main Menu.

Navigation Steps (Substep 04)
This test allows a technician to force a defrost upon exiting service mode.
Press "+" (plus) or "-" (minus) to navigate between other steps until Step 12 is reached from Main Menu.

Press SAVE to confirm the step.

Press "+" (plus) or "-" (minus) to navigate to Substep 04.

Press SAVE again to read the heater's current forced defrost state.
State will be displayed.

Press and hold SAVE for 3 seconds to enter Edit Mode.

Press "+" (plus) or "-" (minus) to navigate between OF, Sh, and Lo forced defrost states.
Codes for defrost state are:

- "OF" = No Forced Defrost will be executed (default condition when entering this substep)
- "Sh" = Short Defrost uses the minimum TTD (time to defrost)
- "Lo" = Long Defrost uses the maximum TTD (time to defrost)

Press COOLING OFF to return to the main Substep Menu. State will be displayed.

For Service Technician Use Only

Step 12: AC Defrost Heater (continued)

Press COOLING OFF to return to the Substep Menu.

Press "+" (plus) or "-" (minus) to navigate between other substeps (defrost modes available).
Press SAVE.

Press COOLING OFF again to return to main menu.

Step 13: All UI LEDs Test

This test allows a technician to verify if an LED on the User Interface (UI) is burned out. No substeps are associated with this step. Entering this step will illuminate all LED indicators.

All LED indicators On for a maximum of 30 seconds in all available UIs.

NOTE: Leaving this step will automatically turn Off the LEDs, if the time-out is not reached.

At any time, if the expected display does not show what is detailed, press COOLING OFF 3 times to return to the Main Menu where the desired navigation steps can be repeated.

Navigation Steps	Display Image
Press "+" (plus) or "-" (minus) to navigate to Step 13 from the Main Menu.	
Press SAVE to enter the step. At this point, all LEDs will illuminate.	
Press COOLING OFF to exit this mode and re-enter Main Menu.	

Step 14: All Buttons Test on UI

This test allows a technician determine if a button on a user interface is no longer working. There are no substeps associated with Step 14. Upon entering the step, the user interface will display "00," indicating no button is pressed. One second after the user interface detects a button, the display will transition to "01."

NOTE: From navigation keys associated with the service mode, the Back keys will execute the specific function for navigation. The other navigation keys will show the same behavior that the non-navigation keys have.

Codes for buttons state:

- "00" - No button pressed
- "01" - Button pressed (displays for 1 second)

At any time, if the expected display does not show what is detailed, press COOLING OFF 3 times to return to the Main Menu where the desired navigation steps can be repeated.

Navigation Steps	Display Image
Press "+" (plus) or "-" (minus) to navigate to Step 14 from the Main Menu.	
Press SAVE to enter. The buttons can be tested as mentioned above. Codes for button's state: ■ "00" - No button pressed ■ "01" - A transition found in any of the buttons or pad/paddles (displays for 1 second)	
Press COOLING OFF to exit this mode and re-enter Main Menu.	

For Service Technician Use Only

Step 17: Ice and Water System Testing

This test allows a technician to view information regarding the Ice and Water System of the unit.

Available substeps are:

- "01" - Usage rating in gallons remaining (200 maximum)
- "02" - Usage ratings in days remaining (182 maximum)
- "03" - Days since last reset
- "04" - Number of water filter resets (999 maximum)

NOTE: To display 3 digits, the following format is used: (Example 182: "18 2-").

At any time, if the expected display does not show what is detailed, press COOLING OFF 3 times to return to the Main Menu where the desired navigation steps can be repeated.

Navigation Steps	Display Image
Press "+" (plus) or "-" (minus) to navigate between other steps until Step 17 is reached from Main Menu. **NOTE:** At the Main Menu, Over Temp icon is not lit or blinking. The 7-segment display is On, but not flashing. If this does not match display screen, press COOLING OFF until the correct display is shown.	
Press SAVE to confirm the step. **NOTE:** "Over Temp" will turn On. Press "+" (plus) or "-" (minus) to navigate between the substeps. Available substeps are: ■ "01" - Usage rating in gallons remaining (200 maximum) ■ "02" - Usage ratings in days remaining (182 maximum) ■ "03" - Days since last reset ■ "04" - Number of water filter resets (999 maximum)	
Press SAVE to read the substep's value. State will be displayed. **NOTE:** "Over Temp" will begin to flash.	
Press COOLING OFF to return to the Substep Menu. **NOTE:** "Over Temp" will stop flashing and be On.	
Press "+" (plus) or "-" (minus) to navigate between other substeps. Press SAVE.	
Press COOLING OFF again to exit this mode and re-enter Main Menu. **NOTE:** "Over Temp" will turn Off.	

Step 18: SW Version for Control Boards

This test allows a technician to verify that the proper software version for a unit is present. The test allows a technician to view the software version information programmed into all of the boards in the system which are capable of being reprogrammed.

Available substeps are:

- "01" - GF2 Board SW Version
- "02" - GF2 Board Flashmap Version
- "03" - Liv User Interface Board SW Version
- "04" - Liv User Interface Board Flashmap Version
- "05" - Liv User Interface Touch Board SW Version
- "06" - Liv User Interface Touch Board EEPROM Version

Information displays for 1 second (version format "XX YY ZZ"). "XX" will display first (blinking), followed by "YY" and then "ZZ."

-Blank for 0.5s

At any time, if the expected display does not show what is detailed, press COOLING OFF 3 times to return to the Main Menu where the desired navigation steps can be repeated.

Navigation Steps	Display Image
Press "+" (plus) or "-" (minus) to navigate between other steps until Step 18 is reached from Main Menu. **NOTE:** At the Main Menu, Over Temp icon is not lit or blinking. The 7-segment display is On, but not flashing. If this does not match display screen, press COOLING OFF until the correct display is shown.	

For Service Technician Use Only

Step 18: SW Version for Control Boards (continued)

Press SAVE to confirm the step.
NOTE: "Over Temp" will turn On.
Press "+" (plus) or "-" (minus) to navigate between the substeps.
Available substeps are:

- "01" - GF2 Board SW Version
- "02" - GF2 Board Flashmap Version
- "03" - Liv User Interface Board SW Version
- "04" - Liv User Interface Board Flashmap Version
- "05" - Liv User Interface Board Touch Board SW
- "06" - Liv User Interface Board Touch Board EEPROM

Press SAVE again to read the SW version number. Reading will be displayed.
NOTE: "Over Temp" will begin to flash.

Press COOLING OFF to return to the main Substep Menu.
NOTE: "Over Temp" will stop flashing and be On.

Press "+" (plus) or "-" (minus) to navigate between other available substeps.
Press SAVE.

Press COOLING OFF again to return to Main Menu.
NOTE: "Over Temp" will turn Off.

Step 19: RH/T Test

This test allows a technician to verify the functionality of the RH/T Sensor, if calibration is required. Calibration is an advanced mode and should be used only by those who truly understand the product. The current measured humidity level of the RH/T Sensor may be viewed. Substep 2 allows the engineers to change the offset value.
Available Substeps are:

- "01" - Read the measurement displayed as a percentage.
- "02" - Calibrate the measurement. Calibration limits are ± 45%.

NOTE: If the sensor measurement is smaller than the sensor range (see component data sheet), the display will show "OP" (open circuit). If it is higher than the sensor range, the display will show "SH" (short circuit).
At any time, if the expected display does not show what is detailed, press COOLING OFF 3 times to return to the Main Menu where the desired navigation steps can be repeated.

Navigation Steps	Display Image
Navigation Steps (Substep 01) This tests allows a technician to diagnose if the RH/T sensor in the unit is properly functioning. Press "+" (plus) or "-" (minus) to navigate between other steps until Step 19 is reached from Main Menu. **NOTE:** At the Main Menu, Over Temp icon is not lit or blinking. The 7-segment display is On, but not flashing. If this does not match display screen, press COOLING OFF until the correct display is shown.	
Press SAVE to confirm the step. **NOTE:** "Over Temp" will turn On. Press "+" (plus) or "-" (minus) to navigate to Substep 01.	

For Service Technician Use Only

Step 19: RH/T Test (continued)

Press SAVE again to read the measured humidity value. Reading will be displayed.
NOTE: "Over Temp" will begin to flash.

Press COOLING OFF to return to the main Substep Menu.
NOTE: "Over Temp" will stop flashing and be On.

Press "+" (plus) or "-" (minus) to navigate between other substeps.
Press SAVE.

Press COOLING OFF again to return to Main Menu.
NOTE: "Over Temp" will turn Off.

Navigation Steps (Substep 02)
The codes displayed in this step are for internal use only. Press COOLING OFF to return to the Main Menu.

Step 22: Design for Diagnostics

The codes displayed in this step are for internal use only. Press COOLING OFF to return to the Main Menu.

Diagnostic Mode Chart for Step 22

Condition	Code Displayed	Condition	Code Displayed
No errors found.	–	Defrost heater error	H1
FC compartment sensor shorted or open	S1	Defrost heater error	H2
RC compartment sensor shorted or open	S2	Defrost heater error	H3
FC evaporator sensor shorted or open	S3	Defrost heater error	H4
RC evaporator sensor shorted or open	S4	Compressor error	C2
Ambient Sensor shorted or open	S5	FC or RC fan error	F1
		FC or RC fan error	F3

Troubleshooting Tips

Customer Complaint: Unit is not cooling; unit appears to be functioning.

Possible Solution: Have the customer enter the Fridge or Freezer menu, and then press and hold COOLING OFF for 3 seconds. If the Cooling Off icon is not available, then the unit is in Showroom Mode. If this is the case, have the customer press and hold FRIDGE and FREEZER for 3 seconds to exit Showroom Mode.

Customer Complaint: Alarm Continuously Sounds, no indicator.

Possible Solution: Likely the Door Ajar Alarm. Have the customer open one of the RC doors. Instruct the customer to manually close the door switch. If the lights do not turn off, then a switch is defective. The Door Ajar Alarm will sound if a door is left open for more than 5 minutes, and then will repeat every 2 minutes.

NOTE: Some units may require the removal of the top grille to access the door switches.

PRODUCT SPECIFICATIONS & WARRANTY INFORMATION SOURCES

IN THE UNITED STATES:

FOR PRODUCT SPECIFICATIONS AND WARRANTY INFORMATION CALL:

FOR WHIRLPOOL PRODUCTS: 1-800-253-1301
FOR KITCHENAID PRODUCTS: 1-800-422-1230

FOR TECHNICAL ASSISTANCE WHILE AT THE CUSTOMER'S HOME CALL:

THE TECHNICAL ASSISTANCE LINE: 1-800-832-7174

HAVE YOUR STORE NUMBER READY TO IDENTIFY YOU AS AN AUTHORIZED IN-HOME SERVICE PROFESSIONAL

FOR LITERATURE ORDERS (CUSTOMER EXPERIENCE CENTER):

PHONE: 1-800-253-1301

FOR TECHNICAL INFORMATION AND SERVICE POINTERS:

www.servicematters.com

IN CANADA:

FOR PRODUCT SPECIFICATIONS AND WARRANTY INFORMATION CALL

1-800-461-5681

FOR TECHNICAL ASSISTANCE WHILE AT THE CUSTOMER'S HOME CALL:

THE TECHNICAL ASSISTANCE LINE: 1-800-488-4791

HAVE YOUR STORE NUMBER READY TO IDENTIFY YOU AS AN AUTHORIZED IN-HOME SERVICE PROFESSIONAL