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SERVICE MANUAL

"3X"

32 CU FT FRENCH DOOR REFRIGERATOR



WRF992FIF*, WRF993FIF*, WRF995FIF*

***All Colors & Versions**

FORWARD

This Whirlpool Service Manual, (Part No. W10901168), provides the In-Home Service Professional with service information for the “32 CU FT FRENCH DOOR REFRIGERATOR.”

The Wiring Diagrams used in this Service Manual are typical and should be used for training purposes only. Always use the Wiring Diagram supplied with the product tech sheet when servicing the refrigerator.

For specific operating and installation information on the model being serviced, refer to the “Use and Care Guide” or “Installation Instructions” provided with the refrigerator.

GOALS AND OBJECTIVES

The goal of this Service Manual is to provide information that will enable the In-Home Service Professional to properly diagnose malfunctions and repair the “32 CU FT FRENCH DOOR REFRIGERATOR.”

The objectives of this Service Manual 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.

WHIRLPOOL CORPORATION assumes no responsibility for any repairs made on our products by anyone other than authorized In-Home Service Professionals.

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PRODUCT SPECIFICATIONS & WARRANTY INFORMATION SOURCES (inside back cover)

Section 1:

General Information

This section provides general safety, parts, and information for the “24 Cu Ft Counter Depth French Door Refrigerator”

- Refrigerator Safety
- Model & Serial Number Location
- Tech Sheet Location
- Model Number Nomenclature

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:



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



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.

Model & Serial Number Location

The Model & Serial Number tag is located in the Refrigerated Compartment on the left, top side of the liner (Figure 1).

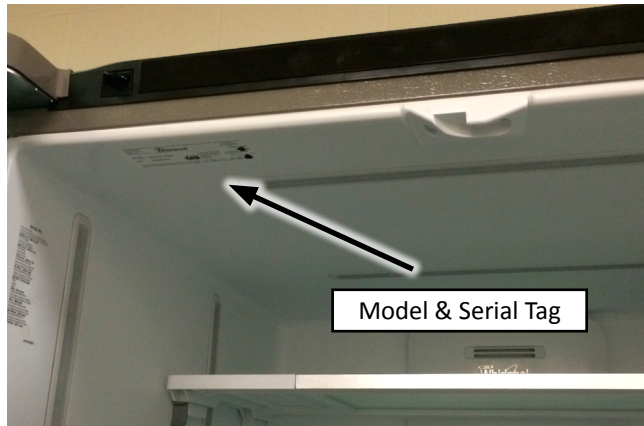


FIGURE 1: Model & Serial Number location

Tech Sheet Location

The Tech Sheet is located behind the Toe Grill on the front side at the bottom of the unit.

Model Number Nomenclature

MODEL NUMBER	W	R	F	9	9	2	F	I	F	H	0
Identical across all models											
Feature Set: 992 - Base Model 993 - Base Plus Model (Includes Second Ice Maker in Freezer) 995 - Step-Up Model (Includes Second Ice Maker and WIFI)											
Identical across all models											
Color Code H = White Ice E = Black Ice M = Stainless Steel Z = Easy Clean Stainless Steel											
Engineering Change 0 = Basic Release; 1 = First Revision; 2 = Second Revision											

Notes



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Section 2: Power Distribution

This section provides information on the supply and distribution of power for the “32 Cu Ft French Door Refrigerator.”

Power Distribution

- Overview
- Power Supply
- Orion High Voltage Board
- GF2 High Voltage Board
- Eyebrow User Interface
- Dispenser User Interface
- WIFI Board
- Notes

Diagnostics & Troubleshooting

- Orion Board
- GF2 Board
- Eyebrow UI
- Dispenser UI
- WIFI Board

For Service Technician Use Only

 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 Disconnect power before servicing. Replace all parts and panels before operating. Failure to do so can result in death 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.

IMPORTANT: Electrostatic Discharge (ESD) Sensitive Electronics

ESD problems are present everywhere. Most people begin to feel an ESD discharge at approximately 3000V. It takes as little as 10V to destroy, damage, or weaken the main control assembly. The new main control assembly may appear to work well after repair is finished, but a malfunction may occur at a later date due to ESD stress.

- Use an anti-static wrist strap. Connect wrist strap to green ground connection point or unpainted metal in the appliance

-OR-

- Touch your finger repeatedly to a green ground connection point or unpainted metal in the appliance.
- Before removing the part from its package, touch the anti-static bag to a green ground connection point or unpainted metal in the appliance.
- Avoid touching electronic parts or terminal contacts; handle electronic control assembly by edges only.
- When repackaging main control assembly in anti-static bag, observe above instructions.

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.

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OVERVIEW

The refrigerator components operate at 115 VAC, 140 VDC, and various DC low voltages.

This section describes how power is supplied to the refrigerator and distributed to the control boards. The control boards provide power output to individual components.

POWER SUPPLY

Power is supplied to the refrigerator by a plug and is filtered through an Electromagnetic Interference (EMI) Filter. The EMI filter prevents electrical interference from entering or leaving the refrigerator over the power cord.



FIGURE 1: Orion Assembly with EMI Filter

The EMI Filter is located in the machine compartment. It is attached to the cover of the Orion Assembly (FIGURE 1). The power cord mates to the EMI filter through a 4-pin connector. Pin 3 (Line) and Pin 4 (Neutral) supply power from the power cord to the EMI Filter. The 120 VAC output of the EMI filter leaves the filter at Pin 1 (Line) and Pin 2 (Neutral) and is routed to the Orion Board Connector P1 (FIGURE 3).

ORION HIGH VOLTAGE BOARD

The Orion Board is attached to the left rail in the machine compartment. The board receives 115 VAC power and uses it to power loads and distribute power to other control boards (FIGURE 4, See Page 2-5).

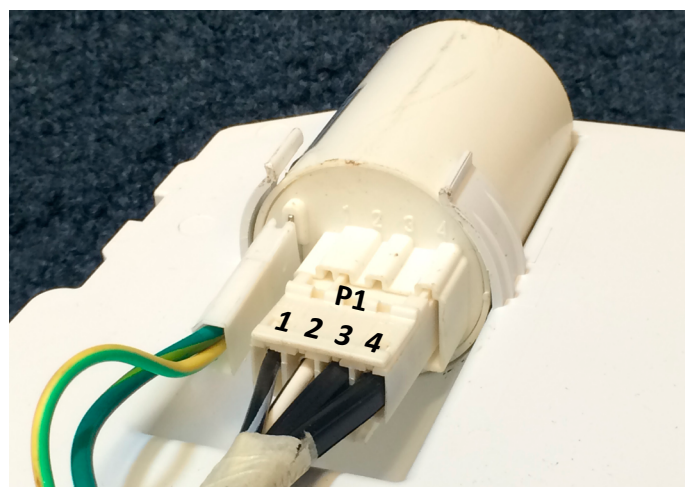


FIGURE 2: EMI Filter

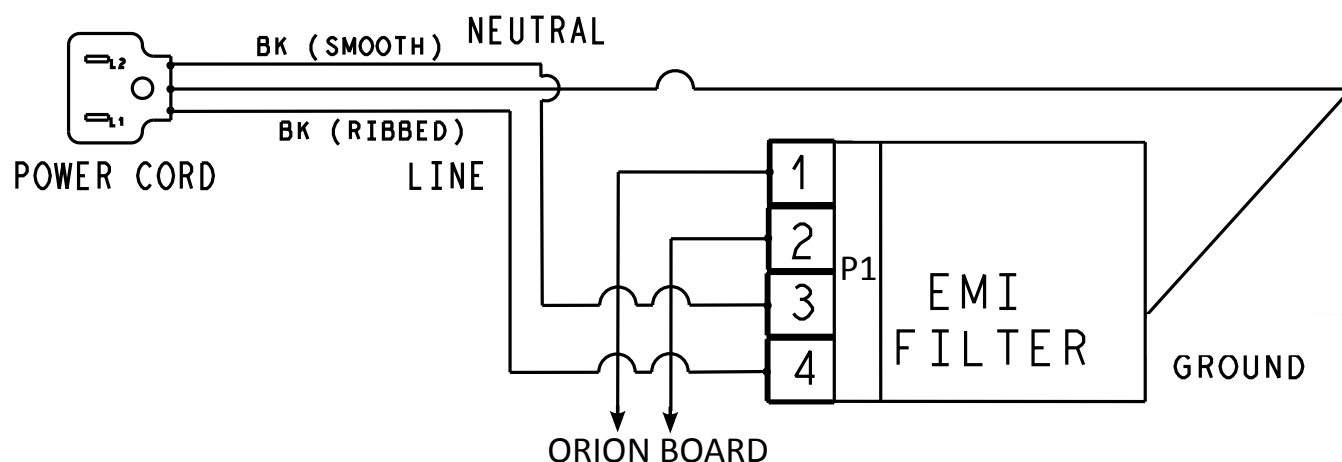


FIGURE 3: EMI POWER CORD

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115 VAC Supply

Filtered 115 VAC power from the EMI Filter is supplied to the Orion Board at P1-1 (FIGURE 5).

115 VAC Load(s)

The Orion Board supplies 115 VAC power to the following loads:

- Linear Compressor
- FC Door Switch

115 VAC Distribution

The Orion Board distributes the 115 VAC power to:

- Gemini Flash Board (GF2)

115 VAC Power is distributed From:

- Orion Board, P1-4

115 VAC Power is distributed To:

- GF2 Board, P1-1
- GF2 Board, P3-5

12.7 VDC Supply

The Orion Board generates 12.7 VDC power from the 115 VAC power supply. The 12.7 VDC power is used to power loads and supply power to other control boards (FIGURE 6).

12.7 VDC Load(s)

The Orion Board supplies 12.7 VDC power to the following loads:

- Freezer Compartment LED Lights
- Refrigerator Compartment LED Shelf Lighting (Select Models)
- 3-Way Valve
- Ice Box Fan
- Condenser Fan
- FC Evaporator Fan
- RC Evaporator Fan

12.7 VDC from Orion Board Connector P4 supplies power for communications between boards.

12.7 VDC Distribution

The Orion Board distributes the 12.7 VDC power to:

- GF2 Board
 - From – Orion Board, P16-1
 - To – GF2 Board, P6-2
- WIFI Board (Select Models)
 - From - Orion Board, P16-1
 - To – WIFI Board, J3-1
- Eyebrow UI
 - From – Orion Board, P16-2
 - To – Dispenser UI, J4-1
- Dispenser UI
 - From – Orion Board, P16-3
 - To – Eyebrow UI, J1-1

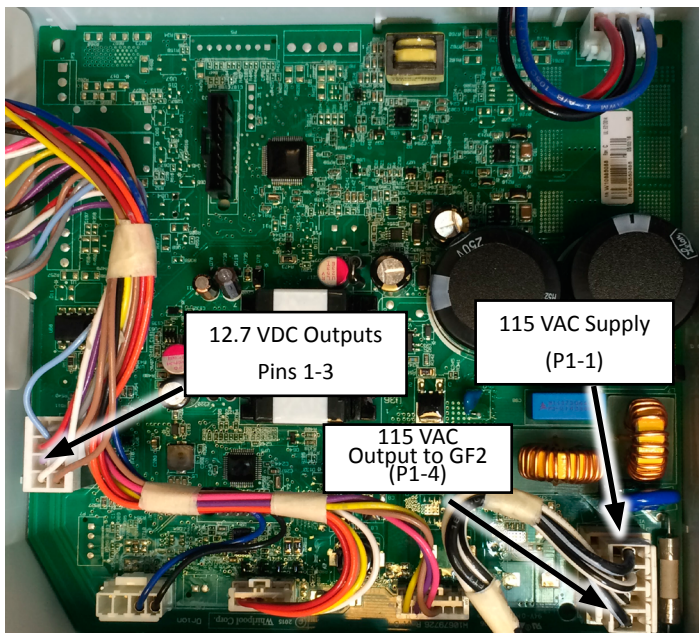


FIGURE 5: Orion Board

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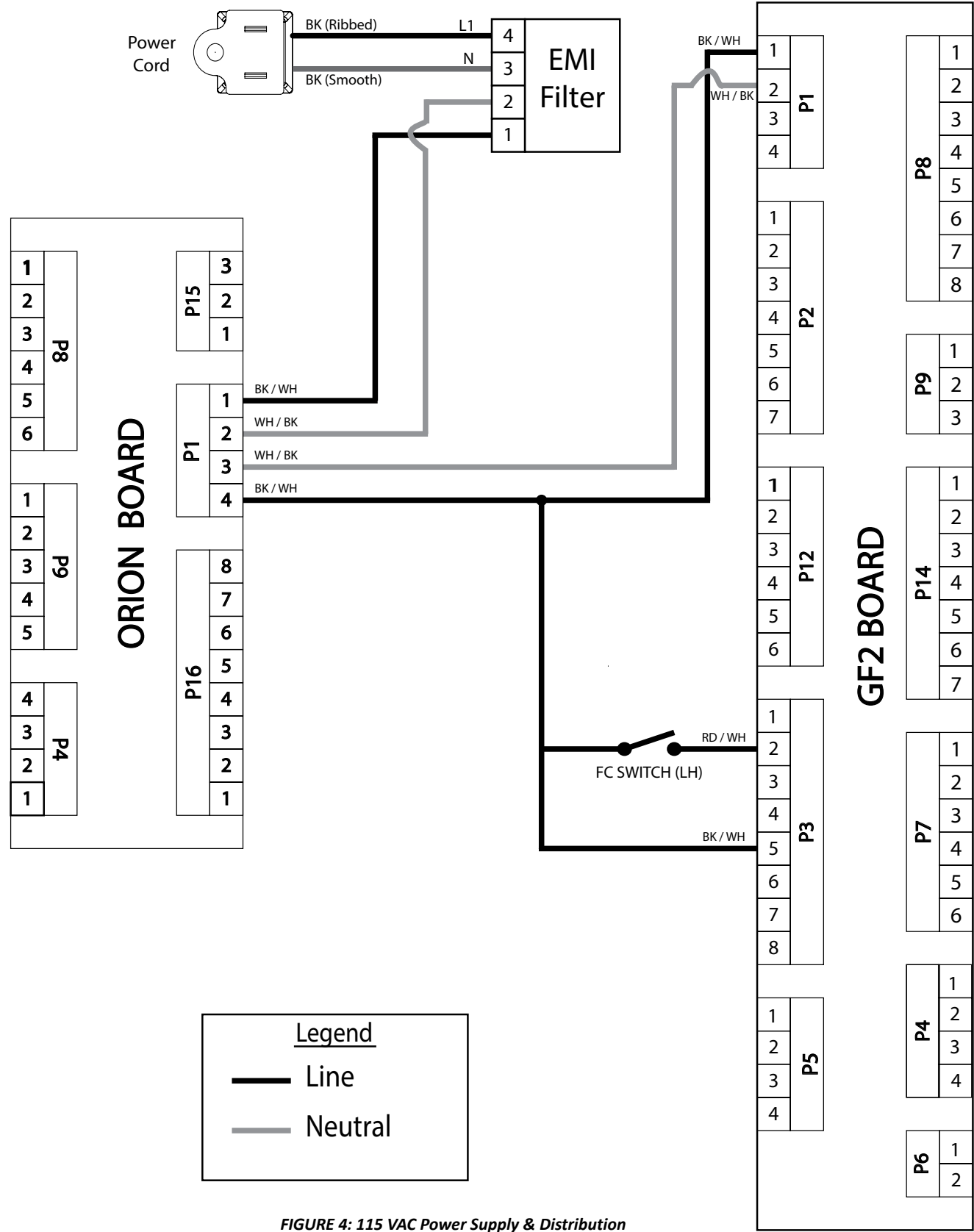


FIGURE 4: 115 VAC Power Supply & Distribution

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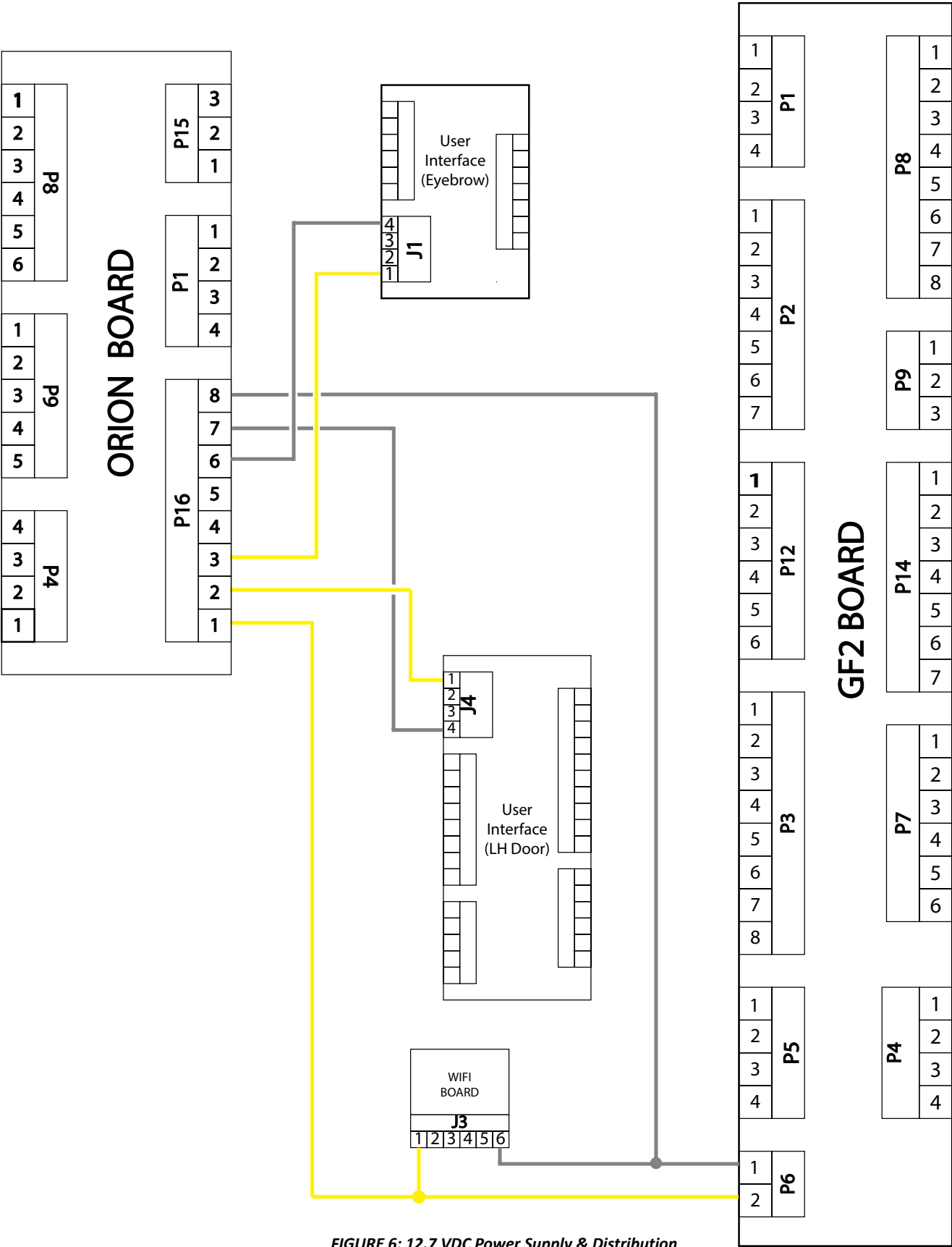


FIGURE 6: 12.7 VDC Power Supply & Distribution

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GF2 HIGH VOLTAGE BOARD

The GF2 Board is located on the back left side of the cabinet behind a metal cover (FIGURE 7). It receives 115 VAC and 12.7 VDC power from the Orion Board. It uses this power to produce 5 VDC power, and supply loads.

115 VAC Supply

The GF2 Board is supplied 115 VAC power at P1-1 and P3-5 (FIGURE 8). Power is supplied from the Orion Board, P1-4.

115 VAC Load(s)

The GF2 Board supplies 115 VAC power to the following loads:

- Pantry Air Baffle
- Ice Maker Duct Cabinet Heater
- Freezer Compartment Defrost Heater
- Ice Maker Water Valve
- Water Isolation Valve
- Freezer Compartment Ice Maker Water Valve (Select Models)

140 VDC Supply

The GF2 Board uses the 115 VAC power to generate a 140 VDC power supply.

140 VDC Load(s)

The GF2 Board directly supplies 140 VDC power to the following load(s):

- Ice Dispenser Motor

12.7 VDC Supply

The GF2 Board is supplied 12.7 VDC power at P6-2 (FIGURE 8). Power is supplied from the Orion Board, P16-1.

12.7 VDC Load(s)

The GF2 Board directly supplies 12.7 VDC power to the following load(s):

- Fill Tube Heater – FC Ice Maker (Select Models)
- Ice Maker Motor – FC Ice Maker (Select Models)
- Ice Maker Motor Switch – FC Ice Maker (Select Models)
- Ice Box Fan (Speed Control)
- FC Evaporator Fan (Speed Control)
- RC Evaporator Fan (Speed Control)
- Condenser Fan (Speed Control)

5 VDC Supply

The GF2 Board uses the 12.7 VDC power to generate a 5 VDC power supply:

5 VDC Load(s)

The GF2 Board supplies 5 VDC power to the following loads:

- FC Temperature Thermistor
- RC Temperature Thermistor
- FC Evaporator Temperature Thermistor
- RC Evaporator Temperature Thermistor



FIGURE 7: GF2 Location

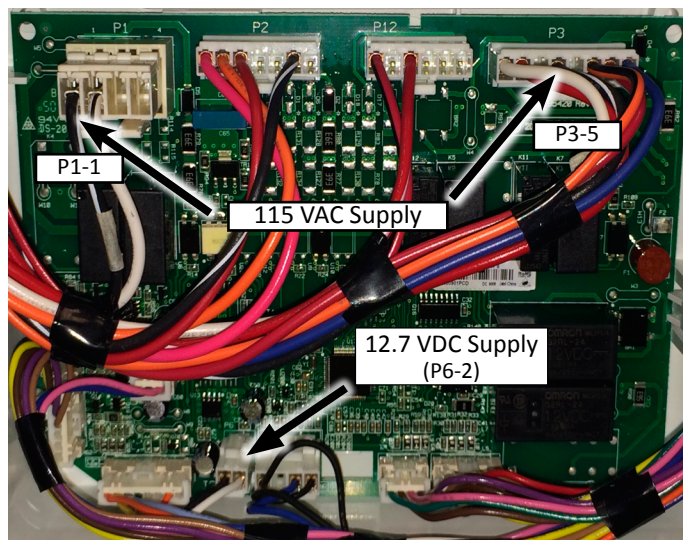


FIGURE 8: 115 VAC & 12.7 VDC Supply to GF2 Board

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EYEBROW USER INTERFACE (UI)

The Eyebrow UI is attached to the top of the cabinet, directly behind the refrigerator doors (FIGURE 9). It receives 12.7 VDC power from the Orion Board. It uses this power to produce 5 VDC and 14 VDC power, and supply loads.

12.7 VDC Supply

The Eyebrow UI is supplied 12.7 VDC power at J1-1 (FIGURE 10). Power is supplied from the Orion Board, P16-3.

12.7 VDC Load(s)

The Eyebrow UI supplies 12.7 VDC power to the following loads:

- RC LED Lights
- Pantry LED Lights
- Left RC Door Switch
- Right RC Door Switch

14 VDC Supply

The Eyebrow UI uses the 12.7 VDC power to generate a 14 VDC power supply:

14 VDC Load(s)

The Eyebrow UI supplies 14 VDC power to the following load(s):

- Mullion Heater

5 VDC Supply

The Eyebrow UI uses the 12.7 VDC power to generate a 5 VDC power supply:

5 VDC Load(s)

The Eyebrow UI supplies 5 VDC power to the following load(s):

- Pantry Temperature Thermistor



FIGURE 9: Eyebrow UI

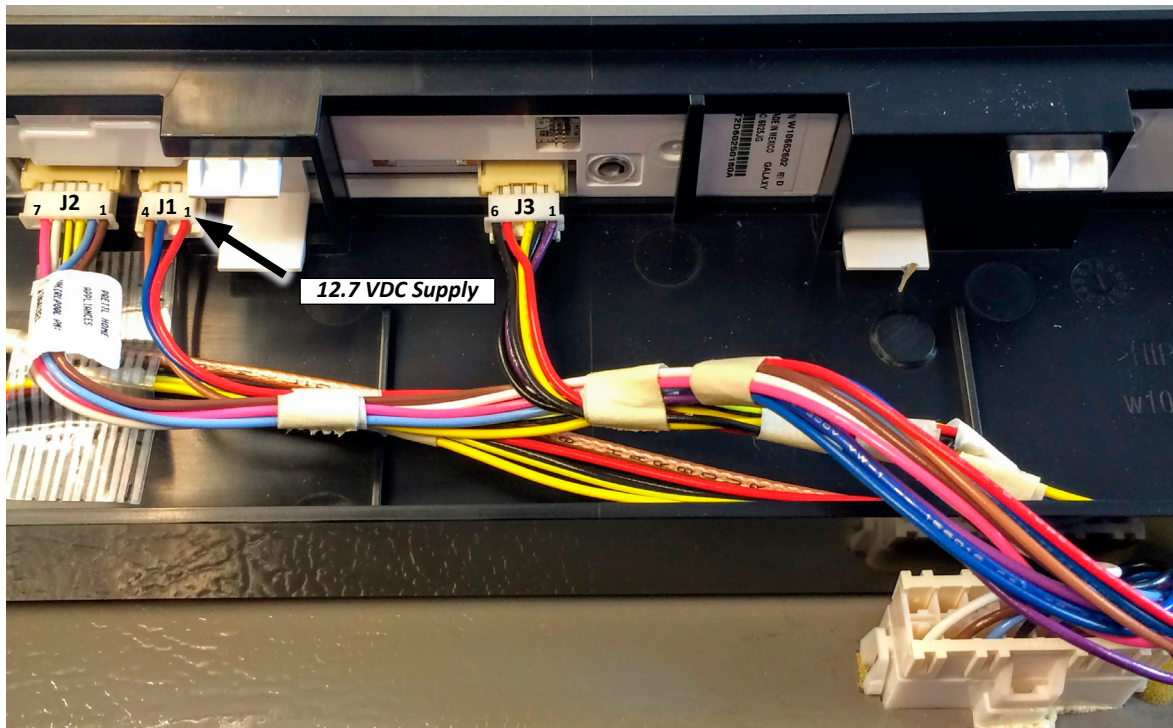


FIGURE 10: 12.7 VDC Supply to Eyebrow UI

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DISPENSER USER INTERFACE (UI)

The Dispenser UI is located in the left refrigerator door. It receives 12.7 VDC power from the Orion Board. It uses this power to produce 5 VDC power, and supply loads.

12.7 VDC Supply

The Dispenser UI is supplied 12.7 VDC power at J4-1 (FIGURE 11). Power is supplied from the Orion Board, P16-2.

12.7 VDC Load(s)

The Dispenser UI supplies 12.7 VDC power to the following loads:

- Ice Bin Switch
- Fill Tube Heater – In-Door Ice Maker
- Ice Maker Motor – In-Door Ice Maker
- Ice Maker Motor Switch – In-Door Ice Maker
- Dispenser Water Valve
- Dispenser Ice Door Motor
- Dispenser Ice Paddle Switch
- Dispenser Water Paddle Switch
- Dispenser Heater
- Ice Maker Air Duct Heater

5 VDC Supply

The Dispenser UI uses the 12.7 VDC power to generate a 5 VDC power supply:

5 VDC Load(s)

The Dispenser UI supplies 5 VDC power to the following load(s):

- Ice Box Temperature Sensor
- Ice Maker Tray Temperature Sensor

WIFI BOARD

The WIFI Board is located under the right refrigerator door hinge cover (FIGURE 12). It receives 12.7 VDC power from the Orion Board.

12.7 VDC Supply

The WIFI Board is supplied 12.7 VDC power at J3-1. Power is supplied from the Orion Board, P16-1.

12.7 VDC Load(s)

The 12.7 VDC is used to power the board, and connect to WIFI.



FIGURE 12: WIFI Board

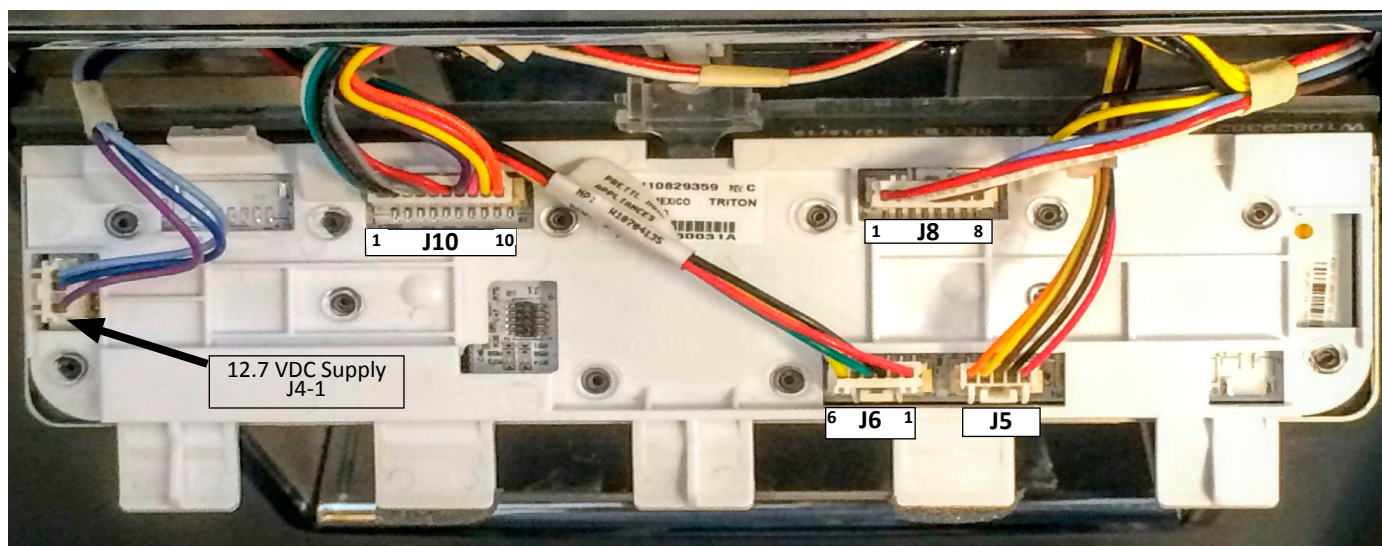


FIGURE 11: 12.7 VDC Supply to Dispenser UI

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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

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death 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.

IMPORTANT: Electrostatic Discharge (ESD) Sensitive Electronics

ESD problems are present everywhere. Most people begin to feel an ESD discharge at approximately 3000V. It takes as little as 10V to destroy, damage, or weaken the main control assembly. The new main control assembly may appear to work well after repair is finished, but a malfunction may occur at a later date due to ESD stress.

- Use an anti-static wrist strap. Connect wrist strap to green ground connection point or unpainted metal in the appliance

-OR-

- Touch your finger repeatedly to a green ground connection point or unpainted metal in the appliance.
- Before removing the part from its package, touch the anti-static bag to a green ground connection point or unpainted metal in the appliance.
- Avoid touching electronic parts or terminal contacts; handle electronic control assembly by edges only.
- When repackaging main control assembly in anti-static bag, observe above instructions.

IMPORTANT SAFETY NOTICE — “For Technicians only”

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REFRIGERATION SYSTEM DIAGNOSTICS & TROUBLESHOOTING

Diagnostics contains Service Tests to troubleshoot and identify the cause of most system problems. Use of the on-board diagnostic routine will increase the speed and accuracy of troubleshooting.

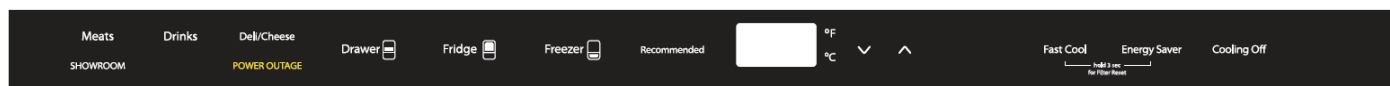


FIGURE 9: Base Model Eyebrow UI

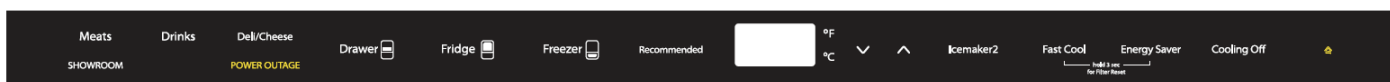


FIGURE 10: Step-Up Model Eyebrow UI



[Click this button for Video](#)

To Access diagnostics:

- Press and hold the “Recommended” key on the Eyebrow UI (**See NOTE 1**).
- At the same time, press and hold the “Drawer” key, wait 5 seconds.
- No countdown will display. A chime will play and the Lights will go out when Diagnostics is accessed.

NOTE 1:

If the “Drawer,” “Fridge,” or “Freezer” key is selected, the “Recommended” key will be lit. De-select the selected zone to extinguish the “Recommended” key prior to accessing diagnostics.

To Navigate Diagnostics:

- Use the Up and Down arrows to navigate to the desired Service Test.
- Press the “Icemaker2” key to Select the desired test (**See NOTE 2**).
- The result will display in the 7-Segment LED section of the display.
- Press the “Fast Cool” key to back out of a Selected Service Test.

NOTE 2:

On Base models, without a second Icemaker, the “Icemaker2” key will not be lit (FIGURE 9). The touch-point on the UI is still active. Press in the location of the “Icemaker2” key to Select the desired test (FIGURE 10).

To Exit Diagnostics:

- Back out of the selected Service Test.
- Navigate to and Select Service Test 00.

Or,

- Cycle power to the refrigerator,

Or,

- Wait 20 minutes

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General Troubleshooting Information

The Diagnostic Service Tests can be used to verify functionality of the Control Boards and User Interfaces.

Certain Service Tests indicate the display should read “On” If the display does indicate “On” this means the control board is functioning properly. If the Service Test indicates the display should read “On”, and it does not, the control board should be replaced.

Orion Board

Verify proper power is supplied to the EMI Filter.

Test for 115 VAC at the EMI Filter between P1-3 & P1-4.

- If the wall outlet has proper 115 VAC power, but power is not present at the EMI Filter, replace the power cord.

Verify EMI Filter is supplying power.

Test for 115 VAC at the EMI Filter between P1-1 & P1-2.

- If power is supplied to the EMI Filter, but power is not present at these points, replace the EMI Filter.

Verify Orion Board is receiving proper power.

Test for 115 VAC at the Orion Board between P1-1 & P1-2.

- If power is present at the EMI Filter output, but not at the these test points, replace the wiring harness between the EMI Filter and the Orion Board.

Verify Orion Board is supplying 115 VAC power to GF2 Board.

Test for 115 VAC at the Orion Board between P1-3 & P1-4.

- If power is supplied to the Orion Board, but is not present at these points, replace the Orion Board.

Verify Orion Board is supplying 12.7 VDC power to external loads.

Test for 12.7 VDC at the Orion Board between the following points:

- P16-1 & P16-8
- P16-2 & P16-8
- P16-3 & P16-8
- P16-4 & P16-8

- If 12.7 VDC is not present at any of these points, replace the Orion Board.

GF2 Board

Verify GF2 Board is receiving 115 VAC Power

Test for 115 VAC between P1-1 & P1-2

- If 115 VAC is not present, check that power is being supplied from the Orion Board (See previous section).
- If power is supplied by the Orion Board, check wiring and wiring connectors between the two boards.

Verify GF2 Board is receiving 12.7 VDC Power

Test for 12.7 VDC between P6-1 & P6-2

- If 12.7 VDC is not present, check that power is being supplied from the Orion Board (See previous section).
- If power is supplied by the Orion Board, check wiring and wiring connectors between the two boards.

Eyebrow UI

Verify the Eyebrow UI is receiving 12.7 VDC Power

Test for 12.7 VDC between J1-1 & J1-4

- If 12.7 VDC is not present, check that power is being supplied from the Orion Board (See previous section).
- If power is supplied by the Orion Board, check wiring and wiring connectors between the two boards.

Run Service Test 92 - Turn All UI LEDs ON

Verify all UI LEDs turn ON. If UI LEDs are not functioning properly, replace the UI.

Run Service Test 93 - UI Button and Pad/Paddle Test

Ensure numeric display shows “01” when each individual key is pressed. If a key is not responding to presses, replace the UI.

Door UI

Verify the Door UI is receiving 12.7 VDC Power

Test for 12.7 VDC between J4-1 & J4-4

- If 12.7 VDC is not present, check that power is being supplied from the Orion Board (See previous section).
- If power is supplied by the Orion Board, check wiring and wiring connectors between the two boards.

Run Service Test 92 - Turn All UI LEDs ON

Verify all UI LEDs turn ON. If UI LEDs are not functioning properly, replace the UI.

Run Service Test 93 - UI Button and Pad/Paddle Test

Ensure numeric display shows “01” when each individual key is pressed. If a key is not responding to presses, replace the UI.

WIFI Board

A voltage test and Service Test 137 will verify full functionality of the WIFI Board. Service Test 106 can be used to help the customer direct their troubleshooting. The technician should restrict their troubleshooting to the WIFI board. Do not conduct any troubleshooting of customer’s network.

Voltage Test

Verify proper power is supplied to the WIFI Board.

- Test for 12.7 VDC between WIFI Board points J3-1 & J3-6

If no voltage present, Test for 12.7 VDC between Orion Board P16-1 & P16-8.

- If voltage present, check wiring harness and

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connections between Orion Board and WIFI Board.

- If voltage not present, replace Orion Board

Run Service Test 137 - WIFI SW Version Number

If result of the test is "0 - 0 - 0"

- This indicates the WIFI Board is not communicating. Replace the WIFI Board.
- If result is any other Software Version, WIFI Board is communicating properly.

Run Service Test 106 - WIFI Link Connection Self Test

A result of "01" indicates the WIFI Board cannot reach the router.

- The customer may need to move their router closer to the refrigerator.

A result of "02" indicates the WIFI Board can't reach the internet.

- The customer should check they have a valid connection to the internet.

A result of "03" means the refrigerator is connected to the router and internet.

The customer should contact Whirlpool Customer Service for further assistance troubleshooting connectivity issues.

NOTES



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Section 3: Refrigeration System

This section details the Operation, Diagnostics, and Troubleshooting of the Refrigeration System for the “32 Cu Ft French Door Refrigerator”

Operation

- Temperature Sensing
- Sealed System
- Air Flow

Diagnostics & Troubleshooting

- Entering Diagnostics
- Compressor Service Requirements
- Thermistors
- Condenser Fan
- Sealed System
- Pantry
- Ice Box

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REFRIGERATION SYSTEM

OPERATION

The refrigeration system compares actual compartment temperatures to set-point temperatures. If the temperature is too warm, the sealed system operates to cool the appropriate compartment. Fans are run to move compartment air over the evaporator, removing heat and cooling the compartment.

TEMPERATURE SET-POINT AND SENSING

The refrigeration system uses dual evaporators to control the temperature of four temperature controlled zones (FIGURE 1) located in two separate compartments.

The compartments and temperature controlled zones are:

- Compartment 1 (C1)
- Freezer Compartment (FC)
 - Ice Box (IB)

- Compartment 2 (C2)
- Refrigerator Compartment (RC)
 - Temperature Controlled Drawer (Pantry)

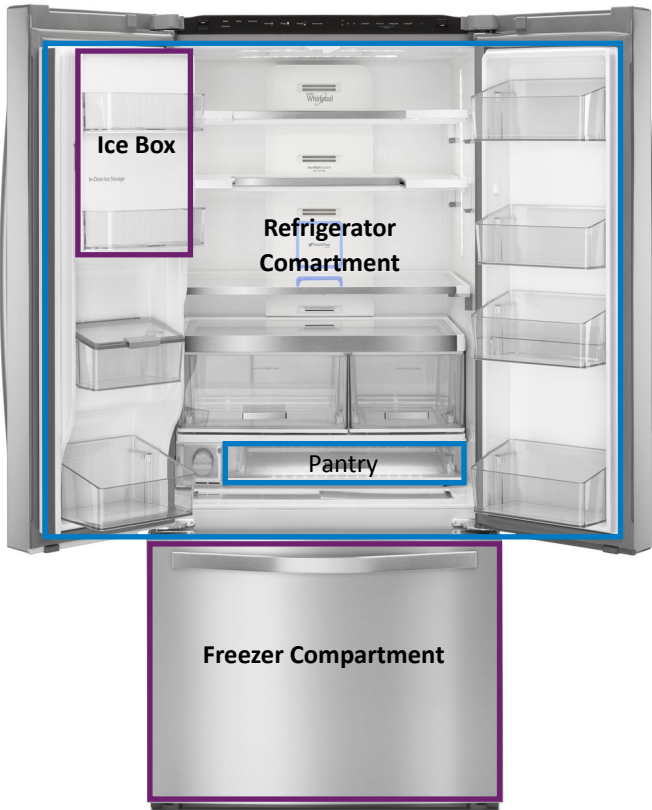


FIGURE 1: Temperature Controlled Zones

TEMPERATURE SET-POINTS

The refrigerator maintains the four temperature controlled zones at the designated set-points. The temperature set-points for the FC, RC, and Pantry are set using the Eyebrow UI. The IB set-point temperature is not user adjustable. (See Table 1)

Compartment	Temperature Zone	Temperature Range
C1	Freezer Compartment	-5°F to 5°F (-21°C to -15°C)
C1	Ice Box	5° F (-15°C) - Ice Making 14°F (-10°C) - Ice Bin Full
C2	Refrigerator Compartment	33°F to 42°F (0.5°C to 5.5°C)
C2	Pantry	Meats - 32°F (0°C) Drinks - 35°F (2°C) Deli / Cheese - 38°F (3°C)

Table 1: Temperature Zone Set-Points

TEMPERATURE SENSING

The refrigerator compares the actual temperature to the temperature zone set-point to determine when cooling is necessary. Actual temperatures of the Pantry, RC, FC, and IB are determined by a thermistor located in each temperature zone.

COOLING PRIORITY

The refrigerator can only cool one of the two compartments at a time. If both compartments are calling for cooling, the refrigerator uses a cooling priority to determine which compartment is cooled first. Cooling priorities are assigned by comparing actual temperature to the temperature set-point. The larger the deviation above set-point, the higher the priority. There are four cooling priorities:

- 3 – High Priority,
- 2 – Medium Priority,
- 1 – Low Priority,
- 0 – Satisfied

C1 Priority = FC Priority + IB Priority
C2 Priority = RC Priority + Pantry Priority

The compartment with the higher priority will cool first.

If a compartment is cooling and another compartment calls for cooling, the first compartment will continue to cool until either the temperature is satisfied, or for 15 minutes, whichever comes first. After this time, cooling switches to the other compartment.

If both compartments have High priority --for example, a warm refrigerator just plugged in—the refrigerator will enter Pull-Down Mode.

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PULL DOWN MODE

If both compartments have a High priority for cooling (i.e. the unit was just plugged in) the refrigerator enters Pull Down Mode. In Pull Down Mode, the following cycle repeats until the temperature is satisfied for at least one of the two compartments.

1. Freezer Compartment cools for 20 minutes. (Freezer Evaporator Fan runs for 2 additional minutes).
2. Refrigerator Compartment cools for 10 minutes. (Refrigerator Evaporator Fan runs for 20 additional minutes).

SEALED SYSTEM

The sealed system uses a new, linear compressor to drive the refrigeration cycle (FIGURE 2). Refrigerant is pumped through the condenser and a Non-UV Dye Drier to the Three-Way Valve. The Three-Way Valve aligns to allow refrigerant to either the RC or FC Evaporator, depending on which is being cooled. A check valve is positioned at the outlet of the FC Evaporator to prevent refrigerant backflow during RC cooling. The linear compressor takes a suction of the evaporator outlet of the compartment being cooled.

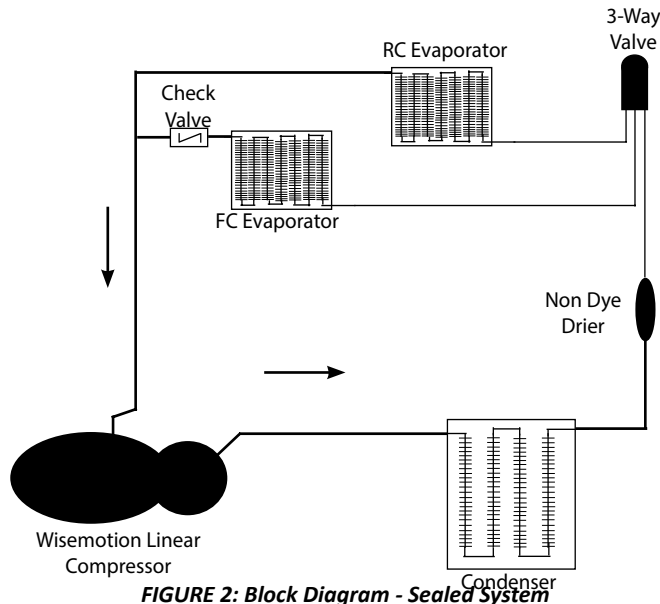


FIGURE 2: Block Diagram - Sealed System

WISEMOTION LINEAR COMPRESSOR

The Wisemotion Linear Compressor (FIGURE 3) is located in the Machine Compartment. It is a Variable Capacity Compressor (VCC). Traditional VCC's vary electrical frequency to the motor, changing the rotational speed of the compressor and varying cooling capacity. The Wisemotion varies voltage/power to the linear motor. The displacement of the piston varies directly with power, varying the cooling capacity. This design provides lower sound levels and more precise control of cooling over a greater range.

The compressor receives power from the Orion Board, P15-2. Voltage is varied between approximately 110 VAC to 260 VAC (20 – 160 watts), depending on cooling needs. The ability to run at this a low power enables the compressor to run for longer periods of time, minimizing cycling. With this design, it is normal for the Wisemotion Compressor to run for extended periods of time.



FIGURE 3: Wisemotion Linear Compressor

CONDENSER

The condenser is a block type condenser located in the Machine Compartment. It transfers heat from the cooled compartments to the external atmosphere. Heat removal is aided by the Condenser Fan.

NON-DYE DRYER

The Non-Dye Dryer is located in the Machine Compartment. It is designed to remove residual moisture from the sealed system and trap any foreign material present in the system.

UV Dye will destroy the Linear Compressor. The Dryer installed in the sealed system is free of UV dye and must only be replaced with a suitable Non-Dye Dryer (See Page 3-9).

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THREE-WAY VALVE

The Three-Way Valve is located in the Machine Compartment. The valve body has one inlet and two outlets. The inlet receives high pressure refrigerant gas from the Non-Dye Dryer. One outlet leads to the RC Evaporator, while the other outlet leads to the FC Evaporator (FIGURE 4).

A 5-pin, 14 VDC electrical coil is placed over the valve body. The valve is driven to any of four distinct positions by applying a specific sequence of 14 VDC pulses to the coil (FIGURE 5).

The four positions are:

- Full Open,
- Full Close,
- RC Evaporator Open,
- FC Evaporator Open

The valve moves to Full Close for a short period before cooling to allow the compressor to evacuate refrigerant from the low side and pump it to the high side of the sealed system.

The valve moves to RC Evaporator Open during RC cooling. The valve moves to FC Evaporator Open during FC Cooling.

Place the valve to Full Open prior to sealed system work to allow a path to both evaporators, facilitating system discharge and evacuation. See Page 3-9 for details.

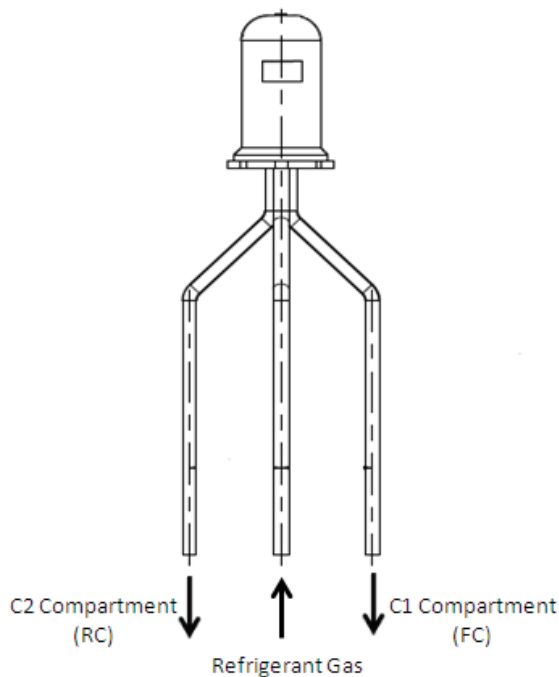


FIGURE 4: Three-Way Valve Body

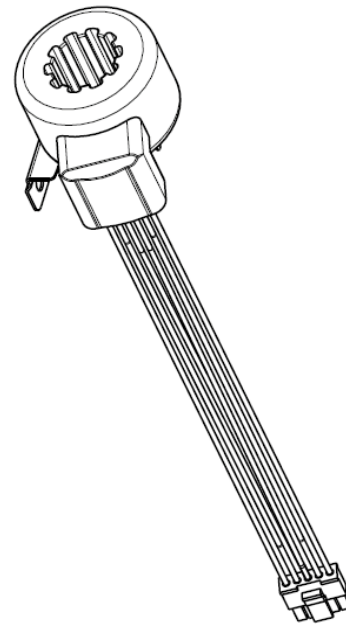


FIGURE 5: Three-Way Valve Coil

RC & FC EVAPORATORS

The RC and FC Evaporators are located behind the rear wall of their respective compartments. Heat from the compartment is absorbed into the refrigerant passing through the evaporator.

CHECK VALVE

The Check Valve is located in the Machine Compartment (FIGURE 6) and prevents refrigerant from flowing back into the FC Evaporator when the RC is cooling.

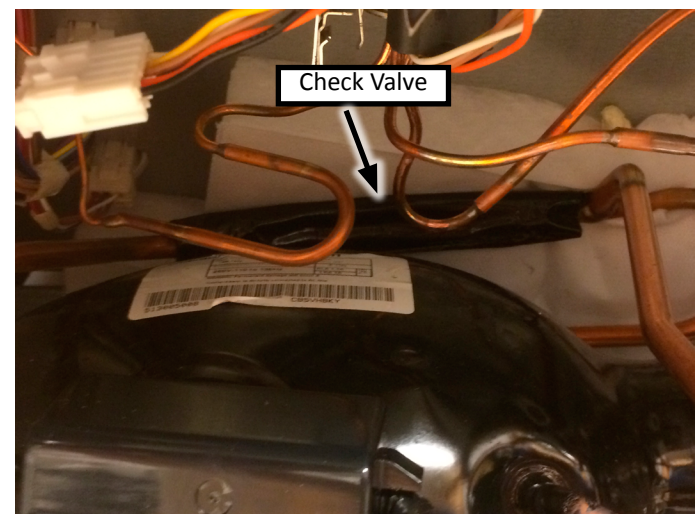


FIGURE 6: Check Valve

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AIR FLOW SYSTEM

The air flow system is composed of ducting and a number of fans to provide air flow to the four temperature controlled zones located in the RC and FC Compartments. Proper air flow allows efficient removal of heat and uniform temperature distribution in each zone.

The air flow system also provides air flow in the machine compartment, cooling equipment and removing waste heat from the condenser.

All fans are supplied with a constant 12.7 VDC power from the Orion Board, P16-4. The fans are switched On, when necessary, by a separate 12.7 VDC signal provided from the GF2 Board.

REFRIGERATOR COMPARTMENT (RC) Airflow

The RC Evaporator Fan and the Pantry Air Baffle are located in the Evaporator Cover Assembly in the RC (FIGURE 7). They control airflow to the two temperature controlled zones, the RC and the Pantry.

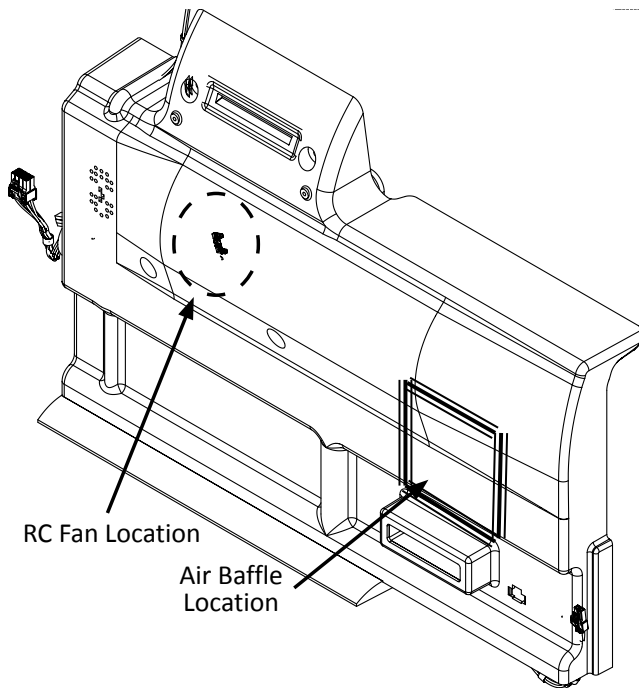


FIGURE 7: Evaporator Cover Assembly

RC EVAPORATOR FAN

The RC Evaporator Fan is a variable speed fan. It moves RC air over the Evaporator to remove heat from the RC.

The RC Evaporator Fan is supplied with constant 12.7 VDC power from Orion Board P16-4. The fan is switched On and Off by a 12.7 VDC gating signal from GF2 Board P14-3. The gating signal is adjusted based on temperature to change the speed of the fan between HI (3450 rpm) and LOW (1725 rpm).

The RC fan is switched On any time the Refrigeration System is cooling the RC. The RC fan will run for a period of time following cooling, and then be switched off. If the refrigerator is in Pull Down Mode, the RC Fan will run for an additional 20 minutes after completion of RC cooling.

If the RC Evaporator needs defrosting, the RC fan may run for up to 10 additional minutes after RC cooling (see DEFROST SYSTEM for further details).

PANTRY AIR BAFFLE

The Pantry is the second temperature controlled zone cooled by the RC Evaporator. The Pantry is cooled by airflow from the RC fan directed through foam ducting in the RC Evaporator Cover Assembly. The Pantry Air Baffle is either Full Open, or Full Close dependent upon Pantry temperature.

The Pantry is operated by 115 VAC Power supplied from GF2 Board P2-5. 115 VAC power is also supplied to a feedback switch by GF2 Board P2-2, providing the board with position indication for the Pantry Air Baffle.

The Pantry Air Baffle will Open when:

- Pantry requests cooling, AND
- RC is Cooling

The Pantry Air Baffle will be CLOSED at all other times.

FREEZER COMPARTMENT (FC) Airflow

The FC Evaporator Fan and the Ice Box Fan are located in the FC. They control airflow to the two temperature controlled zones, the FC and the Ice Box.

FC EVAPORATOR FAN

The FC Evaporator Fan is a variable speed fan. It moves FC air over the Evaporator to remove heat from the FC.

The FC Evaporator Fan is supplied with constant 12.7 VDC power from Orion Board P16-4. The fan is switched On and Off by a 12.7 VDC gating signal from GF2 Board P14-1. The gating signal is adjusted based on temperature to change the speed of the fan between HI (3450 rpm) and LOW (1725 rpm).

The FC fan is switched On any time the Refrigeration System is cooling the FC. The FC fan will run for an additional 2 minutes after completion of FC cooling. The FC fan will also run an additional 2 minutes after completion of cooling while the refrigerator is in Pull Down Mode.

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ICE BOX (IB) FAN

The IB Fan is a variable speed fan located in the FC (FIGURE 8). It circulates air from the FC Evaporator area to the IB in the left RC door to maintain temperature at its set-point. For models with an Ice Maker in the FC, it also circulates air over the FC Ice Maker.

The IB Fan is supplied with constant 12.7 VDC power from Orion Board P16-4. The fan is switched On and Off by a 12.7 VDC gating signal from GF2 Board P9-2. The gating signal is adjusted based on temperature to change the speed of the fan between HI (3450 rpm) and LOW (1725 rpm).

The IB Fan is On any time the FC fan is On. The IB Fan is Off when the FC fan is Off.

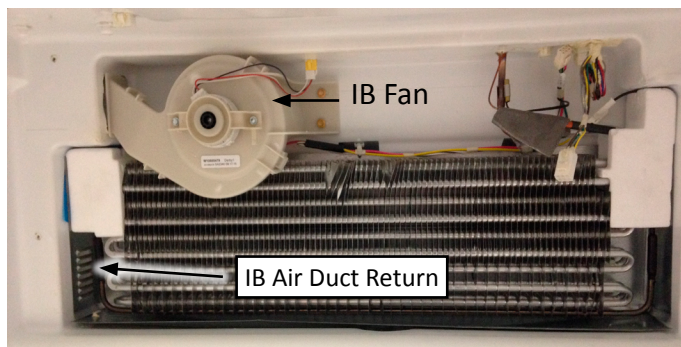


FIGURE 8: IB Fan, Evaporator Cover Assembly Removed

MACHINE COMPARTMENT

The Machine Compartment is cooled by the Condenser Fan.

CONDENSER FAN

The Condenser Fan is located in the Machine Compartment. It draws air from outside the Machine Compartment to remove heat from the Condenser and cool the Compressor.

The Condenser Fan is supplied with constant 12.7 VDC power from Orion Board P16-4. The Condenser fan is switched On any time the Compressor is running. The fan is switched On and Off by a 12.7 VDC gating signal from GF2 Board P8-7. This gating signal varies the fan speed between 0 and 1330 RPM. The fan speed is determined based on ambient temperature and cooling mode of the refrigerator.

For Service Technician Use Only

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

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death 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.

IMPORTANT: Electrostatic Discharge (ESD) Sensitive Electronics

ESD problems are present everywhere. Most people begin to feel an ESD discharge at approximately 3000V. It takes as little as 10V to destroy, damage, or weaken the main control assembly. The new main control assembly may appear to work well after repair is finished, but a malfunction may occur at a later date due to ESD stress.

- Use an anti-static wrist strap. Connect wrist strap to green ground connection point or unpainted metal in the appliance

-OR-

- Touch your finger repeatedly to a green ground connection point or unpainted metal in the appliance.
- Before removing the part from its package, touch the anti-static bag to a green ground connection point or unpainted metal in the appliance.
- Avoid touching electronic parts or terminal contacts; handle electronic control assembly by edges only.
- When repackaging main control assembly in anti-static bag, observe above instructions.

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.

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REFRIGERATION SYSTEM DIAGNOSTICS & TROUBLESHOOTING

Diagnostics contains Service Tests to troubleshoot and identify the cause of most system problems. Use of the on-board diagnostic routine will increase the speed and accuracy of troubleshooting.



FIGURE 9: Base Model Eyebrow UI



FIGURE 10: Step-Up Model Eyebrow UI



[Click this button for Video](#)

To Access diagnostics:

- Press and hold the “Recommended” key on the Eyebrow UI (**See NOTE 1**).
- At the same time, press and hold the “Drawer” key, wait 5 seconds.
- No countdown will display. A chime will play and the Lights will go out when Diagnostics is accessed.

NOTE 1:

If the “Drawer,” “Fridge,” or “Freezer” key is selected, the “Recommended” key will be lit. De-select the selected zone to extinguish the “Recommended” key prior to accessing diagnostics.

To Navigate Diagnostics:

- Use the Up and Down arrows to navigate to the desired Service Test.
- Press the “Icemaker2” key to Select the desired test (**See NOTE 2**).
- The result will display in the 7-Segment LED section of the display.
- Press the “Fast Cool” key to back out of a Selected Service Test.

NOTE 2:

On Base models, without a second Icemaker, the “Icemaker2” key will not be lit (FIGURE 9). The touch-point on the UI is still active. Press in the location of the “Icemaker2” key to Select the desired test (FIGURE 10).

To Exit Diagnostics:

- Back out of the selected Service Test.
- Navigate to and Select Service Test 00.

Or,

- Cycle power to the refrigerator,

Or,

- Wait 20 minutes

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Service Requirements for the Wisemotion Linear Compressor

Design Characteristics

The Wisemotion Linear Compressor operates with a linear motor, tight tolerances, and without oil. This design requires specific precautions and service procedures to be followed. These requirements are outlined here.

Service Kit

An available Service Kit for replacement of the Wisemotion Compressor contains the unique components and consumables necessary to replace the Wisemotion Compressor. The following items are included in the kit.

- Wisemotion Compressor
- Orion High Voltage Board
- Bifurcated Non Dye Drier
- Service Port
- Heat Trap Paste
- Microfiber Cloth
- Alcohol Wipes

Service Precautions - All Repairs

- Use dedicated, oil-free, contaminant-free manifold Gauges and Hoses
- Use a Non Dye Drier
- After Sanding joints, Clean the joints with alcohol wipes to remove contamination

Service Precautions - Compressor Replacement

- Always replace the Orion Board when replacing the compressor
- Do not handle the compressor by the Discharge port.
- Do not Overheat the discharge port
- To help prevent overheating, wet the microfiber cloth and wrap around the neck of the compressor
- To help prevent overheating, coat the discharge tube thoroughly with heat trap paste (From the base of the compressor to within an inch of the brazing joint).

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Troubleshooting Theory

The refrigeration system requires properly functioning thermistors and fans to cool properly. Any malfunction of these components will appear as a cooling problem. Test these components first to prevent a misdiagnosis of the sealed system.

Test Thermistors

Faulty thermistors will cause the cooling system to operate on a timed cycle rather than temperature. This can present problems with over/under cooling. Obtain temperature readings to aid in troubleshooting and verify the functionality of the thermistors.

Run Service Test 01 – RC Thermistor

Run Service Test 02 – FC Thermistor

Run Service Test 05 – Pantry Thermistor

Run Service Test 14 – Door Ice Box Thermistor

- Ensure none of the thermistors are Open “OP” or Shorted “SH”. Replace any faulty thermistors.

Compare actual temperatures to the Compartment Set-point Temperatures, follow the appropriate troubleshooting path.

Path 1 - RC / FC Temperatures Abnormal

Path 2 - Pantry Temperature Abnormal, RC Temperature OK

Path 3 - Ice Box Temperature Abnormal, FC Temperature OK

Path 1

RC / FC Temperature Abnormal

Poor cooling affecting the RC and/or FC is typically caused by a problem with the Compressor, Condenser Fan, 3-Way Valve, or the Sealed System.

Test Condenser Fan

A faulty Condenser Fan will cause the compressor to short cycle on over-temperature, causing abnormal compartment temperatures. Ensure the Machine Compartment cover is in place and there are no obstructions blocking air flow into the Machine Compartment.

Run Service Test 58 – Condenser Fan Test

- Ensure LED Display shows “on”
- Check that the fan is operating

If LED Display does not show “on”:

- Replace GF2 Board

If fan is not operating:

- Check all wiring connectors tight (FIGURE 11).
- Check integrity of wiring between control board and fan. (Continuity or Voltage check as appropriate)

If wiring check indicates bad wiring:

- Replace wiring harness

If wiring checks OK, or if fan is still not operating:

- Replace fan.

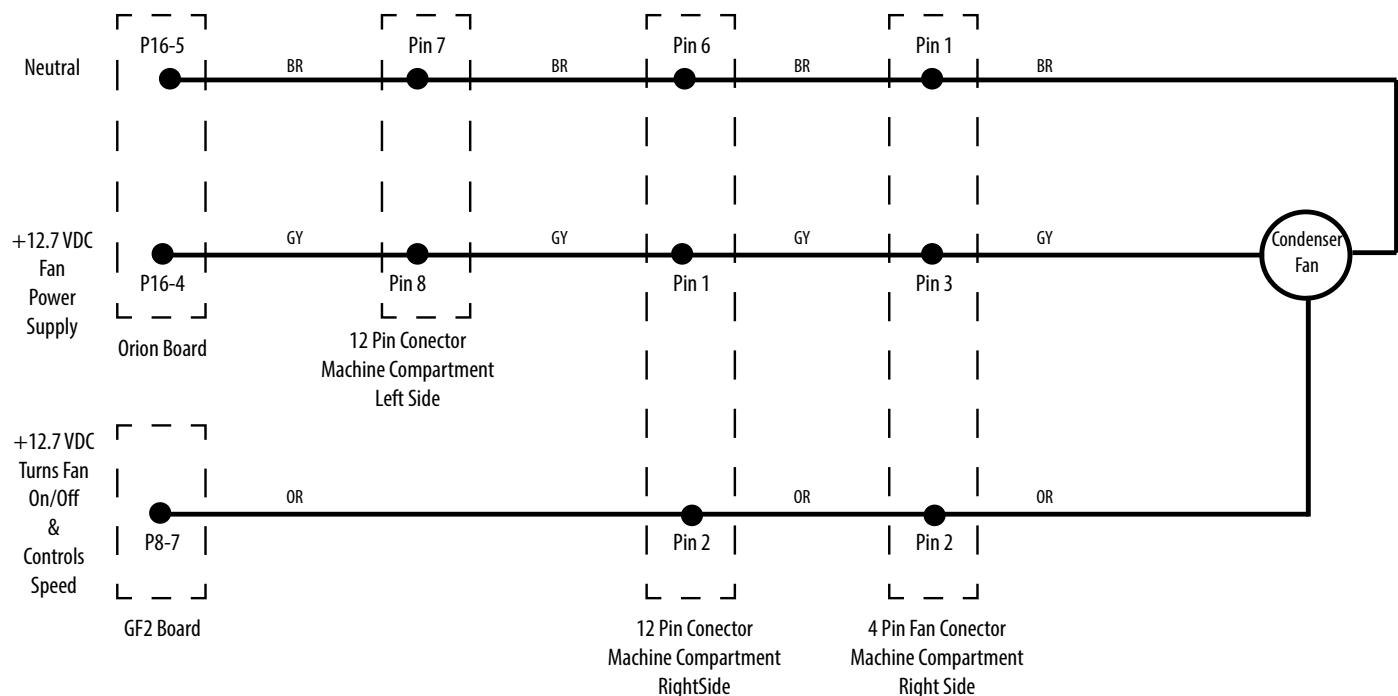


FIGURE 11: Condenser Fan Electrical Diagram

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Test Compressor Resistances

Disconnect power to the compressor. Measure resistances between points to verify sensor and linear motor are OK (Figure 12).

Compare actual resistance readings to the acceptable resistances between points (Table 2).

If any resistances are outside the acceptable resistance range:

- Replace the Compressor and Orion Board (See Page 3-9)

If the resistances are within the acceptable resistance range:

- Proceed to the next section.

Test Point 1	Test Point 2	Acceptable Resistance
Common	Sensor	14 - 19
Line	Common	7 - 13
Line	Sensor	21 - 32

Table 2: Acceptable Resistances Between Test Points

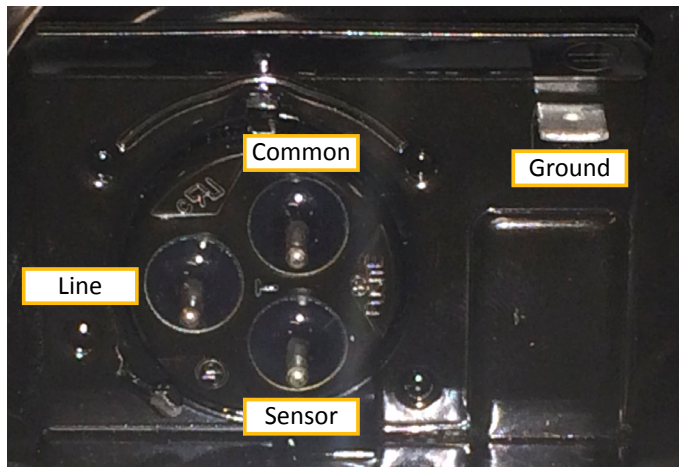


FIGURE 12: Compressor Terminals

Run Service Test 40 – Compressor and Compartment Freezing Cooling Test

Step 01 - 3-Way Valve Opens

- Listen for the chatter of the three-way valve re-positioning.

Step 02 - 3-Way Valve Closes

- Listen for the chatter of the three-way valve re-positioning.

Step 03 - Compressor Turns On

- Check that the Compressor runs.

Step 04 - RC Cools

- Check the RC Fan turns on and blows cold air.

Step 05 - FC Cools

- Check the FC Fan turns on and blows cold air.

Analyze Test Results

Proceed down the appropriate troubleshooting path based on test results.

Path 1A (Page 3-12)

- 3-Way Valve Did Not Re-Position

Path 1B (Page 3-12)

- Compressor Did Not Run
- Compressor Runs Briefly, Shuts Off
- Compressor Runs, Insufficient Cooling

Path 1C (Page 3-13)

- RC Fan Did Not Run

Path 1D (Page 3-14)

- FC Fan Did Not Run

Test Sealed System

Ensure Thermistors, Condenser Fan, and Compressor resistance checks have been completed before proceeding.

The Sealed System, including the compressor and 3-Way valve can be checked using Service Test 40. Follow the important notes below when performing this test, they will save you time.

NOTE: Have a watch or timer available.

NOTE: Start timing at the beginning of Step 3. Note the timing of any compressor operations.

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Path 1A – 3-Way Valve

If the 3-way valve did not reposition in Step 01 & Step 02, check the valve coil. This can be done in two ways.

Watt Meter Method

- Plug the watt meter into a wall outlet.
- Plug the refrigerator into the watt meter.
- Run Service Test 40
- If 4 – 5 watt increase as valve opens. Coil is OK
- If no watt increase, Coil is Bad

Resistance Check Method

- Disconnect power to refrigerator
- Disconnect 5-pin wiring connector to coil
- On coil side of wiring connector, check resistance between center pin and each of the other four pins.
- Good Coil - 43-49 ohms between center pin and each of other four pins.
- Bad Coil - any other reading.

If the Coil is Bad:

- Replace 3-Way Valve Coil

If the Coil is Good:

- Replace 3-Way Valve Body and Coil (See Page 3-9).

Path 1B – Compressor

The compressor contains an internal sensor to detect trouble conditions. The sensor communicates with the Orion Board, which powers the compressor. The Orion Board will start or stop the compressor at different intervals, depending upon the trouble condition detected.

Compressor Does Not Run

Behavior: Under certain failure modes, the Orion Board will enter “End of Life” mode. If this happens, the compressor will not run.

Possible Cause:

- Orion Board is faulty,
- Orion Board has entered End of Life for a compressor problem.

Verification:

- Replace the Orion Board.

If the compressor runs, the original Orion Board was faulty.

If the compressor does not run, the compressor is faulty.

Repair: If the compressor runs with the new Orion Board, leave the new Orion Board installed, repairs are complete.

If the compressor does not run with the new Orion Board:

- Order and install a Wisemotion Replacement Service Kit (See Page 3-9).

Compressor Runs Briefly (≈15 Seconds)

Behavior: Compressor runs briefly (≈15 seconds), then shut off. Compressor restarts between 2 ½ to 10 minutes later. The compressor runs another 15 seconds and shuts off again. This behavior will continue to repeat.

Possible Cause: Sealed System restriction.

Verification: Behavior detailed above and a hot compressor discharge line.

Repair: Remove the restriction and repair the Sealed System (See Page 3-9).

Compressor Runs for a Short Period (≈15 - 30 Seconds)

This section details compressor behavior for a sealed system with no refrigerant charge remaining. The compressor can discern the location of the leak. Compressor behavior will vary with the location.

Behavior: Compressor runs for 15 to 30 seconds, then shuts off. Compressor restarts after 2 to 3 minutes for a high side leak. Compressor restarts after 10 minutes for a low side leak. This behavior will continue to repeat.

Possible Cause: Sealed system leak with no refrigerant charge remaining.

Verification: Behavior detailed above and compressor discharge line does not get hot.

Repair: Find and repair cause for loss of charge. Charge system to appropriate charge (See Page 3-9).

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Compressor Cycles On/Off at Varying Interval

Behavior: Compressor runs for a period of time, then shuts off. Compressor will restart after a period of time and continue to exhibit this behavior.

Possible Cause: Low Refrigerant Charge. The amount of time the compressor runs and remains off for varies with the amount of sealed system charge lost.

Verification: Run Service Test 40 - Compressor and Compartment Freezing Cooling Test.

The compressor should run at max power (160 watts / $\approx 260V$) during Service Test 40. If the charge is low, power will drop to minimum power (20 watts / $\approx 110V$).

- Remove the compressor terminal cover
- Test voltage between Line and Common (Figure 13).

If Voltage remains at $\approx 260V$; refrigerant charge is OK.

If Voltage drops to $\approx 110VAC$; refrigerant charge is low.

Repair: Find and repair cause for loss of charge. Charge system to appropriate charge (See Page 3-9).

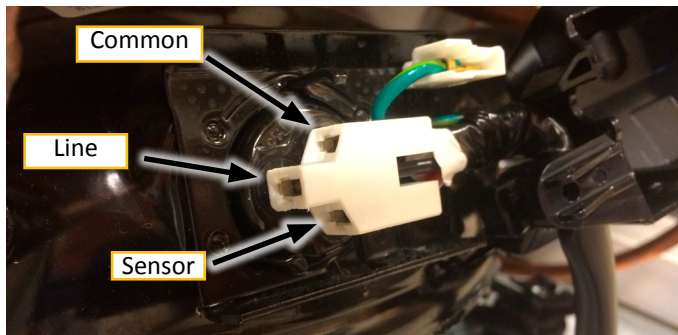


FIGURE 13: Voltage Testing Points

Path 1C – RC Fan

Run Service Test 57 – RC Fan Test

- Ensure LED Display shows “on”
- Check that the fan is operating

If fan is not operating:

- Check all wiring connectors tight (FIGURE 14).
- Check integrity of wiring between control board and fan. (Continuity or Voltage check as appropriate)

If wiring check indicates bad wiring:

- Replace wiring harness

If wiring checks OK, or if fan is still not operating:

- Replace fan.

If LED Display does not show “on”:

- Replace GF2 Board

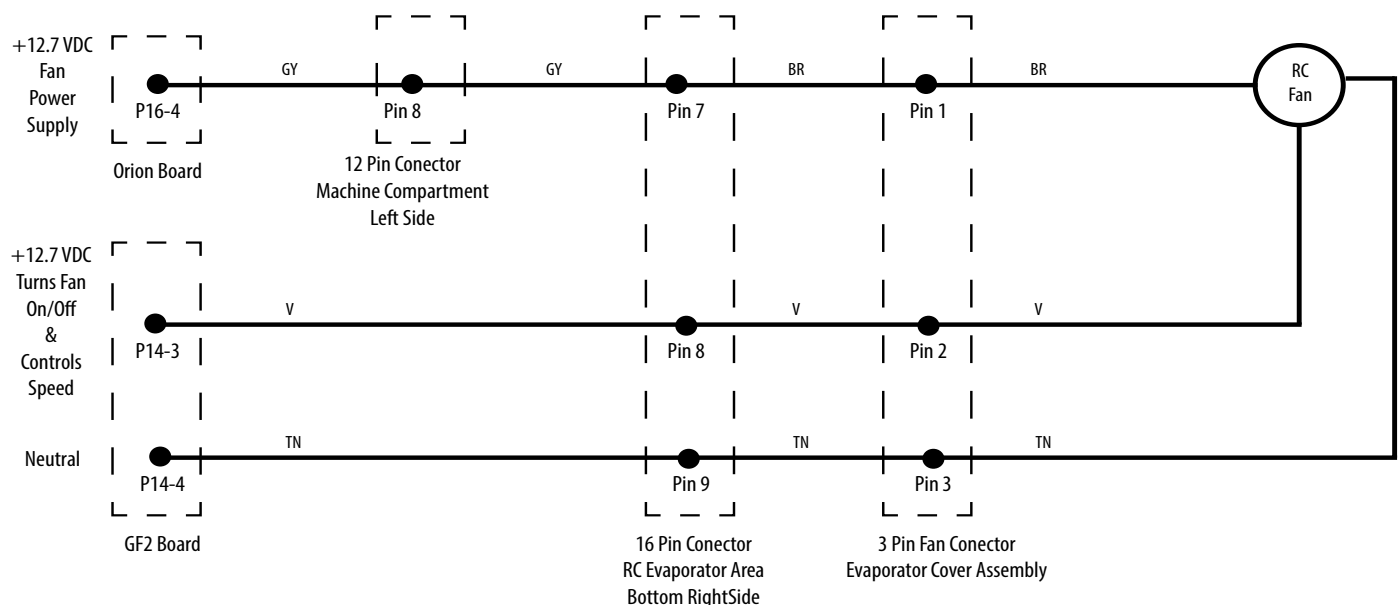


FIGURE 14: RC Fan Electrical Diagram

For Service Technician Use Only

Path 1D – FC Fan

Run Service Test 56 – FC Fan Test

- Ensure LED Display shows “on”
- Check that the fan is operating

If fan is not operating:

- Check all wiring connectors tight (FIGURE 15).
- Check integrity of wiring between control board and fan. (Continuity or Voltage check as appropriate)

If wiring check indicates bad wiring:

- Replace wiring harness

If wiring checks OK, or if fan is still not operating:

- Replace fan.

If LED Display does not show “on”:

- Replace GF2 Board

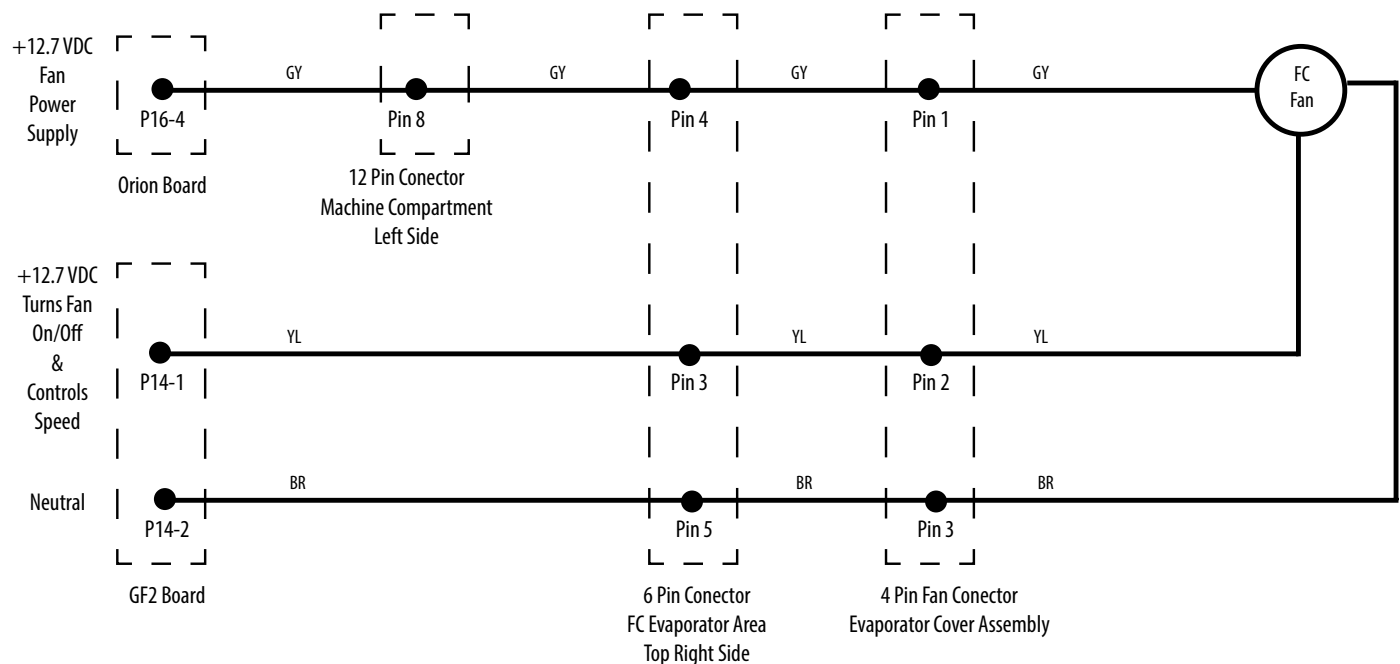


FIGURE 15: FC Fan Electrical Diagram

For Service Technician Use Only

Path 2 - Pantry

Pantry cooling is derived from the RC by control of the Air Baffle. The Air Baffle is located within the Evaporator Cover Assembly. If cooling issues are isolated to the Pantry, the most likely cause is a problem with the Air Baffle, or temperature sensing.

Run Service Test 42 – Main Pantry Air Baffle State

- Ensure the Pantry Air Baffle cycles between Open, “00” and Closed, “01”

If the Pantry Air Baffle is not operating:

- Check all wiring connectors tight (FIGURE 16).
- Check integrity of wiring between control board and the Air Baffle.

If wiring and connectors check OK

- Replace Evaporator Cover Assembly

Run Service Test 05 – Pantry Thermistor

- Ensure the thermistor is not Open, “OP” or Shorted, “SH”

If the thermistor is Open, “OP”, or Shorted, “SH”

- Replace the thermistor

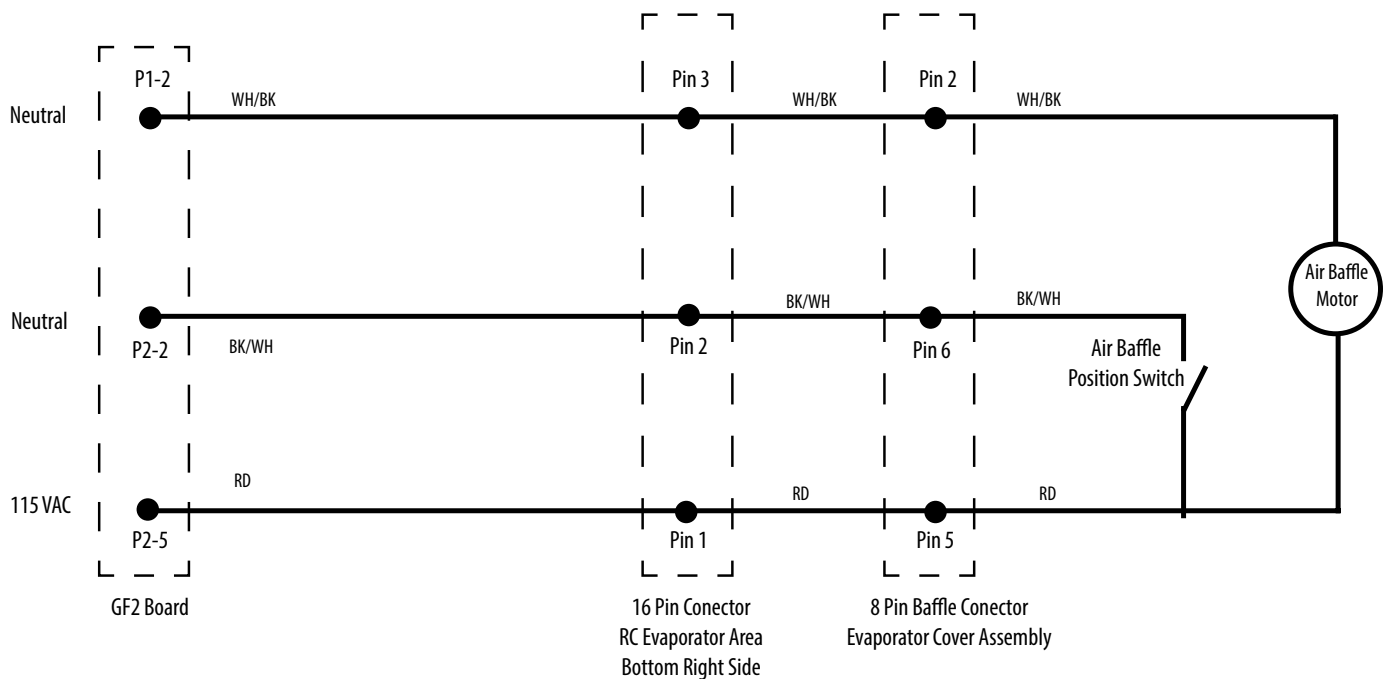


FIGURE 16: Air Baffle Electrical Diagram

For Service Technician Use Only

Path 3 - Ice Box

Ice Box cooling is derived from the FC with airflow provided by the Ice Box Fan. If cooling issues are isolated to the Ice Box, the most likely cause is a problem with Ice Box Fan, or temperature sensing,

Run Service Test 26 – Ice Box Maximum Temperature

Run Service Test 31 – Ice Box Average Temperature

If Service Test 26 & Service Test 31 indicate maximum and average temperatures below 14°F, ice making issues are likely related to the Ice Maker, not Ice Box temperature. (See: Ice and Water – Diagnostics & Troubleshooting)

Run Service Test 59 – Ice Box Fan Test

Ensure LED Display shows “on”

- Check that the fan is operating

If fan is not operating:

- Check all wiring connectors tight (FIGURE 17).
- Check integrity of wiring between control board and fan. (Continuity or Voltage check as appropriate)

If wiring check indicates bad wiring:

- Replace wiring harness

If wiring checks OK, or if fan is still not operating:

- Replace fan.

If LED Display does not show “on”:

- Replace GF2 Board

Run Service Test 14 – Ice Box Thermistor

- Ensure the thermistor is not Open, “OP” or Shorted, “SH”

If the thermistor is Open, “OP”, or Shorted, “SH”

- Replace the thermistor

If all functional components of Ice Box Cooling System check OK, check for a secondary cause of the problem, such as:

- Bad Ice Box door gasket
- Bad FC Thermistor (Service Test 02)

A faulty FC Thermistor will cause FC Cooling to cycle on time, rather than temperature. Under these circumstances, the problem can manifest itself as a warm Ice Box.

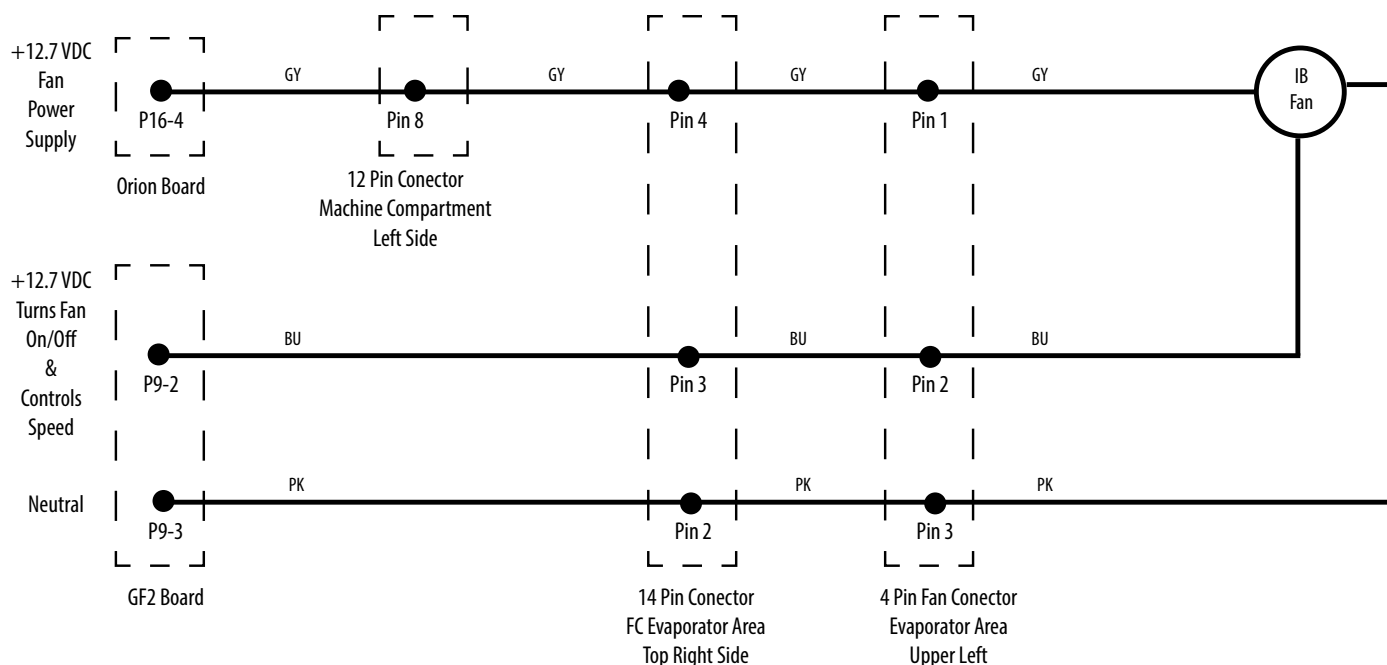


FIGURE 17: IB Fan Electrical Diagram



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Section 4: Water & Ice

This section details the Operation, Diagnostics, and Troubleshooting of the Water & Ice System for the “32 Cu Ft French Door Refrigerator”

Operation

- Water Supply
- Water Dispenser
- In-Door Ice Maker & Dispenser
- Freezer Ice Maker (some models)
- Ice Dispenser

Diagnostics & Troubleshooting

- Entering Diagnostics
- Water Troubleshooting
- Ice Troubleshooting

For Service Technician Use Only

Water & Ice System

The Water and Ice System receives household supplied water, filters the water, and makes it available to the Water Dispenser, In-Door Ice Maker, and on some models, a second Ice Maker in the freezer.

Water Supply

Water is supplied into the refrigerator through an Isolation Valve, directed to a water tank, then filtered and sent to the dual valve controlling water flow to the Water Dispenser and Ice Maker.

On models with a Freezer Ice Maker, filtered water is sent to a ‘T’ Fitting which directs water to the dual valve, and a second single valve for the Freezer Ice Maker.

Isolation Valve

The Isolation Valve is located in the Machine Compartment on the right rail. The valve is normally closed. The valve only opens when water is being provided to the water dispenser, or either ice maker.

The valve is opened by 115 VAC power supplied from GF2 Board, P12-4.

Water Reservoir

The outlet of the Isolation Valve travels up the rear exterior of the refrigerator cabinet and enters the rear RC into the Water Reservoir.

The Water Reservoir is located in the bottom left rear corner of the RC behind the Water Valve Cover.

The Water Reservoir is a coil type holding about 11oz (0.33 Lites) of water (FIGURE 1).

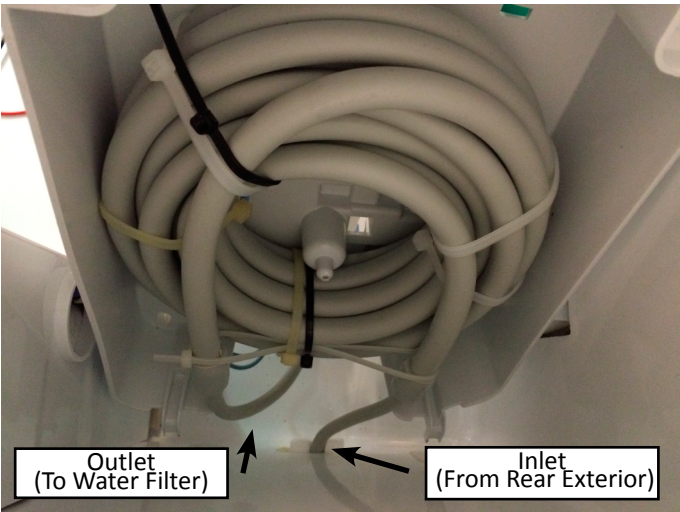


FIGURE 1: Water Reservoir

Water Filter

The outlet of the Water Reservoir is directed to the Water Filter. The Water Filter is located behind the Water Filter Door at the front left bottom of the RC.

The Water Filter supply line, and the rear of the Water Filter Housing are heated to prevent condensation and freezing.

The Dispenser UI tracks water dispensed and age of the filter providing Water Filter indication on the Dispenser UI (Table 1).

Indicator	Gallons Dispensed	Filter Age (Days)
No Indicator	0 - 160	0 - 144
“Order Filter”	161 - 200	145 - 180
“Replace Filter”	>200	>180

Single Ice Maker Models

The Water Filter outlet is directed to the Dual Valve. The Dual Valve directs the water supply to the Water Dispenser, or In-Door Ice Maker through individual valves.

Dual Ice Maker Models

The Water Filter outlet is directed to a ‘T’ Fitting. The ‘T’ Fitting directs water to the Dual Valve and to the Freezer Ice Maker Fill Valve (FIGURE 2).

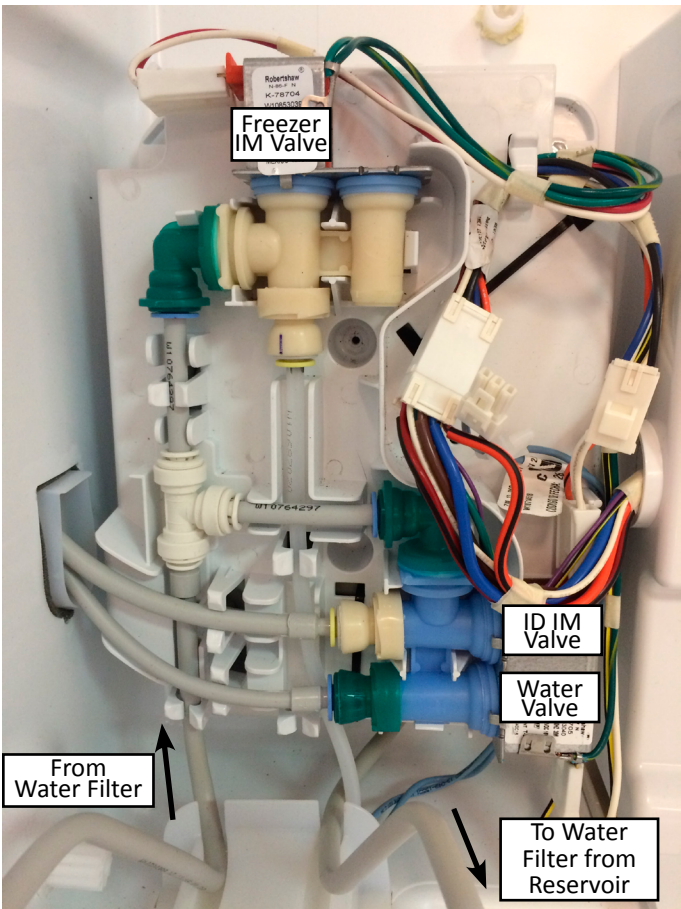


FIGURE 2: Water Tank Housing

For Service Technician Use Only

Water Dispensing

The Dispenser UI is responsible for dispensing water to the In-Water Dispenser. The GF2 Board controls water dispensing to the In-Door Ice Maker, and Freezer Ice Maker (some models).

In-Door Water Dispenser

The dispenser is controlled by the front paddle of a stacked dual paddle, or by the Measured Fill feature available on the Dispenser UI.

When water is requested the Dispenser UI sends the request to the GF2 Board, which opens the Isolation Valve. The Dispenser UI opens the low voltage Water Valve.

The GF2 Board supplies 115 VAC to GF2 Board, P12-4, opening the Isolation Valve.

The Dispenser UI supplies 11.5 VDC Dispenser UI, J8-5, opening the Water Valve and dispensing water.

In-Door Ice Maker

The Dispenser UI controls all aspects of the In-Door Ice Maker, including the Fill Cycle. The ice maker Fill Cycle is 10 seconds, filling the ice tray with about 3.2 oz. (100 ml) of water.

During a Fill Cycle, the Dispenser UI communicates to the GF2 Board. The GF2 Board supplies 115 VAC to P12-4, opening the Isolation Valve. At the same time, the GF2 Board supplies 115 VAC to P3-3, opening the Water Valve for the In-Door Ice Maker.

After 10 seconds, the Dispenser UI instructs the GF2 Board to end the Fill Cycle, the GF2 Board removes power to the valve, ending the Fill Cycle.

Freezer Ice Maker

The Freezer Ice Maker is controlled by the GF2 Board. This Fill cycle is 10 Seconds, filling the ice tray with about 3.2 oz (100ml) of water.

During a Fill Cycle, the GF2 Board supplies 115 VAC to P12-4, opening the Isolation Valve. At the same time, the GF2 Board supplies 115 VAC to P12-6, opening the FC Ice Maker Valve.

After 10 seconds, the GF2 Board to ends the Fill Cycle. The GF2 Board removes power to the valves, to end the Fill Cycle.

Ice Making

The refrigerator contains an Ice Maker (IM) in the left RC Door. Some models have a second IM in the Freezer.

Both are Twist Tray Ice Makers, using twisting action of the motor to break and dump the ice. No heaters are needed for the IM. All timing, logic, and control is outsourced to the control board powering the IM.

In-Door Ice Maker

The In-Door IM is controlled by the Dispenser UI and is composed of the Ice Maker Module.

Ice Maker Module

The Ice Maker module includes the Gear Box, Ice Bin Switch, Ice Box Temperature Sensor, and Ice Tray Temperature Sensor.

Gear Box

The Gear Box has a 12.7 VDC Motor which drives the Tray Gear, turning the Ice Tray and operating the Bail Arm through an associated worm gear. The Bail Arm is used to detect if the Ice Bucket is full.

The Ice tray position is determined by a wiper arm attached to the tray gear. As the tray gear turns, the wiper runs over a resistor ladder. As the wiper moves over the resistance ladder, the resistance changes. The resistance sensed at any given time tells the Dispenser UI the position of the Ice Tray.

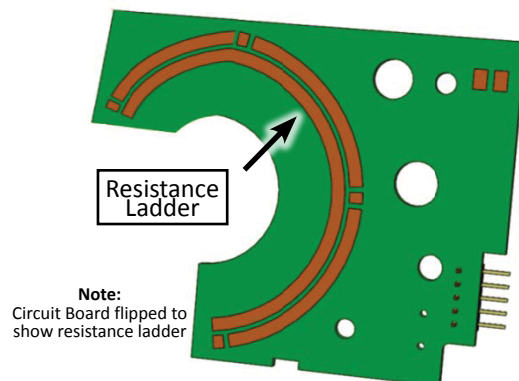
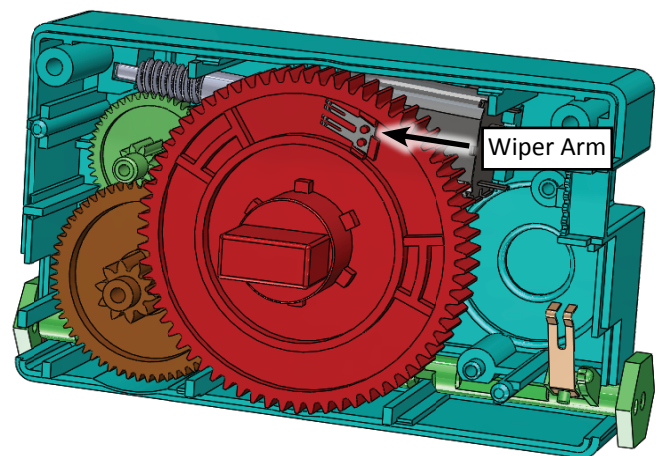


FIGURE 3: Gear Box & Position Indication Resistance Ladder

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Ice Bin Switch

The Ice Bin Switch is a spring loaded, normally open switch. The switch is closed by the Ice Bucket when inserted. The switch must be closed for the Ice Maker to Harvest ice.

Ice Box Thermistor

The Ice Box Thermistor is mounted on the Ice Maker. It senses Ice Box temperature as an input into the Refrigeration System.

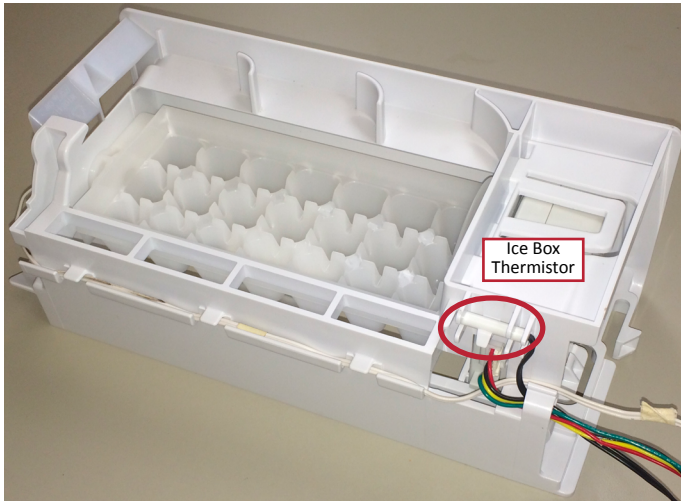


FIGURE 4: IB Thermistor (Rear View of Ice Maker)

Ice Tray Temperature Sensor

The Ice Tray Temperature Sensor is mounted to the underside of the Ice Tray. It reads the temperature of the Ice Tray to ensure the ice is fully frozen.

Ice Making Process

The standard Ice Making process consists of the following cycles:

- Homing
- Filling
- Freezing
- Harvest

Homing

When power is initially applied to the Ice Maker, it will move to the home position. In the Home Position, the Ice Tray is horizontal and ready to receive water.

Filling

During the Fill Cycle, water is dispensed for 10 seconds. This fills the Ice Tray with about 3.2 oz. (100ml) of water.

At the beginning of the fill cycle, the fill tube heater is forced off. The fill tube heater remains off for 20 minutes. After this time delay, the fill tube heater will energize and remain energized for 90 minutes, or until the beginning of the next Fill Cycle, whichever comes first.

Freezing

During Freezing, the IM is waiting for time and temperature conditions to be met. These conditions vary between the Door Ice Maker and the Freezer Ice Maker.

For the Door Ice Maker, in the Normal mode, an 80 minute freeze timer must be satisfied, and the Ice Tray temperature must read 15°F before the ice is ready for Harvest.

In Max Ice mode, a 60 minute freeze timer must be satisfied, and the Ice Tray temperature must read 15°F before the ice is ready for Harvest. The Max Ice feature only affects the In-Door Ice Maker, and not the Freezer Ice Maker.

During Freezing, the freeze timer will be paused any time an RC door is opened. When the RC door is closed, additional time will be added to the timer. The additional time added is equal to the length of time the door was open. The timer will then begin counting down again.

Harvest

When the ice is ready, the IM will Harvest. Before Harvesting, the IM checks that the Ice Bucket is in place (Ice Bucket Switch Closed).

Ice Break

12.7 VDC is applied to the IM Motor, driving it Counter-Clockwise (CCW) to the Ice Break position. In this position, the Ice Tray is flexed, breaking the ice.

Ice Level Detection (Bucket Full)

At the Ice Break position, polarity is reversed, driving the Ice Tray clockwise (CW). As the Ice Tray continues driving past the home position, the Bail Arm lowers. If the Ice Bucket is full, a switch will close in the gearbox, changing the resistance of the resistance ladder. The polarity is again reversed to the motor, returning the Ice Tray to the Home position. This process will repeat every hour until the Ice Bucket is not full.

Ice Level Detection (Bucket Not Full)

As the Ice Tray drives CW past the home position, the Bail Arm is lowered. If the Ice Bucket is not full, the Ice Tray will continue driving to the End of Travel position.

End of Travel

The tray is flexed as it reaches End of Travel, releasing the ice to fall into the Ice Bucket.

Homing

When the tray reaches End of Travel, voltage polarity to the motor is again swapped. The Ice Tray drives CCW until it senses the Home position and stops. The ice maker is now ready for a new fill cycle to begin making more ice.

Jammed Timer

While the Ice Tray is travelling, a jammed timer is initiated. If the Ice Tray does not return to the Home position within 90 seconds, the IM transitions to a Jammed state, and will not make Ice. The IM will attempt to Home once every hour.

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Freezer Ice Maker

Operation of the Freezer Ice Maker is nearly identical to the In-Door Ice Maker, with a few exceptions.

Time and temperature conditions for the Freezer Ice Maker ice to be ready are different from the Door Ice Maker. In Normal and Max Ice Mode, a 100 minute freezer timer must be satisfied, and the Ice Tray temperature must read 3°F before the Ice is ready for Harvest. Opening of the Freezer Door during freezing will pause and add time to the freeze timer.

The Freezer IM is mounted to the top of the FC liner and has a different part number. There is no Ice Bucket Switch associated with the Freezer IM.

Ice Dispenser

The refrigerator is capable of dispensing cubed or crushed ice from the In-Door Dispenser.

Ice is requested through the Dispenser UI. To dispense ice, the Ice Door is opened, and the Auger Motor turns in one direction for cubed ice, and the other direction for crushed ice.

Ice Door Motor

The Ice Door Motor opens to allow ice to be dispensed. It closes 10 seconds after the Ice Paddle is released to prevent loss of cold air.

The Ice Door motor operates on 12.7 VDC supplied from the Dispenser UI, J5-1.

Ice Dispensing Auger Motor

The Ice Dispensing Auger Motor can operate bi-directionally. It rotates one direction for cubed ice, and the other direction for crushed ice.

The Auger Motor operates on 130 VDC supplied from the GF2 Board, P3-7.

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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

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death 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.

IMPORTANT: Electrostatic Discharge (ESD) Sensitive Electronics

ESD problems are present everywhere. Most people begin to feel an ESD discharge at approximately 3000V. It takes as little as 10V to destroy, damage, or weaken the main control assembly. The new main control assembly may appear to work well after repair is finished, but a malfunction may occur at a later date due to ESD stress.

- Use an anti-static wrist strap. Connect wrist strap to green ground connection point or unpainted metal in the appliance

-OR-

- Touch your finger repeatedly to a green ground connection point or unpainted metal in the appliance.
- Before removing the part from its package, touch the anti-static bag to a green ground connection point or unpainted metal in the appliance.
- Avoid touching electronic parts or terminal contacts; handle electronic control assembly by edges only.
- When repackaging main control assembly in anti-static bag, observe above instructions.

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.



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REFRIGERATION SYSTEM DIAGNOSTICS & TROUBLESHOOTING

Diagnostics contains Service Tests to troubleshoot and identify the cause of most system problems. Use of the on-board diagnostic routine will increase the speed and accuracy of troubleshooting.



FIGURE 9: Base Model Eyebrow UI



FIGURE 10: Step-Up Model Eyebrow UI



[Click this button for Video](#)

To Access diagnostics:

- Press and hold the “Recommended” key on the Eyebrow UI (See NOTE 1).
- At the same time, press and hold the “Drawer” key, wait 5 seconds.
- No countdown will display. A chime will play and the Lights will go out when Diagnostics is accessed.

NOTE 1:

If the “Drawer,” “Fridge,” or “Freezer” key is selected, the “Recommended” key will be lit. De-select the selected zone to extinguish the “Recommended” key prior to accessing diagnostics.

To Navigate Diagnostics:

- Use the Up and Down arrows to navigate to the desired Service Test.
- Press the “Icemaker2” key to Select the desired test (See NOTE 2).
- The result will display in the 7-Segment LED section of the display.
- Press the “Fast Cool” key to back out of a Selected Service Test.

NOTE 2:

On Base models, without a second Icemaker, the “Icemaker2” key will not be lit (FIGURE 9). The touch-point on the UI is still active. Press in the location of the “Icemaker2” key to Select the desired test (FIGURE 10).

To Exit Diagnostics:

- Back out of the selected Service Test.
- Navigate to and Select Service Test 00.

Or,

- Cycle power to the refrigerator,

Or,

- Wait 20 minutes

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Water Troubleshooting

Key components for the water supply and dispensing include: the isolation valve, water valve, interconnecting wiring, water tubing, Dispenser UI, Water Paddle Switch, and interconnecting wiring.

Run Service Test 96 - Water Valve General Test

Note: This test also operates the Isolation Valve.

- Ensure display reads “on” for about 5 seconds, then reads “off”
- Check that water dispenses from the Dispenser.

If display did not read “on”

- Replace Dispenser UI.

If water dispensed, check inputs:

Run Service Test 93 - UI Button and Pad/Paddle Test

- Press Water Paddle. Ensure Display reads “i”
If display does not read “i” ensure all wiring connectors are tight.
If all connectors are tight, replace the Water Paddle, or switch, as appropriate.
- Press “Measured Fill” on the Dispenser UI. Ensure Display reads “i”
If display does not read “i” while button is pressed, Ensure all wiring connectors are tight.
If all connectors are tight, Replace the Dispenser UI.

If water did not dispense in Service Test 96:

- Check continuity of the Isolation Valve and Water Valve.
- Check all wiring connectors are tight,
- Check for blockages in water tubing.

Ice Troubleshooting

Key components for ice production and dispensing include:

Water Supply: Isolation Valve, Dispenser UI, Door Ice Maker water valve, Fill Tube Heater, and Freezer Ice Maker water valve and fill tube heater (some models).

Cold Air Supply: Ice Box Thermistor, Ice Box Fan, FC Thermistor.

Ice Making Module: Ice Bucket Switch, Ice Maker including the Ice Tray Thermistor, and IM Motor, and IM Motor Switch,

Ice Dispensing: Auger Motor and Ice Door Motor

Thermistor Checks

Run the appropriate Service Tests for the affected Ice Maker. It is best to check the thermistors first. This will provide accurate temperature conditions to troubleshoot with.

Run Service Test 14 - Door Ice Box Thermistor

Run Service Test 02 - FC Thermistor

Run Service Test 16 - Door Ice Maker Tray Thermistor

Run Service Test 17 - Freezer Ice Maker Tray Thermistor

- Ensure none of the thermistors are Open “OP” or Shorted “SH”. Replace any faulty thermistors.
- **NOTE:** To replace the Door Ice Box Thermistor or Ice Tray thermistor, replace the Ice Maker.

Cold Air Supply

If the Ice Box is not at the proper temperature, check the supply of cold air to the Ice Box.

Run Service Test 59 – Ice Box Fan Test

Ensure LED Display shows “on”

- Check that the fan is operating

If fan is not operating:

- Check all wiring connectors tight (FIGURE 17).
- Check integrity of wiring between control board and fan. (Continuity or Voltage check as appropriate)

If wiring check indicates bad wiring:

- Replace wiring harness

If wiring checks OK, or if fan is still not operating:

- Replace fan.

If LED Display does not show “on”:

- Replace GF2 Board

Ice Maker Water Supply

If temperatures in the Ice Box are appropriate, check whether or not there is ice/water in the Ice Tray. If no water is present, test the Ice Maker Water Supply. If ice is present, proceed to the next section, Ice Maker Harvest Test.

Run Service Test 97 - Door Ice Maker Valve General Test

or

Run Service Test 98 - Freezer Ice Maker Valve General Test

Note: This test also operates the Isolation Valve.

- Ensure display reads “on” for about 5 seconds, then reads “off”
- Check that water is dispensed into the Ice Maker.

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If display did not read “00”

- Replace Dispenser UI (Door Ice Maker).
- Replace GF2 Board (Freezer Ice Maker).

If water did not fill the Ice Maker:

Run Service Test 66 - Door Ice Maker Fill Tube Heater Test
or

Run Service Test 67 - Freezer Ice Maker Fill Tube Heater Test

- Ensure the display shows “00”
- Leave in Test for about 15 minutes
- Re-run Service Test 97 or 98 to test the appropriate Ice Maker Fill Valve.

If Water still does not dispense:

- Perform resistance checks on Fill Tube Heater
- Perform resistance checks on Isolation and Ice Maker Fill Valves.
- Check all wiring connectors are tight.
- Check for blockages of the water tubing.

Resistance Checks

Isolation Valve

Door Ice Maker Water Valve

Door Ice Maker Fill Tube Heater

Freezer Ice Maker Water Valve

Freezer Ice Maker Fill Tube Heater

Ice Maker Module Tests

The Ice Maker Harvest Test checks the functionality of the Ice Maker motor and Motor Position Switch.

Run Service Test 120 - Check Door Ice Maker Harvest

or

Run Service Test 121 - Check Freezer Ice Maker Harvest

Check the results of the test:

- If any errors are reported (“E1”, “E2”, “E3”, or “E4”), replace the Ice Maker
- If the Ice maker indicates the Ice Bin is full (“IB”) verify the Ice Bin is full. If it is not, replace the Ice Maker.

Verify the Ice Bucket Switch functions properly:

Run Service Test 79 - Ice Bin Switch State

- Verify display reads “00” with no Ice Bucket installed.
- Verify display reads “01” with the Ice Bucket installed.

If the switch does not indicate properly, replace the Ice Bin Switch.

Ice Dispensing Tests

Verify the Ice Dispensing components are functioning properly.

Run Service Test 93 - UI Button and Pad/Paddle Test

- Press Ice Paddle. Ensure Display reads “I”
If display does not read “I” ensure all wiring connectors are tight.
If all connectors are tight, replace the Ice Paddle, or switch, as appropriate.
- Press “Cubed Ice” on the Dispenser UI. Ensure Display momentarily reads “I”
If display does not read “I” while button is pressed, Ensure all wiring connectors are tight.
If all connectors are tight, Replace the Dispenser UI.
- Press “Crushed Ice” on the Dispenser UI. Ensure Display momentarily reads “I”
If display does not read “I” while button is pressed, Ensure all wiring connectors are tight.
If all connectors are tight, Replace the Dispenser UI.

Run Service Test 115 - Control Ice Door Motor Using Ice Pads

- Press Ice Paddle. Ensure Ice Door cycles as expected.
- If door does not cycle, check all wiring connectors tight.
- If all connectors are tight, replace the Ice Door and Motor.

Notes



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Section 5: Defrost & Moisture Control

This section details the Operation, Diagnostics, and Troubleshooting of the Defrost & Moisture Control systems for the “32 Cu Ft French Door Refrigerator”

Operation

- Freezer Compartment Defrost
- Refrigerator Compartment Defrost
- Moisture Control

Diagnostics & Troubleshooting

- Entering Diagnostics
- Freezer Compartment Defrost Troubleshooting
- Refrigerator Compartment Defrost Troubleshooting
- Moisture Control Heater Troubleshooting

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OPERATION

The defrost system is designed to remove ice build-up from the Refrigerator Compartment (RC) and Freezer Compartment (FC) evaporators when required. FC defrost is accomplished using a heater, while RC defrost is accomplished using the relatively warm air of the RC. The moisture control system uses heaters to warm areas susceptible to condensation.

FC DEFROST

The FC Evaporator is defrosted as necessary to remove frost or ice buildup. Defrost is accomplished with a 115 VAC, 470 Watt heater.

An Adaptive Defrost Control (ADC) routine determines when a defrost cycle is needed. ADC monitors Compressor operation, and the number of times the FC door is opened are the primary inputs to the ADC routine.

Normal Operation

During defrost, 115 VAC power is applied to the heater from GF2 Board P2-7. The FC Evaporator Thermistor monitors the temperature during defrost. When the FC Evaporator Thermistor reads 50°F (10°C), defrost is ended by removing the 115 VAC power from GF2 Board P2-7.

Backup Operation

There are two thermal fuses wired in series with the defrost heater. The thermal fuses are designed to interrupt the defrost cycle if the normal method does not function properly. The thermal fuses open at 183°F (84°C), interrupting power to the heater.

RC DEFROST

The RC Evaporator is defrosted at the end of each RC cooling cycle. The RC Evaporator Fan runs for a period of time after the completion of RC cooling. This defrosts the evaporator using the relatively warmer air of the RC.

The fan runs until the temperature differential between the RC Evaporator Thermistor and the RC Air Thermistor is less than 1°F. The fan will run for a maximum of 10 minutes, after which it shuts off, regardless of the temperature differential between the thermistors.

MOISTURE CONTROL

The refrigerator has heaters in necessary locations to prevent condensation. The heaters can be operated in one of two activation modes. The default mode is for the heaters to cycle in response to measured humidity. Humidity is measured by a sensor located on the Eyebrow UI. If needed, Diagnostics can be used to place the heaters always On (See Diagnostics & Troubleshooting).

Heater	Voltage	Voltage Source	Watts	Resistance
Filter	115 VAC	GF2 Board P2-6	3	4800
IB Duct (Cabinet)	115 VAC	GF2 Board P2-6	5.5	2375
Dispenser	12.7 VDC	Dispenser UI J8-1	1.5	108
IB Duct (Door)	12.7 VDC	Dispenser UI J8-1	1.5	108
Mullion	14 VDC	Eyebrow UI J2-3	11.5	17

Table 1: Moisture Control Heaters



FIGURE 1: Filter Heater



FIGURE 2: Foamed-In IM Duct Heater Locations

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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

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death 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.

IMPORTANT: Electrostatic Discharge (ESD) Sensitive Electronics

ESD problems are present everywhere. Most people begin to feel an ESD discharge at approximately 3000V. It takes as little as 10V to destroy, damage, or weaken the main control assembly. The new main control assembly may appear to work well after repair is finished, but a malfunction may occur at a later date due to ESD stress.

- Use an anti-static wrist strap. Connect wrist strap to green ground connection point or unpainted metal in the appliance

-OR-

- Touch your finger repeatedly to a green ground connection point or unpainted metal in the appliance.
- Before removing the part from its package, touch the anti-static bag to a green ground connection point or unpainted metal in the appliance.
- Avoid touching electronic parts or terminal contacts; handle electronic control assembly by edges only.
- When repackaging main control assembly in anti-static bag, observe above instructions.

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.

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REFRIGERATION SYSTEM DIAGNOSTICS & TROUBLESHOOTING

Diagnostics contains Service Tests to troubleshoot and identify the cause of most system problems. Use of the on-board diagnostic routine will increase the speed and accuracy of troubleshooting.



FIGURE 9: Base Model Eyebrow UI



FIGURE 10: Step-Up Model Eyebrow UI



[Click this button for Video](#)

To Access diagnostics:

- Press and hold the “Recommended” key on the Eyebrow UI (**See NOTE 1**).
- At the same time, press and hold the “Drawer” key, wait 5 seconds.
- No countdown will display. A chime will play and the Lights will go out when Diagnostics is accessed.

NOTE 1:

If the “Drawer,” “Fridge,” or “Freezer” key is selected, the “Recommended” key will be lit. De-select the selected zone to extinguish the “Recommended” key prior to accessing diagnostics.

To Navigate Diagnostics:

- Use the Up and Down arrows to navigate to the desired Service Test.
- Press the “Icemaker2” key to Select the desired test (**See NOTE 2**).
- The result will display in the 7-Segment LED section of the display.
- Press the “Fast Cool” key to back out of a Selected Service Test.

NOTE 2:

On Base models, without a second Icemaker, the “Icemaker2” key will not be lit (FIGURE 9). The touch-point on the UI is still active. Press in the location of the “Icemaker2” key to Select the desired test (FIGURE 10).

To Exit Diagnostics:

- Back out of the selected Service Test.
- Navigate to and Select Service Test 00.

Or,

- Cycle power to the refrigerator,

Or,

- Wait 20 minutes

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FC Defrost Troubleshooting

Diagnostics has several Service Tests to aid in troubleshooting the FC Defrost system.

Run Service Test 04 - FC Evaporator Thermistor

- Ensure none of the thermistors are Open “OP” or Shorted “SH”. Replace any faulty thermistors.

Check Heater and Thermal Fuse Resistance (FIGURE 5)

- Test resistance between GF2 Board, P2-7 & P1-2
- Resistance should be approximately 29 ohms.

If Circuit is Open:

- Access FC Evaporator section and check for open Defrost Heater, or Thermal Fuse(s).

If Circuit is OK:

Run Service Test 89 - Run FC Defrost Heater

- Test for 115 VAC power at GF2 Board, P2-7

If 115 VAC is not present:

- Replace GF2 Board

If 115 VAC is present:

Check for and repair, loose or damaged wiring or connectors.

If all functional components of FC Defrost system check fine, check for a secondary cause of the problem, such as:

- Bad FC Door Switch (Service Test 75)
- Bad FC Evaporator Fan (Service Test 56)
- Air leak into the FC

If Necessary, Run Service Test 91 -- Forced Defrost

Run Service Test 91 and select ON. Press the “Icemaker2” key to confirm your selection. A defrost cycle will begin after exiting Diagnostics.

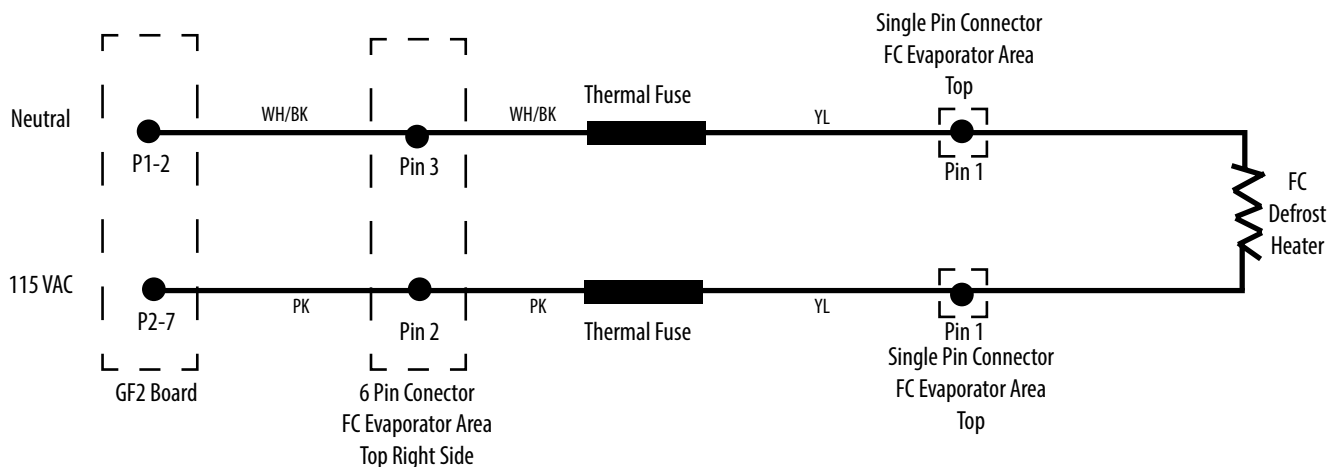


FIGURE 5: Defrost Electrical Diagram

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RC Defrost Troubleshooting

Diagnostics has several Service Tests to aid in troubleshooting the RC Defrost system.

Run Service Test 01 - RC Thermistor

- Ensure the thermistor is not Open “OP” or Shorted “SH”. Replace any faulty thermistors.

Run Service Test 03 - RC Evaporator Thermistor

- Ensure the thermistor is not Open “OP” or Shorted “SH”. Replace any faulty thermistors.

Run Service Test 57 – RC Fan Test

- Ensure LED Display shows “on”
- Check that the fan is operating

If fan is not operating:

- Check all wiring connectors tight (See FIGURE 6, Page 4-6).
- Check integrity of wiring between control board and fan. (Continuity or Voltage check as appropriate)

If wiring check indicates bad wiring:

- Replace wiring harness

If wiring checks OK, or if fan is still not operating:

- Replace fan.

If LED Display does not show “on”:

- Replace GF2 Board

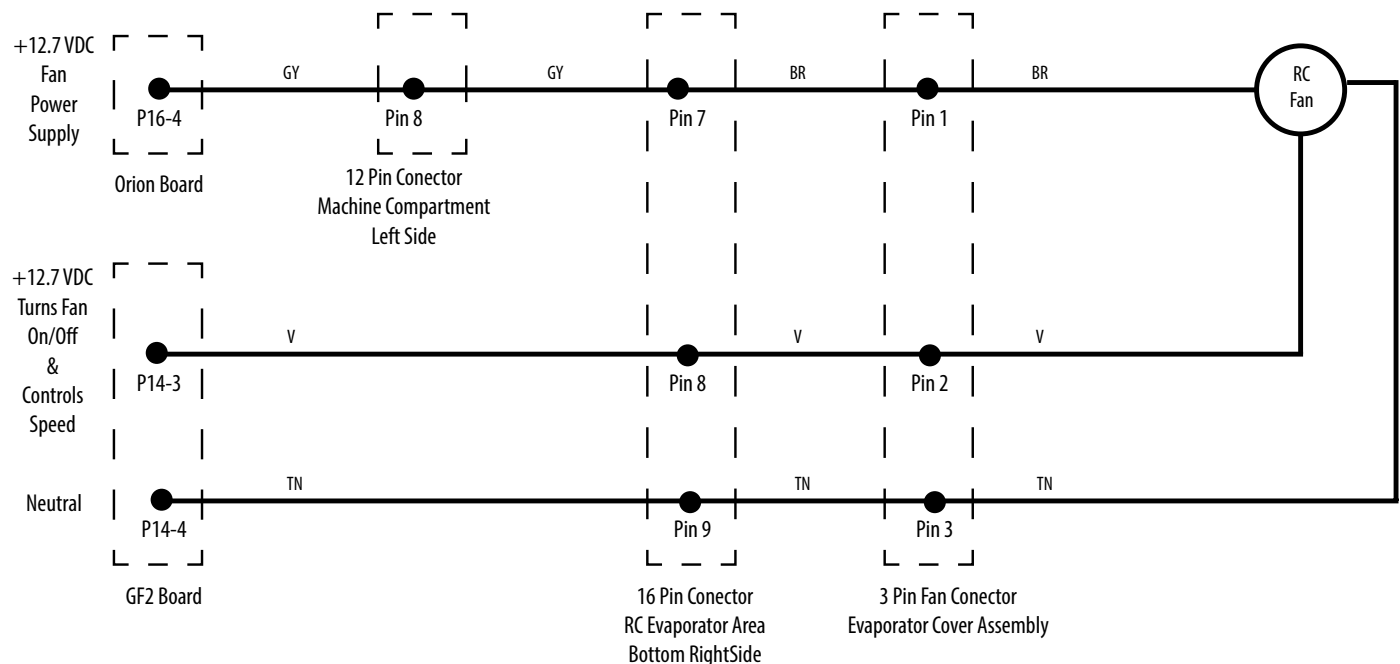


FIGURE 6: RC Fan Electrical Diagram

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Moisture Control Heater Troubleshooting

- If LED display does not show “on”, replace GF2 Board.

Filter Heater & IB Duct Heater (Cabinet) Troubleshooting

- Take resistance reading between GF2 P1-2 & GF2 P2-6 (Figure 7).
- Resistance should be 1400 - 1800 ohms.
- If the Duct Heater is Open, resistance will read ≈ 4800 ohms.
- If the Filter Heater is Open, resistance will read ≈ 2400 ohms.

If all checks are OK and problems persist:

Run Service Test 88 - Ice Box Air Duct Heater Activation Mode

This will turn the heaters Full On.

- Use up or down arrow to change activation mode to “01”
- Press the “Icemaker2” key to confirm selection.

If resistance checks are OK:

Run Service Test 65 - Ice Box Duct Heater Test

- Ensure LED display shows “on”

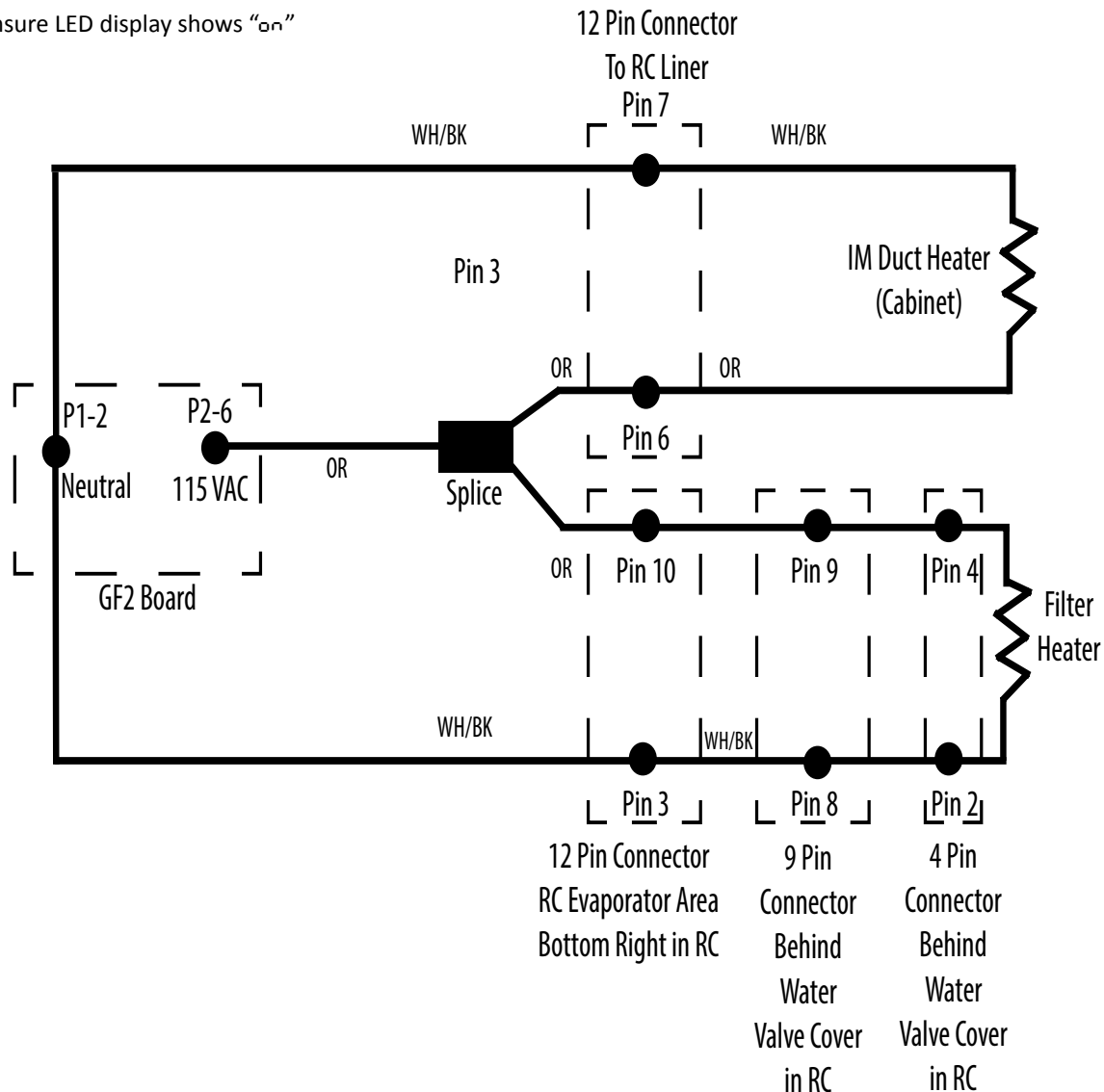


Figure 7: Filter Heater & IB Heater Electrical Diagram

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Dispenser & IB Duct Heater (Door) Troubleshooting

Remove dispenser UI and locate Dispenser heater wiring connector (2 wire connector, 1 red, 1 white.)

Heater Resistance Checks

- Disconnect the 2 Pin Connector (Figure 8).
- Take resistance reading on side leading to visible heater (Dispenser Heater). Reading should be ≈ 108 ohms.
- Take resistance reading on other side of connector (IM Duct Heater--Door). Reading should be ≈ 108 ohms.

Run Service Test 70 - Dispenser Heater Test

- Ensure LED display shows "on"
- If LED display does not show "on", replace Dispenser UI.

If all checks are OK and problems persist:

Run Service Test 87 - Dispenser Heater Activation Mode

- Use up or down arrow to change activation mode to "G I"
- Press the "Icemaker2" key to confirm selection.

Mullion Heater

The Mullion heater resistance can be checked at multiple points. The easiest is under the left hinge cover, or at the heater itself.

Heater Resistance Checks

Check the resistance of the Mullion Heater. Reading should be ≈ 17 ohms.

Run Service Test 63 - Vertical Mullion Heater Test

- Ensure LED display shows "on"
- If LED display does not show "on", replace Eyebrow UI.

If all checks are OK and problems persist:

Run Service Test 85 - Vertical Mullion Heater Activation Mode

- Use up or down arrow to change activation mode to "G I"
- Press the "Icemaker2" key to confirm selection.

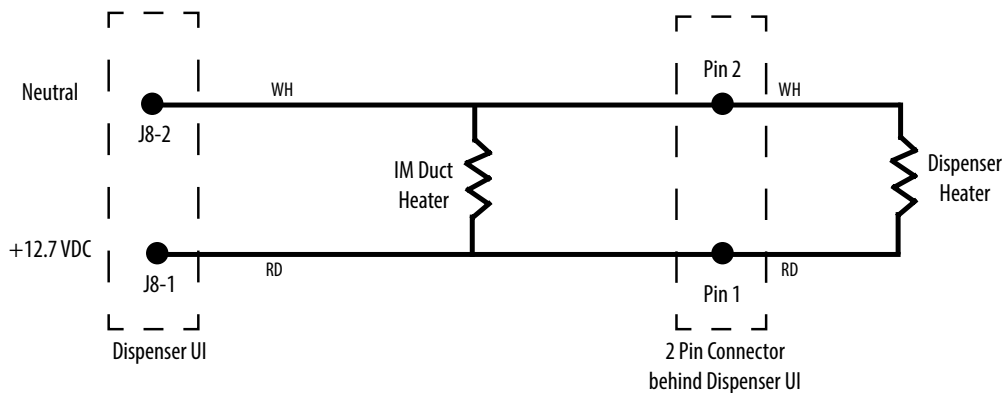


FIGURE 8: IM Duct & Dispenser Heater Diagram

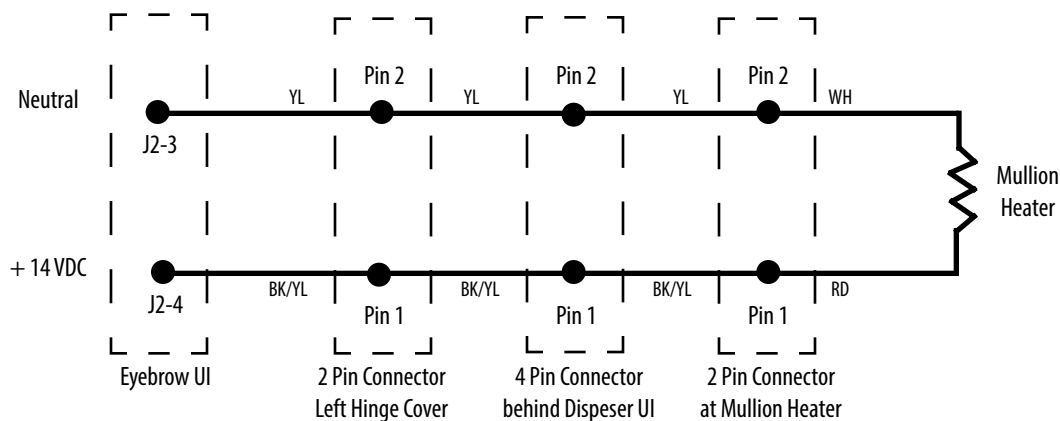


FIGURE 9: Mullion Heater Electrical Diagram



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Section 6: Lighting System

This section details the Operation, Diagnostics, and Troubleshooting of the Lighting System for the “32 Cu Ft French Door Refrigerator”

Operation

- RC Lighting
- FC Lighting
- Dispenser Lighting

Diagnostics & Troubleshooting

- RC Lighting
- FC Lighting
- Dispenser Lighting

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Operation

The Lighting System provides light for the Refrigerator Compartment (RC), Freezer Compartment (FC), and the In Door Dispenser.

RC Lighting

The RC has a LED strip light for the Pantry, a blue LED light around the Air Filter, strip LED lighting in the sides and top of the liner, and on some models, under shelf LED lighting (FIGURE 1). All lighting is controlled by the two FC Door switches. If either or both doors are opened, all LED lights in the RC will turn on.

When an RC Door is opened, the RC Door Switch closes. This supplies a 12.7 VDC signal from Eyebrow UI J3-6 to either J3-5 (Left Door), or J3-3 (Right Door).

When 12.7 VDC is present at either point, The Eyebrow UI will supply 12.7 VDC from J2-5 to the Pantry LED and Air Filter LED. The Eyebrow UI will also supply 12.7 VDC from J2-1 to the LED lights in the top and both sides of the RC liner.

On models with shelf lighting, the Eyebrow UI will communicate with the Orion Board. The Orion Board will supply the shelf LEDs with 12.7 VDC from P8-3.

FC Lighting

The FC has a single LED light at the top of the front edge of the FC. The light is controlled by the position of FC Door Switch. When the FC door is opened, the FC Door Switch closes. This supplies a 115 VAC signal to GF2 Board, P3-2. This signal is communicated to the Orion Board which supplies 12.7 VDC to P8-1, energizing the FC Light.



FIGURE 1: RC LED Lighting

Dispenser Lighting

The Dispenser has 5 integrated LED lights under the front edge. One spigot LED, and four side LED's (FIGURE 2).

The spigot LED is controlled by the water or ice dispenser paddle switch. The LED will light at 100% power when dispensing water. The LED will pulsate when dispensing ice. After dispensing, the LED will stay lit at 50% power for 2 minutes. After two minutes, the dispenser LED will turn off.

The other four LED's are controlled by the water or ice dispenser paddle switch and an ambient light sensor. The 4 side LED's will light at 100% when dispensing water or ice. They will revert to ambient light control after the water or ice paddle is released.

Under ambient light control the side LED's function as a night light. They are controlled by an ambient light sensor located at the bottom left corner of the UI (FIGURE 3). At 20 lumens of ambient light, the sensor turns the LED's on at 50% output. The sensor turns the lights off at 50 lumens ambient light.

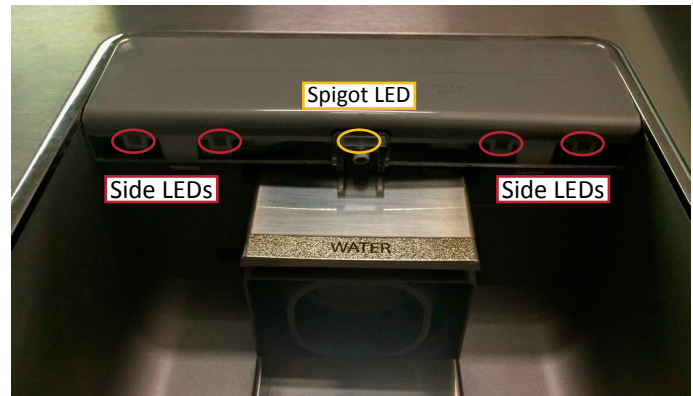


FIGURE 2: Integrated Dispenser LEDs



FIGURE 3: Ambient Light Sensor

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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

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death 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.

IMPORTANT: Electrostatic Discharge (ESD) Sensitive Electronics

ESD problems are present everywhere. Most people begin to feel an ESD discharge at approximately 3000V. It takes as little as 10V to destroy, damage, or weaken the main control assembly. The new main control assembly may appear to work well after repair is finished, but a malfunction may occur at a later date due to ESD stress.

- Use an anti-static wrist strap. Connect wrist strap to green ground connection point or unpainted metal in the appliance

-OR-

- Touch your finger repeatedly to a green ground connection point or unpainted metal in the appliance.
- Before removing the part from its package, touch the anti-static bag to a green ground connection point or unpainted metal in the appliance.
- Avoid touching electronic parts or terminal contacts; handle electronic control assembly by edges only.
- When repackaging main control assembly in anti-static bag, observe above instructions.

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.

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REFRIGERATION SYSTEM

DIAGNOSTICS & TROUBLESHOOTING

Diagnostics contains Service Tests to troubleshoot and identify the cause of most system problems. Use of the on-board diagnostic routine will increase the speed and accuracy of troubleshooting.



FIGURE 9: Base Model Eyebrow UI



FIGURE 10: Step-Up Model Eyebrow UI



[Click this button for Video](#)

To Access diagnostics:

- Press and hold the “Recommended” key on the Eyebrow UI (**See NOTE 1**).
- At the same time, press and hold the “Drawer” key, wait 5 seconds.
- No countdown will display. A chime will play and the Lights will go out when Diagnostics is accessed.

NOTE 1:

If the “Drawer,” “Fridge,” or “Freezer” key is selected, the “Recommended” key will be lit. De-select the selected zone to extinguish the “Recommended” key prior to accessing diagnostics.

To Navigate Diagnostics:

- Use the Up and Down arrows to navigate to the desired Service Test.
- Press the “Icemaker2” key to Select the desired test (**See NOTE 2**).
- The result will display in the 7-Segment LED section of the display.
- Press the “Fast Cool” key to back out of a Selected Service Test.

NOTE 2:

On Base models, without a second Icemaker, the “Icemaker2” key will not be lit (FIGURE 9). The touch-point on the UI is still active. Press in the location of the “Icemaker2” key to Select the desired test (FIGURE 10).

To Exit Diagnostics:

- Back out of the selected Service Test.
- Navigate to and Select Service Test 00.

Or,

- Cycle power to the refrigerator,

Or,

- Wait 20 minutes

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RC and FC LED Lighting Troubleshooting

All LED light strips are wired in parallel. If a single LED light strip is out, replace the affected LED.

If a group of LED lights are out, run the appropriate Diagnostic Service Test .

Service Test 44 - RC Compartment Lighting

- Ensure the 7 segment LED Display indicates “on”

If the 7 segment LED Display does not indicate “on”

- Replace the Eyebrow UI

If the 7 segment LED Display does indicate “on”

- Run Service Test 73/74 - Right/Left RC Door Switch State
- Manually cycle the appropriate RC Door Switch and ensure LED Display cycles between “00” and “01”.
- Check all wiring connectors tight.
- Check integrity of wiring between control board and Light. (Continuity or Voltage check as appropriate)

Service Test 45 - FC Compartment Lighting

- Ensure the 7 segment LED Display indicates “on”

If the 7 segment LED Display does not indicate “on”

- Replace the Orion Board

If the 7 segment LED Display does indicate “on”

- Run Service Test 75 - FC Door Switch State
- Manually cycle the FC Door Switch and ensure LED Display cycles between “00” and “01”.
- Check all wiring connectors tight.
- Check integrity of wiring between control board and Light. (Continuity or Voltage check as appropriate)

Service Test 46 - Shelf Lighting

- Ensure the 7 segment LED Display indicates “on”

If the 7 segment LED Display does not indicate “on”

- Replace the Orion Board

If the 7 segment LED Display does indicate “on”

- Check the metal portion of the shelf is firmly seated on the metal contact of the shelf support and that both are clean.
- Check all wiring connectors tight.
- Check integrity of wiring between control board and Light. (Continuity or Voltage check as appropriate)

Service Test 48 - Pantry and Air Filter Lighting

- Ensure the 7 segment LED Display indicates “on”

If the 7 segment LED Display does not indicate “on”

- Replace the Eyebrow UI

If the 7 segment LED Display does indicate “on”

- Check all wiring connectors tight.
- Check integrity of wiring between control board and Light. (Continuity or Voltage check as appropriate)

Dispenser LED Light Troubleshooting

The five dispenser LEDs are built into the Dispenser UI. If a LED needs to be replaced, replace the Dispenser UI.

Service Test 51 - Dispenser Lighting

This test will only turn on the 4 side LEDs.

- Ensure the 4 LEDs turn On
- If the LEDs do not turn On, replace the Dispenser UI.

If there is a concern about the night light feature:

Run Service Test

The Dispenser LED lights are integrated into the Dispenser UI. There is no Diagnostic Service Test available for the lights.

If the lights fail to work as described on Page 4-2 , replace the Dispenser UI.

Notes

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Section 7: Component Access

This section provides service parts access, removal, and installation instructions for the “32 Cu Ft French Door Refrigerator.”

- Orion Board
- EMI Filter
- Condenser Fan
- Water Isolation Valve
- GF2 Board
- Eyebrow Assembly
- Eyebrow UI
- Refrigerator Door Switch
- WIFI Board
- WIFI Antennae
- Dispenser UI
- Flase Wall
- Water Paddle
- Water Paddle Limit Switch
- Ice Paddle
- Ice Paddle Limit Switch
- Ice Door Motor Bracket
- Dispenser Heater
- Refrigerator Doors
- Door Mullion
- Icemaker Asembly
- Door Ice Maker Fill Tube and Heater
- Ice Dispenser Motor
- Shelves and Drawers
- Air Tower Cover & Air Filter Assembly LED Light
- LED Liner Lights
- Crisper Frame Assembly
- Temperatre Controlled Drawer LED Light & Thermistor
- Water Filter Bracket & Housing
- Freezer Icemaker Fill Tube and Heater

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⚠ 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.

Cabinet Parts

The cabinet parts are contained in the Machine Compartment, Assembly Eyebrow, and the Dispenser.

Machine Compartment

The Machine Compartment contains the Orion Board, EMI Filter, Condenser Fan, and the Water Isolation Valve. The GF2 Board is located above the Machine Compartment on the rear left side of the refrigerator cabinet. It is included in this section.

Orion Board

1. Remove the Machine Compartment cover.
2. Remove the two (2) 1/4" screws holding the Orion Board to the left rail (FIGURE 1).
3. Disconnect the three (3) wiring connectors and remove the Orion Board.



FIGURE 1: Orion Board on Left Rail

EMI Filter

1. Remove the Orion Board
2. Remove the 1/4" screw at the top of the EMI Filter.
3. Remove the EMI Filter from the plastic clip (FIGURE 2).
4. Remove the grounding wire.
5. Remove the wiring connector.

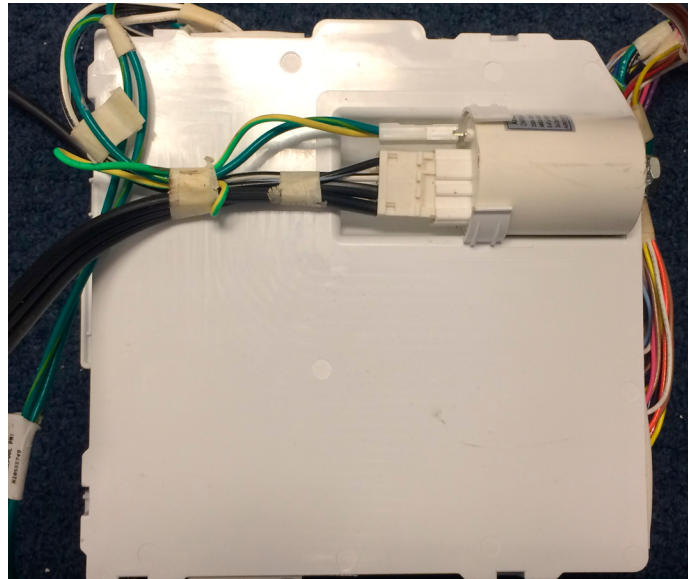


FIGURE 2: EM Filter on Orion Board Cover

Condenser Fan

1. Remove the Machine Compartment cover.
2. Remove the single 1/4" screw at the bottom of the Condenser Fan bracket.
3. Disconnect the wiring connector and slide out the fan to remove.

Water Isolation Valve

1. Remove the Machine Compartment cover.
2. Shut off external water supply to refrigerator
3. Remove the water supply connection to the Water Valve
4. Disconnect the wiring connector
5. Disconnect the Water Valve outlet water tube
6. Remove the two (2) 1/4" screws mounting the Water Valve to the right machine compartment rail.

GF2 Board

1. Remove the four (4) 1/4" screws holding the metal cover in place.
2. Use a screw driver to release the clip holding the plastic cover in place (FIGURE 3).
3. Disconnect the 11 wiring connectors on the GF2 Board.
4. Release the plastic clips and remove the GF2 Board.

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⚠ 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.



Assembly Eyebrow

The assembly eyebrow contains the Eyebrow User Interface (UI), the Left and Right Refrigerator Door Switches, and the WIFI board and antennae.

To access any of these components remove the Assembly Eyebrow:

1. Remove the two (2) Philip head screws and remove each of the left and right Hinge Covers.
2. Remove the three (3) 1/4" screws from the top of the eyebrow.
3. Open the refrigerator compartment doors.
4. Slide the assembly eyebrow forward until the tabs at either end of the eyebrow clear the door hinges (FIGURE 3).

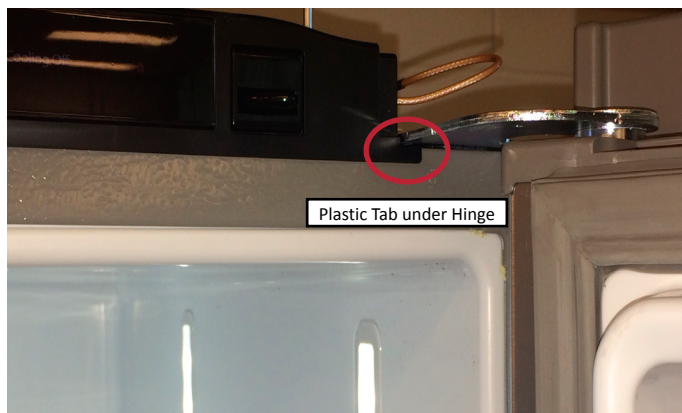


FIGURE 3: Plastic Tab Location

Note: To avoid pinched wires, when replacing the Assembly Eyebrow, ensure the Yellow and Black wire pair is routed through the eyebrow channel and through the opening in the eyebrow.

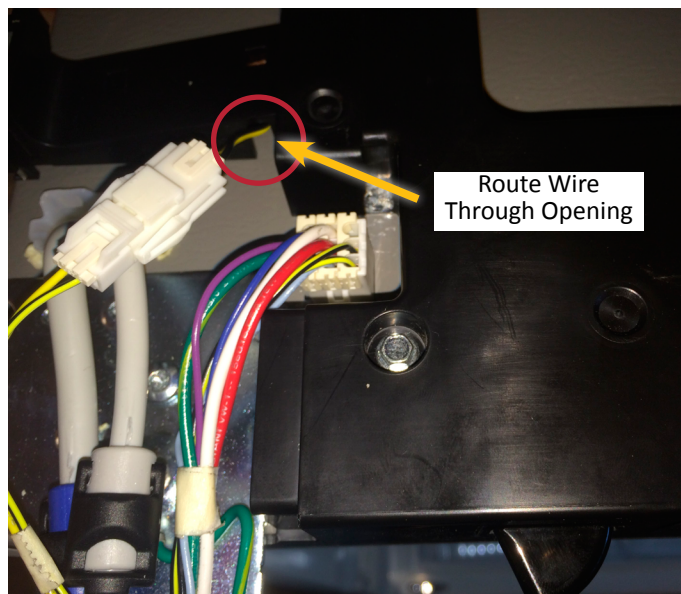


FIGURE 4: Routing of Yellow and Black Wire Pair

Note: Replace the Eyebrow with the refrigerator doors open, and ensure the tabs on the front bottom left and right of the eyebrow are placed under the door hinges (See Previous Page, FIGURE 3).

Eyebrow UI

1. Remove Assembly Eyebrow.
2. Disconnect the three (3) wiring connectors on the left side of the Eyebrow UI (FIGURE 5).
3. Depress the nine (9) white plastic clips holding the Eyebrow UI in place, and remove the UI (FIGURE 5).

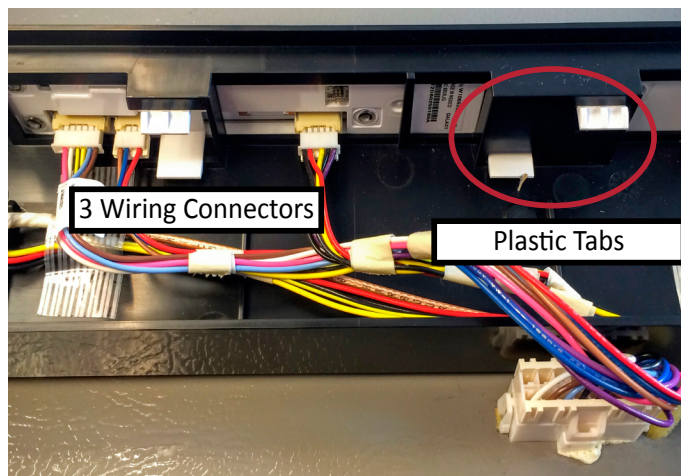


FIGURE 5: Wiring Connectors and Plastic UI Tabs

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⚠ 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.

Refrigerator Door Switch

1. Remove Assembly Eyebrow.
2. Remove the two spade connections from the back of the switch.
3. Depress the two (2) tabs on the switch and remove through the front of the Eyebrow.

WIFI Board and Antennae 1

The WIFI Board has Antennae 1 integrated into the board.

1. Remove the right refrigerator door Hinge Cover.
2. Depress the blue tab and disconnect the antennae coupler (FIGURE 6).
3. Remove the wiring connector from the other end of the board (FIGURE 6).
4. Depress the two black plastic tabs holding the board at the bottom, and remove.

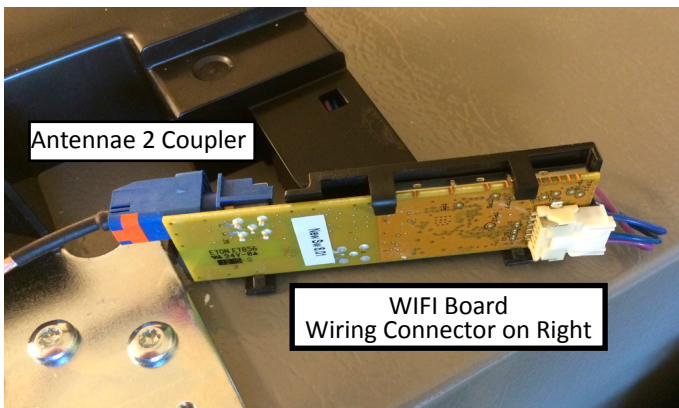


FIGURE 6: WIFI Board with Antennae Coupler

WIFI Antennae 2

1. Remove Assembly Eyebrow:
2. Depress the blue tab and remove the Antennae Coupler from the WIFI Board
3. Depress the two tabs retaining the WIFI Antennae and remove.
4. Remove the tape holding the antennae cable inside the Assembly Eyebrow.

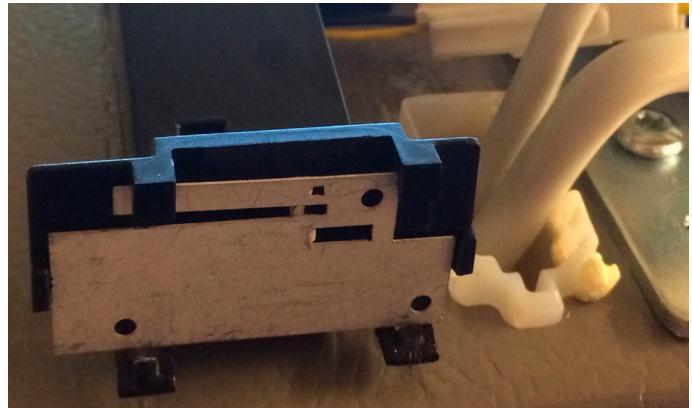


FIGURE 7: WIFI Antennae 2 Under Left Hinge Cover

Dispenser

The Dispenser Front contains the User Interface, Water and Ice Paddles, Ice Door Motor Bracket, and Dispenser Heater.



Door User Interface (UI)

1. Depress the two tabs under the front of the UI (Figure 8).
2. Remove the five (5) wiring connectors from the UI.



FIGURE 8: Retaining Clips (Circled in Red).



False Wall

1. Remove the UI
2. Push in the Drip Tray fully. Lift the front edge and remove the Drip Tray.
3. Remove the two (2) 1/4" screws in the Dispenser Tray Slide.
4. Remove the two (2) 1/4" screws in the top of the false wall.
5. Unclip the dispenser water tube from above the water paddle.
6. Slide the False Wall forward and remove from the Dispenser Housing.

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⚠ 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.

Water Paddle

1. Remove the UI
2. Remove the False Wall
3. Note the positioning of the Water Paddle Torsion Spring and remove
4. Disengage the Water Paddle from the two plastic retaining clips and remove.

Water Paddle Limit Switch

1. Remove the UI
2. Remove the False Wall
3. Disconnect the wiring connector from the Water Paddle Switch
4. Remove the switch from the plastic clips holding it in place.



FIGURE 9: Water Paddle Torsion Spring

Ice Paddle

1. Remove the UI
2. Remove the False Wall
3. Note the positioning of the Ice Paddle Torsion Spring and remove
4. Remove the two plastic ice paddle pins from the holes in the plastic housing and remove.



FIGURE 10: Ice Paddle Torsion Spring

Ice Paddle Limit Switch

1. Remove the UI
2. Remove the False Wall
3. Disconnect the wiring connector from the Ice Paddle Switch
4. Remove the switch from the plastic clips holding it in place.



Ice Door Motor Bracket

1. Remove the UI
2. Remove the False Wall
3. Remove the two (2) 1/4" screws holding the Ice Door Motor Bracket in place, and remove.

Dispenser Heater

1. Remove the UI
2. Remove the False Wall
3. Remove the Ice Door Motor Bracket
4. Disconnect the wiring connector for the Dispenser Heater

For Service Technicians Use Only

⚠ 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.

Refrigerator Door Parts

This section covers removal of the refrigerator doors and and component access for the parts contained in the doors, including the Door Mullion, Ice Maker Assembly, Ice Maker Fill Tube and Heater, and the Ice Auger Motor.

Refrigerator Doors

1. Using a Philips screwdriver, remove the Hinge Cover from the top hinge.
2. (Left Door Only) Disconnect the water dispenser tubing located on top of the door hinge. Firmly pull up on the clasp. Then, pull the tubing out of the fitting.
Note: The water dispenser tubing remains attached to the left-hand refrigerator door.
3. (Left Door Only) Disconnect the Wiring Connectors located on the top of the door hinge.
Note: Do not remove the green ground wire. It should remain attached to the door hinge.
4. Use a TORX T25 screwdriver to remove the three (3) screws from the top hinge.
5. Open the door to 90° to the front of the cabinet and lift the door from the bottom hinge pin.

Door Mullion

1. Place mullion in the door closed position and remove the 1/4" screw at the center of the mullion.
2. Slide the mullion up to remove from the tabs at the top and bottom hinges.
3. Disconnect the wiring connector for the Mullion Heater and remove the mullion.

Note: When installing the mullion, ensure the wiring connector is placed behind the plastic retaining clip.



FIGURE 11: Mullion Heater Wiring Connector Routed Behind Clip



Icemaker Assembly

1. Remove the Ice Bucket
2. Depress the plastic tabs on the bottom left and right sides of the Icemaker and slide out.
3. Disconnect the wiring connector and remove the Icemaker.



Door Ice Maker Fill Tube and Heater

1. Remove the Ice Maker assembly
2. Disconnect the Ice Maker Fill Tube (blue) clasp under the left Hinge Cap.
3. Use pliers to pull Fill Tube and Heater from top of the Ice Maker housing.

Note: Attach a string to the clasp end of the Fill Tube to aid in fishing through the new Fill Tube.

Ice Dispenser Motor

1. Remove the Ice Bucket
2. Remove the four (4) Philip screws retaining the Ice Chute Plate
3. Remove the four (4) 1/4" screws from the Ice Dispenser motor and lift out.
4. Disconnect the wiring connector and remove the Ice Dispenser Motor.

For Service Technicians Use Only

⚠ 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.

REFRIGERATOR COMPARTMENT PARTS

Shelves and Drawers

1. Lift and angle the two (2) Tuck Shelves, and the Full Shelf to remove from the cabinet.
2. Fully extend and lift the rear rollers from the track to remove the crisper drawers and temperature controlled drawer.

Air Tower Cover & Air Filter LED Light

1. Release the ten (10) plastic tabs holding the air cover in place, (FIGURE 12) and remove the air tower cover.
2. Disconnect the wiring connector for the Air Filter Assembly LED Lights
3. Release the eight (8) plastic tabs on the Air Filter Assembly and remove.

NOTE: Certain areas of the liner are cut with a laser during manufacturing. It is normal to see smoke staining on the liner in these areas (FIGURE 13).

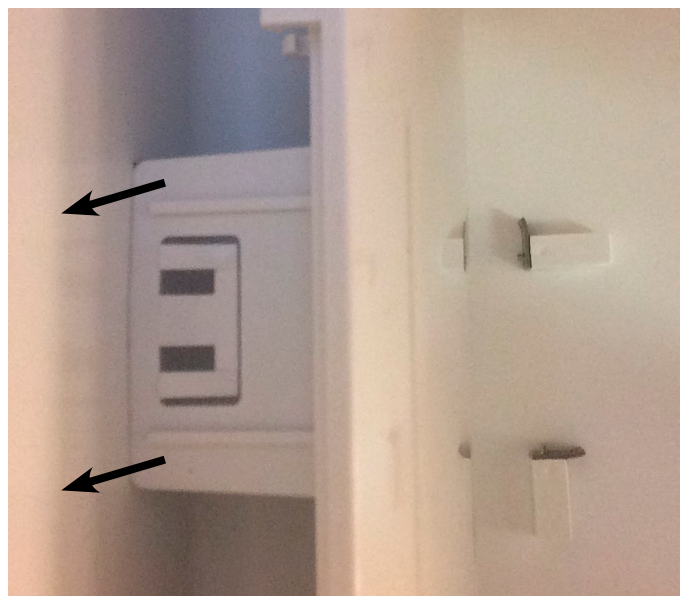


FIGURE 12: Air Cover Tabs (side view)

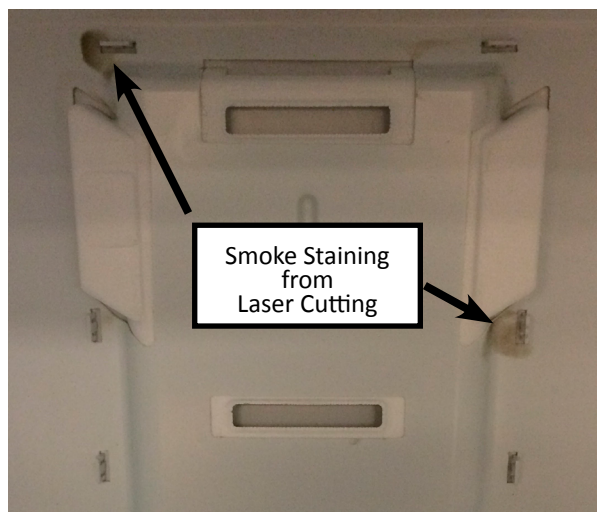


FIGURE 13: Smoke Staining Caused by Laser Cutting

LED Lights (Liner)

1. Use a putty knife to release the thirteen (13) plastic tabs (see FIGURE 14 on next page) holding the LED Light in place.
2. Slowly remove the light from the liner, disconnecting the wiring connector.
3. When installing the light, connect the wiring connector first, ensuring the LED turns on.

For Service Technicians Use Only

⚠ 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.

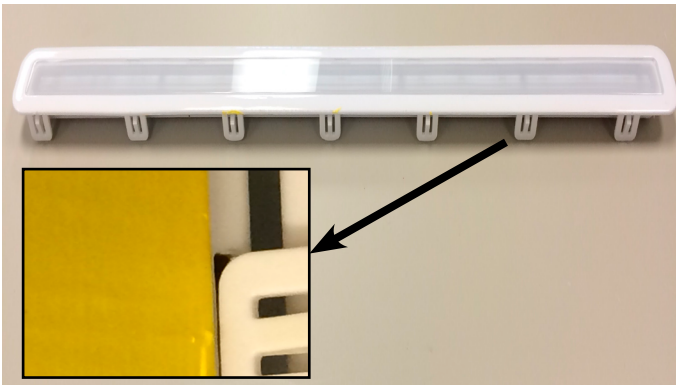


FIGURE 14: Plastic Retaining Tabs



Crisper Frame Assembly

1. Remove the Right Refrigerator Door.
2. Fully extend the Platter Shelf, depress and release the two (2) tabs on the underside of the pantry shelf (FIGURE 15). Remove the shelf from the cabinet.
3. Lift the back of the crisper glass from the underside, slide back until the two front edges are released. Remove the crisper glass.
4. Twist counter-clockwise and remove the water filter.
5. Lift and slide the crisper assembly forward until the rear center of the assembly clears the base of the Air Tower Cover. Continue lifting and remove the Crisper Frame Assembly.

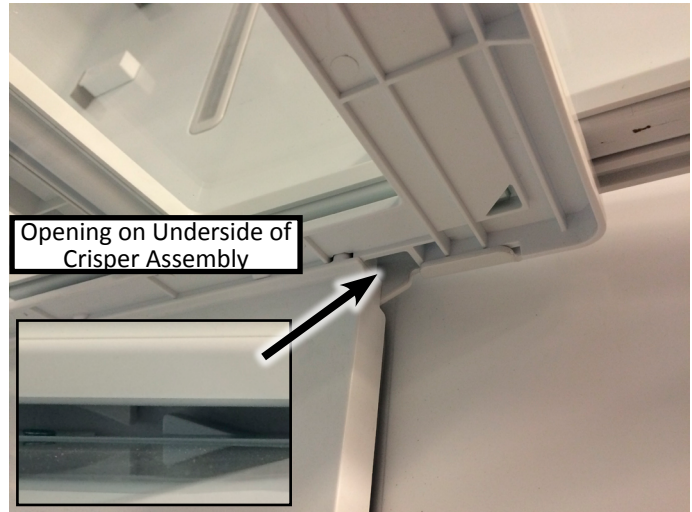


FIGURE 15: Shelf Tab Location



Temperature Controlled Drawer LED Light and

Thermistor

The LED Light and Thermistor for the Temperature Controlled Drawer share the same wiring harness. They are serviced as a pair.

1. Remove the Crisper Frame Assembly
2. Flip over the Crisper Frame Assembly with the front facing you.
3. Remove the three (3) Philip screws attaching the left rail to the bottom of the drawer frame.
4. Remove the three (3) Philip screws attaching the right rail to the top of the drawer frame.
5. Press the tab on the right side of the Water Filter Fascia and release.
6. Release the two (2) plastic clips holding the right rail to the top of the drawer frame, and lift off the bottom of the drawer frame.
7. Remove the six (6) Philip screws attaching the LED Light to the drawer frame.
8. Remove the four (4) Philip screws attaching the wire channel to the drawer frame
9. Unclip the Thermistor and remove the LED Light, Thermistor and associated wiring.

Note: To prevent pinching of the wires, ensure the wiring is run through the plastic channel in the underside of the drawer frame during installation (see FIGURE 16 on next page).

For Service Technicians Use Only

⚠ 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.

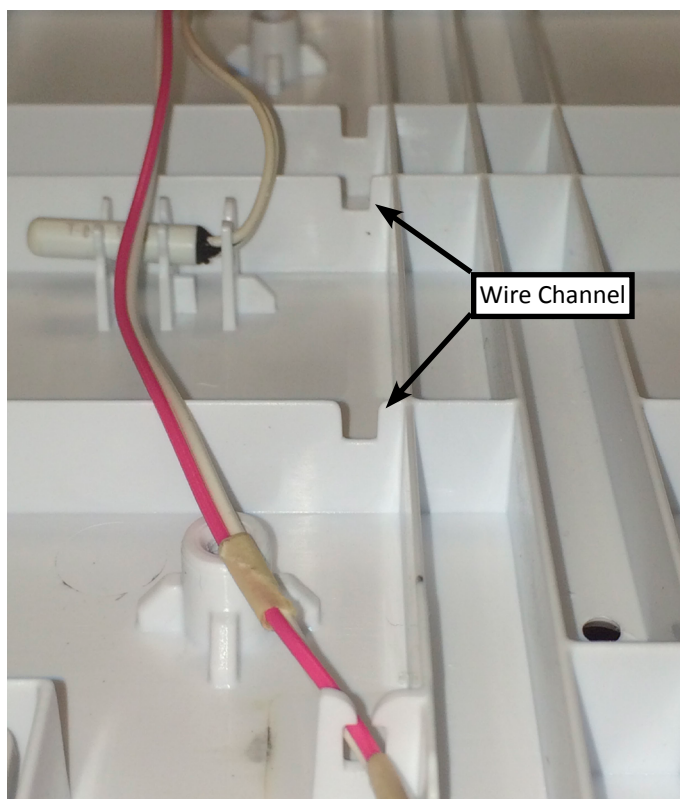


FIGURE 16: Pantry Wire Channel



Water Filter Bracket and Water Filter Housing

1. Remove the Crisper Frame Assembly
2. Remove the two (2) 1/4" screws at the front of the Water Filter Bracket base.
3. Release the water inlet and outlet lines from the Water Filter Bracket, and remove the bracket.
4. To remove the Water Filter Housing from the bracket, release the two plastic tabs at the front top and bottom of the housing, and slide out from the back.
5. When reinstalling the Water Filter Bracket, ensure the Under Filter Foam Insulation is in place, and the two plastic feet on the rear of the Bracket are inserted into the plastic recess in the base of the refrigerator liner (FIGURE 17).



Freezer Icemaker Fill Tube and Heater

1. Remove the Crisper Frame Assembly
2. Remove the Water Filter Bracket
3. Remove the Water Valve Cover
4. Remove the 1/4" screw at the front of the Fill Tube Cover. Slide the cover forward to free the rear tabs and remove.
5. Disconnect the Fill Tube Heater wiring connector located on the Water Tank Housing, and remove the heater.

Note: During assembly, install the Fill Tube Cover prior to the Water Valve Cover

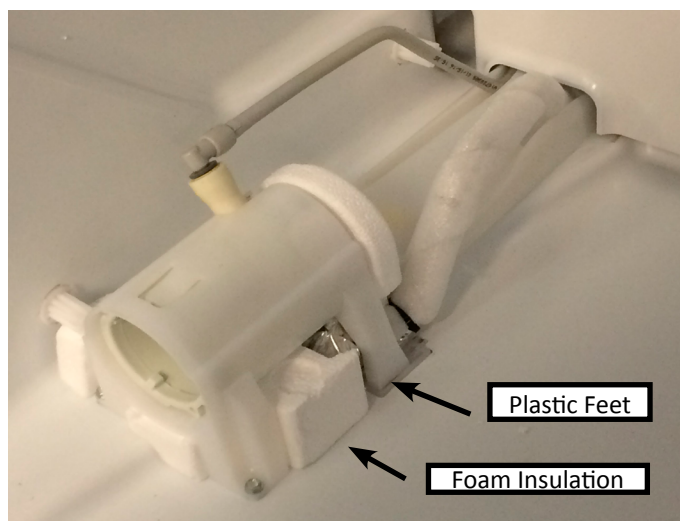


FIGURE 17: Water Filter Insulation and Feet

Dual Water Valve and Freezer IM Water Valve

1. Remove the Crisper Frame Assembly
2. Remove the Water Valve Cover (FIGURE 18).
3. Disconnect the wiring connector(s)
4. Remove the ground wire from the valve solenoid frame
5. Disconnect the water connections

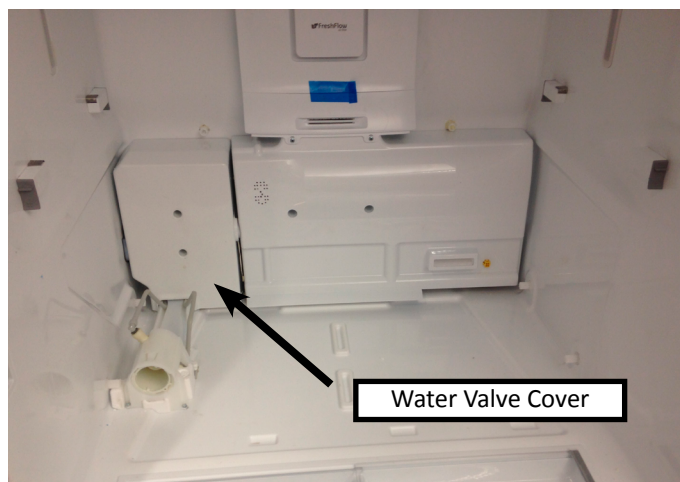


FIGURE 18: Water Valve Cover

For Service Technicians Use Only

⚠ WARNING



Electrical Shock Hazard

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Replace all parts and panels before operating.

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

Water Reservoir

1. Remove the Crisper Frame Assembly
2. Remove the Water Valve Cover
3. Remove the two (2) 1/4" screws at the top of the Water Tank Housing
4. Remove the wire run from the retaining clip
5. Remove the two (2) outlet water tubes from the Dual Water Valve
6. Pull the Water Tank Housing forward and cut the wire ties holding the Water Reservoir in place.
7. Remove the inlet and outlet water connections from the Water Reservoir and remove.



Evaporator Cover Assembly

The Evaporator Cover Assembly is a single part. It contains the Evaporator Fan and Motor, Evaporator Thermistor, Refrigerator Thermistor, and the Damper for the Temperature Controlled Drawer.

1. Remove the Air Tower Cover
2. Remove the Crisper Frame Assembly
3. Remove the Water Valve Cover
4. Remove the Tower Cover Base
5. Remove the four (4) 1/4" screws holding the Evaporator Cover Assembly in place and work the cover loose.
6. Compress the pinch clips on the yellow wiring plug at the bottom right of the cover and push back through the cover.
7. Unclip the Thermistor from the evaporator tubing behind the top right side of the cover.
8. Disconnect the two (2) small wiring connectors located behind the bottom left portion of the cover.
9. Disconnect the bottom wiring connector extending through the liner behind the bottom left portion of the evaporator cover.
10. Remove the blue tape holding the wiring to the rear of the cover assembly, feed the wiring through the hole on the left side of the cover and remove the Evaporator Cover Assembly.

NOTE: Certain areas of the liner are cut with a laser during manufacturing. It is normal to see smoke staining on the liner in these areas (FIGURE 19).

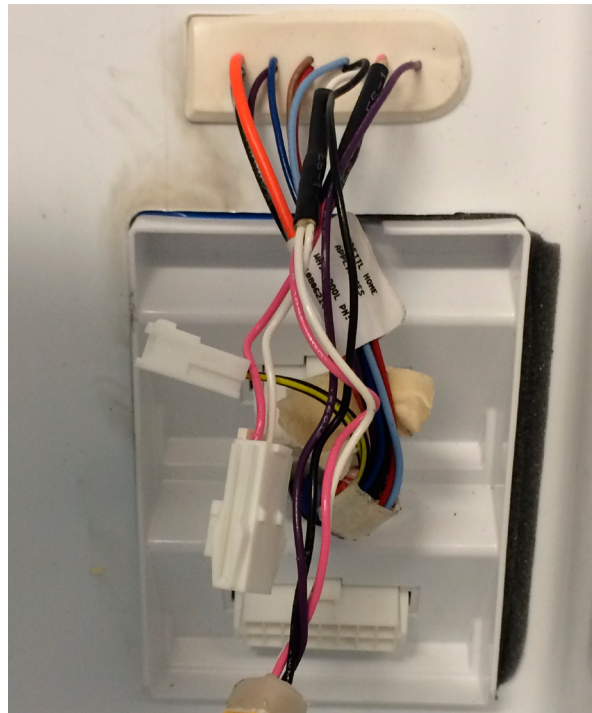


FIGURE 19: Smoke Staining Caused by Laser Cutting

Freezer Compartment Parts

Freezer Door

1. Loosen the four (4) X1/4' screws. Lift the Freezer Door off the brackets and remove.



Top Pan Assembly

1. Remove the Freezer Door
2. Remove either the left or right Pan Stop by flexing out the Bracket Assembly near the Pan Stop
3. Slide the Top Pan Assembly forward and remove, beginning with the side with the Pan Stop removed.



Bottom Pan Assembly

1. Remove the Freezer Door
2. Remove the Top Pan Assembly
3. Lift the front of Bottom Pan to release the front tab and catch.
4. While holding the side rails push the Bottom Pan Assembly back to release the remaining tabs and remove the Bottom Pan.

Note: During Installation, hook the back tab under the lip of the rail first, then work your way forward, hooking one tab at a time.

For Service Technicians Use Only

⚠ WARNING



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



Bracket Assembly

1. Remove the Freezer Door
2. Remove the Top Pan Assembly
3. Remove the Bottom Pan Assembly
4. Slide the Bracket Assembly forward.
5. Release the three tabs on either end of the Rack Shaft and slide out the Gear Collar.
6. Lift the Rack Shaft from the gear and pull to remove the other end from the Gear Collar.
7. Remove the four (4) 1/4" screws from each Bracket Assembly.
8. Slide the entire Bracket Assembly forward to disengage from the liner posts, and remove the Bracket Assembly.

Freezer Ice Maker (Some Models)

1. Remove the 1/4" screw mounting the Ice Maker to the top liner.
2. Slide the Ice Maker forward to disengage from the plastic posts in the top of the liner.
3. Disconnect the wiring connector and remove the Ice Maker.

FREEZER LINER



Evaporator Cover Assembly

The evaporator cover assembly holds the freezer evaporator fan, and the freezer compartment thermistor. The assembly and these parts are a single part number and are replaced as one.

1. Remove the Freezer Door
2. Remove the Top Pan Assembly
3. Remove the Bottom Pan Assembly
4. Remove the Bracket Assembly
5. Remove the Freezer Ice Maker
6. Remove the four (4) corner screws on the Evaporator

Cover.

7. Pull the Evaporator Cover Assembly away from the back liner, disconnect the wiring connector, and remove.

Icebox Fan

1. Remove the Evaporator Cover Assembly
2. Disconnect the wiring connector
2. Remove the two (2) 1/4" screws and remove the Icebox Fan.

Defrost Heater

1. Disconnect the two wiring connectors, one at either end
2. Unclip the Defrost Heater Clips
3. Remove the left and right air dam.
4. Remove the defrost heater.



Defrost Heater Wire Assembly

The Defrost Thermal Fuses and Defrost Thermistor are integrated into the Evaporator Heater Wire Assembly. To replace the Thermal Fuses or Defrost Thermistor:

1. Remove the Icebox Fan to gain access to the Heater Wire Assembly.
2. Disconnect the three wiring connectors and remove the Evaporator Heater Wire Assembly

Notes

PRODUCT SPECIFICATIONS & WARRANTY INFORMATION SOURCES

IN THE UNITED STATES:

**FOR PRODUCT SPECIFICATIONS AND WARRANTY INFORMATION CALL:
FOR WHIRLPOOL PRODUCTS: 1-800-253-1301**

**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: 1-800-851-4605**

**FOR TECHNICAL INFORMATION AND SERVICE POINTERS:
www.servicematters.com**

IN CANADA:

**FOR PRODUCT SPECIFICATIONS AND WARRANTY INFORMATION CALL
PHONE: 1-800-461-5681**

**FOR TECHNICAL ASSISTANCE WHILE AT THE CUSTOMER'S HOME CALL:
THE TECHNICAL ASSISTANCE LINE: 1-800-488-4791**

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**32 CU FT FRENCH DOOR
REFRIGERATOR**

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