GE APPLIANCES
a Haier *company*

Technical Service Guide

July 2017

2017 15 Cu. Ft. French Door Bottom Freezer

Haier

HRF15N3AGS

HRF15N3BGF

31-9270

Safety Information

IMPORTANT SAFETY NOTICE

The information in this service guide is intended for use by individuals possessing adequate backgrounds of electrical, electronic, and mechanical experience. Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.

WARNING

To avoid personal injury, disconnect power before servicing this product. If electrical power is required for diagnosis or test purposes, disconnect the power immediately after performing the necessary checks.

RECONNECT ALL GROUNDING DEVICES

If grounding wires, screws, straps, clips, nuts, or washers used to complete a path to ground are removed for service, they must be returned to their original position and properly fastened.

GE Appliances

Technical Service Guide

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Safety Requirements

GE Factory Service Employees are required to use safety glasses with side shields, safety gloves and steel toe shoes for all repairs.

Steel Toed Work Boot

Electrically Rated Glove and Dyneema® Cut Resistant Glove Keeper

Dyneema®Cut Resistant Glove

Cut Resistant Sleeve(s)

Plano Type Safety Glasses

Brazing Glasses

Prescription Safety Glasses
Safety Glasses must be ANSI Z87.1-2003 compliant

⚠ WARNING

Prior to disassembly of the refrigerator to access components, GE Factory Service technicians are REQUIRED to follow the Lockout / Tagout (LOTO) 6 Step Process:

Step 1 Plan and Prepare	**Step 4** Apply LOTO device and lock
Step 2 Shut down the appliance	**Step 5** Control (discharge) stored energy
Step 3 Isolate the appliance	**Step 6** “Try It” verify that the appliance is locked out

Nomenclature

Model Number

H R F 1 5 N 3 A G S

Brand
H: Haier

Product Type:
R: Refrigerator

Configuration:
F: French Door

Capacity:
15 Cubic Foot

Feature Package:
N: Not Icemaker Ready

Lighting:
3: LED

Model Year:
A: 2015

Shelving:
G: Tempered Glass

Color:
Stainless Steel

The nomenclature breaks down and explains what the letters and numbers mean in the model number.

Serial Number
The first two characters of the serial number identify the month and year of manufacture. The letter designating the year repeats every 12 years.

Example: LA123456S = June, 2013

A – JAN	2024 – Z
D – FEB	2023 – V
F – MAR	2022 – T
G – APR	2021 – S
H – MAY	2020 – R
L – JUN	2019 – M
M – JUL	2018 – L
R – AUG	2017 – H
S – SEP	2016 – G
T – OCT	2015 – F
V – NOV	2014 – D
Z – DEC	2013 – A

Introduction

GE Appliances introduces a new 15 cubic foot French door refrigerator. The new refrigerator is offered in two finishes: stainless steel and glass. All LED lighting illuminates the fresh food section with crisp clear lighting throughout the interior. The French door design gives wide-open access to bins, shelves and drawers. The aluminum-trimmed glass shelves and clear door bins allow convenient visible access to contents in the fresh food section.

Two freezer drawers provide ample storage for frozen goods.

Cooling is achieved using a variable speed compressor and a single evaporator. A freezer fan and electrical damper regulate the air flow into the fresh food section. An electronic control with a digital read-out of temperature settings for both fresh food and freezer is located on the front of the door.

Approximate Product Dimensions in Inches (H x W x D): 71", 28", 26 1/2"

Unit Weight: 201.0 lbs

Additional Features and Specifications:

- LED Lighting
- Counter Depth
- Sabbath Mode Functionality
- Quick Cool and Quick Freeze Function
- Electronic Capacitive Touch Display with Child-Lock
- Power-off Memory
- Door Alarm
- Automatic Defrost
- Adjustable Tempered Glass Shelves
- Clear Storage Door Bins
- 1 Full-Width Manual Temperature Control Bin
- 2 sliding Freezer Drawers
- Energy Star Certified
- Climate Control Drawer
- FF and FZ doors have Pocket Handles
- Demo Mode

NOTE: Features may vary by model.

Photos and Illustrations used in this Service Guide

The illustrations used in this service guide may not match the final design of the product. Therefore the actual product may differ slightly from what and how it is depicted within these pages.

Technical Data

DISCONNECT POWER CORD BEFORE SERVICING

IMPORTANT: RECONNECT ALL GROUNDING DEVICES

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

IMPORTANT SAFETY NOTICE

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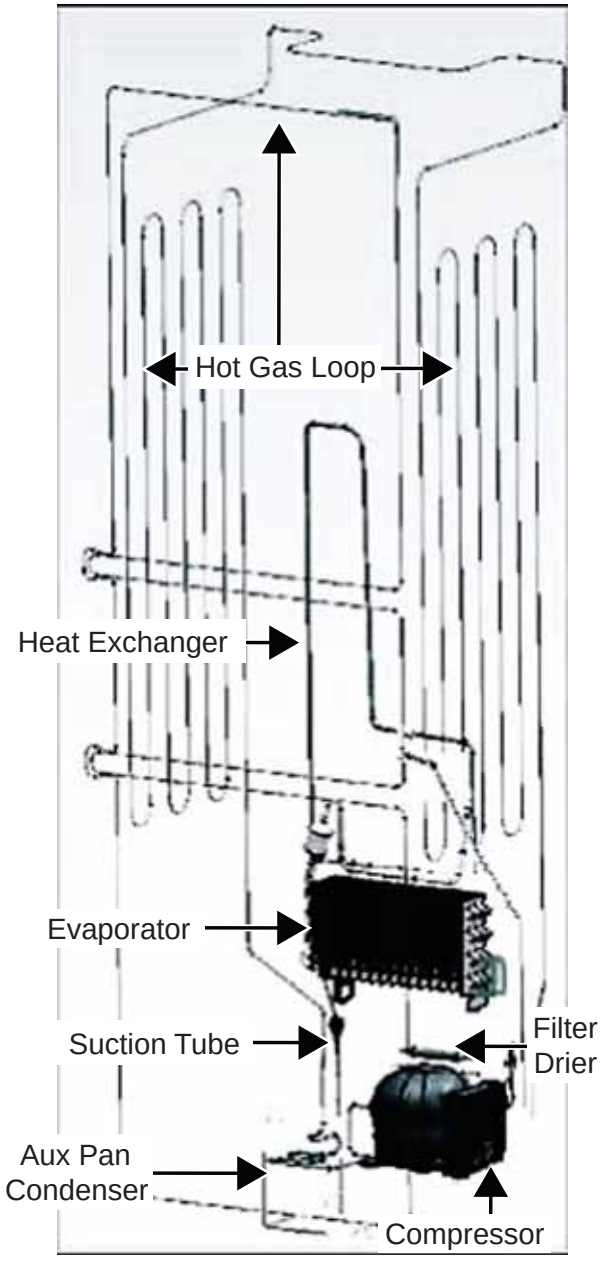
ELECTRICAL SPECIFICATIONS	
Maximum Current Leakage	0.75mA
Electrical Rating	120 VAC / 60 Hz / 3.0 A
Def. Heater Watts @ 77°F	178

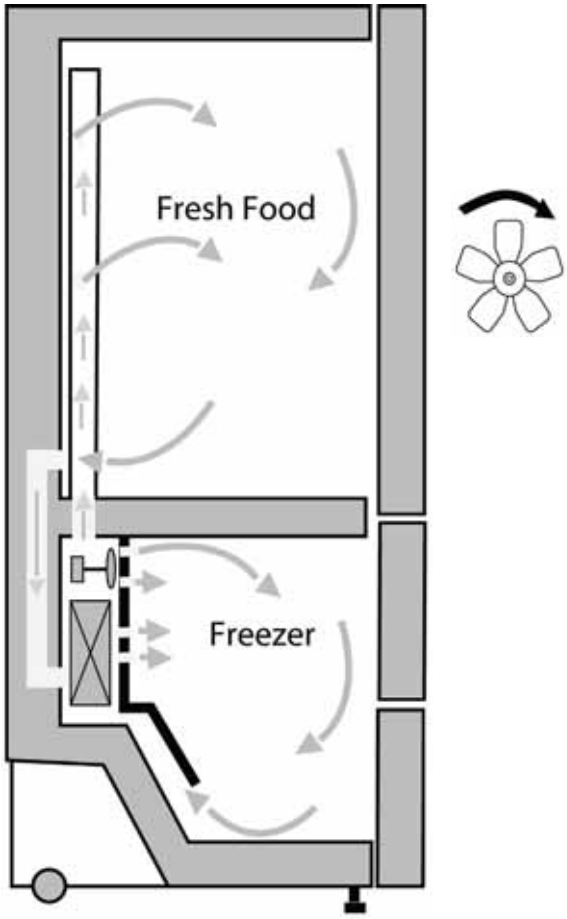
INSTALLATION
Clearance must be provided for proper operation.
At Sides (to allow for full door openings)
min 4" (50.8 mm)
At Back
min 2" (50.8 mm)

REFRIGERATION SYSTEM	
Refrigerant Charge (R134a)	**4.75 oz**
Compressor Resistance	**16 Ohms**
Compressor (Variable)	**29 - 178W**

Sealed System



Air Flow



Operational Characteristics

Design

- No ice maker available.

Power Up

- On power up, there is a 10 second compressor and freezer fan delay.
- On power up, fresh food damper cycles open, close, and then go to a required position based on fresh food temperature.

Fresh Food Lights and Door Openings

- Light switches are DC. Lights are controlled by the main board.
- There are no lights or light switches in the freezer.
- When either fresh food door is opened, the evaporator fan will turn off. There is a 10 second delay on fan start up after door(s) are closed.
- When either fresh food door is opened for more than 7 minutes, the interior lights will turn off and the freezer fan will run at high speed.

Evaporator Fan

The DC evaporator fan has a feedback circuit to the main board. If the main board doesn't receive fan feedback, it will stop sending voltage and try to restart the fan after 1 minute.

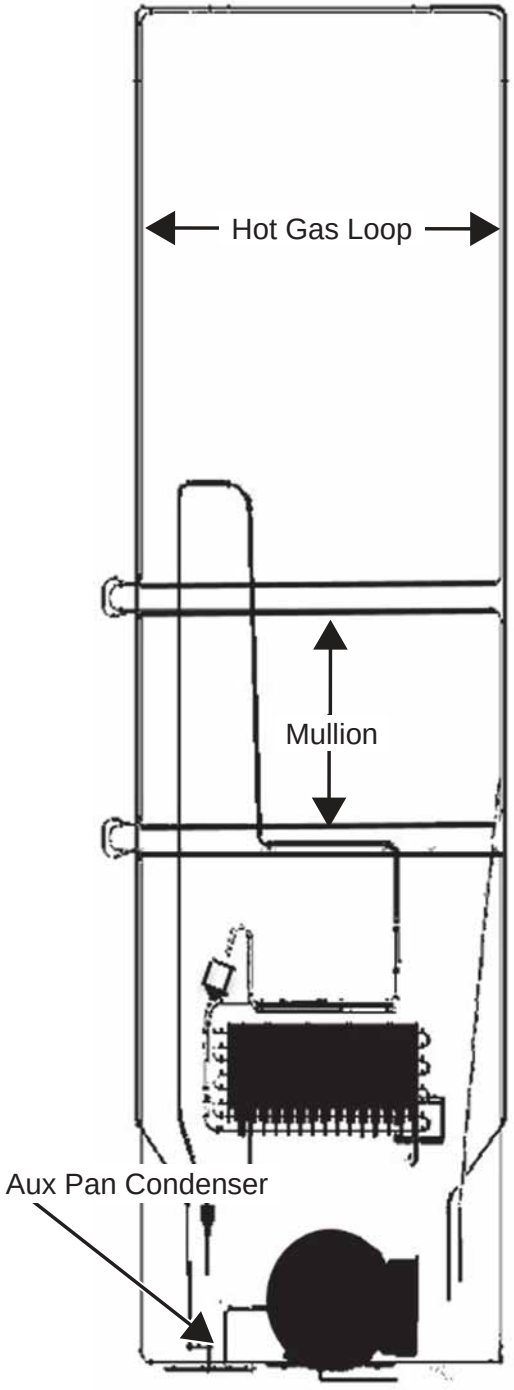
Door Alarm

- When either fresh food door is opened for more than 2 minutes, a triple beep alarm is generated by the UI. The triple beep continues every 30 seconds until the door is closed. If the door stays open for more than 10 minutes, the alarm turns off.

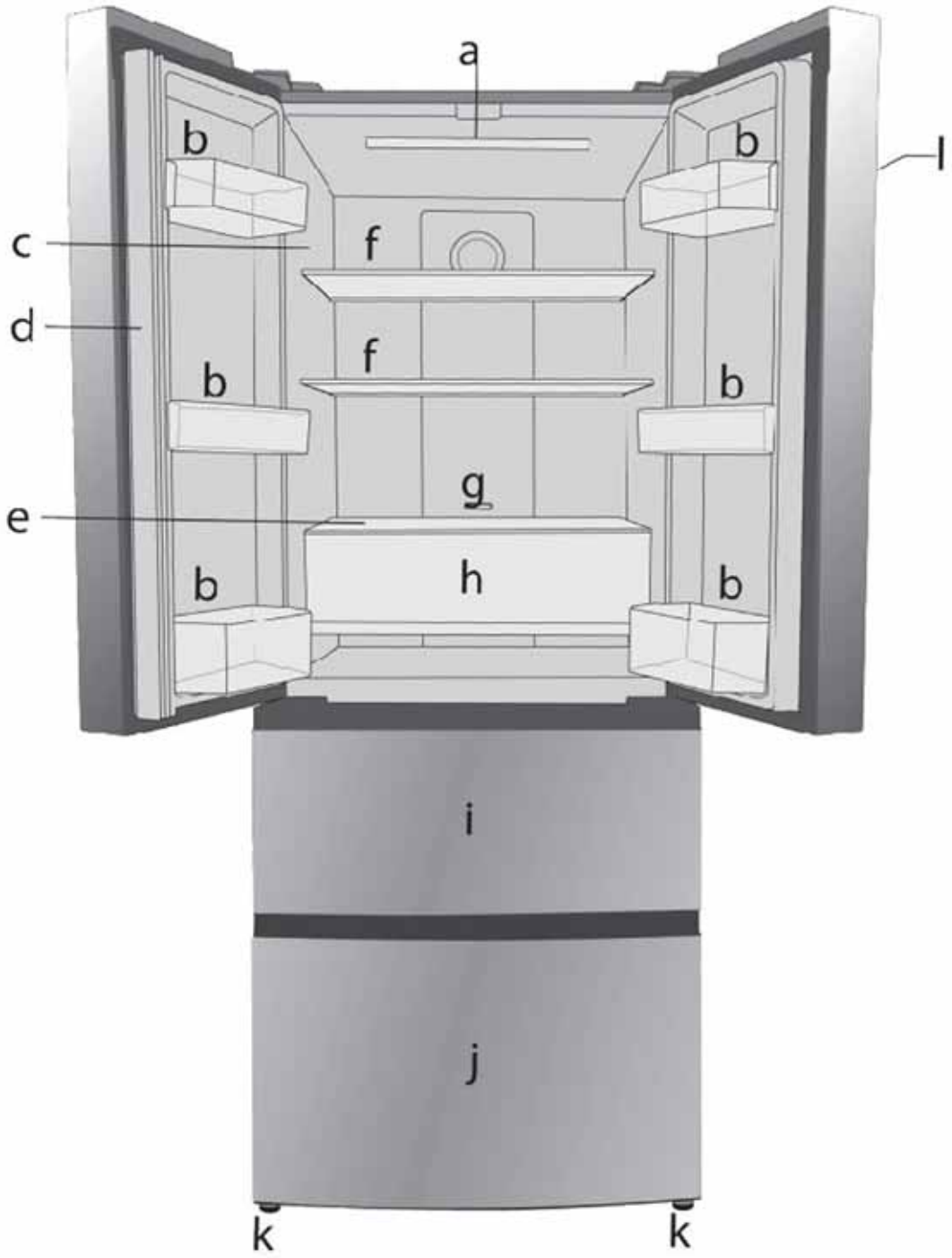
Hot Gas Loop and Auxiliary Pan Condenser

This refrigerator doesn't use a traditional condenser, but dissipates heat by way of hot gas loops in the cabinet walls. This is how most chest freezers operate.

There is an auxiliary pan condenser in the machine compartment defrost drain tray to help with defrost water evaporation.



Component Locator Views



a - Primary LED Lights

b - Door Bin

c - Model and Serial # Plate

d - Articulating Door Mullion

e - Glass Shelf

f - Glass Shelf

g - Cool Zone Control

h - Cool Zone Drawer

i - Upper Freezer Drawer

j- Lower Freezer Drawer

k - Adjustable Foot

l - Control Panel

Installation

Refrigerator Location

This refrigerator is designed for indoor, household use only. This refrigerator should not be recessed or built-in an enclosed cabinet. It is designed for freestanding installation only.

The refrigerator should not be installed in the following locations:

- Where the temperature will go below 55°F (12.7°C).
- Where the temperature will go above 110°F (43°C).
- In a location exposed to water (rain, etc.), direct sunlight or near a heat source, such as an oven or radiator.

The refrigerator should be installed on a floor strong enough to support it fully loaded.

Additional Specifications

- 120 volt 60Hz., 15 or 20 amp power supply is required.
- An individual properly grounded branch circuit or circuit breaker is recommended.

  NOTE: A GFI (Ground Fault Interrupter) is not recommended.

Electrical Shock Hazard

- It is required that the refrigerator be plugged into a grounded 3-prong outlet.
- The ground prong should not be removed.
- Use of a 2-prong adapter or an extension cord is prohibited.
- A frayed or damaged power cord should immediately be replaced.

Clearances

Allow the following clearances for ease of installation, proper air circulation, and plumbing and electrical connections.

- Top 2 inches (50 mm)
- Back 2 inches (50 mm)
- Sides 2 inches (50 mm)

When installing next to a fixed wall, leave 4” (10 cm) minimum to allow for the door to swing open.

Power Cord

The power cord of this appliance is equipped with a 3-prong (grounding) plug, that mates with a standard 3-prong (grounding) wall outlet to minimize the possibility of electric shock hazard from this appliance.

The wall outlet and circuit should be tested by a qualified electrician to ensure the outlet is properly grounded.

If the outlet is a standard 2-prong outlet, it is the personal responsibility and obligation of the consumer to have it replaced with a properly grounded 3-prong wall outlet.

WARNING: Do not, under any circumstances, cut or remove the third (ground) prong from the power cord. For personal safety, this appliance must be properly grounded.

The refrigerator should always be plugged into its own individual electrical outlet, that has a voltage rating that matches the rating plate.

(*Continued next page*)

Installation (continued)

Extension Cord Usage

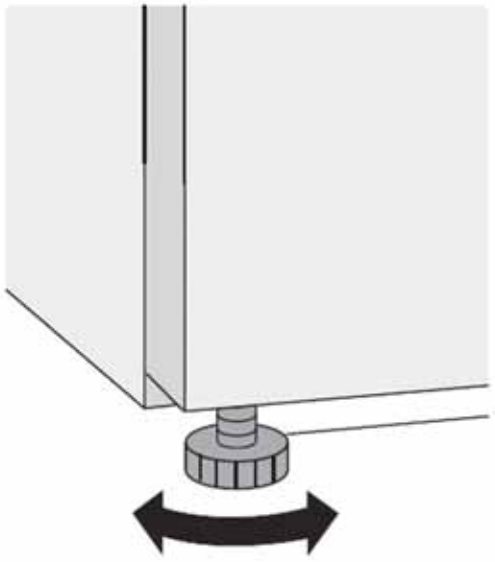
Because of potential safety hazards under certain conditions, we strongly recommend against the use of an extension cord. However, if it is necessary to use an extension cord, it is absolutely necessary that it be a UL-listed (in the United States) or a CSA-listed (in Canada), 3-wire grounding type appliance extension cord. It must have a grounding-type plug and outlet and the electrical rating of the cord must be 15 amperes (minimum) and 120 VAC.

Leveling

The refrigerator must be level to maintain optimal performance and appearance.

1. Move the refrigerator to its final location.
2. Turn the feet on the bottom, front of the cabinet to raise or lower a specific side of the refrigerator until the unit is level side-to-side.
3. Turn both front legs, by the same amount, to slightly raise the front of the refrigerator. This will make it easier for the doors to close.

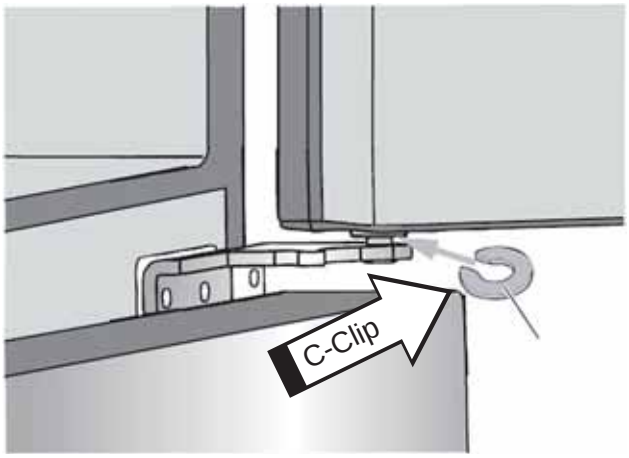
NOTE: Having a second person push against the top of the refrigerator takes some weight off the leveling feet/screws. This makes it easier to rotate and adjust the feet/screws.



- Turn clockwise to raise the front.
- Turn counter-clockwise to lower the front.

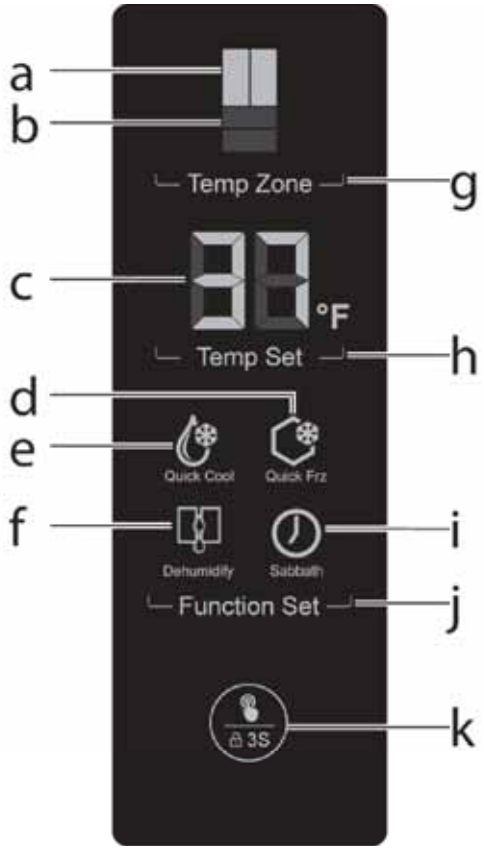
Fresh Food Door Alignment

If the door alignment cannot be corrected by adjusting the leveling foot, then it may require the use of adding one or more C-clips between the door and the center hinge.



Two C-clips (**Part #**: WR01X28504) are supplied with the Use and Care book.

Control Features



Compartment Indicator

(a) Fresh Food (FF) compartment indicator. When lit, the fresh food set temperature is displayed

(b) Freezer compartment indicator. When lit, the freezer set temperature is displayed.

Control Panel Display

(c) The control panel display shows the temperature of the compartment indicated.

Function Set

(j) The **Function Set** button is used to scroll through features.

Quick Freeze Button

(d) The Quick Freeze (**Quick Frz**) function accelerates the cooling in the freezer.

If locked, unlock the control panel by pressing and holding the **Confirm Selection** button (k) for 3 seconds. Press **Function Set** until the Quick Freeze indicator starts to blink. Press the **Confirm Selection** button (k). The temperature display will read qF to indicate Quick Freeze is activated.

Repeat steps to deselect Quick Freeze.

NOTE: Quick Freeze will automatically turn off after 24 hours.

Quick Cool Button

(e) The Quick Cool function accelerates the cooling of fresh food.

If locked, unlock the control panel by pressing and holding the **Confirm Selection** button (k) for 3 seconds.

Press **Function Set** until the Quick Cool indicator starts to blink. Press the **Confirm Selection** button (k). The temperature display will read "qC" to indicate **Quick Cool** is activated.

Repeat steps 1 through 3 to deselect **Quick Cool**.

NOTE: **Quick Cool** will automatically turn off after 3 hours.

Dehumidify

(f) The **Dehumidify** feature activates a heater in the articulating door mullion.

If locked, unlock the control panel by pressing and holding the **Confirm Selection** button (k) for 3 seconds. Press **Function Set** until the Dehumidify indicator starts to blink. Press the **Confirm Selection** button (k).

Repeat steps to deselect **Dehumidify**.

(*Continued next page*)

Control Features (continued)

Temp Zone

(g) The **Temp Zone** button is used to choose which compartment to set the temperature for.

Temp Set

(h) The **Temp Set** button is used to adjust the temperature setting for the fresh food 34°F to 42°F, or freezer -6°F to 4°F.

If locked, unlock the control panel by pressing and holding the **Confirm Selection** button (k) for 3 seconds.

Press **Temp Zone** until the fresh food or freezer compartment Indicator lights up.

Compartment Indicator lights up. The current temperature setting is displayed. Press **Temp Set** to adjust the temperature. The temperature increases by one degree with each press. Press the **Confirm Selection** button (k). If the **Confirm Selection** button (k) is not pressed after 5 seconds, the control will return to the previous set temperature.

Sabbath Mode Indicator

(i) The Sabbath function is designed for those whose religious observances require turning off the lights. All interior lights and alarms will be disabled.

If locked, unlock the control panel by pressing and holding the **Confirm Selection** button (k) for 3 seconds.

Press **Function Set** until the Sabbath Indicator starts to blink. Press **Confirm Selection** button (k). To deselect the Sabbath function, press and hold the **Confirm Selection** button (k) for 5 seconds.

Confirm Select Button

(k) The **Confirm Select Button** button is used to confirm the temperature setting and features. It will also unlock or lock the control panel if held down for 3 seconds.

Demo Mode

To Enter:

1. Lock UI if it's unlocked.
2. Open either refrigerator door.
3. Press and hold **Temp Zone** button, while pressing and releasing **Function Set** button three times.

To Exit: Repeat above steps.

Operational Notes:

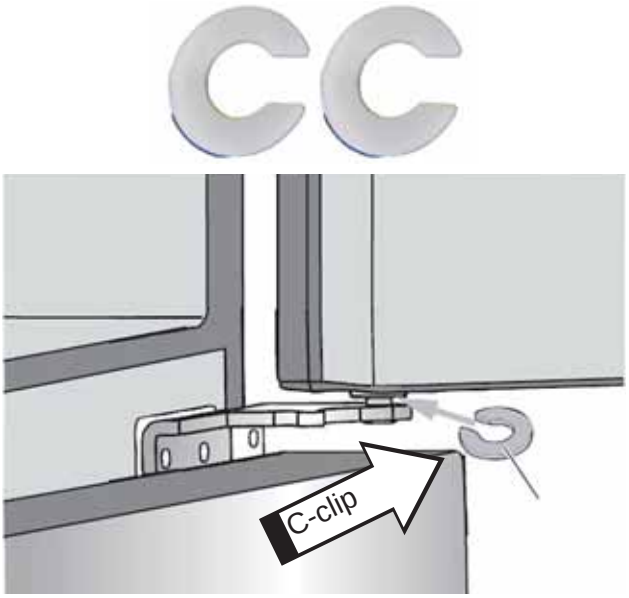
- The UI will not enter show room mode without a fresh food door open.
- When entering or exiting demo mode, a noticeable single beep will be produced.
- When in demo mode, the display automatically starts to scroll through the features LED's.
- When exiting demo mode, it stops scrolling, and the compressor doesn't start for 3 minutes.

Fresh Food Door

Door Alignment

To correctly align doors, adjust the front legs until they are extended to the floor. If door alignment line does not match, turn each leveling leg separately until the leveling matches across both doors.

- Height adjustments can be made with the 1.5 mm C-shaped hinge washer supplied with the Use and Care book (**Part #**: WR01X28504.)



Door Removal

NOTE: The left and right door are removed using the same procedure.

Caution: To prevent damage, tape the door shut with masking tape to support the door.

1. Remove the two Phillips head screws securing each top hinge cover to the cabinet.

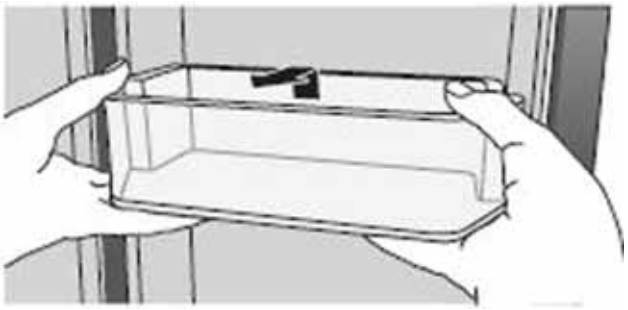
2. Disconnect the door wiring connector, and remove the three 5/16 inch Phillips head screws securing the hinges to the cabinet.

3. Open and lift up to remove the door from the lower hinge pin.

NOTE: If used, the C-shaped hinge washer can stick to the bottom of the door when it's removed. If found, be sure to replace it on the lower hinge pin for proper door alignment.

Door Bins

Door bins are removable by lifting up and out on the desired bin.



Fresh Food Gasket

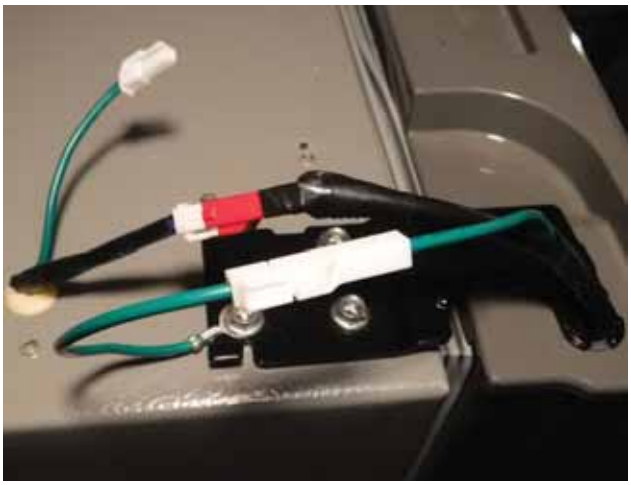
The fresh food door gasket is a push-in style gasket which allows for easy removal and installation into a retainer channel molded into the door. The gasket features a magnetic surface that helps to ensure a proper seal to the metal surface of the refrigerator.

Fresh Food Gasket Removal/Replacement

1. Soak the new gasket in warm water to make it more pliable and to smooth out any wrinkles from the shipping packaging. Thoroughly dry the gasket after pulling it out of the warm water, before installing.
2. Pull the old gasket out of the retainer channel.
3. Starting with any corner of the door, push the barbed edge of the gasket into the retaining channel.

Fresh Food Hinge Covers

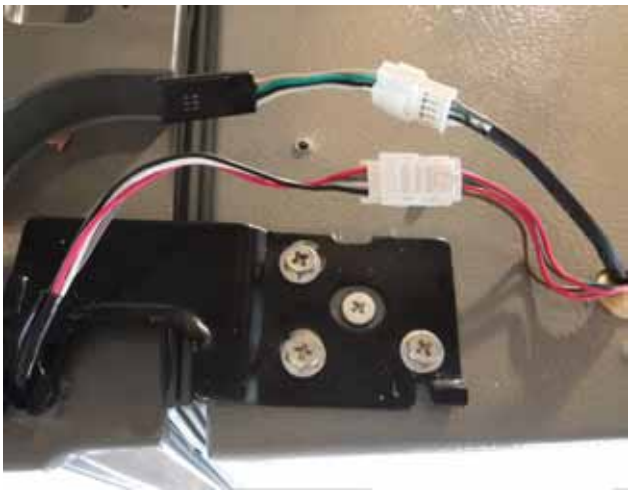
The left side covers the hinge bolts, articulating mullion heater connectors, and an extra green ground wire that is not used.



The right side covers the hinge bolts, UI display, and ambient-humidity sensor cabinet harness connectors.

Left or Right Hinge Cover Removal

1. Remove the two Phillips head screws securing the hinge cover to the cabinet.



Ambient-Humidity Sensor

The ambient-humidity sensor is located under the right side upper hinge cover. The sensor is energized as long as the refrigerator is powered up. The main board supplies the sensor with 5 VDC. Feedback from the sensor controls the vertical mullion heater.

Ambient-Humidity Sensor Removal

1. Follow the steps for **Left or Right Hinge Cover Removal**, under **Fresh Food Hinge Covers** in the **Fresh Food Door** section of this service guide.
2. Gently pry the sensor from the hinge cover retaining clips using a small screw driver.

(*Continued next page*)

3. Disconnect the sensor from the cabinet harness connector and remove the sensor.

Diagnosing Ambient-Humidity Sensor

Operating voltage can be checked at the sensor connector or from the main board.

- Sensor cabinet harness connector pin 3 (**black**) - pin 4 (**white**) = 5 VDC
- Main board connector CN3 pin 3 (**black**) - pin 4 (**white**) = 5 VDC

Feedback voltage can be checked at the sensor connector or from the main board. Any voltage higher than 4 VDC or lower than 1 VDC indicates a failed humidity sensor.

As the humidity level rises, the voltage increases.

- Sensor connector pin 1 (**gray**) - pin 4 (**white**) while connected = 2.1 VDC @ 59% humidity.
- Main board connector CN3 pin 1 (**gray**) - pin 4 (**white**) while connected = 2.1 VDC @ 59% humidity.

Sensor resistance can be checked at the sensor connector or from the main board.

- Sensor connector pin 2 (**green**) - pin 4 (**white**).
- Main board connector CN3 pin 2 (**green**) - pin 4 (**white**).

Sensor	
Resistance Ω	**Temperature °F**
1.9 kΩ	77°F
2.5 kΩ	70°F
5.4 kΩ	37°F
16.8 kΩ	0°F

Articulating Mullion

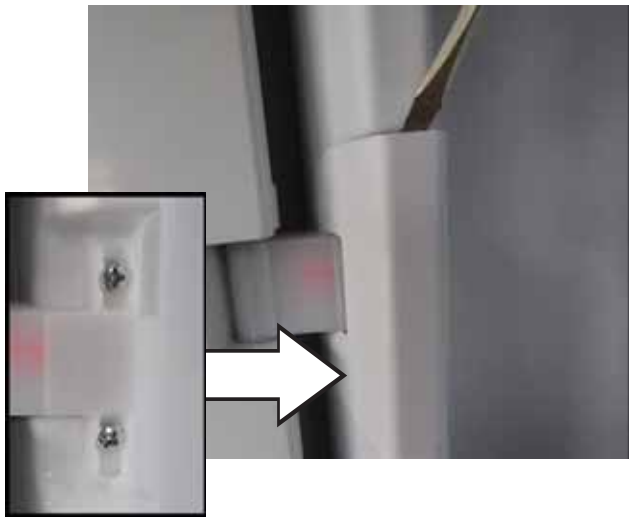
The Articulating Mullion is located on the left fresh food door. The mullion contains a heater which is supplied with 120 VAC from the main board. Heater operation is regulated by the ambient humidity sensor readings.

The articulating mullion heater is controlled by the main board software logic. The main control board takes into account the room temperature and percentage of room humidity. As the room temperature and humidity increase, the heater on time is increased to keep the mullion surfaces from sweating. At lowest humidity, the articulating door mullion may turn off completely. The heater is controlled automatically by the main board based on the ambient humidity sensor input.

The main control board utilizes a duty cycle to monitor and react to the condition of the ambient humidity sensor. Main board corrections, if needed, are made at a specific time period during the duty cycle. If the control detects a failed humidity sensor, the mullion heater will be operated at 85%.

Articulating Mullion Removal

1. Open the left side door and remove the cover from the center mullion hinge using a small flat blade screwdriver.



2. Remove the two Phillips head screws from the center mullion hinge.

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3. Pull out the heater connectors from the door and disconnect them.

4. Push the mullion upwards to disconnect from the door.

Articulating Door Mullion Diagnosing

The heater can be checked at the main board or at the mullion connector.

- Mullion heater has a resistance of 1.1k ohms.

Service test mode T3 can be used to cycle power to articulating door mullion (see the **Service Test Mode** section of this service guide).

Main Board Check:

- CN4 pin 11 (**brown**) - pin 5 (**blue**) = 115 VAC

Mullion Connector Check:

- **Brown** and **red** wires under center cover.

User Interface Display (AGS Model)

The user interface display (UI) consists of a control panel and board assembly. The UI is located on the right fresh food door. To remove the assembly from the door, the 2 inch Suction Cup Tool (**Part #**: WX01X27708) is required.

NOTE: Failure to use this tool for UI removal may cause damage to the UI Panel and/or Door!

User Interface Display (AGS Model) Removal

1. Place the suction cup tool at the top of the UI.

2. While holding slight pressure against the UI, fold the middle arm down to secure the suction cup.

(*Continued next page*)

3. Grasp and pull on the suction cup. Bring the UI about 1 inch forward out of the recess.

4. Next, remove the suction cup tool. To release the suction cup tool, move the middle arm back to the vertical position and remove the tool.

Once the UI display is removed, access the 4-pin connector on the board.

The single 4-pin connector, has a press-to-release catch. When disconnecting or reattaching the connector, keep the connector close to the board.

This will minimize the possibility of damage to the pins on the board.

The UI display can now be tested for VDC at the connector of the UI Board. These same readings are found at the right door hinge connector, and control board connector CN3.

Wire Color	Function	Output VDC
Black	Ground	Ground
White	Supply volts	5 VDC

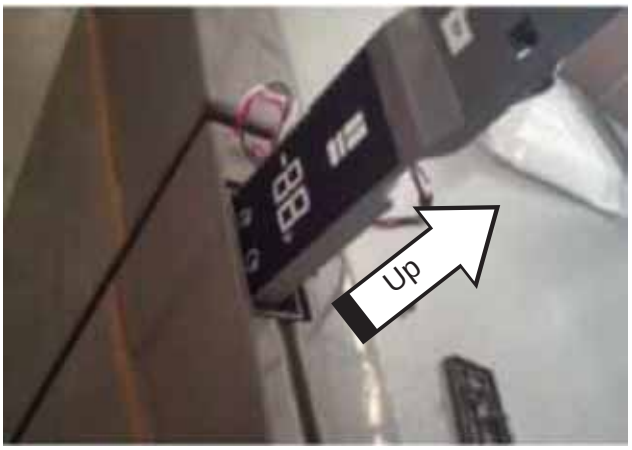
User Interface Display (BGF Glass Finish)

The User Interface display (UI) consists of a control panel and board assembly. It is mounted inside the door behind the glass outer panel. The UI is located on the right fresh food door.

User Interface Display (BGF Glass Finish) Removal

1. Remove the Phillips head screw securing the UI cover to the top of the right fresh food door.

2. Pull the UI straight up and disconnect the harness.



Once the UI display is removed, access the 4-pin connector on the board.

(*Continued next page*)

The single 4-pin connector, has a press-to-release catch. When disconnecting or reattaching the connector, keep the connector close to the board. This will minimize the possibility of damage to the pins on the board.

The UI display can now be tested for VDC at the connector of the UI Board. These same readings are found at the right door hinge connector, and control board connector CN3.

Wire Color	Function	Output VDC
Black	Ground	Ground
White	Supply volts	5 VDC

Door Cam and Stop

The door cam is the closure mechanism for the fresh food doors. It is located at the bottom hinge side of each door.

The door cam is a one piece plastic hinge bushing with a molded in closure arm. The end of the arm rides over a lobe in the lower hinge when the door reaches closure. This keeps tension on the door against the cabinet for good gasket sealing.

Door Cam Removal

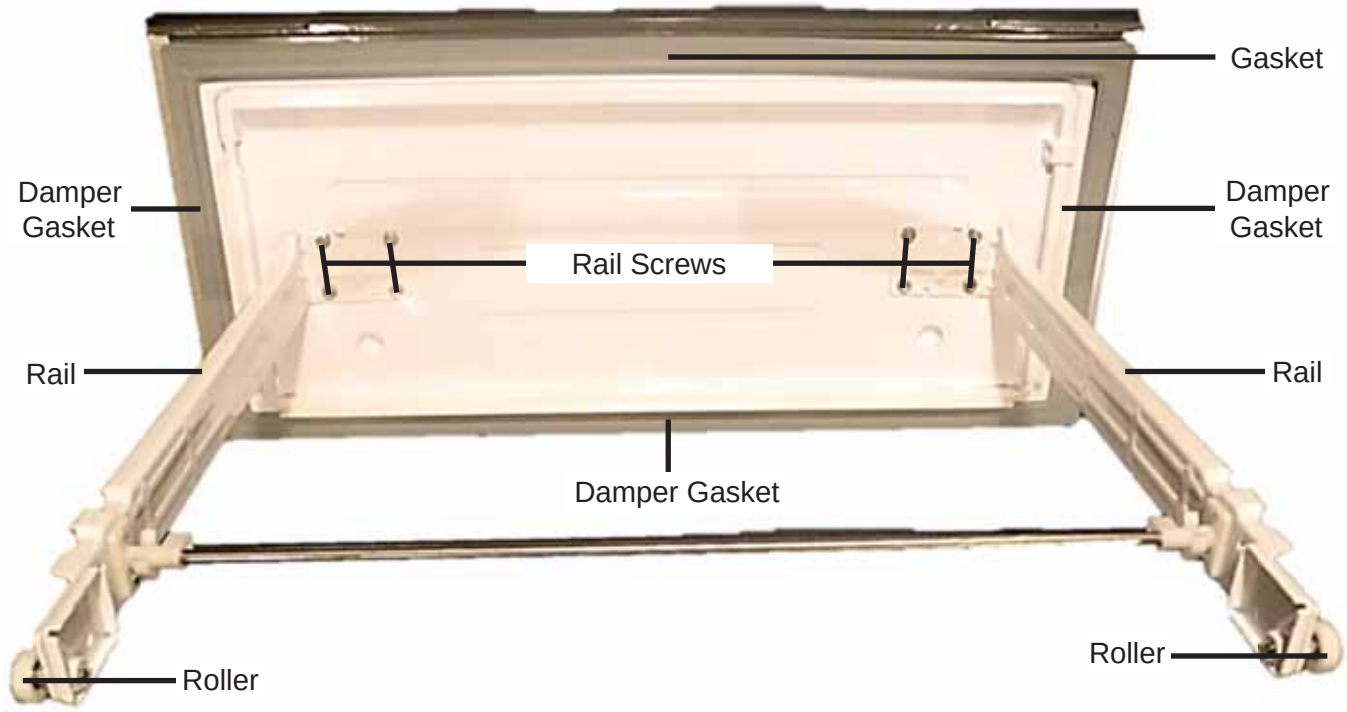
1. Follow steps for the fresh food door removal.
2. Remove the one Phillips head screw securing the cam and door stop to the bottom of the door.

3. Separate the cam from the door stop.

NOTE: If used, the C-shaped hinge washer (**Part #**: WR01X28504) can stick to the bottom of the cam when it's removed from the lower hinge pin. If found, be sure to replace it for proper door alignment.

Freezer Drawers

Freezer Drawer Component Locator



Freezer Drawer Removal

- The upper and lower doors are removed using the same procedure.

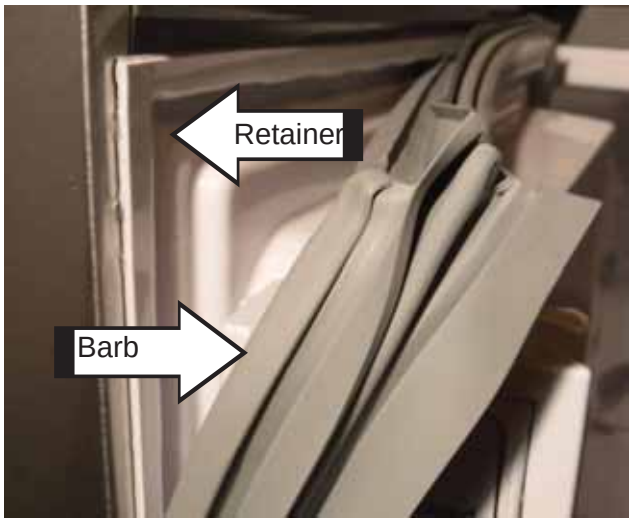
1. Remove the freezer drawer by extending the drawer fully, and then lift up on the drawer and pull out to remove.
2. Remove the freezer drawer bin from drawer frame.
3. Remove the eight Phillips head 5/16 inch screws securing the freezer door to the rails.

Freezer Drawer Gasket

The freezer drawer gasket is a push-in style gasket which allows for easy removal and installation into a retainer channel molded into the door. The gasket features a magnetic surface that helps to ensure a proper seal to the metal surface of the refrigerator.

Fresh Food Gasket Removal/Replacement

1. Soak the new gasket in warm water to make it more pliable and to smooth out any wrinkles from the shipping packaging. Thoroughly dry the gasket after pulling out of the warm water, before installing.
2. Pull the old gasket out of the retainer channel.



3. Starting with any corner of the door, push the barbed edge of the gasket into the retaining channel.

Freezer Drawer Rail

- The upper and lower drawer rails are removed using the same procedure.

Freezer Drawer Rail Removal

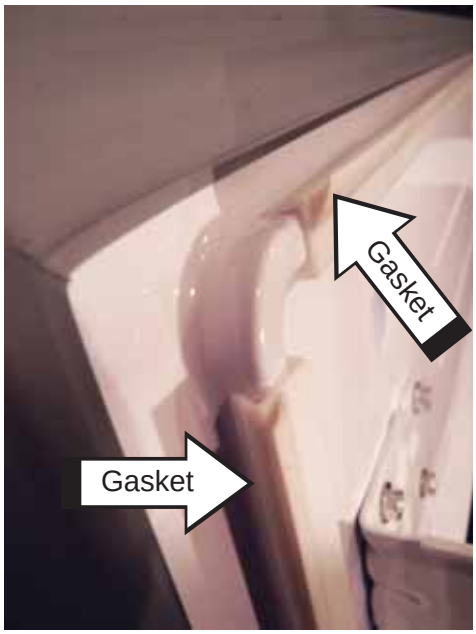
1. Remove the freezer drawer by extending the drawer fully, and then lift up on the drawer and pull out to remove.
2. Remove the eight Phillips head 5/16 inch screws securing the freezer door to the rails.

Damper Gasket

The damper gasket is an auxiliary gasket clipped onto a raised edge, molded in both freezer door liners. The gasket dampens drawer closure and prevents unintended freezer drawer openings.

Damper Gasket Removal/Replacement

1. Pull the gasket off of the raised edge of the freezer door.



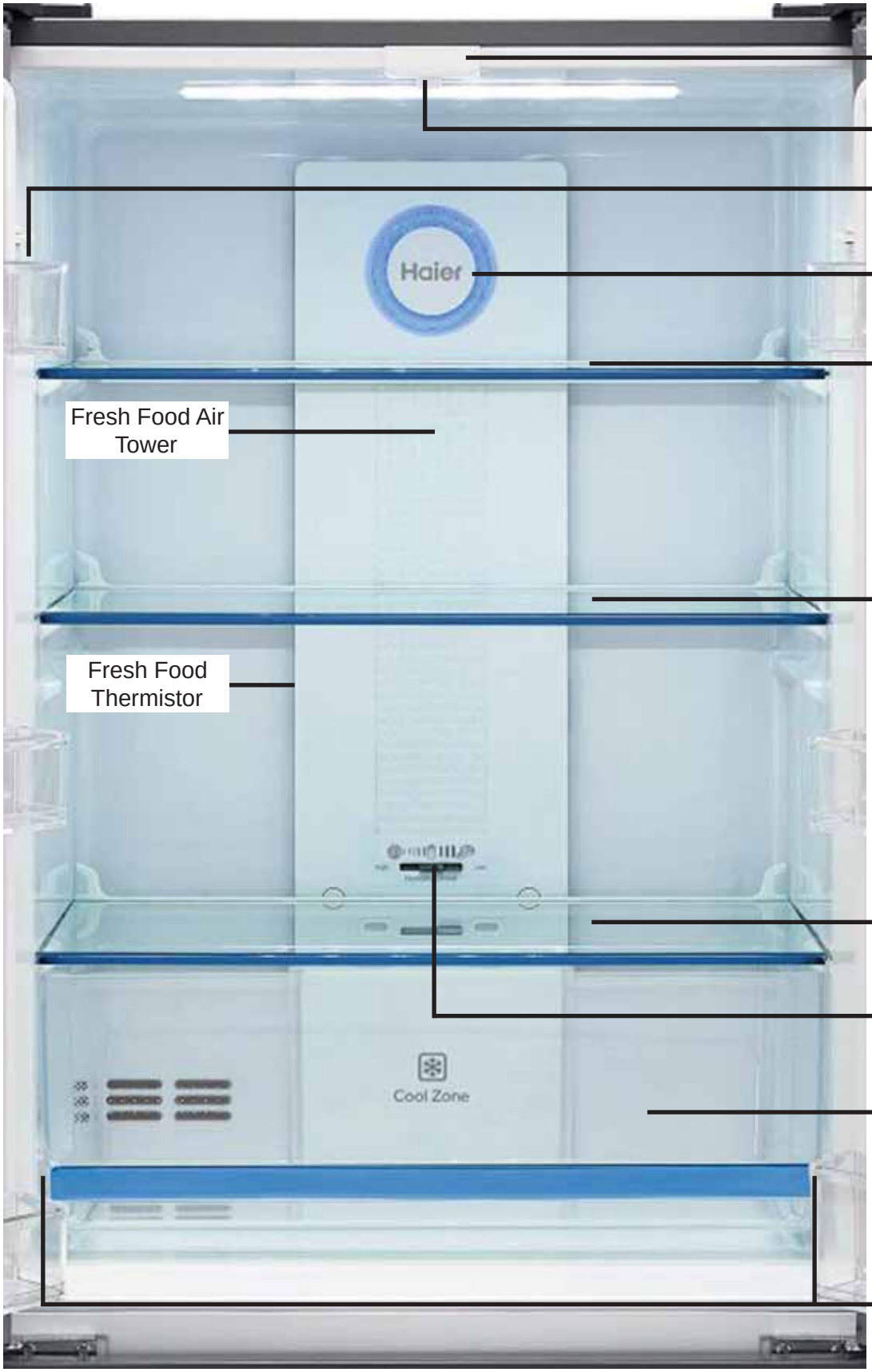
2. Push the gasket on to the raised edge of the freezer door. The raised lip edge points toward the outside.

Freezer Drawer Bins

Remove the freezer drawer bins by lifting up on the desired bin.

Fresh Food Compartment

Fresh Food Interior Component Locator



Mullion Striker

The mullion striker is located at the top center front of the refrigerator. It ensures proper mullion bar alignment upon closure of the left side door.

Mullion Striker Removal

1. Using a small flat blade screwdriver, pry the screw cover off of the striker.

2. Remove the two Phillips head screws securing the striker to the cabinet.

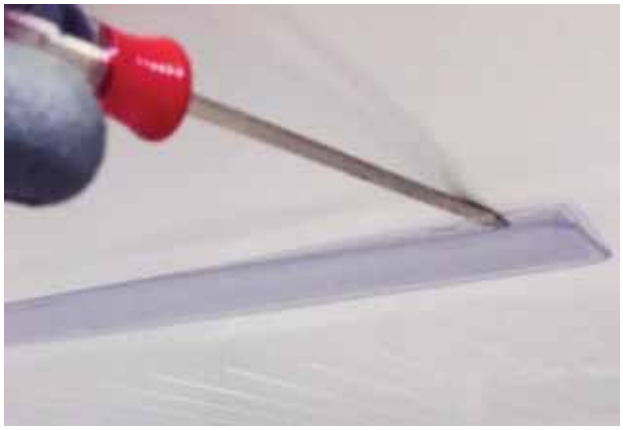
Primary LED Light and Haier LED Light

There are two LED light components in the FF section. The components are wired in parallel. With a fresh food door open, they receive 12 VDC at their connectors, or main board connector CN2 pin 5 (**white**) - pin 6 (**gray**).

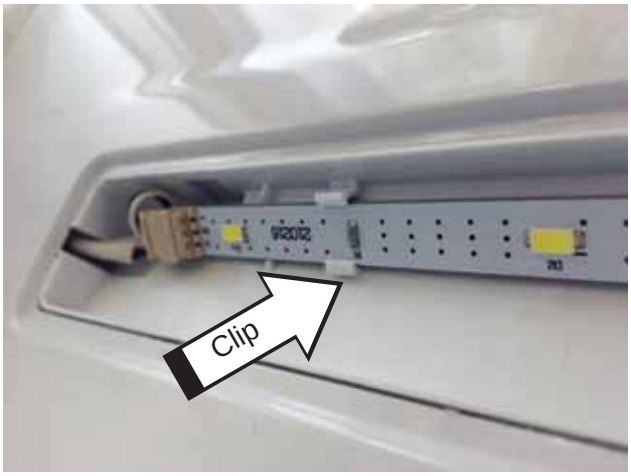
The primary LED light source is mounted in the ceiling.

Primary LED Light Removal

1. Use a thin screwdriver to remove the light cover.



2. The LED/Board assembly is supported by small clips along the edge. Press the tabs in and the board can be removed.



NOTE: Reverse this procedure to reinstall.

(*Continued next page*)

The secondary LED light source is mounted near the top of the FF air tower. It creates a circular light around the air duct cover.

Secondary LED Light Removal

1. Rotate the LED light/air duct cover clockwise less than 1/4 of a turn to loosen.

2. Pull the assembly forward.

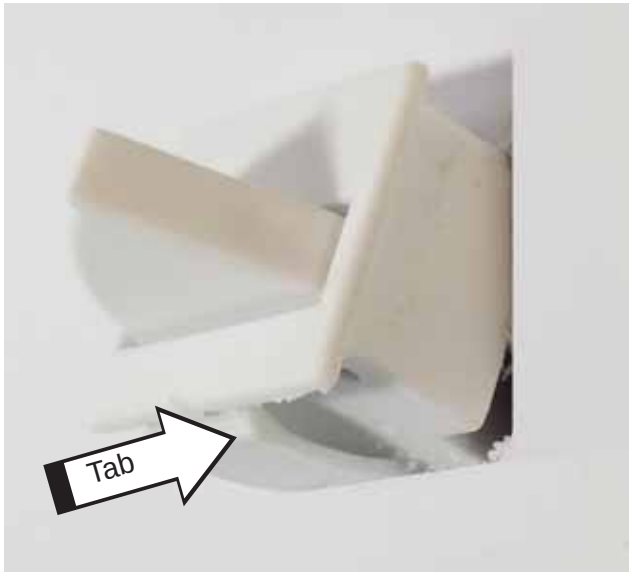
Interior Light Switches

The light switch is located on the right and left side of the fresh food interior. It is a DC single-pole, single-throw, normally-closed switch. When pushed in by the fresh food door, it opens a 5 VDC door switch signal circuit at the control board.

Light Switch Removal

1. Insert a putty knife or thin blade screwdriver under the light switch and release the locking tab.

2. Apply a lot of force on the tension tab located at the bottom of the right switch, and on the top side of the left switch while prying the switch out of the liner. Be careful not to damage the liner.



3. Pull the switch out, then disconnect the wire leads and remove.

(*Continued next page*)

Light Switch Diagnosing

- When the switch is not being pressed, the switch contacts will be closed and there will be continuity.
- When the switch is pushed in, the switch contacts will be open and there will be no continuity.
- The 5 VDC door switch circuit can be checked at the light switches or at control board connector CN2 pin 7 (**brown**) - pin 8 (**yellow**).

Shelves

The height of the shelves can be adjusted to fit storage needs.

1. To remove a shelf, lift up on both the front and back edge to disengage the shelf hooks from the shelf supports along the refrigerator wall and pull it out.

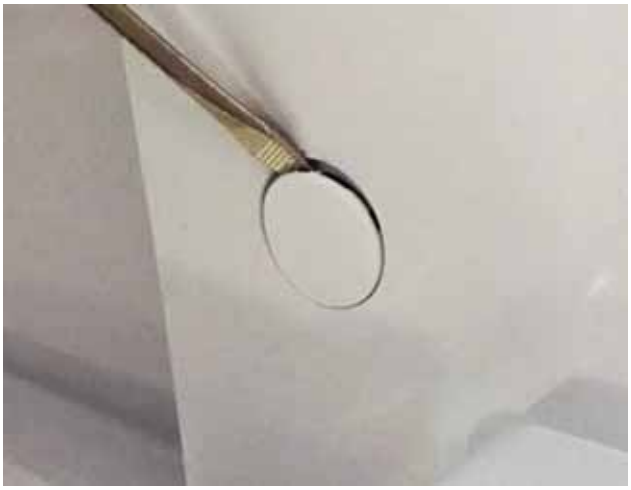
2. To reinstall a shelf, rest the shelf on both the front and rear supports. Push the shelf toward the rear of the refrigerator until the back of the shelf hooks around the rear shelf supports.

Fresh Food Air Tower

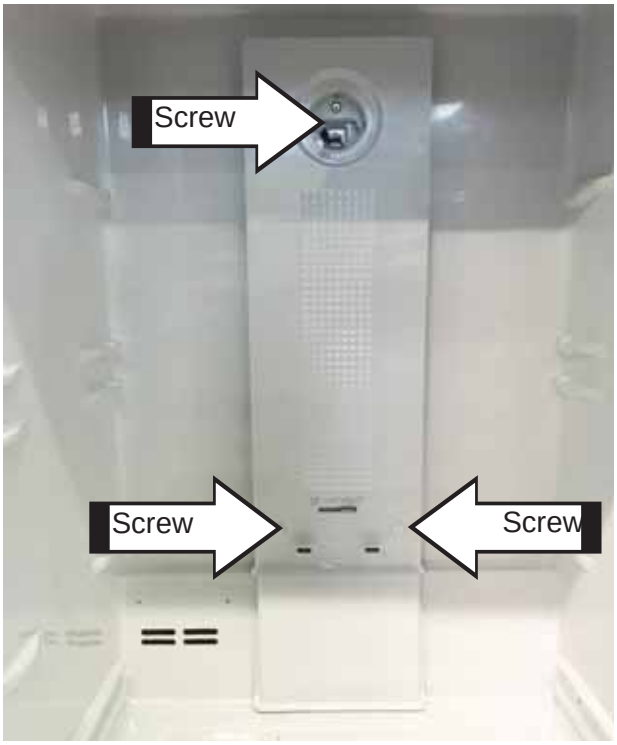
The fresh food air tower distributes air from the freezer to the fresh food compartment through vents along the sides and front. It is recessed into the center rear wall of the fresh food. It houses the fresh food damper, and fresh food sensor.

Fresh Food Air Tower Removal

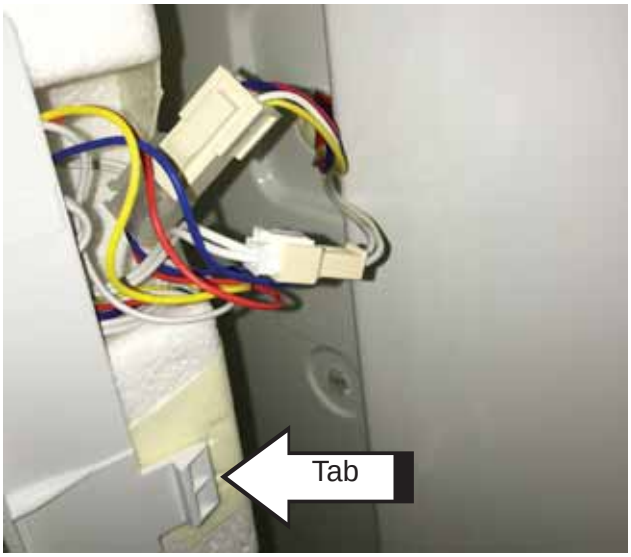
1. Remove the fresh food shelves and cool zone drawer.
2. Follow the steps for **Secondary LED Light Removal**, under **Primary LED Light and Haier LED Light** in this section of this service guide.
3. Remove the two round screw hole plugs located on each side of the vegetable drawer vents.



4. Remove the three Phillips head screws securing the FF air tower to the rear of the fresh food. One screw is located behind the secondary LED light, and two screws are behind the hole plugs removed in step 3.



5. There are five tabs on each side of the air tower. Pull on the right side of the air tower to release it from the recess in the rear wall. Be careful to not pull it out completely, as there are damper and sensor connectors on the right side that must be disconnected first.



6. Disconnect the damper and sensor connectors.

7. Remove the air tower.

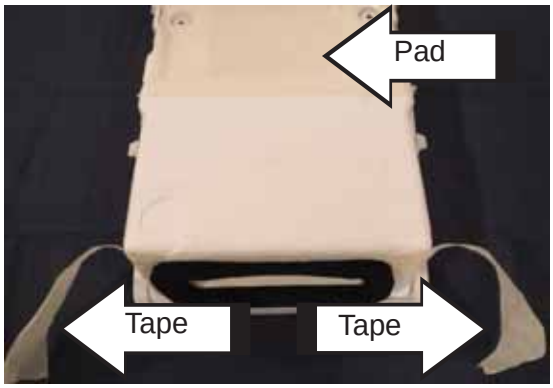
Air Damper

The air damper is located inside the bottom of the fresh food air tower duct. The damper opens and closes to regulate cold air flow into the fresh food compartment.

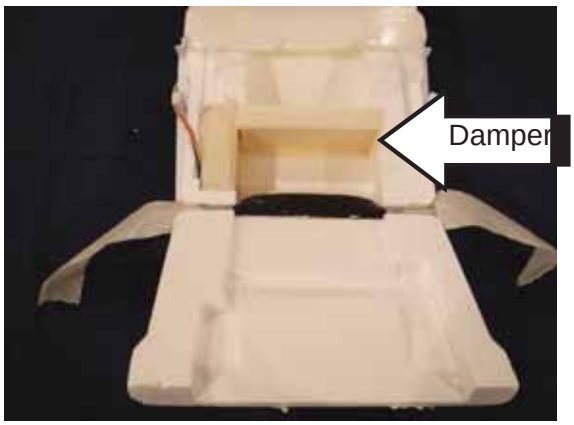
Air Damper Removal

1. Follow the steps for **Fresh Food Air Tower Removal**, under **Fresh Food Air Tower**, in this section of the service guide.

2. Peel back the masking tape on each side of the air duct.



3. Peel back adhesive pad from the rear of the EPS duct and flip open the air damper cover (leave the air duct black gasket in place).



4. Remove the air damper.

Air Damper Diagnosing

Service test mode T1 can be used to cycle damper open and T2 can be used to cycle damper closed (see the **Service Test Mode** section of this service guide).

The air damper can be checked for resistance at the damper connector and main board connector CN1.

- 4k ohms **white** - **blue** wires
- 4k ohms **yellow** - **red** wires

Sensors

Sensor	
Resistance Ω	**Temperature °F**
1.9 kΩ	77°F
2.5 kΩ	70°F
5.4 kΩ	37°F
16.8 kΩ	0°F

NOTE: To accurately test a sensor, place the sensor in a glass of ice and water (approximately 33°F) for several minutes and check for approximately 9k ohms.

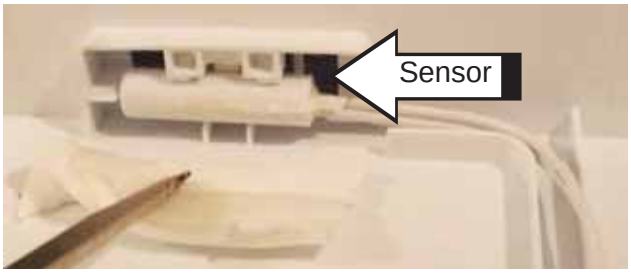
Fresh Food Sensor

The fresh food sensor is located in the Fresh Food Air Tower, at the center of the left side. The control uses the temperature sensors readings to regulate the air flow into the fresh food compartment.

Fresh Food Sensor Removal

1. Follow the steps for **Fresh Food Air Tower Removal**, under **Fresh Food Air Tower**, in this section of the service guide.
2. Separate the foam air duct from the plastic front panel by pulling out on the three locking tabs, one on each side, and one at the top.

3. Peel back the masking tape over the sensor harness. Pull back the adhesive pad over the sensor, and remove the sensor.

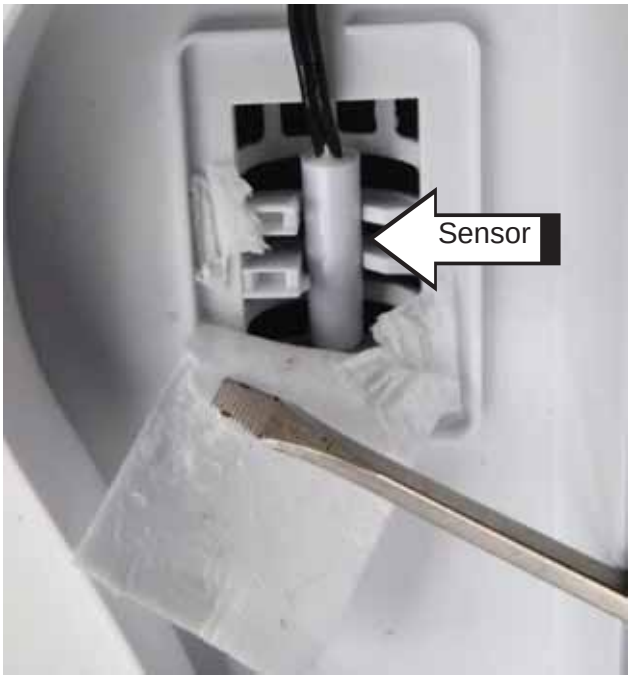


Freezer Sensor

The freezer sensor is located in the left side of the evaporator cover. It is visible from the front. It has a two-wire single connector in the upper left rear of the freezer compartment. The control uses the temperature sensor readings to regulate the air flow in the freezer compartment.

Freezer Sensor Removal

- Follow the steps for **Evaporator Cover Removal**, under **Evaporator Cover** in the **Freezer Compartment** section of this service guide.
- Pull off the adhesive tape and remove the sensor.



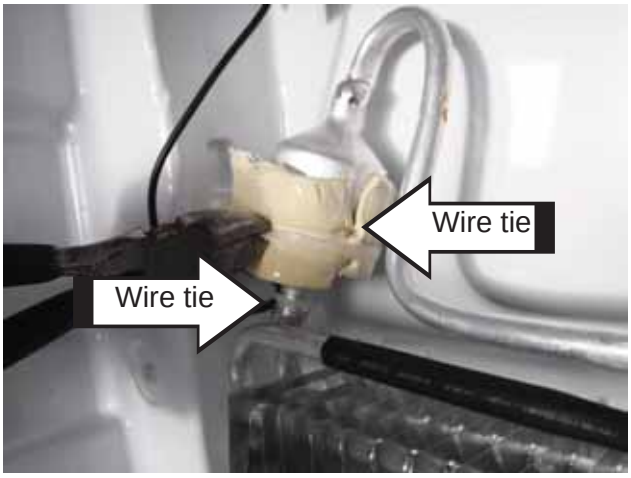
Defrost Sensor

The defrost sensor is located on top of the left side of the evaporator. It is wrapped in mastic and zip tied to the evaporator accumulator. It has a two wire single connector in the upper left rear of the freezer compartment. The control uses the temperature sensor readings to regulate the defrost cycle.

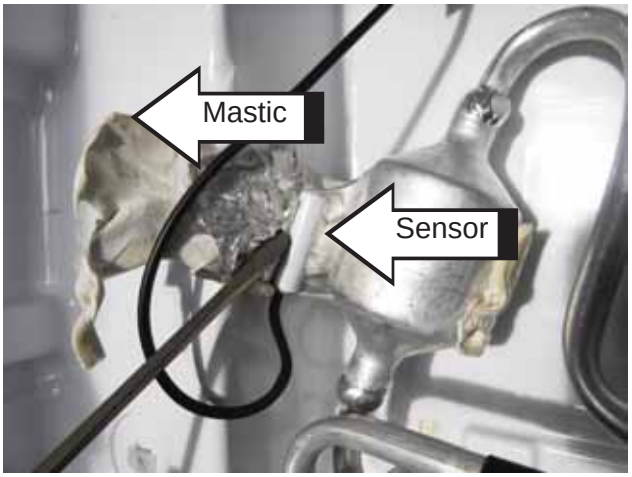
Defrost Sensor Removal

1. Follow the steps for **Evaporator Cover Removal**, under **Evaporator Cover** in the **Freezer Compartment** section of this service guide.

2. Cut the zip ties and pull off the adhesive tape for sensor removal.



3. Peel back the mastic, remove and disconnect the sensor.

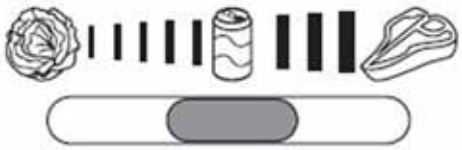


Cool Zone Drawer

The refrigerator compartment is equipped with a Cool Zone drawer, which allows storage of food at the proper temperature.

The sliding control is a manual air damper located in the fresh food air tower. It allows the flow of cold air to be adjusted at the rear of the cool zone drawer.

The manual air damper is a replaceable part. If the Cool Zone manual air damper component failed, then the fresh food air tower would need to be replaced.



Setting	Description
	Fruits and Vegetables Suitable to store fruits and vegetables
	Soft Drinks Rapid cooling and storage of beverages
	Meats Suitable to store meat.

Fresh Food Rails

The cool zone drawer rides on rails located at each side of the lower fresh food compartment.

Each rail is a one piece plastic design

Fresh Food Drawer Rail Removal

- The left and right rails are removed using the same procedure.

1. Remove the fresh food drawer by pulling it out and lifting it up.

2. Remove the three Phillips head screws securing each drawer rail to the sides of the fresh food compartment.

Left side rail pictured above

Freezer Compartment

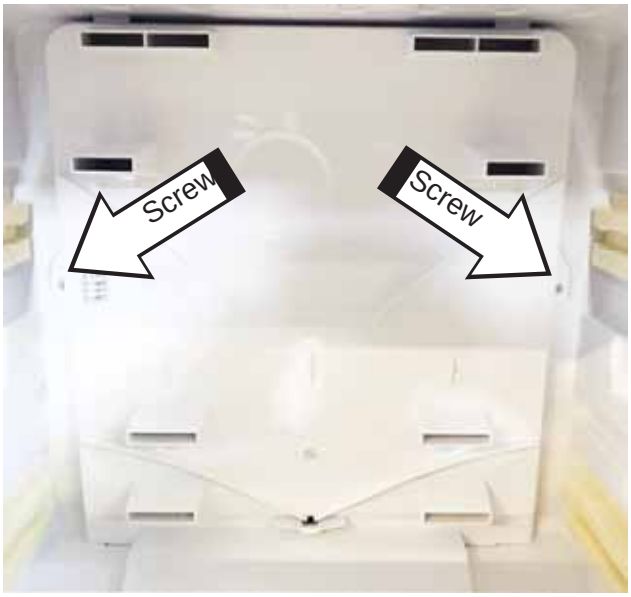
Freezer Interior Component Locator

Evaporator Cover

The evaporator cover distributes air coming through the evaporator to the freezer and the fresh food compartment through vents along the top and front. It is recessed into the center rear wall of the freezer. It houses the evaporator fan, and freezer sensor.

Evaporator Cover Removal

1. Remove the freezer drawers (see **Freezer Drawer Removal** in the **Freezer Drawers** section of this service guide).
2. Remove the two Phillips head screws securing the evaporator cover to the rear of the freezer.



3. Pull the evaporator cover out at the bottom to release the two tabs on each side of the cover that hold it in the rear of the freezer. Be careful to not pull it out completely as there are fan and sensor connectors on both sides that must be disconnected first.
4. Disconnect the fan and sensor connectors.
5. Remove the evaporator cover.

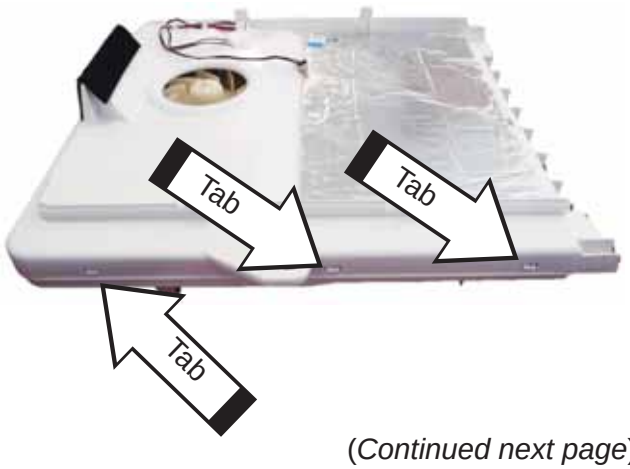
Evaporator Fan

The evaporator fan is a single speed fan which creates the air circulation in the freezer and fresh food compartments. It has a three-wire single connector in the upper left rear of the freezer compartment. The fan receives 9 VDC from the control board when in cooling mode and both fresh food doors are closed.

Evaporator Fan Removal

1. Follow the steps for **Evaporator Cover Removal**, under **Evaporator Cover** in the **Freezer Compartment** section of this service guide.
2. Remove the one Phillips head screw in the front lower center of the evaporator cover.

3. Use a flat screwdriver to separate the 13 locking tabs around all sides of the evaporator cover assembly.

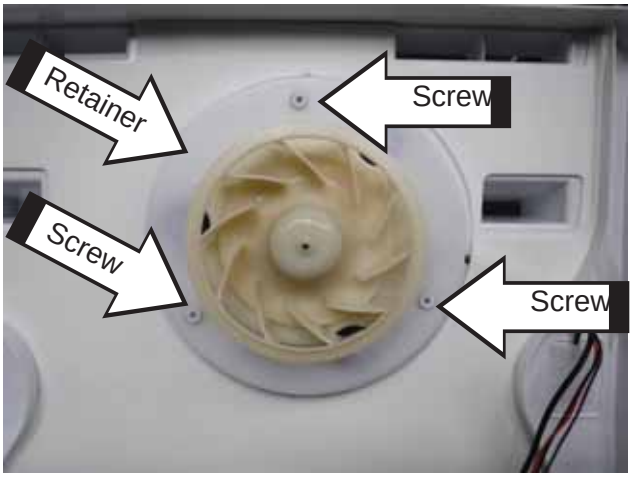


(*Continued next page*)

4. The fan and sensor harnesses are routed through the rear half of the evaporator cover assembly. Peel back the adhesive pad covering the opening to feed the harnesses through the cover without damage.

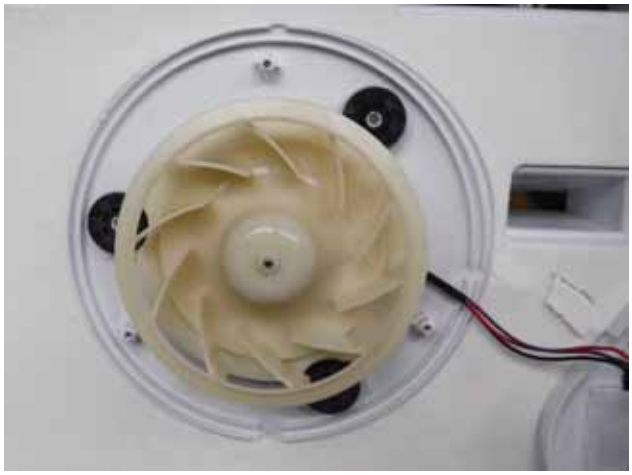
5. Separate the two halves of the evaporator cover.

6. Remove the three Phillips head screws and retainer securing the evaporator fan to the cover.



7. Neatly tear the adhesive pad covering the fan harness.

8. Remove the evaporator fan.



Evaporator Fan Diagnosing

Service test mode T1 can be used to cycle power to evaporator fan (see the **Service Test Mode** section of this service guide).

The evaporator fan can be checked at the fan connector or at control board connector CN1.

- 9 - 15 VDC from pin 2 (**red**) - pin 1 (**black**) wires at the fan connector. Or check for 9 - 15 VDC at control board connector CN1 pin 1 (**brown**) - pin 3 (**black**)
- 2.5 VDC (fan feedback) at CN1 connector pin 2 (**orange**) - pin 3 (**black**). If the motor is moving at the proper speed, it should create this 2.5 VDC fan feedback.

NOTE: If the control doesn't get fan feedback, it will stop the fan. It will try to restart after 1 minute.

NOTE: The fan stops when either fresh food door is opened and will delay start for 10 seconds when doors are closed. If either fresh food door is left open for more than 7 minutes, the fan will restart (interior lights go out also).

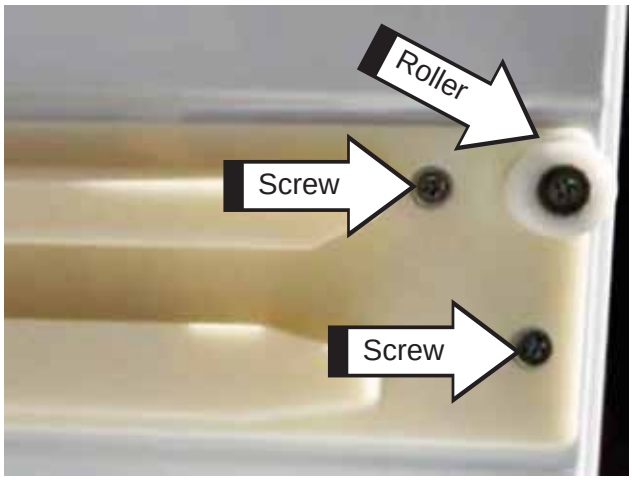
Freezer Drawer Rail Guides

The upper and lower freezer drawers ride on drawer rail guides located at each side of the freezer compartment.

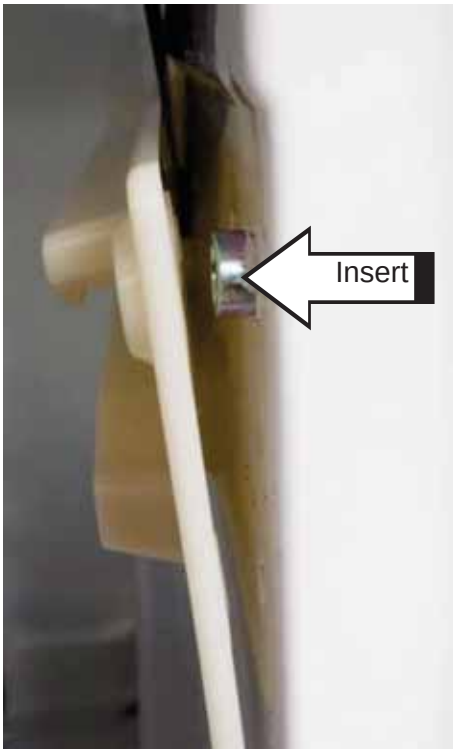
The upper and lower rails guides are the same and are removed using the same procedure.

Freezer Drawer Rail Removal

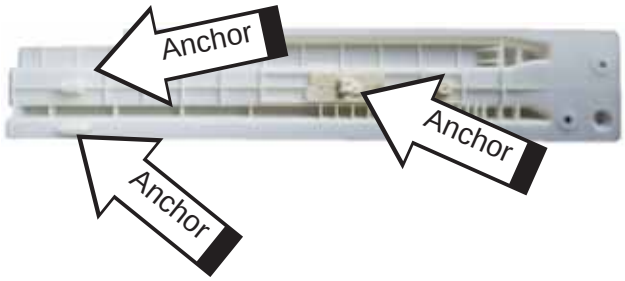
1. Remove the freezer drawer by extending the drawer fully, and then lift up on the drawer and pull out to remove.
2. Remove the two Phillips head screws and the roller securing the freezer rails to the freezer wall.



3. Pull the front of the rail away from the wall to clear the roller threaded insert in the cabinet.



4. Pull the rail forward releasing the three rail guide anchors from the freezer wall. The right side rail guide is pictured below to show the anchors on the back side.



Defrost Operation

Adaptive Defrost

Adaptive Defrost is a defrost system that adjusts to a refrigerator's surrounding environment and household usage. Unlike conventional defrost systems that use electromechanical timers with a fixed defrost cycle time, adaptive defrost utilizes electronic controls to determine when the defrost cycle is necessary.

In order to accomplish the optimum defrost cycle time, the main control board monitors the following refrigerator operations:

- Length of time the refrigerator doors were open since the last defrost cycle
- Length of time the compressor has run since the last defrost cycle
- Amount of time the defrost heaters were on in the last defrost cycle

Adaptive Defrost is divided into 5 separate cycles. Those operations are:

- Cooling Operation
- Pre-Chill Operation
- Defrost Heater Operation
- Dwell Period
- Post Dwell

Adaptive Defrost (Cooling Operation)

During the cooling operation, the main board monitors the fresh food door openings, and compressor run times. The board counts the time that the fresh food doors are open, and reduces the length of time between defrosts for each minute that door is open. One or both fresh food doors are counted as one. If the doors are not opened, the compressor will run up to 96 hours between defrosts. If the doors are opened frequently and/or for long periods of time, the compressor run time between defrosts will be reduced to as little as 7 hours.

Adaptive Defrost (Pre-Chill Operation)

When the main control board determines that defrost is necessary, it will force the refrigerator into a 33 minute continuous cool mode called "pre-chill". During pre-chill, the freezer temperature may be driven below the set point. However, the fresh food temperature will be regulated. For the last 3 minutes of pre-chill, the main board turns the compressor off, closes the fresh food damper, and runs the evaporator fan at high speed.

Defrost Heater Operation

After the pre-chill, the main board turns off the evaporator fan. During defrost operation, the main board monitors the evaporator temperature using defrost sensor inputs. When the thermistor senses 50°F, the main board will terminate the defrost heater operation. The maximum defrost cycle (heater on) time is 60 minutes (main board time out). The defrost system is protected by thermal fuses. The thermal fuses open at 171°F and are not resettable.

Dwell Period

After the defrost heater operation has been terminated by the main control board, a 6 minute dwell period occurs. During this period, the compressor and evaporator fan remain off. The remaining frost melting from the evaporator will continue to drip and drain so that, prior to the cooling operation, the evaporator will be totally clear of any moisture.

Post Dwell Period

The post-dwell state is entered following dwell. During the post-dwell state, the compressor will start and FZ evaporator fan will remain off for 5 minutes.

NOTE:

The defrost cycle is usually locked out until after the compressor has accumulated 7 hours of total run time. After the 7 hours, the adaptive defrost systems determines when to start and how long the defrost cycle should last based on door openings and other data collected by the main board.

NOTE:

During Defrost:

- If the defrost sensor temperature is ≥ 50 degrees Fahrenheit, the main board will exit defrost.
- If the defrost sensor fails, defrost max time is set to 15 minutes.
- If the defrost cycle extends past 60 minutes, and the defrost sensor temperature is still below 50 degrees Fahrenheit, the main board then terminates the defrost cycle.

Defrost Components

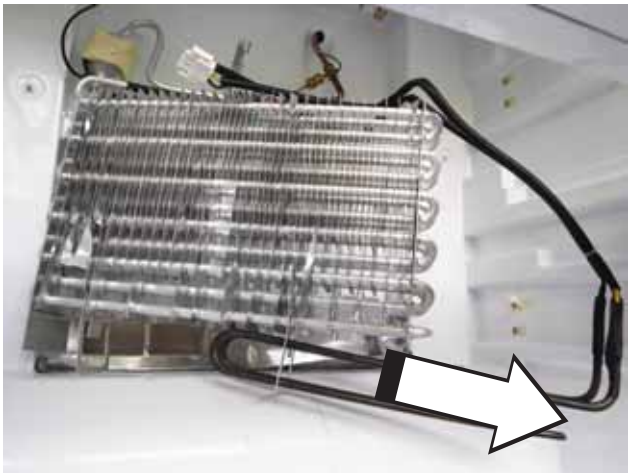
Defrost Heater

The defrost heater is a Calrod type which has a resistance of 74.3 ohms. It is mounted under and secured to the right side of the evaporator with an aluminum strap. It has a three-wire single connector in the upper right rear of the freezer compartment. The heater receives 120 VAC from the main board.

Defrost Heater Removal

1. Follow the steps for **Evaporator Cover Removal**, under **Evaporator Cover** in the **Freezer Compartment** section of this service guide.
2. Remove the aluminum strap securing the heater to the evaporator coil at the lower right.

3. Gently move the right side of the evaporator out into the freezer area.
4. Slide the heater out of the evaporator frame.



Defrost Heater Diagnosing

Service test mode T2 can be used to cycle power to heater (see the **Service Test Mode** section of this service guide).

The defrost circuit can be checked at the control board connector CN4 pin 7 (**red**) - pin 9 (**blue**).

NOTE: The thermal fuses are in a series circuit with the defrost heater. If the heater circuit checks open from the control board connector, it will be necessary to check at the heater wiring connector to determine if the heater, or thermal fuse is open.

Defrost Thermal Fuses

The thermal fuses are non-resettable. They are zip tied together on the right side of the evaporator with their own harness. They have a four-wire single connector located in the upper right rear of the freezer compartment. They are designed to ensure the defrost cycle doesn't go into a run-away state.

The thermal fuses are in line with the defrost heater and will open when they reach a temperature of 171°F.

Defrost Thermal Fuse Removal

1. Follow the steps for **Evaporator Cover Removal**, under **Evaporator Cover** in the **Freezer Compartment** section of this service guide.

   Test the fusible link for continuity prior to exchange.

2. Cut the zip ties securing the fuses to the evaporator.

3. Disconnect the thermal fuses harness connector and remove the thermal fuse.

Thermal Fuse Diagnosing

Service test mode T2 can be used to cycle power to the thermal fuses in the heater circuit (see the **Service Test Mode** section of this service guide).

The thermal fuses can be checked at the control board connector CN4 pin 7 (**red**) - pin 9 (**blue**).

NOTE: The thermal fuses are in a series circuit with the defrost heater. If the heater circuit checks open from the control board connector, it will be necessary to check at the heater wiring connector to determine if the heater, or thermal fuses are open.

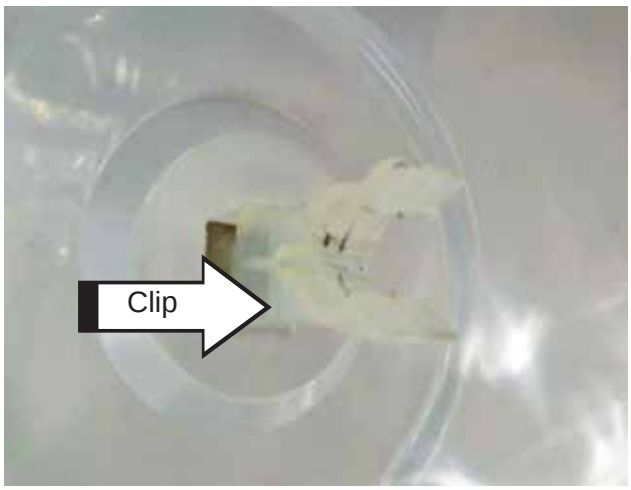
Evaporator

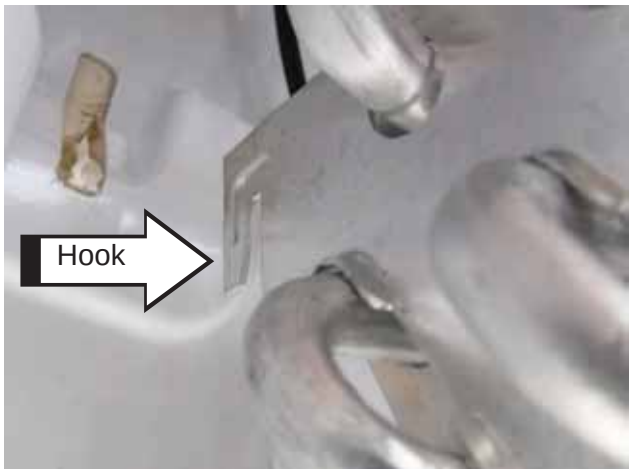
Located behind the evaporator fan, the evaporator is made up of copper and aluminum. Heat energy is pulled into the refrigerant through the evaporator coils to later be dispersed by the hot gas tubing. The evaporator is secured to the rear wall of the freezer with hooks at each top corner and a plastic clip in the center.

Evaporator Removal

1. Remove the seven Phillips head screws securing the machine compartment cover to the rear cabinet.
2. Recover the refrigerant.
3. Follow the steps for **Evaporator Cover Removal**, under **Evaporator Cover** in the **Freezer Compartment** section of this service guide.
4. Follow the steps for removing the thermal fuses, defrost sensor, and defrost heater from the evaporator.

   Caution: Protect wiring from heat during de-soldering and re-soldering if brazing.
5. De-solder the capillary tube (if brazing); or score and cut the tube closest to the evaporator connection (if using LokRing).
6. De-solder the suction line (if brazing); or cut the tubing closest to the evaporator connection (if using LokRing).

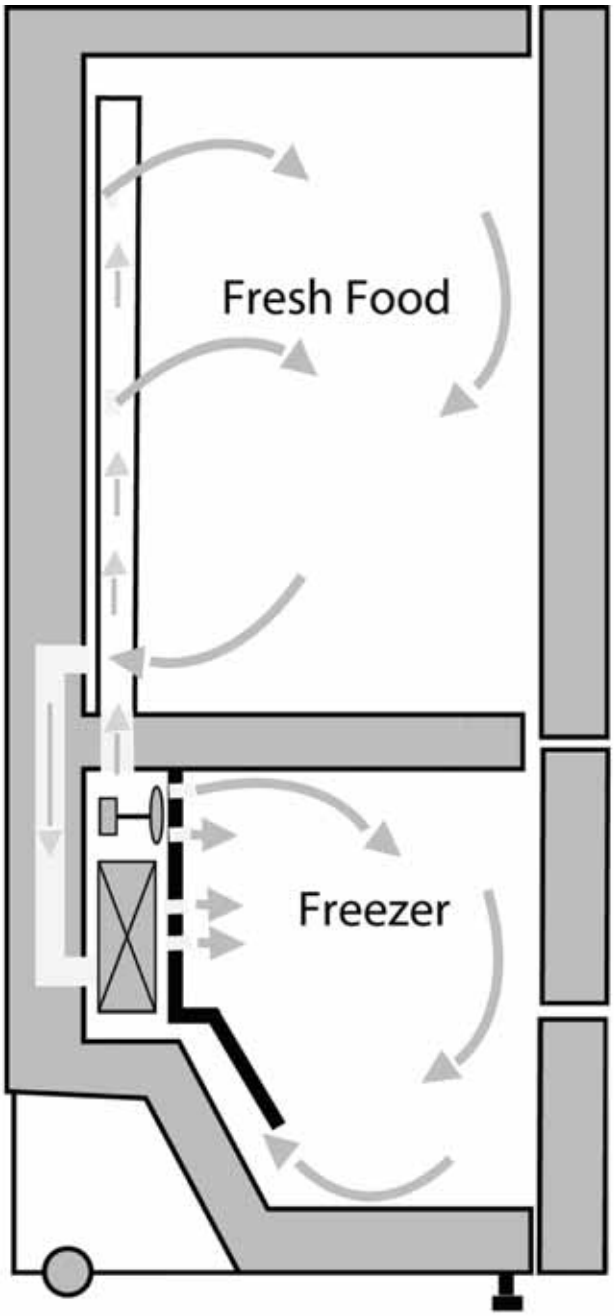




7. Pull the bottom of the evaporator out slightly to release the center clip and then lift up to unhook from the rear wall.

Important: The filter dryer should be replaced when any sealed system repair is performed. Refer to the mini manual or the model/serial tag for the exact refrigerant type and charge quantity.

Air Flow



Freezer Air Flow

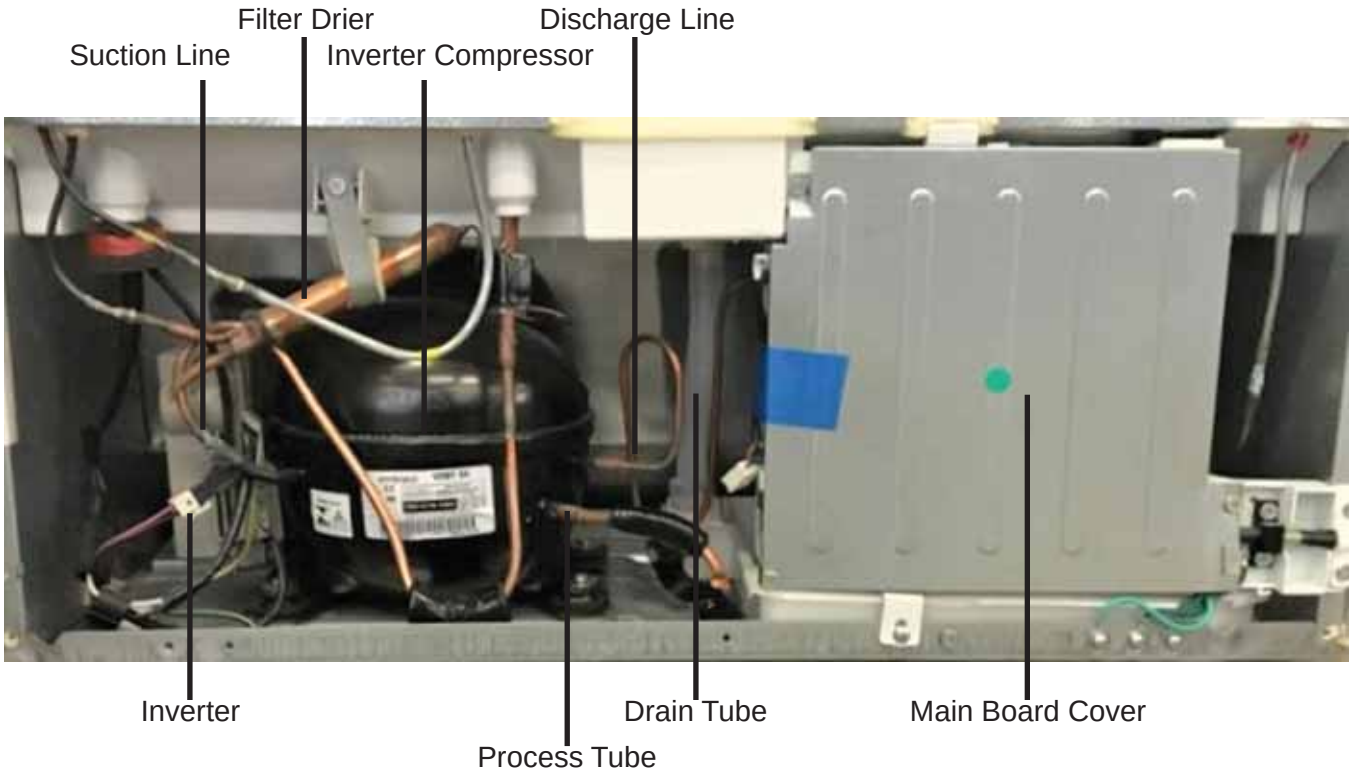
Cold air from the evaporator is forced against the evaporator cover. It is then discharged through six vents along the front of the evaporator cover. Air is circulated by the evaporator fan throughout the freezer compartment, where it picks up heat and moisture. The evaporator fan then draws the warmer, moisture-laden air through return louvers in the bottom of the evaporator cover. The air is then drawn through the evaporator where heat is removed and moisture is deposited as frost .

Fresh Food Air Flow

Some of the cold air that is being forced against the air duct tower is diverted through the upper portion of the evaporator cover and is pushed through the mullion opening into the fresh food air tower. Air circulates throughout the fresh food compartment, picking up heat and moisture. The air is then returned to the evaporator through the return duct located at the rear lower left of the fresh food interior. The picture below shows the mullion opening in the rear of the fresh food with the air tower.

View of the lower rear fresh food section behind the control housing.

Machine Compartment



Rear Access Cover

The metal rear access cover provides protection for the machine compartment.

Rear Access Cover Removal

- Remove the seven Phillips head screws securing the machine compartment cover to the rear cabinet.

Defrost Drain Tube

The defrost drain tube is located in the rear of the machine compartment. It drains evaporator defrost water out of the cabinet and into the drain tray located to the right of the compressor (behind the main board).

Defrost Drain Tube Removal

1. Remove the seven Phillips head screws securing the machine compartment cover to the rear cabinet.
2. Pull the tube downward to remove it from the cabinet drain, and up to remove it from the drain tray.

Inverter

The inverter controls the compressor speed by frequency variation and by Pulse Width Modulation (PWM). It operates on 120 VAC.

The inverter receives commands from the control board. The control board will send a PWM (Pulse Width Modulation) run signal from the CN8 connector of between 2 - 3 VDC effective voltage to the inverter (all wires must be connected). The inverter will select compressor speed (voltage and frequency output) based on this signal. The control board will only send a run signal to the inverter when the compressor should be on.

Inverter Diagnosing

Operating voltages can be checked at the inverter connectors. If voltages are correct and the compressor won't start, the compressor needs to be checked before assuming the inverter is at fault.

- Inverter connector pin 1 (**white**) - pin 2 (**black**) = 120 VAC

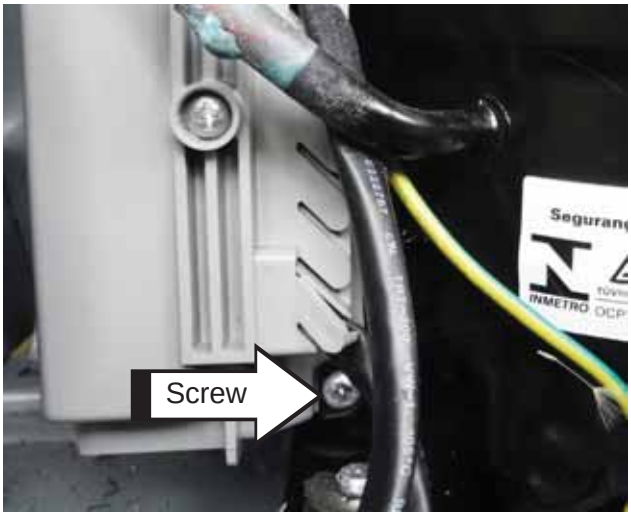
Signal voltage can be checked at the control board connector CN8, or at the DC inverter connector.

(*Continued next page*)

- CN8 pins 1 (**red**) - pin 2 (black) = 2 - 3 VDC when harness is disconnect
- CN8 pins 1 (**red**) - pin 2 (**black**) = 2 - 3 VDC with connected harness

Inverter Removal

1. Remove the seven Phillips head screws securing the machine compartment cover to the rear cabinet.
2. Remove the green 1/4 in. hex head screw securing the inverter ground wire to the floor of the machine compartment.
3. Disconnect AC and DC connectors.
4. Remove the Phillips head screw securing the inverter to the compressor.
5. Lift up on the inverter and disconnect the connector from the compressor



Inverter Compressor

The compressor is a reciprocating, variable speed, 4-pole type. It operates on 3-phase, 80 to 230 VAC within a range of 57 to 104 Hz.

An inverter controls the speed of the compressor by frequency variation and by Pulse Width Modulation (PWM). Each winding of the compressor should be approximately 16 ohms Ω.

Caution: Do not attempt to direct-start the compressor. The compressor operates on a 3-phase power supply. **Applying 120 VAC to the compressor will permanently damage the unit.** It is not possible to start the compressor without an inverter.

NOTE: Some voltmeters will not be able to read voltage output or frequency from the inverter and it is not recommended that it be measured.

Compressor Removal

1. Follow steps for **Inverter Removal**, under **Inverte**r in this section.
2. Recover the refrigerant.

   Caution: Protect wiring from heat during de-soldering and re-soldering if brazing.
3. De-solder the suction tube (if brazing); or cut the tube closest to the evaporator connection (if using LokRing).
4. De-solder the discharge line (if brazing); or cut the tubing closest to the evaporator connection (if using LokRing).
5. Remove the four retaining clips from the compressor studs.
6. Lift the compressor off of the compressor studs.

Important: The filter dryer should be replaced when any sealed system repair is performed. Refer to the mini manual or the model/serial tag for the exact refrigerant type and charge quantity.

Main Board

The control board controls all the functions of the refrigerator and is located in the machine compartment on the right side. The board is supplied with 120 VAC between CN6 (L) - CN5 (N) and will deliver AC and DC voltage to operate components. Voltage checks can be made at the connectors on the board.

Main Board Removal

1. Remove the seven Phillips head screws securing the machine compartment cover to the rear cabinet.
2. Remove the blue tape securing the assembly line test harness to the control board housing and cover.
3. Remove the four Phillips head screws securing the control board cover to the housing.
4. Disconnect the ground wire clip from the lower right corner of the control board cover.
5. Disconnect the connectors and remove the four Phillips head screws in each corner of the board.

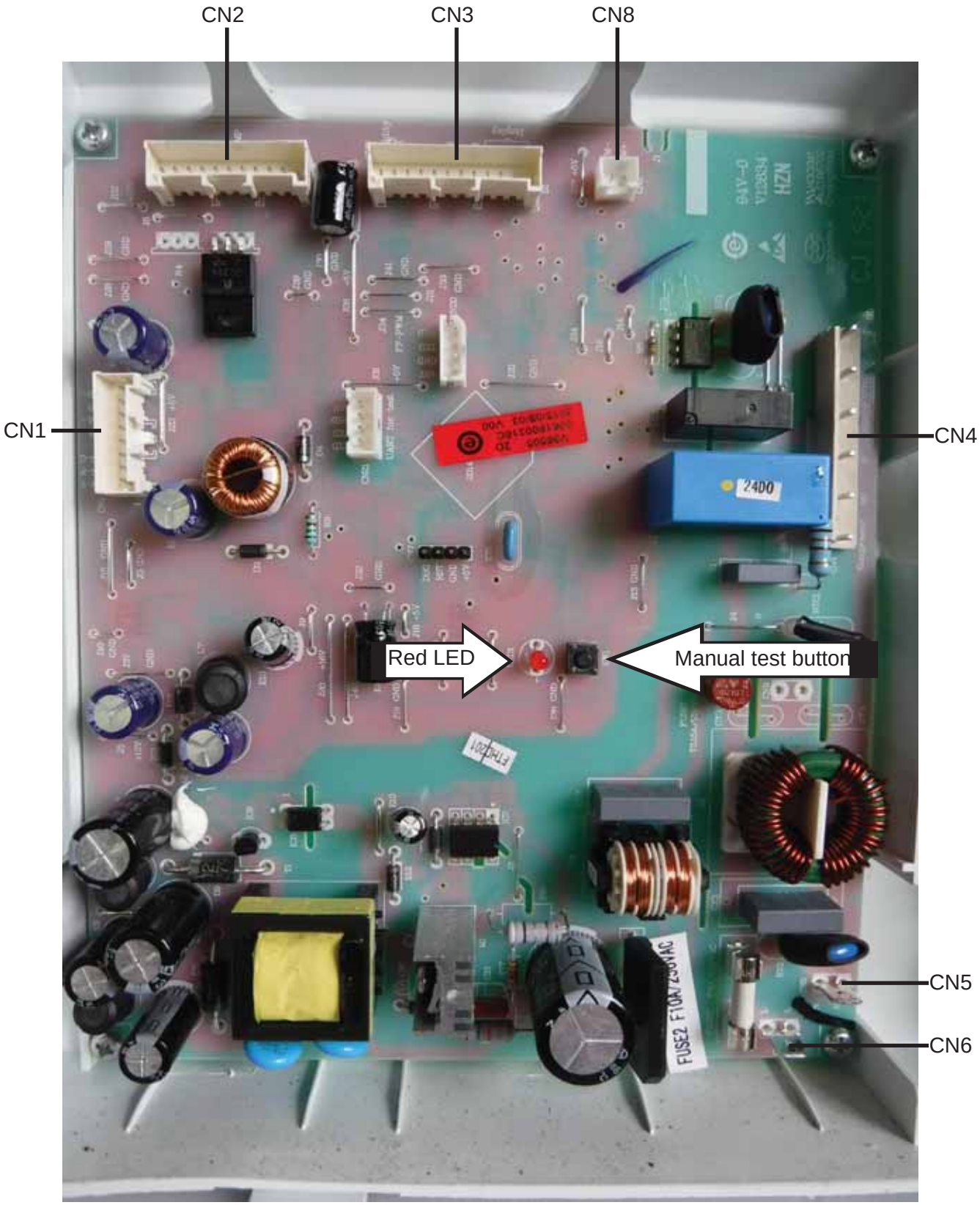
Main Board Diagnosing

When checking for a dead or nonresponsive control board, verify supply voltage to the board at CN6 to neutral at CN5 and then check communication voltage at CN3. A LED on the board will blink during normal operations. The flashing pattern does not indicate any faults, only that the main board has communication. If the red LED is not blinking, it may be an indication of a bad main board or a supply voltage issue to the refrigerator.

- CN6 (**black**) to CN5 (**white**) = 120 VAC
- CN3 pin 9 (**red**) to CN3 pin 10 (**brown**) = 5 VDC
- CN3 pin 3 (**black**) to CN3 pin 4 (**white**) = 5 VDC

NOTE: When checking VDC at CN3, if no voltage is present, remove all other DC components from the board in case a component is shorted and retest the voltage at CN3. Once voltage is present at CN3 on the control board, reconnect DC connectors one at a time to determine which circuit contains the shorted component.

Main Board Connector Locations



Cabinet Bottom

Cabinet Bottom Component Locator

Leveling Legs

Cabinet leveling is done by adjusting the front leveling legs located at the front bottom corners of the cabinet. The rear of the cabinet does not have any adjustment.

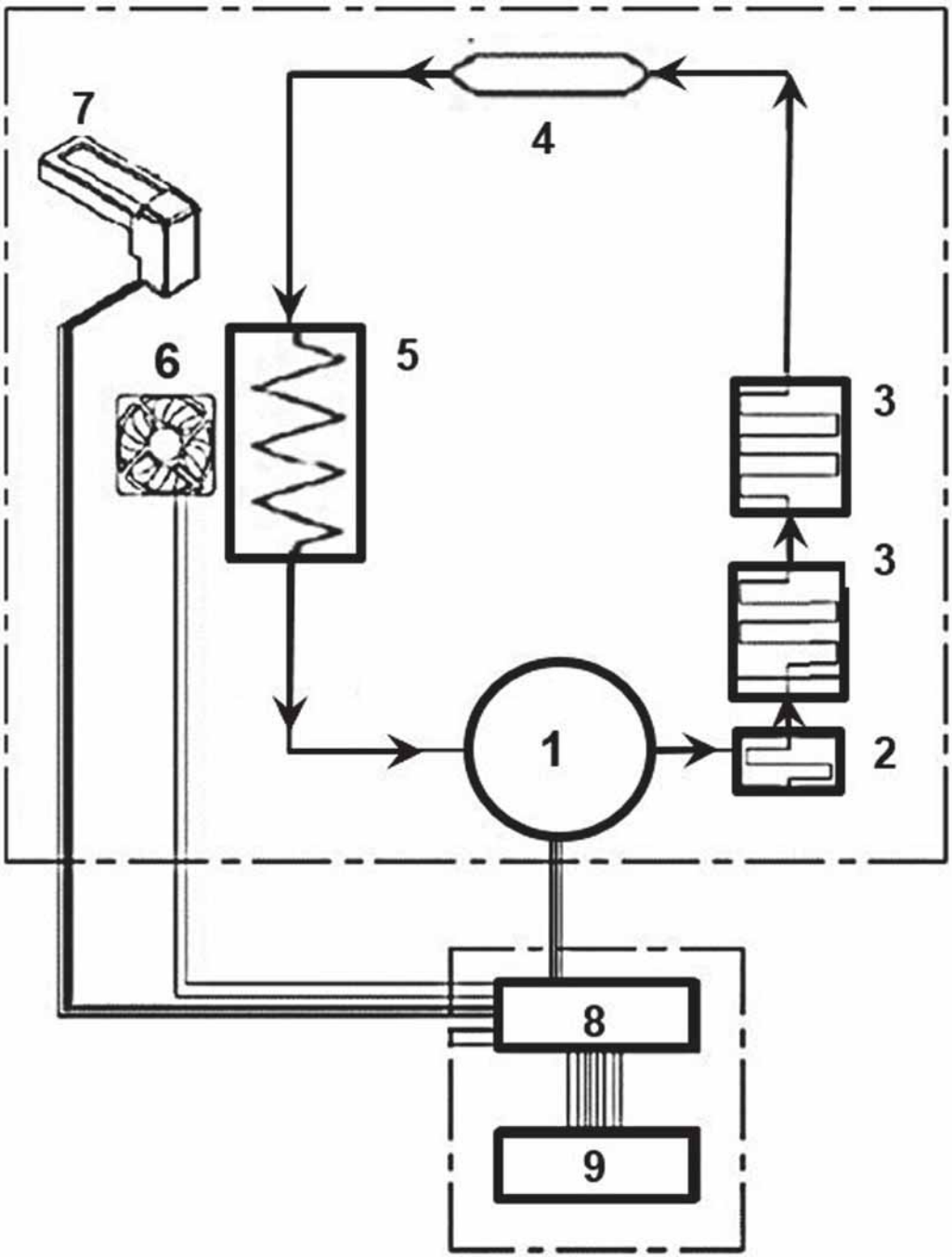
Leveling Legs Removal

1. Remove any food present in the freezer or fresh food section.
2. Remove the retaining clips securing the leveling legs to the cabinet bracket.
3. Tilt the cabinet back and place a prop block under each side of the refrigerator.
4. Turn the leveling leg until the leg drops from the front roller assembly

Rear Rollers

Rollers at the rear base of the cabinet enable the consumer to easily move the refrigerator. The rear rollers cannot be replaced.

Cooling System



1. Inverter Compressor
2. Auxiliary Pan Condenser
3. Hot Gas Loop
4. Filter Drier
5. Evaporator
6. Evaporator Fan
7. Fresh Food Air Tower Damper
8. Main Board
9. User Interface (UI)

Replacing Sealed System Components

The following information will cover the evacuation and charging procedure for seal system work. Detailed instruction will also be provided on replacing each sealed system component using LOKRING. If the component will be replaced by brazing joints, follow the evacuation procedure and unsolder and solder the joint or joints for the component being replaced instead of using the LOKRING connector.

WARNING:

- Before cutting or using a torch on refrigerant tubes, recover the refrigerant from the system using approved recovery equipment.
- Never charge new refrigerant through the purge valve. This valve is always located on the high pressure side of the system.
- Never apply heat from any source to a container of refrigerant. Such action will cause excessive pressure in the container.
- Always wear appropriate PPE (Personal Protective Equipment) when working with refrigerants and nitrogen holding a charge in some replacement parts. Contact with these gases may cause injury.

Evacuation and Charging Procedure

1. Attach the hose from the charging cylinder to the process tube port on the compressor.
2. Evacuate the system to a minimum 20 in. vacuum using the refrigerator compressor and recovery pump, which is attached to the new drier assembly.
3. Turn off the recovery pump. Close the ball valve on the hose connected to the high-side port connection. Add 3 ounces of refrigerant to the system. Let the refrigerator operate and circulate the refrigerant for 5 minutes.
4. Open the ball valve. Recover the purge/sweep charge using the recovery pump and the refrigerator compressor until a 20 in. vacuum is attained. Close the ball valve and remove the recovery hose.
5. Charge the system with the exact amount of refrigerant specified on the name plate.
6. Disconnect the power cord to the refrigerator. This allows the pressure to equalize. After 3 to 5 minutes, the low-side pressure will be positive and then the hose-to-charging port can be disconnected.
7. Using an electronic leak detector, check all brazed joints and both Schrader ports. Reinstall caps to the Schrader ports.

Access Valve (LOKRING)

1. Remove the seven Phillips head screws securing the machine compartment cover to the rear cabinet.

2. Cut the compressor access tube as pictured below. There must be a minimum of 1 1/8 inches of straight tubing for LOKRING.

3. Cut the access valve tube as pictured below. There must be a minimum of 1 1/8 inches of straight tubing for LOKRING.

Access valve WJ56X10008 is pictured above. The same procedure applies to Access valve WJ56x61.

CAUTION: Tubing must be clean and free from burrs when using LOKRING.

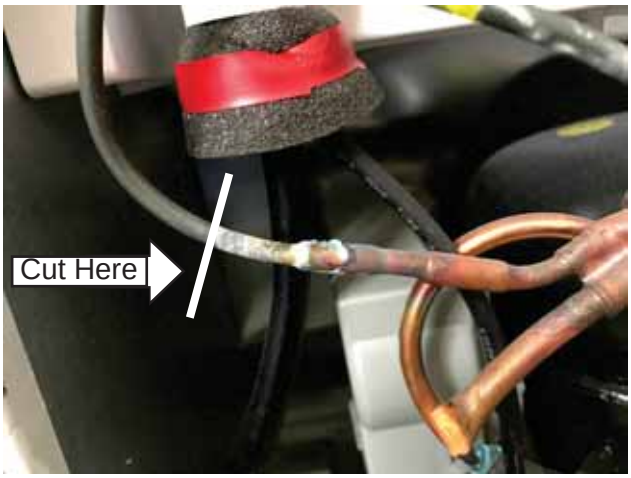
4. Complete the access valve installation using the LOKRING method. LOKRING connector WR97X10031 must be used on access port to access valve tubing.

NOTE: Use FRESH “Lok-Prep” when performing the LOKRING method.

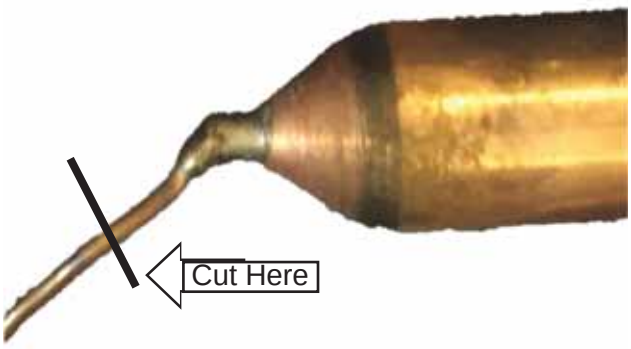
5. Follow steps 1 through 7 of the **Evacuation and Charging Procedure** to recharge the system.

Filter Drier Replacement (LOKRING)

1. Remove the seven Phillips head screws securing the machine compartment cover to the rear cabinet.
2. Recover the refrigerant.
3. Remove the old drier.
    - Cut the inlet tube (hot gas loop side) close to the brazed joint as pictured below. There must be a minimum of 1 1/8 inches of straight tubing for LOKRING.



4. Cut the cap tube close to the brazed joint.



5. Prepare the new drier.
    - Cut the end tips off as pictured below. There must be a minimum of 1 1/8 inches of straight tubing for LOKRING.

Filter Drier WR86X96 Pictured above. The same procedure applies to WR86X93.

CAUTION: Tubing must be clean and free from burrs when using LOKRING.

(*Continued next page*)

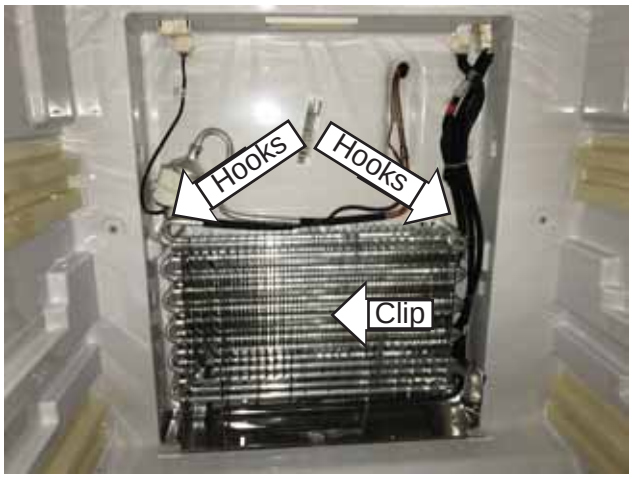
Complete the filter drier install by using the LOKRING method. The LOKRING connector WR97X10033 must be used on inlet tube (hot gas loop) to the filter drier tubing. The LOKRING connector WR97X10085 must be used on the cap tube to filter drier tubing.

NOTE: Use FRESH “Lok-Prep” when performing the LOKRING method.

Follow steps 1 through 7 of the **Evacuation and Charging Procedure** to recharge the system.

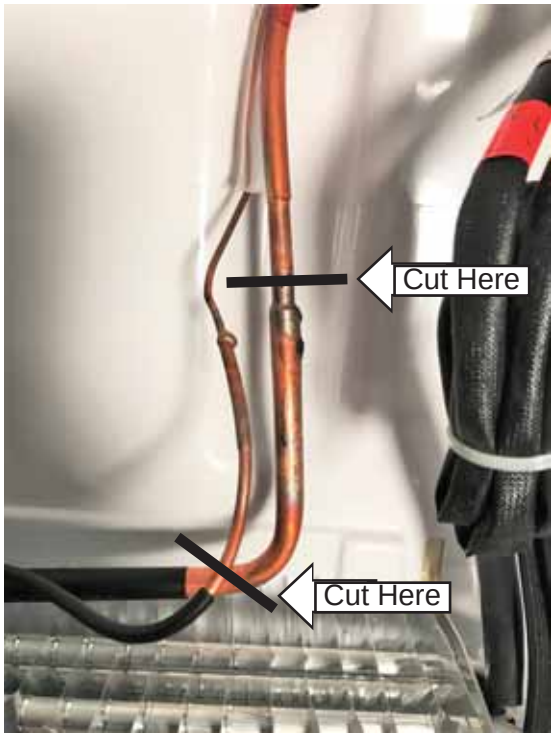
Evaporator Replacement (LOKRING)

1. Remove the machine compartment cover.
2. Recover the refrigerant.
3. Follow the steps for **Evaporator Cover Removal**, under **Evaporator Cover** in the **Freezer Compartment** section of this service guide.
4. Follow the steps in **Defrost Heater Removal** and the steps in **Defrost Thermal Fuse Removal** in the **Defrost Components** section of this service guide.
5. Pull the bottom of the evaporator out and then lift up to unhook it from the rear wall.



6. Remove old evaporator.

    - Cut the outlet tube close to the brazed joint on the outlet tube (suction side).
    - Cut the inlet tube close to the black sleeve (capillary tube side).



1. Prepare new evaporator.

    - Cut the outlet tube a 1/2 inch from its end.
    - Cut the inlet tube close to the cap tube end (capillary tube side).

CAUTION: Tubing must be clean and free from burrs when using LOKRING.

2. Install the evaporator using the LOKRING method. LOKRING connector WR97X10036 must be used on outlet (suction side) and LOKRING connector WR97X10046 must be used on inlet (cap tube side).

NOTE: Use FRESH “Lok-Prep” when performing the LOKRING method.

3. Follow steps 1 through 7 of the **Evacuation and Charging Procedure** to recharge the system.

Service Test Mode

The test mode can be entered in two different ways:

1. Press the **Test** button on the main board to start the first test, advance to next test, and exit after last test.

   OR, With the display locked (the blue ring around the **Confirm Selection** button (k) will be lit), press and hold the **Temp Set Button** (h) and the **Function Set button** (j) simultaneously for 5 seconds. **NOTE**: Press and hold **Confirm Selection** button (k) for 3 seconds to lock the display.

2. Then, press the **Confirm Selection** button (k) to toggle through the test modes, T1 > T2 > T3 > T4 > T5 > Exit. After entering the test mode, T1 will start on its own. There is a 10 second delay for each test to start.

a: Refrigerator Compartment Indicator
b: Freezer Compartment Indicator
c: Temperature Indicator
d: Quick Freeze Indicator
e: Quick Cool Indicator
f: Dehumidify Indicator
g: Temp Zone Button
h: Temp Set Button
i: Sabbath Indicator
j: Function Set Button
k: Confirm Selection Button

Tests

T1: CONTINUOUS RUN MODE

- Damper opens
- Compressor On High speed (2.3 VDC @ inverter)
- Freezer Fan ON High speed (15 VDC)
- Heaters OFF
- Refrigerator compartment temperature display shows T1
- T1 state will continue for 100 hours or until manually exited

T2: FORCED DEFROST

- Damper closes
- Defrost Heater ON
- Refrigerator compartment display shows T2
- If Defrost Sensor > 45°F, Defrost heater turns off after 10 seconds.
- If Defrost Sensor < 45°F, Defrost heater will stay on and turns off when Defrost Sensor reaches 45°F (Heater on for 60 minutes max.)
- With faulty Defrost Sensor, Heater on for 30 minutes max

T3: VERTICAL MULLION HEATER ON

- Vertical Mullion Heater on for 1 minute
- Refrigerator compartment temperature display shows T3

T4: N/A

T5: N/A

NOTE: If test mode doesn't respond or exit properly, disconnect the refrigerator power cord from the electrical outlet for 10 seconds. Reconnect the power cord to restart refrigeration mode and re-enter test mode if needed.

Fault Code Mode

The UI Control must be locked. Press and hold the **Confirm Selection** button (k) for 3 seconds to lock the display. The blue ring around the **Confirm Selection** button (k) will be lit.

To enter Fault Code Mode, press and hold the **Temp Zone** button (g) while pressing the **Temp Set** button (h) three times. There will be a single beep to indicate the Fault Code Mode has been entered.

If there is more than one fault, pressing the **Function Set** button (j) will advance to the next fault code.

"US" will initially display to represent a "United States" model.

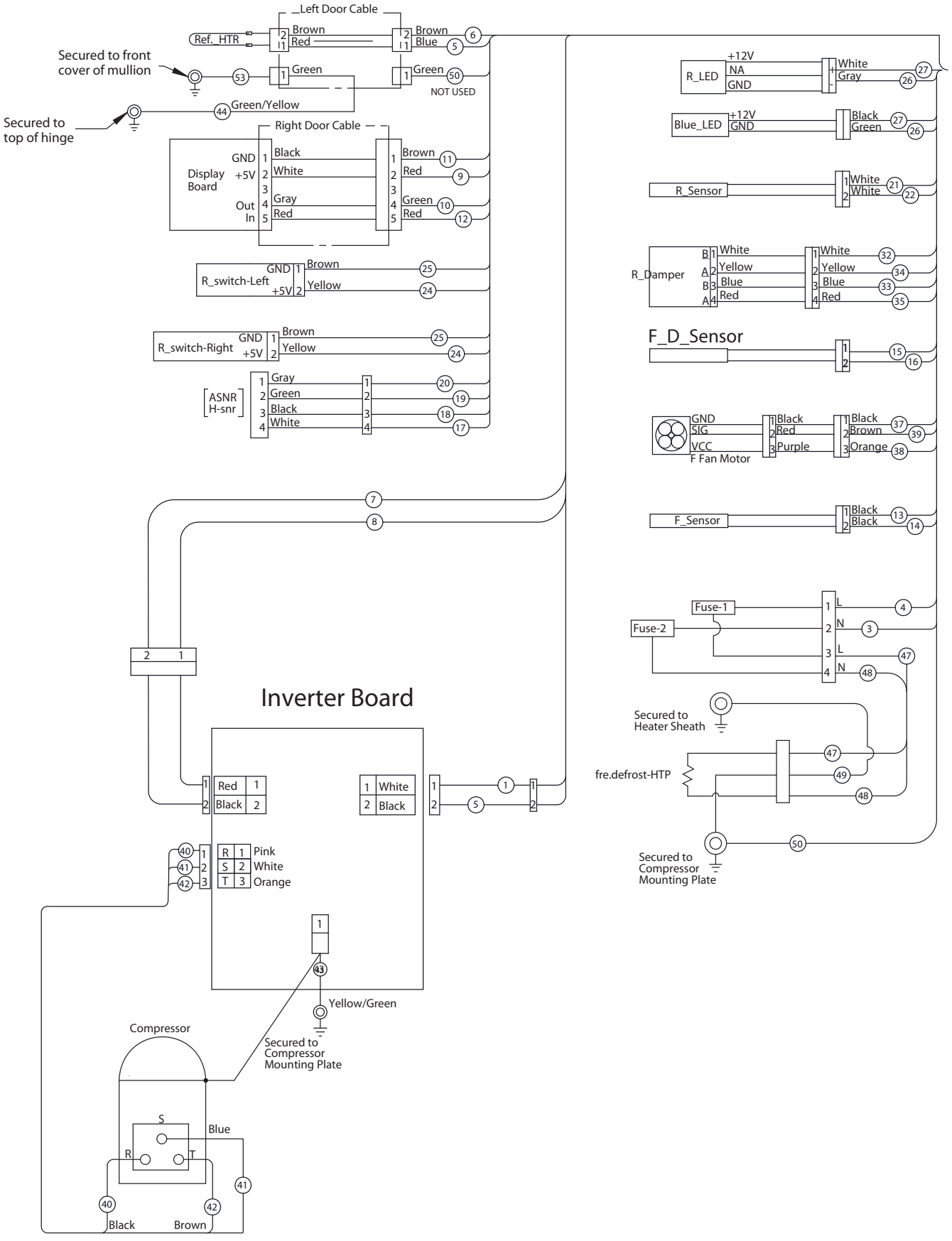
The chart below describes each fault code:

Group	Display	Fault Code Definition
No Faults 00	**00**	
Sensor	F2	Ambient temperature sensor reading out of range.
	F3	Fresh food temperature sensor reading out of range.
	F4	Freezer temperature sensor reading out of range.
	F6	Defrost temperature sensor reading out of range.
	Eh	Ambient humidity sensor reading out of range.
Communication Failure	E0	Lost Communication for 2 minutes.
Fan	E1	Evaporator fan - no feedback to main board.
Defrost	Ed	Defrost heater has been on for more than 60 minutes, but temperature is below 45°F.

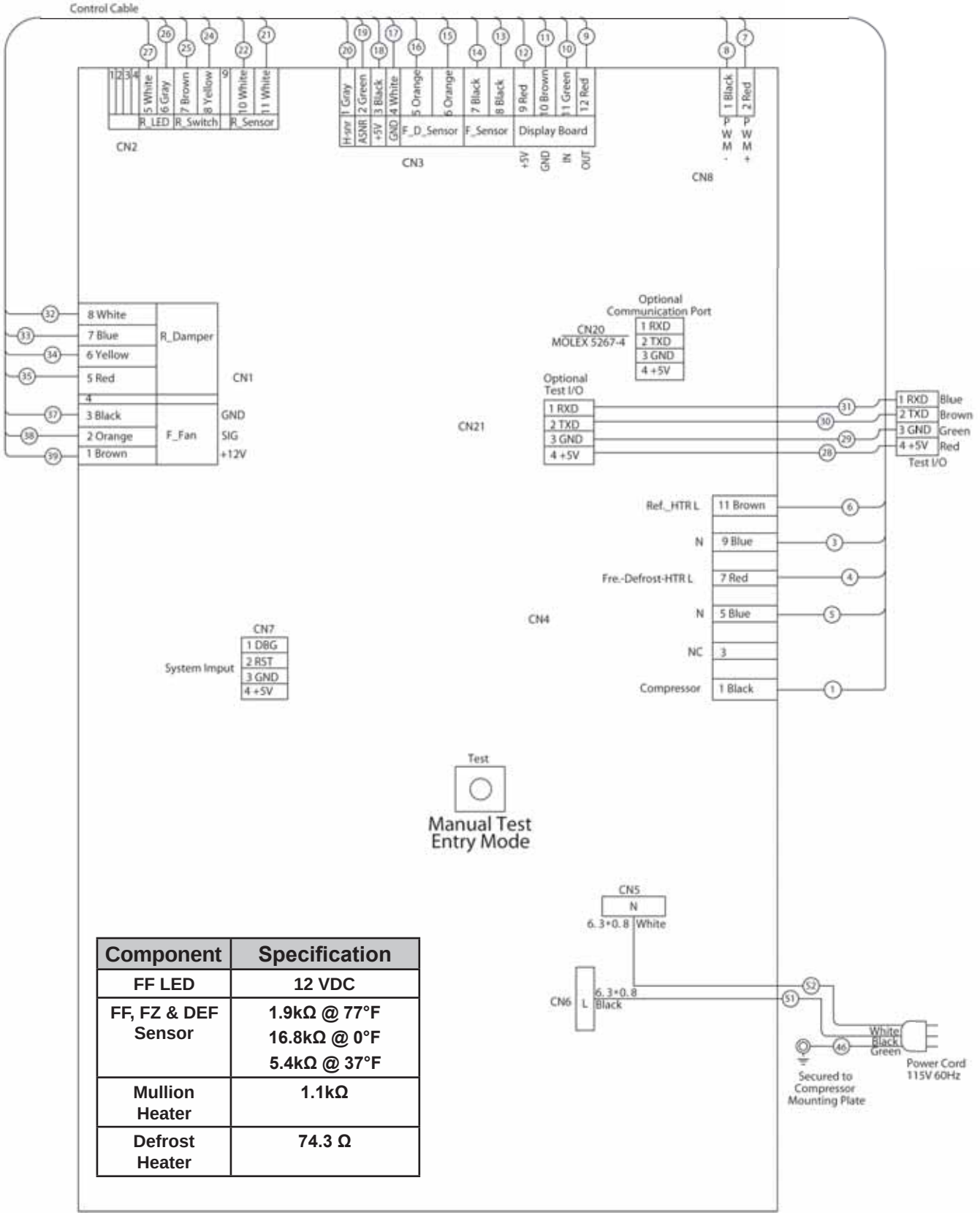
Fault codes are only cleared when the failed component is replaced, repaired or the issue is resolved. No history of fault codes are stored.

To exit Fault Code Mode, the UI control must be in the locked state. Press and hold the **Temp Zone** button (g) while pressing **Temp Set** button (h) three times.

Wiring Diagram



Schematic



Component	Specification
FF LED	12 VDC
FF, FZ & DEF Sensor	1.9kΩ @ 77°F 16.8kΩ @ 0°F 5.4kΩ @ 37°F
Mullion Heater	1.1kΩ
Defrost Heater	74.3 Ω

LIMITED WARRANTY

IN-HOME SERVICE

FULL ONE YEAR WARRANTY

For 12 months from the date of original retail purchase, Haier will repair or replace any part free of charge including labor that fails due to a defect in materials or workmanship.

Haier may replace or repair at their sole discretion any part or subsystem including the entire product.

Product must be accessible, without encumbrance and installed properly to receive warranty repair service.

LIMITED WARRANTY

After one year from the original retail purchase date, Haier will provide a part at no cost, as indicated below, to replace said part as a result of a defect in materials or workmanship. Haier is solely responsible for the cost of the part. All other costs such as labor, trip charge, etc are the responsibility of the owner.

Second through Fifth Year

For 60 months from the date of original retail purchase. The components of the sealed system (e.g. hermetic compressor, condenser and evaporator) from manufacturing defects. Any damage to such components caused by mechanical abuse or improper shipping and handling will not be covered.

NOTE: This warranty commences on the date the item was purchased, and the original purchase receipt must be presented to the authorized service representative before warranty repairs are rendered.

Exceptions: Commercial Use Warranty

- **90 days labor from date of original purchase**
- **90 days parts from date of original purchase**
- **No other warranty applies.**

FOR WARRANTY SERVICE

All service must be performed by a Haier authorized service center. For the name and telephone number of the nearest authorized service center, please call 1-877-337-3639.

Before calling please have available the following information:

- Model number and serial number of your appliance.
- The name and address of the dealer you purchased the unit from and the date of purchase.
- A clear description of the problem.
- A proof of purchase (sales receipt).

LIMITED WARRANTY (Continued)

This warranty covers home appliance services within the contiguous United States and Canada and where available in Alaska, Hawaii and Puerto Rico.

What is not covered by this warranty:

- Replacement or repair of household fuses, circuit breakers, wiring or plumbing.
- A product whose original serial number has been removed or altered.
- Any service charges not specifically identified as normal such as normal service area or hours.
- Replacement of light bulbs.
- Damage incurred in shipping.
- Damage caused by improper installation or maintenance.
- Damage from misuse, abuse accident, fire, flood, or acts of nature.
- Damage from service other than an authorized Haier dealer or service center.
- Damage from incorrect electrical current, voltage or supply.
- Damage resulting from any product modification, alteration or adjustment not authorized by Haier.
- Adjustment of consumer operated controls as identified in the owner's manual.
- Hoses, knobs, lint trays and all attachments, accessories and disposable parts.
- Labor, service transportation, and shipping charges for the removal and replacement of defective parts beyond the initial 12-month period.
- Damage from other than normal household use.
- Any transportation and shipping charges.

THIS LIMITED WARRANTY IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE

The remedy provided in this warranty is exclusive and is granted in lieu of all other remedies.

This warranty does not cover incidental or consequential damages, so the above limitations may not apply to you.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

This warranty gives you specific legal rights, and you may have other rights, which vary from state to state.

Haier America

Wayne, NJ 07470

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