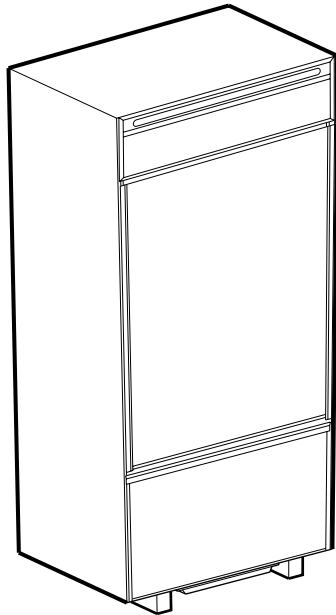




TECHNICAL SERVICE GUIDE

Monogram BMNF Refrigerators with Electronic Controls



MODEL SERIES:

ZIC360N





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 Consumer Home Services Training
Technical Service Guide
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TABLE OF CONTENTS

| | |
|--|----|
| TECHNICAL DATA | 3 |
| MODEL NOMENCLATURE | 4 |
| RATING PLATE | 4 |
| MINI-MANUAL | 4 |
| SERIAL NUMBER | 5 |
| COMPONENT AND CONNECTOR LOCATOR VIEWS | 6 |
| CABINET | 9 |
| Cabinet | 9 |
| Machine Compartment | 10 |
| Door Closure Mechanism | 11 |
| Fresh Food Door and Hinges | 11 |
| Freezer Drawer | 11 |
| Door and Drawer Gaskets | 11 |
| Rollers and Leveling | 12 |
| ICEMAKER | 12 |
| Water Valve and Water Line | 12 |
| AIRFLOW | 14 |
| Damper | 14 |
| Evaporator Fan | 15 |
| Condenser Fan | 18 |
| Drain Pan Fan | 19 |
| DEFROST SYSTEM | 19 |
| Adaptive Defrost | 19 |
| Normal Operating Characteristics | 20 |
| Abnormal Operating Characteristics | 20 |
| Liner Protection Mode | 20 |
| Defrost Heater | 21 |
| Evaporator Thermistor | 21 |
| Defrost Overtemperature Thermostat | 21 |
| CONTROL SYSTEM | 22 |
| Touch Panel and Temperature Control Board | 22 |
| Main Control Board | 23 |
| Main Control Board Locator Tables | 26 |
| Thermistors | 30 |
| ELECTRICAL SYSTEM | 31 |
| Door and Drawer Switches | 31 |
| Sabbath Switch | 31 |
| Temperature Overload Device (TOD) | 31 |
| Schematic | 32 |
| REFRIGERATION SYSTEM | 33 |
| Compressor | 33 |
| Condenser | 33 |

Table of Contents (cont.)

| | |
|------------------------------------|-----------|
| Condenser Loop | 33 |
| Dryer | 34 |
| Evaporator | 34 |
| Auxiliary Lines | 35 |
| Refrigerant Charge | 35 |
| DIAGNOSTIC MODE | 36 |
| DIAGNOSTIC FLOWCHARTS | 37 |
| PARTS LIST | 47 |
| WARRANTY | 57 |

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.

CAUTION

To avoid personal injury when servicing the condensing unit, stand on a ladder which will give enough support to allow removal of the top panel and safely allow access to service the unit.

ELECTRICAL SPECIFICATIONS

Max Defrost Control
W/No Door Openings 60 hrs. @ 40 min
Evap Defrost Thermo Disc 65-45°F
Light Thermostat. 190-130°F
Electrical Rating: 115V. AC 60 Hz. 9.0 amp
Maximum Current Leakage 0.50 mA
Maximum Ground Path Resistance 0.14 Ohms
Energy Consumption 571 KWhr/yr

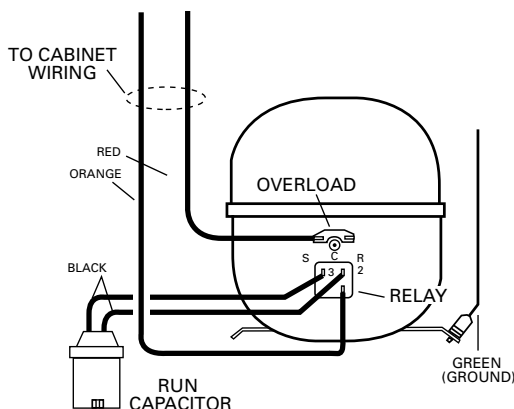
NO LOAD PERFORMANCE

CONTROL POSITION 37-0°F and
AMBIENT TEMPERATURE OF **70°F** **90°F**

Fresh Food, °F 36-42 34-40
Frozen Food, °F (-3) -3 (-3) -3
Percent Running Time 25-37 45-57

REFRIGERATION DIAGNOSIS

To access the **low pressure** side of the system, install a **WR86X0097** valve **only** on the process tube extending from the compressor case.



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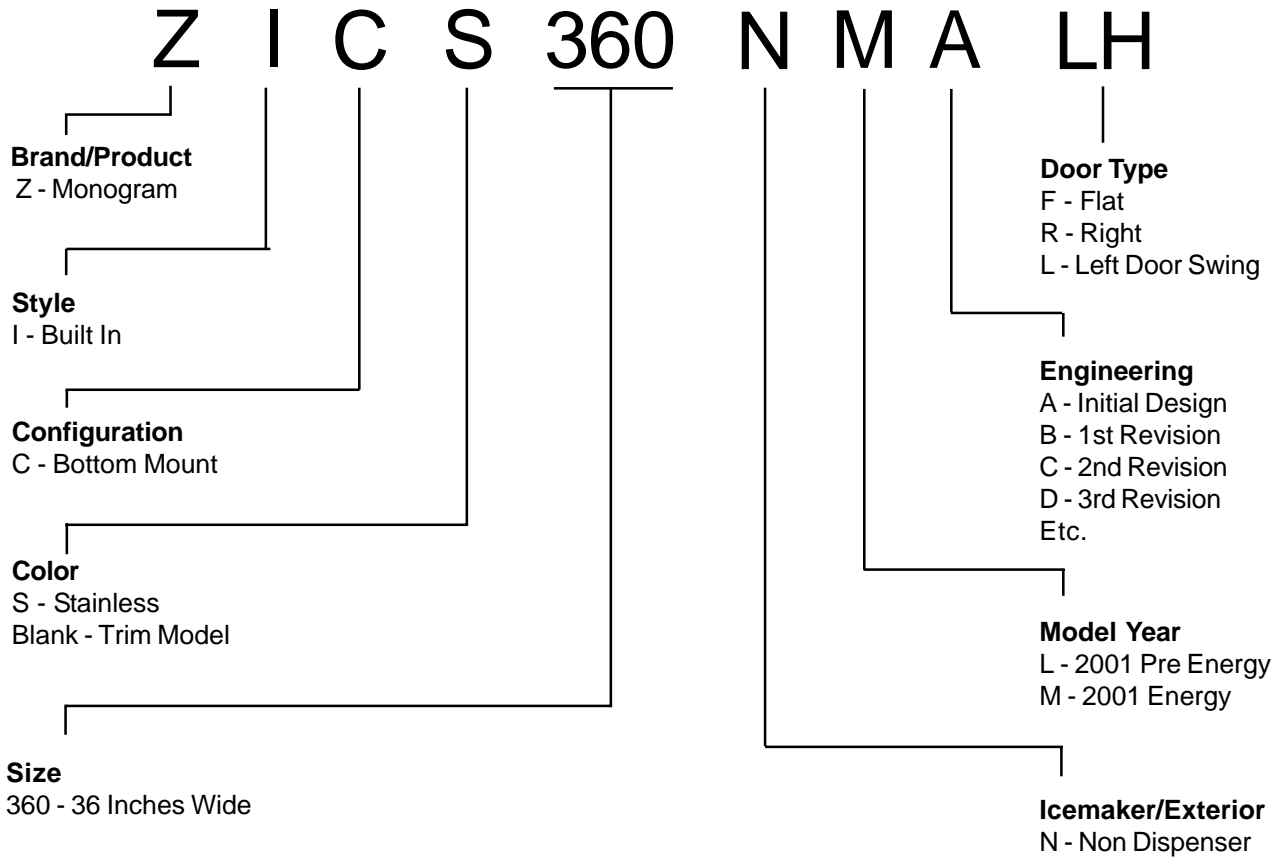
REFRIGERATION SYSTEM

Compressor 830 BTU/hr
Minimum Compressor Capacity
Vacuum, 26 inches
Minimum Equalized Pressure
@ 70°F 71 PSIG
@ 90°F 104 PSIG
R134a Refrig. Chg. 13 oz

REPLACEMENT PARTS

Temperature Control WR55X10098
Relay WR07X10033
Overload WR08X10022
Run Capacitor (15 uF) WR62X0080
Lamp Overtemperature Thermostat WR50X10003
Defrost Heater Overtemperature
Thermostat WR50X10030
Defrost Heater WR51X10015
Condenser Fan Motor WR60X10053
Condenser Fan Blade WR60X10049
Evaporator Fan Motor WR60X10043
Evaporator Fan Blade WR60X10050
Main Board WR55X10056
Thermistors (2-FF, 1-FZ, 1-EV) WR55X10028
Drain Pan Fan Motor WR60X10051
Damper WR09X10065
Evaporator WR85X10007
Compressor WR87X10041
Condenser WR84X10030
Dryer WR86X0096

MODEL NOMENCLATURE



RATING PLATE

The rating plate, located inside the fresh food compartment under the right-hand storage drawer, contains the model and serial numbers. Additionally, the rating plate specifies the minimum installation clearances, electrical voltage, frequency, maximum amperage rating, refrigerant charge, and type.

MINI-MANUAL

The mini-manual is located behind the grille panel at the top of the unit. It is taped to the left side wall of the machine compartment. When done, return the mini-manual to its original location for future use.

SERIAL NUMBER

The serial number consists of two letters, followed by six numerals. The two prefix letters of the serial number indicate the month and year the product was manufactured. The year of manufacture does not correspond with the model year of the model number.

| | <i>JAN</i> | <i>FEB</i> | <i>MAR</i> | <i>APR</i> | <i>MAY</i> | <i>JUN</i> | <i>JUL</i> | <i>AUG</i> | <i>SEP</i> | <i>OCT</i> | <i>NOV</i> | <i>DEC</i> |
|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <i>2000</i> | <i>AZ</i> | <i>DZ</i> | <i>FZ</i> | <i>GZ</i> | <i>HZ</i> | <i>LZ</i> | <i>MZ</i> | <i>RZ</i> | <i>SZ</i> | <i>TZ</i> | <i>VZ</i> | <i>ZZ</i> |
| <i>2001</i> | <i>AA</i> | <i>DA</i> | <i>FA</i> | <i>GA</i> | <i>HA</i> | <i>LA</i> | <i>MA</i> | <i>RA</i> | <i>SA</i> | <i>TA</i> | <i>VA</i> | <i>ZA</i> |
| <i>2002</i> | <i>AD</i> | <i>DD</i> | <i>FD</i> | <i>GD</i> | <i>HD</i> | <i>LD</i> | <i>MD</i> | <i>RD</i> | <i>SD</i> | <i>TD</i> | <i>VD</i> | <i>ZD</i> |
| <i>2003</i> | <i>AF</i> | <i>DF</i> | <i>FF</i> | <i>GF</i> | <i>HF</i> | <i>LF</i> | <i>MF</i> | <i>RF</i> | <i>SF</i> | <i>TF</i> | <i>VF</i> | <i>ZF</i> |
| <i>2004</i> | <i>AG</i> | <i>DG</i> | <i>FG</i> | <i>GG</i> | <i>HG</i> | <i>LG</i> | <i>MG</i> | <i>RG</i> | <i>SG</i> | <i>TG</i> | <i>VG</i> | <i>ZG</i> |
| <i>2005</i> | <i>AH</i> | <i>DH</i> | <i>FH</i> | <i>GH</i> | <i>HH</i> | <i>LH</i> | <i>MH</i> | <i>RH</i> | <i>SH</i> | <i>TH</i> | <i>VH</i> | <i>ZH</i> |
| <i>2006</i> | <i>AL</i> | <i>DL</i> | <i>FL</i> | <i>GL</i> | <i>HL</i> | <i>LL</i> | <i>ML</i> | <i>RL</i> | <i>SL</i> | <i>TL</i> | <i>VL</i> | <i>ZL</i> |
| <i>2007</i> | <i>AM</i> | <i>DM</i> | <i>FM</i> | <i>GM</i> | <i>HM</i> | <i>LM</i> | <i>MM</i> | <i>RM</i> | <i>SM</i> | <i>TM</i> | <i>VM</i> | <i>ZM</i> |
| <i>2008</i> | <i>AR</i> | <i>DR</i> | <i>FR</i> | <i>GR</i> | <i>HR</i> | <i>LR</i> | <i>MR</i> | <i>RR</i> | <i>SR</i> | <i>TR</i> | <i>VR</i> | <i>ZR</i> |
| <i>2009</i> | <i>AS</i> | <i>DS</i> | <i>FD</i> | <i>GS</i> | <i>HS</i> | <i>LS</i> | <i>MS</i> | <i>RS</i> | <i>SS</i> | <i>TS</i> | <i>VS</i> | <i>ZS</i> |
| <i>2010</i> | <i>AS</i> | <i>DS</i> | <i>FD</i> | <i>GS</i> | <i>HS</i> | <i>LS</i> | <i>MS</i> | <i>RS</i> | <i>SS</i> | <i>TS</i> | <i>VS</i> | <i>ZS</i> |
| <i>2011</i> | <i>AT</i> | <i>DT</i> | <i>FT</i> | <i>GT</i> | <i>HT</i> | <i>LT</i> | <i>MT</i> | <i>RT</i> | <i>ST</i> | <i>TT</i> | <i>VT</i> | <i>ZT</i> |
| <i>2012</i> | <i>AV</i> | <i>DV</i> | <i>FV</i> | <i>GV</i> | <i>HV</i> | <i>LV</i> | <i>MV</i> | <i>RV</i> | <i>SV</i> | <i>TV</i> | <i>VV</i> | <i>ZV</i> |
| <i>2013</i> | <i>AZ</i> | <i>DZ</i> | <i>FZ</i> | <i>GZ</i> | <i>HZ</i> | <i>LZ</i> | <i>MZ</i> | <i>RZ</i> | <i>SZ</i> | <i>TZ</i> | <i>VZ</i> | <i>ZZ</i> |
| <i>2014</i> | <i>AA</i> | <i>DA</i> | <i>FA</i> | <i>GA</i> | <i>HA</i> | <i>LA</i> | <i>MA</i> | <i>RA</i> | <i>SA</i> | <i>TA</i> | <i>VA</i> | <i>ZA</i> |
| <i>2015</i> | <i>AD</i> | <i>DD</i> | <i>FD</i> | <i>GD</i> | <i>HD</i> | <i>LD</i> | <i>MD</i> | <i>RD</i> | <i>SD</i> | <i>TD</i> | <i>VD</i> | <i>ZD</i> |
| <i>2016</i> | <i>AF</i> | <i>DF</i> | <i>FF</i> | <i>GF</i> | <i>HF</i> | <i>LF</i> | <i>MF</i> | <i>RF</i> | <i>SF</i> | <i>TF</i> | <i>VF</i> | <i>ZF</i> |
| <i>2017</i> | <i>AG</i> | <i>DG</i> | <i>FG</i> | <i>GG</i> | <i>HG</i> | <i>LG</i> | <i>MG</i> | <i>RG</i> | <i>SG</i> | <i>TG</i> | <i>VG</i> | <i>ZG</i> |
| <i>2018</i> | <i>AH</i> | <i>DH</i> | <i>FH</i> | <i>GH</i> | <i>HH</i> | <i>LH</i> | <i>MH</i> | <i>RH</i> | <i>SH</i> | <i>TH</i> | <i>VH</i> | <i>ZH</i> |
| <i>2019</i> | <i>AL</i> | <i>DL</i> | <i>FL</i> | <i>GL</i> | <i>HL</i> | <i>LL</i> | <i>ML</i> | <i>RL</i> | <i>SL</i> | <i>TL</i> | <i>VL</i> | <i>ZL</i> |
| <i>2020</i> | <i>AM</i> | <i>DM</i> | <i>FM</i> | <i>GM</i> | <i>HM</i> | <i>LM</i> | <i>MM</i> | <i>RM</i> | <i>SM</i> | <i>TM</i> | <i>VM</i> | <i>ZM</i> |
| <i>2021</i> | <i>AR</i> | <i>DR</i> | <i>FR</i> | <i>GR</i> | <i>HR</i> | <i>LR</i> | <i>MR</i> | <i>RR</i> | <i>SR</i> | <i>TR</i> | <i>VR</i> | <i>ZR</i> |
| <i>2022</i> | <i>AS</i> | <i>DS</i> | <i>FD</i> | <i>GS</i> | <i>HS</i> | <i>LS</i> | <i>MS</i> | <i>RS</i> | <i>SS</i> | <i>TS</i> | <i>VS</i> | <i>ZS</i> |

Refrigerators using a number four (4) as the first digit of the serial number are designated as Celya production.

COMPONENT AND CONNECTOR LOCATOR VIEWS

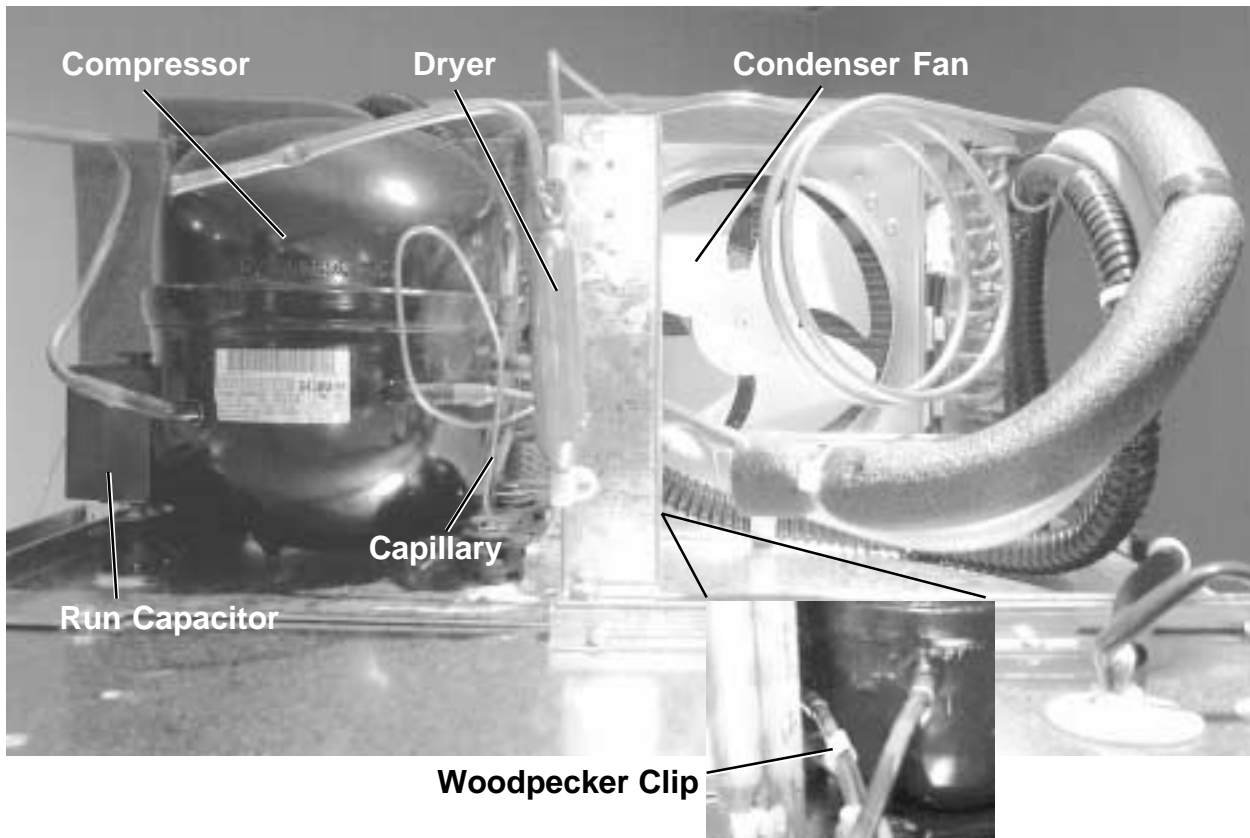


Figure 1 - Machine Compartment – Side View

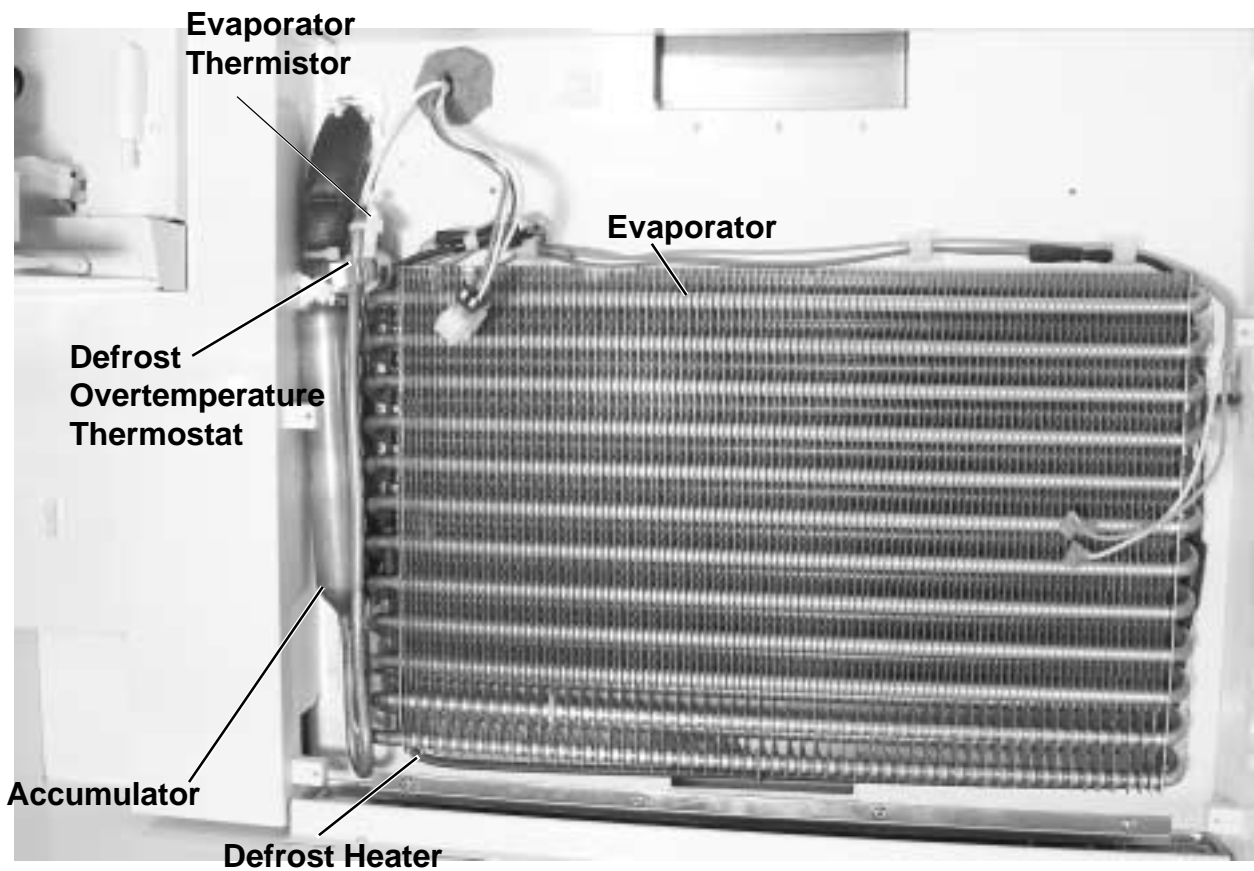


Figure 2 - Evaporator

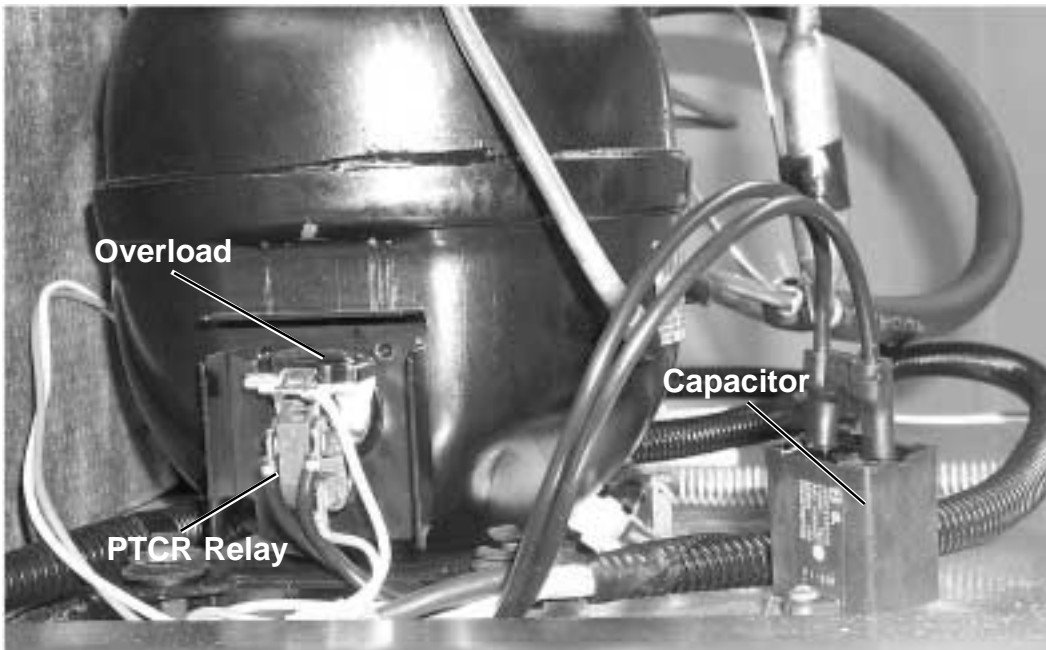


Figure 3 - Compressor Overload/PTCR Relay

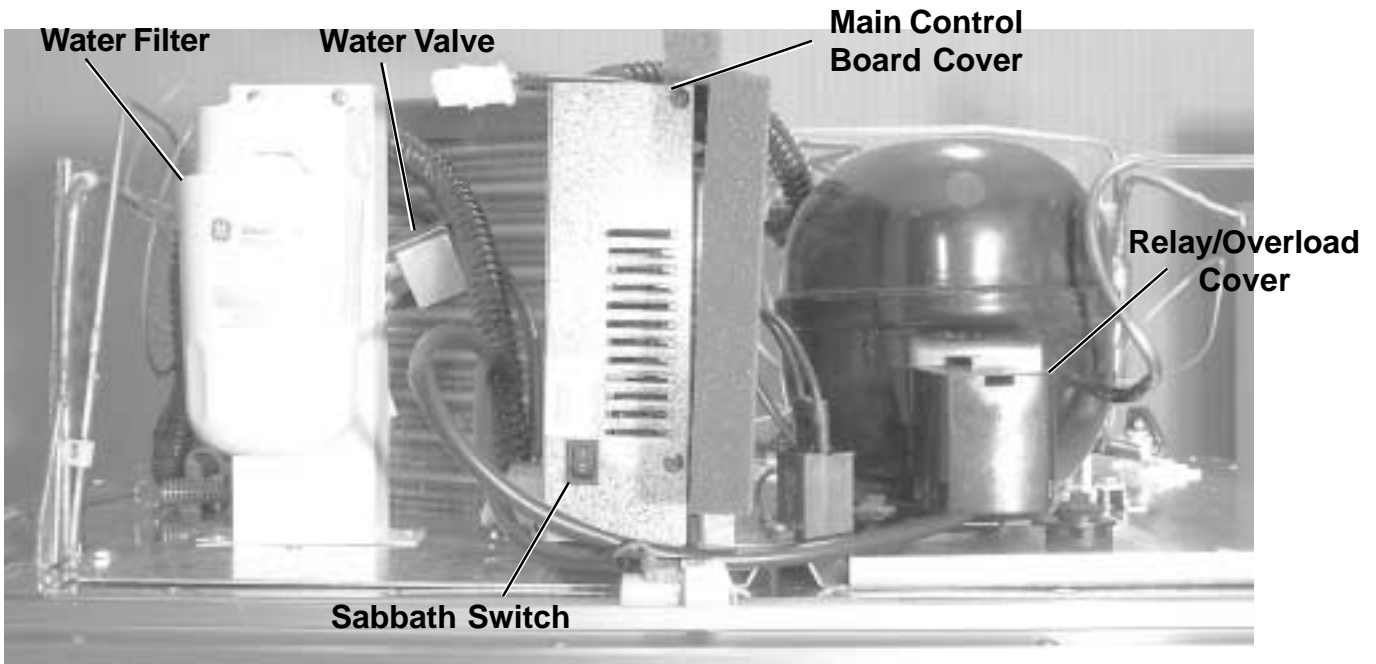


Figure 4 - Machine Compartment Front View

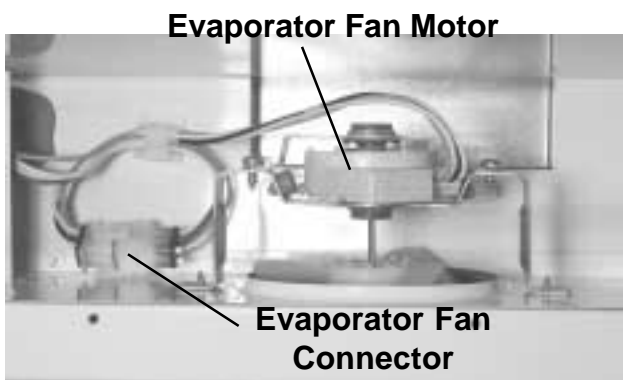
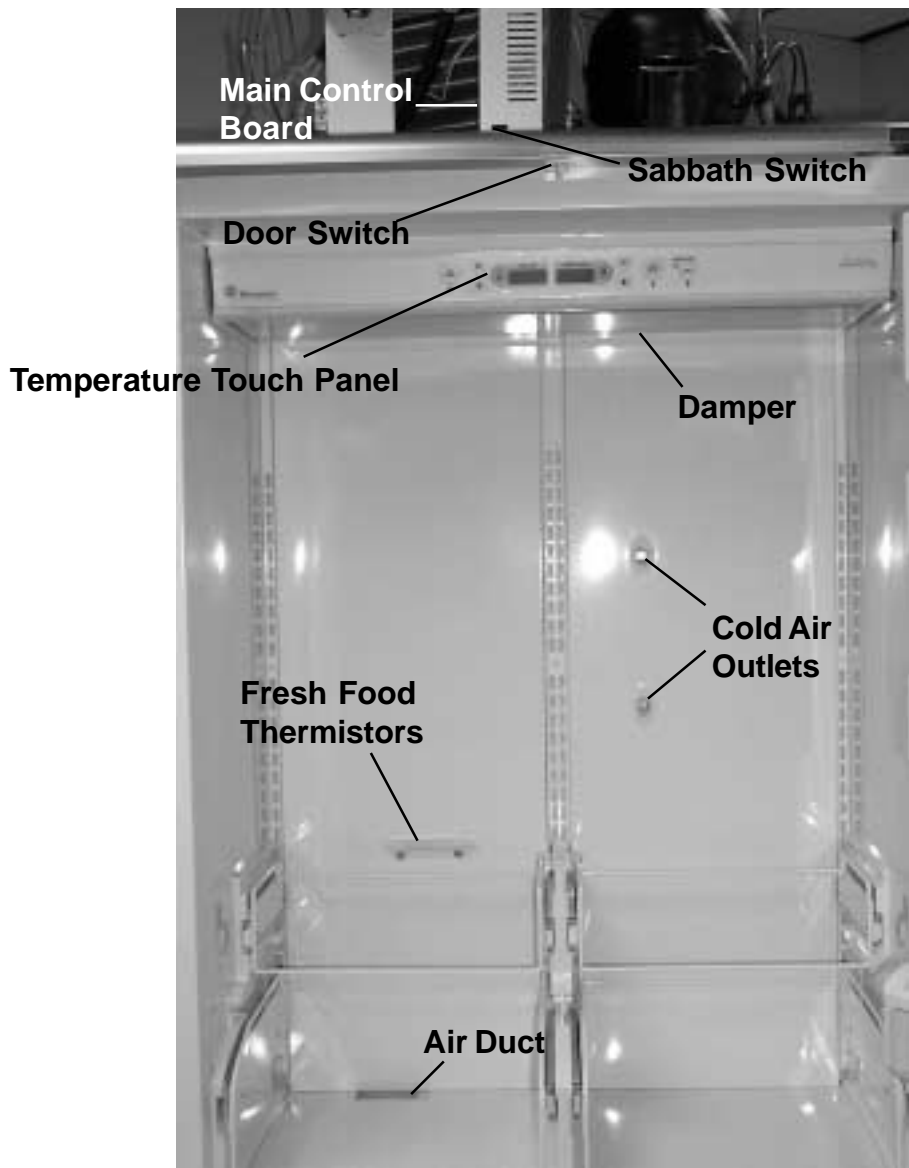
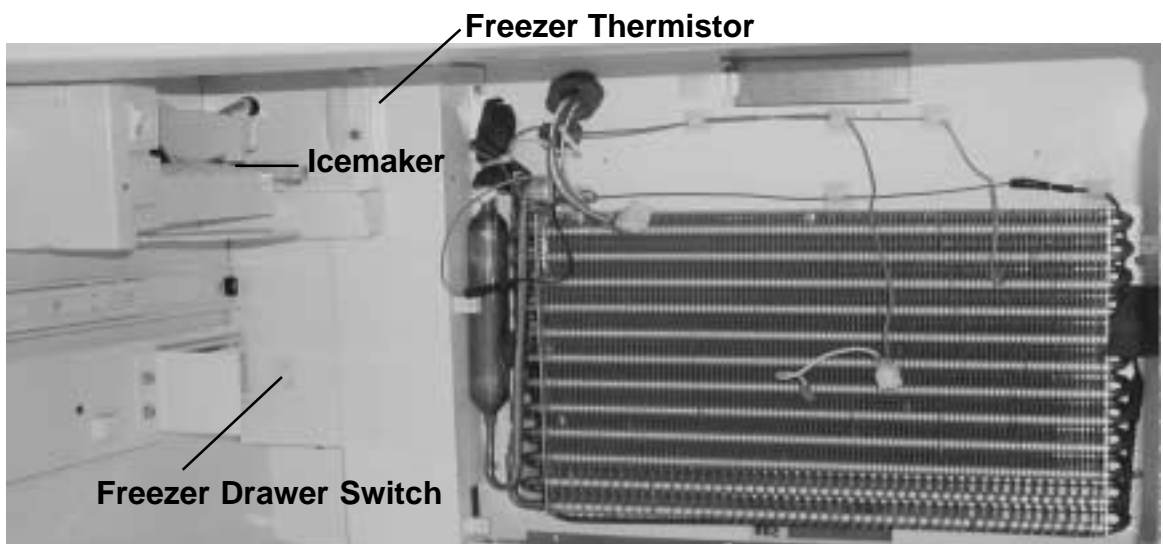


Figure 5 - Evaporator Fan



P0003329

Figure 5 - Fresh Food Compartment



P0003376

Figure 6 - Freezer Compartment

CABINET

Cabinet

The outer case is made of galvanized steel. The fresh food and freezer liners are painted metal with a smooth finish. Individual fresh food and freezer compartments provide separation and enhanced individual control between the compartments. The metal liner provides a thermal break between the interior of the refrigerator and freezer compartments and reduces the transfer of heat from the room into the fresh food and freezer compartments. The liner is not removable or replaceable.

Machine Compartment

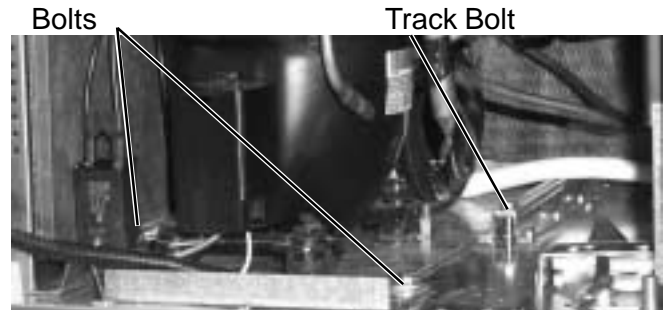
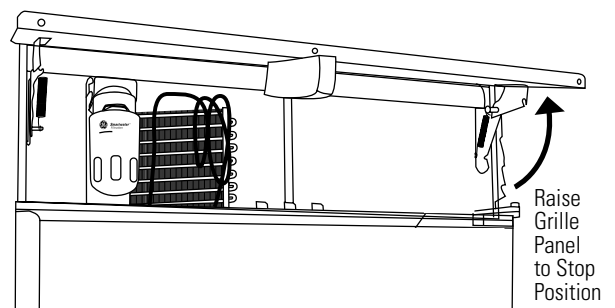
The machine compartment is located on the top of the unit and has a movable chassis that can be extended from the front of the unit to provide access to the refrigeration system and components.

Caution: Avoid kinking the refrigeration lines when sliding the chassis out and back in.

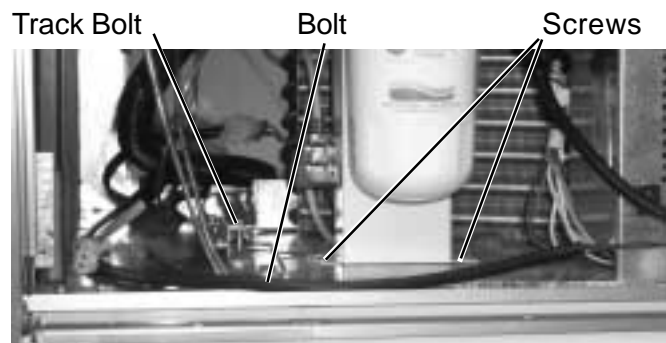
To extend the chassis:

1. Raise the grille panel to stop position.
2. Remove the wire guard and rocker switch panel.
3. Disconnect the door closure mechanism spring from the pin and remove the pin by turning it counterclockwise.
4. Remove 3 screws securing the water filter mounting bracket.
5. Remove 3 (7/16-in.) bolts from chassis bottom.
6. Loosen 2 (7/16-in.) chassis track bolts.
7. Pull the chassis forward until it reaches the stops in the tracks, working the refrigeration tubing as you pull the chassis out.

Note. When sliding the chassis back into position, be certain the lines and wiring have not fallen behind the chassis.



Right Side of Machine Compartment



Left Side of Machine Compartment

Door Closure Mechanism

The door closure mechanism uses a spring to provide positive door closure from 30 degrees. The door closure mechanism actuator arm has a spring attached to the rear and is supported by guide rollers on either side of the base channel. The roller circumferences and the actuator arm detents are matched for smooth operation. The arm is attached to the door with an Allen head shoulder bolt.

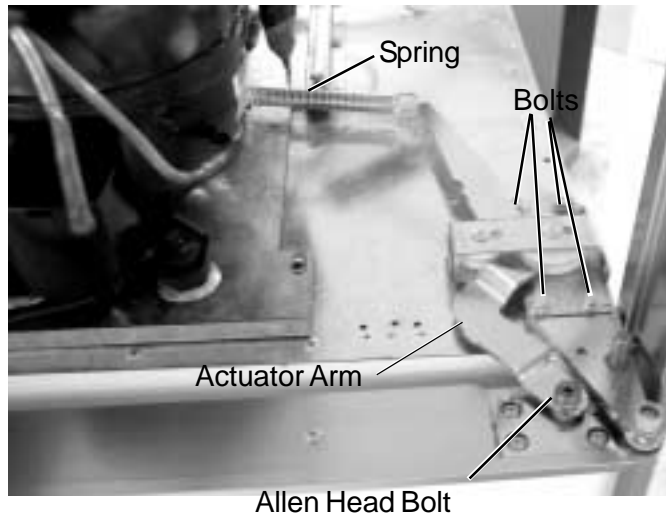
The closure mechanism allows easy opening to approximately 90 degrees, where the arm has a detent to permit the door to remain open at 90 degrees with minimal tension. Once the door is opened beyond 90 degrees, the closure mechanism pulls the door open until the closure arm engages the door stop at approximately 130 degrees. The reverse action occurs when the door is closed.

Note: The door closure mechanism and the top door hinge are held by the same bolts. Take the necessary precautions to secure the fresh food door when the door closure mechanism is being removed.

- The actuator arm is spring loaded with moderate spring tension.

To remove the door closure mechanism

1. Remove the 3/16-in. Allen head bolt and spacer from the door and actuator arm.
2. Disconnect the spring from the pin on the top of the cabinet and pull the actuator arm from the closure mechanism.
3. Remove 4 (3/8-in.) bolts and the door closure mechanism.



Fresh Food Door and Hinges

WARNING: Use the appropriate safety equipment and lifting techniques.

Caution: Use wood or a heavy plastic sheet to protect the floor where the door will be placed.

Note: Unit must be removed from its installation to remove center hinge.

Door

The door is of one-piece construction with foam insulation. One-piece construction provides superior thermal performance and reduces air infiltration.

The inner door panel and outer door panel cannot be separated and must be replaced as an assembly.

1. Remove all food and bins from the inner door liner.
2. Tape door to cabinet.
3. Remove the door closure mechanism (see previous procedure).
4. Remove the upper hinge.
5. Remove tape and lift the door off center hinge.
6. Remove 4 T-27 Torx screws and center hinge.

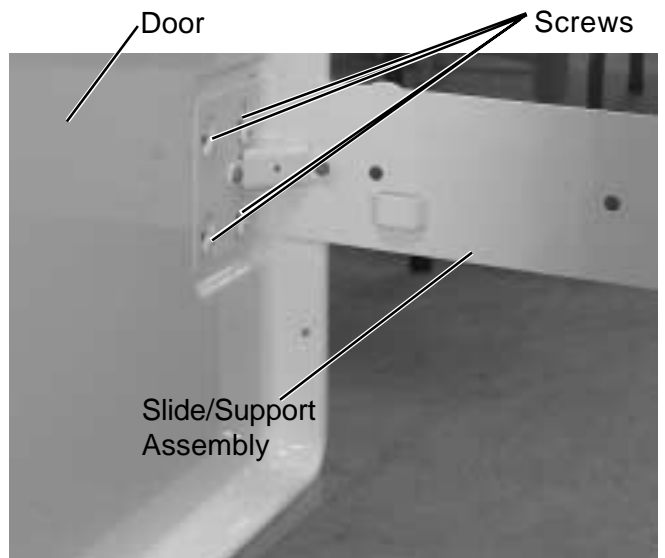
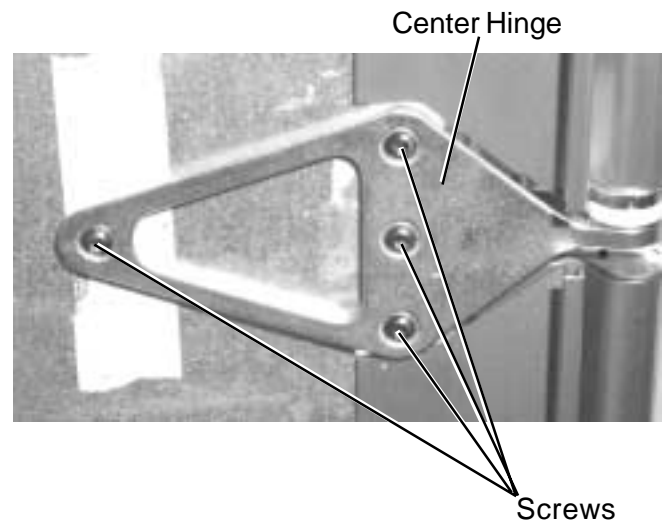
Freezer Drawer

1. Loosen 4 screws connecting each side of the freezer door to the slide/support assemblies.
2. Lift door up and out to remove.

Door and Drawer Gaskets

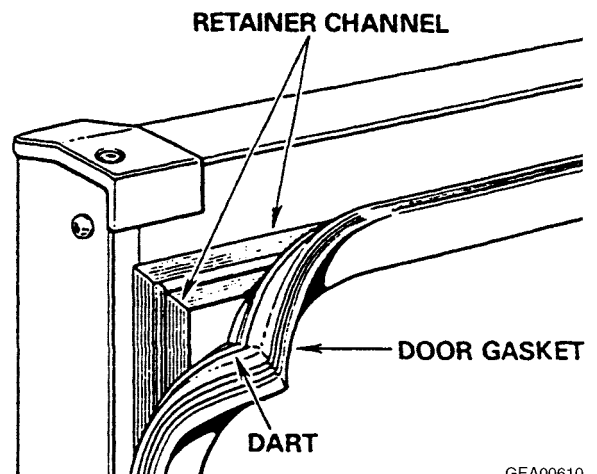
The fresh food door and freezer drawer have magnetic gaskets that create a positive seal to the front of the steel cabinet. The magnetic door gaskets are secured to the fresh food door and freezer drawer by a barbed edge that locks into a retainer channel.

1. Starting at any corner, pull the old gasket out of the retainer channel.
2. Soak the new gasket in warm water to make it pliable.
3. Push the barbed edge of the gasket into the retainer channel.



Left Side of Freezer Door

P0003336



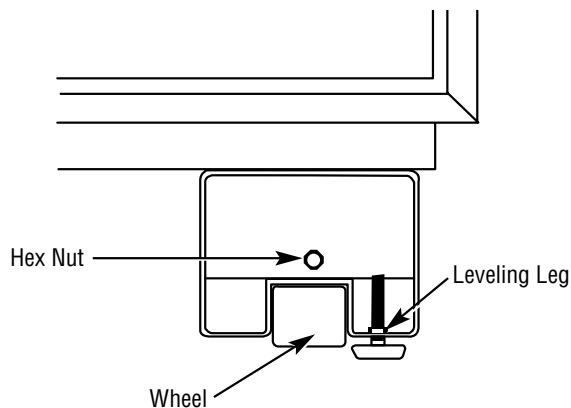
GEA00610

Rollers and Leveling

This model has 4-point leveling provided by adjustable rollers on the rear and leveling legs on the front. It also has 2 nonadjustable front rollers that are used only for unit positioning.

To level the unit:

1. Turn the 7/16-in. hex nut located above the front rollers to adjust the roller on the rear of the unit. Turn clockwise to raise, counterclockwise to lower.
2. Turn the front legs with a 1-1/4 in. open end wrench to adjust the front of the unit. Turn clockwise to raise, counterclockwise to lower.

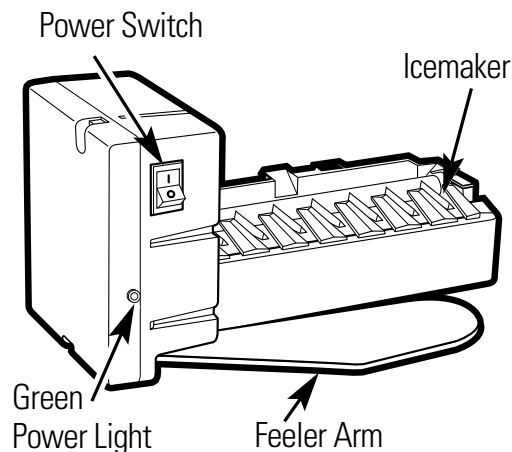


ICEMAKER

The icemaker is mounted to the upper left wall of the freezer cabinet. Under normal operating conditions, temperatures, door openings, and food load, the icemaker is capable of producing approximately 100 to 130 cubes in a 24-hour period.

Note: The freezer door light switch, located on the back wall of the freezer, also serves as an icemaker interlock (or kill) switch. It will open the circuit to the icemaker any time the freezer drawer is open.

To service the icemaker, refer to GE Publication 31-9063.



Water Valve and Water Line

The water valve is mounted to the side of the water filter bracket in the machine compartment.

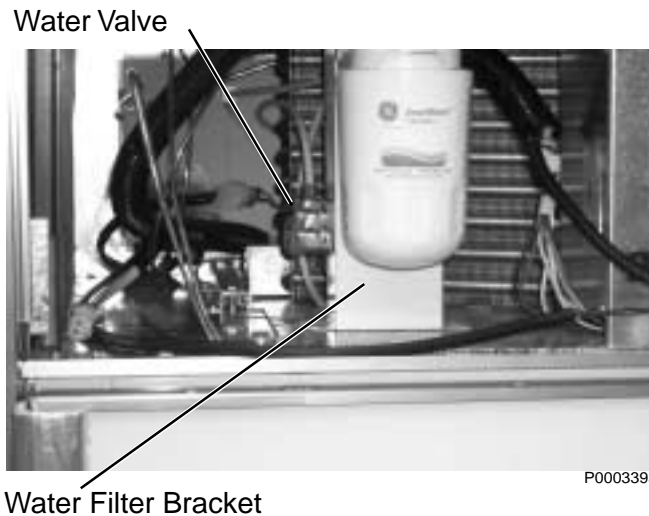
A plastic water line is routed from under the unit, up the back of the cabinet, into the machine compartment, and to the water valve.

A low-pressure plastic water line supplies water to the icemaker from the water valve. The plastic water line is routed from the water valve, out the back of the machine compartment, down the back of the cabinet to the fill tube grommet. The icemaker fill tube is also plastic.

To Replace the Water Valve

Note: Some water may leak from the water supply line and valve when they are disconnected.

1. Shut off the water supply to the freezer.



P0003393

2. Raise the machine compartment cover panel.
3. Remove 2 Phillips screw attaching the water valve cover.
4. Remove 2 Phillips screw attaching the water valve to the filter bracket.
5. Disconnect the wiring harness connector and 2 water lines from the water valve and remove.

To Replace the Water Line from the Water Valve to the Fill Tube Grommet

Note: Some water may leak from the water supply line and valve when they are disconnected.

1. Shut off the water supply to the freezer.
2. Remove the unit from its installation.
3. Remove 14 (1/4-in.) screws and the metal access cover.
4. Disconnect the water line at the quick connector by pushing in the white collar on the quick connector while pulling the water line out.
5. Loosen the clamp at the fill tube grommet and remove the water line.

Water Valve



Screw



P0003413

AIRFLOW

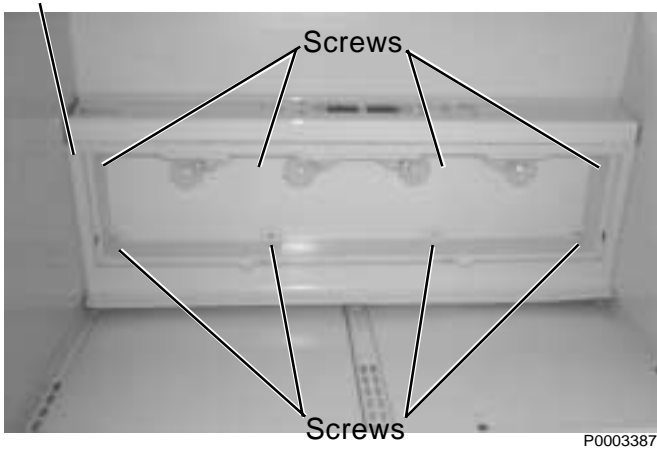
Damper

The fresh food compartment receives chilled air via an electronic damper that is positioned at the top rear of the fresh food compartment. The damper is controlled by the main control board and when open, allows the evaporator fan to push chilled air from the evaporator into the fresh food compartment.

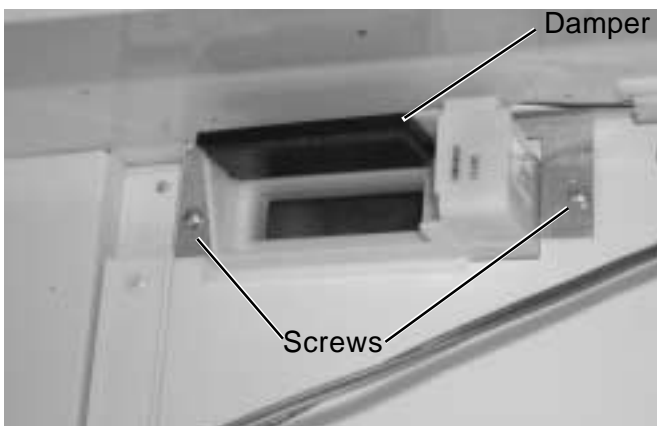
To remove the damper

1. Remove the light cover.
2. Remove 8 Phillips screws and the light assembly.
3. Disconnect the damper wiring.
4. Remove 2 Phillips screws and the damper.

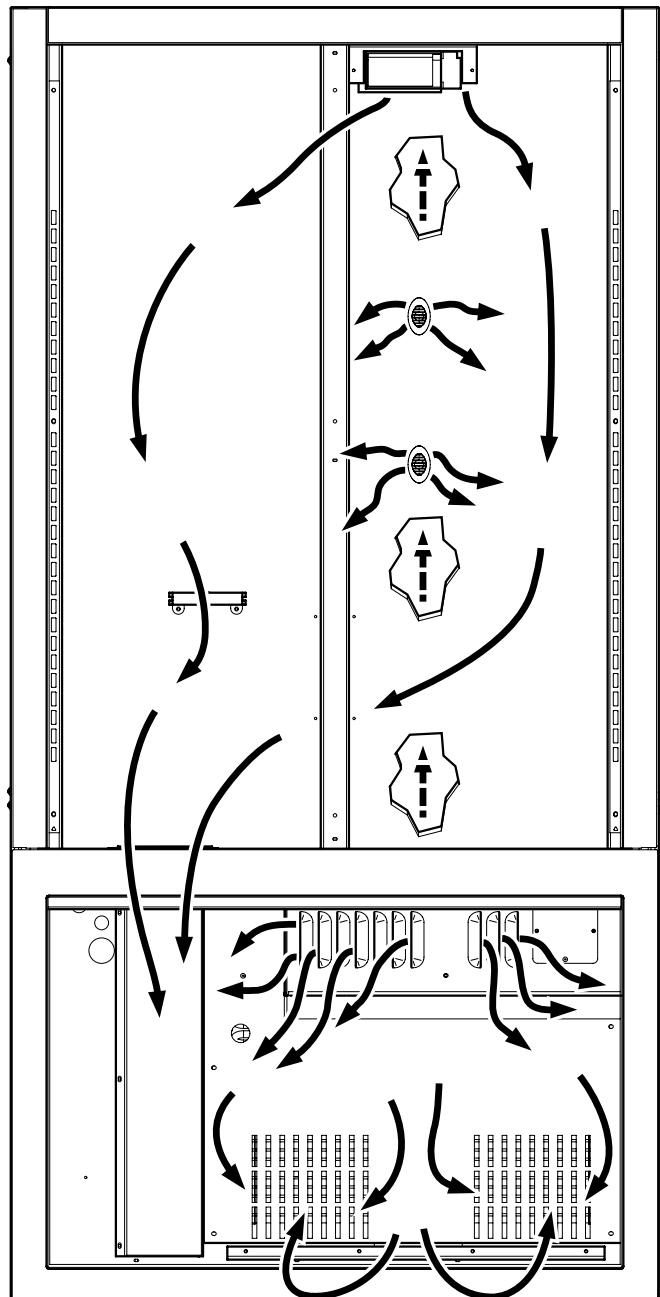
Light Assembly



P0003387



P0003380

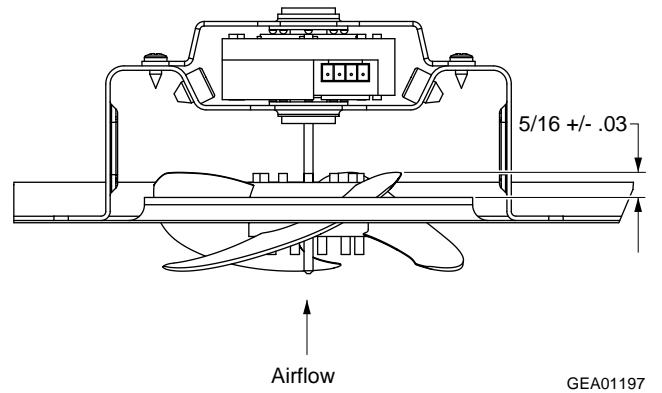


Evaporator Fan

The position of the fan blade in relation to the shroud is critical. Refer to evaporator fan adjustment graphic for specifications.

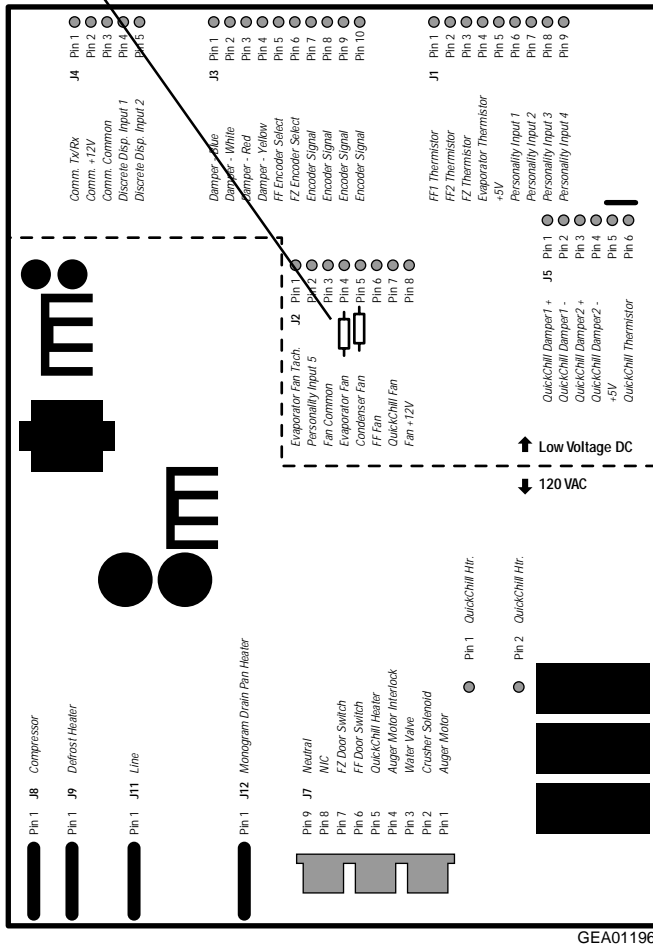
If the fan shorts, it will damage the main control board. If the resistor on the main control board is burnt, you must replace the fan and the board (see photo).

Evaporator Fan Adjustment



GEA01197

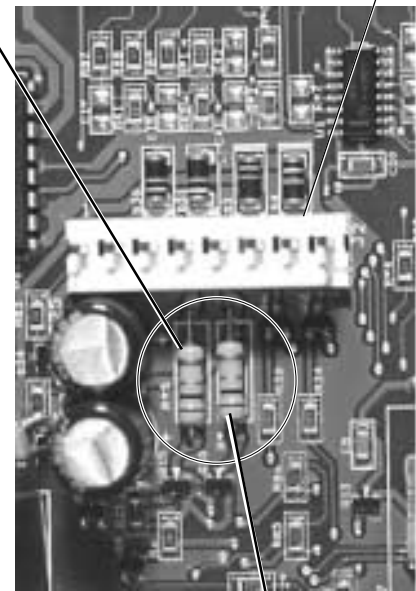
Evaporator and Condenser Fan Resistors



GEA01196

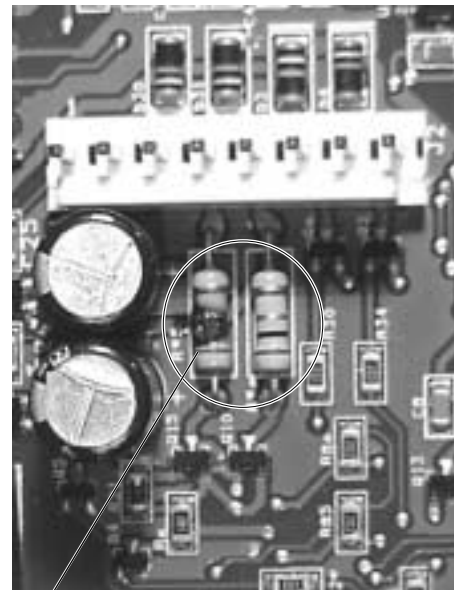
Evaporator Fan Resistor

J2 Connector



GEA01140

Condenser Fan Resistor

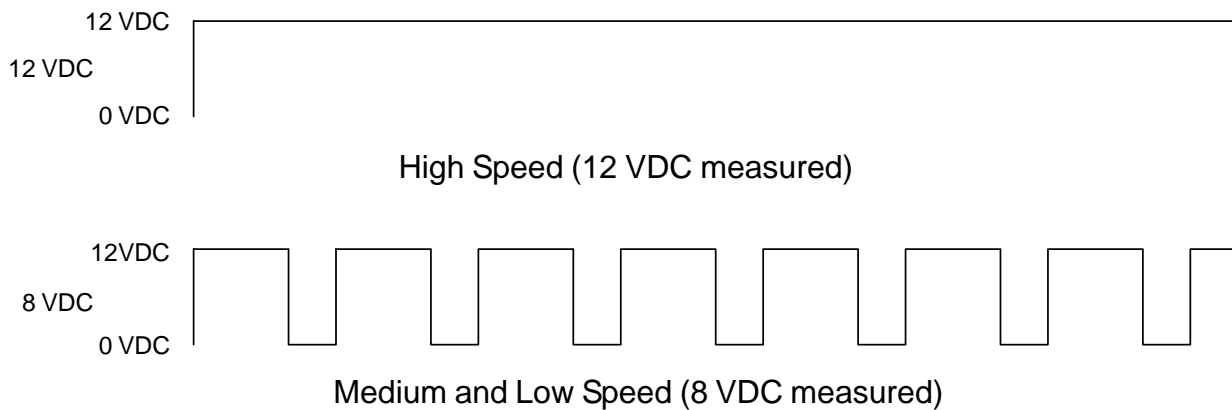


Bad Evaporator Fan Resistor

The evaporator fan utilizes a permanent magnet, 4-pole, DC motor that can operate at three different speeds: high, medium, and low (medium and low are the same speed, controlled by the main control board). The speed of the fan is controlled by the voltage output from the main control board. Voltage output from the control board to the fan is 12.6 VDC; however, in order to regulate the speed of the fan, the control board uses Pulse Width Modulation (PWM) during low speed and medium speed operation. When operating in low and medium speed, voltage is sent in pulses (much like a duty cycle) as opposed to an uninterrupted flow. This pulsing of 12.6 VDC produces effective voltage being received at the motor, which is the equivalent to a reduction in voltage. Fan speed will be selected and maintained by the control board regulating the length and frequency of the 12.6 VDC pulse.

One complete revolution of the motor is comprised of all 4 poles. To determine the rpm of the fan: Measure the frequency being applied to the motor. Multiply this number by 15 (60 seconds divided by 4 poles). For example, a frequency measurement of 200 Hz multiplied by 15 would show a fan speed of 3000 rpm ($15 \times 200 = 3000$). Temperature may cause some fan speed variation. Fan speed may vary +/- 5%, depending on the temperature, with higher temperatures causing slightly higher speeds.

The evaporator fan motor uses a 4-wire connection, utilizing a common wire (white), feedback/rpm wire (blue), supply wire (red), and a signal wire (yellow).



White Wire (DC Common)

The white wire is the DC common wire used for testing. During repairs, DC polarity must be observed. Reversing the DC polarity will cause a shorted motor and/or board.

Red Wire (Supply)

Each motor uses an internal electronic controller to operate the motor. Supply voltage from the main control board remains at a constant 12 VDC.

Blue Wire (Feedback/RPM)

The blue wire feeds rpm (speed) information to the main control board, allowing the board to maintain consistent fan speeds. Loss of feedback from the blue wire will result in the fan accelerating to maximum speed. Measure the fan rpm using the frequency between the blue and white wires.

Note: Fan operates at the same speed in low and medium.

High speed - 195 to 200 Hz

Medium speed - 145 to 160 Hz

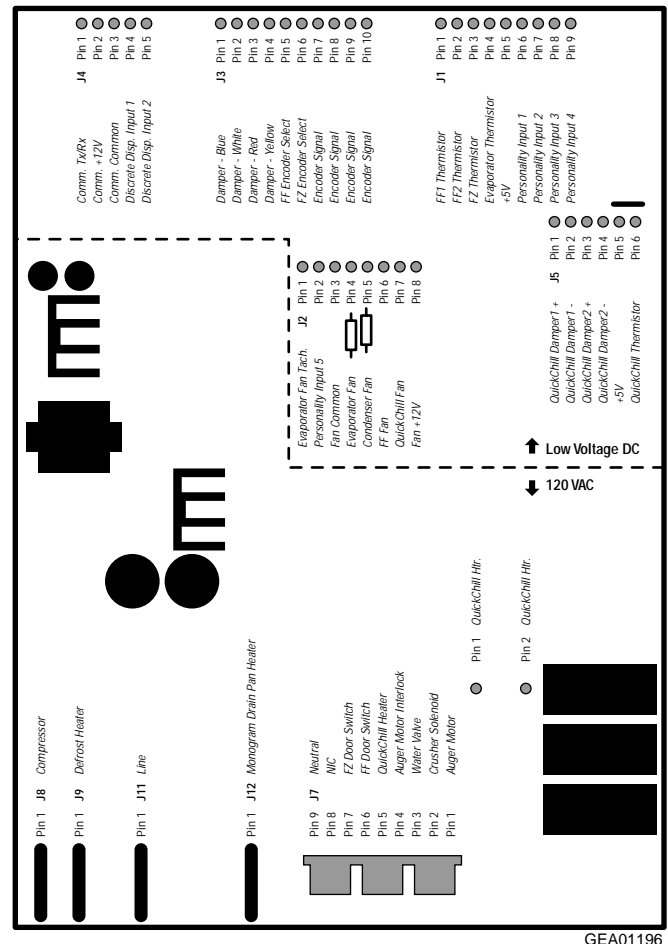
Low speed - 145 to 160 Hz (same as medium)

Yellow Wire (Signal)

The yellow wire is the input wire from the main control board. The main control board provides 8.1 VDC effective voltage for low speed, 8.1 VDC effective voltage for medium speed, and 12.6 VDC for high speed. The fan will operate in low speed only when the fresh food thermistor is satisfied.

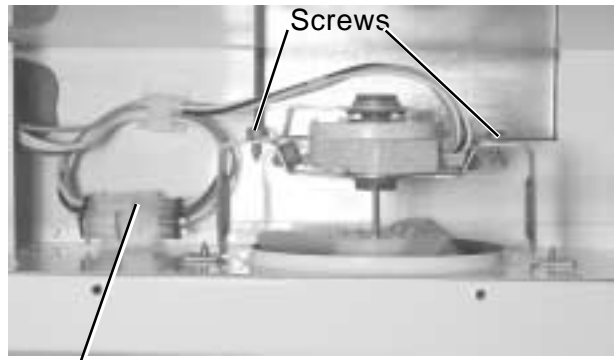
Note: When testing these motors:

- You cannot test with an ohmmeter.
- DC common is not AC common.
- Verify 2 voltage potentials:
 - a. Red to white - power for internal controller.
 - b. Yellow to white - power for fan.
- Observe circuit polarity.
- Motors can be run for short periods using a 9-volt battery. Connect the white wire to the negative (-) battery terminal only. Connect the red and yellow wires to the positive (+) battery terminal.



To remove the fan

1. Remove the drawer (see procedure).
2. Remove 5 screws securing the rear duct.
3. Disconnect the freezer light and light thermostat wiring and the remove duct.
4. Disconnect the wire connector from the fan motor.
5. Remove 2 screws from the fan motor bracket and remove the evaporator fan motor.



Wiring Harness Connector

Condenser Fan

The condenser fan utilizes a DC motor that operates at a single speed and is mounted in the machine compartment. When the fan is operating, air is pulled through the condenser, drawing air through the coils. The air is then exhausted past the compressor and out the front of the refrigerator on the right side.

Inlet air is available through the left front and left rear of the machine compartment.

If the fan shorts, it will damage the main control board. If the resistor on the main control board is burnt, you must replace the fan and the board (see photo page 15).

The condenser fan is mounted with screws to a fan shroud and mounting bracket in back of the condenser.

To remove the fan

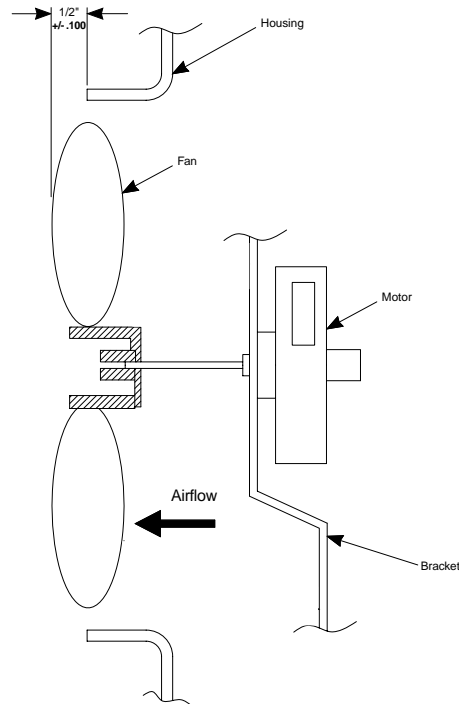
1. Extend the machine compartment chassis (see Machine Compartment).
2. Disconnect the condenser fan wiring at the harness connector.
3. Remove 4 screws and fan assembly.
4. Remove fan blade, 2 screws from the fan mounting bracket, and fan motor.

Note: A magnetic tip screwdriver may be required to install the condenser fan mounting screws.

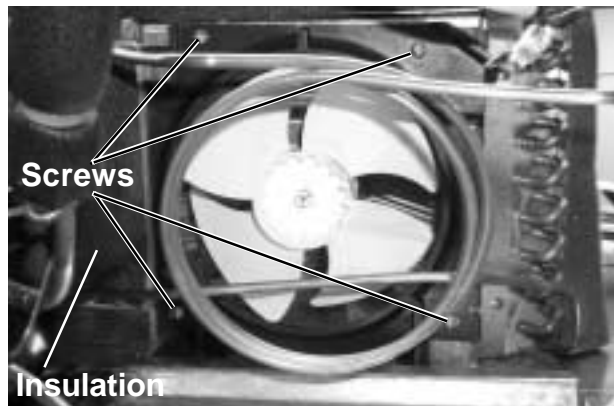
To install lower fan mounting screw:

1. Pull back foam insulation to visually locate screw hole.
2. Locate hole with fingers of left hand.
3. Place screw on the tip of the screwdriver.
4. Use your right hand to maneuver the screwdriver and use your left hand to guide the screw into the hole.

Condenser Fan Adjustment



GEA0148



P0003374

Drain Pan Fan

The Monogram BMNF has an auxiliary evaporation fan located under the unit. The purpose of this fan is to improve the evaporation rate of drain water should extreme conditions occur.

Should this fan malfunction, there is no replacement procedure. The absence of this fan will not affect drain water evaporation under normal conditions. A stainless steel hot gas loop routed through the drain pan will provide ample evaporation.

To remove the fan

1. Remove toe kick (2 screws).
2. Slide out and remove drain pan.
3. Disconnect harness from fan motor.
4. **Remove fan by unscrewing 2 screws accessible from within the pan housing.**

DEFROST SYSTEM

Adaptive Defrost

Adaptive Defrost can be described as a defrost system that adapts 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 an intelligent, electronic control to determine when the defrost cycle is necessary. In order to accomplish the correct 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

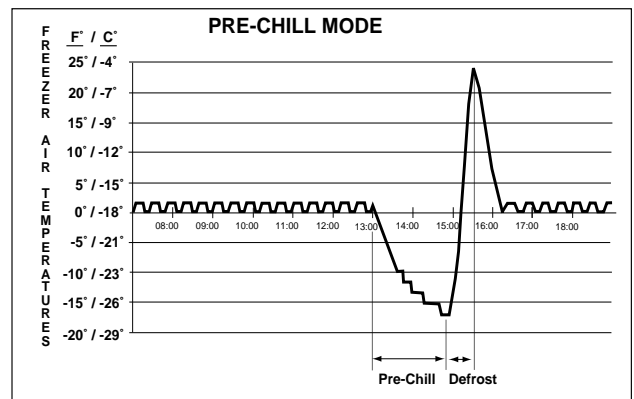
- Pre-Chill Operation
- Defrost Heater Operation
- Dwell Period
- Post Dwell

(See Pub. #31-9062 for more information on Adaptive Defrost.)

Adaptive Defrost (Cooling Operation)

During the cooling operation, the main control board monitors door opening (fresh food door and freezer drawer) and compressor run times. The board counts the time the doors are open. It reduces the length between defrosts by 300 seconds (multiplication factor) for each second that each door is open (if both doors are open, it reduces it by twice the amount). The multiplication factor reduces compressor run time. If the doors are not opened, the compressor will run up to 60 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 8 hours.

Adaptive Defrost (Pre-Chill Operation)



When the main control board determines that defrost is necessary, it will force the refrigerator into a continuous cool mode (pre-chill). During pre-chill, the freezer temperature may be driven below the set point. However, the fresh food temperature will be regulated by the evaporator fan running at low speed. Pre-chill will last for 15 minutes. These models do not have a defrost holdoff.

Adaptive Defrost (Defrost Heater Operation)

After 15 minutes of pre-chill operation, the main control board turns off the compressor, condenser fan, and evaporator fan.

During defrost operation, the main control board monitors the evaporator temperature using evaporator thermistor inputs. Typically, the evaporator thermistor will sense a temperature of 45 °F within 20 minutes. When the thermistor senses 45 °F, the main control board will terminate defrost heater operation. Maximum defrost cycle (heater on) time is 40 minutes (main control board time out).

The defrost system is protected by a defrost termination thermostat (bimetal switch). The thermostat opens when the evaporator temperature raises to 65 °F and closes when the evaporator temperature lowers to 45 °F.

Adaptive Defrost (Dwell Period)

After defrost heater operation has been terminated by the main control board, a 5-minute dwell period occurs. During this period, the compressor, condenser fan, 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. After the 5-minute dwell period, the unit goes into post dwell.

Adaptive Defrost (Post Dwell)

The post dwell period is designed to cool the evaporator before circulating air within the refrigerator. This prevents any residual heat on the evaporator from being distributed in the freezer. During this period, the compressor is on and the condenser fan is on, but the evaporator fan is off. Post dwell will last 10 minutes or until the evaporator temperature reaches 30 °F on these models.

Normal Operating Characteristics That Are Different from Previous Models

- Evaporator fan running, without compressor or condenser fan.
- Post Dwell (Adaptive Defrost), compressor, and condenser fan on with evaporator fan off after defrost cycle.
- Liner Protection Mode, fan comes on when the doors are open for 3 minutes.
- Different sound levels can be heard when the fan changes speed; however, the fan should never be heard oscillating between speeds.
- Response time for drastic temperature change is 2 to 10 minutes. The main control board will only respond to 8 °F of temperature change per minute as determined by resistance of sensor.

Abnormal Operating Characteristics (Incorrect Operation)

- Rapid fan speed changes, fan takes at least 1 minute to change speeds.
- Compressor running without the condenser fan. The compressor and condenser fan should always run at the same time.

Liner Protection Mode

The liner protection mode will activate if either of the doors has been open for 3 minutes. This mode will start the evaporator fan on high speed.

This mode is controlled by 2 timers. Timer #1 monitors door-open time. A 3-minute door-open count begins when the door is opened. If 3 minutes elapse before the door is closed, the liner protection mode will become active. Once the door is closed, timer #1 resets and liner protection mode goes into standby. In standby, normal fan and damper operations resume and timer #2 begins a 3-minute door-closed count. If 3 minutes elapse without a door opening, liner protection mode will completely deactivate. If a door is opened within the timer #2 door-closed count, the remaining time in the door-closed count will be deducted from the timer #1 door-open count.

Defrost Heater

Caution: Use care to avoid scratching the finish on unit walls.

The defrost heater is a single-calrod type, radiant heater mounted under the evaporator.

To remove the defrost heater:

1. Remove the drawer (see procedure).
2. Remove upper right slide/support assembly by removing 3 Phillips screws.
3. Remove lower right slide/support assembly by removing 3 Torx screws.
4. Remove 5 screws, disconnect light and light thermostat wiring, and remove rear duct.
5. Remove 4 screws and evaporator cover.
6. Disconnect the heater lead wires.
7. Remove the clip securing the heater to the evaporator and remove the heater.

Evaporator Thermistor

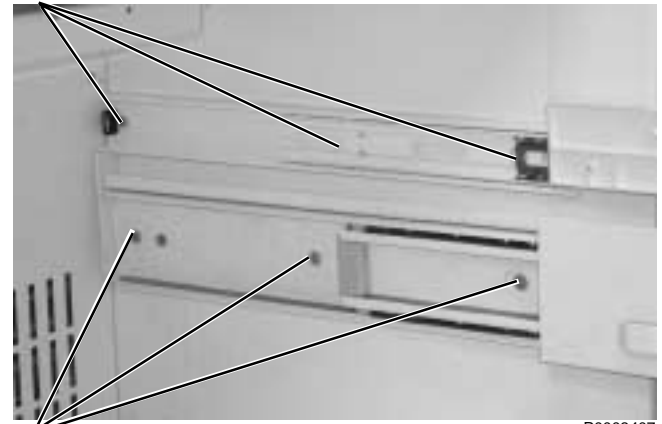
The evaporator thermistor is mounted on the upper left side of the evaporator. The defrost cycle will terminate when the main control board detects 45 °F from the evaporator thermistor. The main control board must sense 45 °F in less than 40 minutes, or the defrost cycle will time out. Average time to defrost is 20 minutes. Defrost time should not exceed 40 minutes. Defrost time does not include dwell and post dwell periods.

Defrost Overtemperature Thermostat

The defrost overtemperature thermostat (bimetal switch) is mounted on the evaporator and provides overtemperature protection during defrost. This thermostat will open at 65 °F and will close at 45 °F.

Note: The main control board will not know if the heater does not come on due to a broken heater, open defrost overtemperature thermostat, or open wiring harness. The defrost heater is controlled by maximum time on the main control board or temperature at the evaporator thermistor.

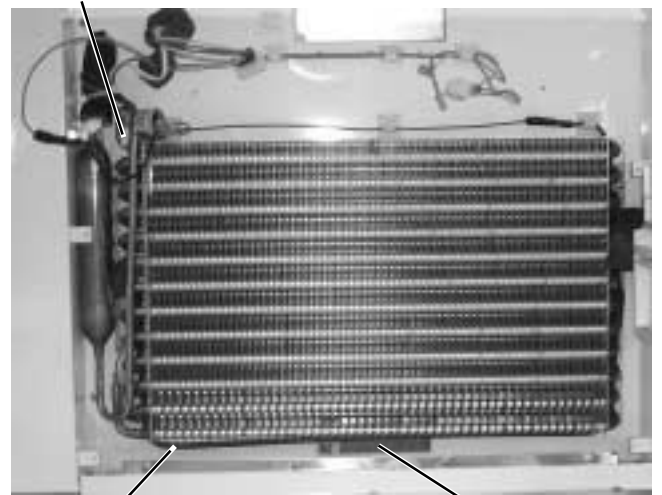
Screws



P0003407

Screws

Evaporator Thermistor

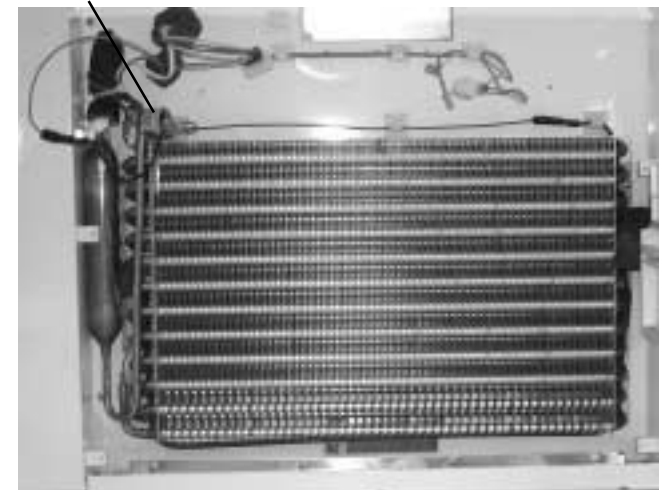


P0003343

Defrost Heater

Clip

Defrost Overtemperature Thermostat



P0003343

CONTROL SYSTEM

Touch Panel and Temperature Control Board

The temperature control assembly is located at the top front of the fresh food compartment and contains the touch panel and temperature control board.

The temperature control board receives switched DC voltage from the main control board. Input consists of pins 2 to 3. Failure of input results in default to most recent setting. Pin 1 provides digital communication between the temperature control board and the main control board. Failure of communication results in erratic control.

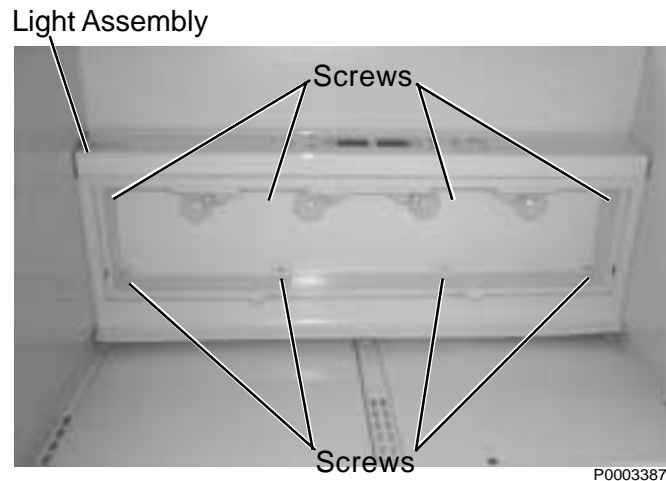
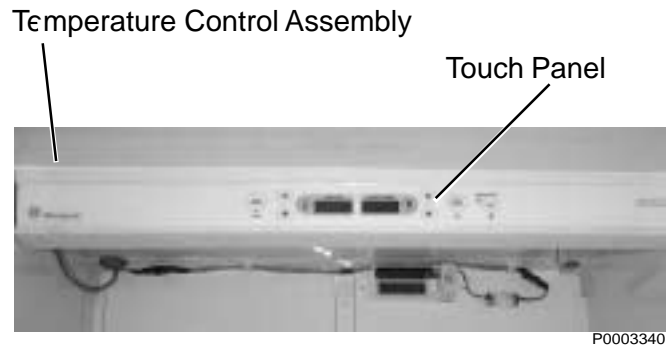
To remove the temperature control assembly:

1. Remove the light cover.
2. Remove 8 Phillips screws and the light assembly.

Note: Temperature control assembly is mounted on 3 slotted fasteners. Fasteners do not need to be loosened or removed.

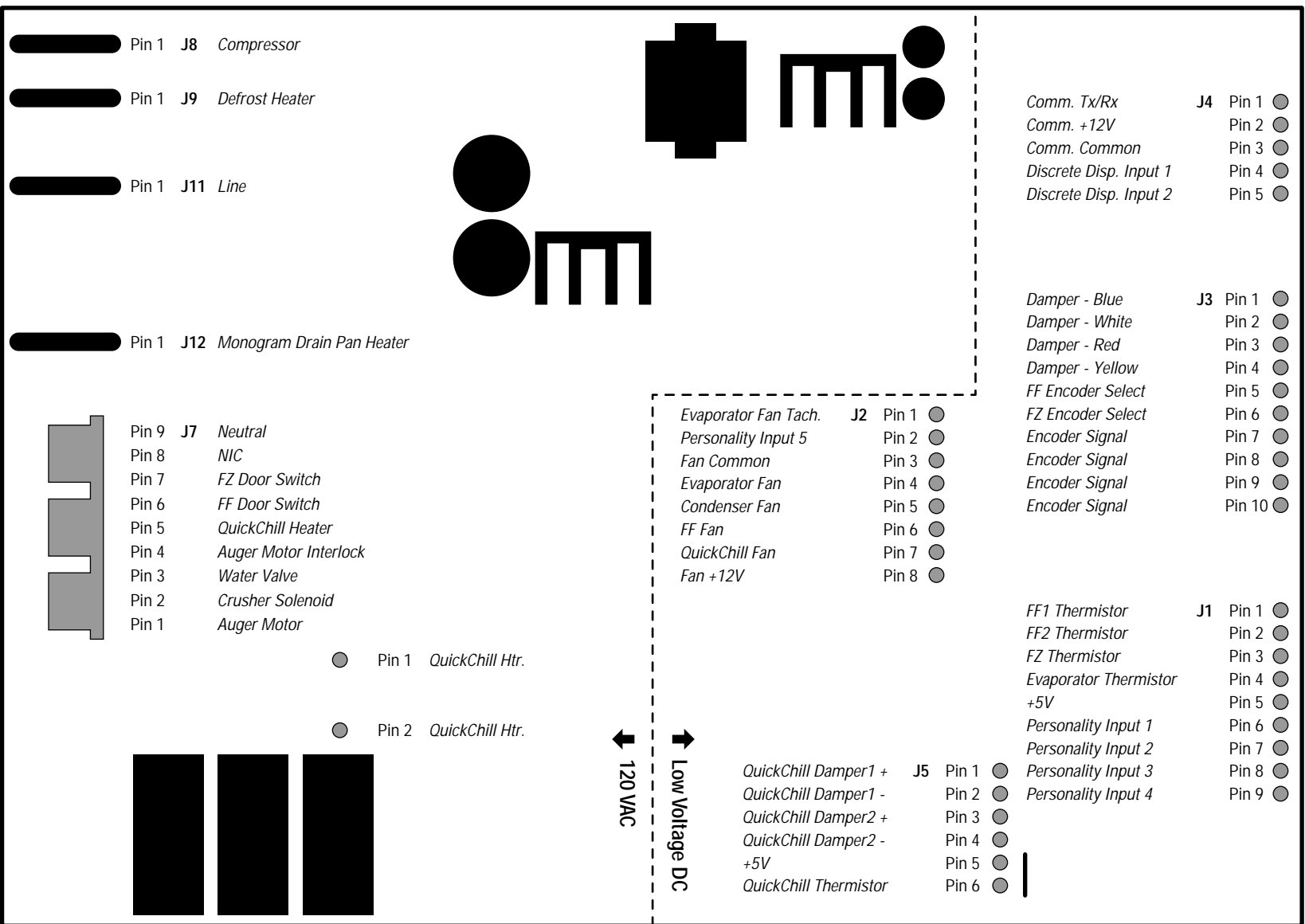
3. Carefully cut RTV seal between temperature control assembly and cabinet.
4. Slide the temperature control assembly back to release it from the slotted fasteners and lower the assembly.
5. Disconnect the wiring connector from the temperature control board.
6. Slide the touch panel out of the temperature control assembly.
7. Remove 2 screws and the temperature control board.

Note: Use RTV 102 to reseal temperature control assembly when reassembling.



Main Control Board

The main control board, located behind a metal cover at the top of the refrigerator in the machine compartment, manages the operation of the refrigerator by calculating response from various inputs.



GEA00859

| CONTROL BOARD PIN DEFINITIONS | | | | |
|-------------------------------|-----|-------|--------|--|
| CONNECTOR | PIN | INPUT | OUTPUT | FUNCTION |
| J1 | 1 | VDC | | Feedback of fresh food thermistor value. Thermistor is NTC, when temperature drops, resistance value increases, causing return voltage reduction. This value is used to cycle fresh food fan (when used), evaporator fan, compressor, and condensor fan. Feedback is filtered to respond to 8 degrees of change per minute. |
| J1 | 2 | VDC | | Feedback of second fresh food thermistor value (when used). Thermistor is NTC, when temperature drops, resistance value increases, causing return voltage reduction. This value is used to cycle fresh food fan (when used), evaporator fan, compressor, and condensor fan. Feedback is filtered to respond to 8 degrees of change per minute. |
| J1 | 3 | VDC | | Feedback of freezer thermistor value. Thermistor is NTC, when temperature drops, resistance value increases, causing return voltage reduction. This value is used to cycle evaporator fan, compressor, and condensor fan, and will not cycle fresh food fan (when used). Feedback is filtered to respond to 8 degrees of change per minute. |
| J1 | 4 | VDC | | Feedback of evaporator thermistor value. Thermistor is NTC, when temperature drops, resistance value increases, causing return voltage reduction. This thermistor value is used to cycle the heater on during defrost when temperature is below defrost value and off when the temperature is above defrost value. This value is also read during power-up to determine if refrigerator goes into pulldown mode or cycle continuation. Feedback is unfiltered, responds immediately. |
| J1 | 5 | | VDC | Provides 5 VDC for thermistors and personality pins on J1. |
| J1 | 8 | VDC | | Selection pin that, when connected in combination with other personality pins, determines model and programming used. Reads combination on power-up only. |
| J1 | 9 | VDC | | Selection pin that, when connected in combination with other personality pins, determines model and programming used. Reads combination on power-up only. |

| CONTROL BOARD PIN DEFINITIONS | | | | |
|-------------------------------|-----|-------|--------|---|
| CONNECTOR | PIN | INPUT | OUTPUT | FUNCTION |
| J2 | 1 | Hz | | Feedback from evaporator fan. This feedback frequency is used to control the PWM for fan speeds. |
| J2 | 3 | | VDC | Fan common - VDC ground. |
| J2 | 4 | | VDC | Output to evaporator fan for motor operation. Effective voltage is determined by PWM. |
| J2 | 5 | | VDC | Output to condensor fan for motor operation. Effective voltage is determined by PWM, speed set in EEPROM. |
| J2 | 6 | | | Drain pan fan ground. |
| J2 | 8 | | VDC | Provides 12-VDC supply voltage to all fans, constant voltage. |

| CONTROL BOARD PIN DEFINITIONS | | | | |
|-------------------------------|-----|-------|--------|-----------------------|
| CONNECTOR | PIN | INPUT | OUTPUT | FUNCTION |
| J3 | 1 | | VDC | Damper stepper motor. |
| J3 | 2 | | VDC | Damper stepper motor. |
| J3 | 3 | | VDC | Damper stepper motor. |
| J3 | 4 | | VDC | Damper stepper motor. |

CONTROL BOARD PIN DEFINITIONS

| CONNECTOR | PIN | INPUT | OUTPUT | FUNCTION |
|-----------|-----|-----------------------|-----------------------|--|
| J4 | 1 | Digital Communication | Digital Communication | Two-way digital communication between control and control board. |
| J4 | 2 | | VDC | 12-VDC supply. |
| J4 | 3 | | VDC | DC common. |

CONTROL BOARD PIN DEFINITIONS

| CONNECTOR | PIN | INPUT | OUTPUT | FUNCTION |
|-----------|-----|-------|--------|---|
| J7 | 6 | VAC | | Receives L1 input from fresh food door switch when switch closes (door open). This input is used for evaporator fan control, liner protection mode calculations, door alarm calculations, and adaptive defrost calculations. |
| J7 | 7 | VAC | | Receives L1 input from freezer door switch when switch closes (door open). This input is used for evaporator fan control, liner protection mode calculations, adaptive defrost calculations, door alarm calculations, and some door interlock functions. Switch must be closed in door closed position (switch depressed) for dispenser light and duct door magnet to energize. |
| J7 | 9 | VAC | | AC neutral in. |

CONTROL BOARD PIN DEFINITIONS

| CONNECTOR | PIN | INPUT | OUTPUT | FUNCTION |
|-----------|-----|-------|--------|--|
| J8 | 1 | | VAC | Switched L1 voltage to compressor circuit. A timer counts how long circuit is energized and uses this information to determine when the next defrost will occur. |

CONTROL BOARD PIN DEFINITIONS

| CONNECTOR | PIN | INPUT | OUTPUT | FUNCTION |
|-----------|-----|-------|--------|--|
| J9 | 1 | | VAC | Switched L1 voltage to the defrost circuit - 120 VAC. A timer counts how long this circuit is energized and uses this information to determine if the next defrost cycle is adaptive or nonadaptive. |

CONTROL BOARD PIN DEFINITIONS

| CONNECTOR | PIN | INPUT | OUTPUT | FUNCTION |
|-----------|-----|-------|--------|--|
| J11 | 1 | VAC | | Constant L1 voltage to control board circuits - 120 VAC input potential for switched L1 terminals. |

Main Control Board Locator Tables

| Main Control Board J1 Connector (Low-Voltage DC Side) | | | | |
|--|-------------------|-----------------------------------|---------------------|------------------------------------|
| Pin | Wire Color | Component Termination | Input/Output | Pin-to-Pin Voltage Reading |
| 1 | Purple | Fresh food thermistor 1 | Input | J1 pin 1 to pin 5 = 2.8 to 3.5 VDC |
| 2 | Blue | Fresh food thermistor 2 | Input | J1 pin 2 to pin 5 = 2.8 to 3.5 VDC |
| 3 | Red | Freezer thermistor | Input | J1 pin 3 to pin 5 = 2.8 to 3.5 VDC |
| 4 | Black | Evaporator thermistor | Input | J1 pin 4 to pin 5 = 2.8 to 3.5 VDC |
| 5 | Brown | Thermistor supply voltage (5 VDC) | Output | J1 pin 5 to J4 pin 3 = 5 VDC |

| Main Control Board J2 Connector (Low-Voltage DC Side) | | | | |
|--|-------------------|------------------------------|---------------------|--|
| Pin | Wire Color | Component Termination | Input/Output | Pin-to-Pin Voltage Reading |
| 1 | Blue | Evaporator fan tachometer | Input | J2 pin 1 to pin 3 = 6.3 VDC |
| 3 | White | Fan common | Common | J2 pin 3 to pin 8 = 12 VDC |
| 4 | Yellow | Evaporator fan | Output | J2 pin 4 to pin 3 = 12.6 VDC (high), 8.1 VDC (med.), 8.1 VDC (low) |
| 5 | Pink | Condenser fan | Output | J2 pin 5 to pin 3 = 13.4 VDC (condenser fan is single speed) |
| 6 | Black | Drain pan fan | Ground | VDC ground |
| 8 | Red | Fan supply voltage (12 VDC) | Output | J2 pin 8 to pin 3 = 12 VDC |

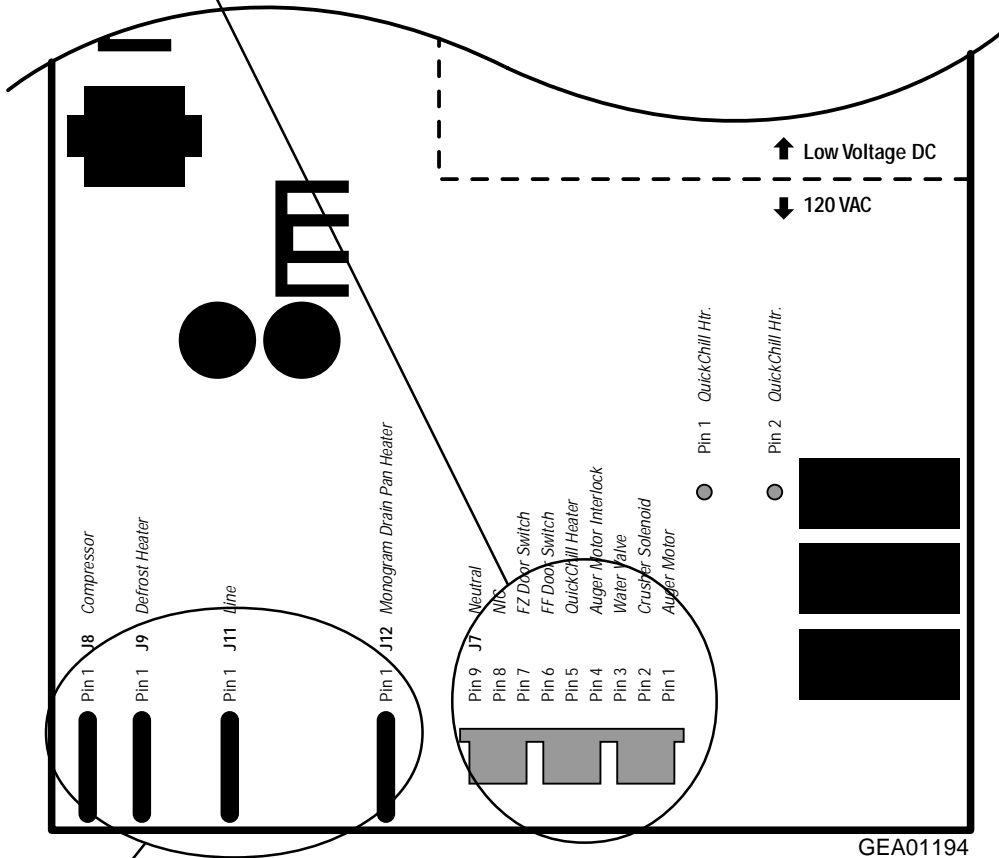
| Main Control Board J3 Connector (Low-Voltage DC Side) | | | | |
|--|-------------------|------------------------------|---------------------|---|
| Pin | Wire Color | Component Termination | Input/Output | Pin-to-Pin Voltage Reading |
| 1 | Blue | Damper Stepper Motor | | J3 pin 1 to J4 pin 3 = Standing Voltage 2.3 VDC Traveling Voltage = 6.0 VDC |
| 2 | White | Damper Stepper Motor | | J3 pin 2 to J4 pin 3 = Standing Voltage 2.3 VDC Traveling Voltage = 6.0 VDC |
| 3 | Red | Damper Stepper Motor | | J3 pin 3 to J4 pin 3 = Standing Voltage 2.3 VDC Traveling Voltage = 6.0 VDC |
| 4 | Yellow | Damper Stepper Motor | | J3 pin 4 to J4 pin 3 = Standing Voltage 2.3 VDC Traveling Voltage = 6.0 VDC |

| Main Control Board J4 Connector (Low-Voltage DC Side) | | | | |
|--|-------------------|------------------------------|---------------------|--|
| Pin | Wire Color | Component Termination | Input/Output | Pin-to-Pin Voltage Reading |
| 1 | Red | Temperature control | Communication | Two-way digital communication between temperature control and control board. |
| 2 | Brown | Temperature control | VDC | 12-VDC supply. |
| 3 | Orange | Temperature control | VDC | DC common. |

| Main Control Board J7 Connector (120 VAC Side) | | | | |
|---|-------------------|------------------------------|---------------------|---|
| Pin | Wire Color | Component Termination | Input/Output | Pin-to-Pin Voltage Reading |
| 6 | Blue | Fresh food door light switch | Input | J7 pin 6 to J7 pin 9 = 120 VAC (FF door open) |
| 7 | Yellow | Freezer door light switch | Input | J7 pin 7 to J7 pin 9 = 120 VAC (FZ door open) |
| 9 | Orange | Neutral | Neutral | Neutral |

**Main Control Board
J7 Connector (120 VAC Side)**

| Pin | Wire Color | Component Termination | Input/Output | Pin-to-Pin Voltage Reading |
|-----|------------|------------------------------|--------------|---|
| 6 | Blue | Fresh food door light switch | Input | J7 pin 6 to J7 pin 9 = 120 VAC (FF door open) |
| 7 | Yellow | Freezer door light switch | Input | J7 pin 7 to J7 pin 9 = 120 VAC (FZ door open) |
| 9 | Orange | Neutral | Neutral | Neutral |

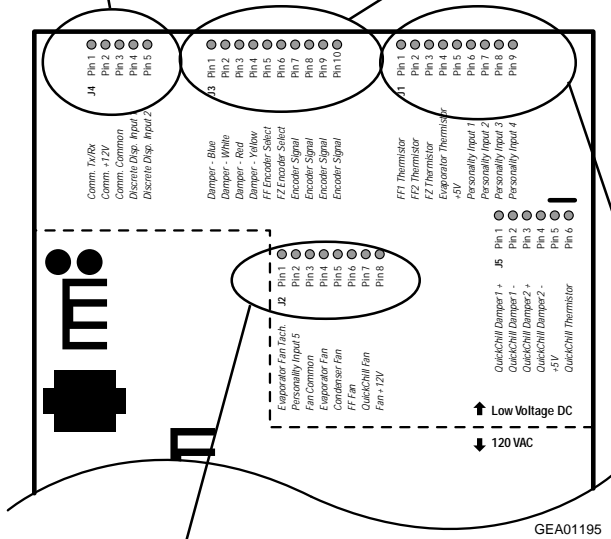


**Main Control Board J8, J9, J11,
Connectors (High-Voltage Side)**

| Pin | Wire Color | Input/Output | Pin to Pin Voltage Reading |
|-----|------------|--------------|----------------------------|
| J8 | White | Output | J8 to J7 pin 9 = 120 VAC |
| J9 | Red | Output | J9 to J7 pin 9 = 120 VAC |
| J11 | Brown | Input | J11 to J7 pin 9 = 120 VAC |

| Main Control Board J4 Connector (Low-Voltage DC Side) | | | | |
|--|------------|-----------------------|---------------|--|
| Pin | Wire Color | Component Termination | Input/Output | Pin-to-Pin Voltage Reading |
| 1 | Red | Temperature control | Communication | Two-way digital communication between temperature control and control board. |
| 2 | Brown | Temperature control | VDC | 12-VDC supply. |
| 3 | Orange | Temperature control | VDC | DC common. |

| Main Control Board J3 Connector (Low-Voltage DC Side) | | | | |
|--|------------|-----------------------|--------------|---|
| Pin | Wire Color | Component Termination | Input/Output | Pin-to-Pin Voltage Reading |
| 1 | Blue | Damper Stepper Motor | | J3 pin 1 to J4 pin 3 = Standing Voltage 2.3 VDC Traveling Voltage = 6.0 VDC |
| 2 | White | Damper Stepper Motor | | J3 pin 2 to J4 pin 3 = Standing Voltage 2.3 VDC Traveling Voltage = 6.0 VDC |
| 3 | Red | Damper Stepper Motor | | J3 pin 3 to J4 pin 3 = Standing Voltage 2.3 VDC Traveling Voltage = 6.0 VDC |
| 4 | Yellow | Damper Stepper Motor | | J3 pin 4 to J4 pin 3 = Standing Voltage 2.3 VDC Traveling Voltage = 6.0 VDC |



| Main Control Board J1 Connector (Low-Voltage DC Side) | | | | |
|--|------------|-----------------------------------|--------------|------------------------------------|
| Pin | Wire Color | Component Termination | Input/Output | Pin-to-Pin Voltage Reading |
| 1 | Purple | Fresh food thermistor 1 | Input | J1 pin 1 to pin 5 = 2.8 to 3.5 VDC |
| 2 | Blue | Fresh food thermistor 2 | Input | J1 pin 2 to pin 5 = 2.8 to 3.5 VDC |
| 3 | Red | Freezer thermistor | Input | J1 pin 3 to pin 5 = 2.8 to 3.5 VDC |
| 4 | Black | Evaporator thermistor | Input | J1 pin 4 to pin 5 = 2.8 to 3.5 VDC |
| 5 | Brown | Thermistor supply voltage (5 VDC) | Output | J1 pin 5 to J4 pin 3 = 5 VDC |

| Main Control Board J2 Connector (Low-Voltage DC Side) | | | | |
|--|------------|-----------------------------|--------------|--|
| Pin | Wire Color | Component Termination | Input/Output | Pin-to-Pin Voltage Reading |
| 1 | Blue | Evaporator fan tachometer | Input | J2 pin 1 to pin 3 = 6.3 VDC |
| 3 | White | Fan common | Common | J2 pin 3 to pin 8 = 12 VDC |
| 4 | Yellow | Evaporator fan | Output | J2 pin 4 to pin 3 = 12.6 VDC (high), 8.1 VDC (med.), 8.1 VDC (low) |
| 5 | Pink | Condenser fan | Output | J2 pin 5 to pin 3 = 13.4 VDC (condenser fan is single speed) |
| 6 | Black | Drain pan fan | Ground | VDC ground |
| 8 | Red | Fan supply voltage (12 VDC) | Output | J2 pin 8 to pin 3 = 12 VDC |

Thermistors

This main control board uses input from 4 thermistors. These thermistors are located in the fresh food section, the freezer section, and on the evaporator. The main control board monitors the thermistors to determine the temperature in these areas of the unit and determines which components to run and when to run them based on this information.

| Thermistor Values | | |
|-------------------------|-------------------------|-------------------------|
| Temperature Degrees (C) | Temperature Degrees (F) | Resistance in Kilo-ohms |
| -40 | -40 | 166.8 kΩ |
| -30 | -22 | 88 kΩ |
| -20 | -4 | 48.4 kΩ |
| -10 | 14 | 27.6 kΩ |
| 0 | 32 | 16.3 kΩ |
| 10 | 50 | 10 kΩ |
| 20 | 68 | 6.2 kΩ |
| 30 | 86 | 4 kΩ |
| 40 | 104 | 2.6 kΩ |
| 50 | 122 | 1.8 kΩ |
| 60 | 140 | 1.2 kΩ |

| Temperature Set Point Chart | | | | | |
|-----------------------------|---|---------|-------------------------|--------------------------------------|---------|
| Fresh Food Control Setting | Fresh Food Thermistor Temperature Range | | Freezer Control Setting | Freezer Thermistor Temperature Range | |
| | Minimum | Maximum | | Minimum | Maximum |
| 34 °F | 32 °F | 36 °F | -5 °F | -10 °F | 0 °F |
| 35 °F | 33 °F | 37 °F | -4 °F | -9 °F | 1 °F |
| 36 °F | 34 °F | 38 °F | -3 °F | -8 °F | 2 °F |
| 37 °F | 35 °F | 39 °F | -2 °F | -7 °F | 3 °F |
| 38 °F | 36 °F | 40 °F | -1 °F | -6 °F | 4 °F |
| 39 °F | 37 °F | 41 °F | 0 °F | -5 °F | 5 °F |
| 40 °F | 38 °F | 42 °F | 1 °F | -4 °F | 6 °F |
| 41 °F | 39 °F | 43 °F | 2 °F | -3 °F | 7 °F |
| 42 °F | 40 °F | 44 °F | 3 °F | -2 °F | 8 °F |
| 43 °F | 41 °F | 45 °F | 4 °F | -1 °F | 9 °F |
| 44 °F | 42 °F | 46 °F | 5 °F | 0 °F | 10 °F |
| 45 °F | 43 °F | 47 °F | 6 °F | 1 °F | 11 °F |

ELECTRICAL SYSTEM

Door and Drawer Switches

The door switch (fresh food door or freezer drawer) closes when the door is open. When the door switch is closed, L1 is provided to the compartment light(s). The main control board receives L1 input on pin 6, J7 when the fresh food door switch is closed (door open). The main control board receives L1 input on pin 7, J7 when the freezer drawer switch is closed (door open).

Sabbath Switch

The Sabbath switch is located behind the grille panel on the control board cover and will activate the Sabbath feature. The Sabbath switch will open the light circuit preventing the interior lights from receiving L1; therefore, the lights will not operate when either door is open.

Temperature Overload Device (TOD)

A temperature overload device is wired in series with both the fresh food light and the freezer light. If either light should reach excessive temperatures due to a door/drawer being open for an extended period, the corresponding TOD will open the light circuit. The TOD will open at 190 °F and close at 130 °F.

REFRIGERATION SYSTEM

The major components of the refrigeration system are a reciprocating-type compressor, condenser, condenser loop, dryer, and evaporator. These components, except for the condenser loop, are all replaceable separately.

Compressor

The compressor is a reciprocating type. Refer to the mini-manual for the BTU/hour rating and the compressor capacity test specification.

A copper process tube is provided for access to the low-pressure side of the refrigeration system.

Note: The woodpecker clip holds the capillary tube in thermal contact with the compressor discharge tube. If the capillary tube is not clipped to the discharge tube, a knocking noise may occur during compressor operation.

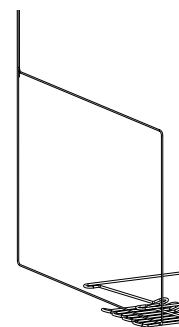
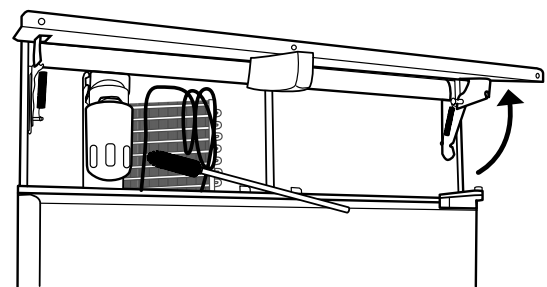
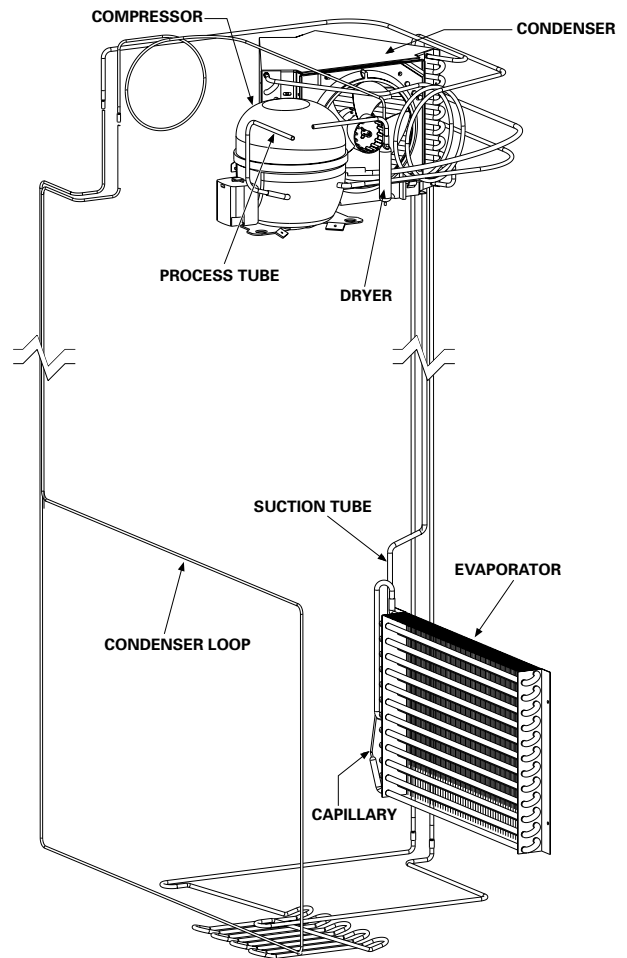
Refer to the compressor replacement instructions included with the replacement compressor.

Condenser

The condenser is located behind the grille panel at the top of the refrigerator and is made of steel tubing. The outlet of the condenser is connected to a copper jumper tube that is connected to the inlet of the condenser loop. In a normal home environment, there is no need for routine condenser cleaning. However, in environments that may be particularly dusty or greasy, the condenser should be cleaned periodically for efficient refrigeration operation. An ordinary appliance brush should be all that is needed. Functionally, the condenser does the same job as previous models. Air is drawn through the condenser by the condenser fan from the front left and rear left of the machine compartment. Air exits only from the right side of the machine compartment.

Condenser Loop

The condenser loop, made of copper tubing, is foamed in place behind the breaker frame and across the mullion. It is not accessible for replacement. The tubing is routed from the machine compartment forward to the mullion, down to the freezer compartment, around the front perimeter of the freezer, and back into the machine compartment. The outlet of the condenser loop is connected to the dryer inlet.



Dryer

The dryer is positioned vertically in the center of the machine compartment. A copper process tube, connected to the inlet of the dryer, provides access to the high-pressure side of the refrigeration system. The capillary is connected to the outlet of the dryer. Replacement of filter dryer requires additional refrigerant when installed (0.5 oz).

Evaporator

The evaporator is made of copper and aluminum and is located below the evaporator fan and behind the evaporator cover at the back of the freezer compartment. An accumulator is attached to the left side of the evaporator. The accumulator eliminates woodpecker knock from the sealed system.

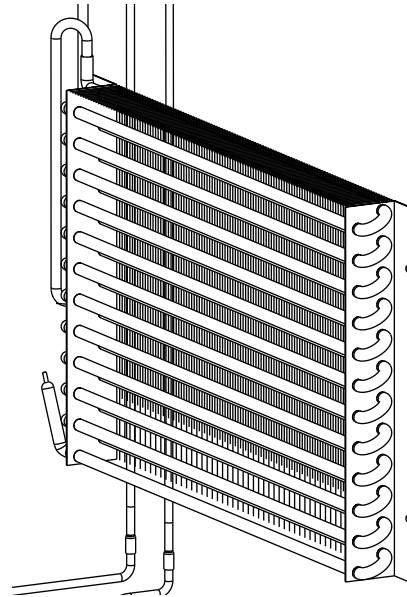
To replace the evaporator

1. Recover the refrigerant.
2. Remove the freezer drawer (see procedure).
3. Remove the defrost overtemperature thermostat and evaporator thermistor.
4. Remove the defrost heater (see procedure).
5. Disconnect the ground wire from the evaporator and position all wiring to allow for evaporator removal.
6. Remove the 2 screws that hold the evaporator to the cabinet.

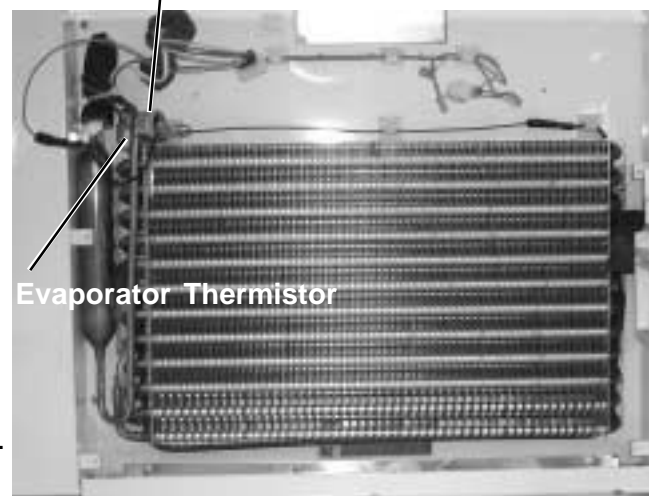
Caution:

- **If desoldering the evaporator, HEAT SHIELD, P/N WR49X10025, must be used to prevent damage to freezer liner.**
- **Protect wiring from heat during desoldering and resoldering.**
- **To prevent damage to the capillary tube, the capillary tube must be desoldered first.**

11. Desolder the capillary tube from the evaporator.
12. Desolder the suction line. Use a pair of pliers to hold the evaporator.
13. Remove the evaporator.
14. Using a file, score the capillary tube just above the old solder and break the solder-covered section off. This will help prevent the capillary tube from becoming plugged when resoldering.
15. Position the new evaporator in the cabinet. Insert the suction line and capillary tube into the evaporator.



Defrost Overtemperature Thermostat



Evaporator Thermistor

16. Solder the suction line to the evaporator using silfos.

Note: Mastic should be replaced on evaporator discharge line after replacing the evaporator.

17. Solder the capillary tube to the evaporator using silfos.

18. Install a replacement dryer.

19. Evacuate and recharge the system using currently accepted procedures.

Auxiliary Line

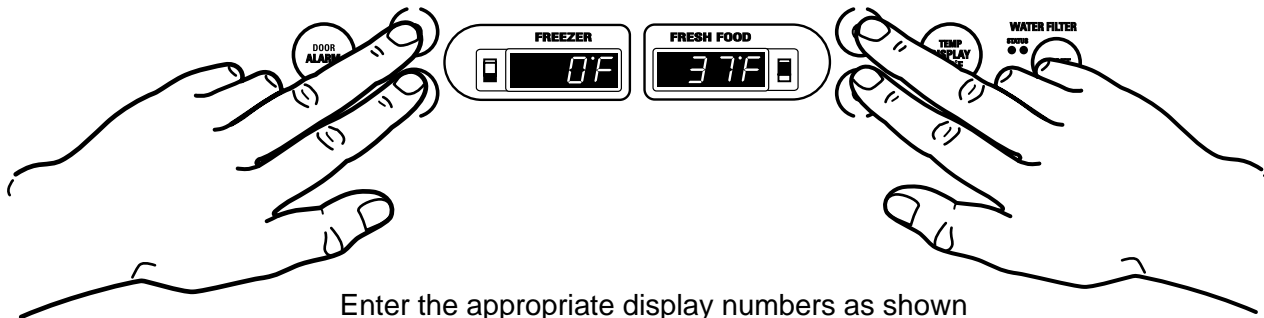
A stainless steel hot gas loop is routed from the machine compartment down the back of the unit into the drain pan and back up to the machine compartment. Hot refrigerant gas flows through the gas loop to assist the evaporation of drain water collected in the drain pan.

Refrigerant Charge

The refrigerant used in this model is type R134a. Refer to the mini-manual or model tag for the exact refrigerant charge quantity.

Diagnostic Mode

Enter the diagnostic mode by pressing both the freezer temperature pads (plus and minus) and the refrigerator temperature pads (plus and minus) simultaneously. All 4 pads must be held for approximately 3 seconds. Blinking "0's" in both displays indicate the refrigerator has entered the test mode.



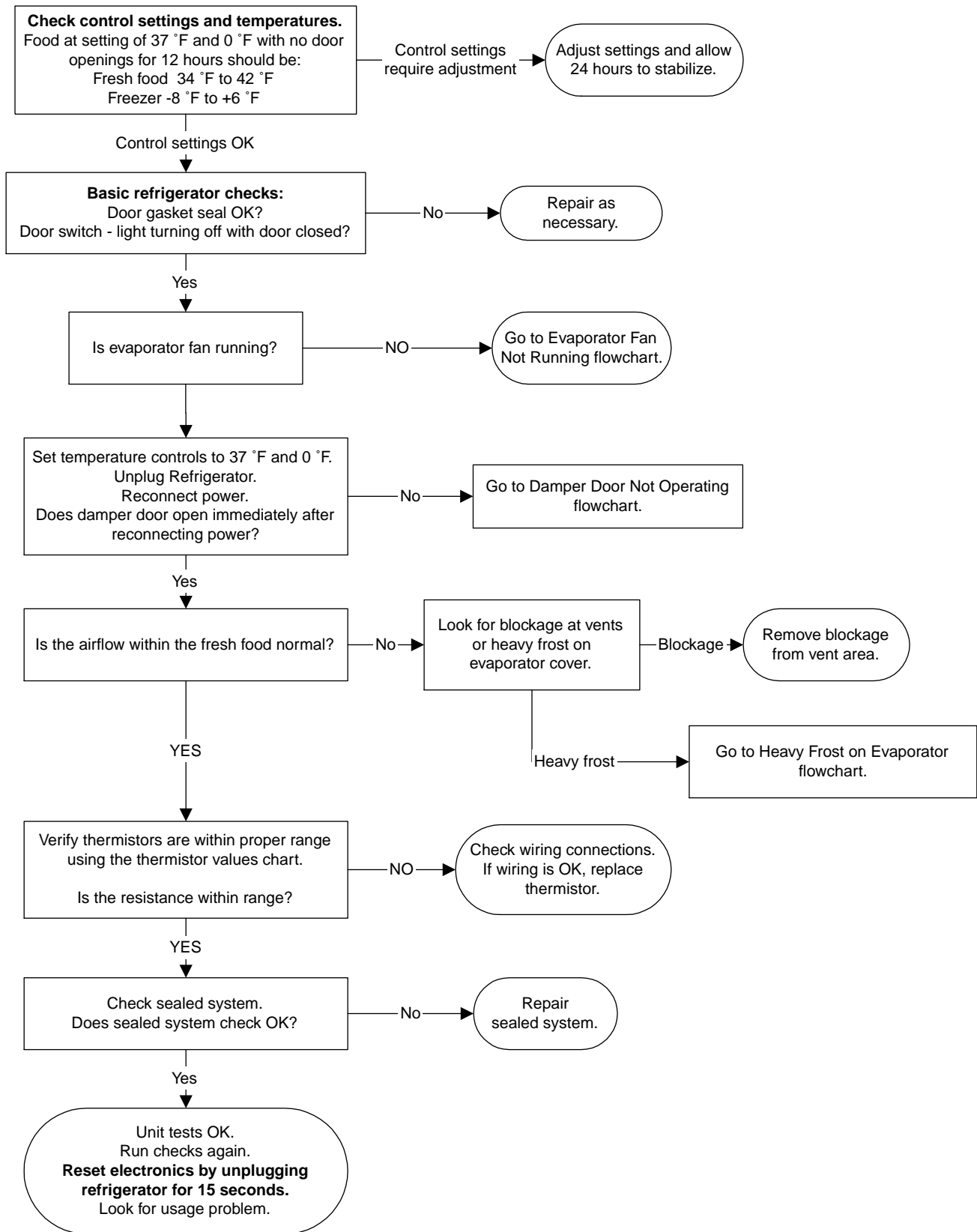
Enter the appropriate display numbers as shown below and press any pad other than the temperature pads to activate that test mode.

| Freezer Display | Fresh Food Display | Diagnostics | Results | Comments |
|-----------------|--------------------|---|--|---|
| 0 | 2 | Communication check between Temperature Control and Main Control. | "P" on freezer display if OK. "F" means problem is found. | |
| 0 | 7 | Control and Sensor System Test. | Checks each thermistor and displays "P" for pass and "0" for fail. | See note 1 below. |
| 1 | 0 | Damper Test. | Opens damper, pauses briefly, and then closes damper. | |
| 1 | 2 | 100% Run Time. | Sealed system on 100% of the time. Times out after 1 hour. | |
| 1 | 3 | Pre-chill Test. | Starts pre-chill mode. Unit returns to normal on its own. | |
| 1 | 4 | Defrost Test. | Toggles on the defrost cycle. See note 2 below. | Must press again to turn heaters off. See note 2 below. |
| 1 | 5 | Main Control Reset. | Causes a system reset. | |
| 1 | 6 | Exit Diagnostic Mode. | Causes a temperature control board reset. | |

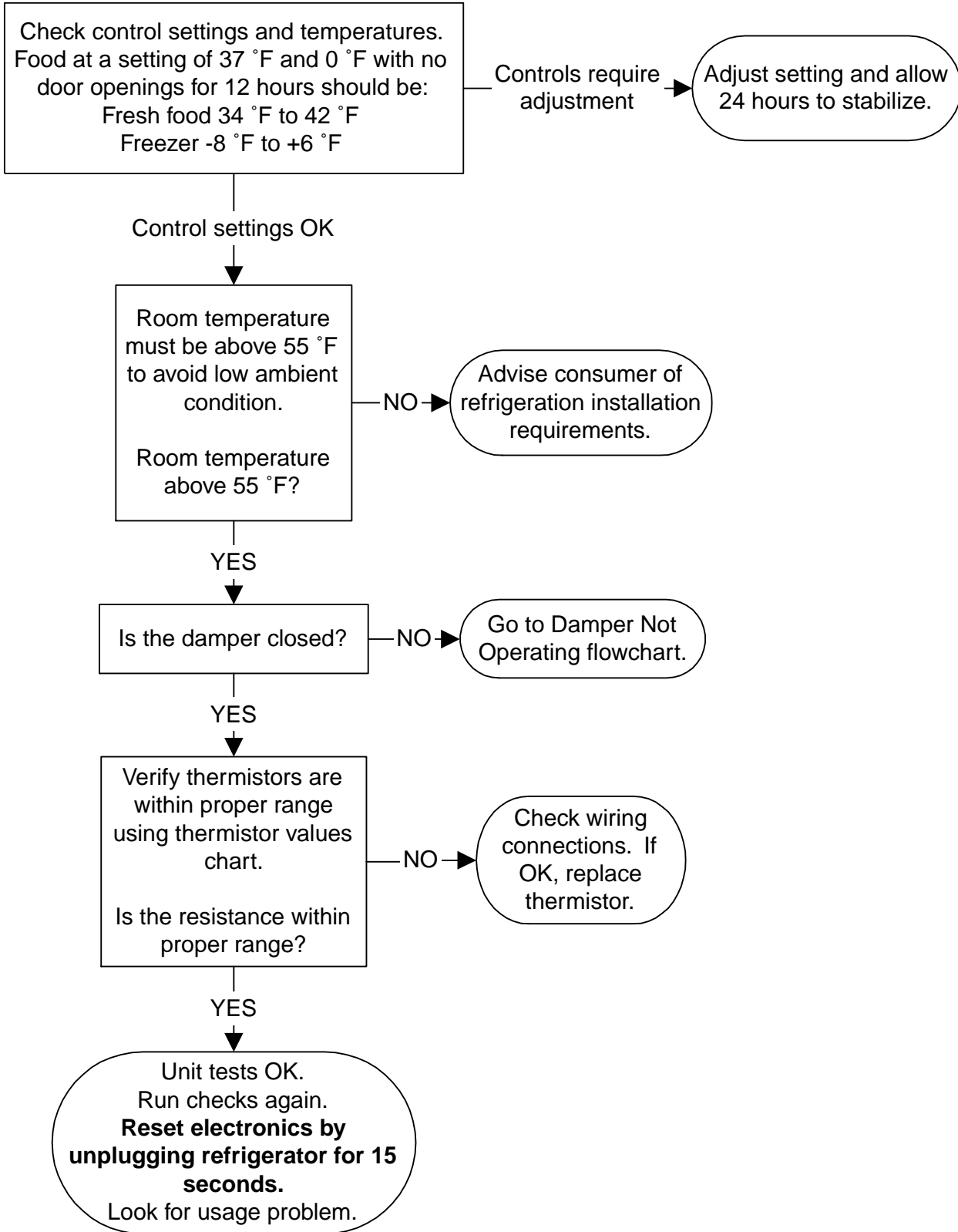
Note 1: Display order is: 1) Fresh Food 1, 2) Fresh Food 2, 3) Custom Cool, 4) Thermistor test results are P = pass, 0 = fail, S = short to 5 VDC, B = bad amplifier (replace main control).

Note 2: You must enter the defrost test again to toggle the defrost heater off at the end of the test. The heater will not come on if the evaporator thermistor is warm.

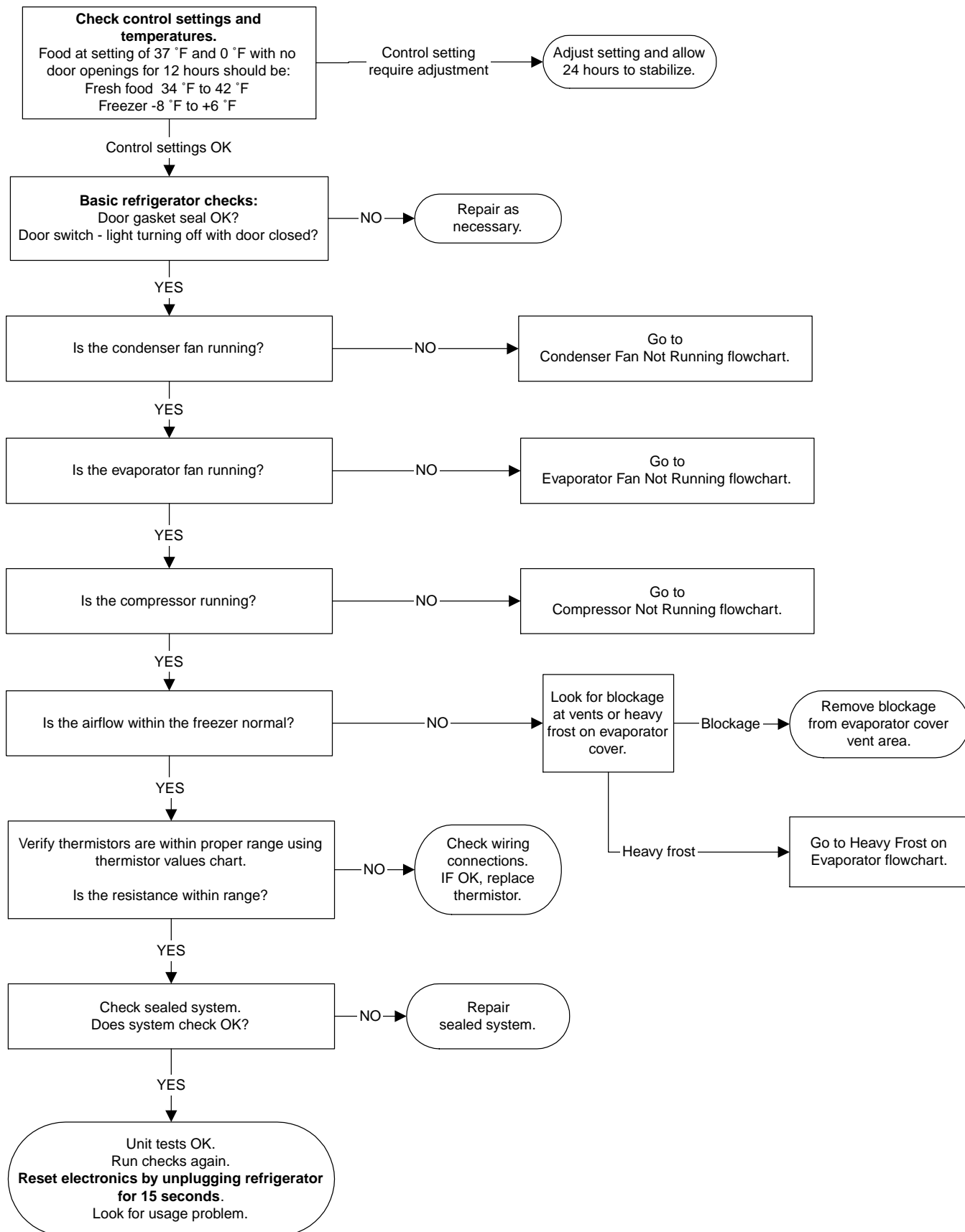
Fresh Food Warm - Freezer Normal



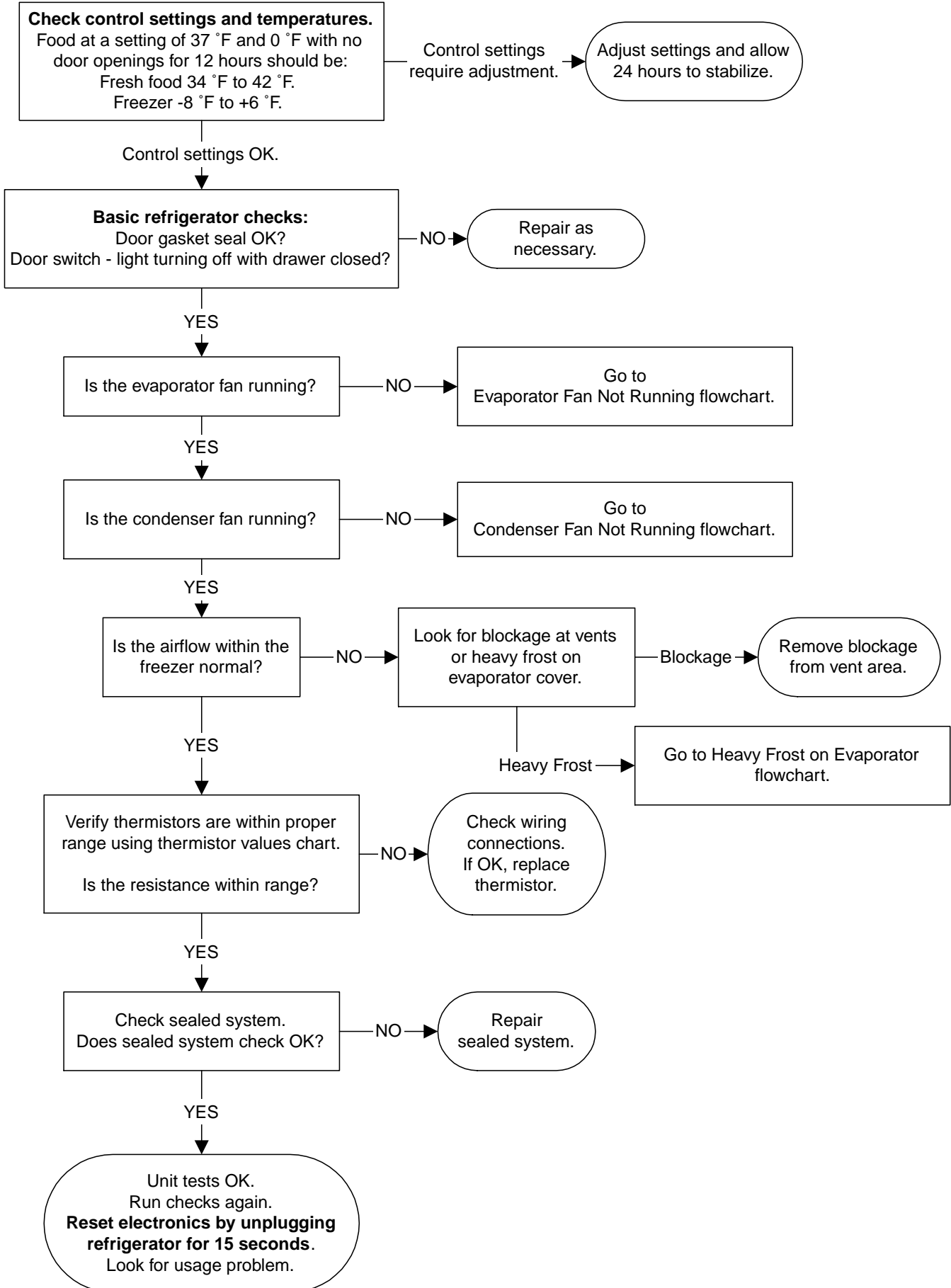
Fresh Food Too Cold - Freezer Normal



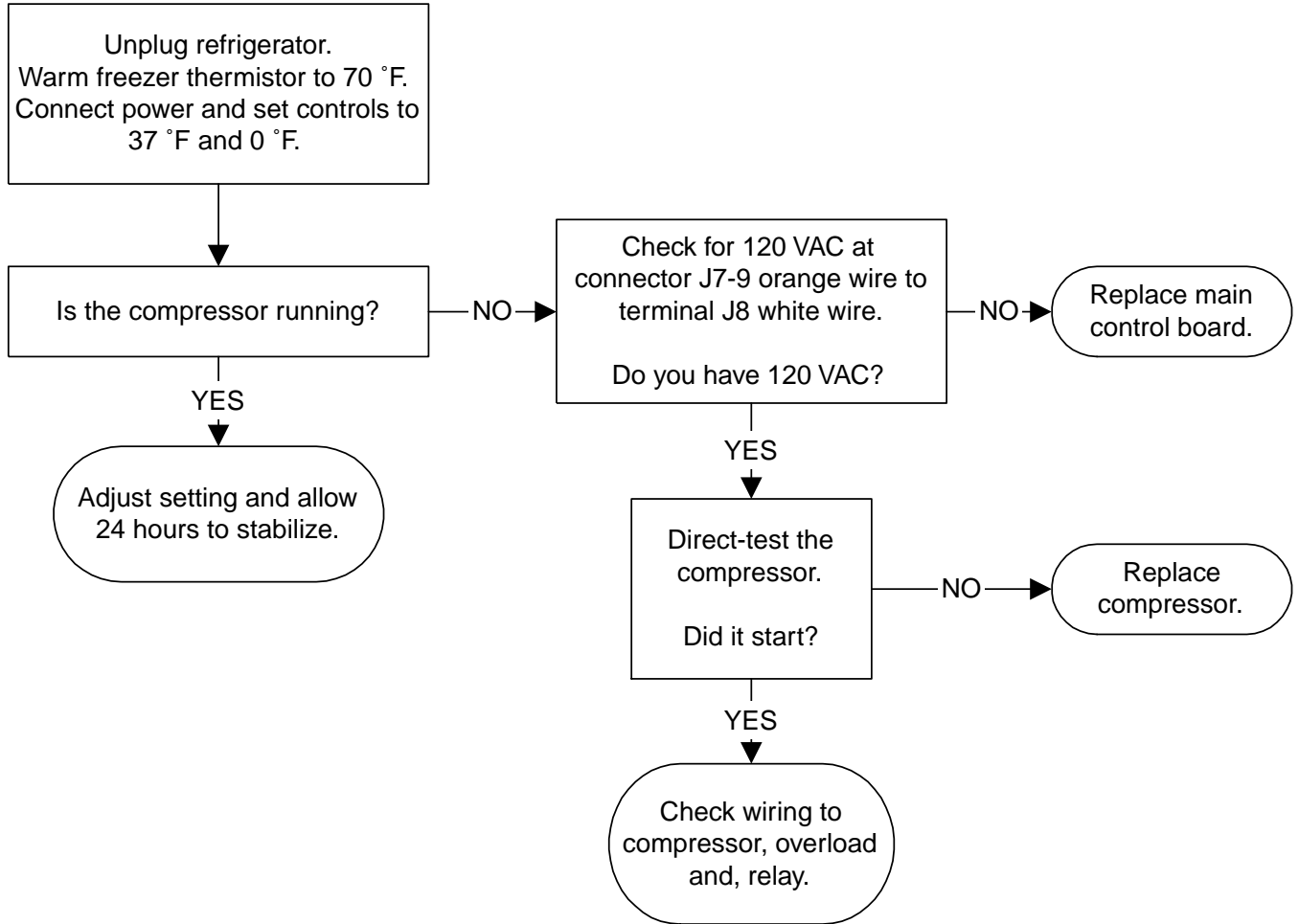
Fresh Food Warm - Freezer Warm



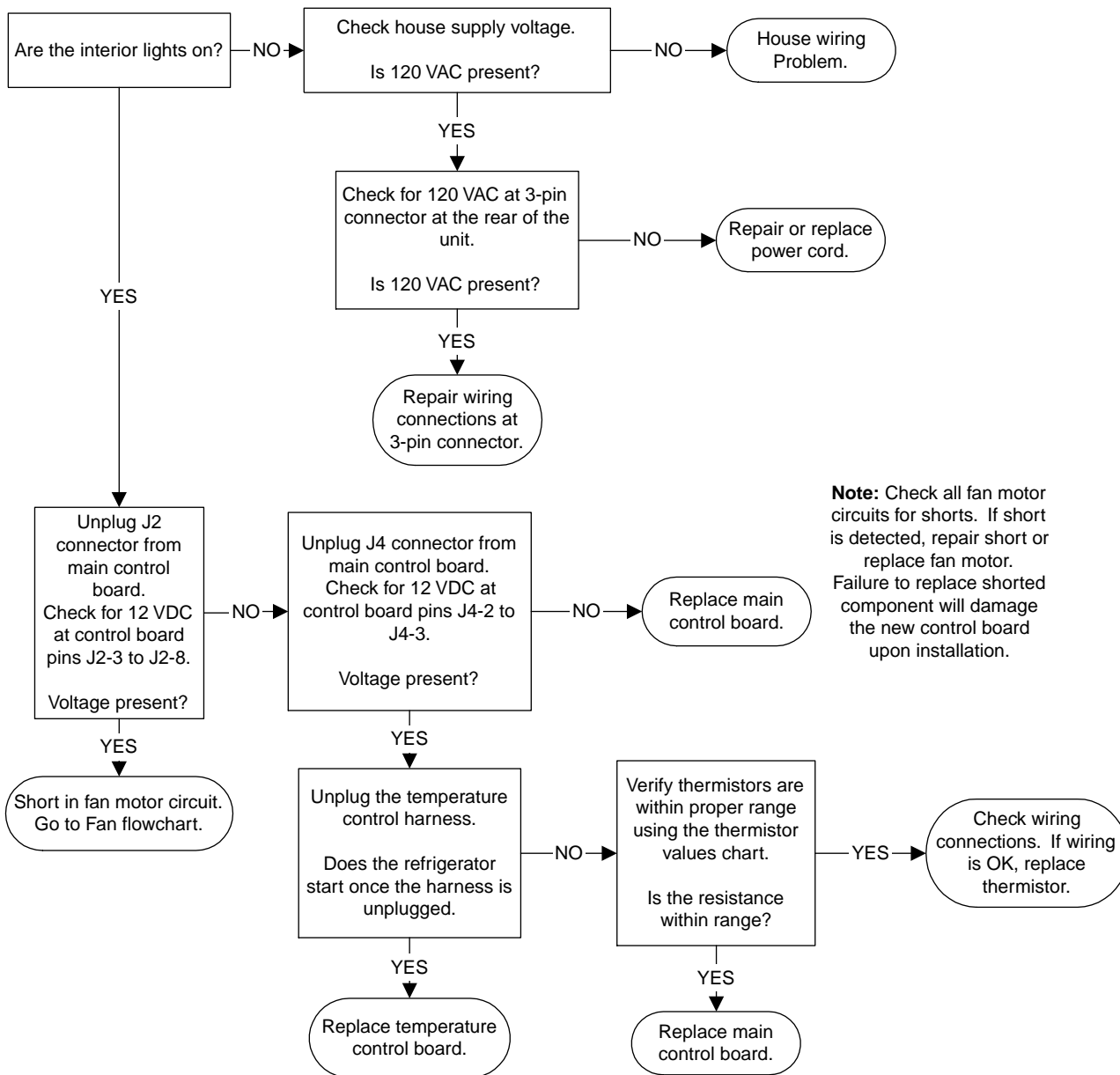
Freezer Warm - Fresh Food Normal



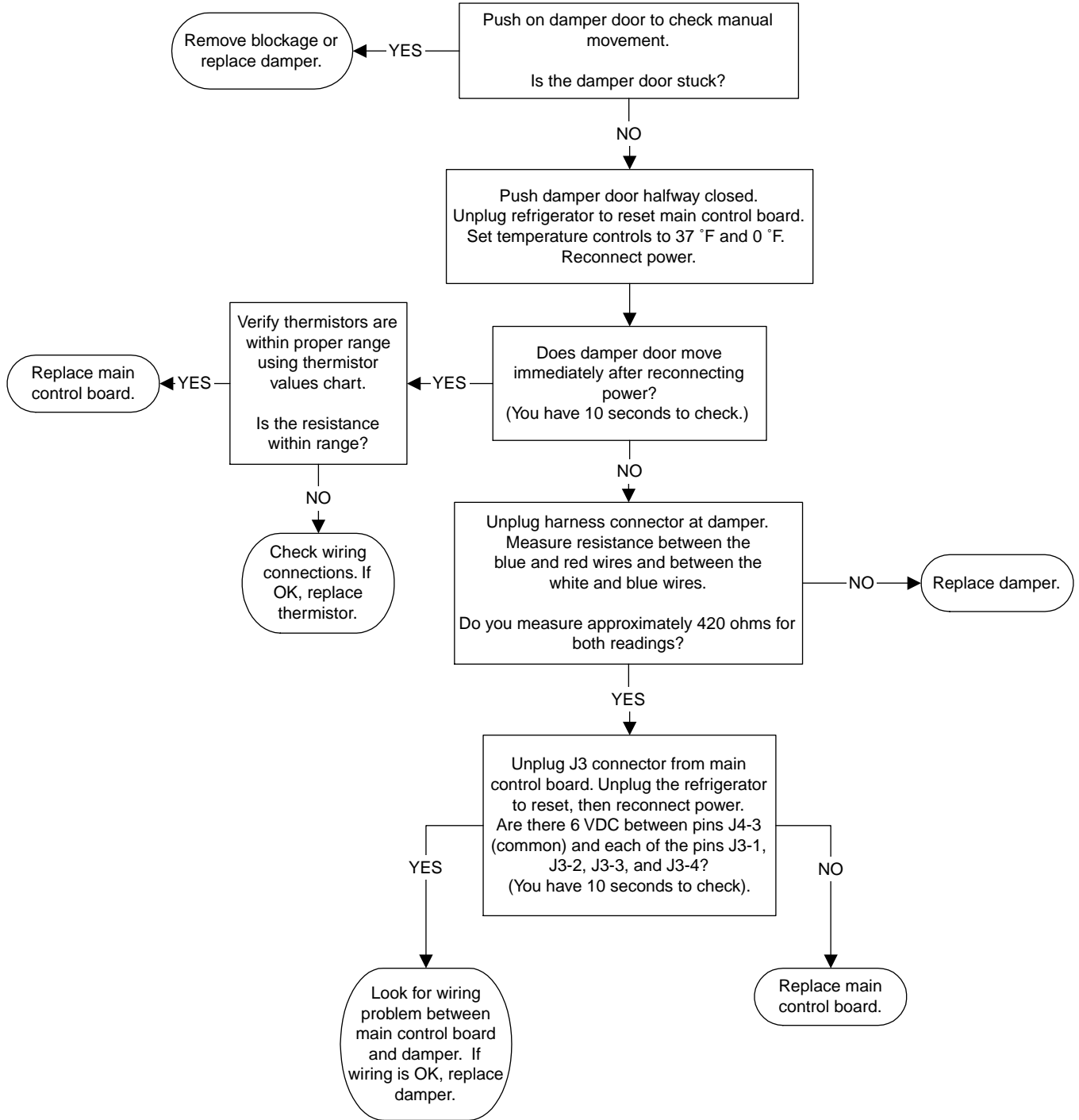
Compressor Not Running



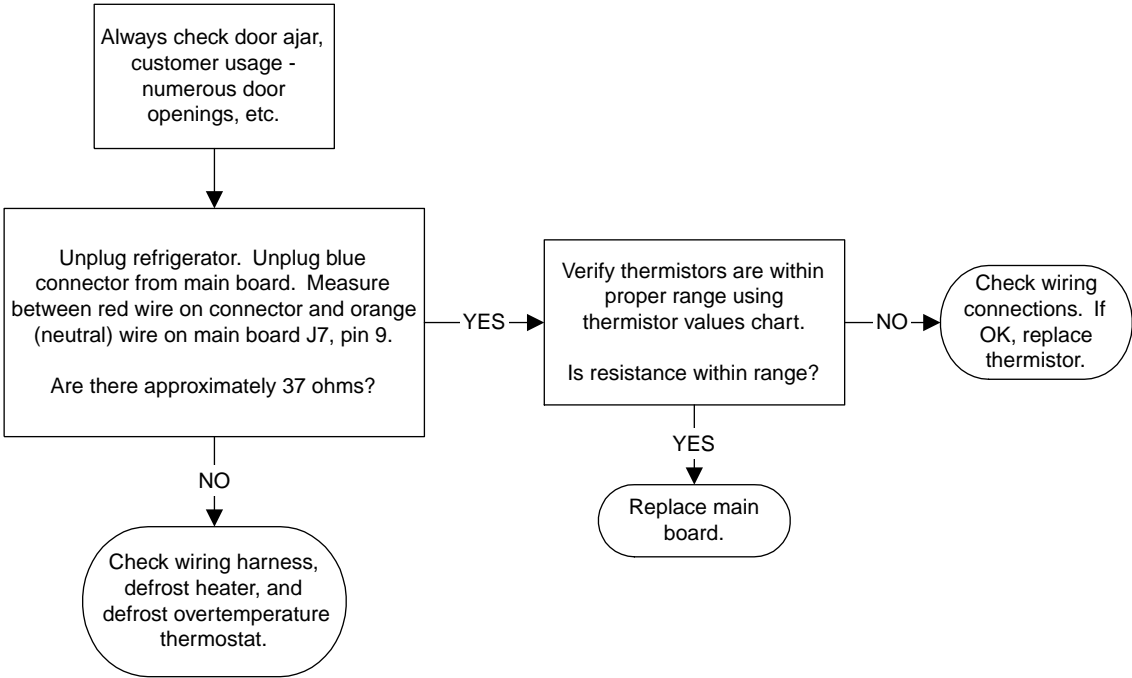
Refrigerator Dead - No Sound, No Cooling



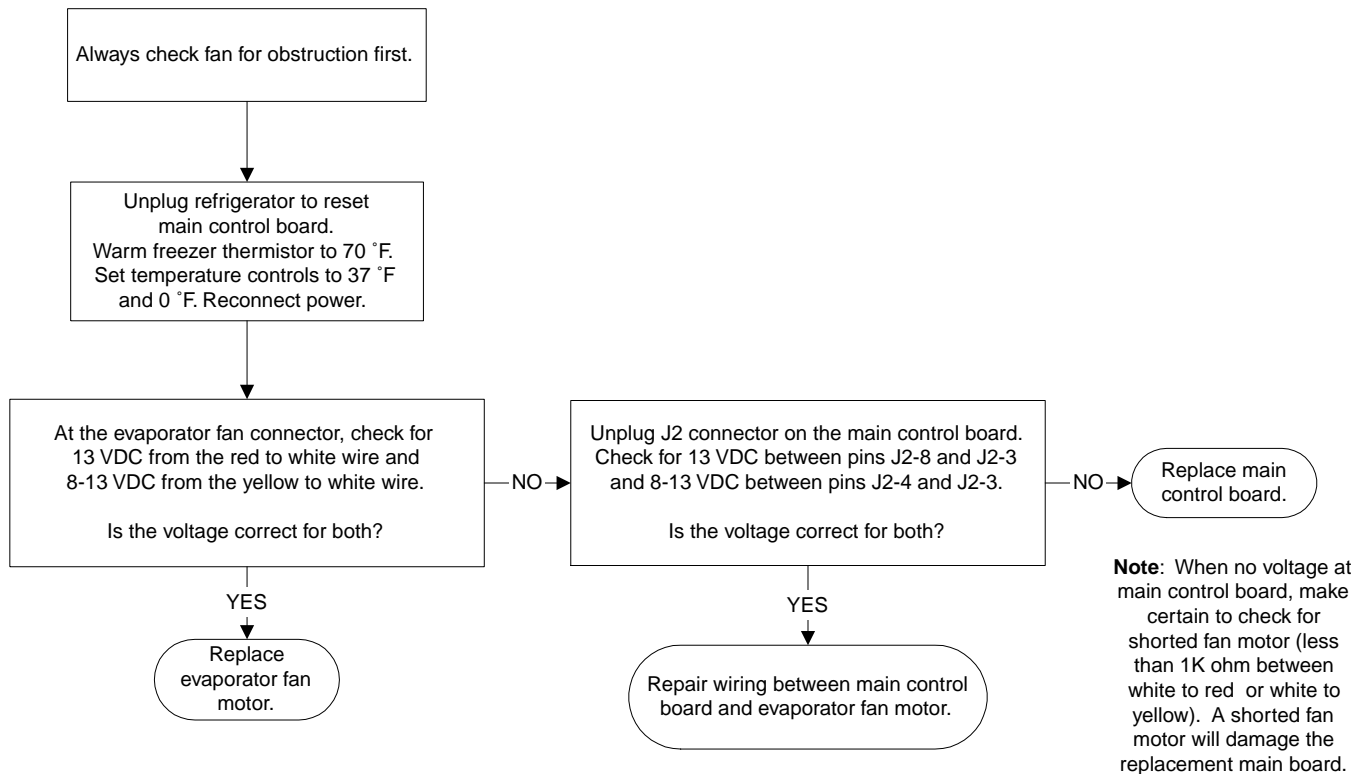
Damper Door Does Not Operate



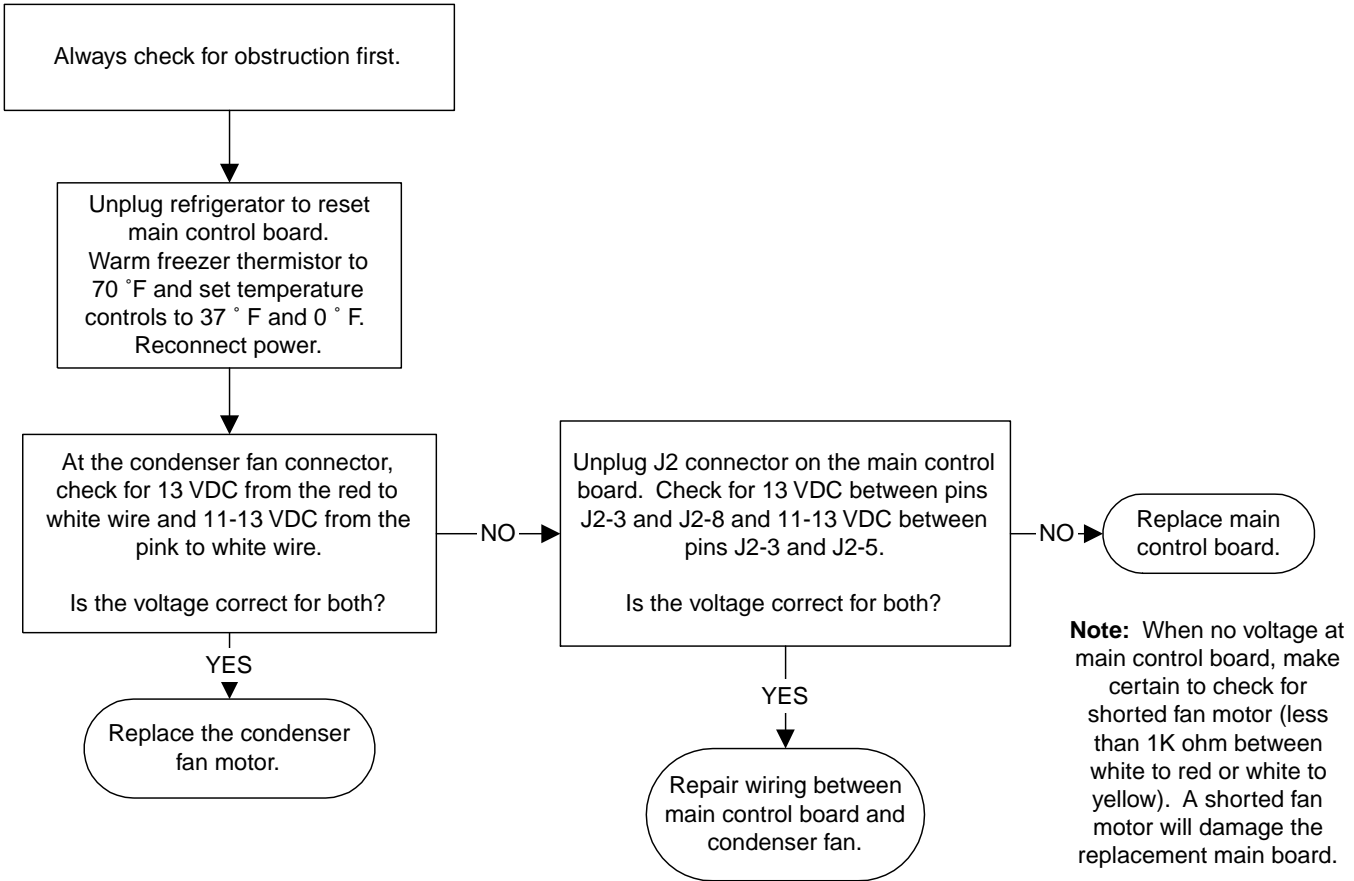
Heavy Frost on Evaporator



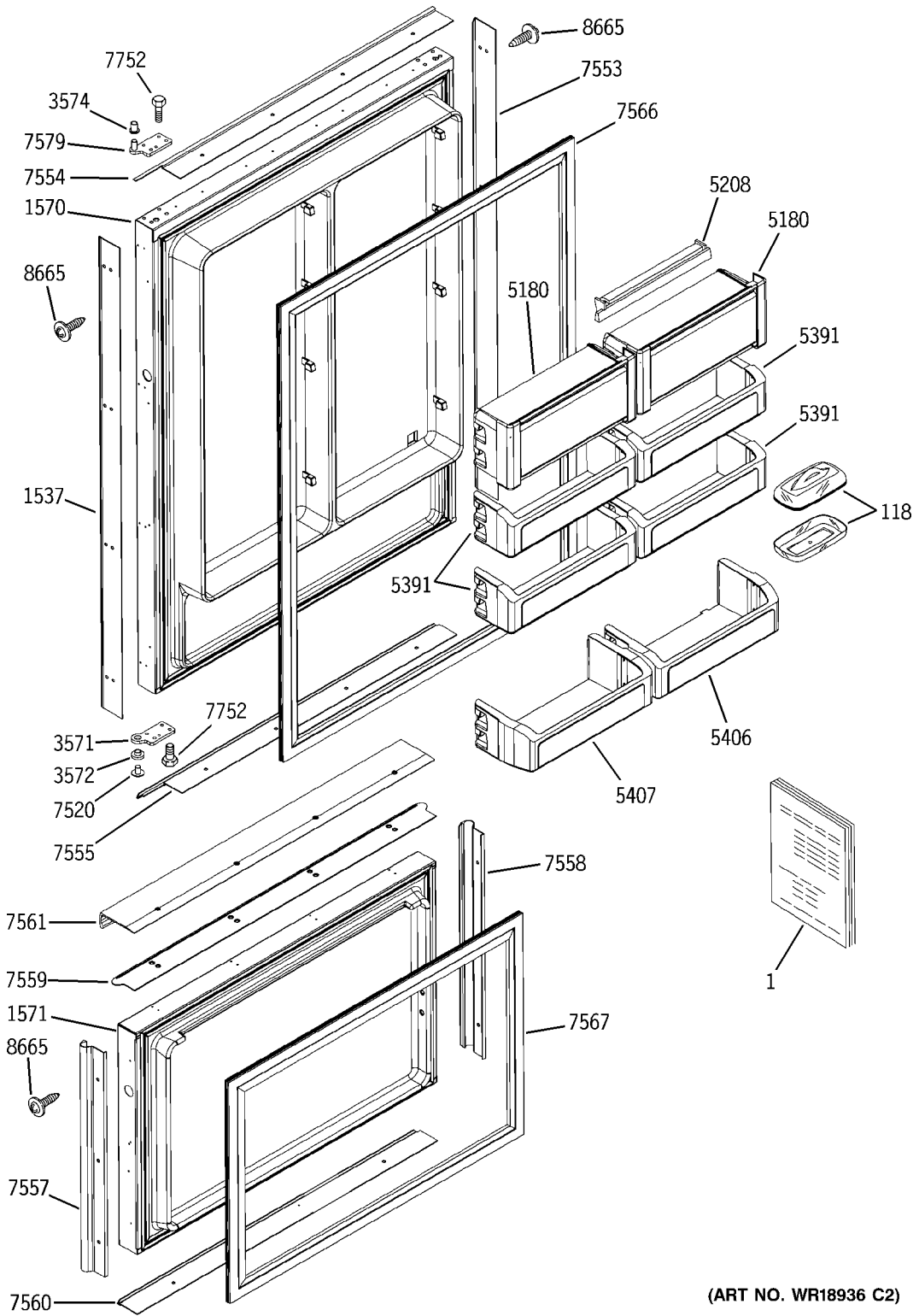
Evaporator Fan Not Running



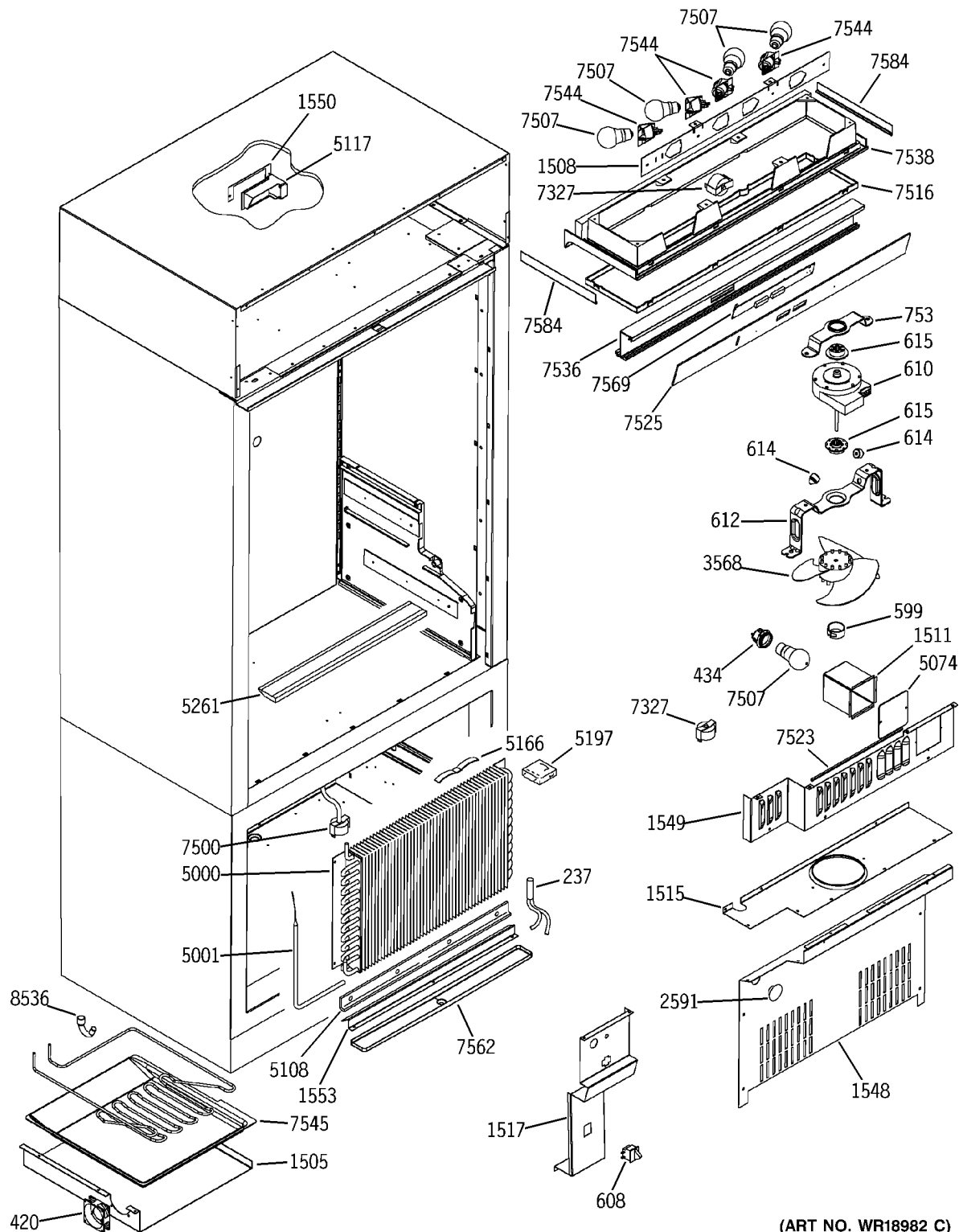
Condenser Fan Not Running



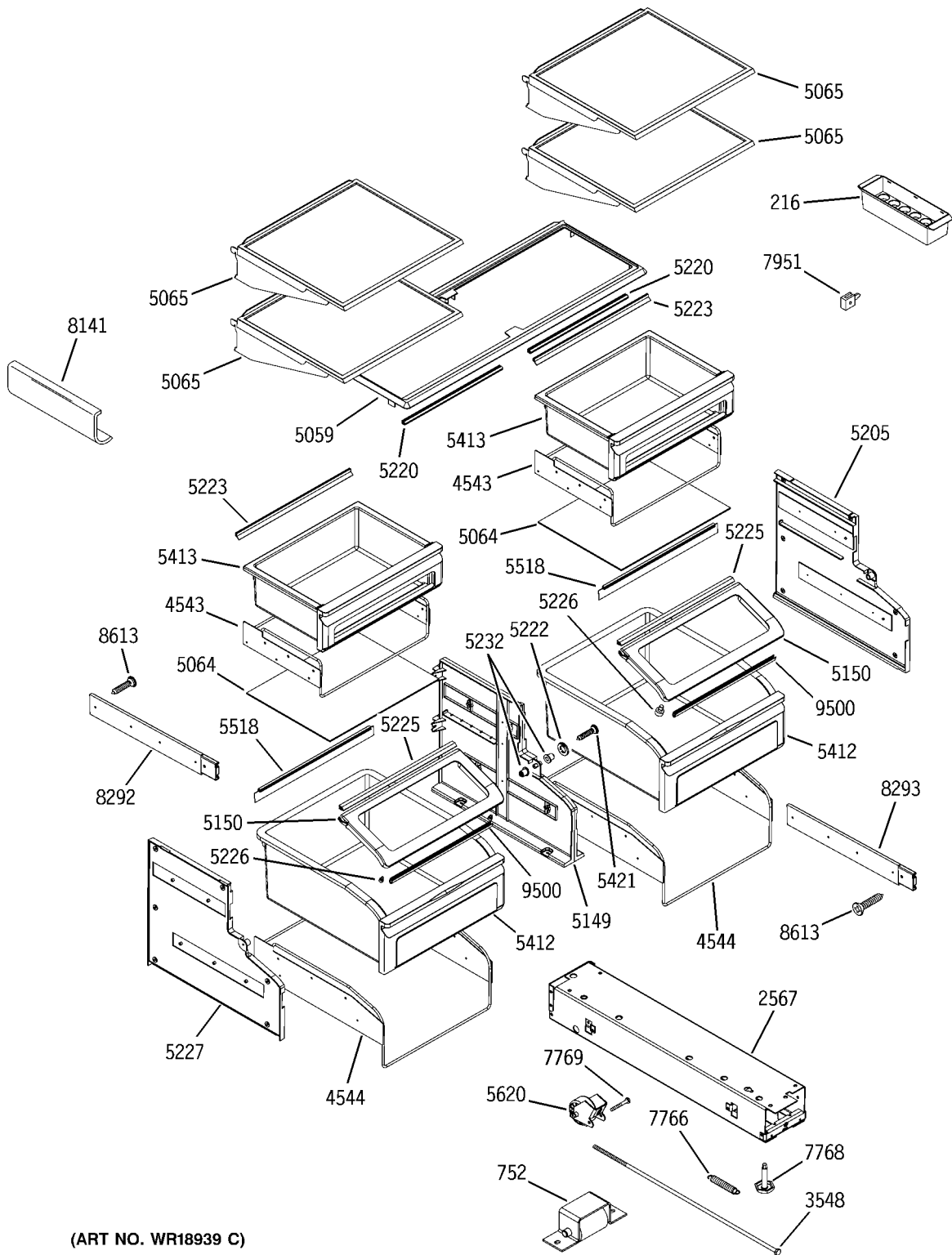
PARTS LIST



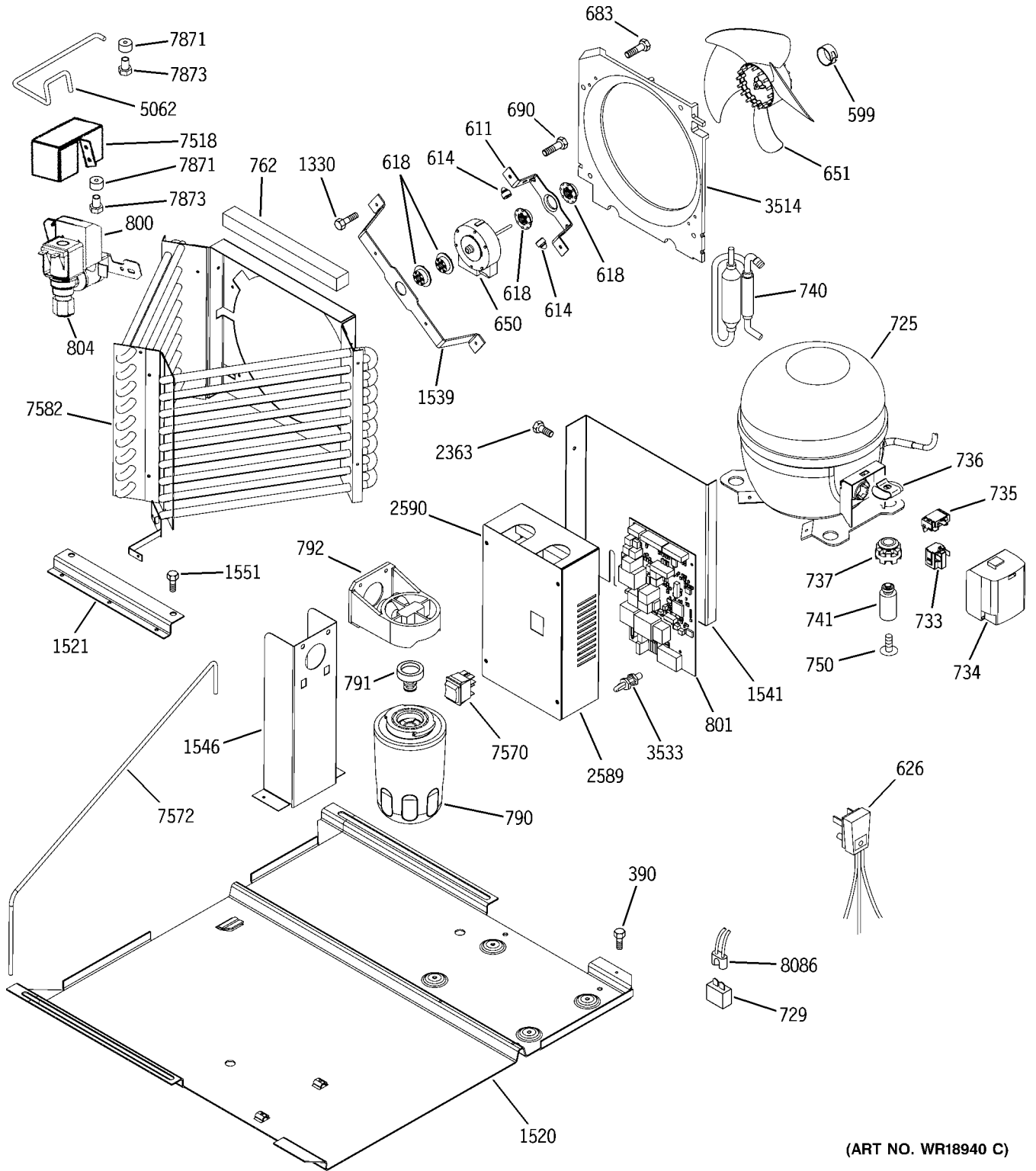
(ART NO. WR18936 C2)



(ART NO. WR18982 C)



(ART NO. WR18939 C)



(ART NO. WR18940 C)

| View | Description | Part # | Qty |
|------|--------------------------|---------------|-----|
| 1 | PM MINI MANUAL | 31-51357 | 1 |
| 1 | USE & CARE MANUAL | 49-60127 | 1 |
| 1 | CUSTOM OPTIONS GUIDE | 49-60136 | 1 |
| 118 | DISH BUTTER ASM | WR19X0035 | 1 |
| 216 | BUCKET EGG | WR32X1435 | 1 |
| 237 | SENSOR TEMP | WR55X10025 | 4 |
| 390 | SCREW | WR01X1826 | 4 |
| 420 | DC FRESH FOOD FAN | WR60X10051 | 1 |
| 434 | SOCKET STRAIGHT LIGHT FZ | WR02X10732 | 1 |
| 599 | RING COMPRESSION FAN | WR02X10509 | 2 |
| 608 | SWITCH LIGHT FZ | WR23X0427 | 1 |
| 610 | MOTOR DC EVAP FAN | WR60X10043 | 1 |
| 611 | BRACKET COND FAN (MTG) | WR02X10521 | 1 |
| 612 | BRACKET ORIFICE FAN | WR02X10653 | 1 |
| 614 | BUMPER LID | WH01X2722 | 4 |
| 615 | GROMMET EVAP FAN | WR02X10519 | 2 |
| 618 | GROMMET COND FAN | WR02X10520 | 2 |
| 626 | POWER CORD | WR23X0420 | 1 |
| 650 | MOTOR DC COND FAN | WR60X10053 | 1 |
| 651 | BLADE COND FAN ASM | WR60X10049 | 1 |
| 683 | SCREW, FAN MOTOR | WR01X1716 | 8 |
| 690 | SCR 8-32 T HXW 3/8 S | WZ5X158D | 4 |
| 725 | COMPRESSOR REPL ASM | WR87X0471 | 1 |
| 729 | CAPACITOR | WR62X0080 | 1 |
| 733 | RELAY PTCR | WR07X10031 | 1 |
| 734 | COVER RELAY SNAP (MEI) | not available | 1 |
| 735 | OVERLOAD | WR08X10026 | 1 |
| 736 | CLIP COMP MTNG | WR02X8583 | 4 |
| 737 | GROMMET | WR02X10099 | 4 |
| 740 | DRYER BIFURCATED XH9 | WR86X0096 | 1 |
| 741 | STUD MTG COMPR | WR01X1779 | 4 |
| 750 | SCR 10-32 TR T 1/2 | WR01X1786 | 4 |
| 752 | FT WHEEL BKT | WR02X8470 | 2 |
| 753 | BRACKET EVAP FAN BTM | WR02X10548 | 1 |
| 762 | FOAM STRIP | WR14X0313 | 2 |
| 790 | FILTER CANISTER | GWF | 1 |
| 791 | PLUG BYPASS FILTER | WR02X10577 | 1 |
| 792 | FILTER MNT & TUBE ASM | WR17X10707 | 1 |
| 800 | VALVE WATER | WR57X10034 | 1 |
| 801 | BRD ASM MAIN CONT | WR55X10056 | 1 |
| 804 | NUT SLEEVE 1/4 | WR57X0057 | 1 |
| 806 | WATER LINE | WR17X2107 | 1 |
| 820 | ELECTRONIC IM-DOM | WR30X10012 | 1 |
| 1326 | CLAMP TUBE | WR02X3736 | 2 |
| 1505 | HOUSING DRAIN PAN | WR17X11006 | 1 |
| 1508 | FIXTURE LIGHTING | WR02X11023 | 1 |
| 1511 | BRACKET LIGHT SOCKET FZ | WR74X10085 | 1 |
| 1513 | FF THERMISTOR HOLDER | WR02X10942 | 1 |
| 1515 | PLATE FAN MOTOR MTG. | WR74X10096 | 1 |
| 1517 | FILL TUBE COVER | WR74X10086 | 1 |
| 1520 | ASM. REFRIGERATION PAN | WR17X11033 | 1 |
| 1521 | BRKT REFRIG PAN GUIDE | not available | 2 |
| 1531 | FF AIR DIFFUSER | WR71X10325 | 2 |
| 1532 | CLOSURE ASM TOP DOOR RH | WR02X10943 | 1 |
| 1533 | FZ THERMISTOR CLIP | WR02X10944 | 1 |
| 1537 | HANDLE DOOR FF 36BM RH | WR12X10476 | 1 |
| 1538 | SWITCHPLATE | not available | 1 |

| | | | |
|------|--------------------------|---------------|----|
| 1539 | BRKT COND FAN MOTOR LG | WR02X10945 | 1 |
| 1541 | BAFFLE CONDENSER LH | WR17X11034 | 1 |
| 1546 | FILTER BRACKET | WR02X10946 | 1 |
| 1548 | EVAPORATOR COVER 36" BM | WR74X10097 | 1 |
| 1549 | EVAPORATOR FAN COVER | WR74X10098 | 1 |
| 1550 | BRACKET DAMPER MTG | WR17X11009 | 1 |
| 1551 | SCREW IM STRAP, PAN | WR01X5645 | 12 |
| 1553 | WATER COLLECTOR | WR17X11010 | 1 |
| 1557 | HOOD HINGE MOUNT 36 | WR74X10081 | 1 |
| 1570 | FF DOOR FOAMED ASM | WR78X10496 | 1 |
| 1571 | FZ DRAWER FOAMED ASM | WR78X10497 | 1 |
| 1580 | TOE KICK 36 BM | WR74X10089 | 1 |
| 2363 | 6-32 X 3/8 PHIL S/S TYPE | WR01X5684 | 2 |
| 2508 | ACTUATOR ARM FF DOOR | WR02X10948 | 1 |
| 2567 | CHANNEL BASE ASM (RH) | WR13X10200 | 1 |
| 2568 | CHANNEL BASE ASM (LH) | WR13X10201 | 1 |
| 2589 | HOUSING MOTHER BOARD | not available | 1 |
| 2590 | COVER MOTHER BOARD | not available | 1 |
| 2591 | PLUG BUTTON #413 I/M | WR02X10154 | 1 |
| 2843 | SCREW CASE TRIM | WR01X1903 | 12 |
| 3514 | HOUSING COND FAN | WR17X11011 | 1 |
| 3521 | BHNG ARM NYLON FF DR CL | WR02X10951 | 1 |
| 3522 | BOLT SHOULDER FF DOOR | WR01X10254 | 1 |
| 3533 | PC BOARD MOUNTS | WR02X10952 | 4 |
| 3542 | SPRING FF DOOR CLOSURE | WR01X10255 | 1 |
| 3546 | CASE TRIM TOP 36" | WR17X11012 | 1 |
| 3548 | BASE SHAFT | WR01X10256 | 2 |
| 3568 | BLADE FAN MOTOR | WR60X10050 | 1 |
| 3571 | HINGE DOOR BOTTOM | WR13X10202 | 1 |
| 3572 | BUSHING HINGE BOTTOM | WR02X10953 | 1 |
| 3574 | BUSHING HINGE TOP | WR02X10954 | 1 |
| 3576 | TUBE WATER FILL | not available | 1 |
| 3577 | GROMMET AND GASKET ASM | WR02X10967 | 1 |
| 3599 | CUP FILL IM | WR29X10046 | 1 |
| 4543 | PAN SUPPORT SNACK PAN | WR02X10149 | 2 |
| 4544 | PAN SUPPORT ASM VEG PAN | WR02X10150 | 2 |
| 5000 | EVAP COIL | WR85X10007 | 1 |
| 5001 | DEFROST HEATER 36BM | WR51X10015 | 1 |
| 5059 | SNACK PAN COVER | WR32X10072 | 1 |
| 5062 | TUBE - WATER VALVE INLET | WR02X10141 | 1 |
| 5064 | VEG PAN COVER | WR32X10073 | 2 |
| 5065 | ENCAP SHELF ASSY | WR32X10074 | 4 |
| 5074 | LIGHT SHIELD FZ | WR17X10347 | 1 |
| 5075 | ICE BUCKET | WR32X10075 | 1 |
| 5076 | FZ BASKET LG | WR21X10007 | 1 |
| 5086 | VENT GUARD 36BM | WR02X10142 | 1 |
| 5089 | CASE TRIM SHORT RH | WR17X11035 | 1 |
| 5108 | DRAIN BAFFLE | WR17X10349 | 1 |
| 5117 | DAMPER MOTORIZED | WR09X10050 | 1 |
| 5149 | DIVIDER ASM VEG. PANS | WR72X10011 | 1 |
| 5150 | SHOWCASE LID ASM. | WR32X10076 | 2 |
| 5166 | WIRE RETAINER EVAP HEATE | WR01X10045 | 2 |
| 5180 | ASM DAIRY COMP | WR71X10142 | 2 |
| 5197 | BAFFLE EVAP LH | WR02X10145 | 1 |
| 5205 | SUPPORT, SLIDE RH | WR72X10012 | 1 |
| 5208 | SEAL DAIRY ASM | WR22X10007 | 1 |
| 5220 | SEAL, FRONT SNACK PAN | WR14X10009 | 2 |
| 5222 | WASHER SHOWCASE PIVOT | WR01X10046 | 2 |
| 5223 | SEAL, RR SNACK PAN | WR14X10011 | 2 |

| | | | |
|------|--------------------------|---------------|---|
| 5225 | SEAL, FRT VEG PAN GLASS | WR14X10012 | 2 |
| 5226 | BUTTON GLIDE | WR01X10047 | 4 |
| 5227 | SUPPORT, SLIDE LH | WR72X10013 | 1 |
| 5232 | BUSHING, SHOWCASE PIVOT | WR01X10048 | 2 |
| 5245 | FZ SLIDE/SUPPORT ASM LH | WR72X10084 | 1 |
| 5261 | MULLION BLOCK KIT BTM.MT | WR49X10015 | 1 |
| 5308 | FZ SLIDE/SUPPORT ASSY RH | WR72X10014 | 1 |
| 5359 | SCREW, TRUSS HD 1/4-20 X | WR01X10049 | 8 |
| 5391 | BIN, FF DOOR W/WINDOW | WR71X10138 | 4 |
| 5406 | BIN, DOOR FF DEEP RH | WR71X10139 | 1 |
| 5407 | BIN, DOOR FF DEEP LH | WR71X10140 | 1 |
| 5412 | VEG PAN ASM | WR32X10077 | 2 |
| 5413 | SNACK PAN ASM | WR32X10078 | 2 |
| 5421 | SCREW, #8 18 X 7/8 | WR01X10050 | 2 |
| 5518 | SEAL REAR VEG PAN GLASS | WR14X10014 | 2 |
| 5620 | WHEEL ASM REAR | WR02X8377 | 2 |
| 7271 | 10-24*7/8 PHIL P-HD TAP | WR01X10051 | 9 |
| 7288 | SCREW GRILLE MTG. | WR01X5686 | 2 |
| 7317 | 1/4 CLAMP NYLON | WR17X3046 | 4 |
| 7327 | THERMOSTAT | WR50X10003 | 2 |
| 7500 | EVAP. THERMODISC | WR50X10030 | 1 |
| 7503 | BRACKET GRILLE LH | WR02X10956 | 1 |
| 7504 | BRACKET GRILLE RH | WR02X10957 | 1 |
| 7506 | BASKET UPPER FRZ | WR21X10043 | 1 |
| 7507 | LAMP 40W | 40A15 | 4 |
| 7508 | SUPPORT BASKET UPPER FZ | WR72X10080 | 2 |
| 7509 | SLIDE LINER UPPER FZ | WR72X10081 | 2 |
| 7510 | SLIDE BASKET UPPER FZ | WR72X10082 | 2 |
| 7515 | HINGE UPPER FF CASE | WR13X10203 | 1 |
| 7516 | LIGHT SHIELD FF | WR17X11014 | 1 |
| 7518 | WATER VALVE BRKT | WR02X10958 | 1 |
| 7520 | PIN BTM. LOWER HINGE | WR01X10257 | 1 |
| 7522 | EYEBROW RH | WR02X10959 | 1 |
| 7523 | EDGE TRIM FZ REAR DUCT | WR38X10247 | 1 |
| 7524 | SHELF TRACK CENTER | WR17X11027 | 1 |
| 7525 | CTRL. PANEL TEMP. CTRL. | WR17X11036 | 1 |
| 7528 | FREEZER SLIDE SHIM | WR72X10085 | 2 |
| 7536 | HOUSING CONTROL | WR74X10082 | 1 |
| 7538 | TRIM LIGHTING FF | WR17X11015 | 1 |
| 7541 | HINGE ASM GRILLE LEFT | WR13X10204 | 1 |
| 7542 | HINGE ASM GRILLE RIGHT | WR13X10205 | 1 |
| 7544 | SOCKET LAMP FF | WR02X11024 | 4 |
| 7545 | DRAIN PAN | WR17X11016 | 1 |
| 7551 | TRIM CASE LEFT 36BM | WR17X11017 | 1 |
| 7552 | TRIM CASE RIGHT 36BM | WR17X11018 | 1 |
| 7553 | TRIM DOOR SIDE FF 36BM | WR17X11019 | 1 |
| 7554 | TRIM DOOR TOP FF 36BM | WR17X11020 | 1 |
| 7555 | TRIM DOOR BTM FF 36BM | WR17X11021 | 1 |
| 7556 | GRILLE PANELASM. | not available | 1 |
| 7557 | TRIM DRWR SIDE FZ RH | WR17X11022 | 1 |
| 7558 | TRIM DRWR SIDE FZ LH | WR17X11023 | 1 |
| 7559 | TRIM DRAWER HANDLE FZ | WR17X11024 | 1 |
| 7560 | TRIM DRAWER BTM FZ | WR17X11025 | 1 |
| 7561 | HANDLE DRAWER FZ 36BM | WR12X10488 | 1 |
| 7562 | EVAPORATOR TROUGH | WR17X11098 | 1 |
| 7566 | GASKET FF DOOR BM | WR24X10083 | 1 |
| 7567 | GASKET FZ DOOR BM | WR24X10084 | 1 |
| 7569 | BOARD ASM TEMP CONTROL | not available | 1 |
| 7570 | SABBATH SWITCH | WR23X10220 | 1 |

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|------|--------------------------|------------|----|
| 7572 | CAP/SUCTION TUBE ASM | WR86X10016 | 1 |
| 7573 | STUD SPRING FF DOOR | WR01X10258 | 1 |
| 7579 | HINGE TOP RH FF DOOR ASM | WR13X10208 | 1 |
| 7582 | CONDENSER MONOGRAM BM | WR84X10030 | 2 |
| 7584 | GASKET FF LIGHT TRIM | WR38X10255 | 2 |
| 7589 | HINGE BTM RH FF CASE ASM | WR13X10209 | 1 |
| 7752 | SCREW 12-24TT OHT .900 | WR01X1845 | 12 |
| 7766 | SPRING WHEEL #LE022C4 | WR02X8799 | 2 |
| 7768 | LEVELING LEG | WR02X10479 | 2 |
| 7769 | AXLE REAR | WR01X1733 | 2 |
| 7770 | STOP DOOR | WR13X0637 | 1 |
| 7871 | COMPRESSION NUT 1/4 | WR57X10016 | 1 |
| 7873 | BRASS FERRULE | WR57X10017 | 1 |
| 7951 | TWIST SUPPORT | WR02X10151 | 4 |
| 8086 | HARNESS CAPACITOR | WR23X0474 | 1 |
| 8141 | WINE RACK | WR17X4141 | 1 |
| 8142 | ROCKER SWITCH 200-WATT | WR23X0475 | 1 |
| 8292 | SLIDE FULL EXT10 | WR72X0269 | 4 |
| 8293 | SLIDE FULL EXT12 | WR72X0270 | 4 |
| 8350 | TRACK SHELF FF | WR17X4140 | 2 |
| 8536 | DRAIN TRAP AUX. COND. | WR17X10675 | 1 |
| 8613 | #8-18AB X 1/2 PHILS TRUS | WR01X10052 | 19 |
| 8665 | TRIM SCREW | WR01X2130 | 24 |
| 8738 | #8-18 TYPE AB X 3/8 BLK | WR01X10053 | 2 |
| 9500 | SEAL FRONT SHOWCASE LID | WR14X10040 | 2 |

WARRANTY

YOUR MONOGRAM REFRIGERATOR WARRANTY

Staple sales slip or cancelled check here. Proof of original purchase date is needed to obtain service under warranty.

WHAT IS COVERED

From the Date of the Original Purchase

FULL TWO-YEAR WARRANTY

For two years from date of original purchase, we will provide, free of charge, parts and service labor in your home to repair or replace *any part of the refrigerator* that fails because of a manufacturing defect.

FULL FIVE-YEAR WARRANTY

For five years from date of original purchase, we will provide, free of charge, parts and service labor in your home to repair or replace *any part of the sealed refrigerating system* (the compressor, condenser, evaporator and all connecting tubing) that fails because of a manufacturing defect.

LIMITED ADDITIONAL SEVEN-YEAR WARRANTY ON THE SEALED SYSTEM

For the sixth through twelfth year from the date of the original purchase, we will provide, free of charge, replacement parts for *any part of the sealed refrigerating system* (the compressor, condenser, evaporator and all connecting tubing) that fails because of a manufacturing defect. You pay for the service trip to your home and for service labor charges.

LIMITED LIFETIME WARRANTY ON ACCURIDE® SLIDES

From the date of the original purchase we will provide, free of charge, replacement parts for *any part of the Accuride Slides* that fails because of a manufacturing defect. You pay for the service trip to your home and for service labor charges.

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This warranty is extended to the original purchaser and any succeeding owner for products purchased for ordinary home use in the 48 mainland states, Hawaii and Washington, D.C. In Alaska the warranty is the same except that it is LIMITED because you must pay to ship the product to the service shop or for the service technician's travel costs to your home.

All warranty service will be provided by our Factory Service Centers or by our authorized Customer Care® servicers during normal working hours.

Should your appliance need service, during warranty period or beyond, in the U.S.A. call 800.444.1845. In Canada: 888.880.3030.

WHAT IS NOT COVERED

- Service trips to your home to teach you how to use the product.
 - Replacement of house fuses or resetting of circuit breakers.
 - Damage to the product caused by accident, fire, floods or acts of God.
 - Failure of the product if it is used for other than its intended purpose or used commercially.
 - Improper installation.
If you have an installation problem, contact your dealer or installer. You are responsible for providing adequate electrical, plumbing and other connecting facilities.
 - Loss of food due to spoilage.
 - Incidental or consequential damage caused by possible defects with this appliance.
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Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. To know what your legal rights are in your state, consult your local or state consumer affairs office or your state's Attorney General.

Warrantor: General Electric Company, Louisville, KY 40225