# ***Appliance Diagnostic Modes***
# ***Refrigerator***

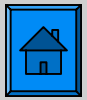
imagination at work

***GE Consumer & Industrial Technical Training***

# Refrigerator
# Table of Contents







# Refrigerator
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# Arctica SxS

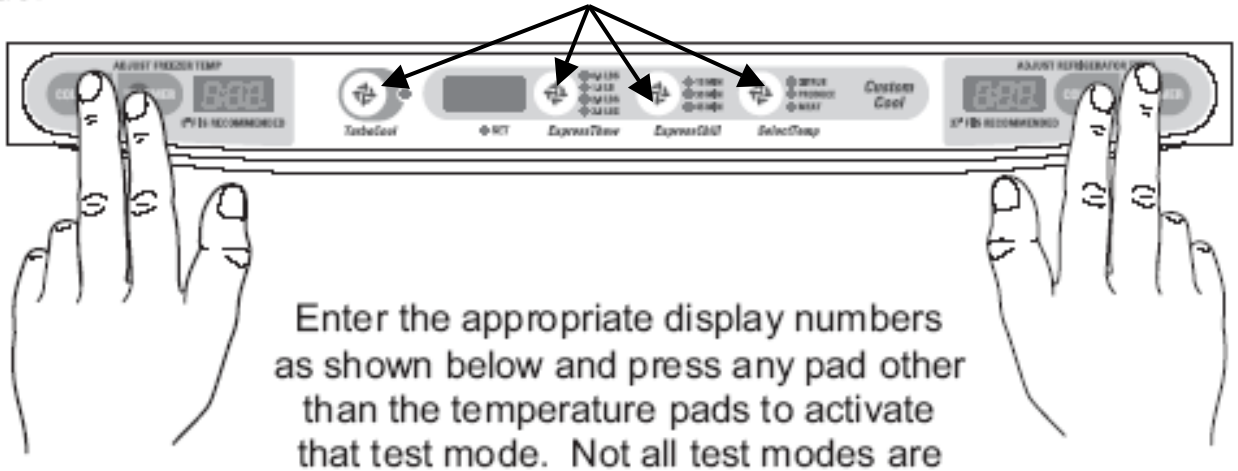
**PSS and GSS**
**23, 25, 27, and 29**

# Arctica SxS

## Control Diagnostics

**Make sure controls are set to either “5” & “5” or “37” & “0”**

Enter the diagnostic mode by pressing both the freezer temperature (COLDER and WARMER) pads and the refrigerator temperature (COLDER and WARMER) pads simultaneously. All four pads must be held for approximately 3 seconds. Blinking "0"s in both displays indicate the refrigerator has entered the test mode. **Now press any other pad between the FF & FRZ displays to lock test mode.**




Enter the appropriate display numbers as shown below and press any pad other than the temperature pads to activate that test mode. Not all test modes are available on all models.

**Note 1:** Display order is #1 = Fresh Food Evaporator Thermistor, #2 = Fresh Food Thermistor, #3 = Custom Cool Thermistor, #4 = Freezer Evaporator Thermistor, #5 = Freezer Thermistor.

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 above 70°F.

**Note 3:** To exit the Temperature Control LED Test, press both refrigerator temperature pads (COLDER and WARMER) simultaneously for 3 seconds.

| Table 2. Diagnostic Tests | | | |
|---|---|---|---|
| **Freezer Display** | **Refrigerator Display** | **Mode** | **Comments** |
| 0 | 2 | Temperature control panel to main control board communication | P on the FZ display if OK.<br>F on the FZ display if not OK. |
| 0 | 3 | Temperature control panel to dispenser board communication | P on the FZ display if OK.<br>F on the FZ display if not OK. |
| 0 | 4 | Dispenser board to main control board communication | P on the FZ display if OK.<br>F on the FZ display if not OK. |
| 0 | 6 | Temperature control panel self-test | See Temperature Control Panel Self-Test on page 35. |
| 0 | 7 | Control and sensor system self-test | See Control and Sensor Self-Test on page 36. |
| 1 | 0 | Open damper | Damper will open, pause briefly, then close. |
| 1 | 1 | Fan speed test * | Each fan will run for 10 seconds, then stop. |
| 1 | 2 | 100% run time | This mode runs the sealed system 100% of the time for 1 hour. |
| 1 | 3 | Enter pre-chill | This places the freezer in pre-chill mode. The refrigerator will return to normal operation on its own. |
| 1 | 4 | Enter defrost | This will set the refrigerator into the defrost mode. If the cabinet is not cold when executed, this mode may execute extremely fast. The refrigerator will return to normal operation on its own. |
| 1 | 5 | Refrigerator reset | Causes a system reset. |
| 1 | 6 | Test mode exit | Causes system to exit test mode and resets temperature control panel. |
| 1 | 7 | Degree C/F | Refrigerator temperature adjust keys can be used to change display from F to C or C to F. |

* **NOTE:** Only do this test if model was built in 2002 or later.

## Testing

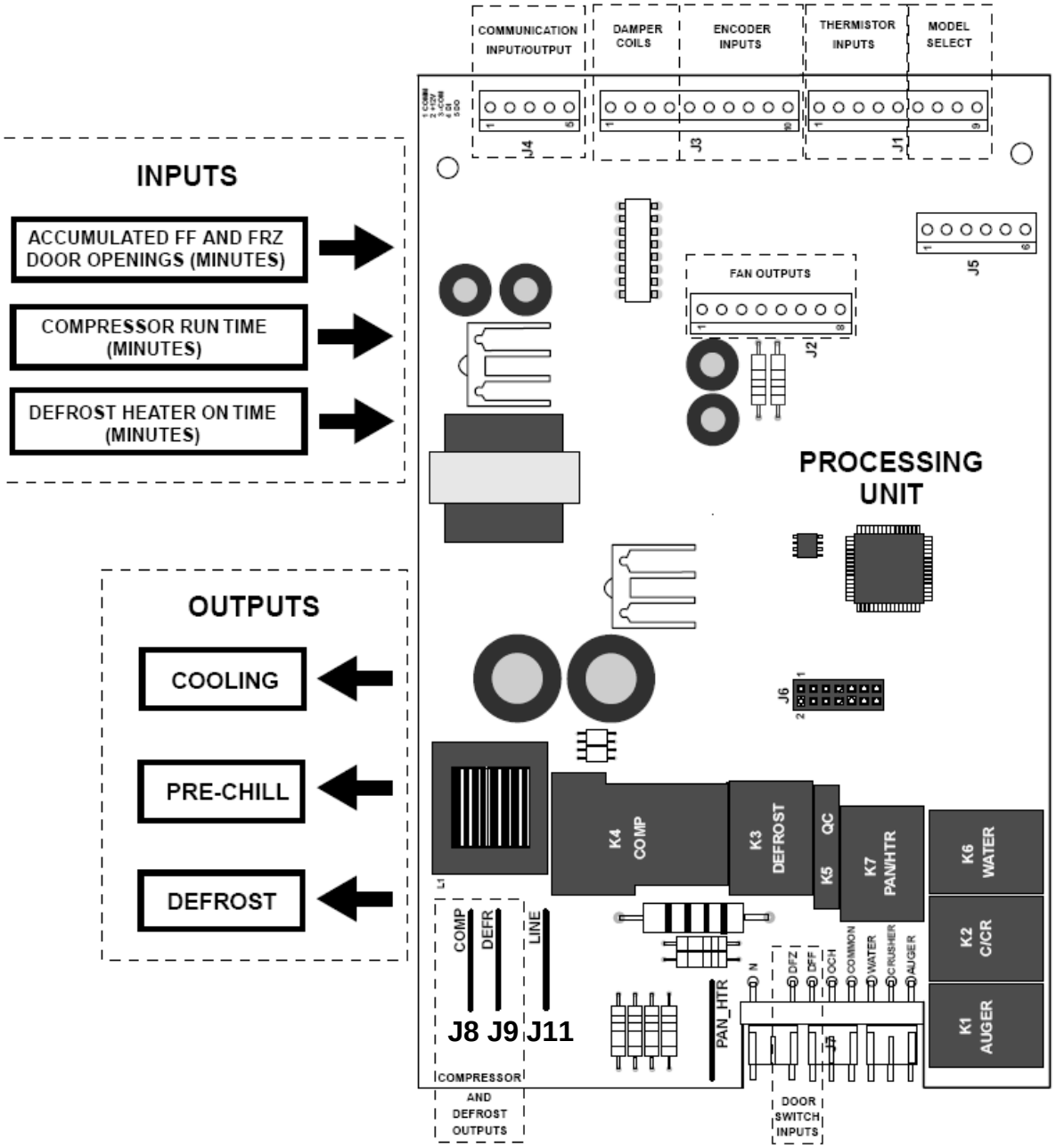
The most accurate method of testing a thermistor is to place it in a glass of ice water for several minutes. The thermistor should read approximately **16KΩ** in the glass of 33°F ice water.

**Note:** Thermistors can also be checked for an open or shorted condition by using the diagnostic mode (see ***Service Diagnostics***).

| Table 2. Thermistor Values | | |
|---|---|---|
| Temperature Degrees (C) | Temperature Degrees (F) | Resistance in Kilo-Ohms |
| -40 | -40 | 166.8 kΩ |
| -35 | -31 | 120.5 kΩ |
| -30 | -22 | 88 kΩ |
| -25 | -13 | 65 kΩ |
| -20 | -4 | 48.4 kΩ |
| -15 | 5 | 36.4 kΩ |
| -10 | 14 | 27.6 kΩ |
| -5 | 23 | 21 kΩ |
| 0 | 32 | 16.3 kΩ |
| 5 | 41 | 12.7 kΩ |
| 10 | 50 | 10 kΩ |
| 15 | 59 | 7.8 kΩ |
| 20 | 68 | 6.2 kΩ |
| 25 | 77 | 5 kΩ |
| 30 | 86 | 4 kΩ |
| 35 | 95 | 3.2 kΩ |
| 40 | 104 | 2.6 kΩ |
| 45 | 113 | 2.2 kΩ |
| 50 | 122 | 1.8 kΩ |
| 55 | 131 | 1.5 kΩ |
| 60 | 140 | 1.2 kΩ |

**NOTE: The thermistor's resistance has a negative coefficient. As the temperature increases, the thermistor's resistance decreases.**

# Arctica SxS



# Arctica SxS

| Main Control Board Locator Table (Low-Voltage Side) | | | | |
|---|---|---|---|---|
| Connector | Pin | Wire Color | Component Termination | Pin-to-Pin Voltage Reading |
| J1 | 1 | Blue/Red | Fresh food thermistor #1 | J1 pin 1 to pin 5 = 2.8 to 3.5 VDC |
| J1 | 2 | Yellow | Fresh food thermistor #2 | J1 pin 2 to pin 5 = 2.8 to 3.5 VDC |
| J1 | 3 | Red/White | Freezer thermistor | J1 pin 3 to pin 5 = 2.8 to 3.5 VDC |
| J1 | 4 | Blue/White | Evaporator thermistor | J1 pin 4 to pin 5 = 2.8 to 3.5 VDC |
| J1 | 5 | Blue | Thermistor supply voltage (5 VDC) | J1 pin 5 to J4 pin 3 = 5 VDC |

# Arctica SxS

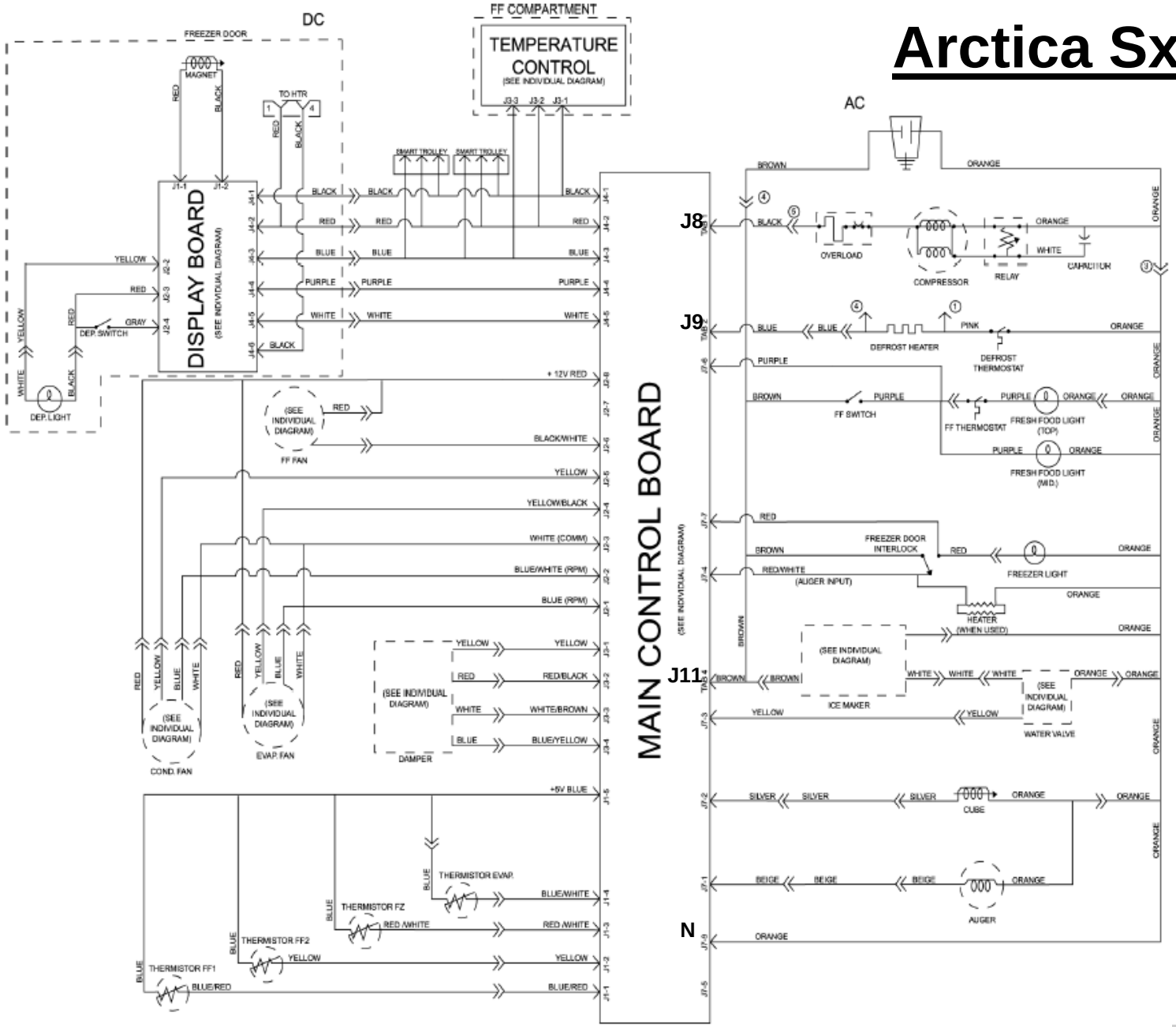
| | | | | |
|---|---|---|---|---|
| J2 | 1 | Blue | Evaporator fan tachometer | J2 pin 1 to pin 3 = 6.3 VDC |
| J2 | 2 | Blue/White | Fan input | J2 pin 2 to pin 3 = 12 VDC |
| J2 | 3 | White | Fan common | J2 pin 3 to pin 8 = 12 VDC |
| J2 | 4 | Yellow/Black | Evaporator fan | J2 pin 4 to pin 3 = 12.4 VDC (high speed), 8 VDC (low speed) |
| J2 | 5 | Yellow | Condenser fan | J2 pin 5 to pin 3 = 13.4 VDC (condenser fan is single speed) |
| J2 | 6 | Black/White | Fresh food fan | J2 pin 6 to pin 3 = 0 VDC (high speed), 3 VDC (low speed) |
| J2 | 7 | Not used | Not applicable | Not applicable |
| J2 | 8 | Red | Fan supply voltage (12 VDC) | J2 pin 8 to pin 6 = 13.4 VDC (high speed), 9 VDC (low speed)<br>J2 pin 8 to J4 pin 3 = 13.4 VDC |

| Main Control Board Locator Table (Low-Voltage Side) | | | | |
|---|---|---|---|---|
| Connector | Pin | Wire Color | Component Termination | Pin to Pin Voltage Reading |
| J3 | 1 | Yellow | Damper | J3 pin 1 to J4 pin 3 = Standing Voltage 2.3 VDC Traveling Voltage 6.0 VDC |
| J3 | 2 | Red/Black | Damper | J3 pin 2 to J4 pin 3 = Standing Voltage 2.3 VDC Traveling Voltage 6.0 VDC |
| J3 | 3 | White/Brown | Damper | J3 pin 3 to J4 pin 3 = Standing Voltage 2.3 VDC Traveling Voltage 6.0 VDC |
| J3 | 4 | Blue/Yellow | Damper | J3 pin 4 to J4 pin 3 = Standing Voltage 2.3VDC Traveling Voltage 6.0 VDC |
| J4 | 1 | Black | Dispenser board common transmit/receive | See schematic |
| J4 | 2 | Red | Dispenser board common 12 VDC | See schematic |
| J4 | 3 | Blue | Dispenser board common ground | See schematic |

# Arctica SxS

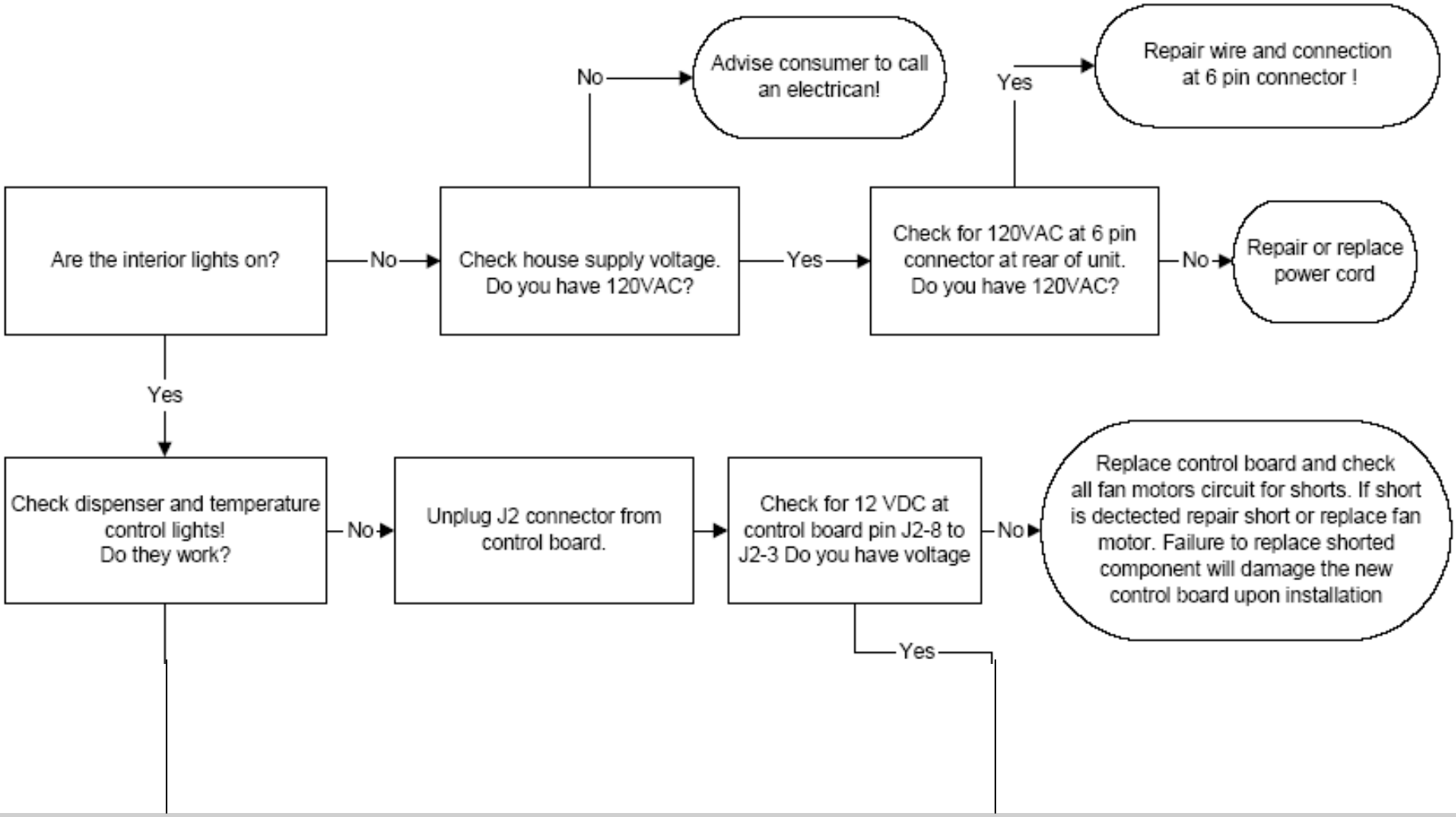
| Main Control Board Locator Table (120-VAC Side) | | | | |
|---|---|---|---|---|
| Connector | Pin | Wire Color | Component Termination | Pin to Pin Voltage Reading |
| J7 | 1 | Beige | Auger motor | J7 pin 1 to J7 pin 9 + 120 VAC |
| J7 | 2 | Silver | Cube solenoid | J7 pin 2 to J7 pin 9 + 120 VAC |
| J7 | 3 | Yellow | Water valve | J7 pin 3 to J7 pin 9 + 120 VAC |
| J7 | 4 | Red/White | Auger motor interlock | J7 pin 4 to J7 pin 9 + 120 VAC |
| J7 | 5 | Blue/White | Quick chill heater | J7 pin 5 to J7 pin 9 + 120 VAC |
| J7 | 6 | Purple | Fresh food door light switch feedback | J7 pin 6 to J7 pin 9 + 120 VAC |
| J7 | 7 | Red | Freezer door light switch feedback | J7 pin 7 to J7 pin 9 + 120 VAC |
| J7 | 8 | Not used | Not used | Not used |
| J7 | 9 | Orange | Neutral | Neutral |

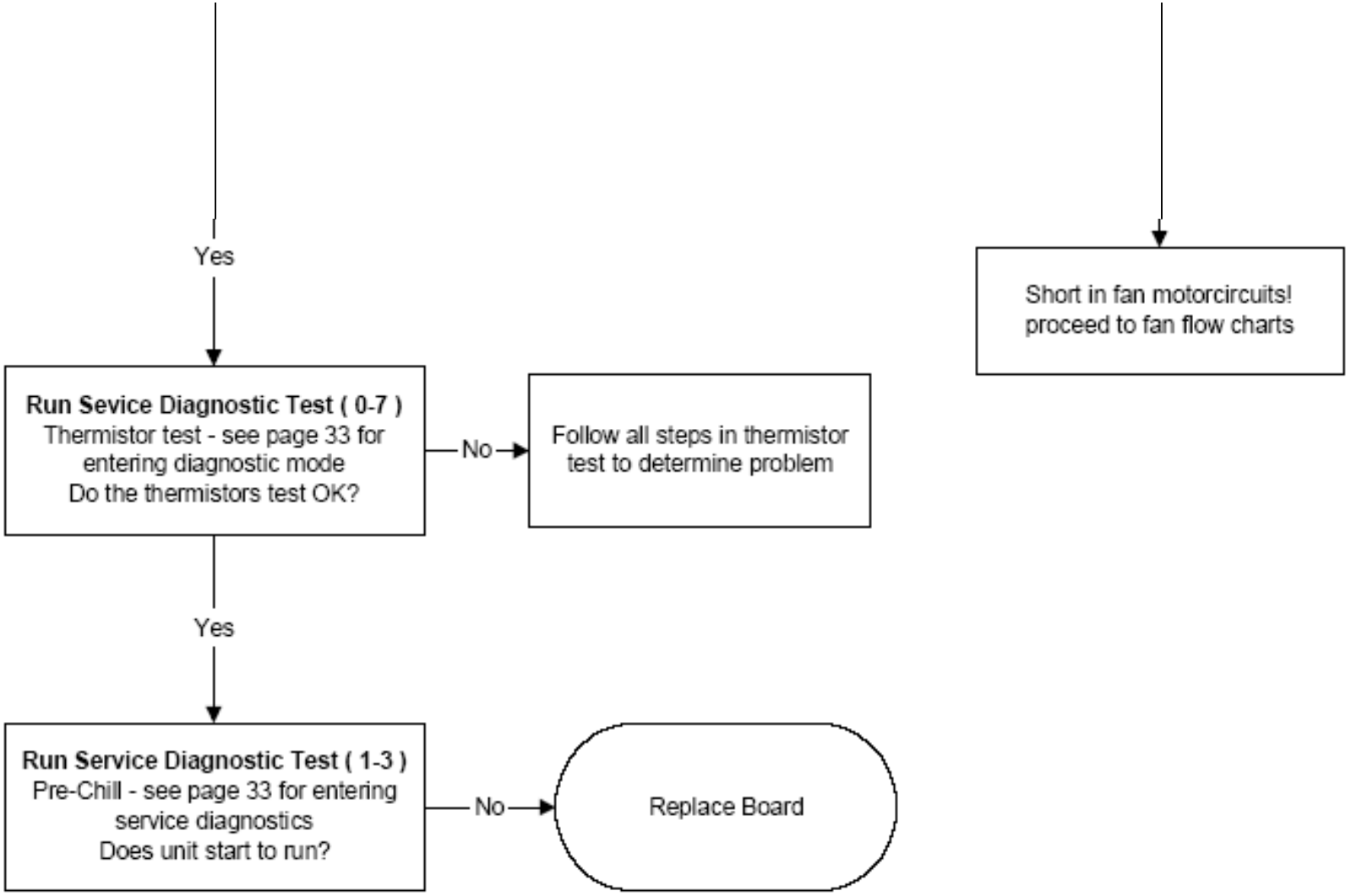
# Arctica SxS



# Arctica SxS

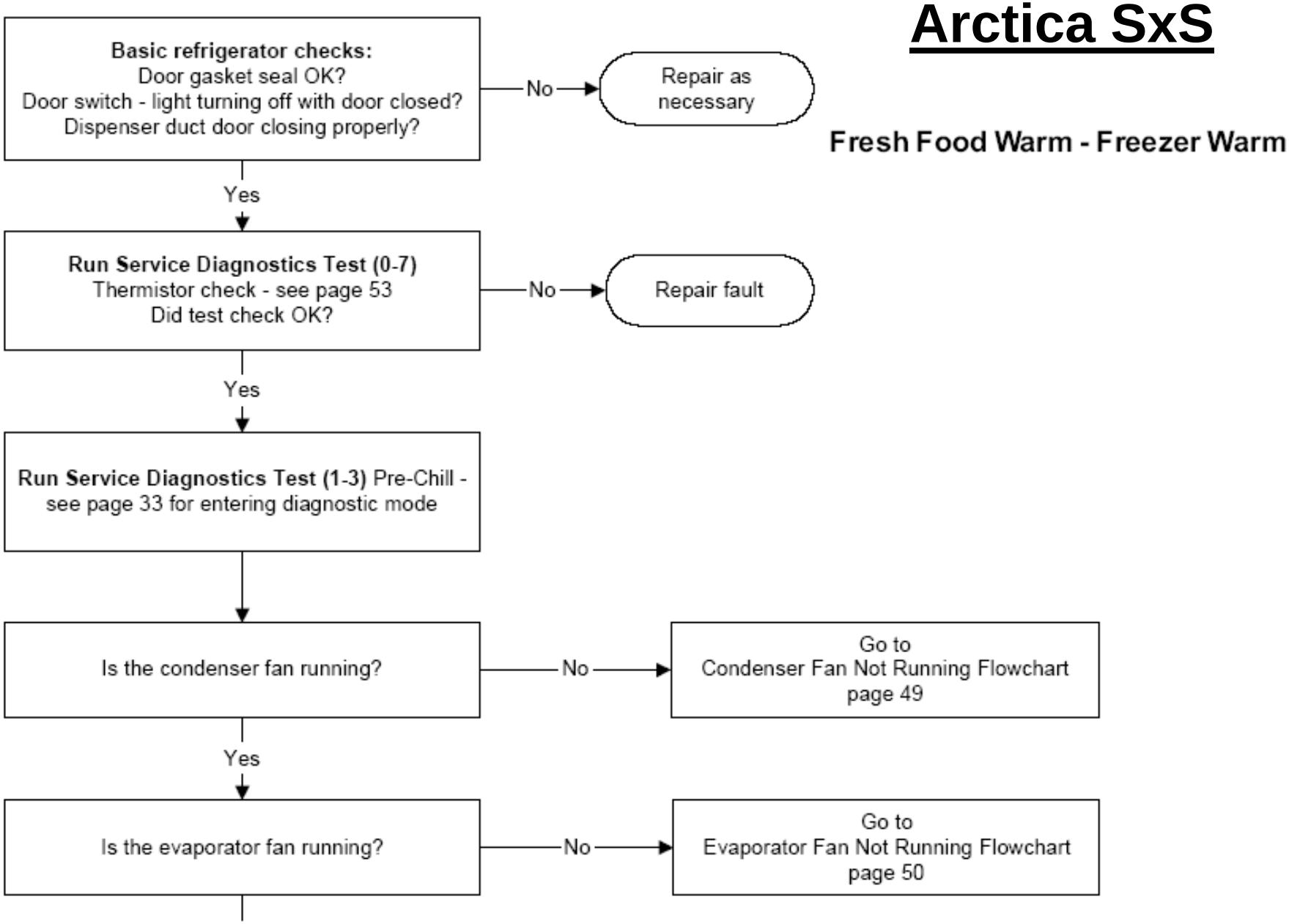
## Unit Dead, No Sound & No Cooling

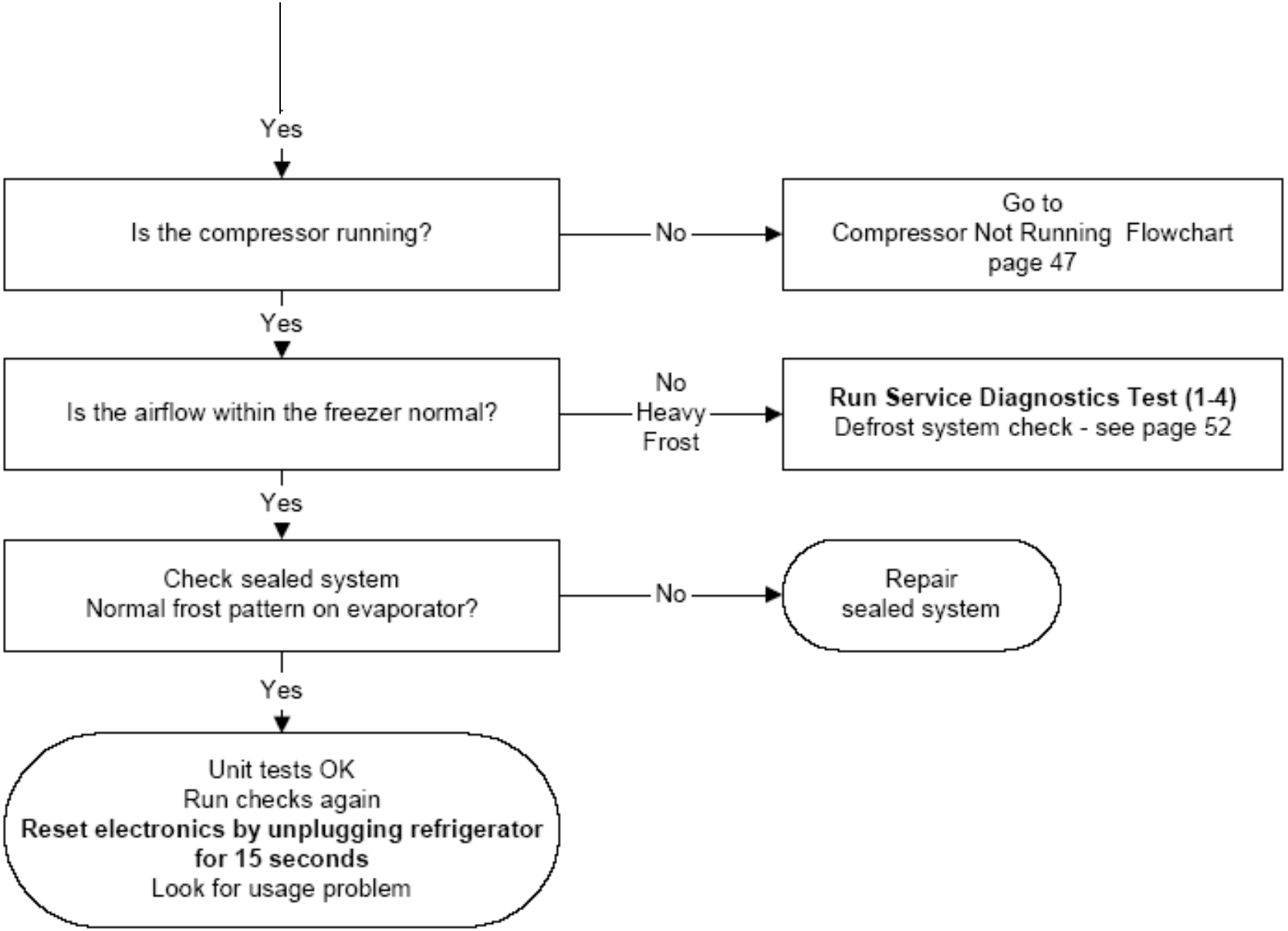




# Arctica SxS

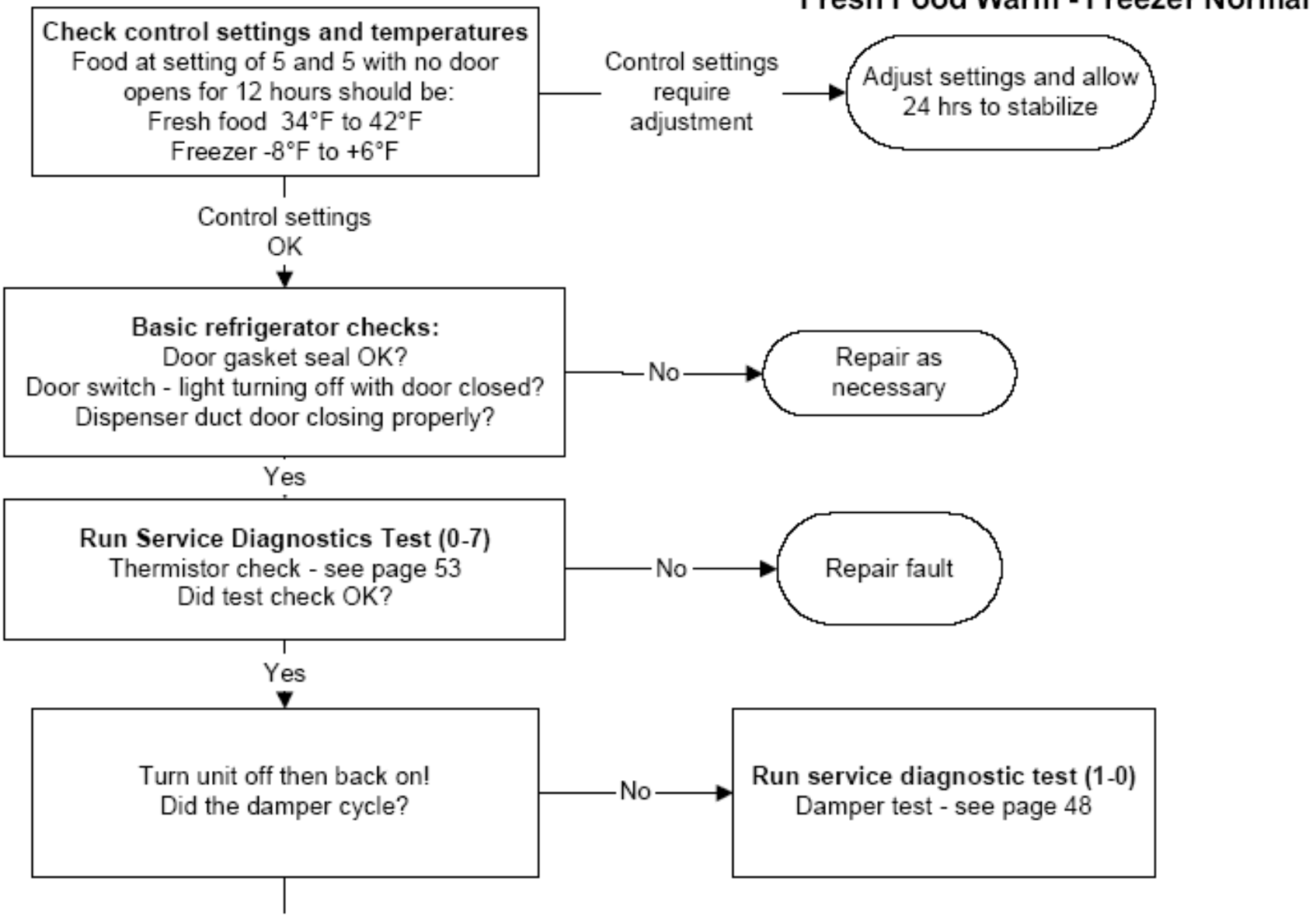
## Fresh Food Warm - Freezer Warm

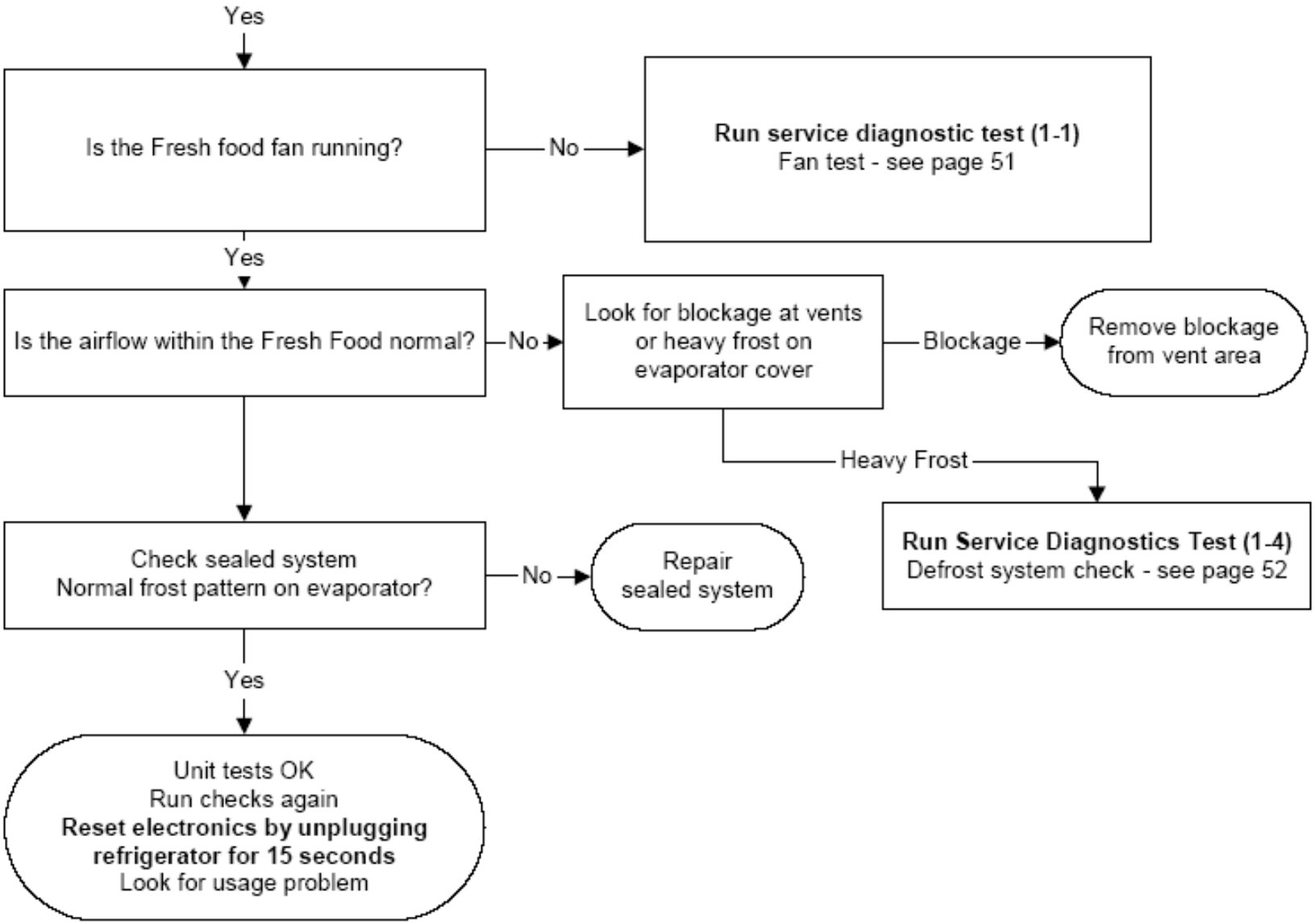




# Arctica SxS

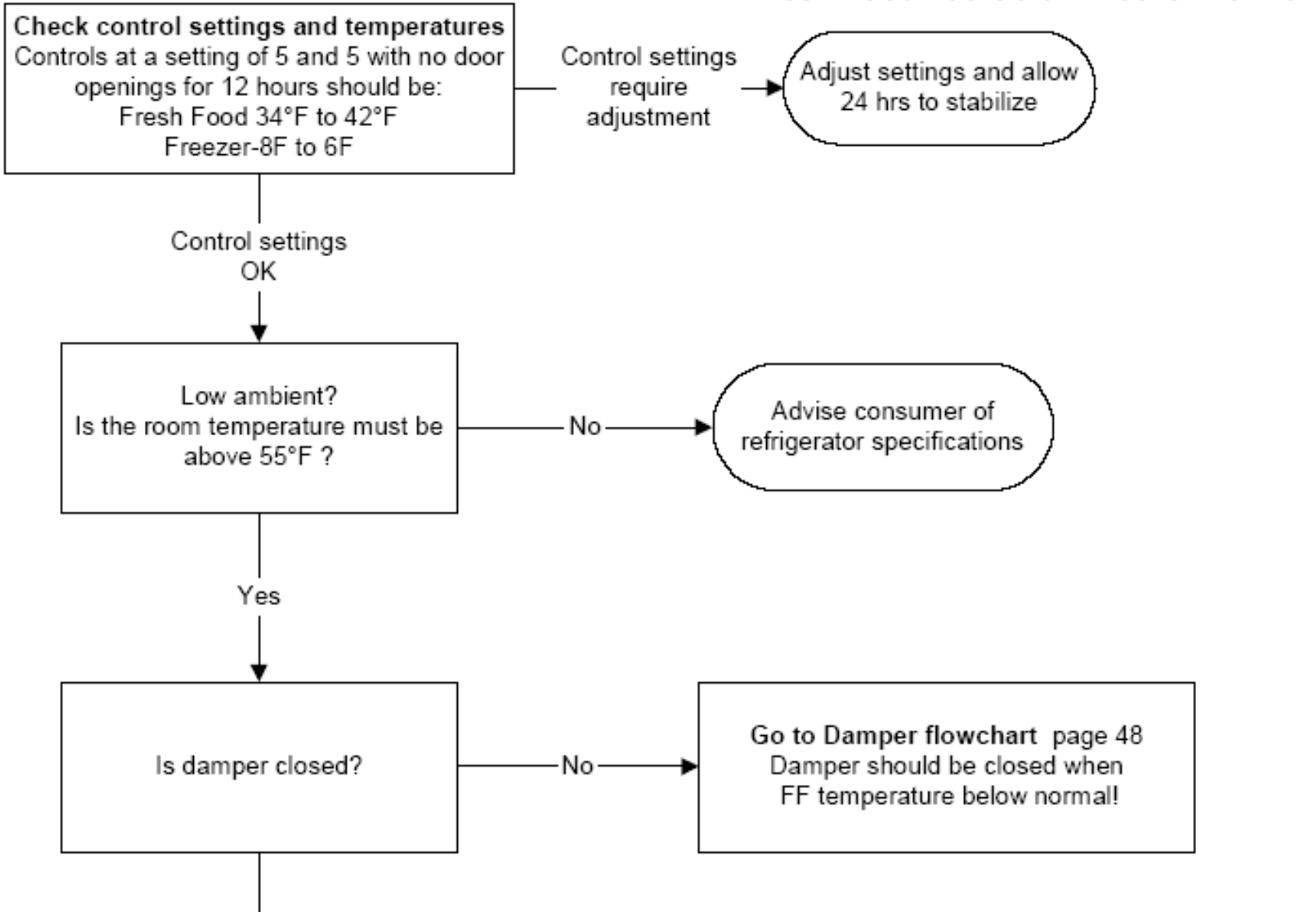
## Fresh Food Warm - Freezer Normal

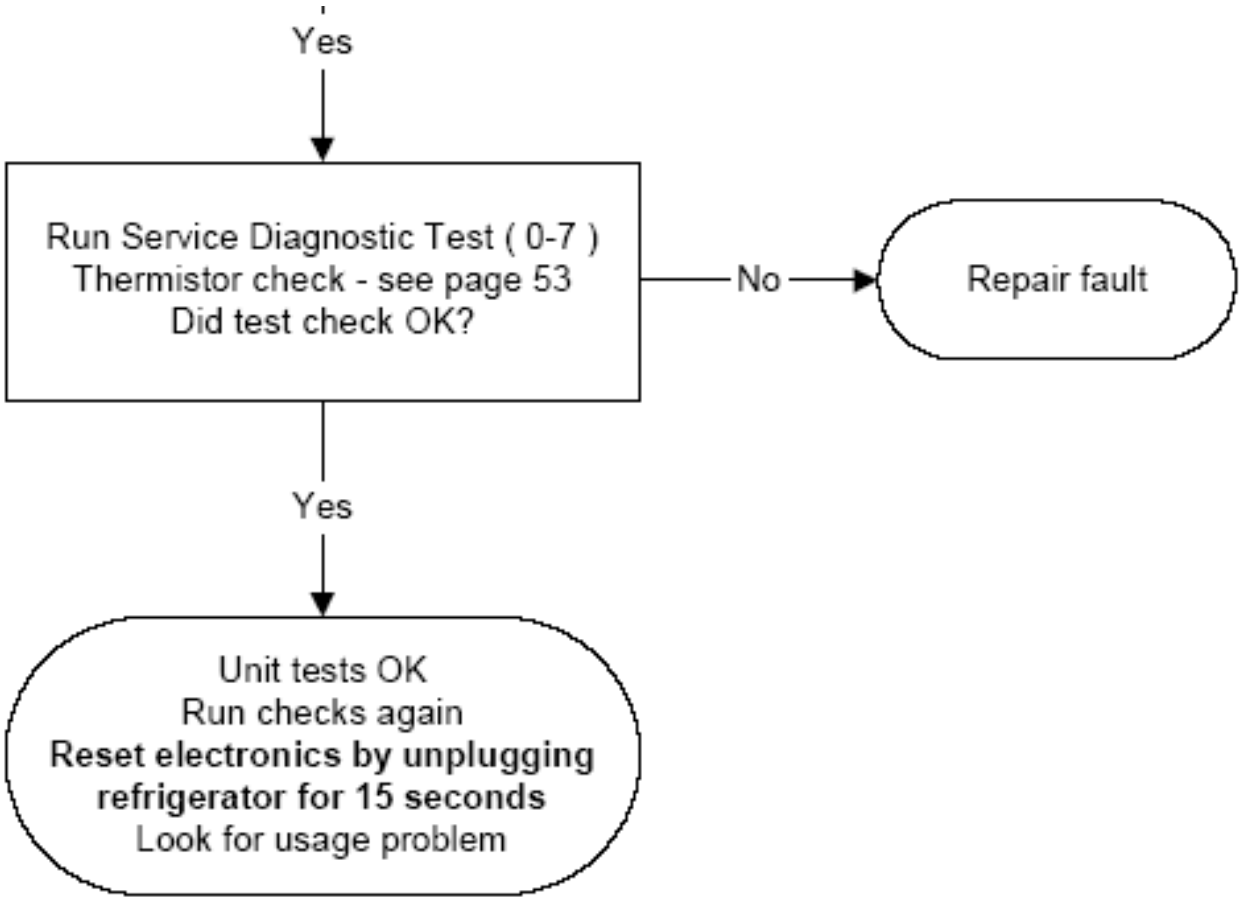




# Arctica SxS

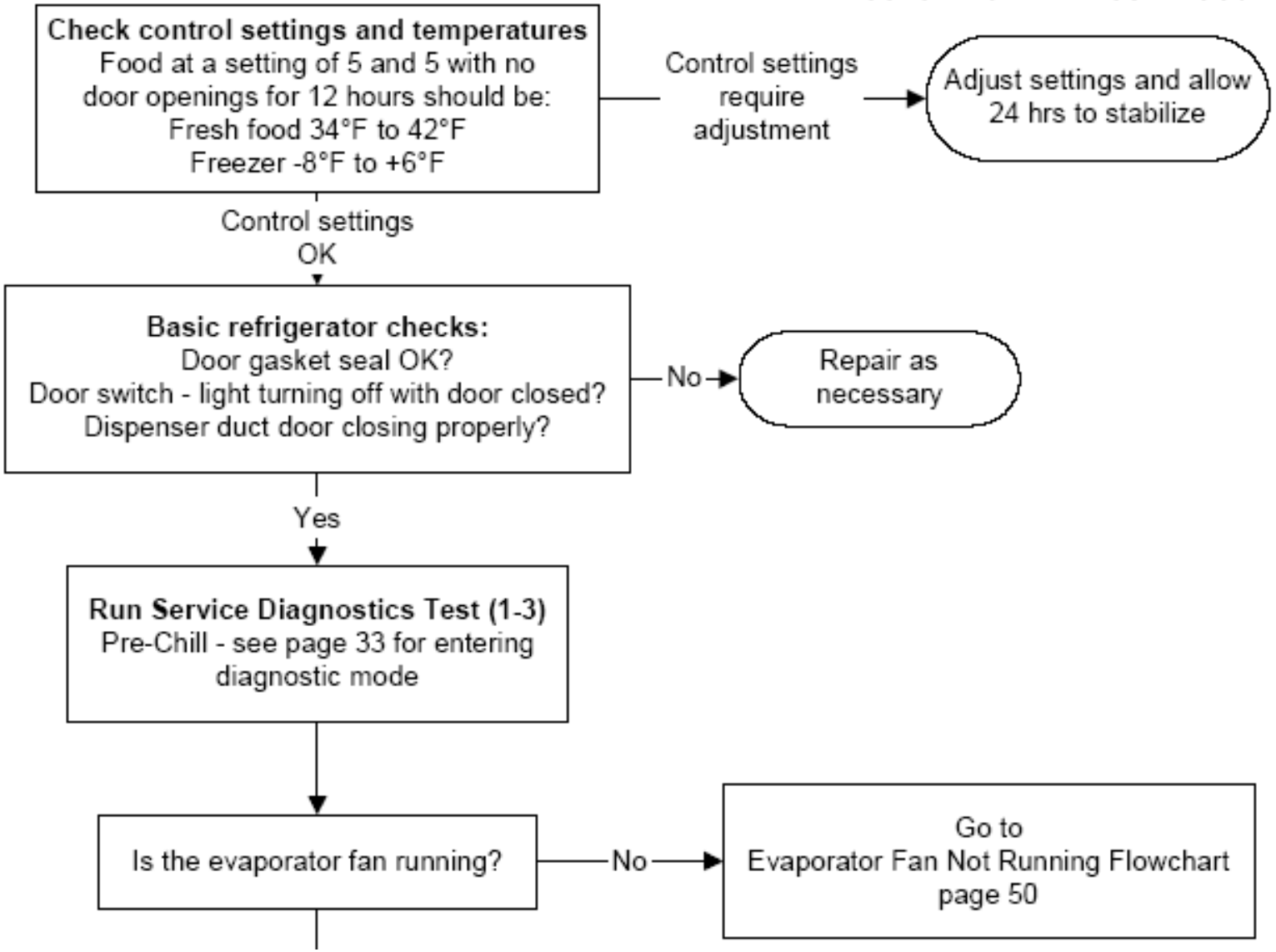
## Fresh Food Too Cold - Freezer Normal

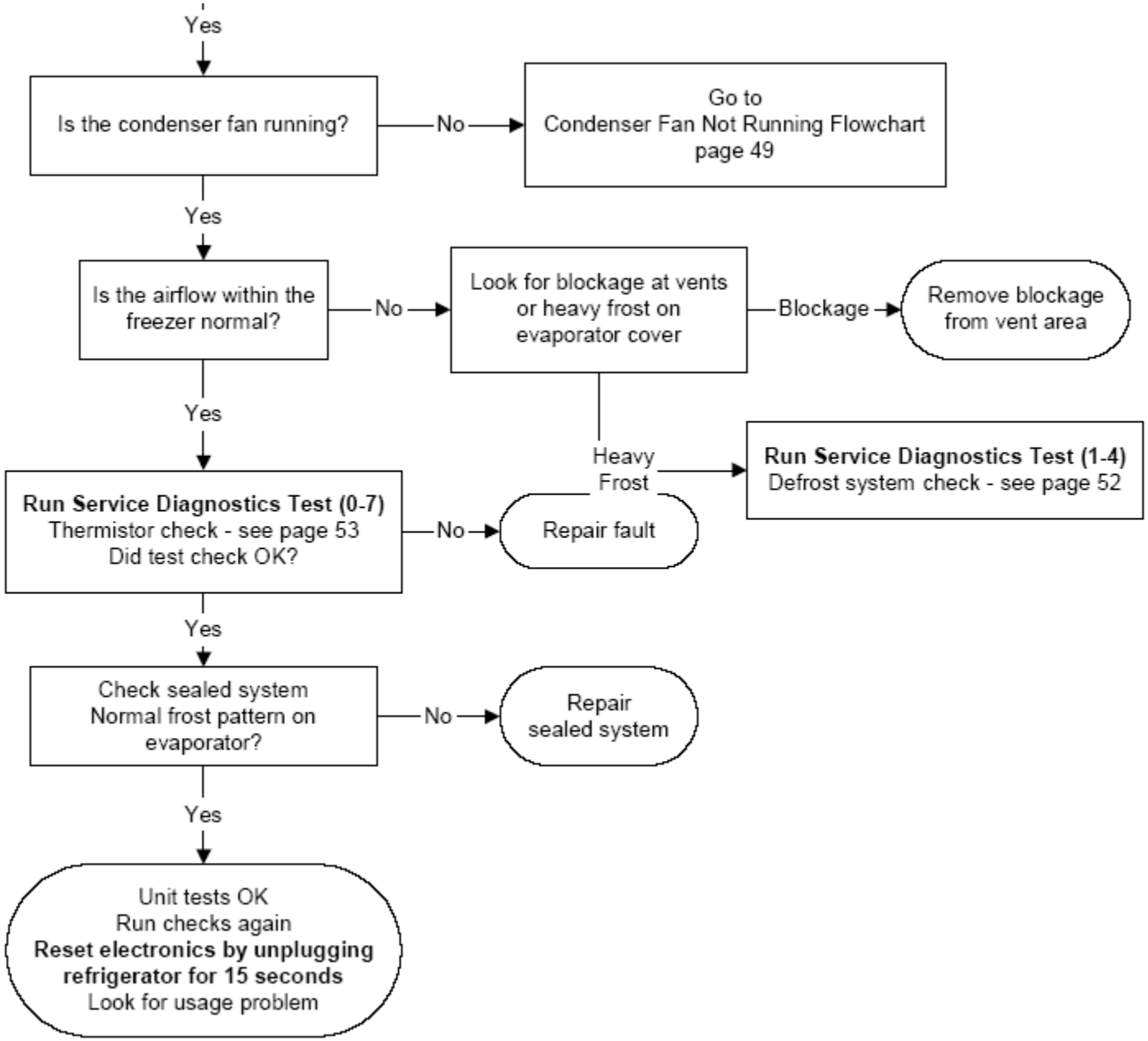




# Arctica SxS

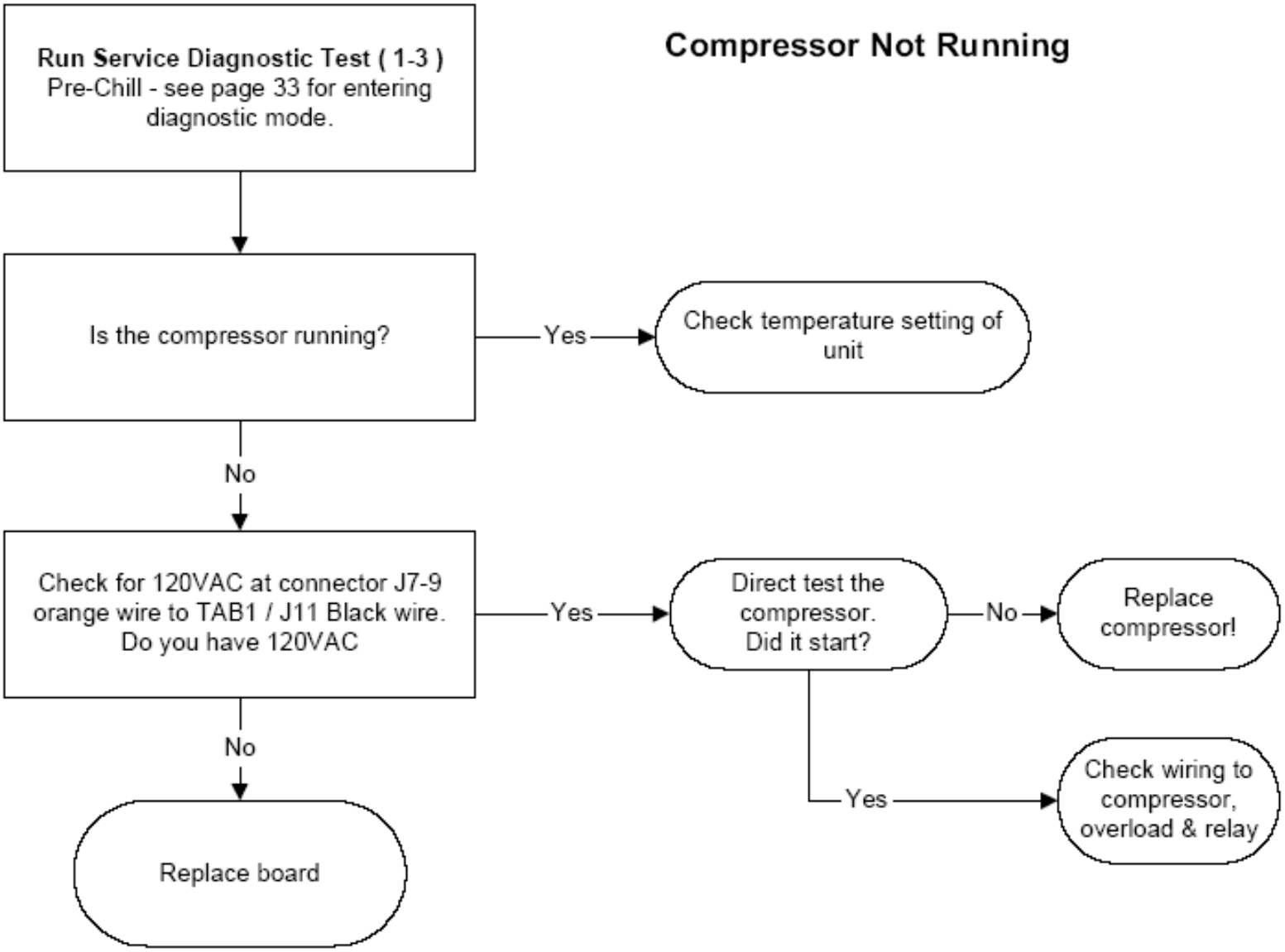
## Freezer Warm - Fresh Food Normal





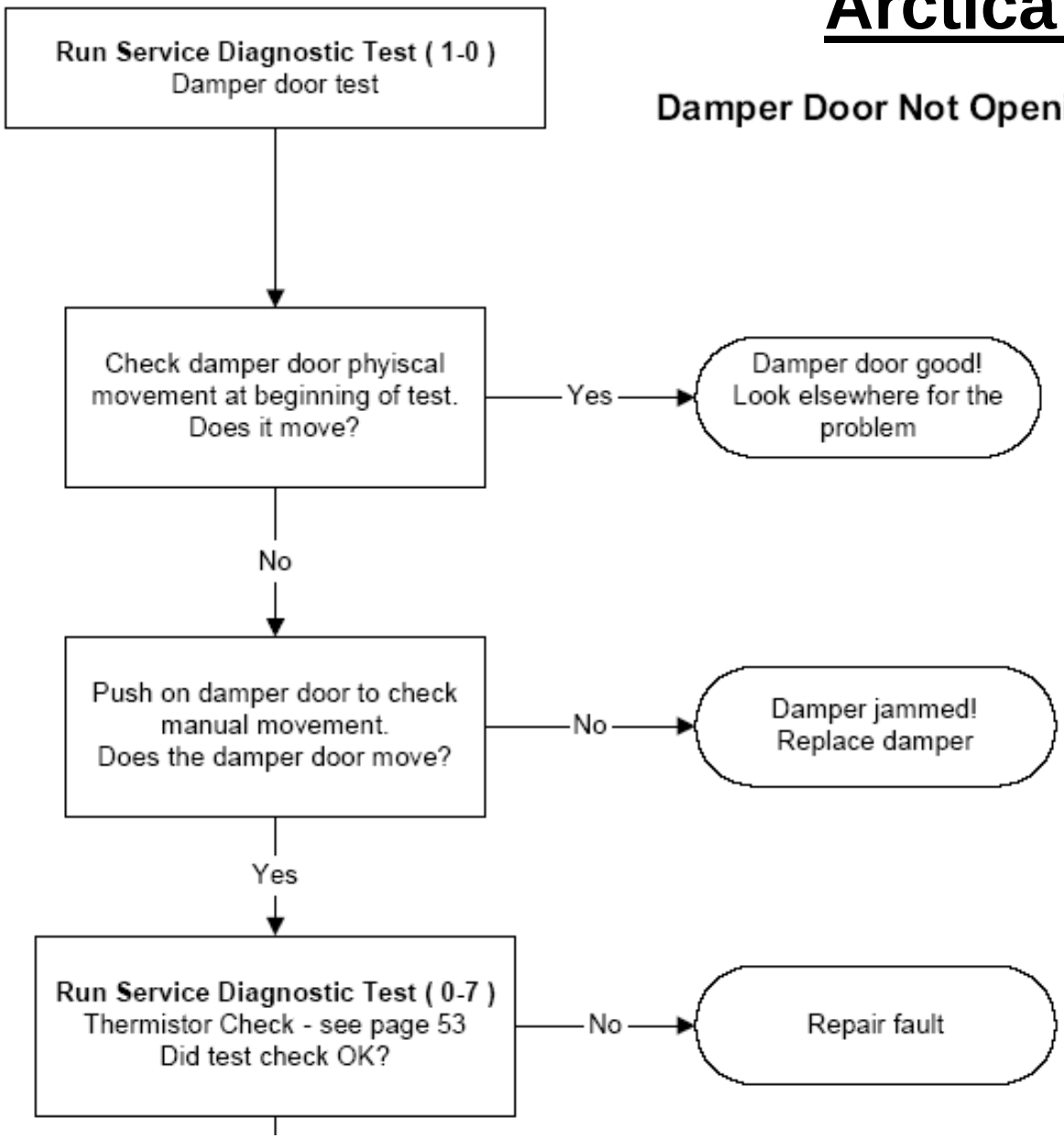
# Arctica SxS

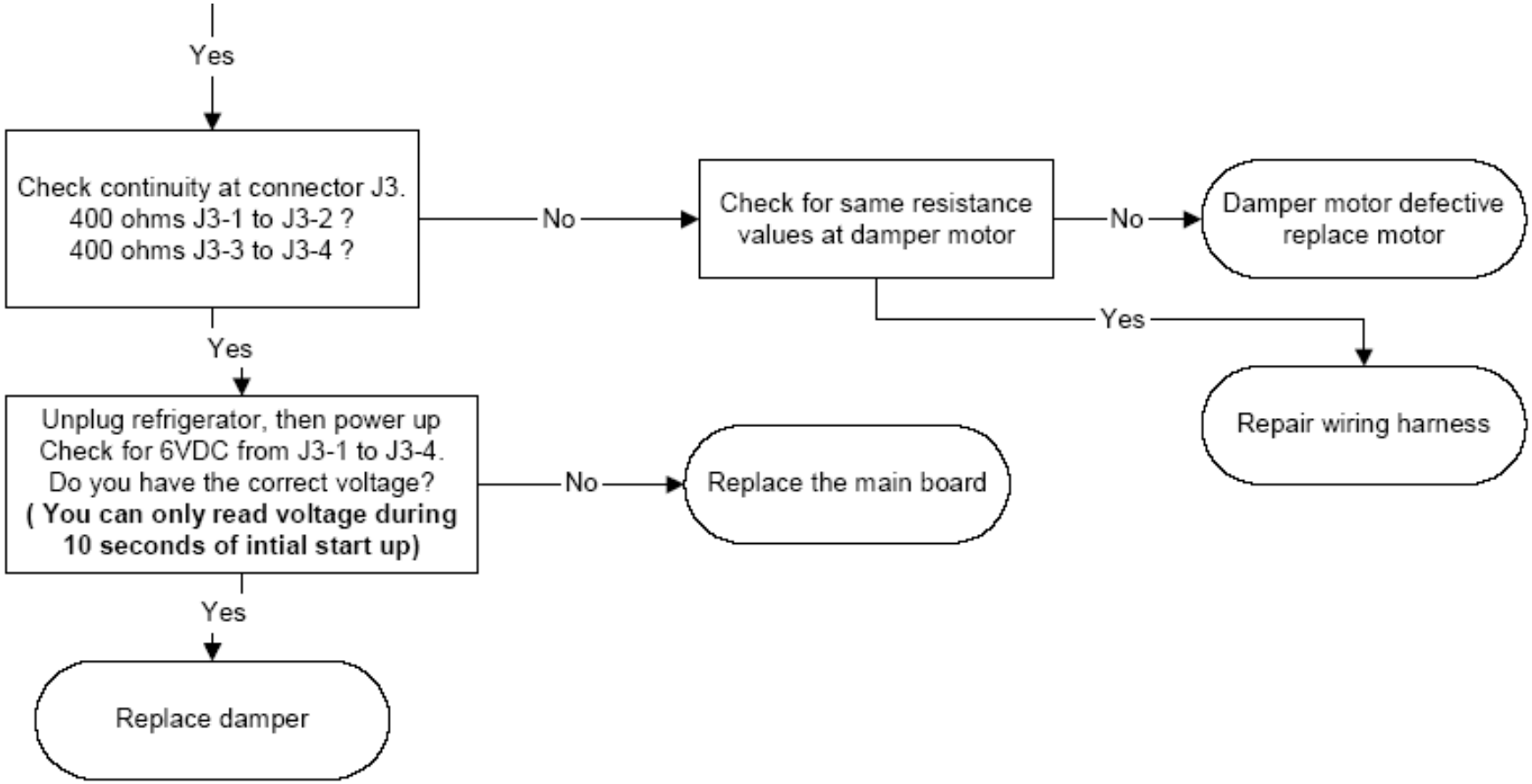
## Compressor Not Running



# Arctica SxS

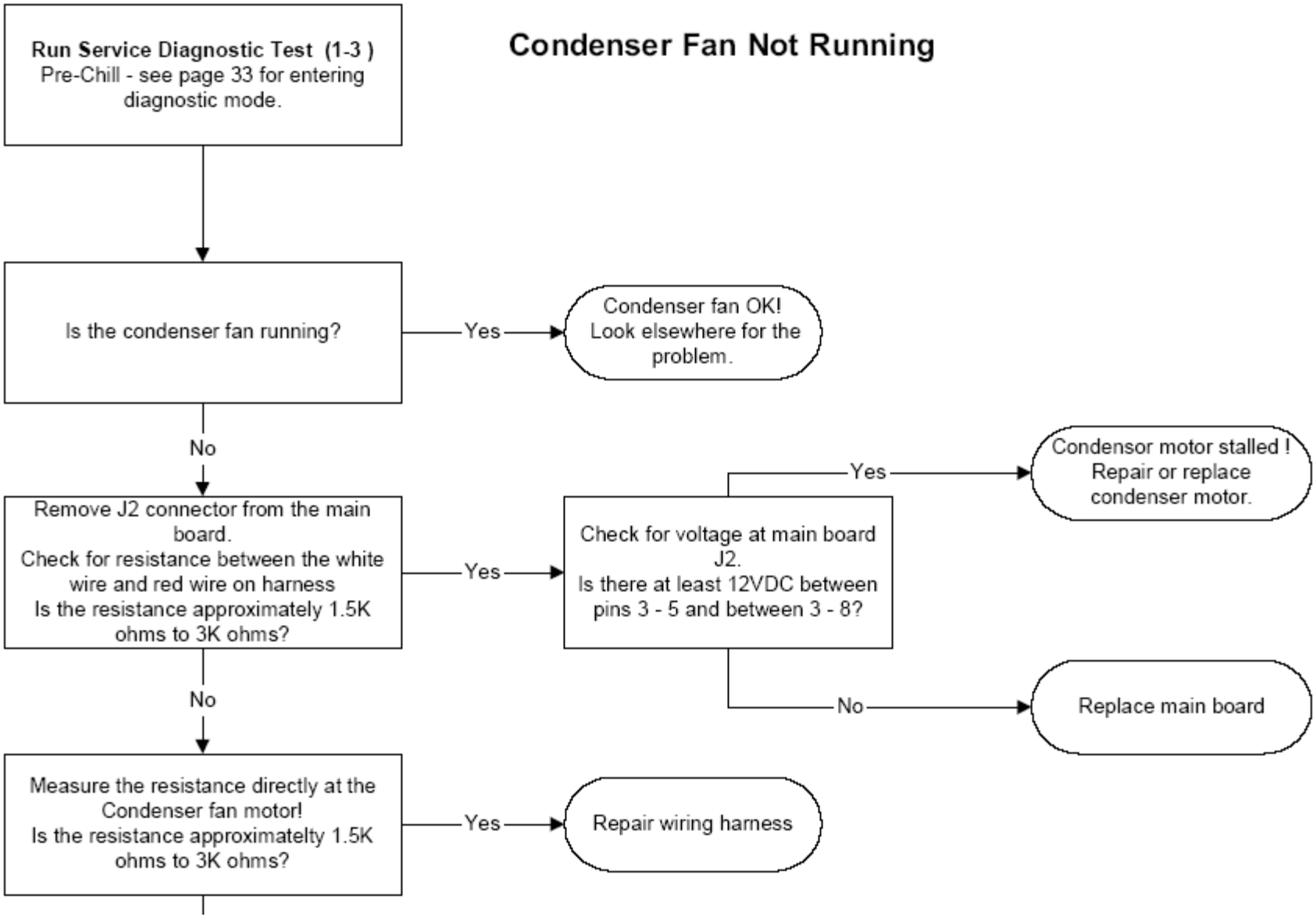
## Damper Door Not Opening or Not Closing

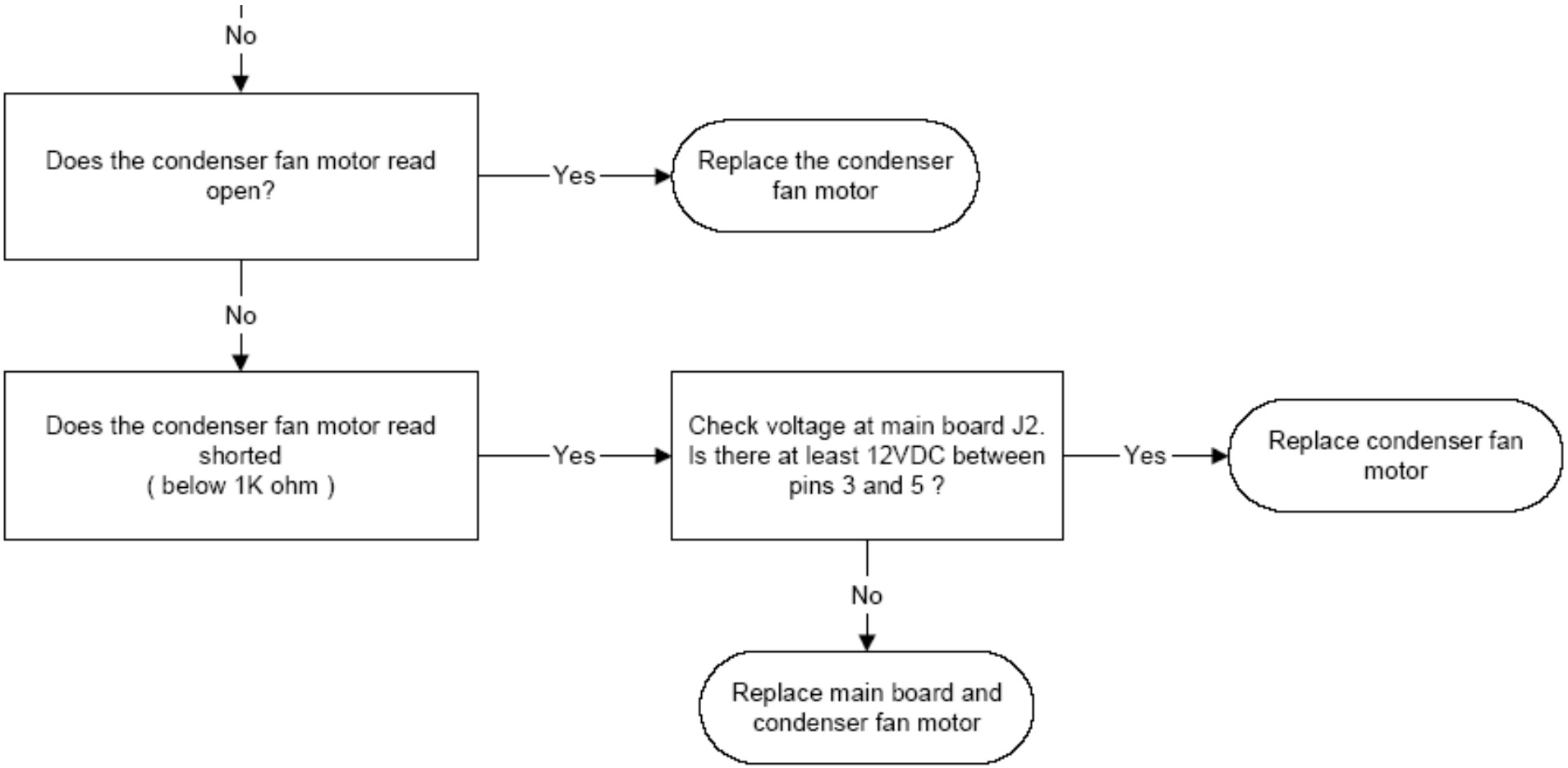




# Arctica SxS

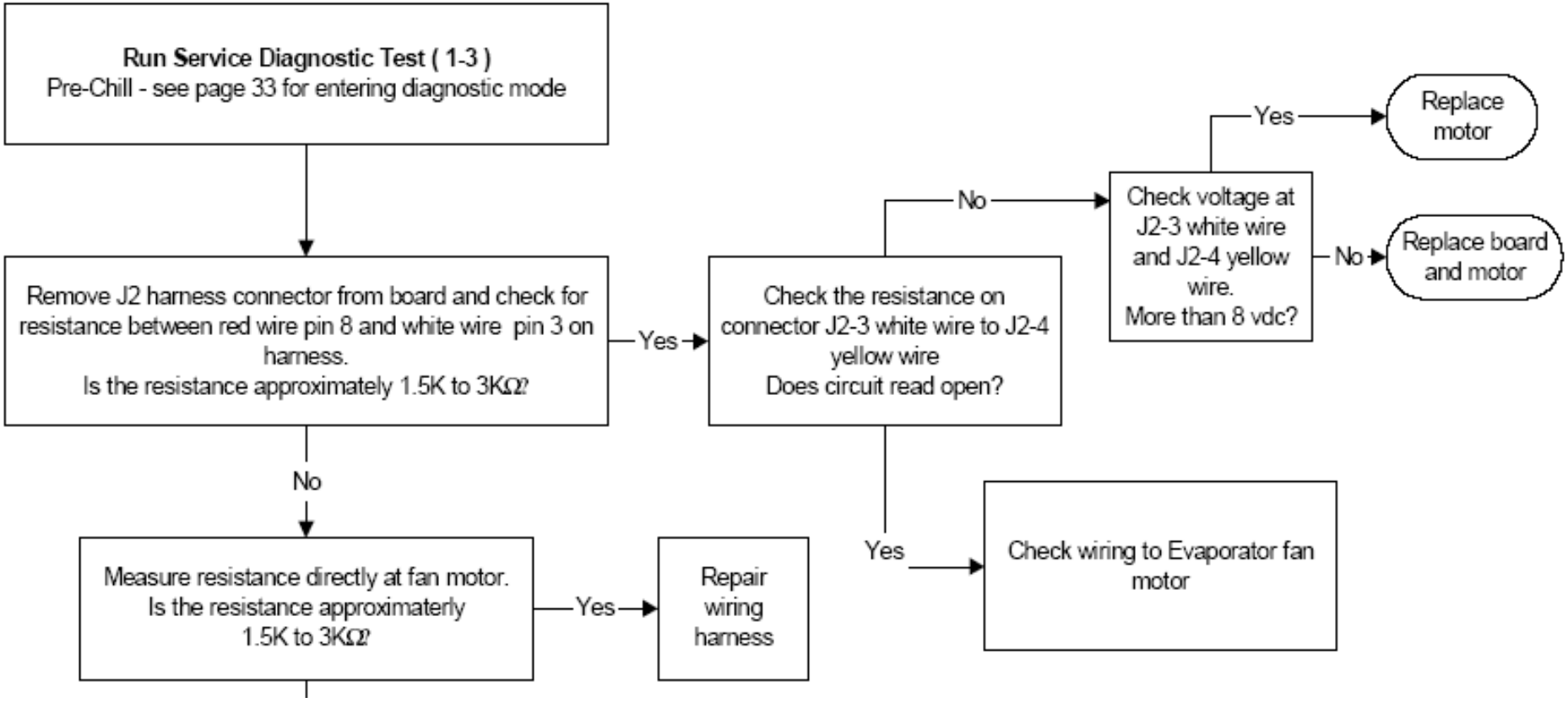
## Condenser Fan Not Running

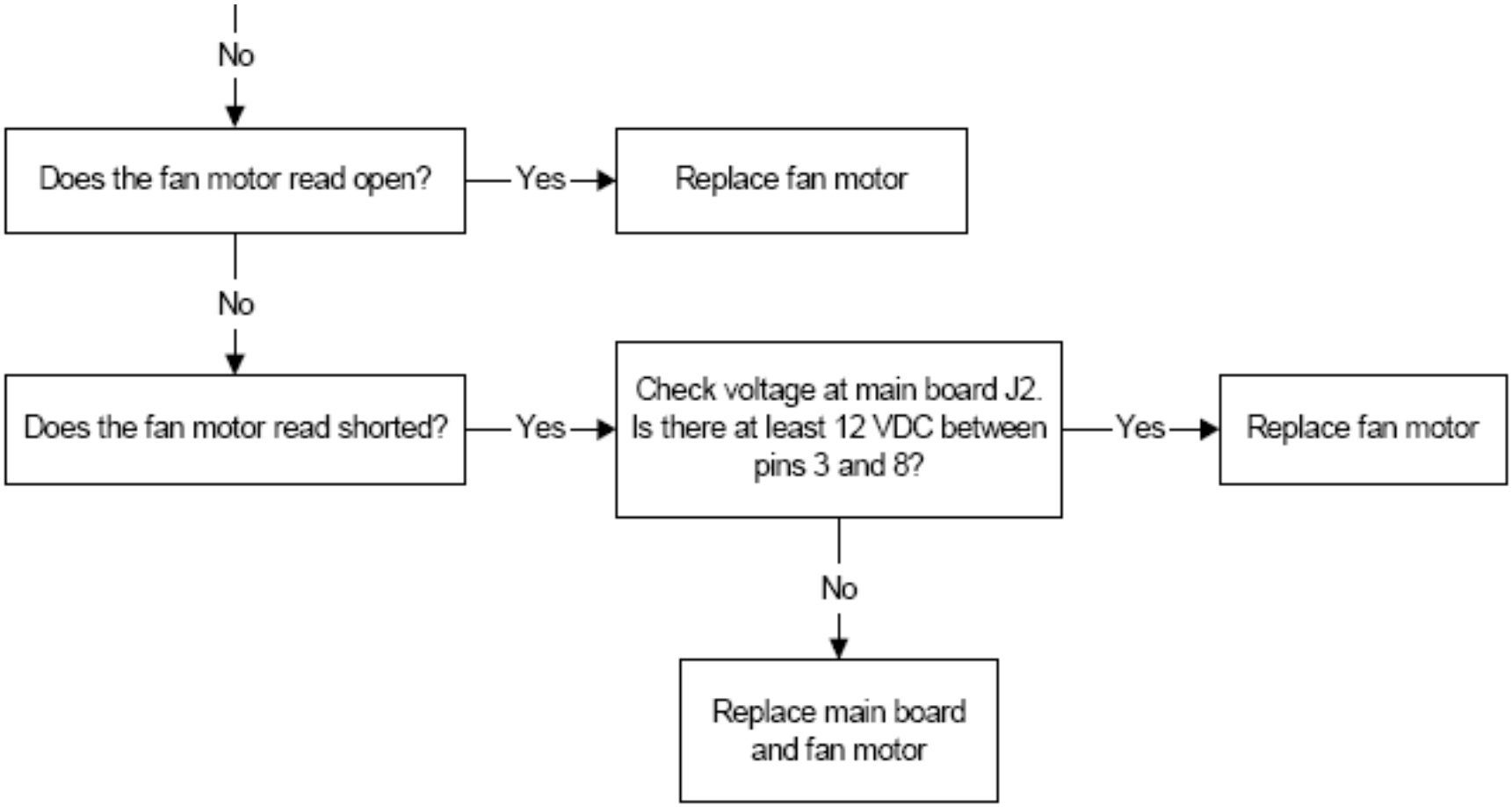




# Arctica SxS

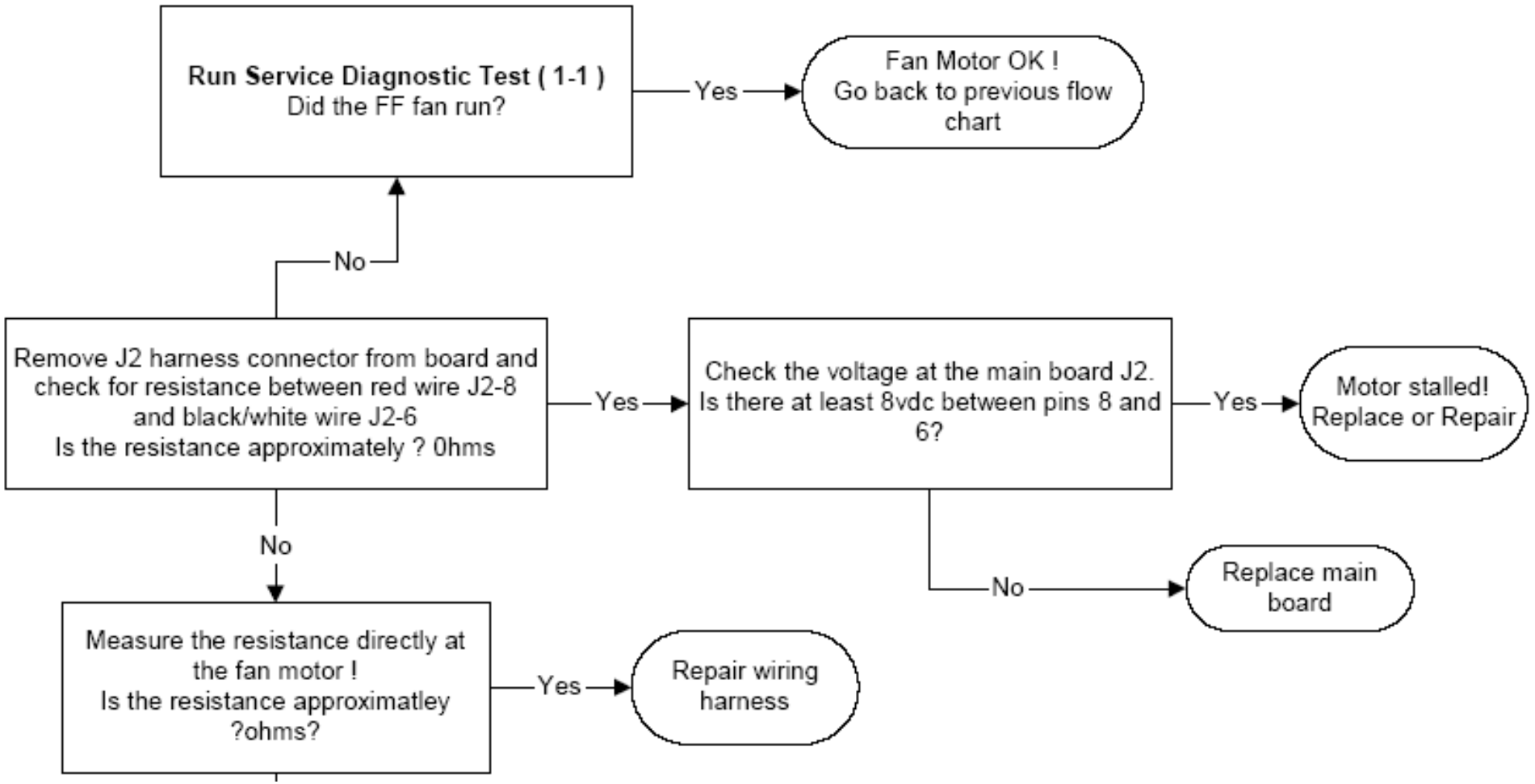
## Evaporator Fan Not Running

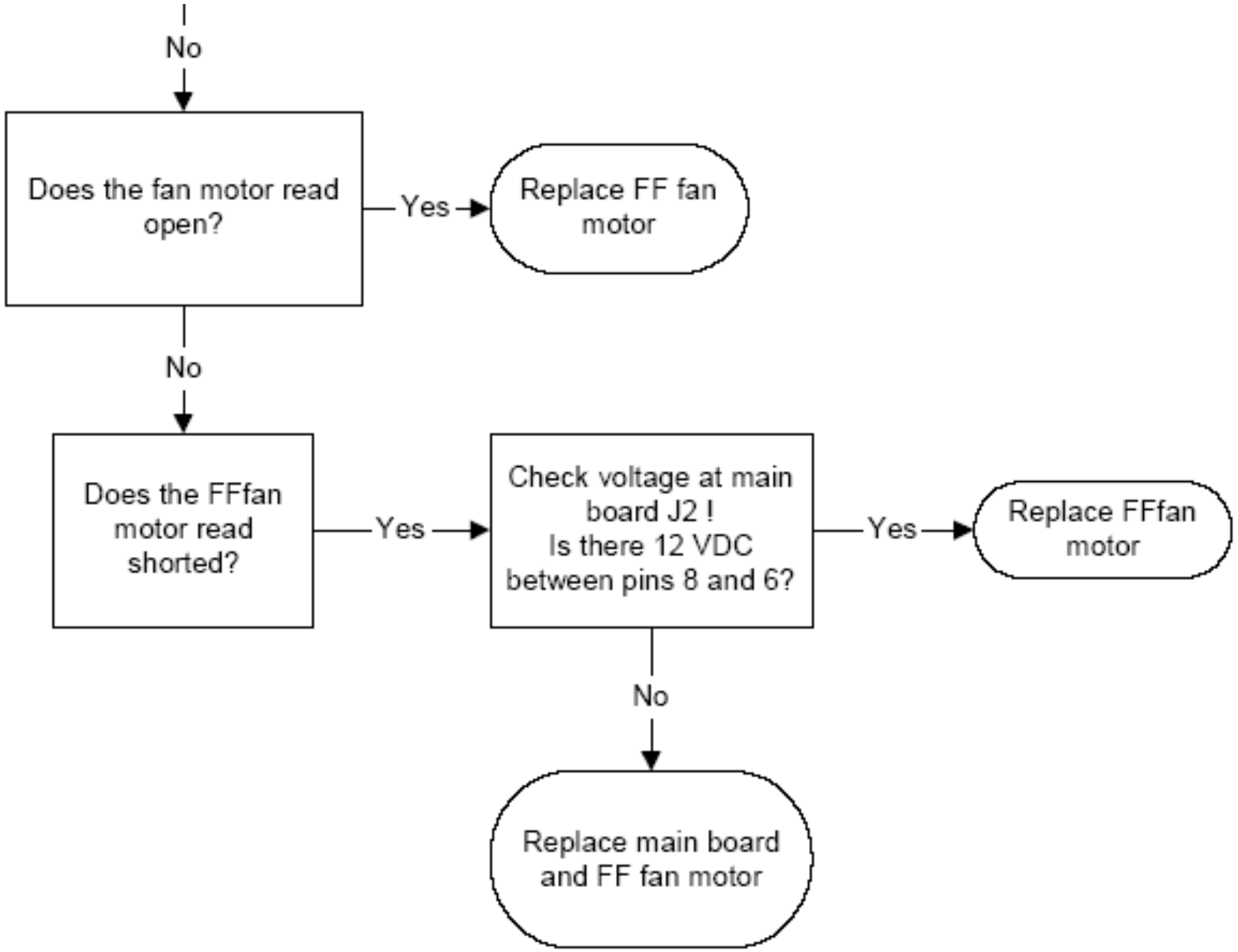




# Arctica SxS

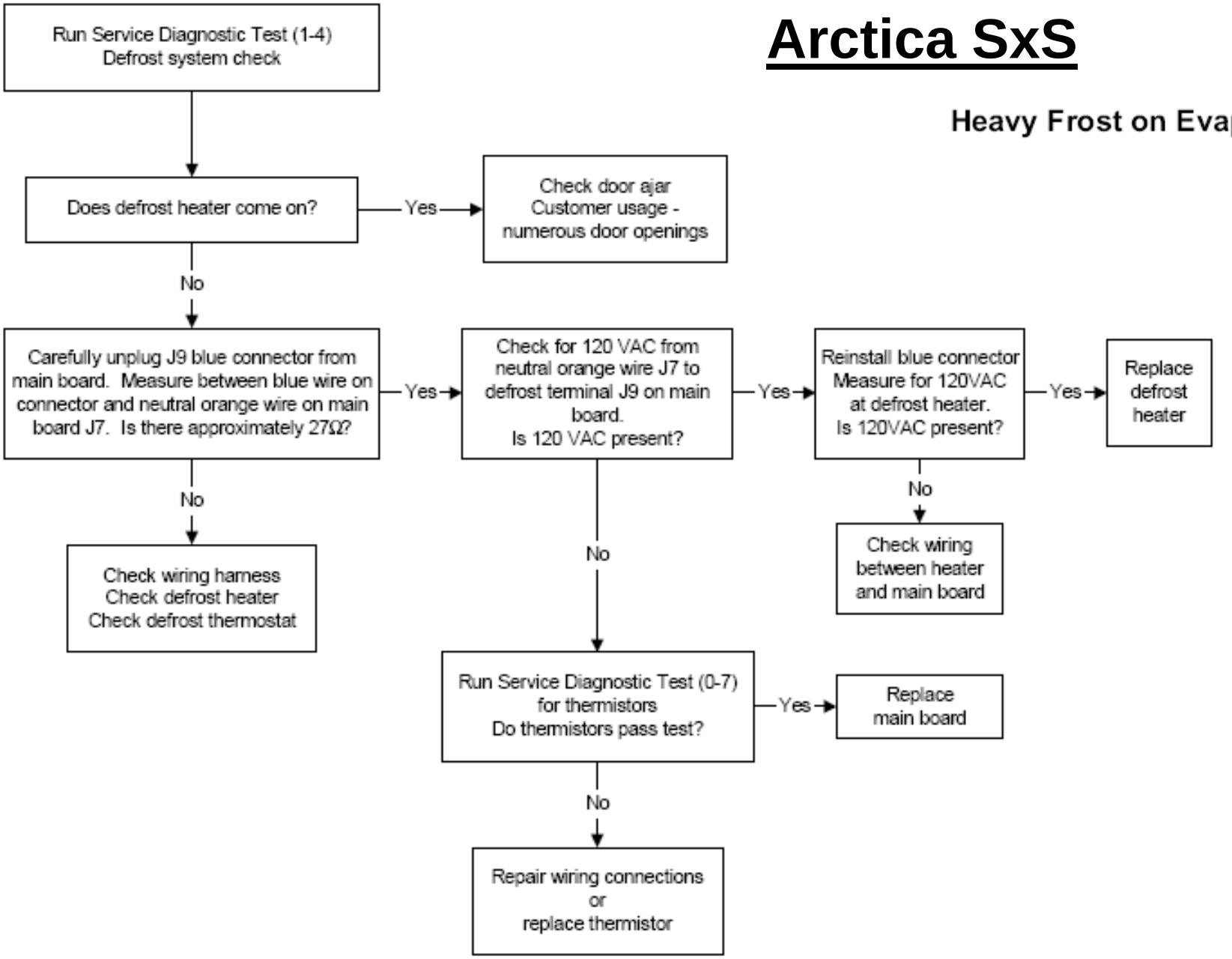
## Fresh Food Fan Not Running





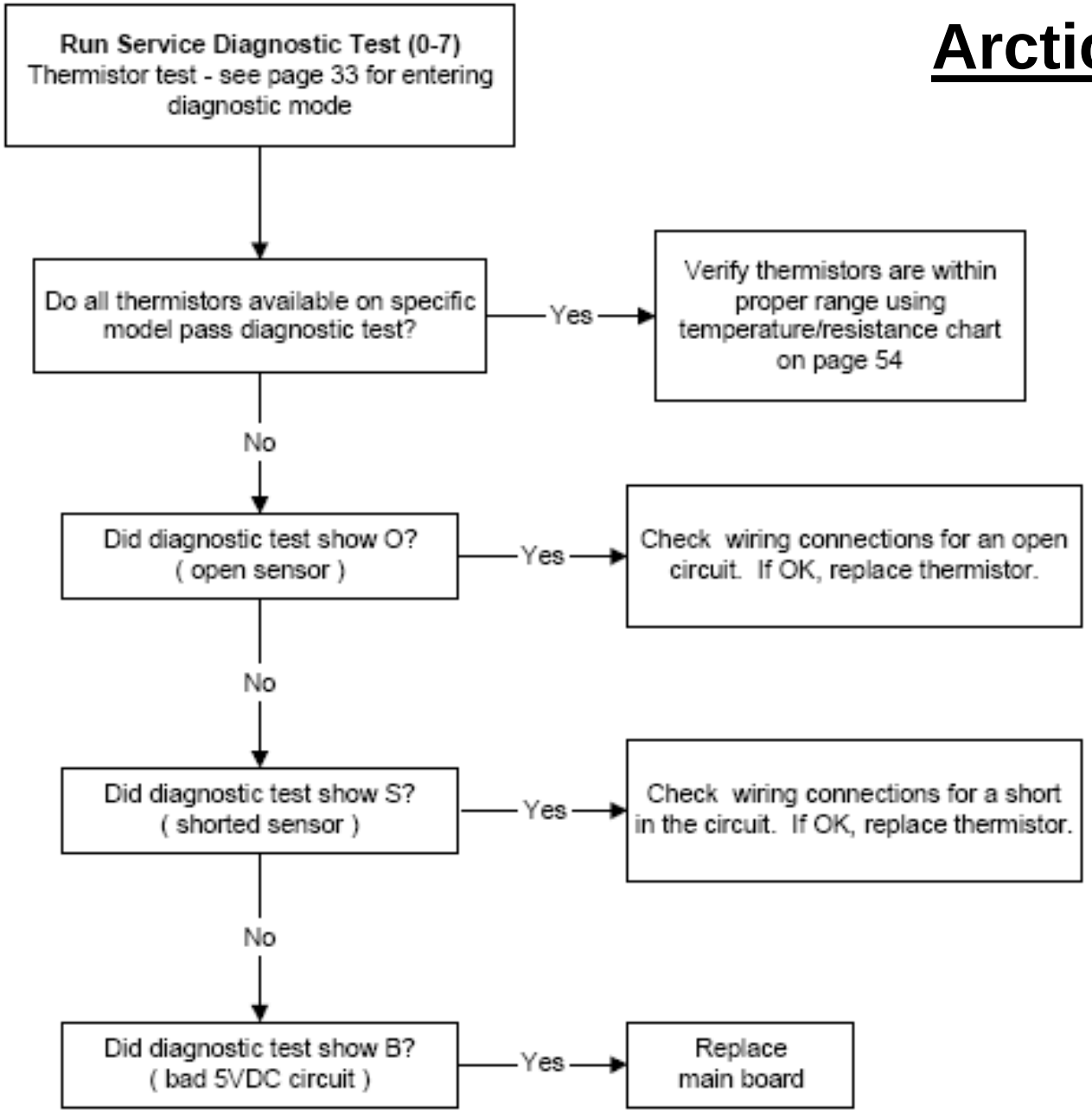
# Arctica SxS

## Heavy Frost on Evaporator



# Arctica SxS

## Thermistor Test



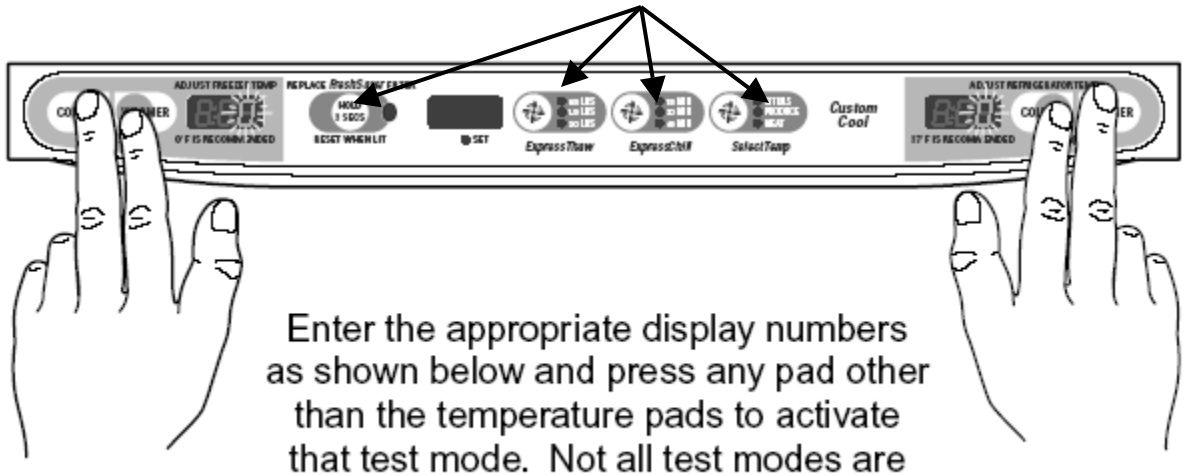
# GE SxS

GSS20
GSS22
GSS25
ESS22
ESS25
HSS22
HSS25
SSS25

# GE Electronic Refrigerator Diagnostic Aid - SxS

Once connected to the refrigerator, enter the diagnostic mode by pressing both the freezer temperature (colder and warmer) pads and the refrigerator temperature (colder and warmer) pads simultaneously. All four pads must be held for approximately 3 seconds. Blinking "0's" in both displays indicate the refrigerator has entered the test mode.

**Press any key pad in the middle to lock in test.**




Enter the appropriate display numbers as shown below and press any pad other than the temperature pads to activate that test mode. Not all test modes are available on all models.

**Note 1.** Display order is #1) Fresh Food 1 #2) Fresh Food 2 #3) Custom Cool #4) Evaporator #5) Freezer
Thermistor test results are: P = Pass 0 = Fail S = Short to 5 VDC B = Bad amplifier (replace 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.

Refer to Service Guide 31-9072 for additional information

| FREEZER DISPLAY | FRESH FOOD DISPLAY | DIAGNOSTICS | RESULTS | COMMENTS |
|---|---|---|---|---|
| 0 | 2 | Communication check between Temperature Control and Main Control | "P" on freezer display if OK and "F" if problem is found | |
| 0 | 3 | Communication check between Dispenser Control & Temperature Control | "P" on freezer display if OK and "F" if problem is found | Dispenser models only |
| 0 | 4 | Communication check between Dispenser Control and Main Control | "P" on freezer display if OK and "F" if problem is found | Dispenser models only |
| 0 | 5 | Encoder Test | As the knob is rotated the display will show the corresponding setting | Only for models with temperature control knobs |
| 0 | 7 | Control and Sensor System Test | Checks each thermistor and displays "P" for pass and "0" for fail | See Note 1 below |
| 0 | 8 | Duct Door Test | Opens the dispenser duct door for 10 seconds, then closes. | Only for dispensers with 5 or more touch pads |
| 1 | 0 | Dampers Test | Opens each damper, pauses briefly and then closes. | Includes Custom Cool dampers if applicable |
| 1 | 2 | 100% Run Time | Sealed system on 100% of the time. Times out after 1 hour. | |
| 1 | 3 | Prechill Test | Starts Prechill mode. Unit returns to normal on its own. | |
| 1 | 4 | Defrost Test | Toggles on the Defrost cycle. **See Note 2** | Must press again to turn heaters off. See Note 2 |
| 1 | 5 | Main Control Reset | Causes a system reset | |
| 1 | 6 | Exit Diagnostic Mode | Causes a temperature control board reset | |
| 1 | 7 | Degrees C°/F° | Changes from F° to C° or C° to F° on temperature display | Press FF temperature pad (warmer/colder) to toggle |

## Testing

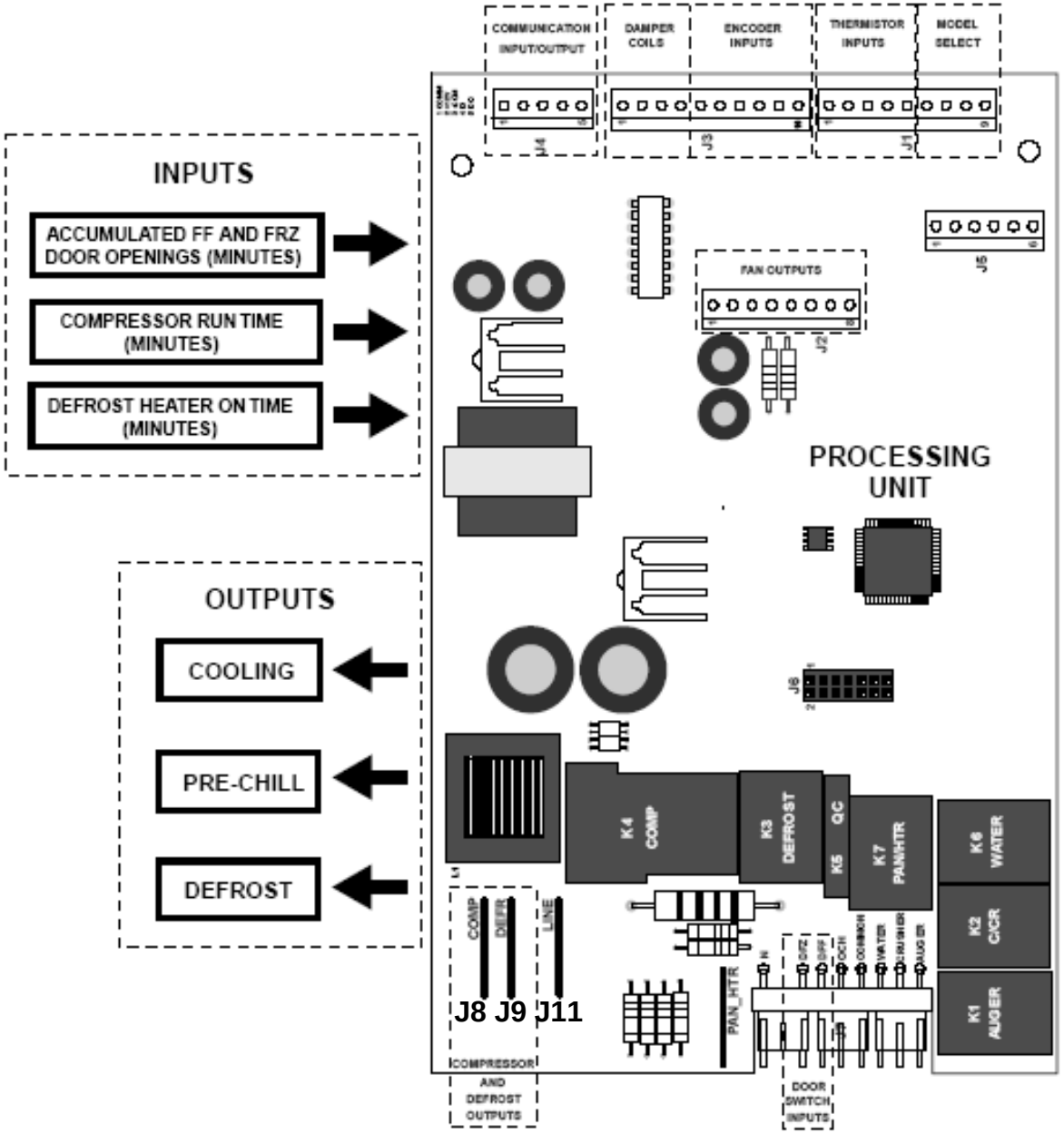
The most accurate method of testing a thermistor is to place it in a glass of ice water for several minutes. The thermistor should read approximately 16KΩ in the glass of 33°F ice water.

**Note:** Thermistors can also be checked for an open or shorted condition by using the diagnostic mode (see ***Service Diagnostics***).

| Table 2. Thermistor Values | | |
|---|---|---|
| Temperature Degrees (C) | Temperature Degrees (F) | Resistance in Kilo-Ohms |
| -40 | -40 | 166.8 kΩ |
| -35 | -31 | 120.5 kΩ |
| -30 | -22 | 88 kΩ |
| -25 | -13 | 65 kΩ |
| -20 | -4 | 48.4 kΩ |
| -15 | 5 | 36.4 kΩ |
| -10 | 14 | 27.6 kΩ |
| -5 | 23 | 21 kΩ |
| 0 | 32 | 16.3 kΩ |
| 5 | 41 | 12.7 kΩ |
| 10 | 50 | 10 kΩ |
| 15 | 59 | 7.8 kΩ |
| 20 | 68 | 6.2 kΩ |
| 25 | 77 | 5 kΩ |
| 30 | 86 | 4 kΩ |
| 35 | 95 | 3.2 kΩ |
| 40 | 104 | 2.6 kΩ |
| 45 | 113 | 2.2 kΩ |
| 50 | 122 | 1.8 kΩ |
| 55 | 131 | 1.5 kΩ |
| 60 | 140 | 1.2 kΩ |

**NOTE: The thermistor's resistance has a negative coefficient. As the temperature increases, the thermistor's resistance decreases.**

# GE SxS



# GE SxS

| Main Control Board Locator Table (Low-Voltage Side) | | | | |
|---|---|---|---|---|
| Connector | Pin | Wire Color | Component Termination | Pin-to-Pin Voltage Reading |
| J1 | 1 | Not used | Not used | Not used |
| J1 | 2 | Yellow/Blue Band | Fresh food thermistor #1 | J1 pin 2 to pin 5 = 2.8 to 3.5 VDC |
| J1 | 3 | White/Blue Band | Freezer thermistor | J1 pin 3 to pin 5 = 2.8 to 3.5 VDC |
| J1 | 4 | Brown | Evaporator thermistor | J1 pin 4 to pin 5 = 2.8 to 3.5 VDC |
| J1 | 5 | 5 VDC Blue/White | Thermistor supply voltage (5 VDC) | J1 pin 5 to J4 pin 3 = 5 VDC |
| J2 | 1 | Blue | Evaporator fan tachometer | J2 pin 1 to pin 3 = 6.3 VDC |
| J2 | 2 | Not used | Not used | Not used |
| J2 | 3 | White-DC common | Fan common | J2 pin 3 to pin 8 = 12 VDC |
| J2 | 4 | Yellow/Black | Evaporator fan | J2 pin 4 to pin 3 = 12.4 VDC (high speed), 8 VDC (low speed) |
| J2 | 5 | Yellow | Condenser fan | J2 pin 5 to pin 8 = 13.4 VDC (condenser fan is single speed) |
| J2 | 6 | Not used | Not used | Not used |
| J2 | 7 | Not used | Not used | Not used |
| J2 | 8 | Red-13 VDC | Fan supply voltage | J2 pin 8 to pin 6 = 13.4 VDC |

# GE SxS

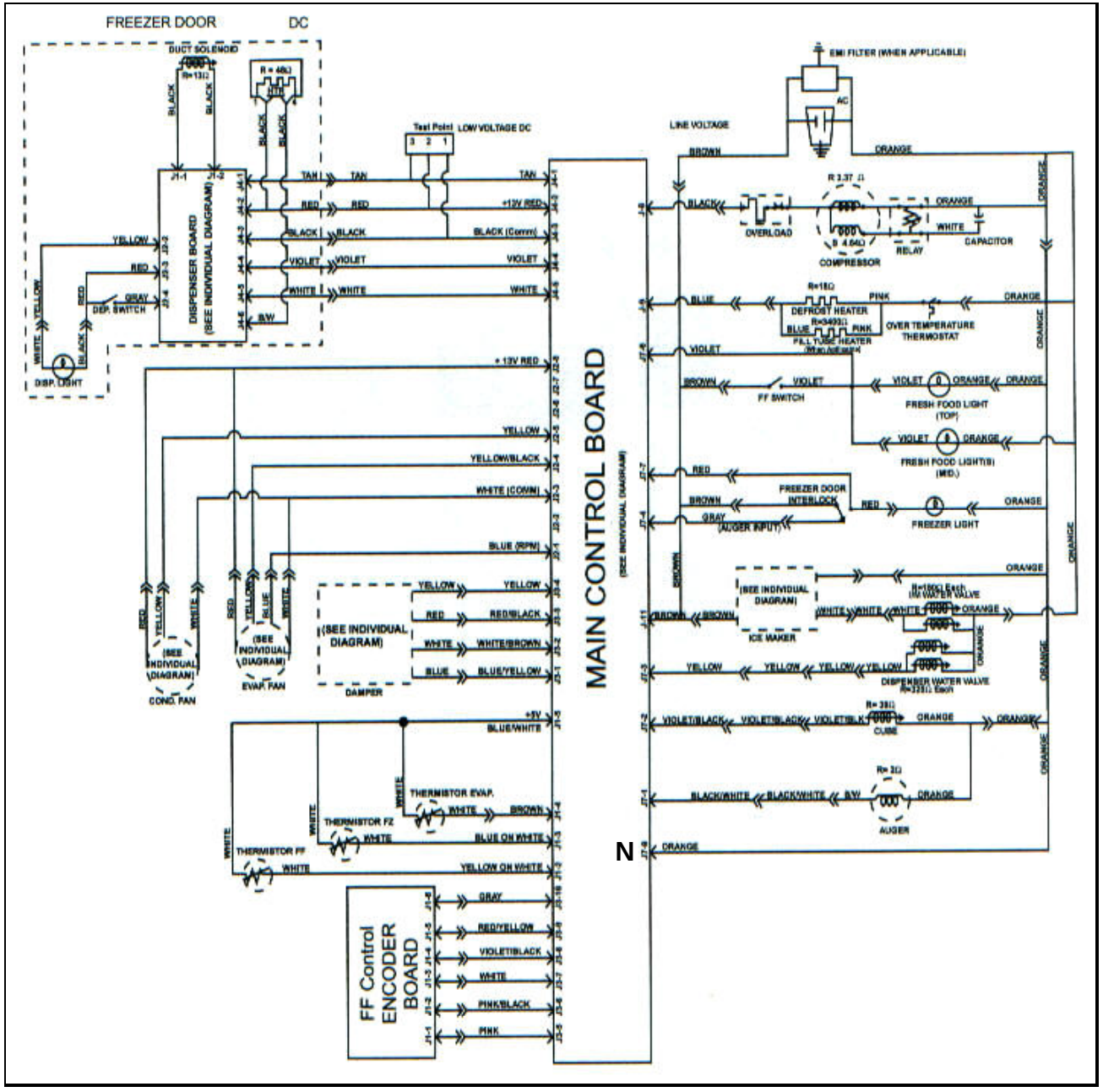
| Main Control Board Locator Table (Low-Voltage Side) | | | | |
|---|---|---|---|---|
| Connector | Pin | Wire Color | Component Termination | Pin-to-Pin Voltage Reading |
| J3 | 1 | Blue/Yellow | Damper | J3 pin 1 to J4 pin 3 = Traveling Voltage 6.0 VDC |
| J3 | 2 | White/Brown | Damper | J3 pin 2 to J4 pin 3 = Traveling Voltage 6.0 VDC |
| J3 | 3 | Red/Black | Damper | J3 pin 3 to J4 pin 3 = Traveling Voltage 6.0 VDC |
| J3 | 4 | Yellow | Damper | J3 pin 4 to J4 pin 3 = Traveling Voltage 6.0 VDC |
| J4 | 1 | Tan | Dispenser board common transmit/receive | See schematic |
| J4 | 2 | Red | Dispenser board common 13 VDC | See schematic |
| J4 | 3 | Black-DC common | Dispenser board common ground | See schematic |
| J4 | 4 | Violet | Dispenser board input 1 | See schematic |
| J4 | 5 | White | Dispenser board input 2 | See schematic |

# GE SxS

| Main Control Board Locator Table (120-VAC Side) | | | | |
|---|---|---|---|---|
| Connector | Pin | Wire Color | Component Termination | Pin-to-Pin Voltage Reading |
| J7 | 1 | Black/White | Auger motor | J7 pin 1 to J7 pin 9 = 120 VAC* |
| J7 | 2 | Violet/Black | Cube solenoid | J7 pin 2 to J7 pin 9 = 120 VAC* |
| J7 | 3 | Yellow | Water valve | J7 pin 3 to J7 pin 9 = 120 VAC* |
| J7 | 4 | Gray | Auger motor interlock | J7 pin 4 to J7 pin 9 = 120 VAC (freezer door shut) |
| J7 | 5 | Not used | Not used | Not used |
| J7 | 6 | Violet | Fresh food door light switch feedback | J7 pin 6 to J7 pin 9 = 120 VAC (fresh food door open) |
| J7 | 7 | Red | Freezer door light switch feedback | J7 pin 7 to J7 pin 9 = 120 VAC (freezer door open) |
| J7 | 8 | Black | Not used | Not used |
| J7 | 9 | Orange | Neutral | Neutral |

*** When activated**

# GE SxS



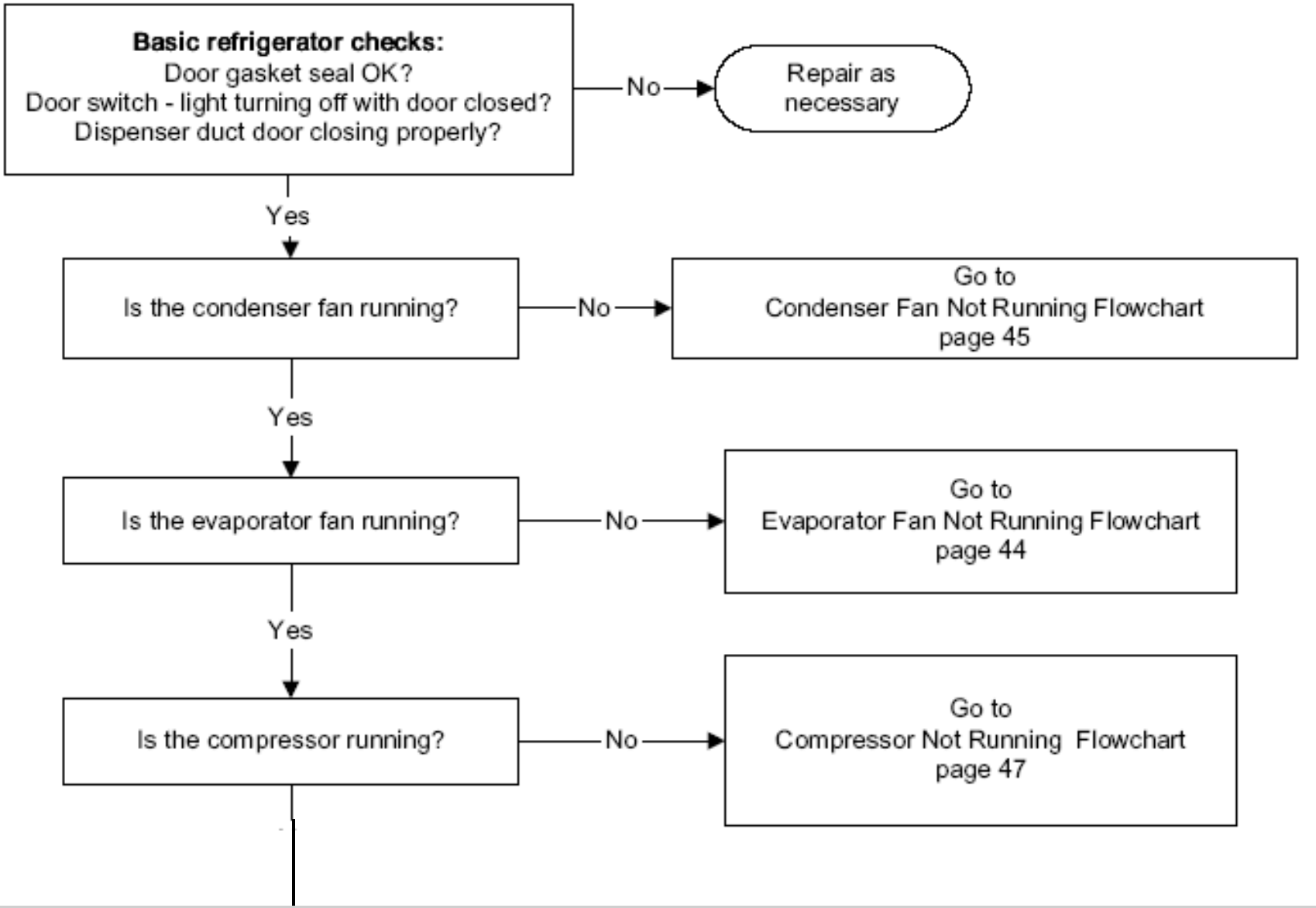


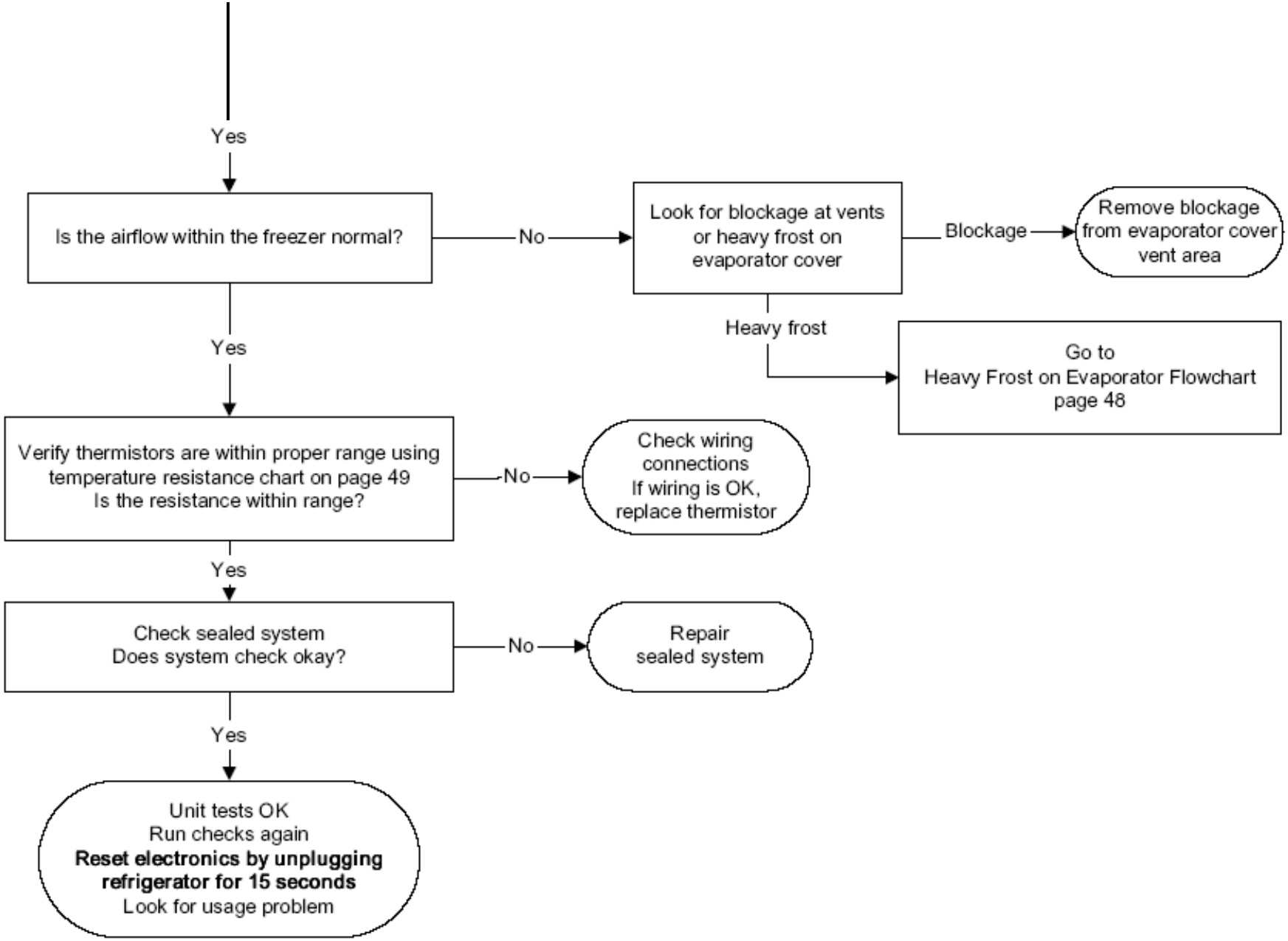


(SG59)

# GE SxS

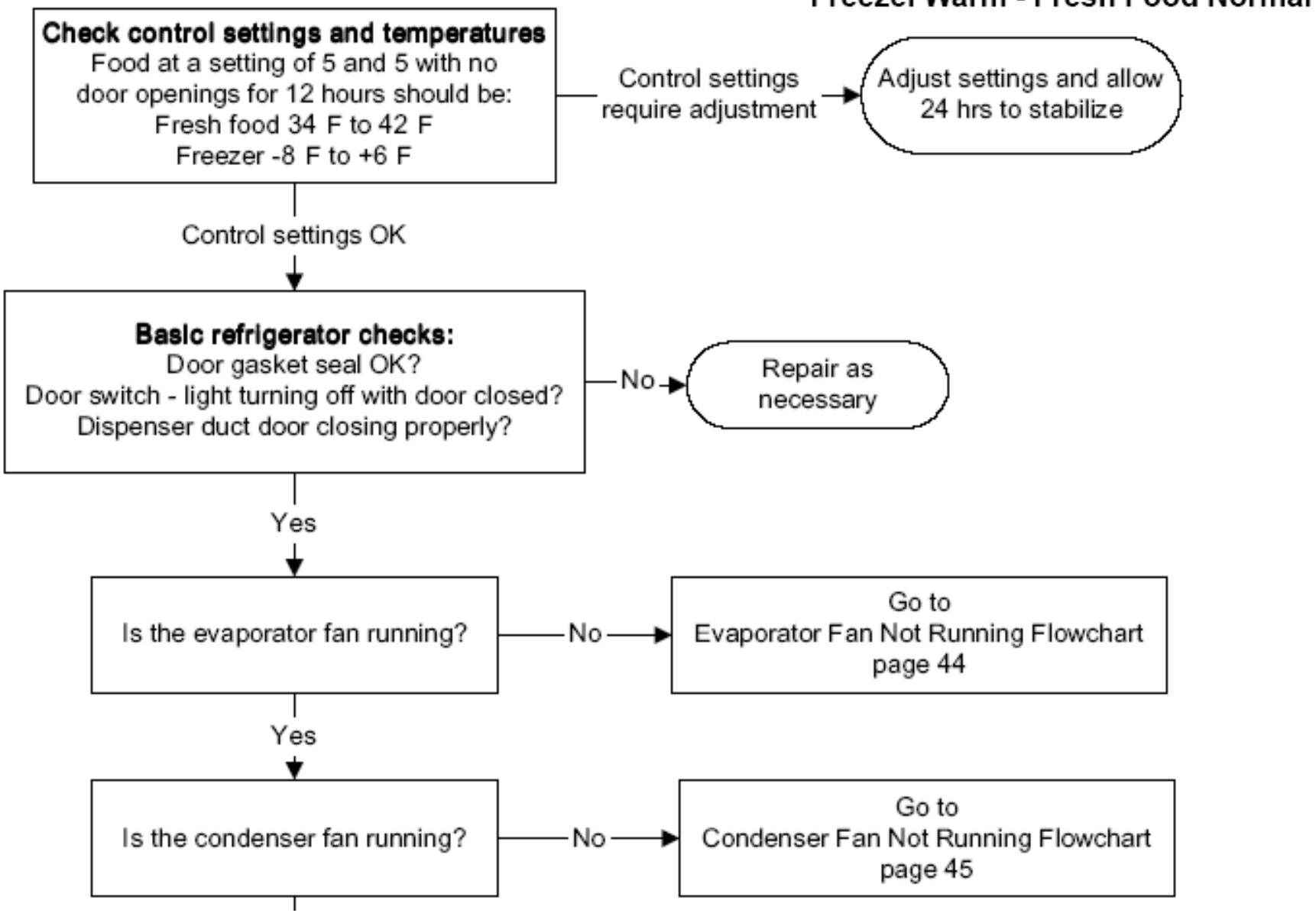
## Fresh Food Warm - Freezer Warm

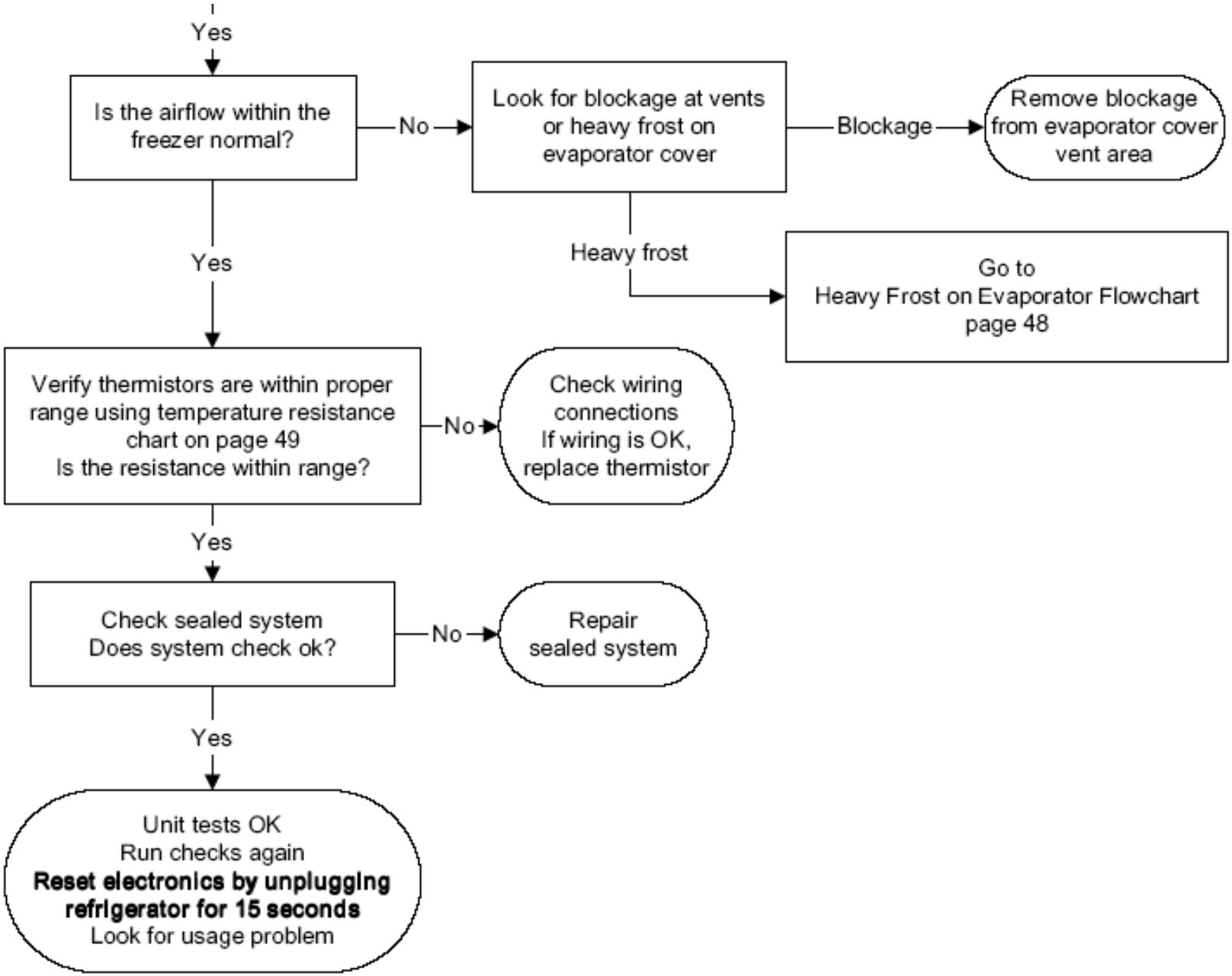




# GE SxS

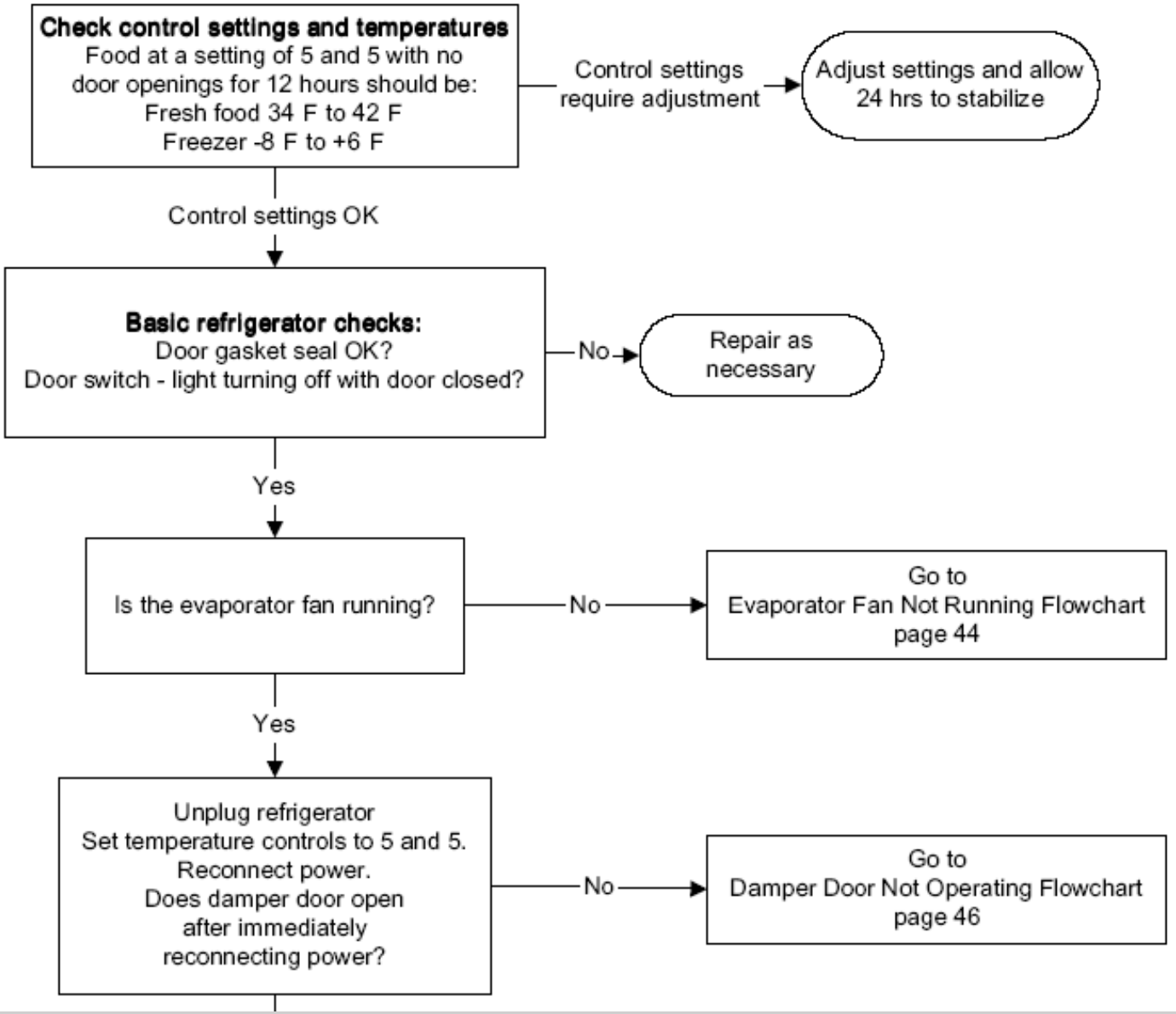
## Freezer Warm - Fresh Food Normal

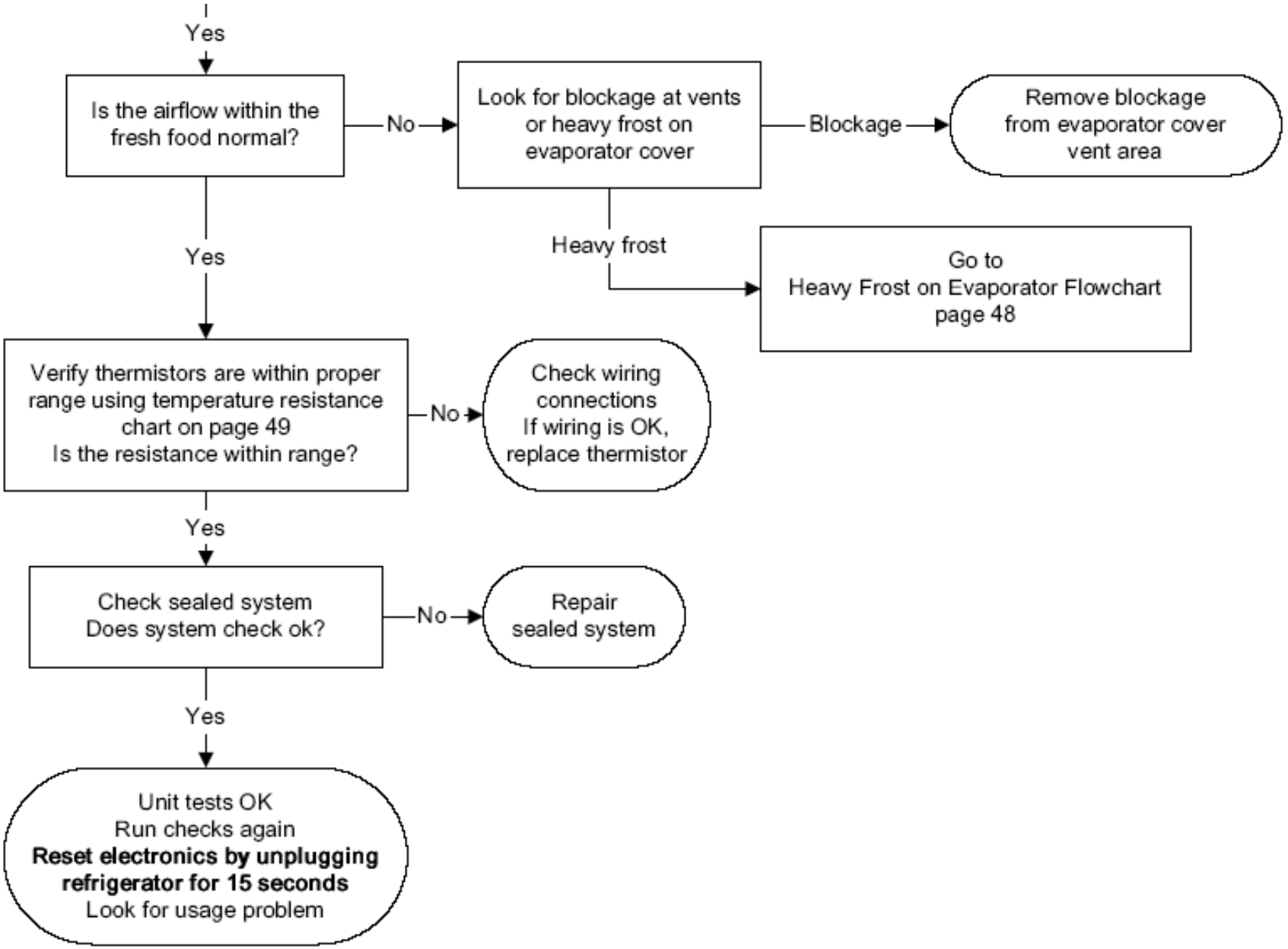




# GE SxS

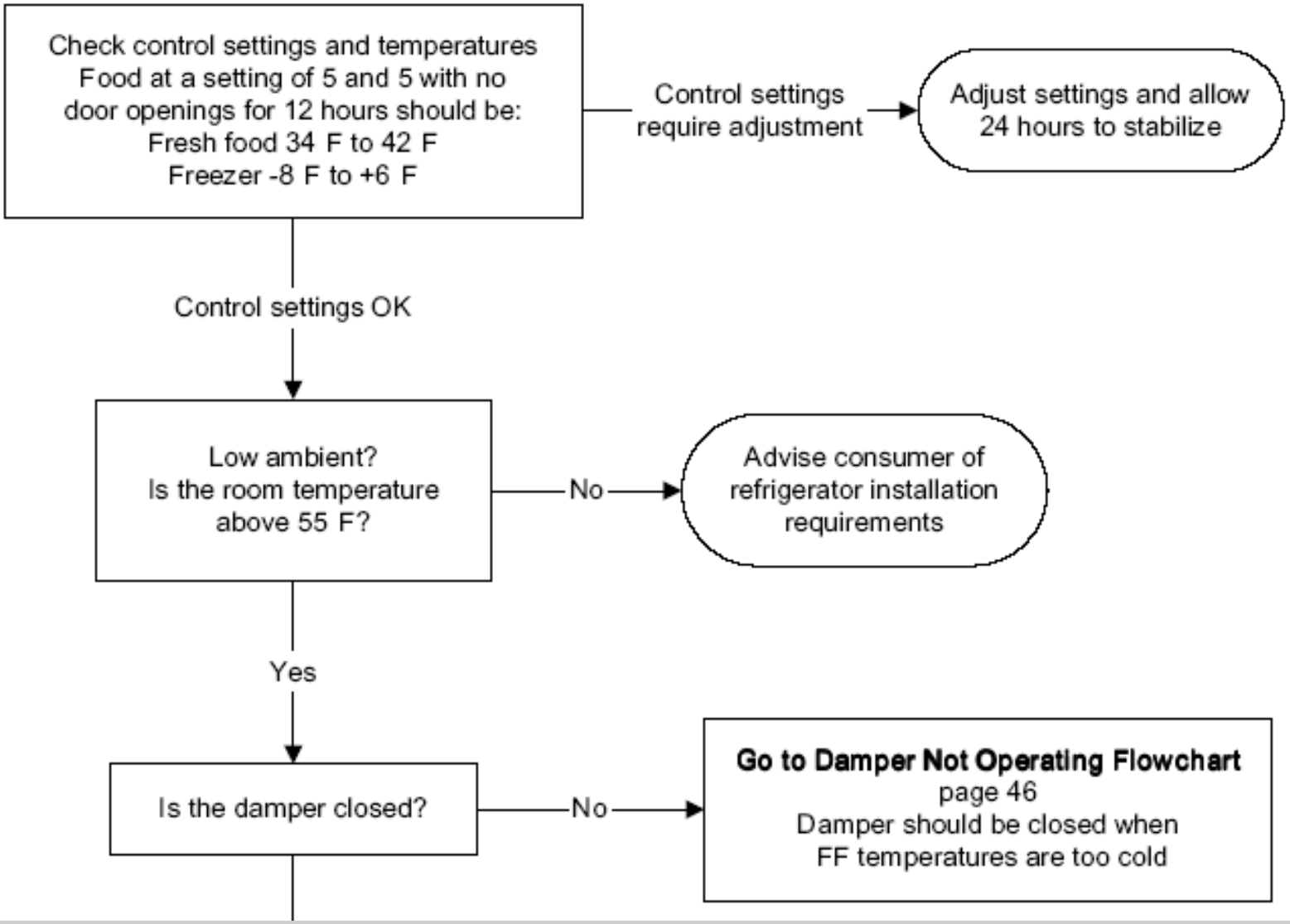
## Fresh Food Warm - Freezer Normal

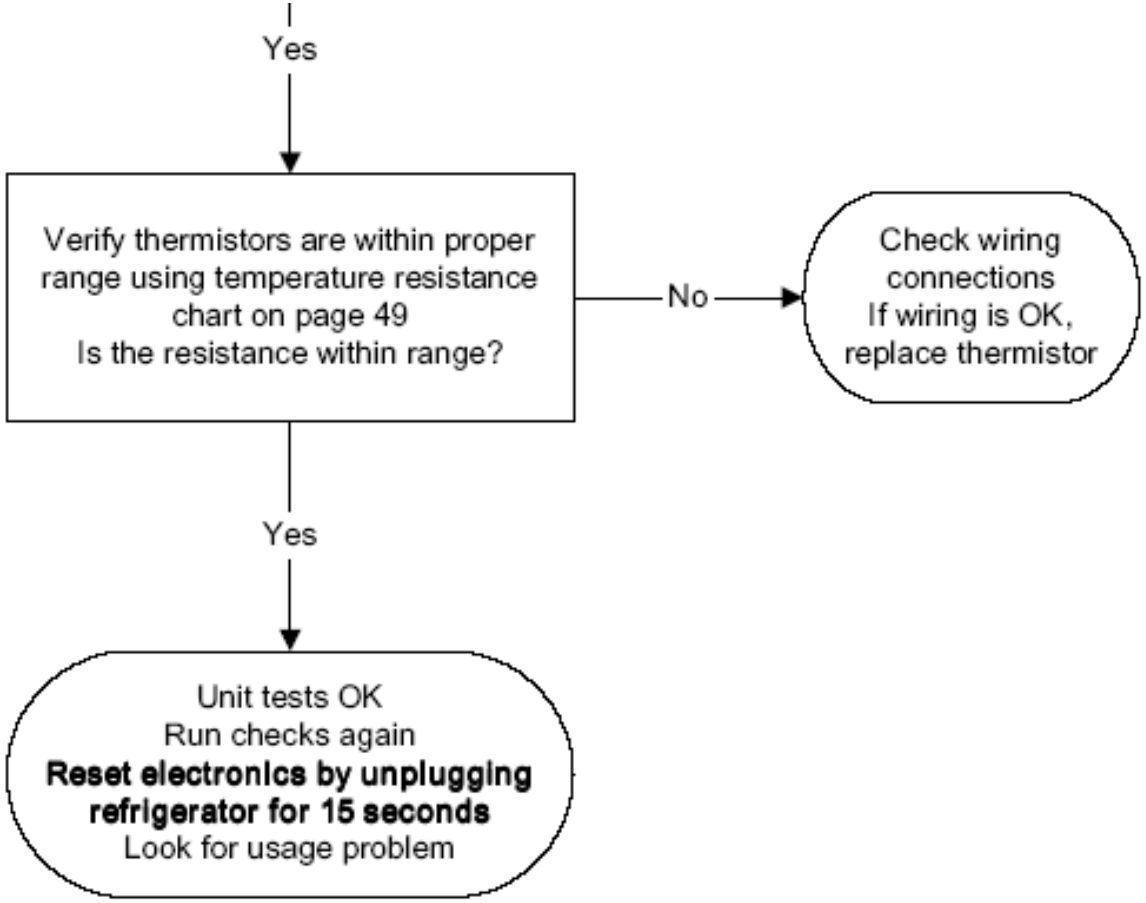




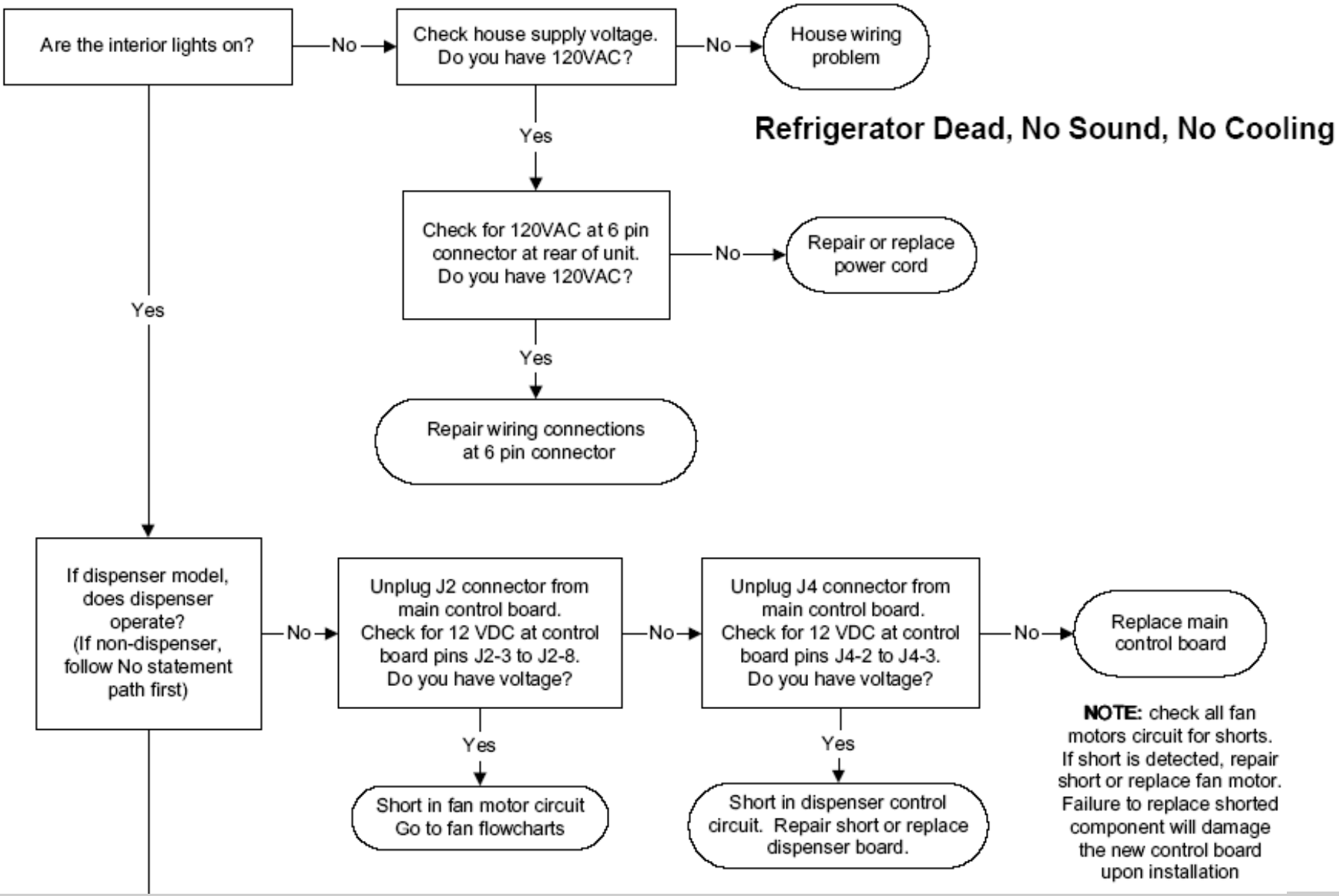
# GE SxS

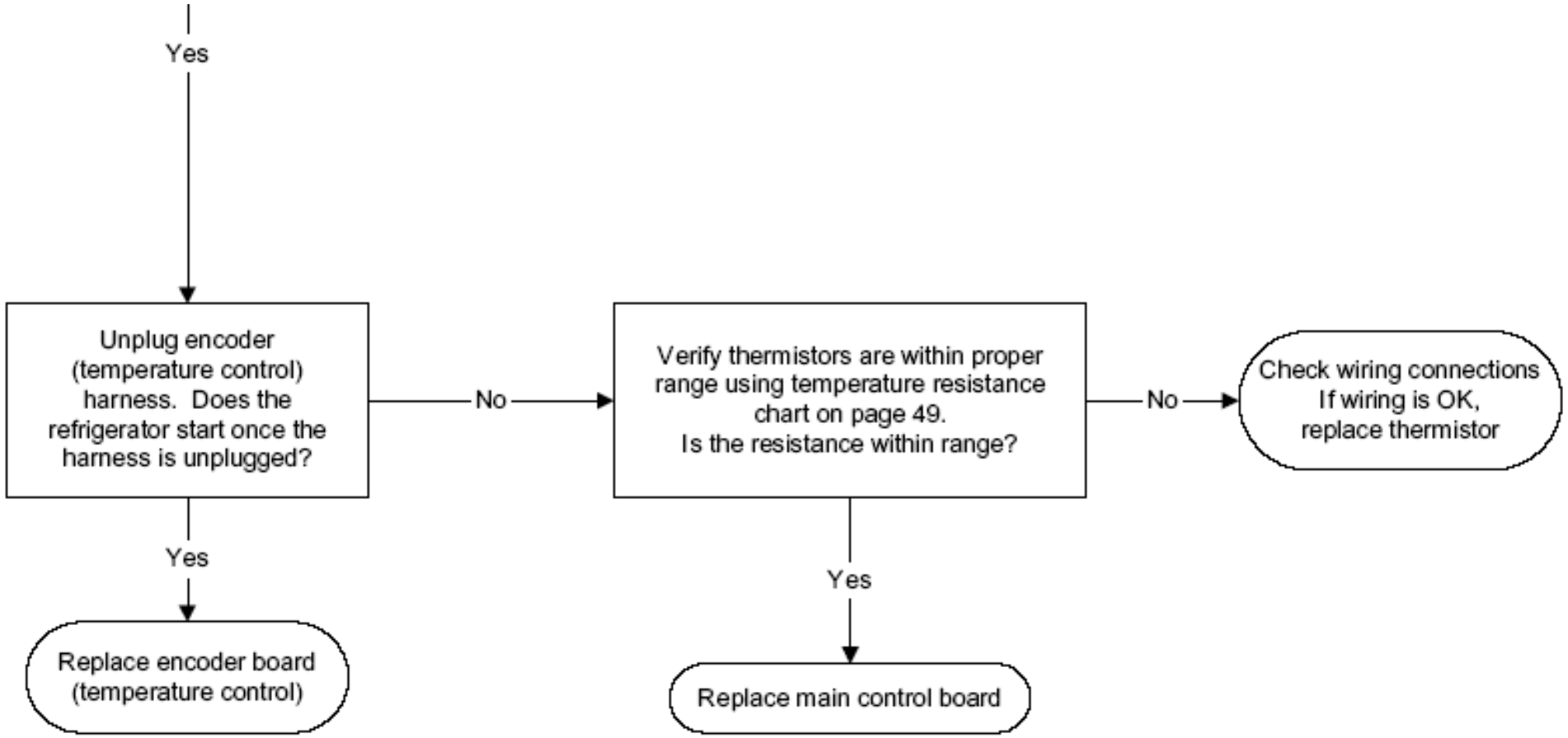
## Fresh Food Too Cold - Freezer Normal





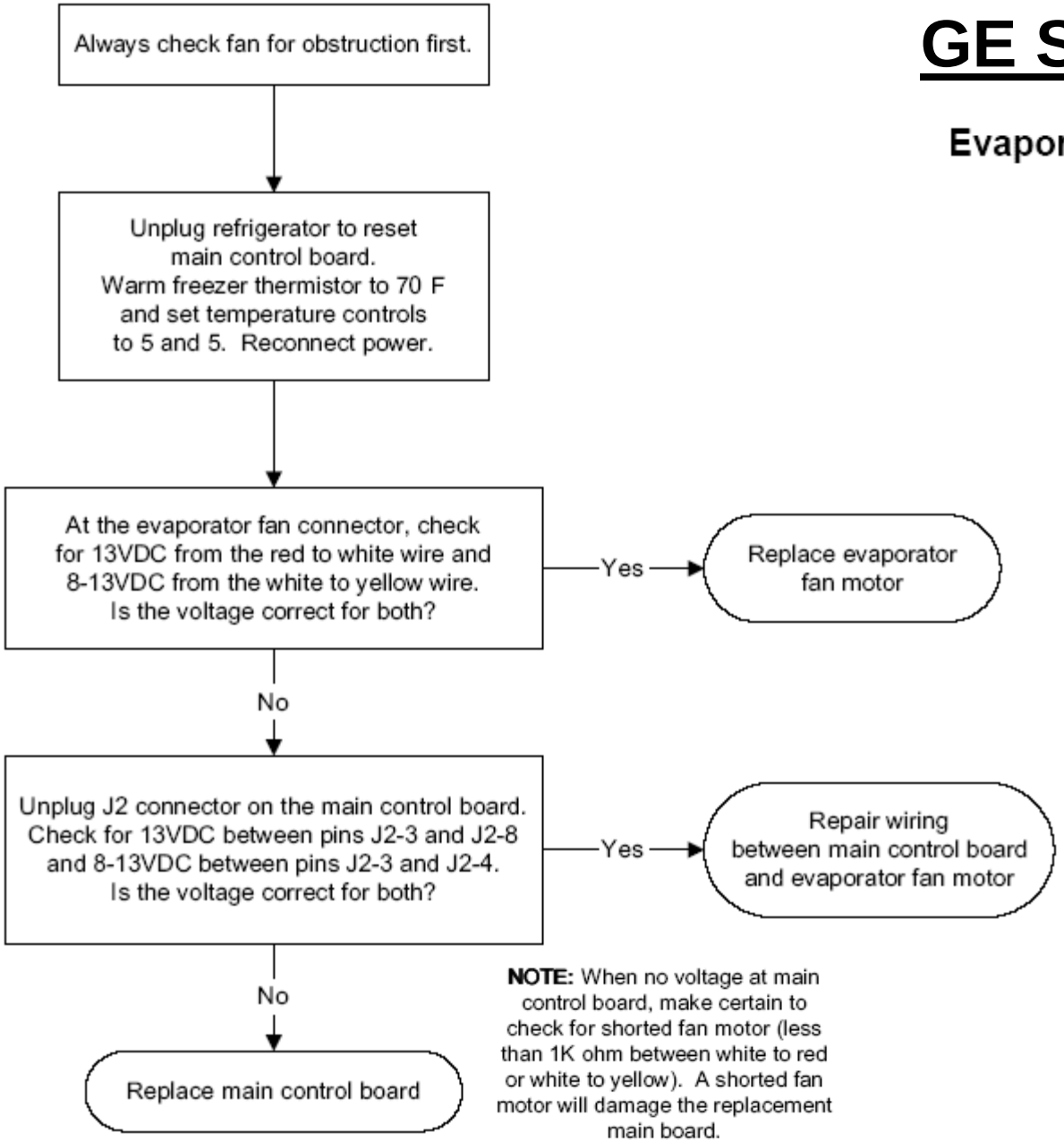
# GE SxS





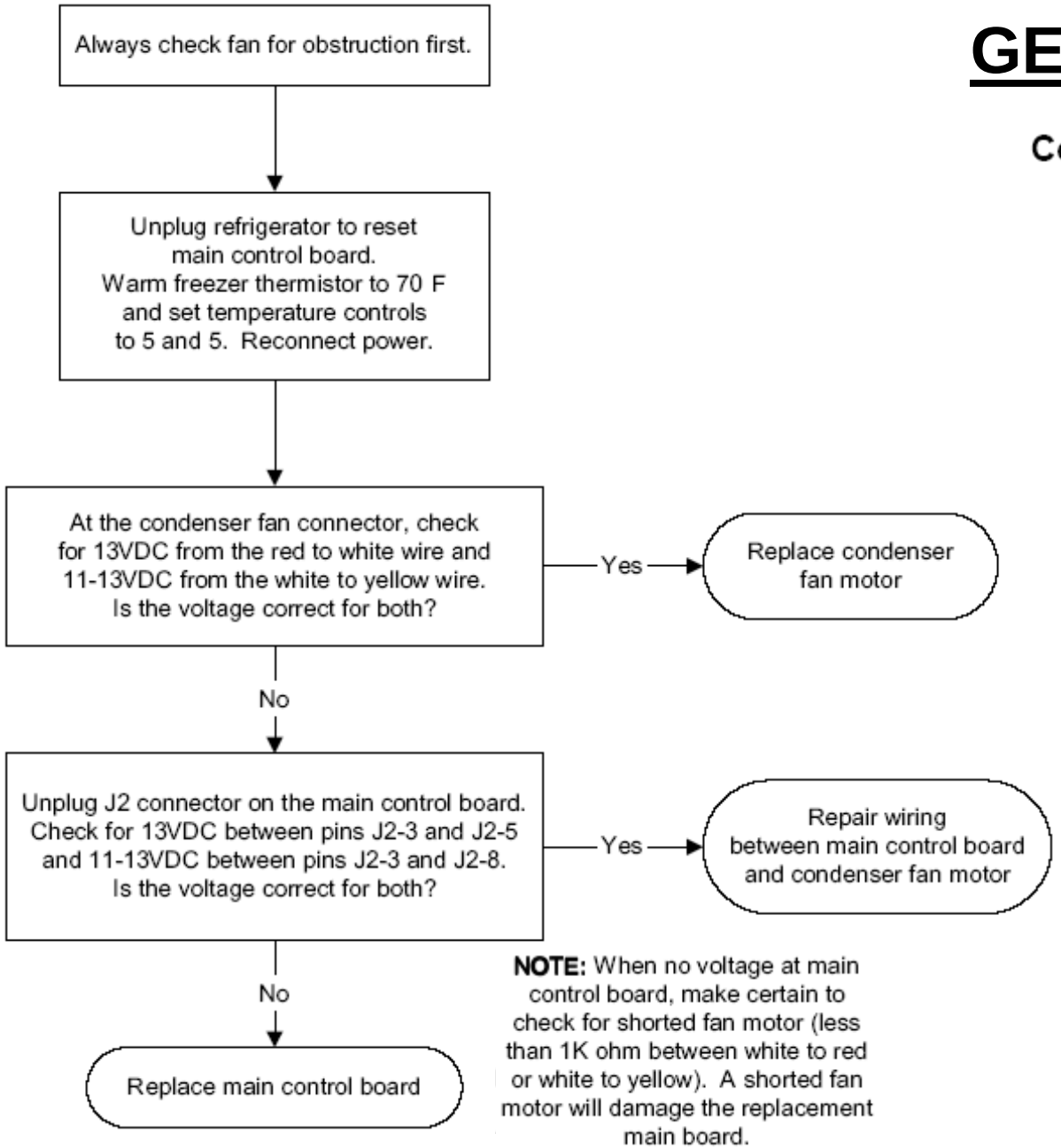
# GE SxS

## Evaporator Fan Not Running



# GE SxS

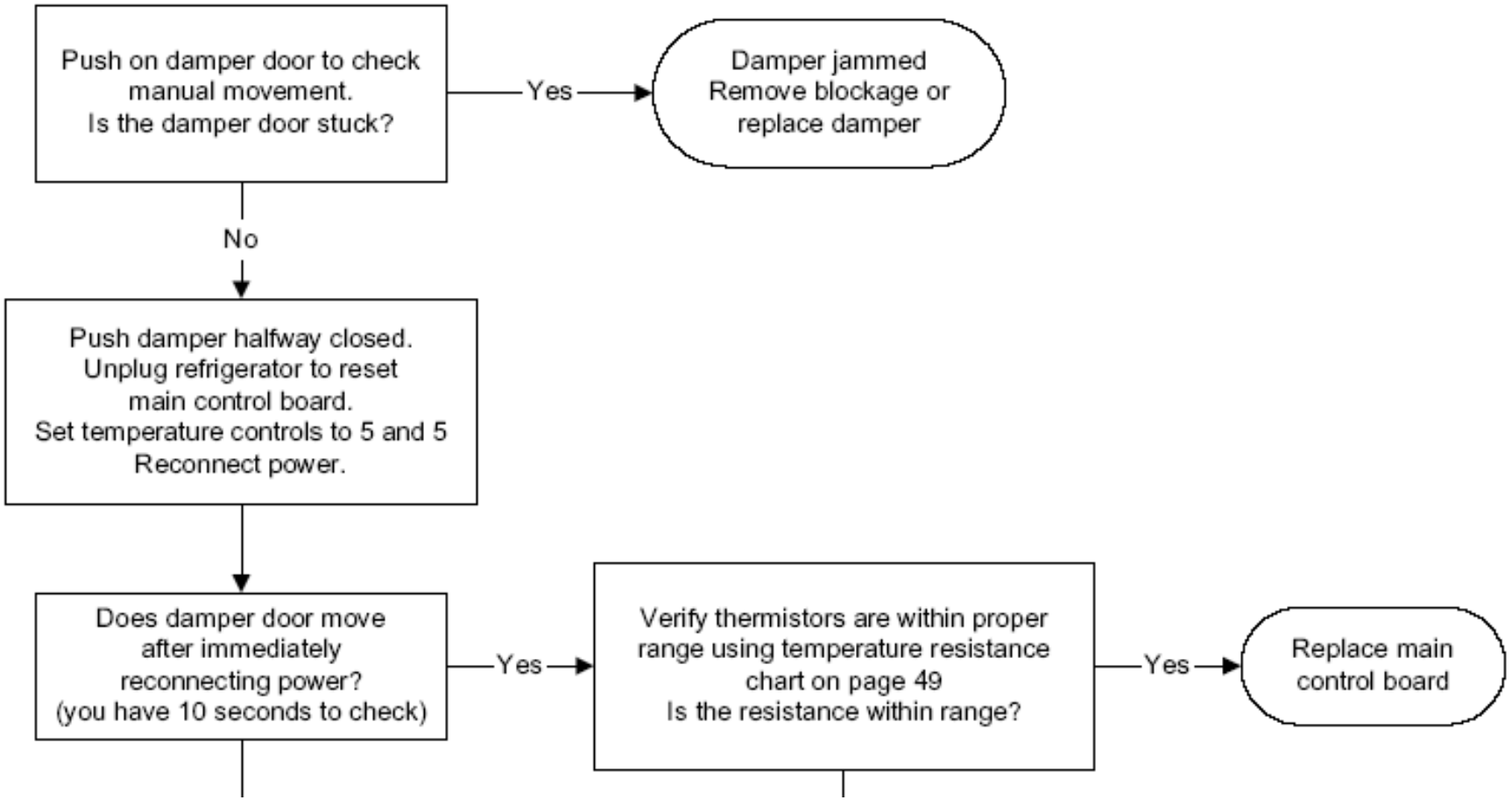
## Condenser Fan Not Running

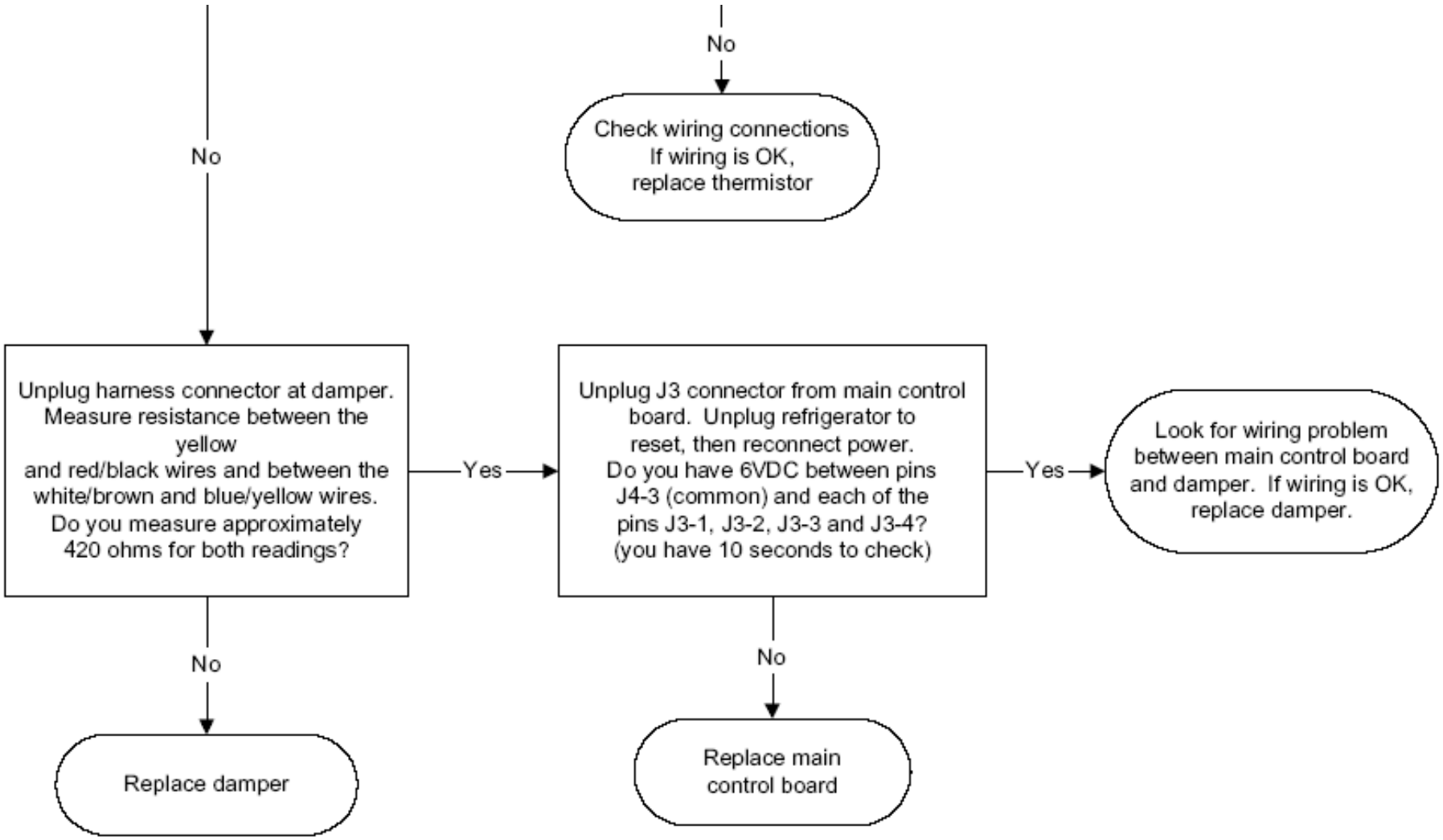



**NOTE:** When no voltage at main control board, make certain to check for shorted fan motor (less than 1K ohm between white to red or white to yellow). A shorted fan motor will damage the replacement main board.

# GE SxS

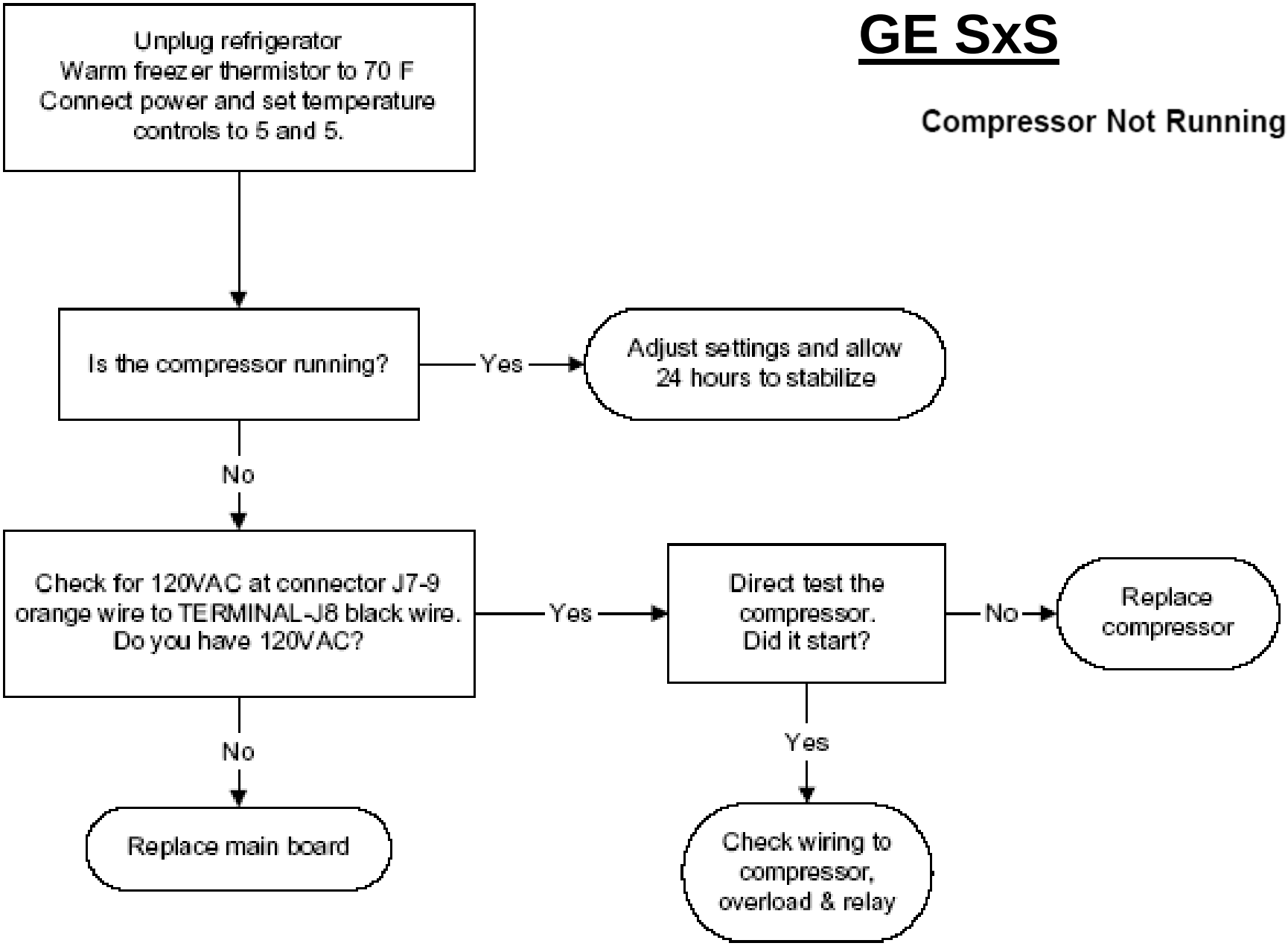
## Damper Door Not Operating





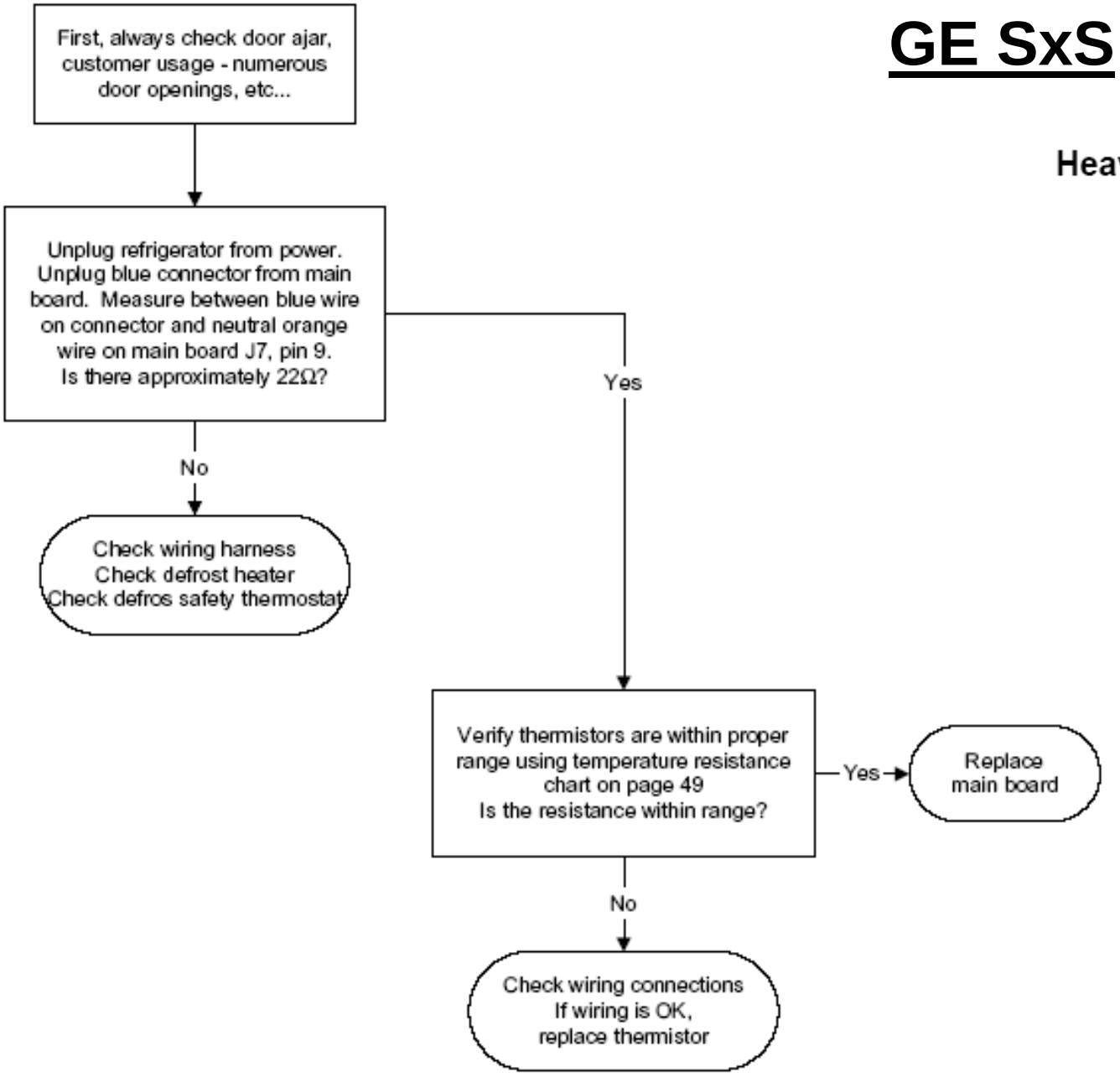
# GE SxS

## Compressor Not Running



# GE SxS

## Heavy Frost on Evaporator



# GE TMNF

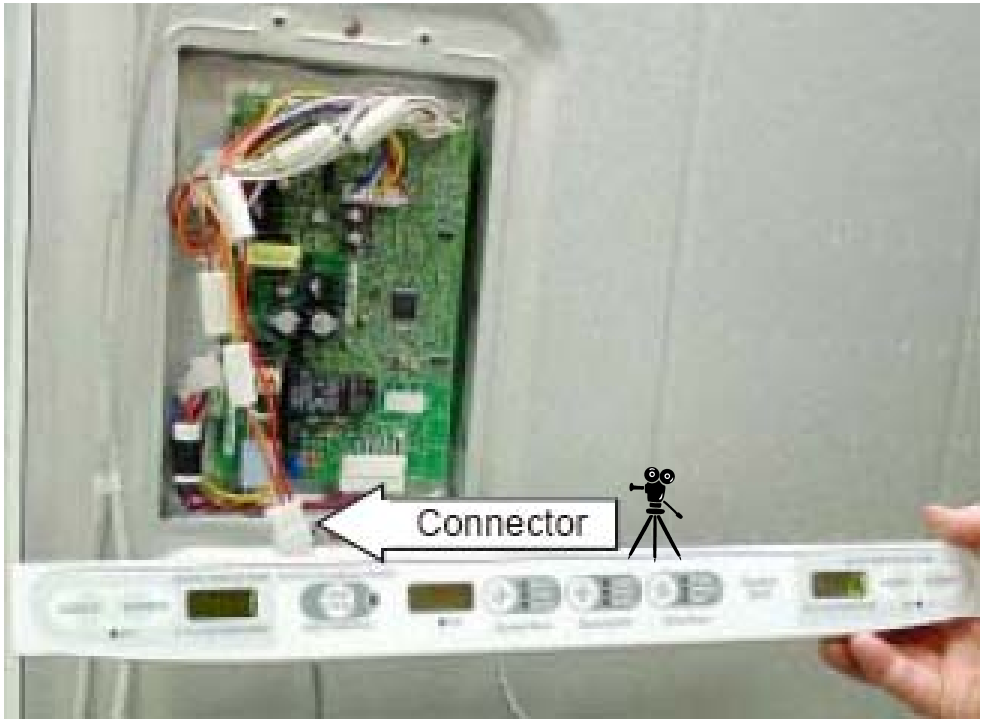
ETS22
GTS22
HTS22
PTS22
PTS25
STS22

# GE Electronic Refrigerator Diagnostic Aid - TMNF

## Control Diagnostics

A diagnostic aid can be assembled which consists of a control board, membrane and wiring harness. The parts required are WR55X10120, WR55X10068 and WX05X14999.

The control diagnostics allow the technician to functionally test individual components to aid in troubleshooting.

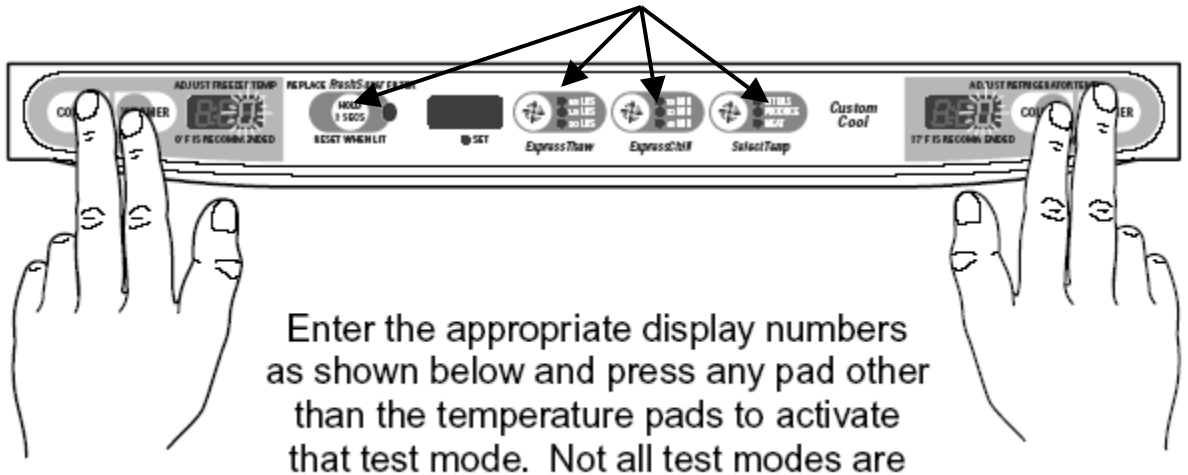



**Note:** Refrigerators with an electronic temperature control must have the control disconnected before attempting the diagnostics test from the main control board.

# GE Electronic Refrigerator Diagnostic Aid - TMNF

Once connected to the refrigerator, enter the diagnostic mode by pressing both the freezer temperature (colder and warmer) pads and the refrigerator temperature (colder and warmer) pads simultaneously. All four pads must be held for approximately 3 seconds. Blinking "0's" in both displays indicate the refrigerator has entered the test mode.

**Press any key pad in the middle to lock in test.**




Enter the appropriate display numbers as shown below and press any pad other than the temperature pads to activate that test mode. Not all test modes are available on all models.

**Note 1.** Display order is #1) Fresh Food 1 #2) Fresh Food 2 #3) Custom Cool #4) Evaporator #5) Freezer
Thermistor test results are: P = Pass 0 = Fail S = Short to 5 VDC B = Bad amplifier (replace 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.

Refer to Service Guide 31-9072 for additional information

| FREEZER DISPLAY | FRESH FOOD DISPLAY | DIAGNOSTICS | RESULTS | COMMENTS |
|---|---|---|---|---|
| 0 | 2 | Communication check between Temperature Control and Main Control | "P" on freezer display if OK and "F" if problem is found | |
| 0 | 3 | Communication check between Dispenser Control & Temperature Control | "P" on freezer display if OK and "F" if problem is found | Dispenser models only |
| 0 | 4 | Communication check between Dispenser Control and Main Control | "P" on freezer display if OK and "F" if problem is found | Dispenser models only |
| 0 | 5 | Encoder Test | As the knob is rotated the display will show the corresponding setting | Only for models with temperature control knobs |
| 0 | 7 | Control and Sensor System Test | Checks each thermistor and displays "P" for pass and "0" for fail | See Note 1 below |
| 0 | 8 | Duct Door Test | Opens the dispenser duct door for 10 seconds, then closes. | Only for dispensers with 5 or more touch pads |
| 1 | 0 | Dampers Test | Opens each damper, pauses briefly and then closes. | Includes Custom Cool dampers if applicable |
| 1 | 2 | 100% Run Time | Sealed system on 100% of the time. Times out after 1 hour. | |
| 1 | 3 | Prechill Test | Starts Prechill mode. Unit returns to normal on its own. | |
| 1 | 4 | Defrost Test | Toggles on the Defrost cycle. **See Note 2** | Must press again to turn heaters off. See Note 2 |
| 1 | 5 | Main Control Reset | Causes a system reset | |
| 1 | 6 | Exit Diagnostic Mode | Causes a temperature control board reset | |
| 1 | 7 | Degrees C°/F° | Changes from F° to C° or C° to F° on temperature display | Press FF temperature pad (warmer/colder) to toggle |

## Testing

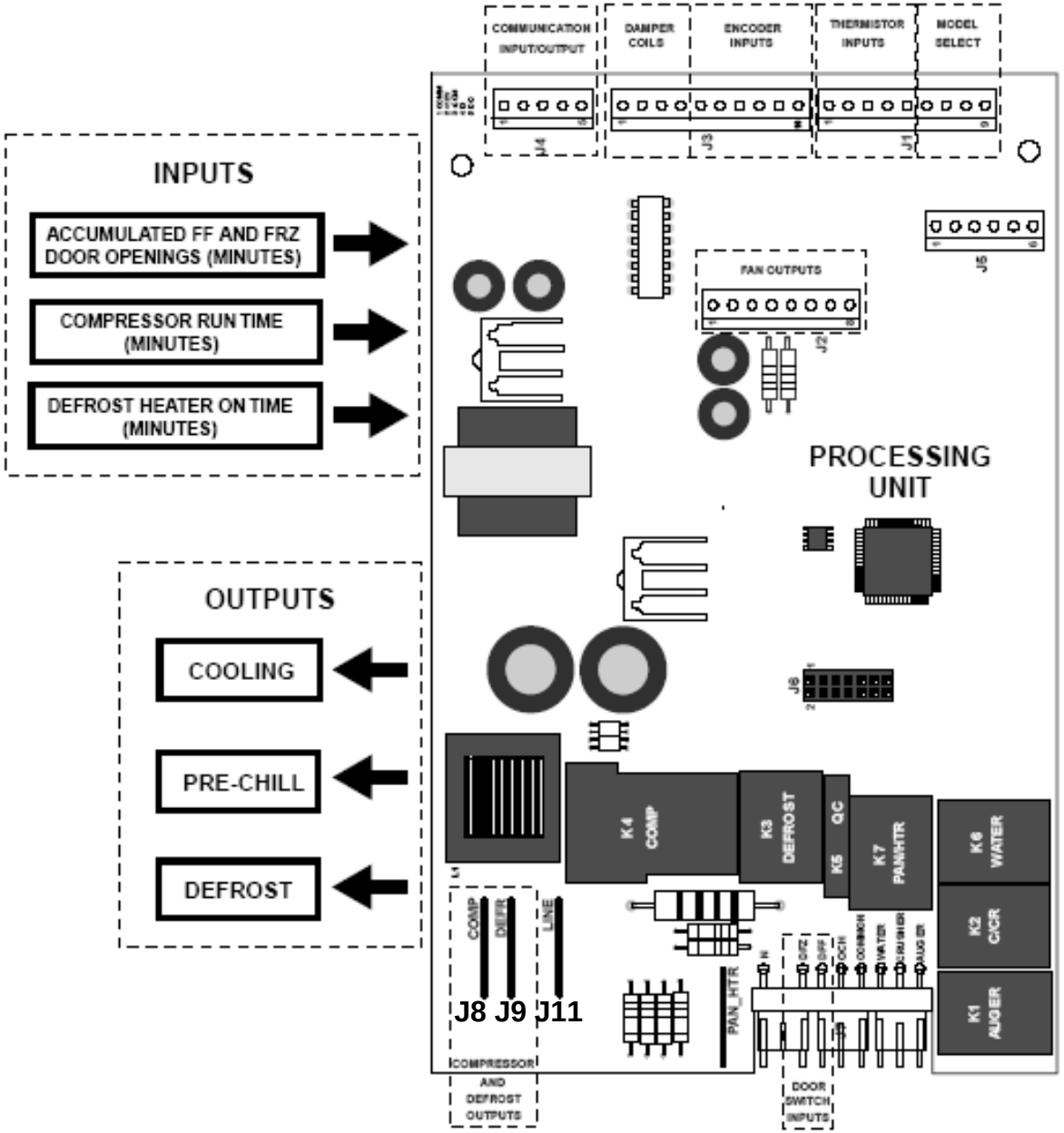
The most accurate method of testing a thermistor is to place it in a glass of ice water for several minutes. The thermistor should read approximately 16KΩ in the glass of 33°F ice water.

**Note:** Thermistors can also be checked for an open or shorted condition by using the diagnostic mode (see ***Service Diagnostics***).

| Table 2. Thermistor Values | | |
|---|---|---|
| Temperature Degrees (C) | Temperature Degrees (F) | Resistance in Kilo-Ohms |
| -40 | -40 | 166.8 kΩ |
| -35 | -31 | 120.5 kΩ |
| -30 | -22 | 88 kΩ |
| -25 | -13 | 65 kΩ |
| -20 | -4 | 48.4 kΩ |
| -15 | 5 | 36.4 kΩ |
| -10 | 14 | 27.6 kΩ |
| -5 | 23 | 21 kΩ |
| 0 | 32 | 16.3 kΩ |
| 5 | 41 | 12.7 kΩ |
| 10 | 50 | 10 kΩ |
| 15 | 59 | 7.8 kΩ |
| 20 | 68 | 6.2 kΩ |
| 25 | 77 | 5 kΩ |
| 30 | 86 | 4 kΩ |
| 35 | 95 | 3.2 kΩ |
| 40 | 104 | 2.6 kΩ |
| 45 | 113 | 2.2 kΩ |
| 50 | 122 | 1.8 kΩ |
| 55 | 131 | 1.5 kΩ |
| 60 | 140 | 1.2 kΩ |

**NOTE: The thermistor's resistance has a negative coefficient. As the temperature increases, the thermistor's resistance decreases.**

# GE TMNF







(SG12)

# GE TMNF

| Main Control Board Locator Table<br>J1 Connector (Low-Voltage Side) | | | | |
|---|---|---|---|---|
| **Pin** | **Wire Color** | **Component Termination** | **Input/ Output** | **Pin-to-Pin Voltage Reading** |
| 1 | Blue/Red | Fresh food thermistor | Input | J1 pin 1 to pin 5 = 2.8 to 3.5 VDC |
| 2 | Not used | Not used | Not used | Not used |
| 3 | Red/White | Freezer thermistor | Input | J1 pin 3 to pin 5 = 2.8 to 3.5 VDC |
| 4 | White | Evaporator thermistor | Input | J1 pin 4 to pin 5 = 2.8 to 3.5 VDC |
| 5 | Blue | Thermistor supply voltage (5 VDC) | Output | J1 pin 5 to J7 pin 9 = 5 VDC |
| 6 | Not used | Not used | Not used | Not used |
| 7 | Blue | Thermistor supply voltage (5 VDC) | Output | J1 pin 7 to J7 pin 9 = 5 VDC |

# GE TMNF

| Main Control Board J2 Connector (Low-Voltage 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 |
| 2 | Not used | Not used | Not used | Not used |
| 3 | White | Fan common | Common | J2 pin 3 to pin 8 = 12 VDC |
| 4 | Yellow/Black | Evaporator fan | Output | J2 pin 4 to pin 3 = 12.6 VDC (high), 8.1 VDC (med.), 4.6 VDC (low) |
| 5 | Yellow | Condenser fan | Output | J2 pin 5 to pin 3 = 13.4 VDC (condenser fan is single speed) |
| 6 | Not used | Not used | Not used | Not used |
| 7 | Not used | Not used | Not used | Not used |
| 8 | Red | Fan supply voltage (12 VDC) | Output | J2 pin 8 to pin 3 = 12 VDC |

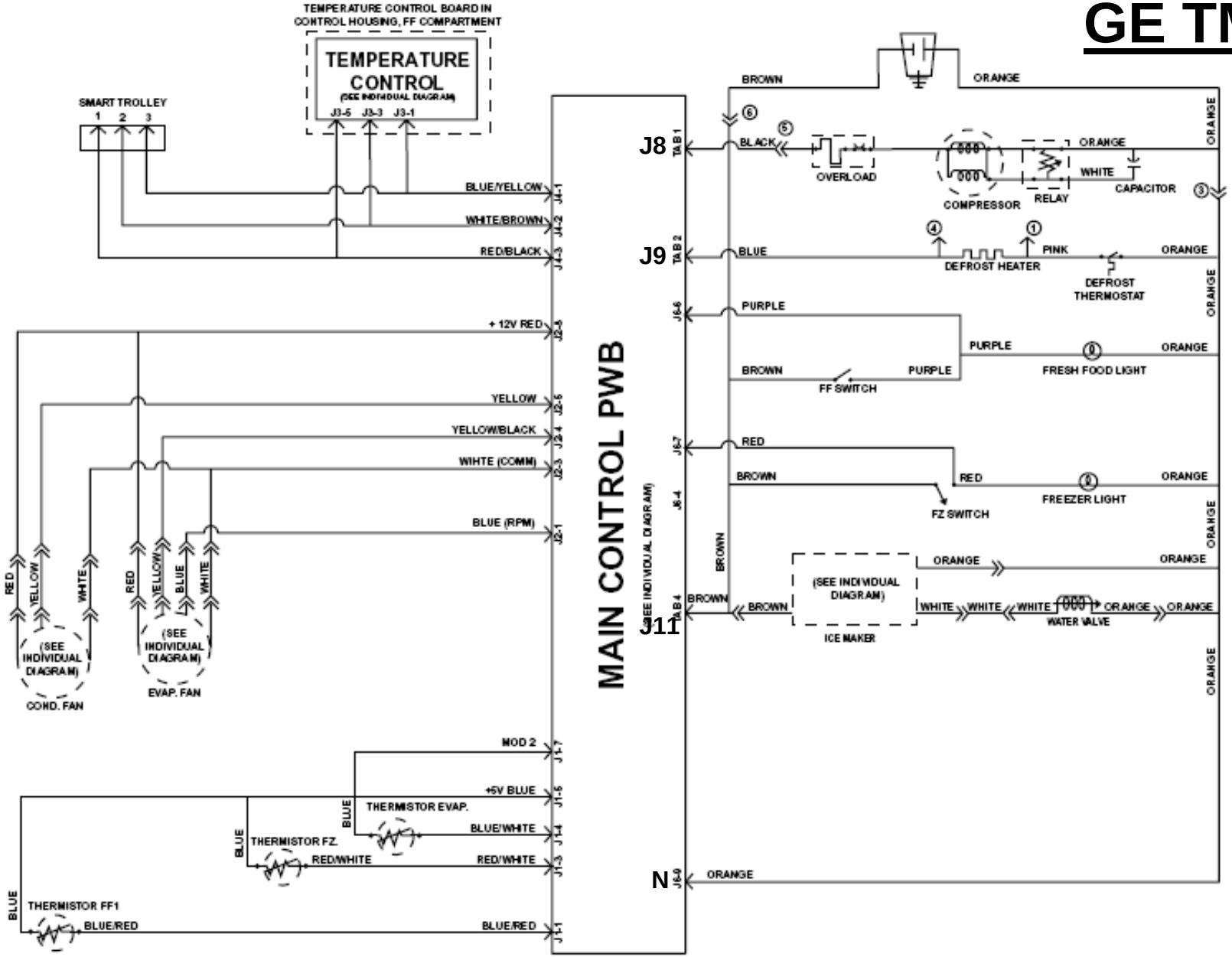
# GE TMNF

| Main Control Board<br>J3 Connector (Low-Voltage Side) | | | | |
|---|---|---|---|---|
| **Pin** | **Wire Color** | **Component Termination** | **Input/ Output** | **Pin-to-Pin Voltage Reading** |
| 5 | Blue/Yellow | Temperature control panel | | |
| 6 | White/Brown | Temperature control panel | | |
| 7 | Red/Black | Temperature control panel | | |
| 8 | Black | Temperature control panel | | |
| 9 | Red | Temperature control panel | | |
| 10 | Red | Temperature control panel | | |

# GE TMNF

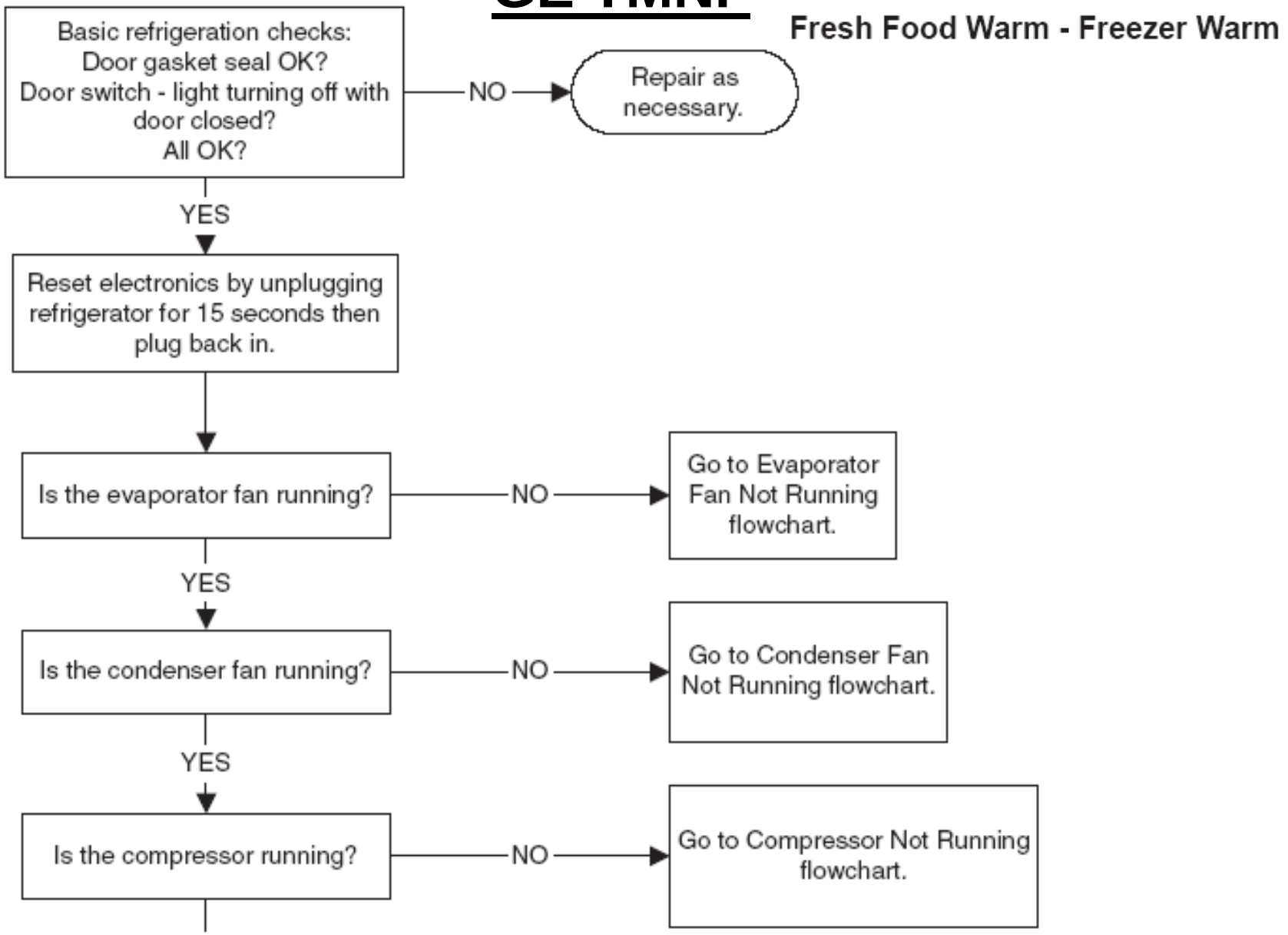
| Main Control Board<br>J7 Connector (Low-Voltage Side) | | | | |
|---|---|---|---|---|
| *Pin* | *Wire Color* | *Component Termination* | *Input/ Output* | *Pin-to-Pin Voltage Reading* |
| 6 | Purple | Fresh food door light switch | Input | J7 pin 6 to J7 pin 9 = 120 VAC (FF door open) |
| 7 | Red | Freezer door light switch | Input | J7 pin 7 to J7 pin 9 = 120 VAC (FZ door open) |
| 8 | Not used | Not used | Not used | Not used |
| 9 | Orange | Neutral | Neutral | Neutral |

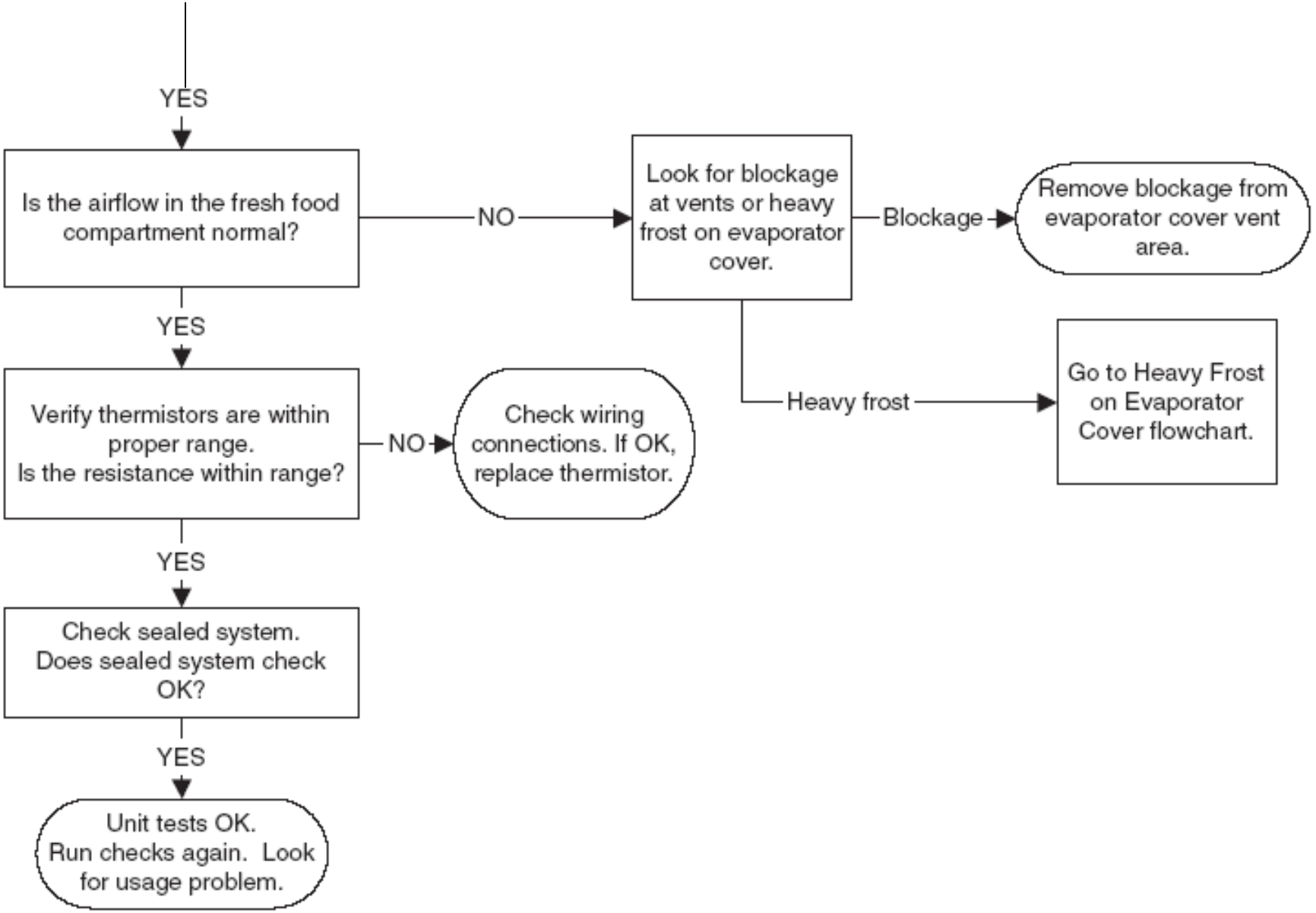
# GE TMNF



# GE TMNF

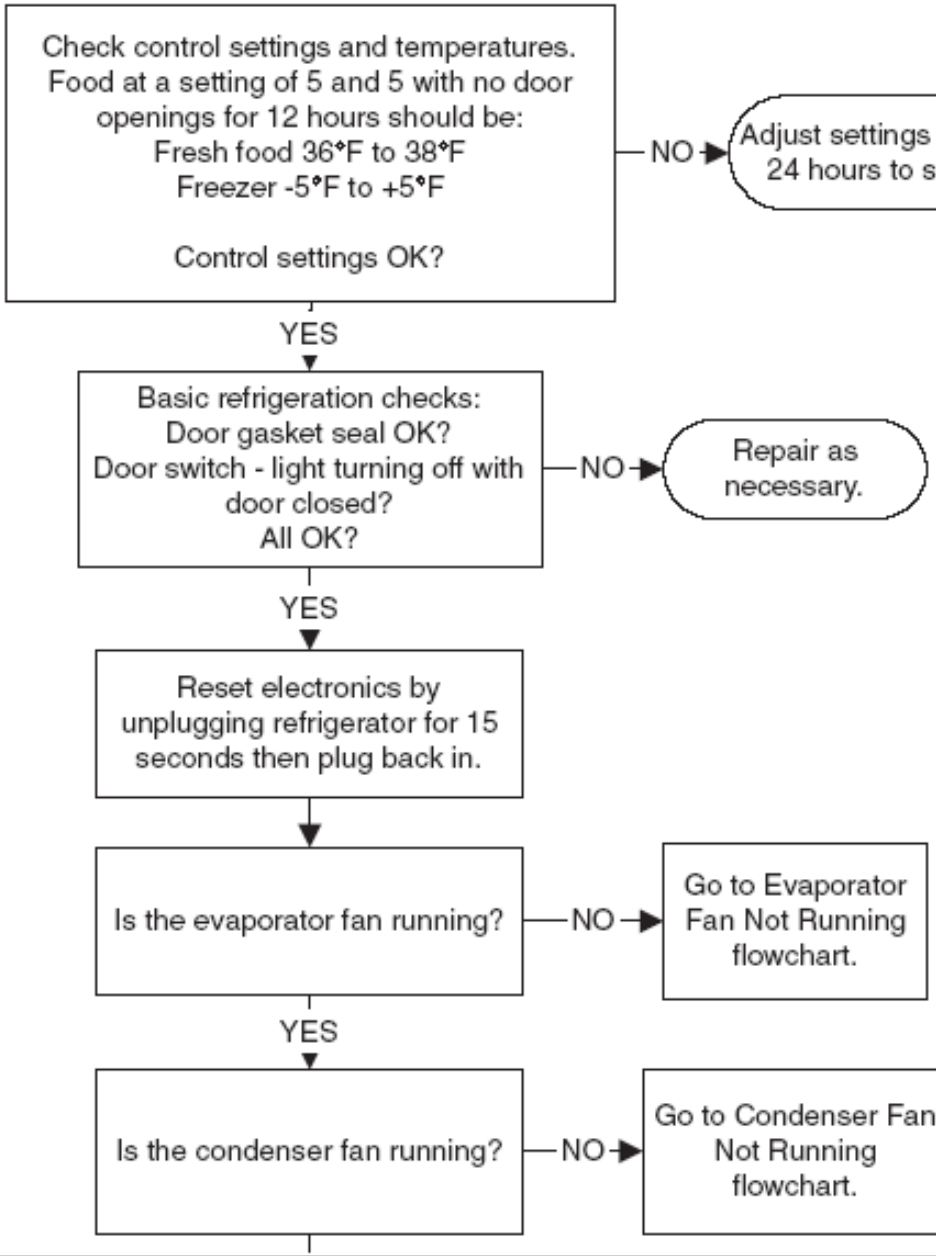
## Fresh Food Warm - Freezer Warm

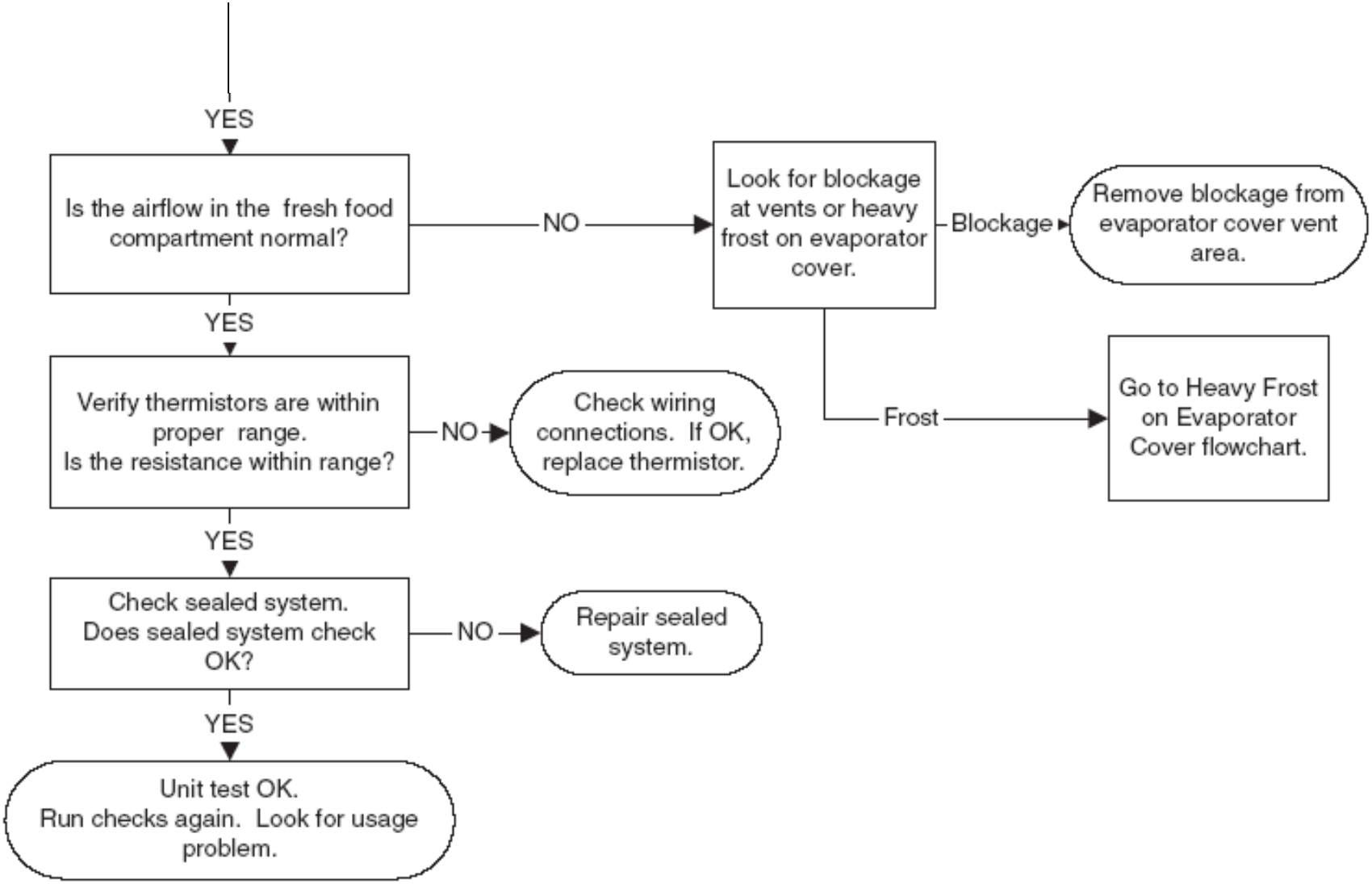




# GE TMNF

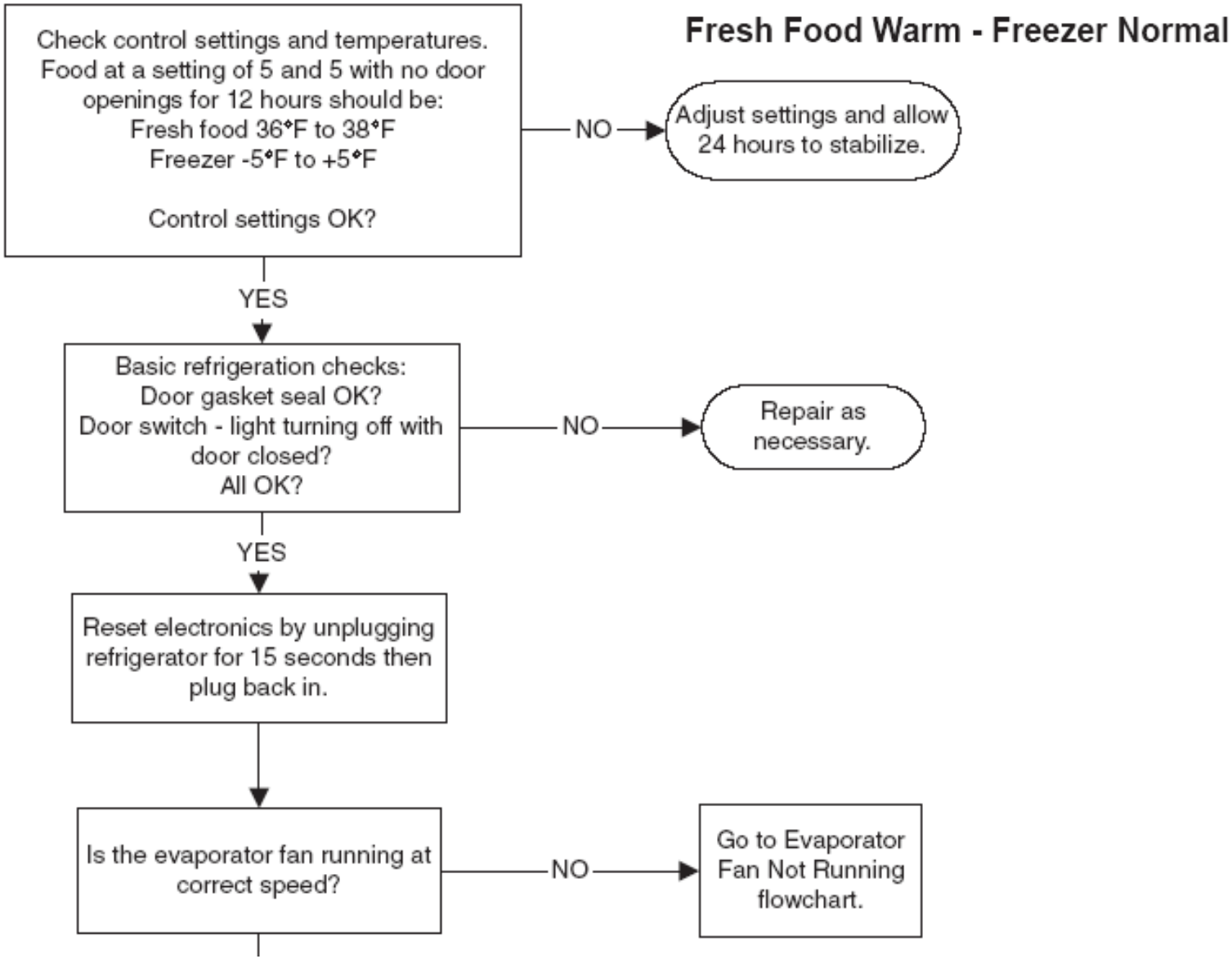
## Freezer Warm - Fresh Food Normal

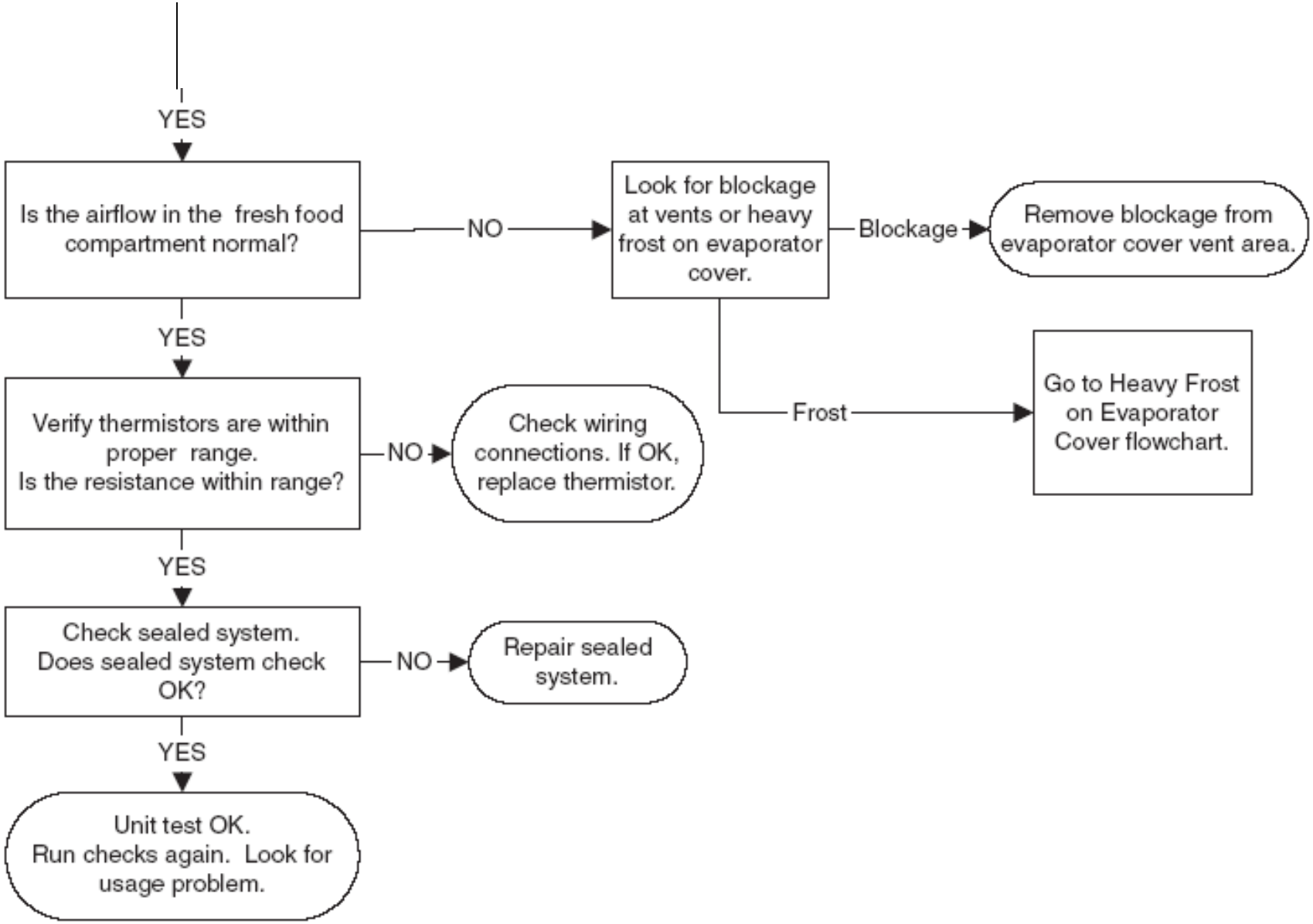




# GE TMNF

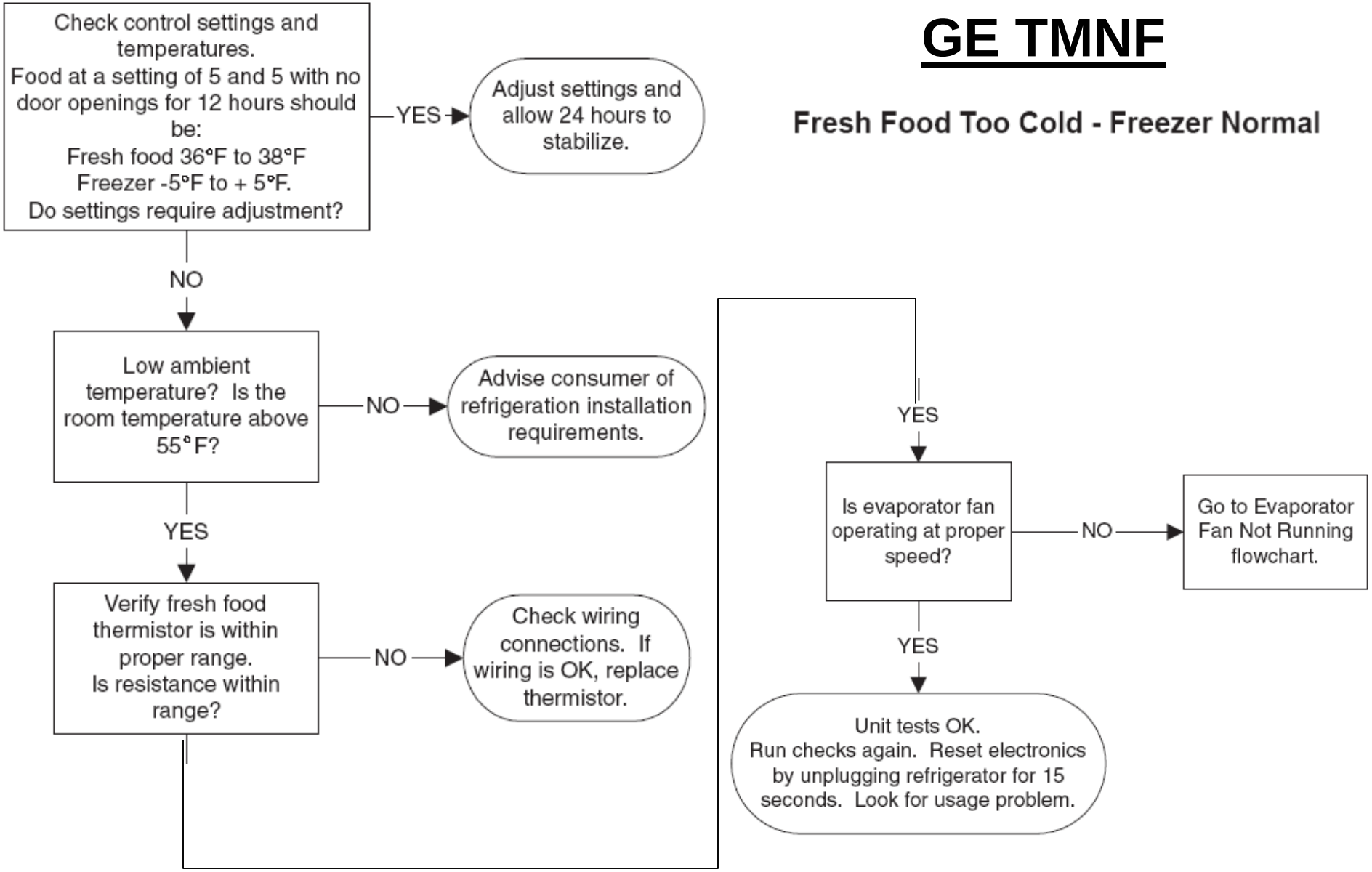
## Fresh Food Warm - Freezer Normal





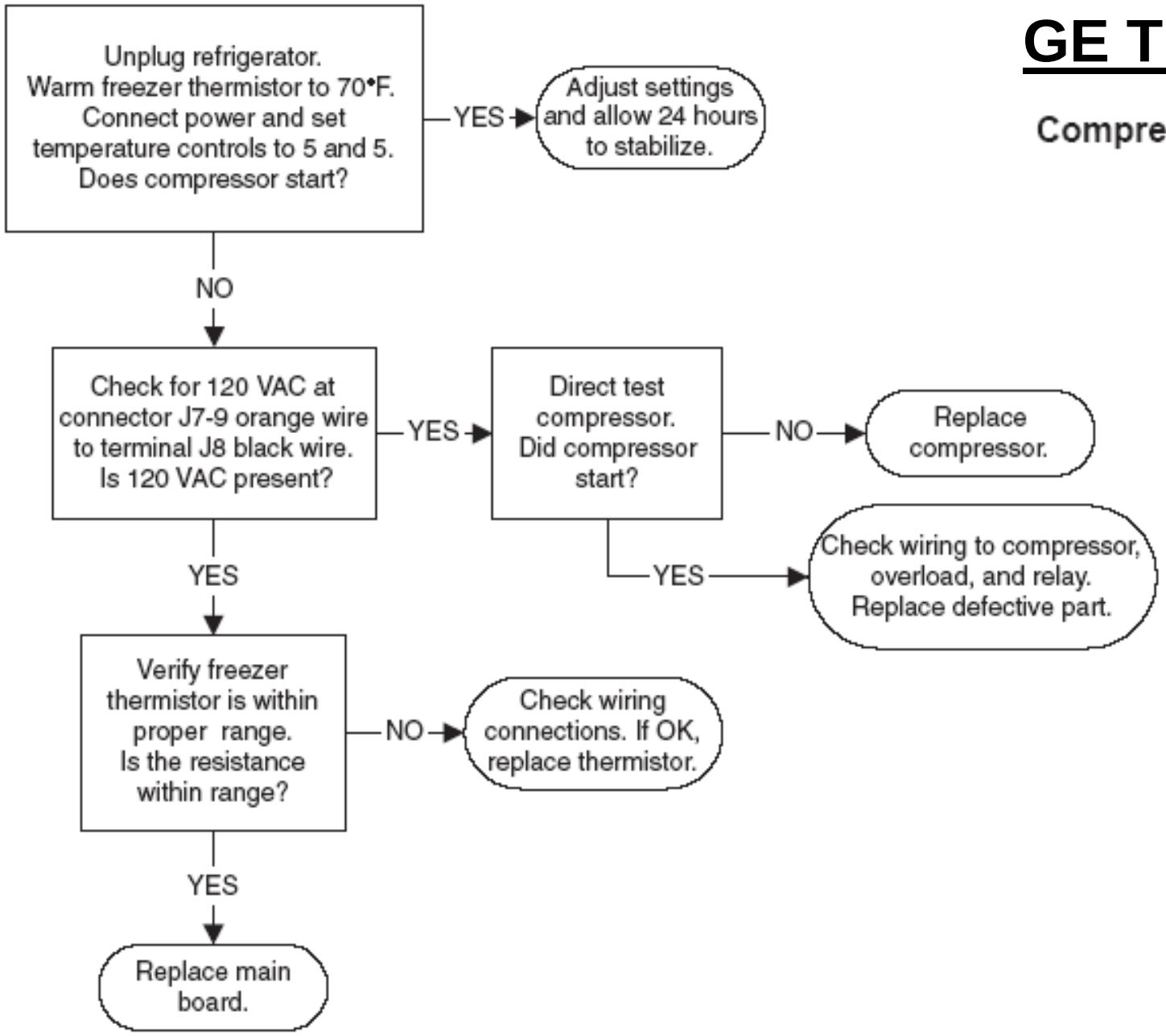
# GE TMNF

## Fresh Food Too Cold - Freezer Normal



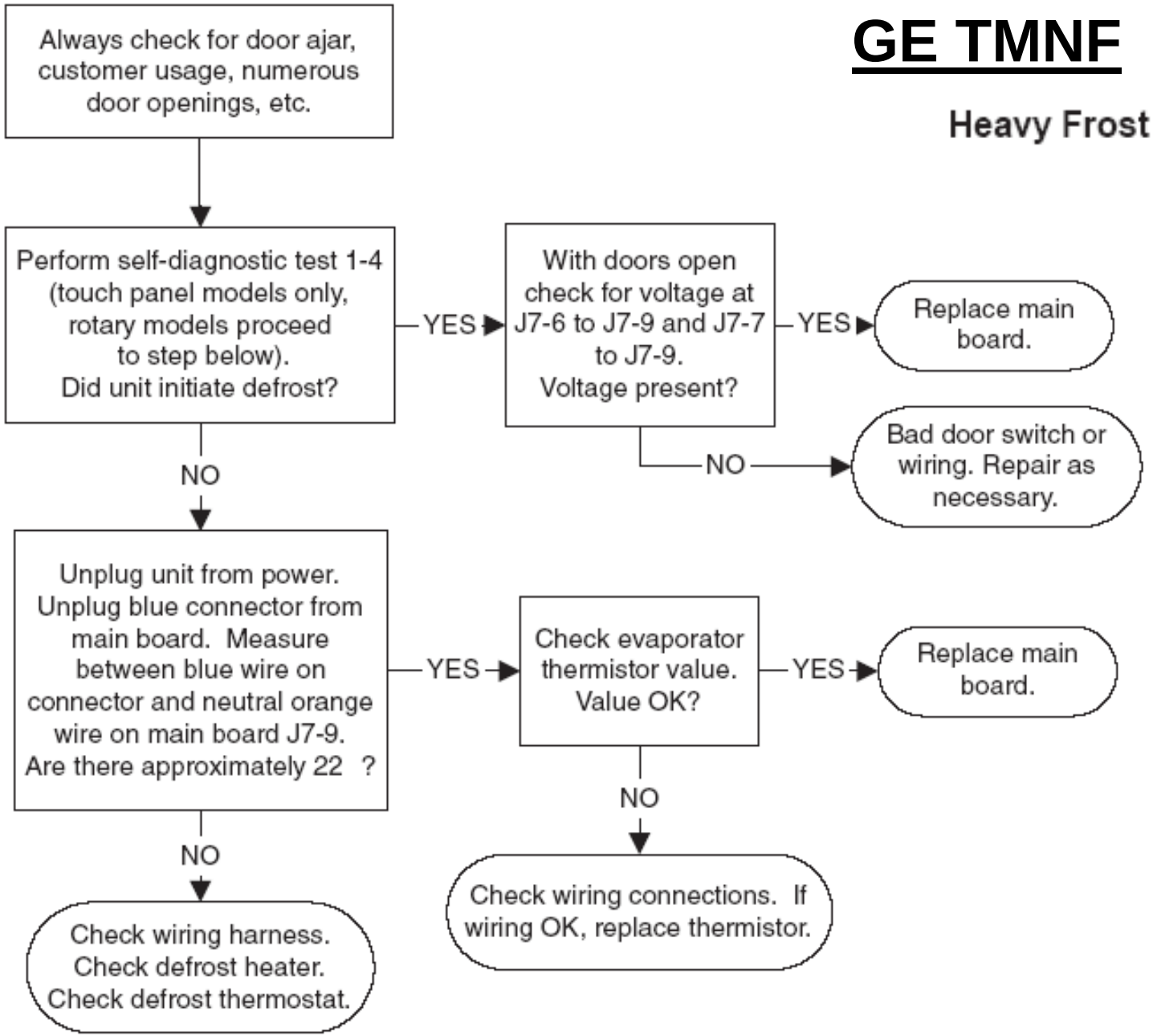
# GE TMNF

## Compressor Not Running



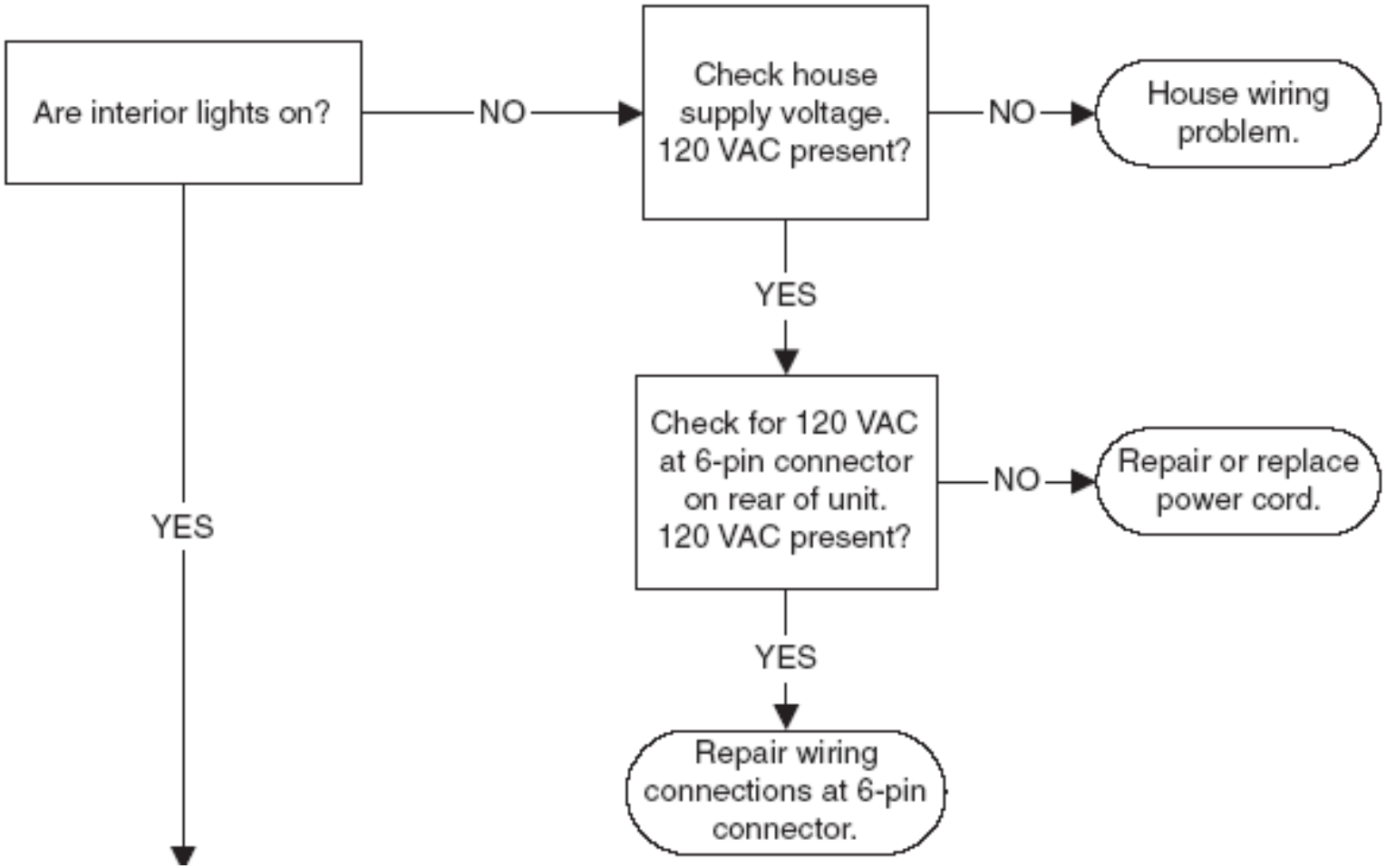
# GE TMNF

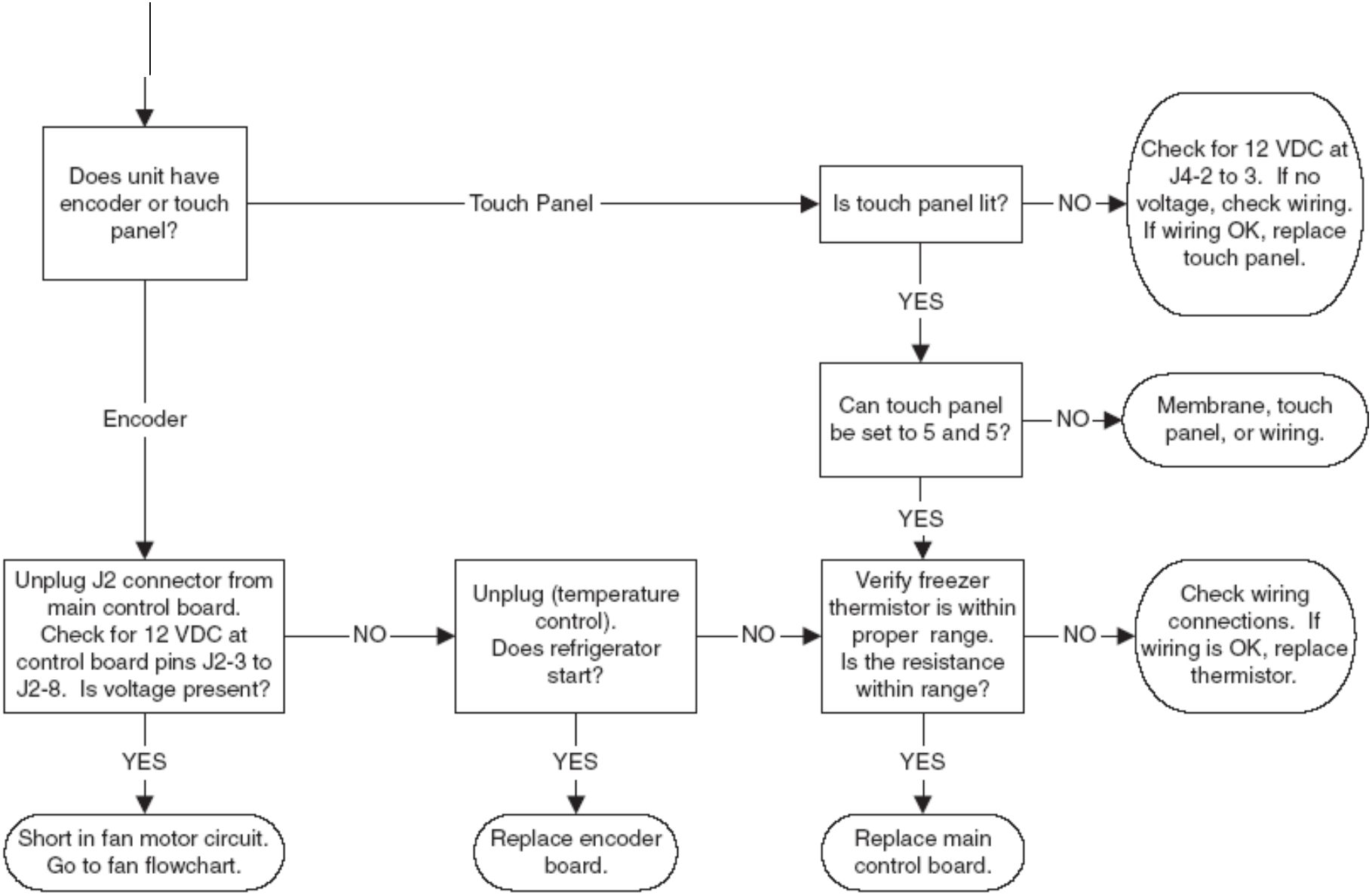
## Heavy Frost on Evaporator



# GE TMNF

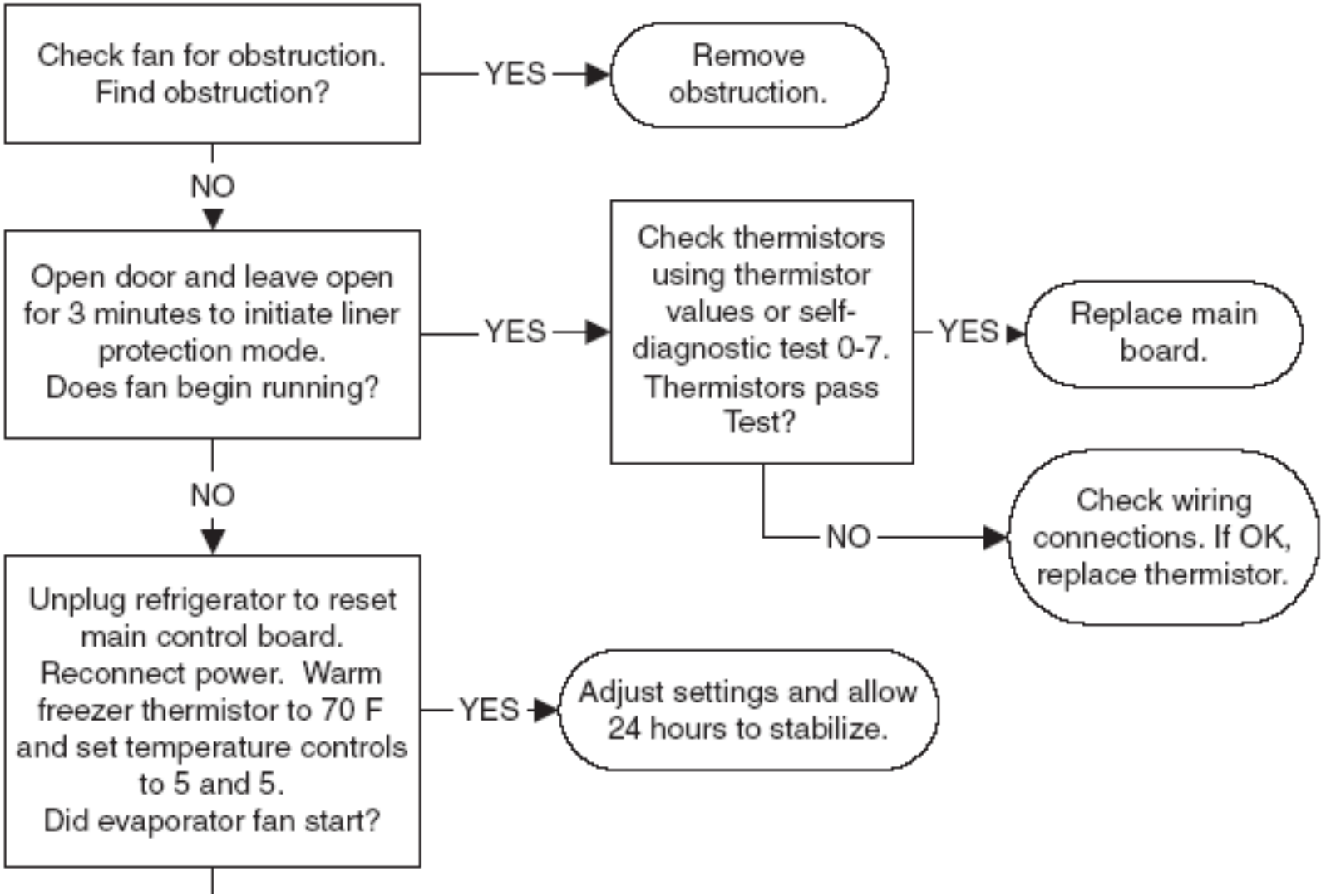
## Refrigerator Not Responding

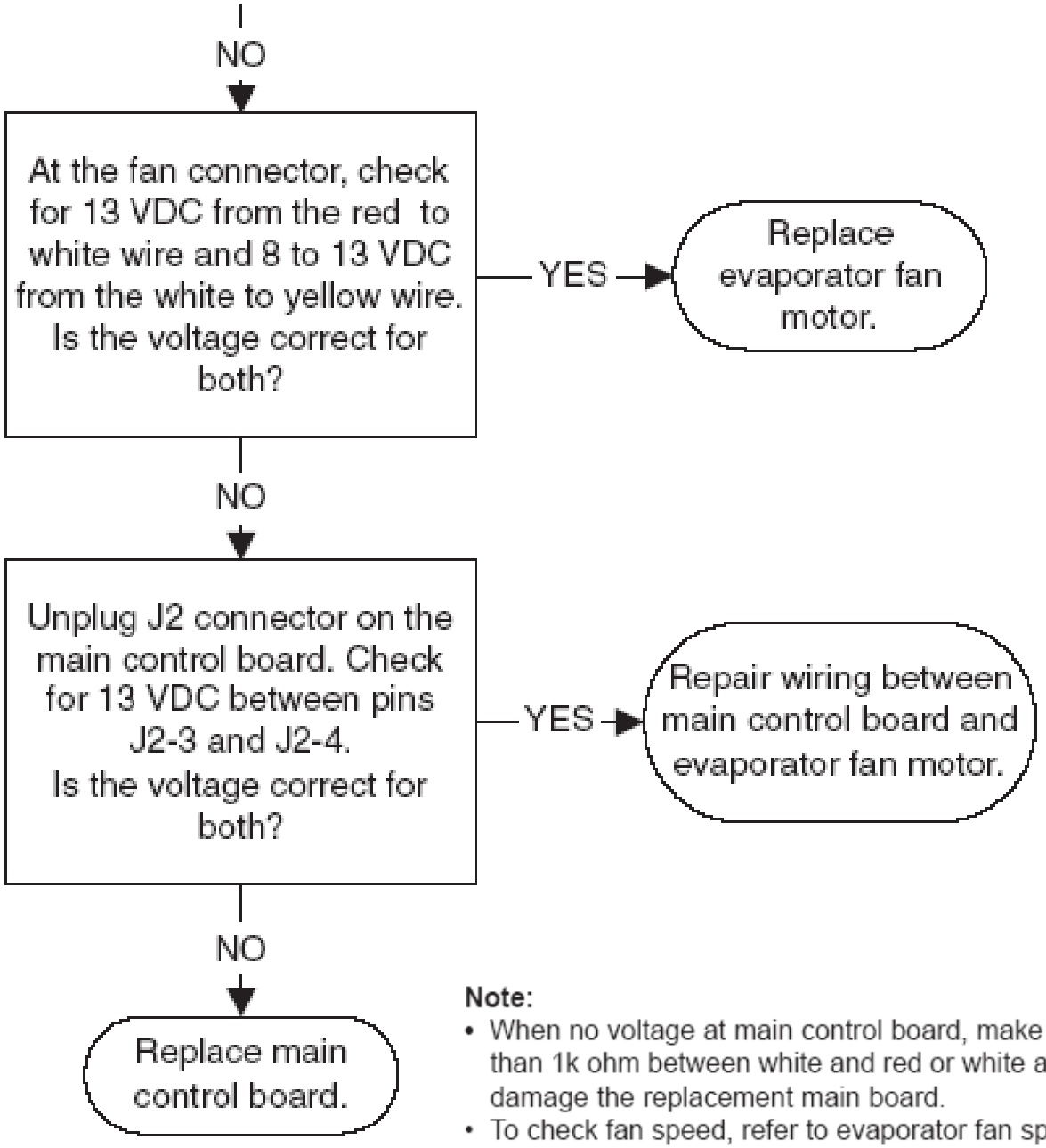




# GE TMNF

## Evaporator Fan Not Running



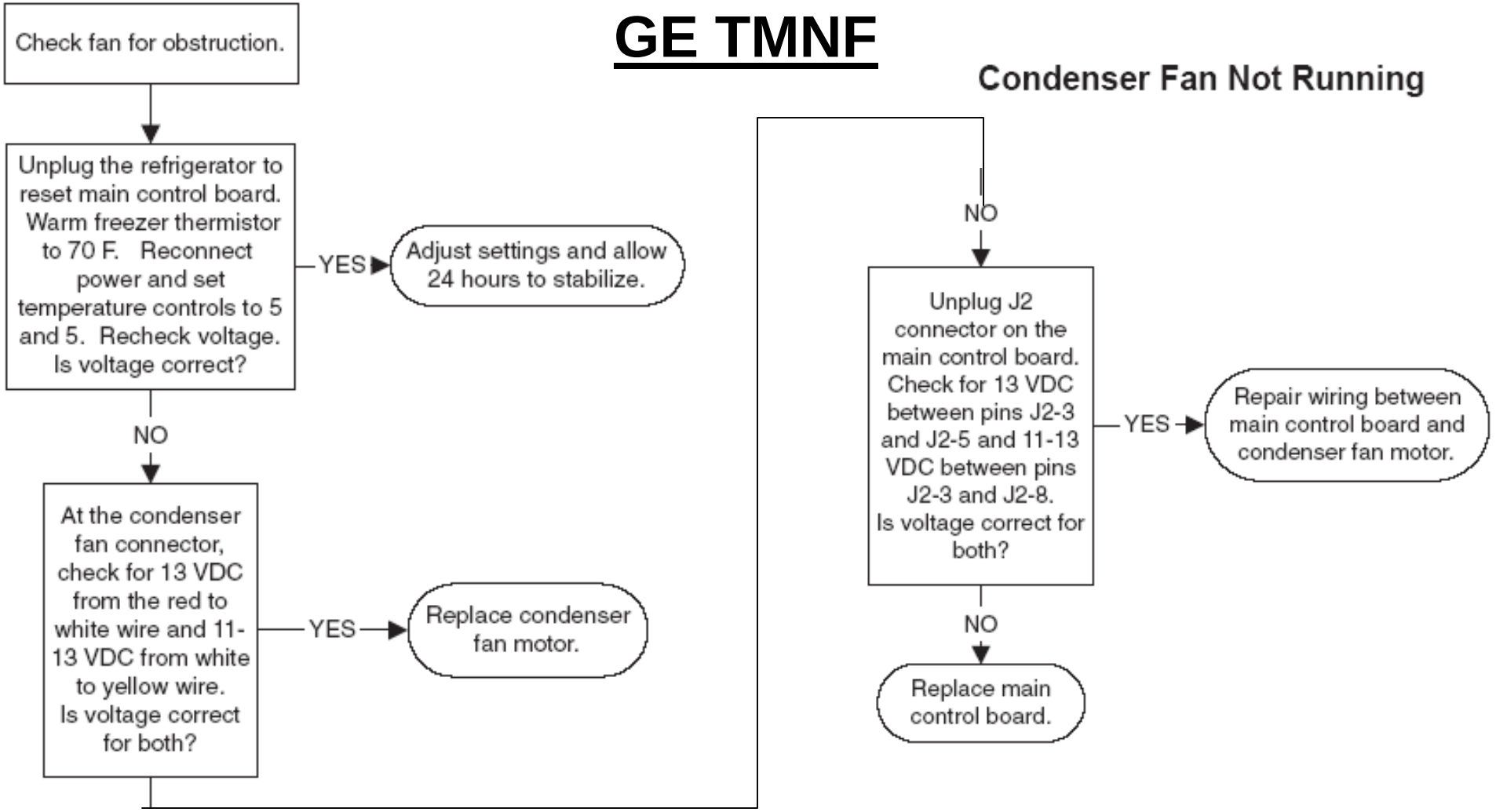



**Note:**

- When no voltage at main control board, make certain to check for shorted fan motor (less than 1k ohm between white and red or white and yellow). A shorted fan motor will damage the replacement main board.
- To check fan speed, refer to evaporator fan speed information on page 20.

# GE TMNF

## Condenser Fan Not Running




**Note:**

- Compressor and condensor fan should always operate at the same time.
- When no voltage at main control board, make certain to check for shorted fan motor (less than 1k ohm between white and red or white and yellow). A shorted fan motor will damage the replacement main board.

# GE BMNF

**GBS22_ _P**
**GBS20_ _P**
**PDS22_ _P**
**PDS20_ _P**

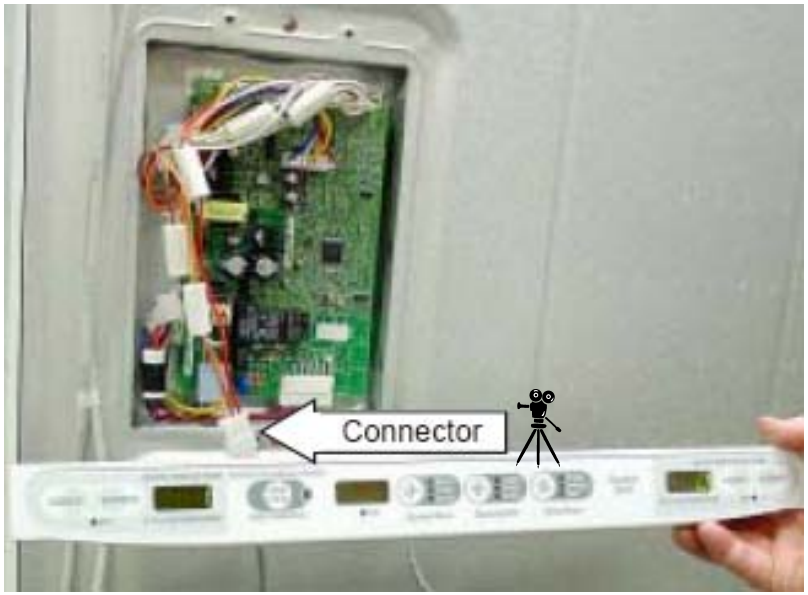
# GE Electronic Refrigerator Diagnostic Aid - BMNF

## Control Diagnostics

A diagnostic aid can be assembled which consists of a control board, membrane and wiring harness. The parts required are WR55X10120, WR55X10068 and WX05X14999.

The control diagnostics allow the technician to functionally test individual components to aid in troubleshooting.

On the electronic bottom mount models, the diagnostics are performed by removing the existing temperature control board and plugging in the diagnostic aid or by accessing the main board on the back of the refrigerator and plugging into the J4 connector.



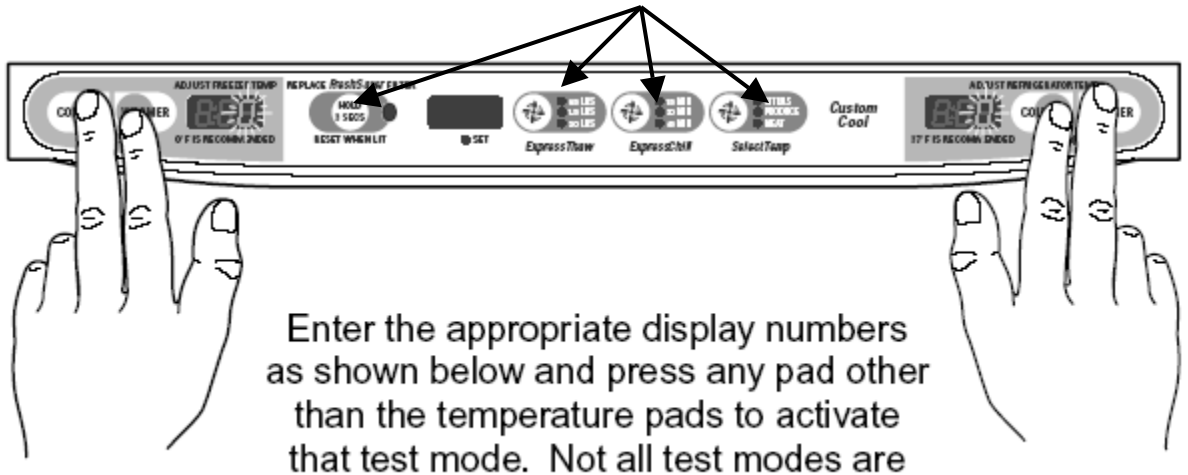

**Note:** Refrigerators with an electronic temperature control must have the control disconnected before attempting the diagnostics test from the main control board.

Note 1. #1 & #2 - Single Fresh Food Thermistor #3 - Custom Cool #4 - Evaporator #5 - Freezer
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.
Note 3. Press FF temperature pad (warmer/colder) to toggle. Using the service test board, you can change the temperature display from Fahrenheit to Centigrade on the refrigerator display, but the customer will be unable to change it back without using a service test board.

# GE Electronic Refrigerator Diagnostic Aid - BMNF

Once connected to the refrigerator, enter the diagnostic mode by pressing both the freezer temperature (colder and warmer) pads and the refrigerator temperature (colder and warmer) pads simultaneously. All four pads must be held for approximately 3 seconds. Blinking "0's" in both displays indicate the refrigerator has entered the test mode.

**Press any key pad in the middle to lock in test.**




Enter the appropriate display numbers as shown below and press any pad other than the temperature pads to activate that test mode. Not all test modes are available on all models.

**Note 1.** Display order is #1) Fresh Food 1 #2) Fresh Food 2 #3) Custom Cool #4) Evaporator #5) Freezer
Thermistor test results are: P = Pass 0 = Fail S = Short to 5 VDC B = Bad amplifier (replace control)

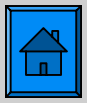
**Note 2.** You **must** enter the defrost test again to toggle the defrost heater off at the end of the test.
The heater will not come on if the evaporator thermistor is warm.

Refer to Service Guide 31-9072 for additional information

# GE BMNF

| FREEZER DISPLAY | FRESH FOOD DISPLAY | DIAGNOSTICS | RESULTS | COMMENTS |
|---|---|---|---|---|
| 0 | 5 | Encoder Test | As the knob is rotated the display will show the corresponding setting | Only for models with temperature control knobs |
| 0 | 7 | Control and Sensor System Test | Checks each thermistor and displays "P" for pass and "0" for fail | See **Note 1** below for display order |
| 1 | 0 | Dampers Test | Opens each damper, pauses briefly and then closes. | Includes Custom Cool dampers if applicable |
| 1 | 1 | Fan Test | Runs each fan in sequence for 10 seconds each. | |
| 1 | 2 | 100% Run Time | Sealed system on 100% of the time. Times out after 1 hour. | |
| 1 | 3 | Prechill Test | Starts Prechill 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 |
| 1 | 5 | Main Control Reset | Causes a system reset | |
| 1 | 6 | Exit Diagnostic Mode | Causes a temperature control board reset | |
| 1 | 7 | Degrees C°/F° | Changes from F° to C° or C° to F° on temperature display | See **Note 3** below |



# GE BMNF

| Thermistor Values | | |
|---|---|---|
| Temperature Degrees (F) | Resistance in Kilo-Ohms | Temperature Degrees (C) |
| -40 | 166.8 kΩ | -40 |
| -31 | 120.5 kΩ | -35 |
| -22 | 88 kΩ | -30 |
| -13 | 65 kΩ | -25 |
| -4 | 48.4 kΩ | -20 |
| 5 | 36.4 kΩ | -15 |
| 14 | 27.6 kΩ | -10 |
| 23 | 21 kΩ | -5 |
| 32 | 16.3 kΩ | 0 |
| 41 | 12.7 kΩ | 5 |
| 50 | 10 kΩ | 10 |
| 59 | 7.8 kΩ | 15 |
| 68 | 6.2 kΩ | 20 |
| 77 | 5 kΩ | 25 |
| 86 | 4 kΩ | 30 |
| 95 | 3.2 kΩ | 35 |
| 104 | 2.6 kΩ | 40 |
| 113 | 2.2 kΩ | 45 |
| 122 | 1.8 kΩ | 50 |
| 55 | 1.5 kΩ | -40 |
| 60 | 1.2 kΩ | -35 |

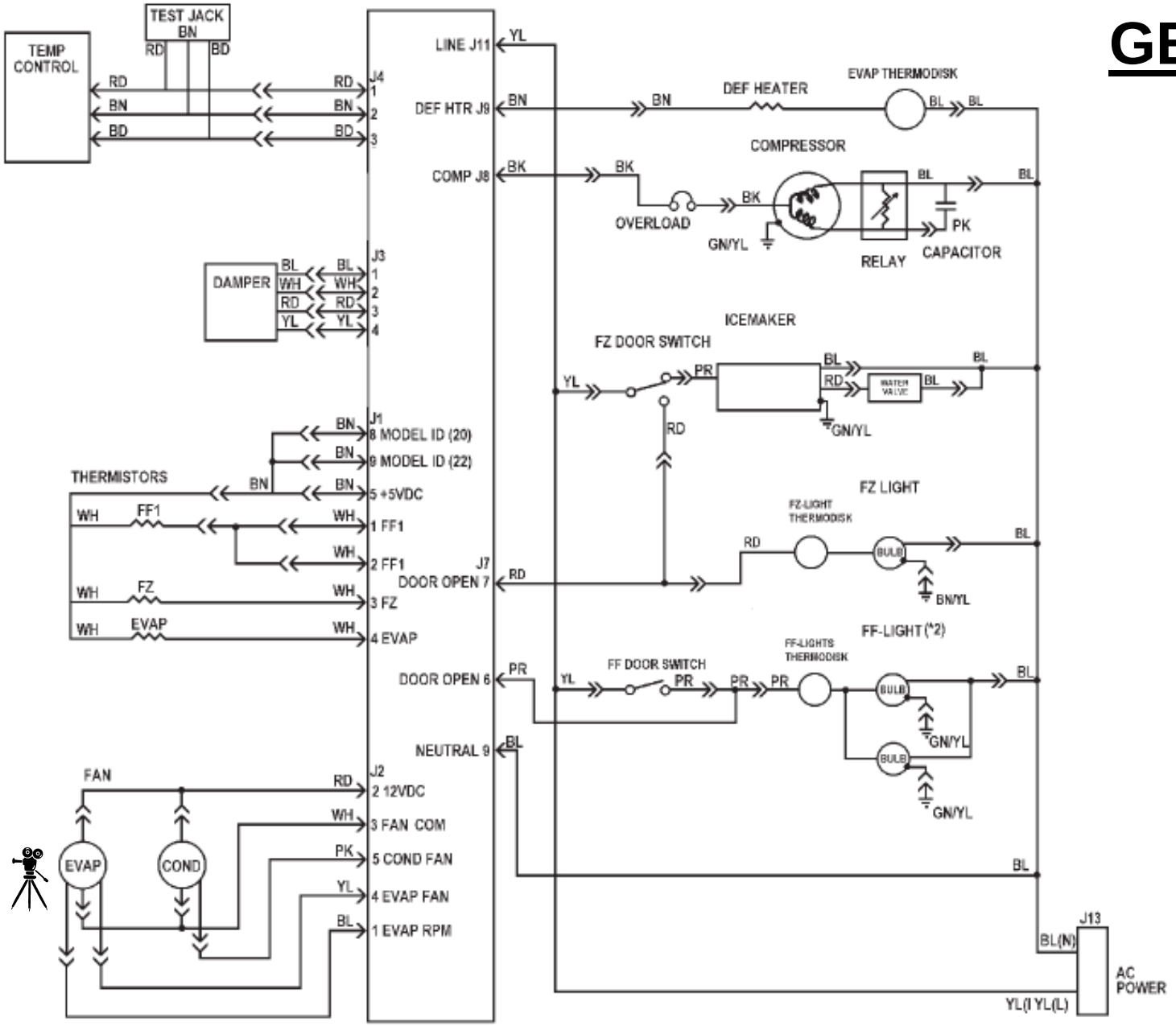
## Testing

The most accurate method of testing a thermistor is to place it in a glass of ice water for several minutes. The thermistor should read approximately **16KΩ** in the glass of 33°F ice water.

**Note:** Thermistors can also be checked for an open or shorted condition by using the diagnostic mode (see ***Service Diagnostics***).

# GE BMNF

**Drawer Models**

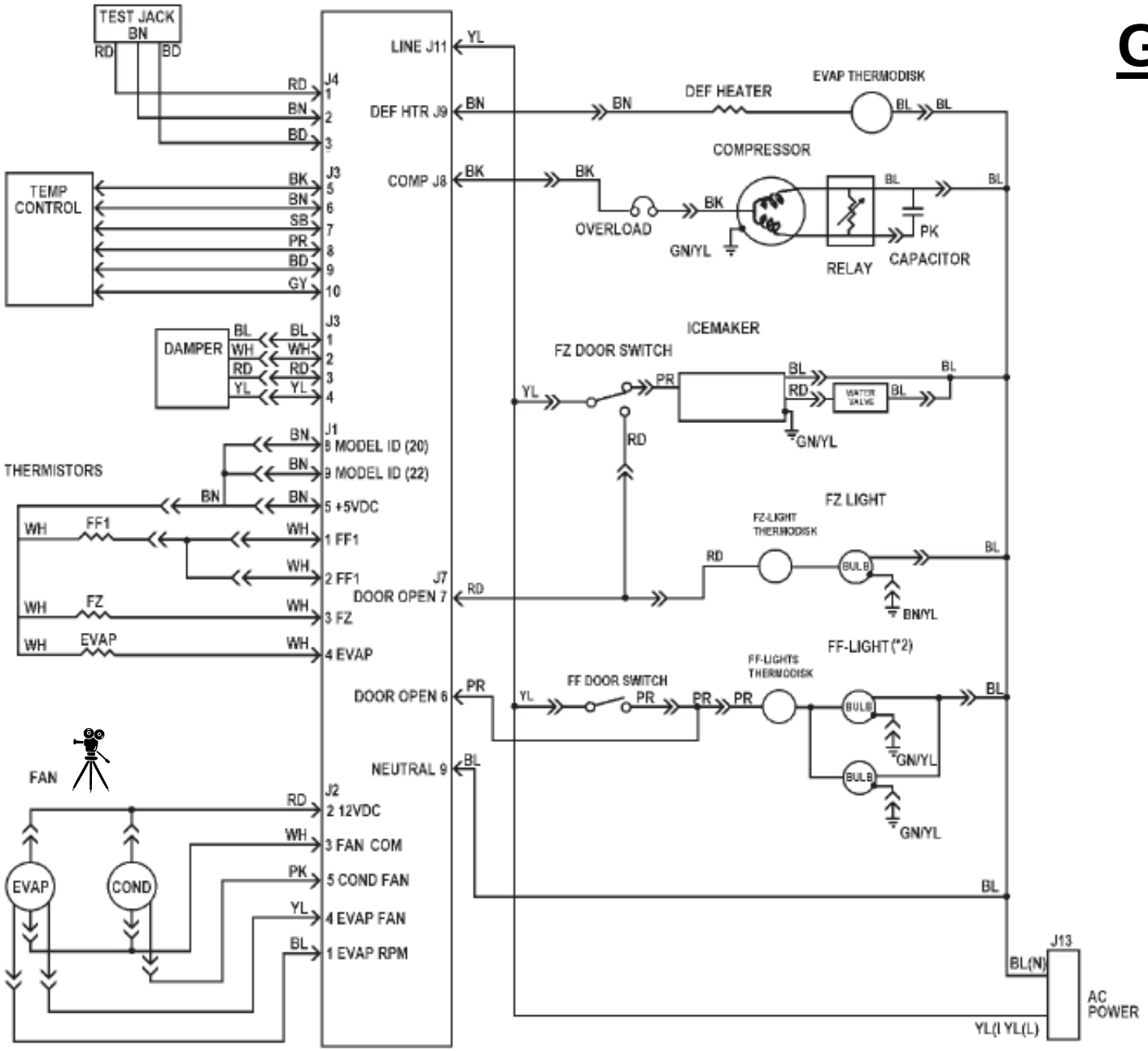



## LEGEND

BK: BLACK
BN: BROWN
RD: RED
BO: BRIGHT ORANGE
BL: BLUE
GY: GREY
GN: GREEN
YL: YELLOW
WH: WHITE
PR: PURPLE
SB: SKY BLUE
PK: PINK

# GE BMNF

## Door Models




**LEGEND**

BK: BLACK
BN: BROWN
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BO: BRIGHT ORANGE
BL: BLUE
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GN: GREEN
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WH: WHITE
PR: PURPLE
SB: SKY BLUE
PK: PINK

# Inverter Compressor

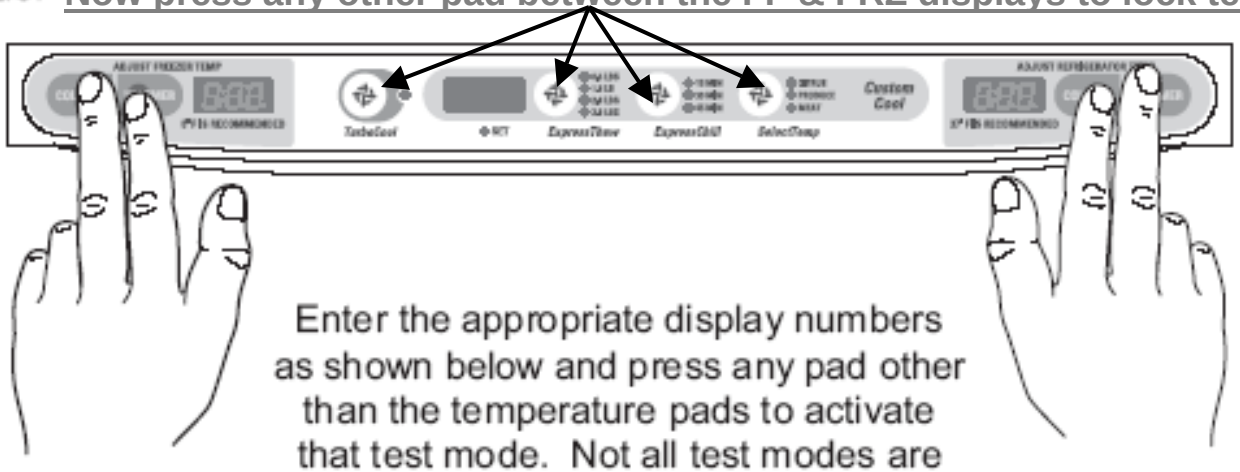
**PSH23SGNAFBS**
**PSH25SGNAFBS**

# Arctica SxS Inverter Compressor

## Control Diagnostics

**Make sure controls are set to either “37” & “0”**

Enter the diagnostic mode by pressing both the freezer temperature (COLDER and WARMER) pads and the refrigerator temperature (COLDER and WARMER) pads simultaneously. All four pads must be held for approximately 3 seconds. Blinking "0"s in both displays indicate the refrigerator has entered the test mode. **Now press any other pad between the FF & FRZ displays to lock test mode.**




Enter the appropriate display numbers as shown below and press any pad other than the temperature pads to activate that test mode. Not all test modes are available on all models.

**Note 1:** Display order is #1 = Fresh Food Evaporator Thermistor, #2 = Fresh Food Thermistor, #3 = Custom Cool Thermistor, #4 = Freezer Evaporator Thermistor, #5 = Freezer Thermistor.

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 above 70°F.

**Note 3:** To exit the Temperature Control LED Test, press both refrigerator temperature pads (COLDER and WARMER) simultaneously for 3 seconds.

| Table 2. Diagnostic Tests | | | |
|---|---|---|---|
| **Freezer Display** | **Refrigerator Display** | **Mode** | **Comments** |
| 0 | 2 | Temperature control panel to main control board communication | P on the FZ display if OK.<br>F on the FZ display if not OK. |
| 0 | 3 | Temperature control panel to dispenser board communication | P on the FZ display if OK.<br>F on the FZ display if not OK. |
| 0 | 4 | Dispenser board to main control board communication | P on the FZ display if OK.<br>F on the FZ display if not OK. |
| 0 | 6 | Temperature control panel self-test | See Temperature Control Panel Self-Test on page 35. |
| 0 | 7 | Control and sensor system self-test | See Control and Sensor Self-Test on page 36. |
| 1 | 0 | Open damper | Damper will open, pause briefly, then close. |
| 1 | 1 | Fan speed test | Each fan will run for 10 seconds, then stop. |
| 1 | 2 | 100% run time | This mode runs the sealed system 100% of the time for 1 hour. |
| 1 | 3 | Enter pre-chill | This places the freezer in pre-chill mode. The refrigerator will return to normal operation on its own. |
| 1 | 4 | Enter defrost | This will set the refrigerator into the defrost mode. If the cabinet is not cold when executed, this mode may execute extremely fast. The refrigerator will return to normal operation on its own. |
| 1 | 5 | Refrigerator reset | Causes a system reset. |
| 1 | 6 | Test mode exit | Causes system to exit test mode and resets temperature control panel. |
| 1 | 7 | Degree C/F | Refrigerator temperature adjust keys can be used to change display from F to C or C to F. |

## Testing

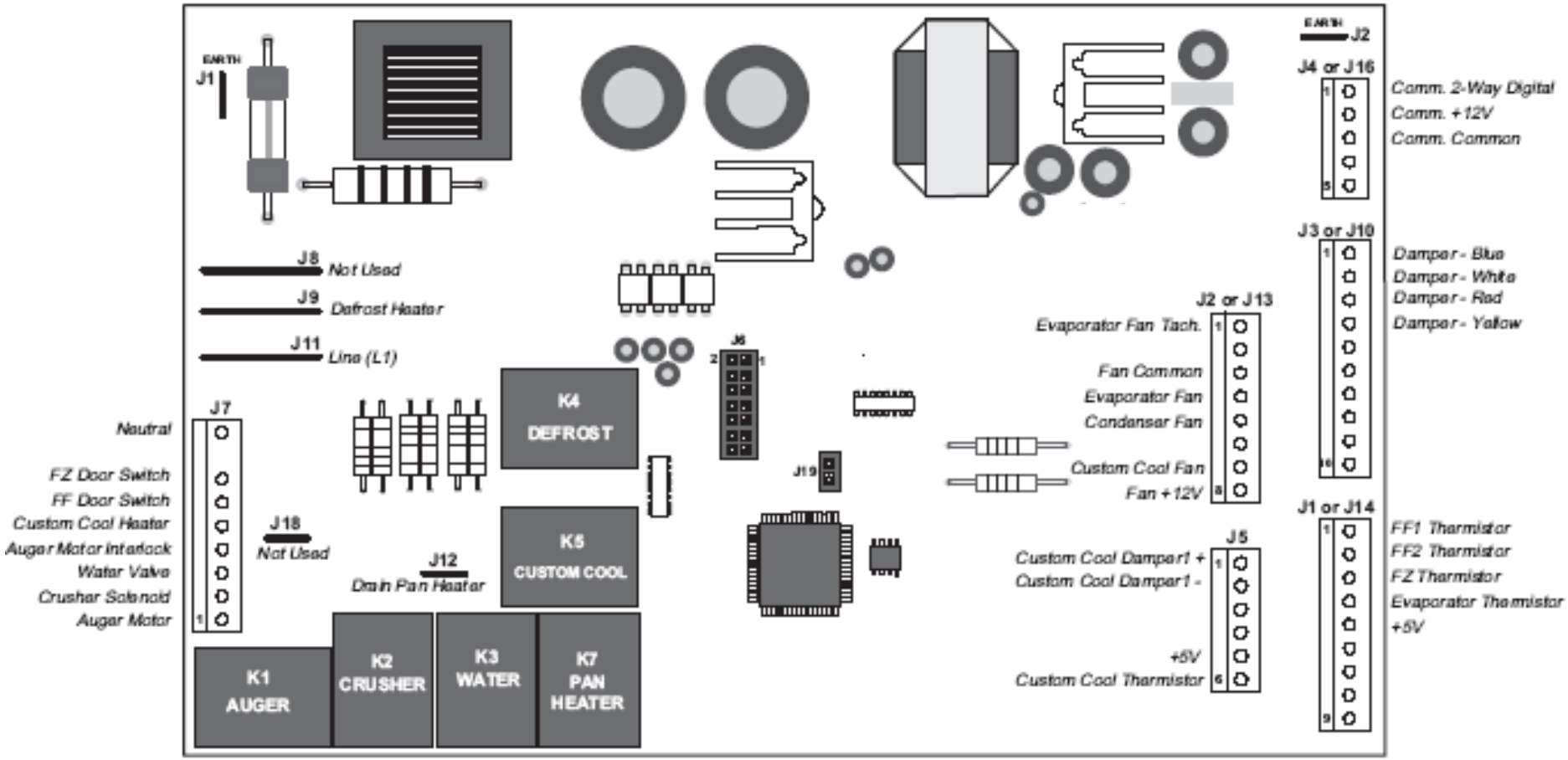
The most accurate method of testing a thermistor is to place it in a glass of ice water for several minutes. The thermistor should read approximately **16KΩ** in the glass of 33°F ice water.

**Note:** Thermistors can also be checked for an open or shorted condition by using the diagnostic mode (see ***Service Diagnostics***).

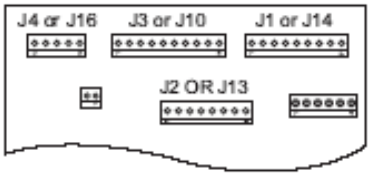
| Table 2. Thermistor Values | | |
|---|---|---|
| Temperature Degrees (C) | Temperature Degrees (F) | Resistance in Kilo-Ohms |
| -40 | -40 | 166.8 kΩ |
| -35 | -31 | 120.5 kΩ |
| -30 | -22 | 88 kΩ |
| -25 | -13 | 65 kΩ |
| -20 | -4 | 48.4 kΩ |
| -15 | 5 | 36.4 kΩ |
| -10 | 14 | 27.6 kΩ |
| -5 | 23 | 21 kΩ |
| 0 | 32 | 16.3 kΩ |
| 5 | 41 | 12.7 kΩ |
| 10 | 50 | 10 kΩ |
| 15 | 59 | 7.8 kΩ |
| 20 | 68 | 6.2 kΩ |
| 25 | 77 | 5 kΩ |
| 30 | 86 | 4 kΩ |
| 35 | 95 | 3.2 kΩ |
| 40 | 104 | 2.6 kΩ |
| 45 | 113 | 2.2 kΩ |
| 50 | 122 | 1.8 kΩ |
| 55 | 131 | 1.5 kΩ |
| 60 | 140 | 1.2 kΩ |

**NOTE: The thermistor's resistance has a negative coefficient. As the temperature increases, the thermistor's resistance decreases.**

# Inverter Compressor




Some of the low voltage DC connector labeling on this model may differ from other models. The function and diagnostics for these connectors are identical for all models.



# Inverter Compressor

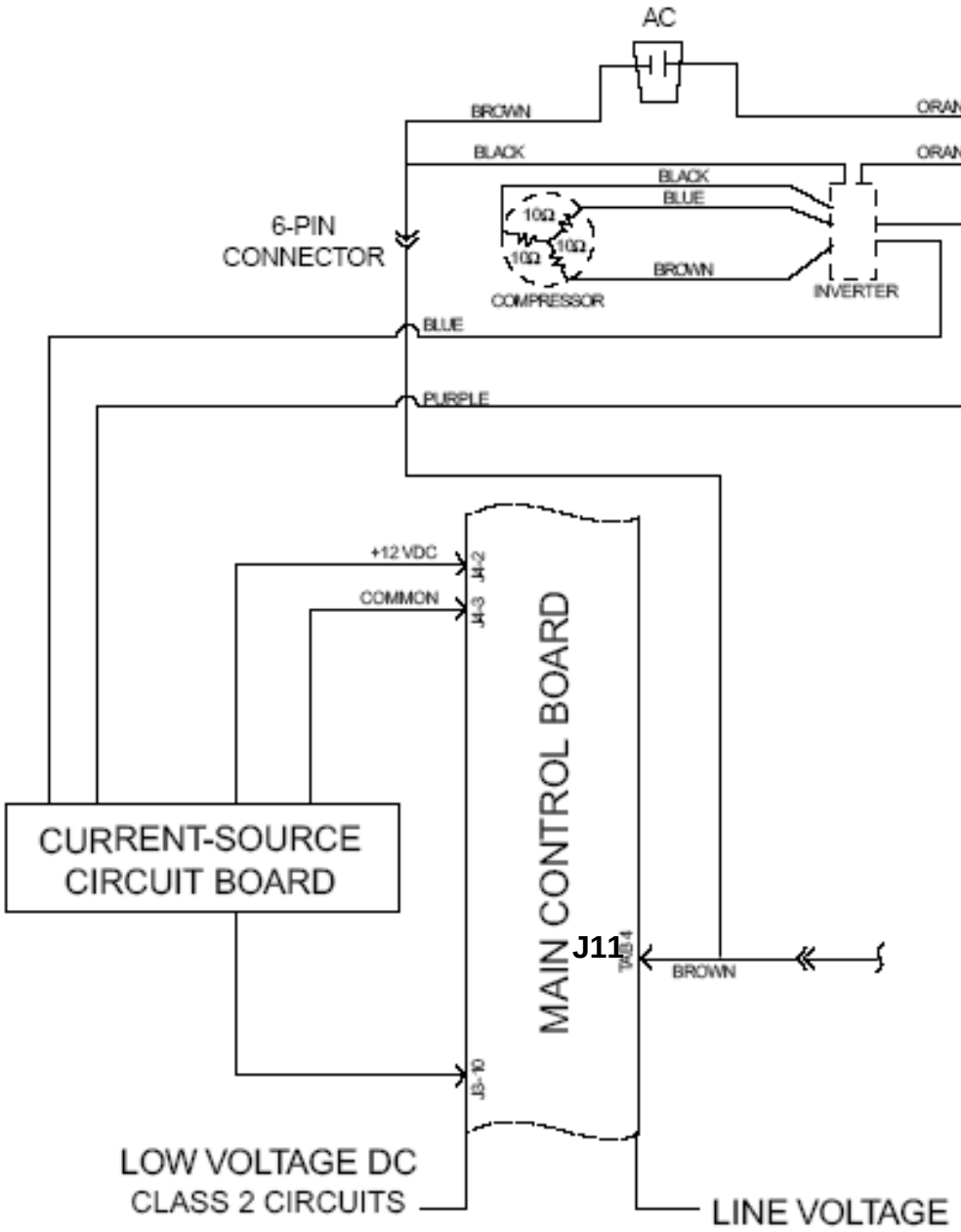
Compressor speed is based on the temperature setpoint in conjunction with the cabinet temperature. Speeds are selected according to the following cabinet temperatures:

- 8 °F to 19.5 °F above setpoint = high speed
- 3.5 °F to 7.5 °F above setpoint = medium speed
- 1 °F to 3 °F above setpoint = low speed

Note: The compressor will run at medium speed if the cabinet temperature is 20 °F or more above the setpoint.

The inverter will monitor compressor operation and if the compressor fails to start or excessive current draw (4 amps maximum) is detected, the inverter will briefly stop voltage output. The inverter will then make 12 consecutive compressor start attempts (once every 12 seconds). If after 12 attempts the compressor has not started, an 8-minute count will initiate. After the 8-minute count, the inverter will attempt to start the compressor again. If the compressor starts, normal operation will resume. If the compressor fails to start, this process will be repeated. Removing power to the unit will reset the inverter count. When power is restored, the inverter will attempt to start the compressor within 8 seconds.

# Inverter Compressor

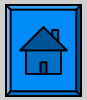



See next slide for testing for a compressor not running.

# Inverter Test

- Put Refrigerator into Diagnostic Mode.
- Set for the “1 – 2 Test” – Compressor Run Time.
- Pull Refrigerator away from the wall.
- Remove rear machine cover.
- Set meter to ACV.
- Place meter leads on Inverter wire connector (Black & Orange).
- Should read line voltage – if not check wires & repair, otherwise go to next step.
- Set meter to DCV.
- Place meter leads on Inverter wire connector (Blue & Purple).
- Should read between 4VDC & 6VDC – if not go to next step, otherwise check compressor windings – any two terminals should read 10W & also check each terminal to case, replace compressor if any windings are defective – if not, replace Inverter.
- Remove cover from Main Control Board.
- Place meter leads on J3-10 & J4-3.
- Should read between 1.5VDC & 3.5VDC – if not replace Main Board.
- If correct DCV at J3-10 & J4-3, replace Current-Source Circuit Board.



# Inverter Compressor

| Main Control Board<br>J1 Connector (Low-Voltage DC Side) | | | | |
|---|---|---|---|---|
| Pin | Wire Color | Component Termination | Input/ Output | Pin-to-Pin Voltage Reading |
| 1 | Blue/Red | Fresh food thermistor 1 | Input | N/A |
| 2 | Yellow | Fresh food thermistor 2 | Input | N/A |
| 3 | Red/White | Freezer thermistor | Input | N/A |
| 4 | Blue/White | Evaporator thermistor | Input | N/A |
| 5 | Blue | Thermistor supply voltage (5 VDC) | Output | J1 pin 5 to J2 pin 3 = 5 VDC |
| 6 | Blue | Personality pin | Input | J1 pin 6 to J2 pin 3 = 5 VDC |
| 8 | Blue | Personality pin | Input | J1 pin 8 to J2 pin 3 = 5 VDC |
| 9 | Blue | Personality pin | Input | J1 pin 9 to J2 pin 3 = 5 VDC |

# Inverter Compressor

| Main Control Board<br>J2 Connector (Low-Voltage DC Side) | | | | |
|---|---|---|---|---|
| Pin | Wire Color | Component Termination | Input/ Output | Pin-to-Pin Voltage Reading |
| 1 | Blue | Evaporator fan tachometer | Input | Not applicable to this model. |
| 2 | Blue/White | Model | Input | J2 pin 2 to pin 3 = 12 VDC |
| 3 | White/Silver | Fan common | Common | J2 pin 8 to pin 3 = 12 VDC |
| 4 | Yellow/Black | Evaporator fan | Output | J2 pin 4 to pin 3 = 9.5 VDC (high), 8 VDC (med), 6.5 VDC (low) |
| 5 | Yellow | Condenser fan | Output | J2 pin 5 to pin 3 = 10.5 VDC (high), 7.5 VDC (med), 5.5 VDC (low) |
| 6 | Black/White | Fresh food fan | Common | J2 pin 8 to pin 6 = 12 VDC (high), 10 VDC (med), 9 VDC (low) |
| 7 | Tan | Custom Cool fan | Common | J2 pin 7 to pin 8 = 12 VDC |
| 8 | Red | Fan supply voltage (12 VDC) | Output | J2 pin 8 to pin 3 = 12 VDC |

# Inverter Compressor

| Main Control Board<br>J3 Connector (Low-Voltage DC Side) | | | | |
|---|---|---|---|---|
| Pin | Wire Color | Component Termination | Input/ Output | Pin-to-Pin Voltage Reading |
| 1 | Yellow | Damper Stepper Motor | | J3 pin 1 to J4 pin 3 =<br>Standing Voltage - less than 1.3 VDC<br>Traveling Voltage - approx. 6.5 VDC |
| 2 | Red/Black | Damper Stepper Motor | | J3 pin 2 to J4 pin 3 =<br>Standing Voltage - less than 1.3 VDC<br>Traveling Voltage - approx. 6.5 VDC |
| 3 | White/Brown | Damper Stepper Motor | | J3 pin 3 to J4 pin 3 =<br>Standing Voltage - less than 1.3 VDC<br>Traveling Voltage - approx. 6.5 VDC |
| 4 | Blue/Yellow | Damper Stepper Motor | | J3 pin 4 to J4 pin 3 =<br>Standing Voltage - less than1.3 VDC<br>Traveling Voltage - approx. 6.5 VDC |
| 10 | Blue/Green | Inverter | Output | J3 pin 10 to J2 pin 3 =<br>1.5 to 3.5 VDC |

# Inverter Compressor

| Main Control Board<br>J4 Connector (Low-Voltage DC Side) | | | | |
|---|---|---|---|---|
| **Pin** | **Wire Color** | **Component Termination** | **Input/Output** | **Pin-to-Pin Voltage Reading** |
| 1 | Black | Temperature control | Communication | 2-way digital communication. |
| 2 | Red | Temperature control | Output | J4 pin 2 to pin 3 = 12 VDC |
| 3 | Blue | Temperature control | Common | J4 pin 2 to pin 3 = 12 VDC |

# Inverter Compressor

| Main Control Board<br>J5 Connector (Low-Voltage DC Side) | | | | |
|---|---|---|---|---|
| Pin | Wire Color | Component Termination | Input/ Output | Pin-to-Pin Voltage Reading |
| 1 | Pink | QuickChill (Custom Cool) Damper | Input/ Output | J5 pin 1 to pin 2 = 12 VDC (reversing polarity) |
| 2 | Yellow | QuickChill (Custom Cool) Damper | Input/ Output | J5 pin 2 to pin 1 = 12 VDC (reversing polarity) |
| 3 | Brown | QuickChill (Custom Cool) Damper | Input/ Output | J5 pin 3 to pin 4 = 12 VDC (reversing polarity) |
| 4 | Yellow/ Black | QuickChill (Custom Cool) Damper | Input/ Output | J5 pin 4 to pin 3 = 12 VDC (reversing polarity) |
| 5 | | Supply Voltage (5 VDC) | Output | J5 pin 10 to J2 pin 3 = 5 VDC |
| 6 | | QuickChill (Custom Cool) Thermistor | Input | N/A |

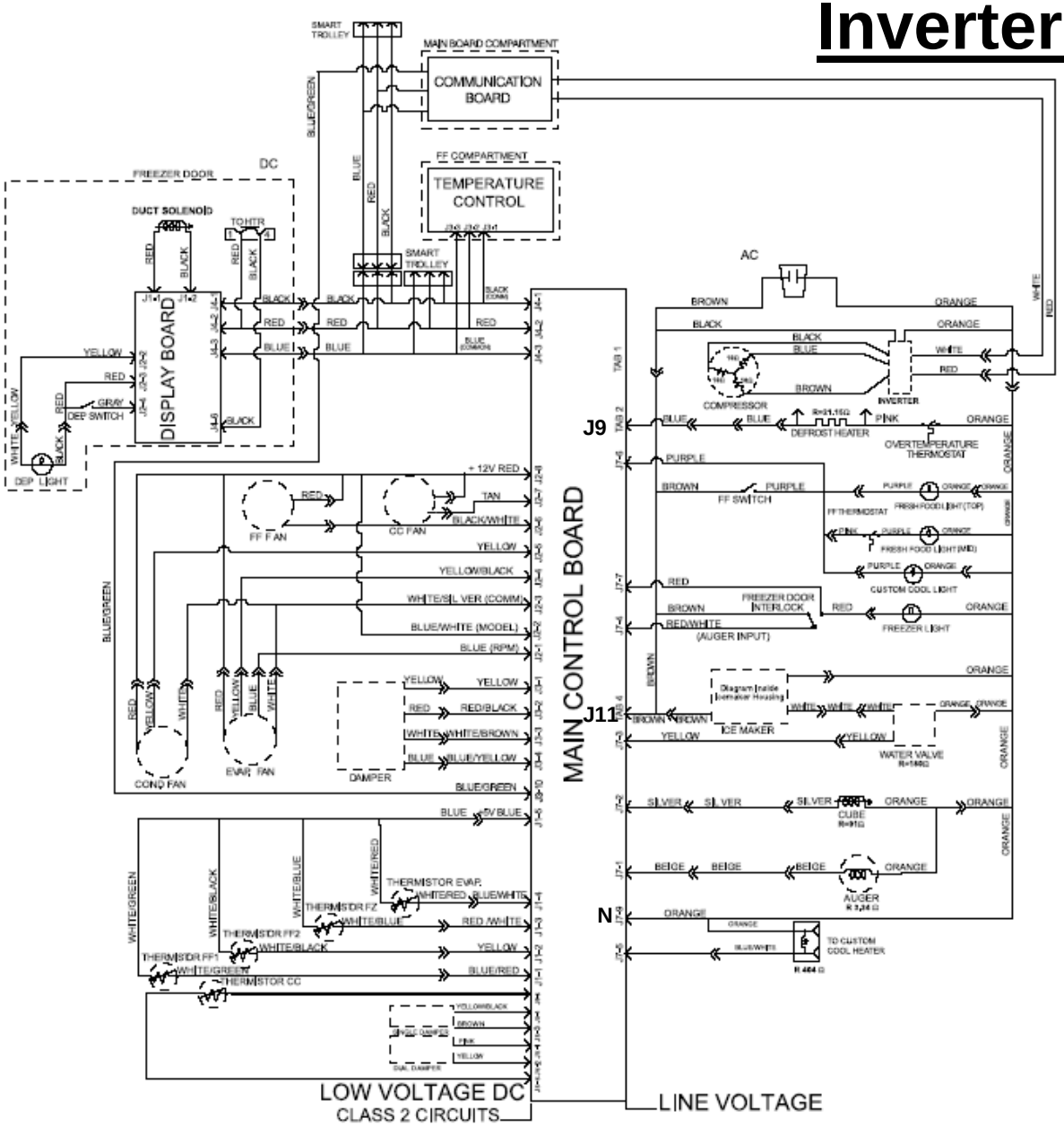
# Inverter Compressor

| Main Control Board J7 Connector (120 VAC Side) | | | | |
|---|---|---|---|---|
| **Pin** | **Wire Color** | **Component Termination** | **Input/ Output** | **Pin-to-Pin Voltage Reading** |
| 1 | Beige | Auger | Output | J7 pin 1 to J7 pin 9 = 120 VAC |
| 2 | Silver | Cube Soleniod | Output | J7 pin 2 to J7 pin 9 = 120 VAC |
| 3 | Yellow | Water Valve | Output | J7 pin 3 to J7 pin 9 = 120 VAC |
| 4 | Red/White | FZ Door Switch | Input | J7 pin 4 to J7 pin 9 = 120 VAC (FZ door closed) |
| 5 | Blue/White | Quick Chill | Output | J7 pin 5 to J7 pin 9 = 120 VAC |
| 6 | Purple | FF door light switch | Input | J7 pin 6 to J7 pin 9 = 120 VAC (FF door open) |
| 7 | Red | Freezer door light switch | Input | J7 pin 7 to J7 pin 9 = 120 VAC (FZ door open) |
| 9 | Orange | Neutral | Neutral | Neutral |

# Inverter Compressor

| Main Control Board J9, J11, Connectors (High-Voltage Side) | | | | |
|---|---|---|---|---|
| **Pin** | **Wire Color** | **Component Termination** | **Input/Outp-ut** | **Pin to Pin Voltage Reading** |
| J9 (Tab 2) | Blue | Defrost Heater | Output | J9 to J7 pin 9 = 120 VAC |
| J11 (Tab 4) | Brown | Icemaker | Input | J11 to J7 pin 9 = 120 VAC |

# Inverter Compressor




## Inverter Compressor

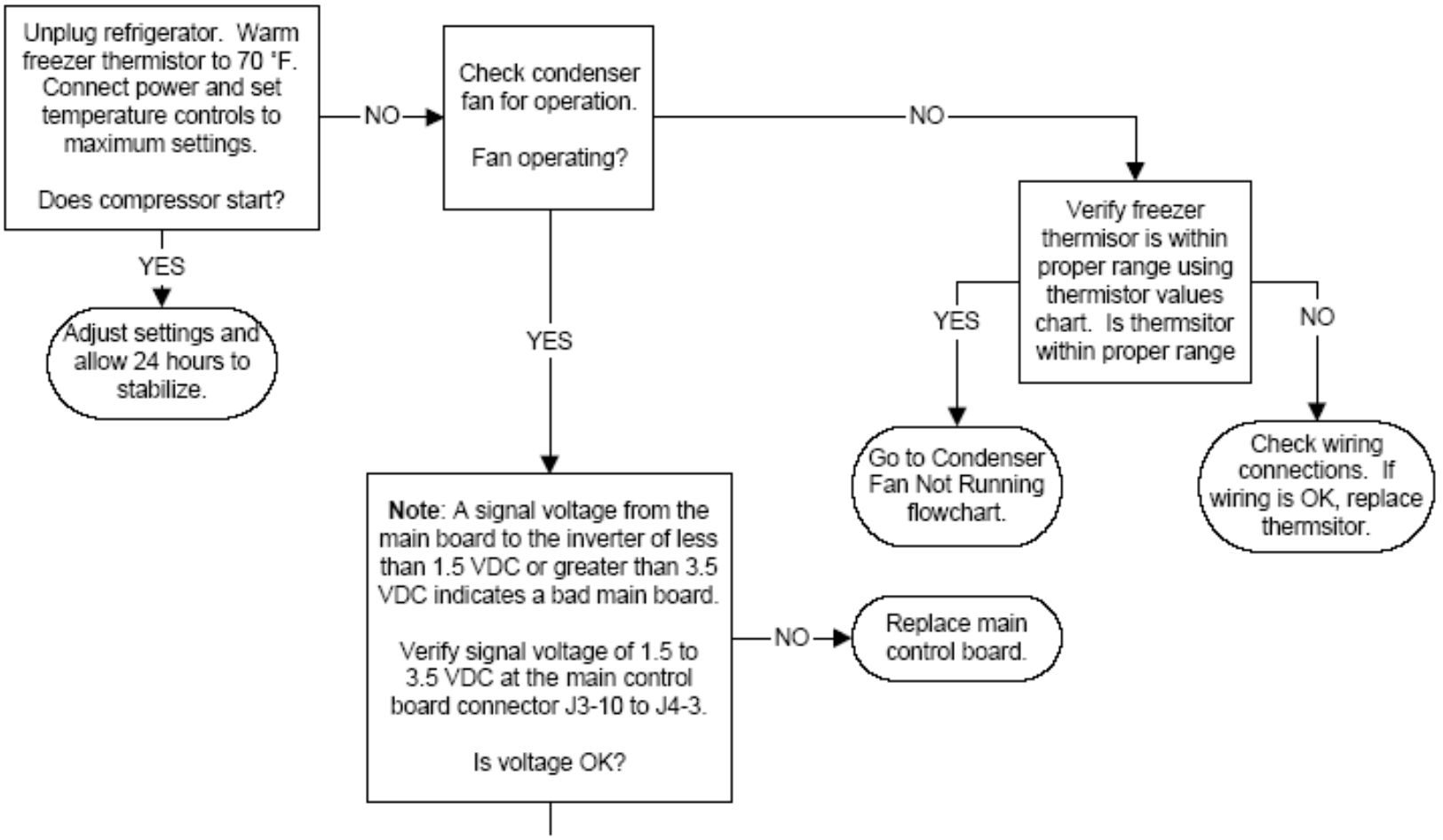
The new inverter compressor is not controlled by 120 VAC output from the main control board, as in previous models. The compressor is controlled by the inverter.

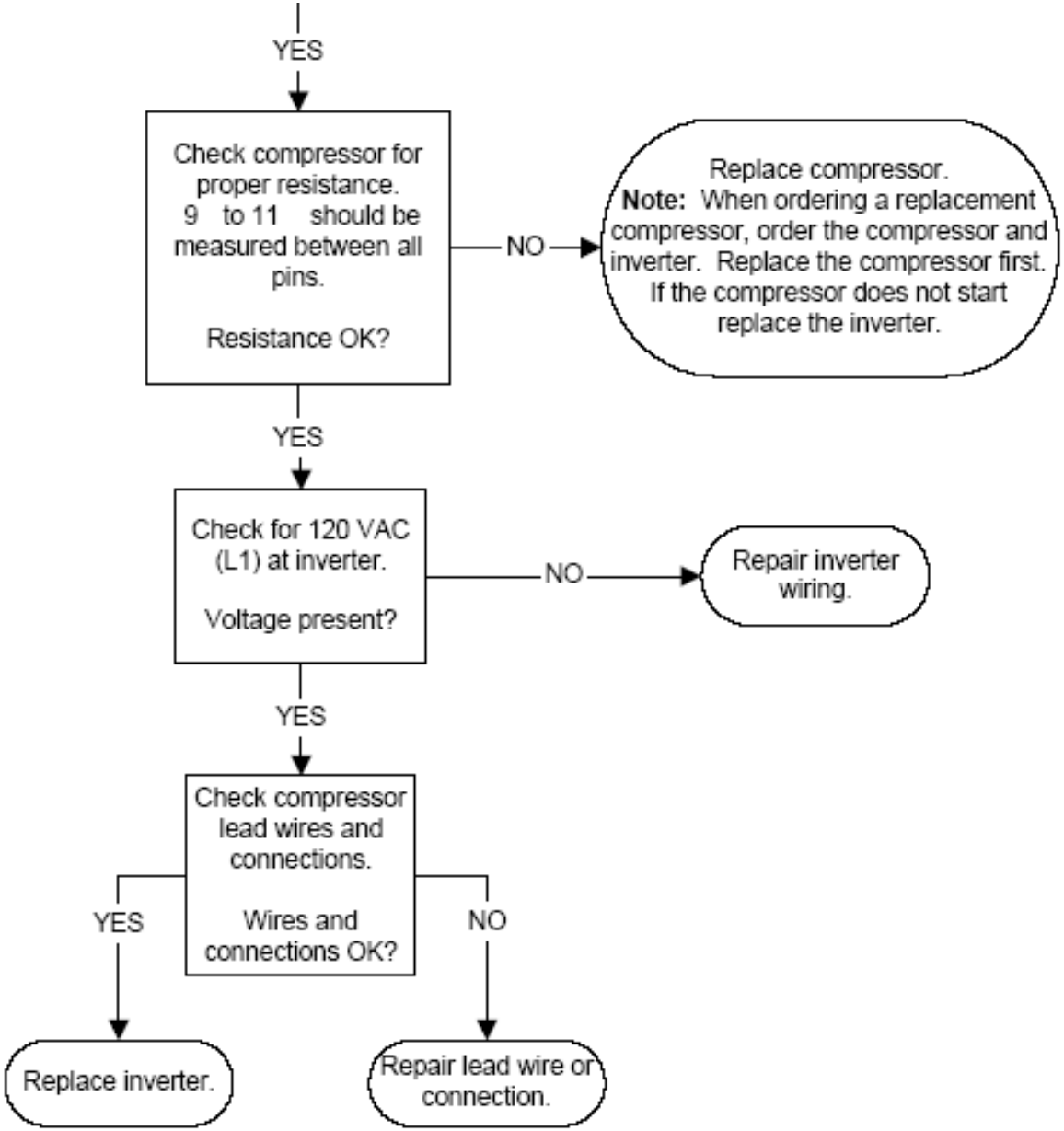
**Warning: Disconnecting the 6-pin connector does not disconnect power (120 VAC) from the inverter. The refrigerator must be unplugged before servicing the inverter or compressor.**

**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.**

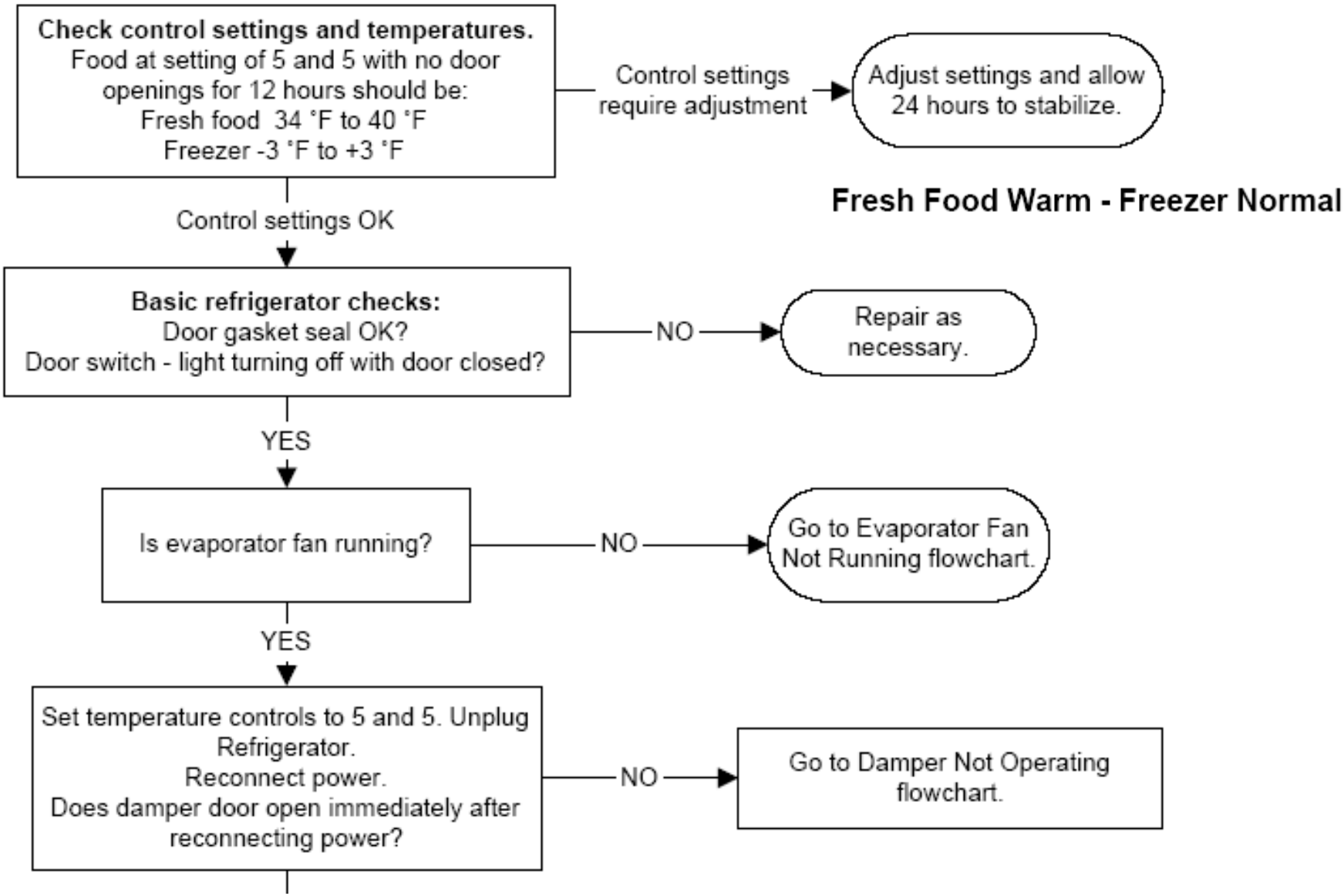
# Inverter Compressor

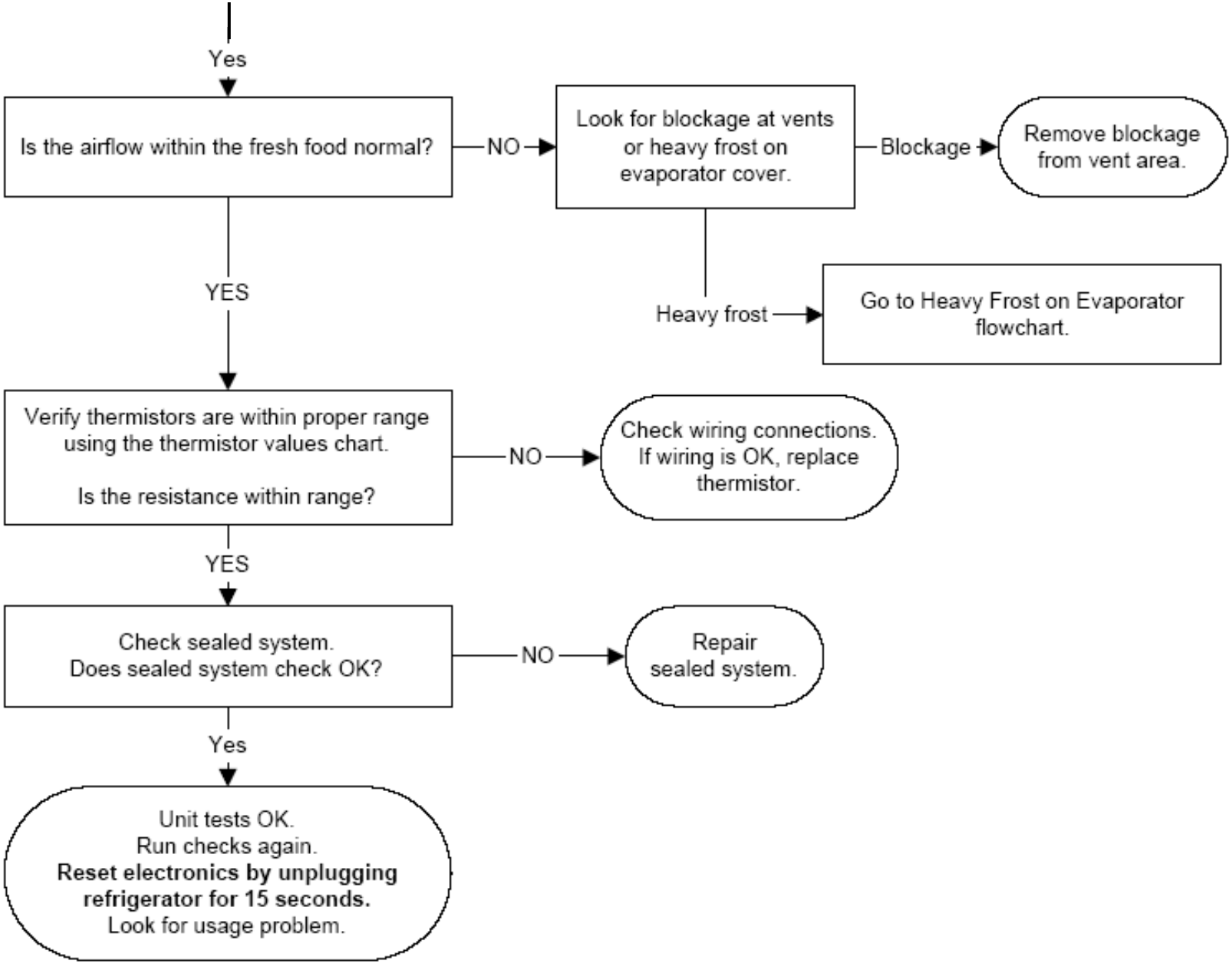
## Compressor Not Running



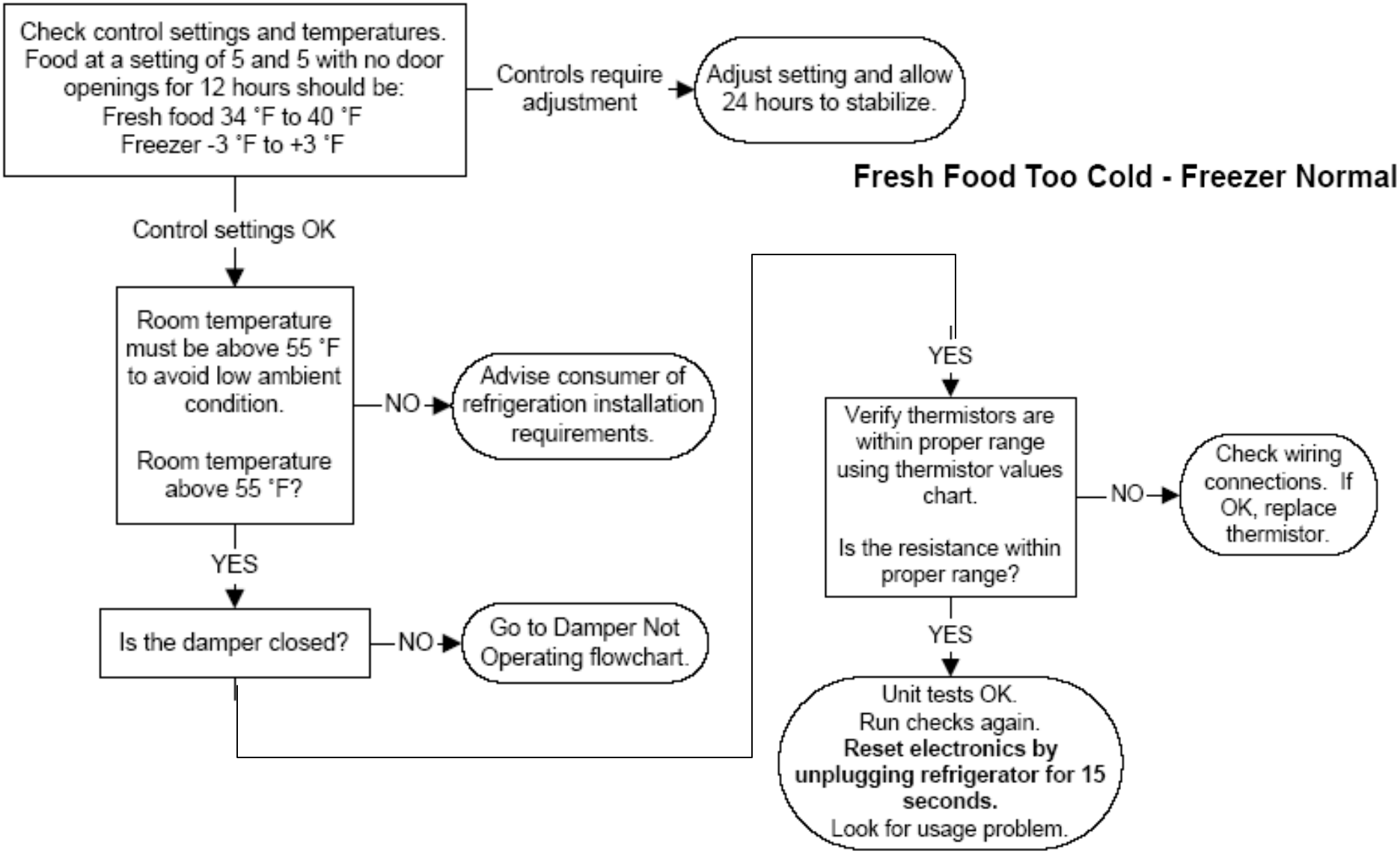


# Inverter Compressor



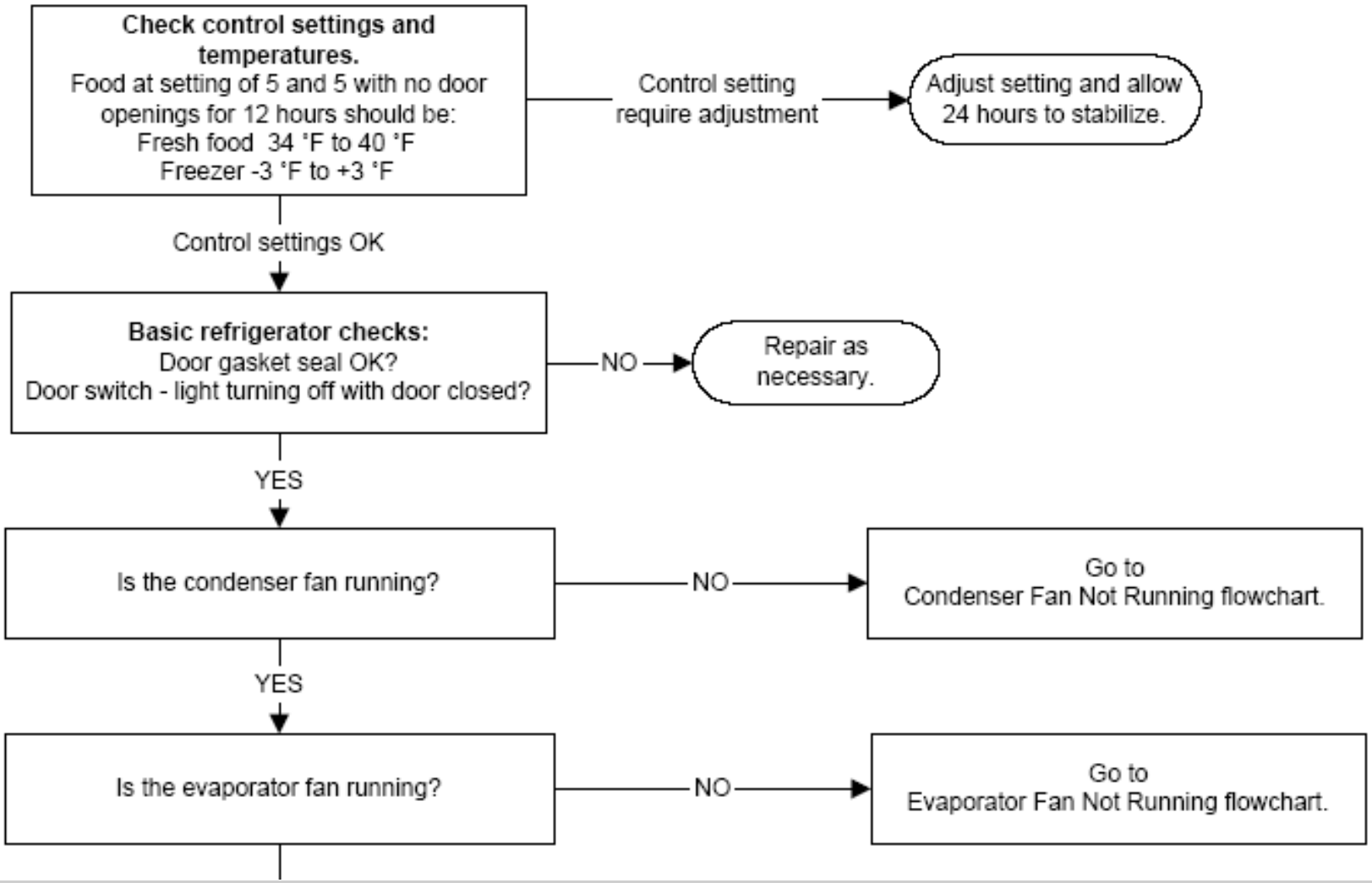


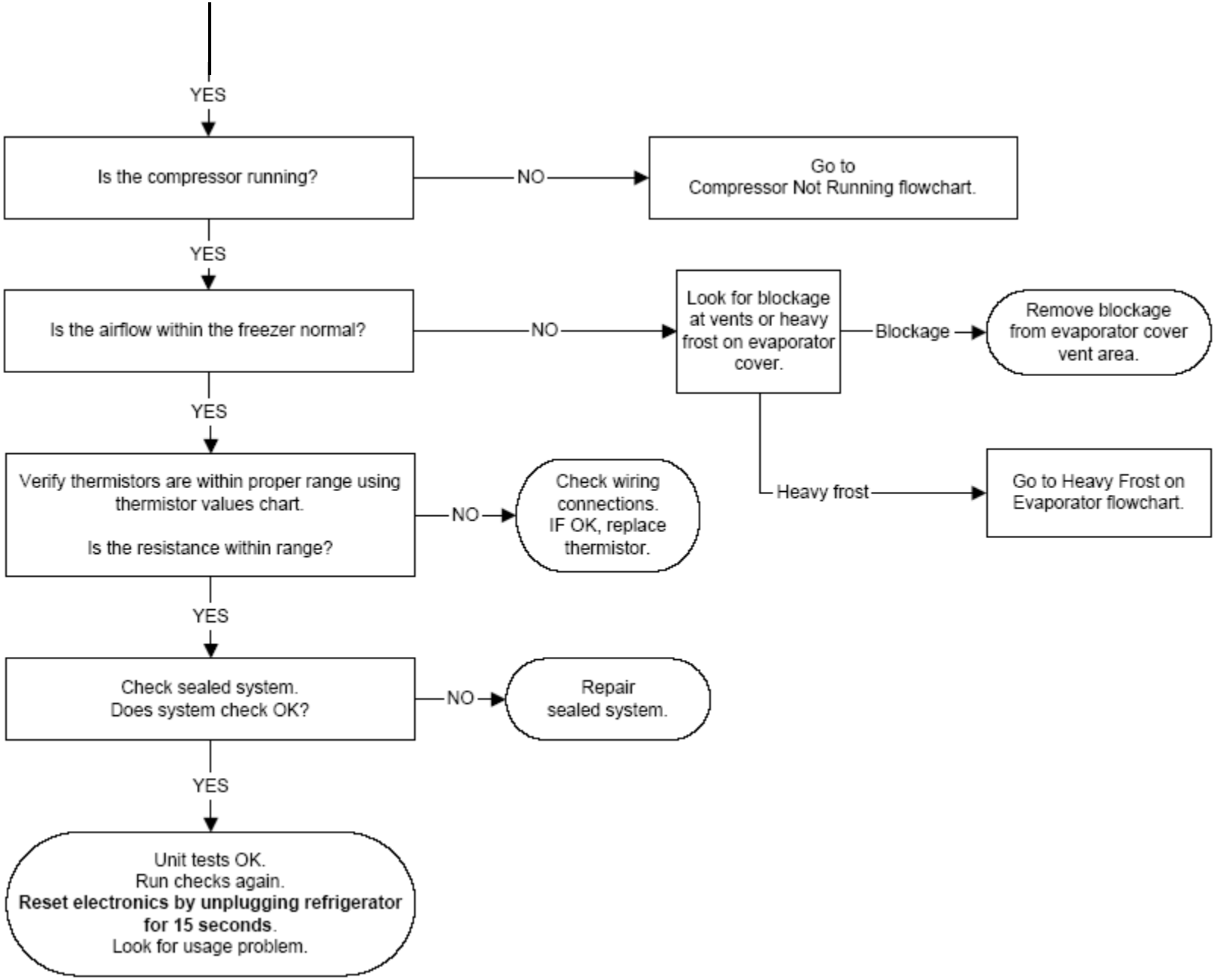
# Inverter Compressor



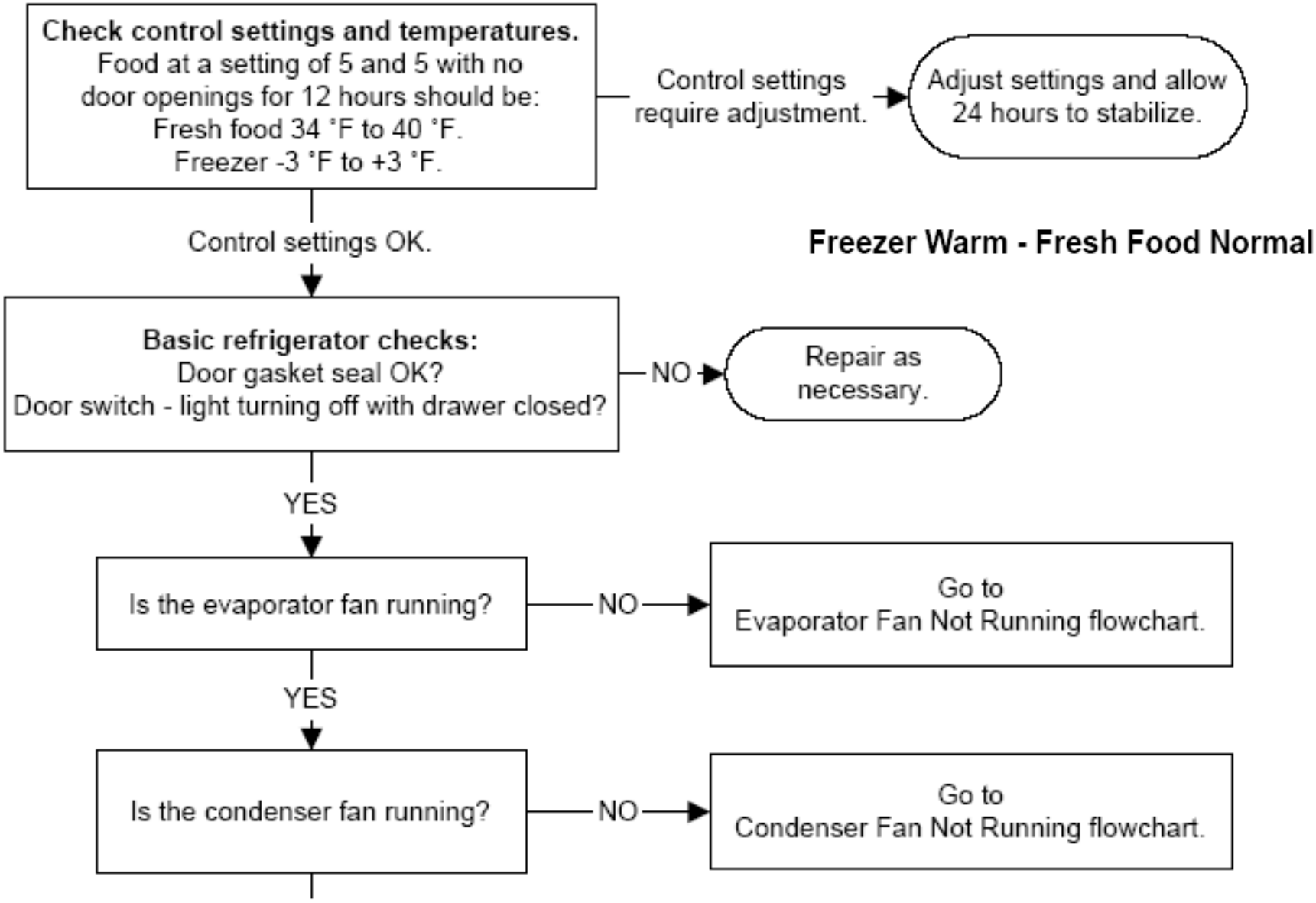
# Inverter Compressor

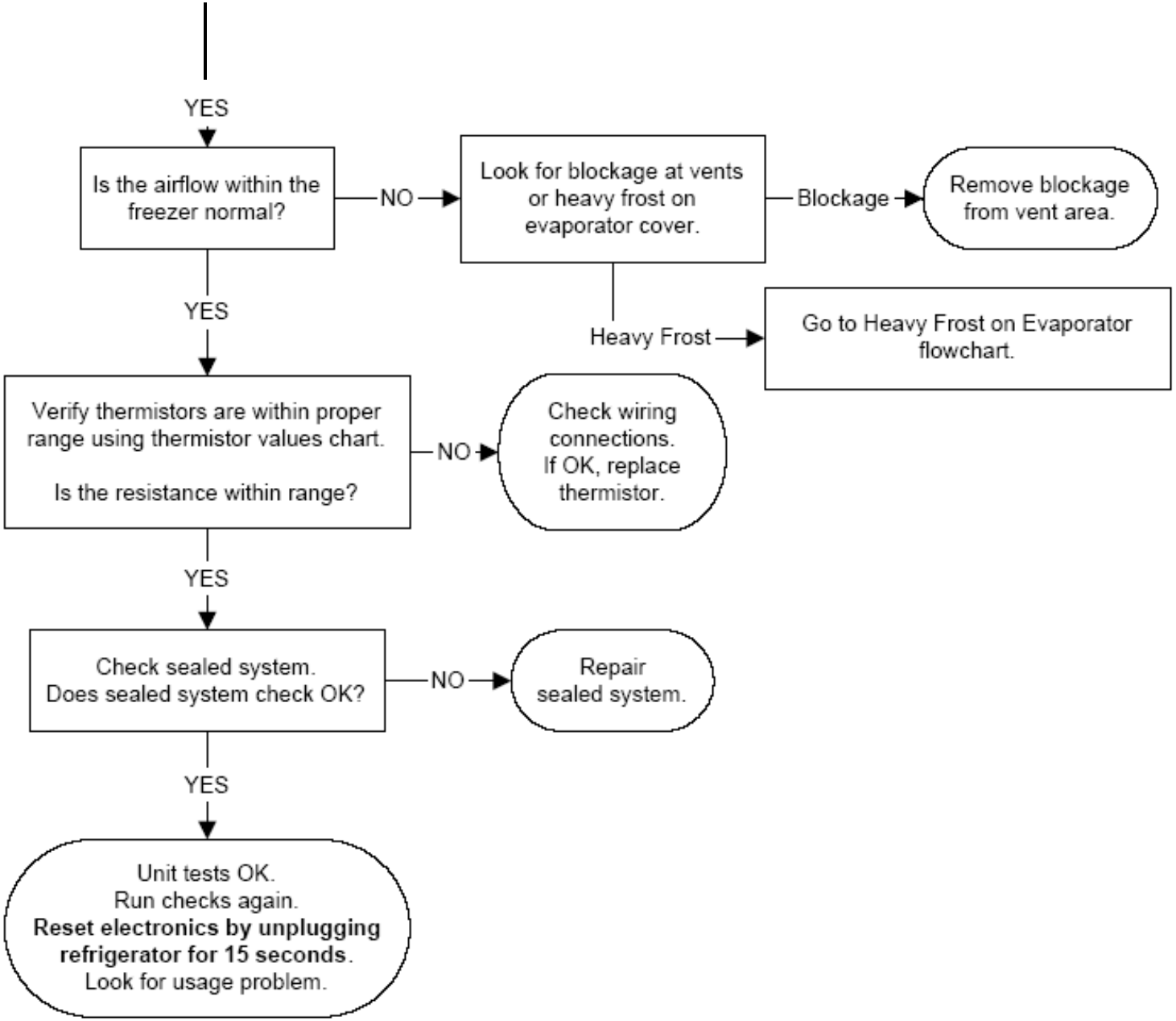
## Fresh Food Warm - Freezer Warm




YES
Is the compressor running?
NO
Go to
Compressor Not Running flowchart.
YES
Is the airflow within the freezer normal?
NO
Look for blockage at vents or heavy frost on evaporator cover.
Blockage
Remove blockage from evaporator cover vent area.
YES
Heavy frost
Go to Heavy Frost on Evaporator flowchart.
Verify thermistors are within proper range using thermistor values chart.
Is the resistance within range?
NO
Check wiring connections.
IF OK, replace thermistor.
YES
Check sealed system.
Does system check OK?
NO
Repair sealed system.
YES
Unit tests OK.
Run checks again.
Reset electronics by unplugging refrigerator for 15 seconds.
Look for usage problem.

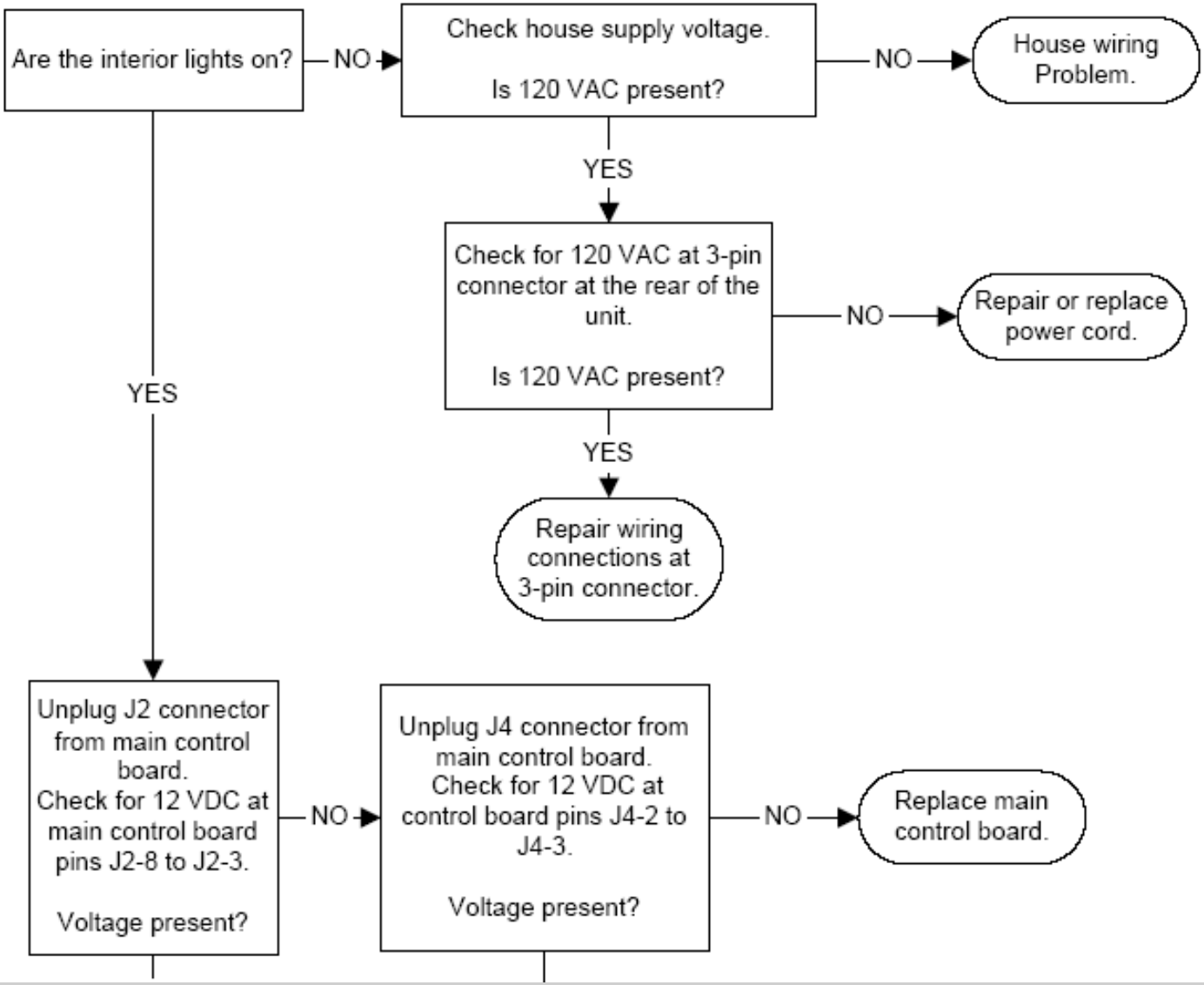
# Inverter Compressor

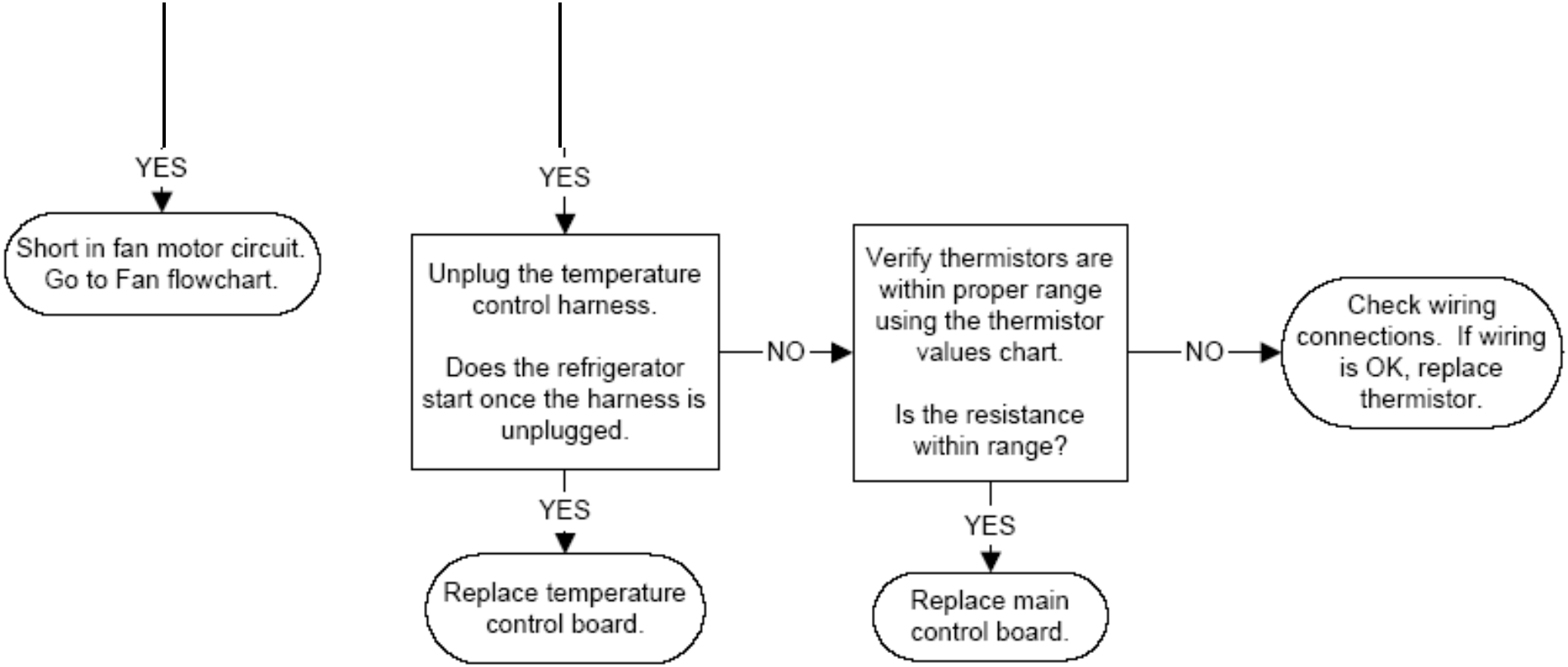




# Inverter Compressor

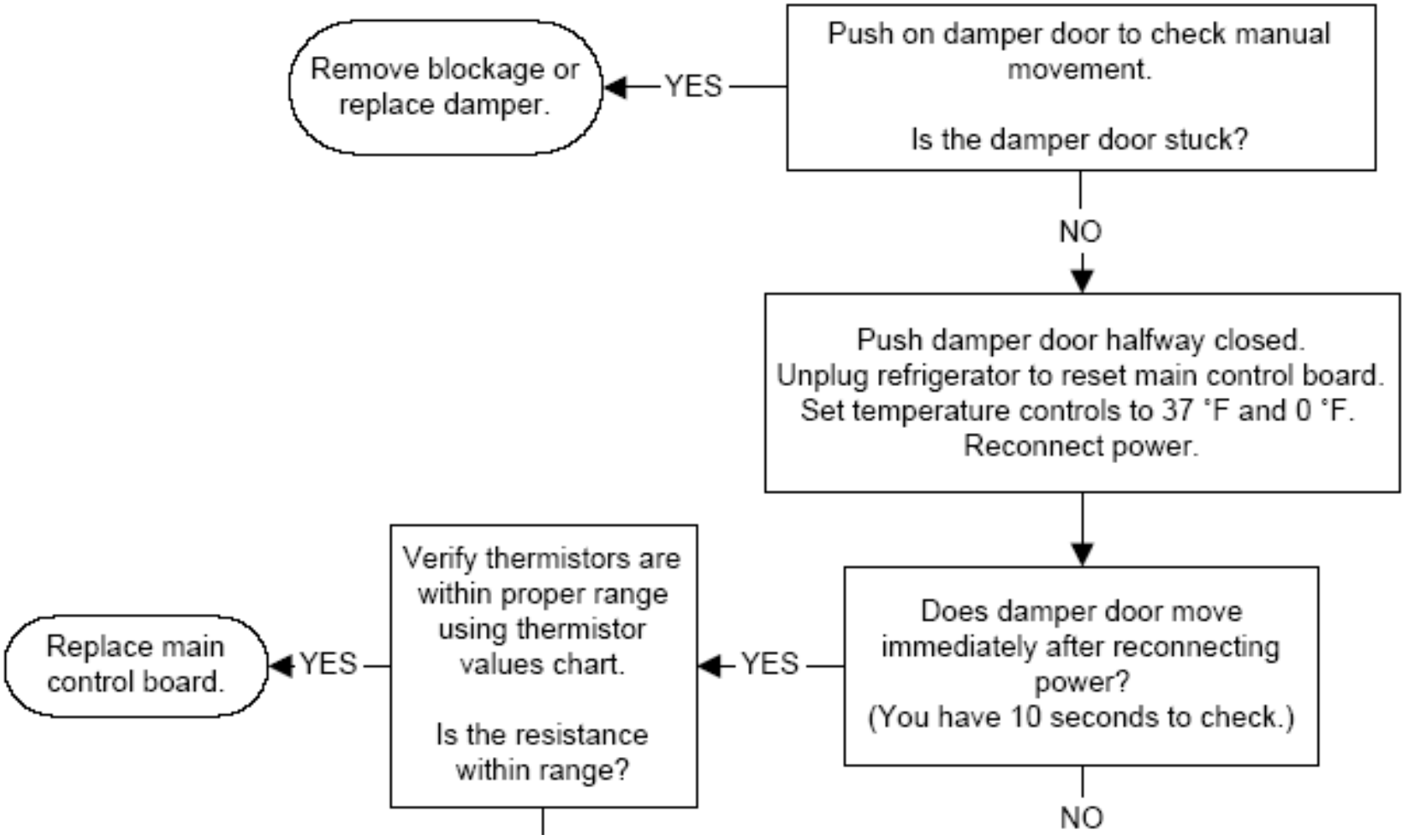
## Refrigerator Dead - No Sound, No Cooling

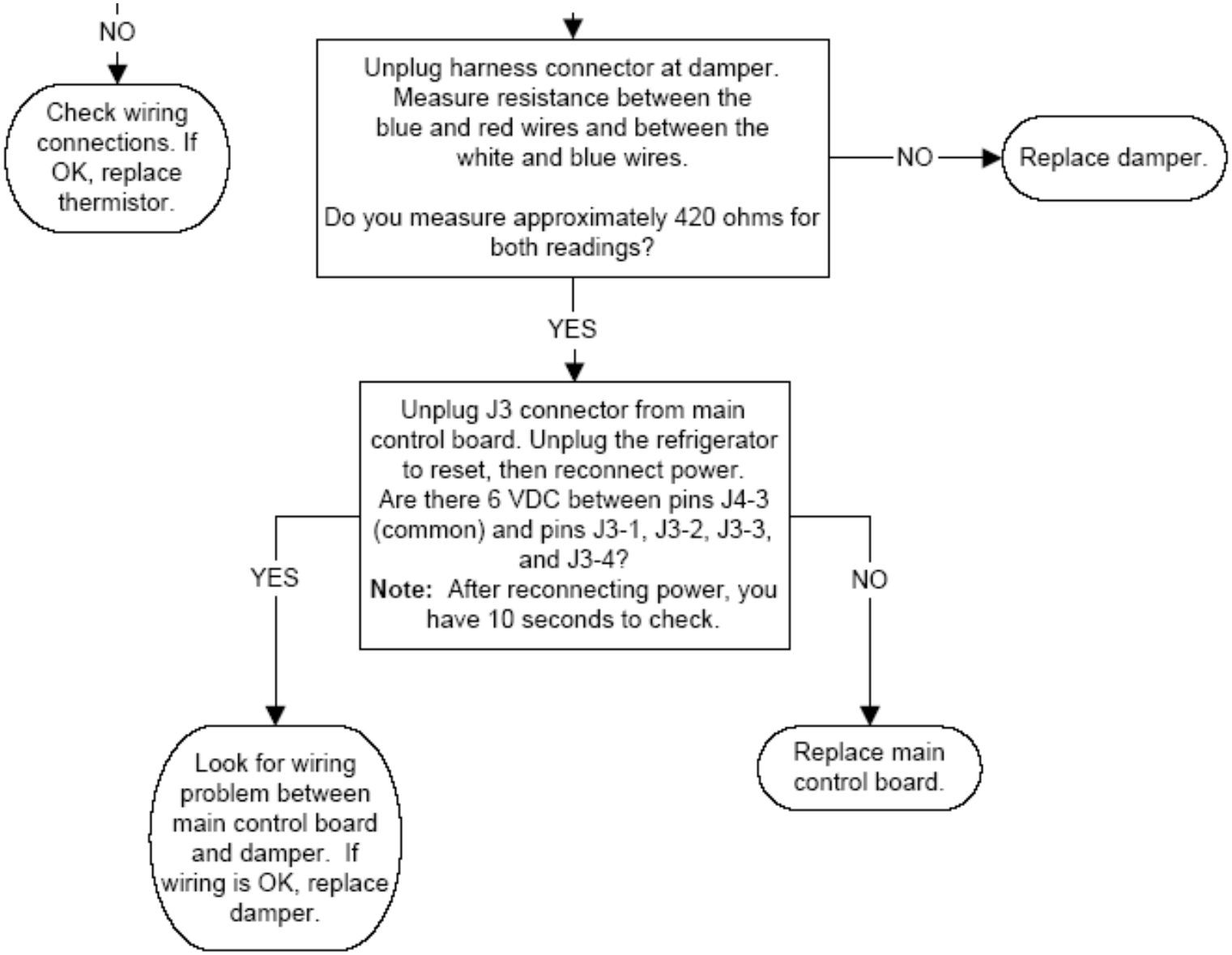




# Inverter Compressor

## Damper Not Operating

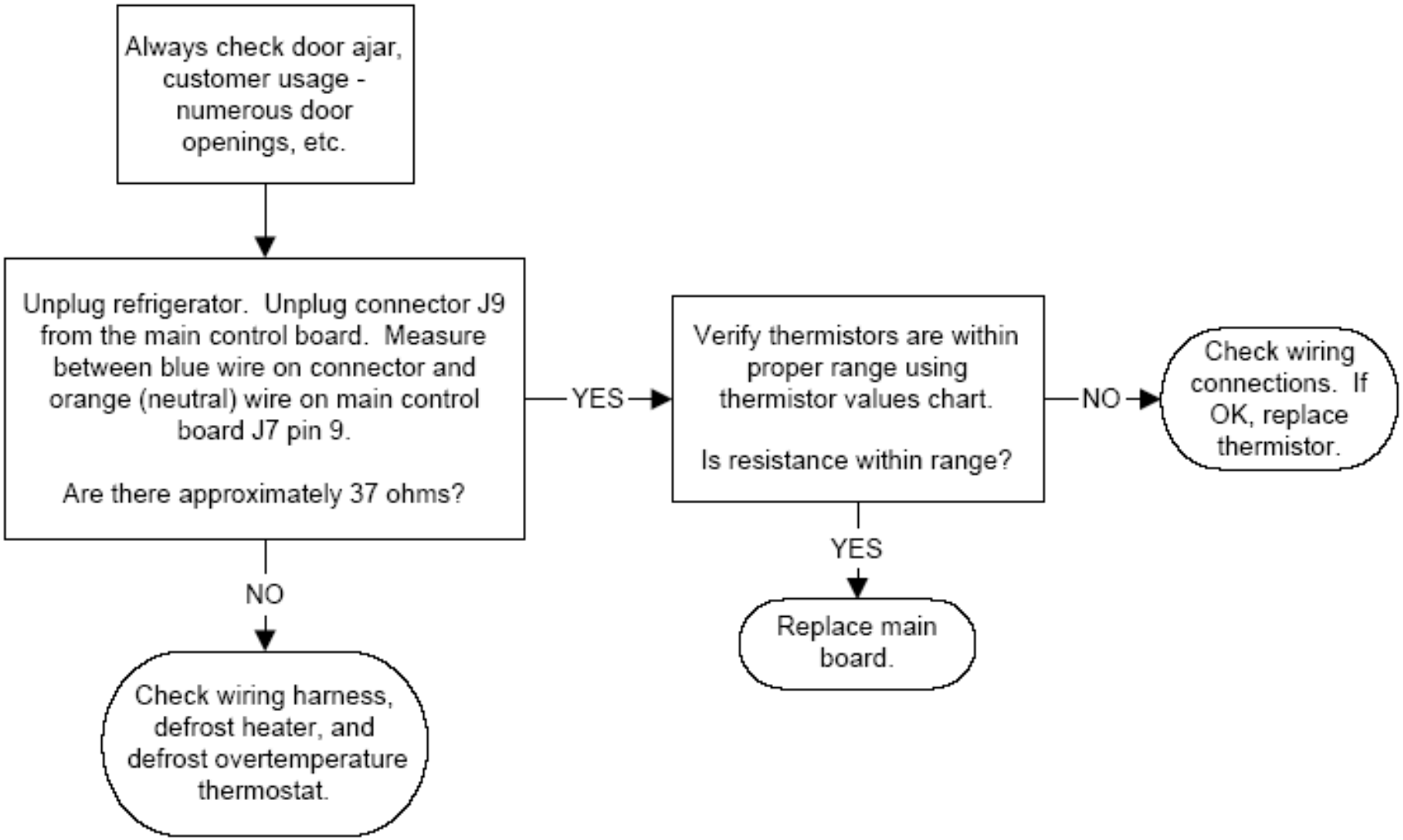





**Note:** The damper will cycle open and closed every 1/2 hour.

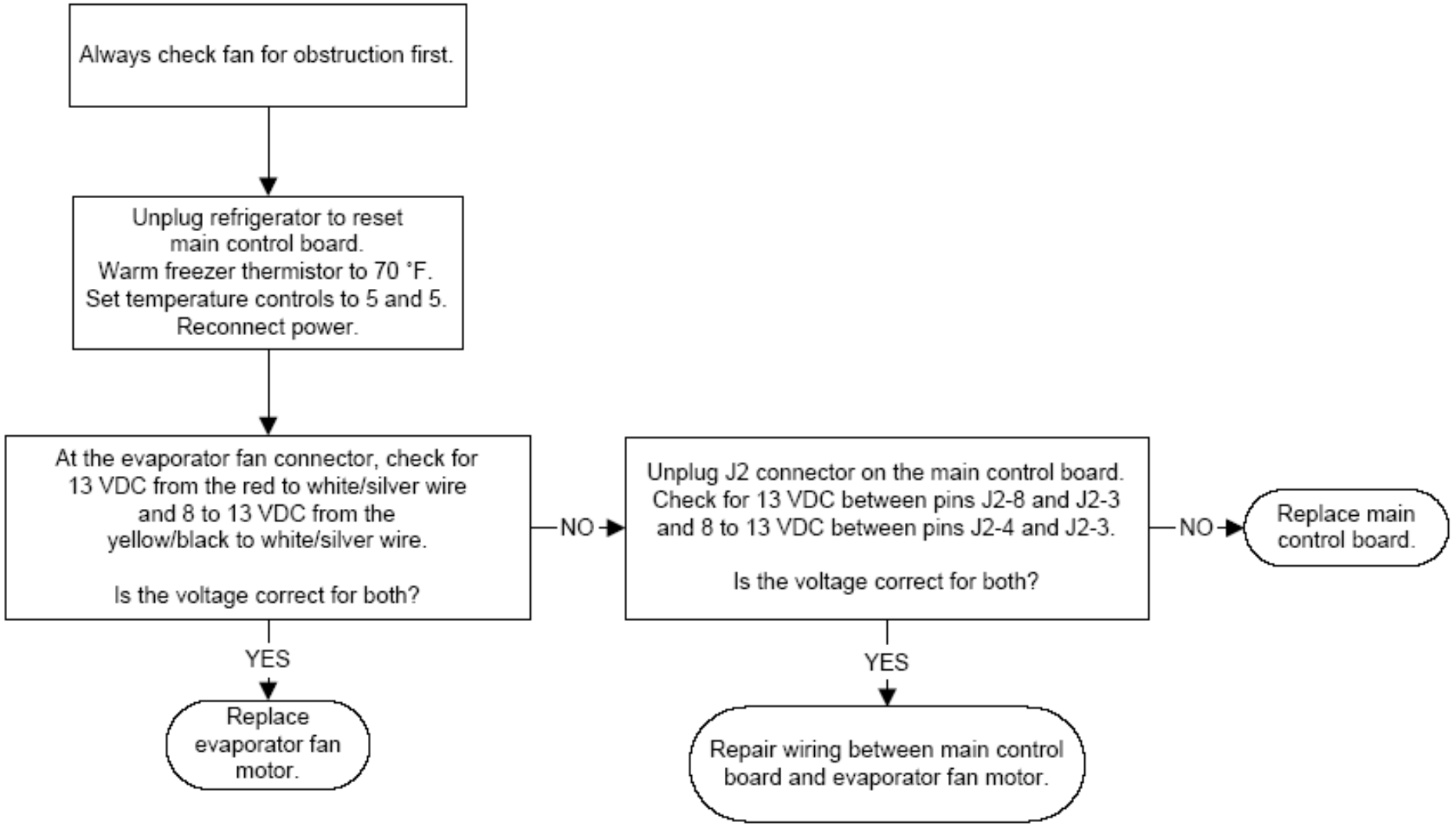
# Inverter Compressor

## Heavy Frost on Evaporator

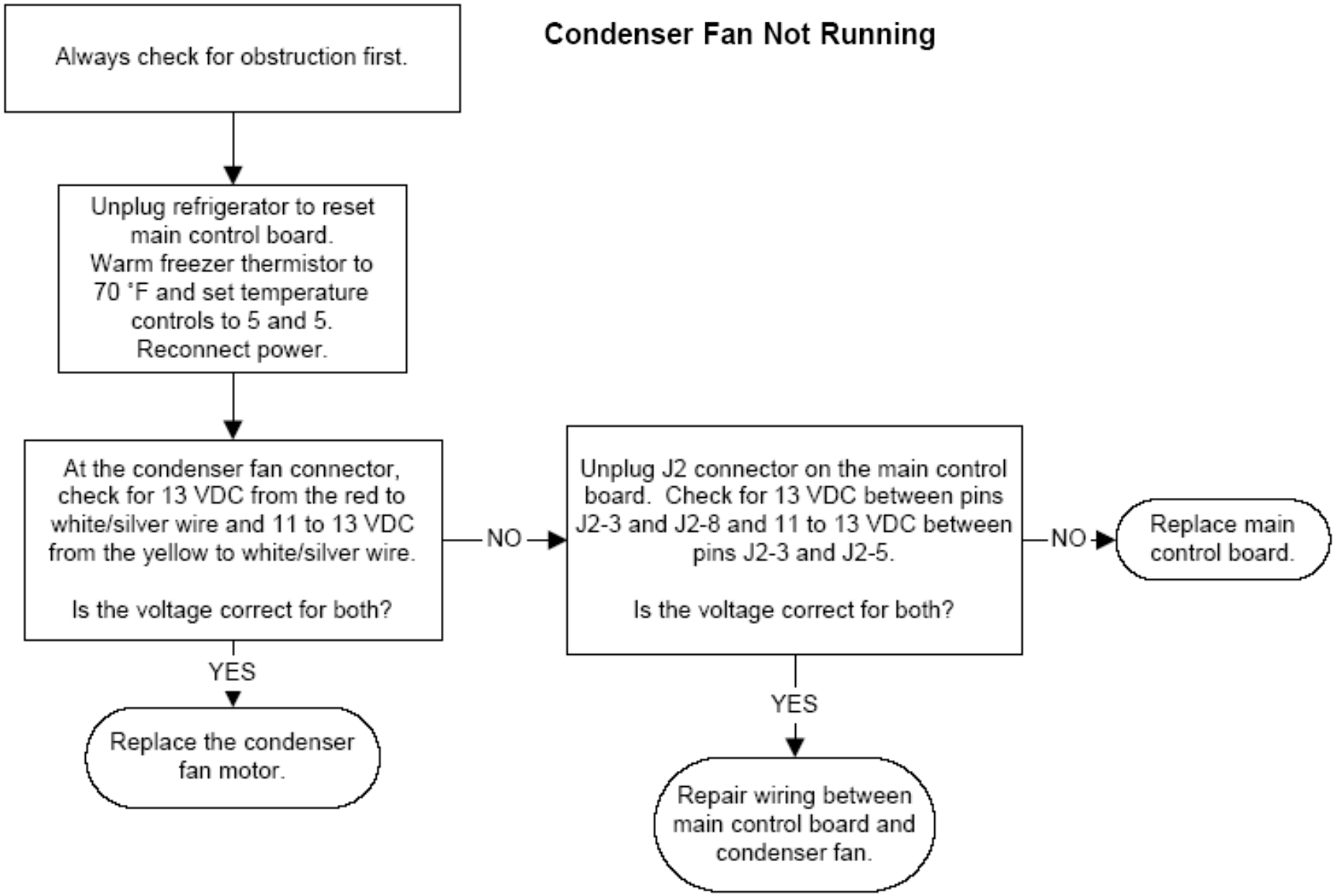


# Inverter Compressor

## Evaporator Fan Not Running



# Inverter Compressor



# ClimateKeeper

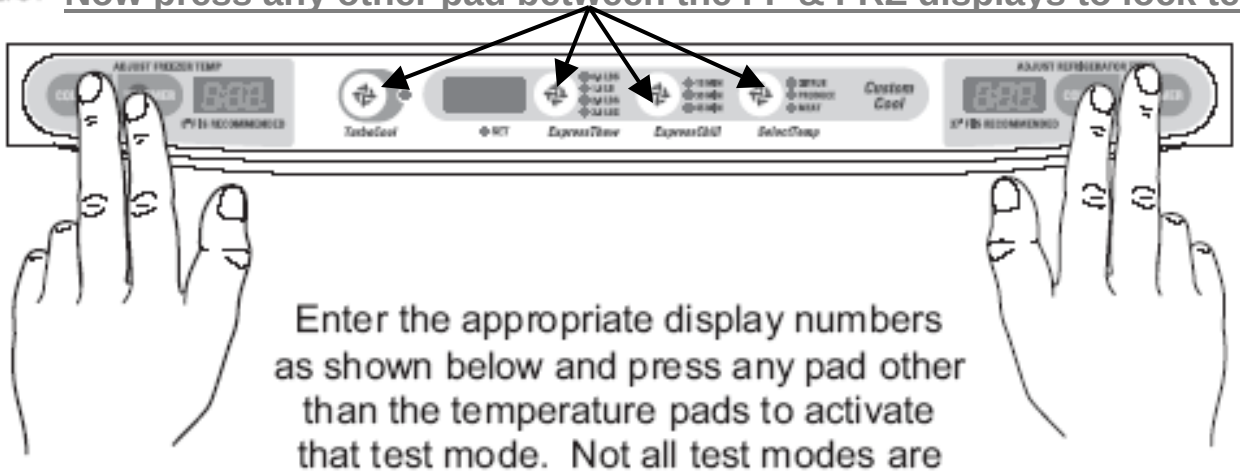
**PSH23PGR**
**PSH23PSR**
**PSH25PGR**
**PSH25PSR**
**PSH27PGR**
**PSH27PSR**
**PSH30PGR**
**PSH30PSR**

# Arctica SxS ClimateKeeper

## Control Diagnostics

**Make sure controls are set to either “37” & “0”**

Enter the diagnostic mode by pressing both the freezer temperature (COLDER and WARMER) pads and the refrigerator temperature (COLDER and WARMER) pads simultaneously. All four pads must be held for approximately 3 seconds. Blinking "0"s in both displays indicate the refrigerator has entered the test mode. **Now press any other pad between the FF & FRZ displays to lock test mode.**




Enter the appropriate display numbers as shown below and press any pad other than the temperature pads to activate that test mode. Not all test modes are available on all models.

**Note 1:** Display order is #1 = Fresh Food Evaporator Thermistor, #2 = Fresh Food Thermistor, #3 = Custom Cool Thermistor, #4 = Freezer Evaporator Thermistor, #5 = Freezer Thermistor.

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 above 70°F.

**Note 3:** To exit the Temperature Control LED Test, press both refrigerator temperature pads (COLDER and WARMER) simultaneously for 3 seconds.

# ClimateKeeper

| 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" if problem is found. | |
| 0 | 4 | Communication check between Dispenser Control and Main Control | "P" on freezer display if OK. "F" if problem is found. | |
| 0 | 6 | Temperature Control LED Test | All LEDs light. Pressing the corresponding pad turns off the LED. | **See Note 3.** |
| 0 | 7 | Control and Sensor System Test | Checks each thermistor and displays "P" for pass and "0" for fail. | **See Note 1.** |
| 0 | 8 | Duct Door Test | Opens the dispenser duct door for 10 seconds, then closes. | Test can be performed with door open. |

# ClimateKeeper

| Freezer Display | Fresh Food Display | Diagnostics | Results | Comments |
|---|---|---|---|---|
| 1 | 0 | Dampers Test | Double damper will open, close after 10 seconds, pause briefly, then single damper will open for 10 seconds. | Test will not start for 20 seconds after pad is depressed. |
| 1 | 1 | Fan Test | Cycles through each fan for 5 seconds. | |
| 1 | 2 | 100% Run Time | Sealed system on 100% of the time. Times out after 1 hour. | |
| 1 | 3 | Prechill Test | Starts Prechill mode. Unit returns to normal on its own. | |
| 1 | 4 | Defrost Test | Toggles on the defrost cycle. **See Note 2.** | Must press again to turn heaters off. See **Note 2.** |
| 1 | 5 | Main Control Reset | Causes a system reset. | |
| 1 | 6 | Exit Diagnostics Mode | Causes a temperature control board reset. | |

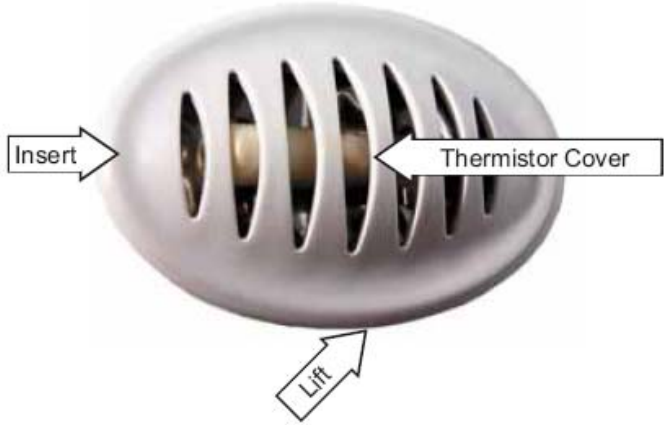
# ClimateKeeper

| Thermistor Resistance | | |
|---|---|---|
| Temperature (°F) | Temperature (°C) | Resistance in Kilo-Ohms |
| -40 | -40 | 166.8 kΩ |
| -31 | -35 | 120.5 kΩ |
| -22 | -30 | 88 kΩ |
| -13 | -25 | 65 kΩ |
| -4 | -20 | 48.4 kΩ |
| 5 | -15 | 36.4 kΩ |
| 14 | -10 | 27.6 kΩ |
| 23 | -5 | 21 kΩ |
| 32 | 0 | 16.3 kΩ |
| 41 | 5 | 12.7 kΩ |
| 50 | 10 | 10 kΩ |
| 59 | 15 | 7.8 kΩ |
| 68 | 20 | 6.2 kΩ |
| 77 | 25 | 5 kΩ |
| 86 | 30 | 4 kΩ |
| 95 | 35 | 3.2 kΩ |
| 104 | 40 | 2.6 kΩ |
| 113 | 45 | 2.2 kΩ |
| 122 | 50 | 1.8 kΩ |
| 131 | 55 | 1.5 kΩ |
| 140 | 60 | 1.2 kΩ |

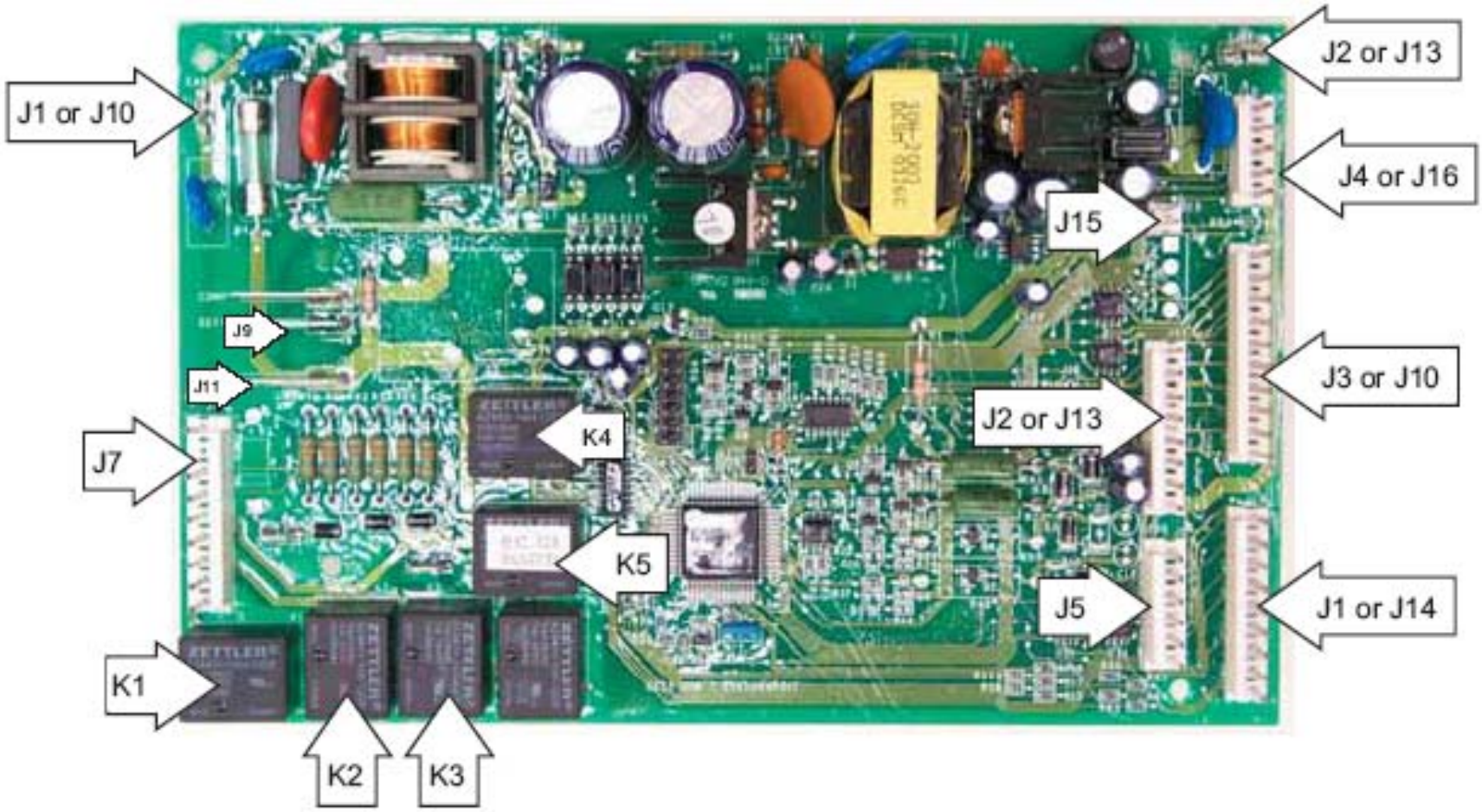
## Testing

The most accurate method of testing a thermistor is to place it in a glass of ice water for several minutes. The thermistor should read approximately **16KΩ** in the glass of 33°F ice water.

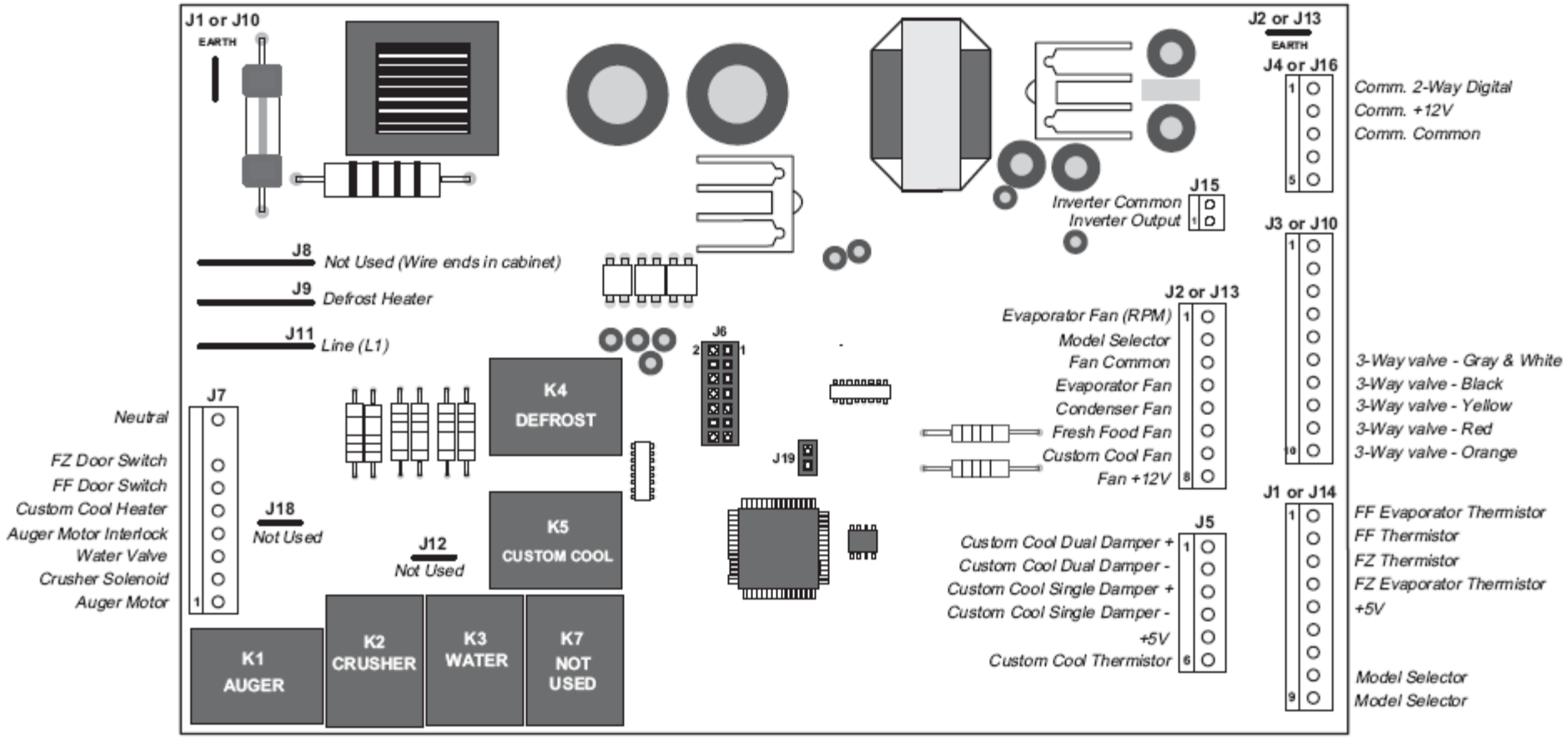
**Note:** Thermistors can also be checked for an open or shorted condition by using the diagnostic mode (see ***Service Diagnostics***).



# ClimateKeeper



# ClimateKeeper



# ClimateKeeper

The inverter receives commands from the main control board. The main control board will send a PWM run signal from the J15 connector of between 4-6 VDC effective voltage to the inverter (all wires must be connected). The inverter will select compressor speed (voltage output) based on this signal.

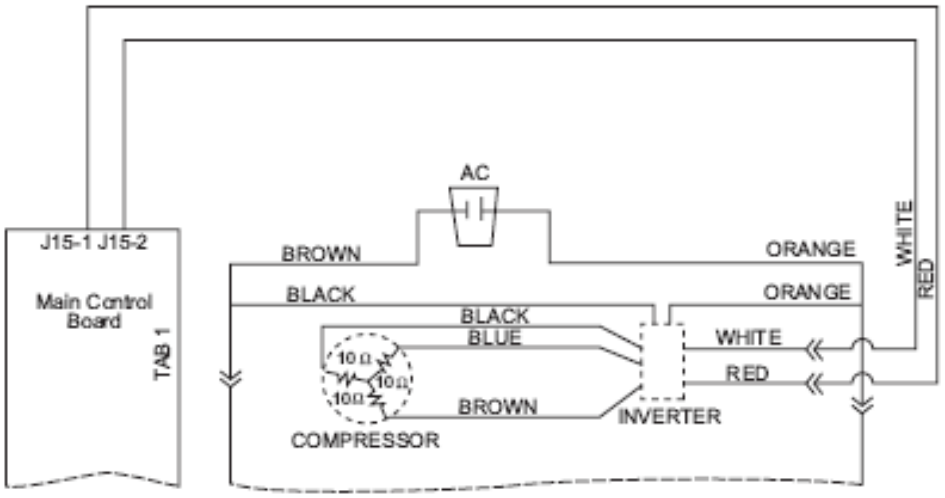
The main control board will only send a run signal to the inverter when the compressor should be on.

**Note:** When measuring signal voltage (from the main control board) at the inverter, a reading of 4-6 VDC will be measured with all wires connected. If the inverter wiring is disconnected, the board output will measure between 10-12 VDC.

## Inverter Compressor

**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.

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.



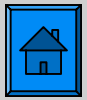

Compressor speed is based on the temperature set point in conjunction with the specific cabinet temperature. Speeds are selected according to the following cabinet temperatures, with freezer temperature being the primary:

- 7°F to 19.5°F above freezer set point = high speed.
- 4.5°F to 6.5°F above freezer set point = medium speed.
- 1°F to 4°F above freezer set point = low speed.
- 1°F to 2.5°F above refrigerator set point = low speed.
- 3°F to 5°F above refrigerator set point - medium speed.
- 5.5°F to°7 F above refrigerator set point - high speed.

# ClimateKeeper Inverter Test

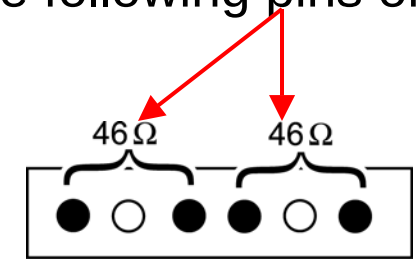
- Put Refrigerator into Diagnostic Mode.
- Set for the “1 – 2 Test” – Compressor Run Time.
- Pull Refrigerator away from the wall.
- Remove rear machine cover.
- Set meter to ACV.
- Place meter leads on Inverter wire connector (Black & Orange).
- Should read line voltage – if not check wires & repair, otherwise go to next step.
- Set meter to DCV.
- Place meter leads on Inverter wire connector (White & Red).
- Should read between 4VDC & 6VDC – if not go to next step, otherwise check compressor windings – any two terminals should read 10W & also check each terminal to case, replace compressor if any windings are defective – if not, replace Inverter.
- Remove cover from Main Control Board.
- Place meter leads on J15-1 & J15-2.
- Should read between 4VDC & 6VDC – if not replace Main Board.
- If correct DCV at J15-1 & J15-2, repair broken wire or reconnect loose plug/pin.

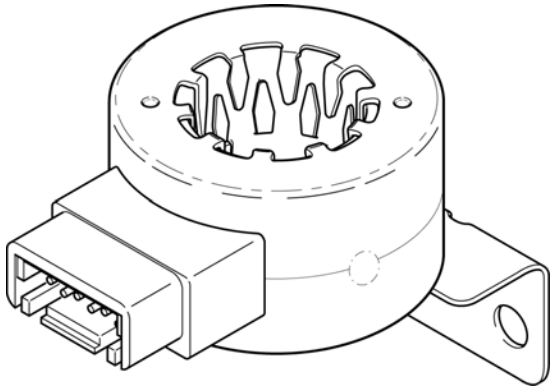


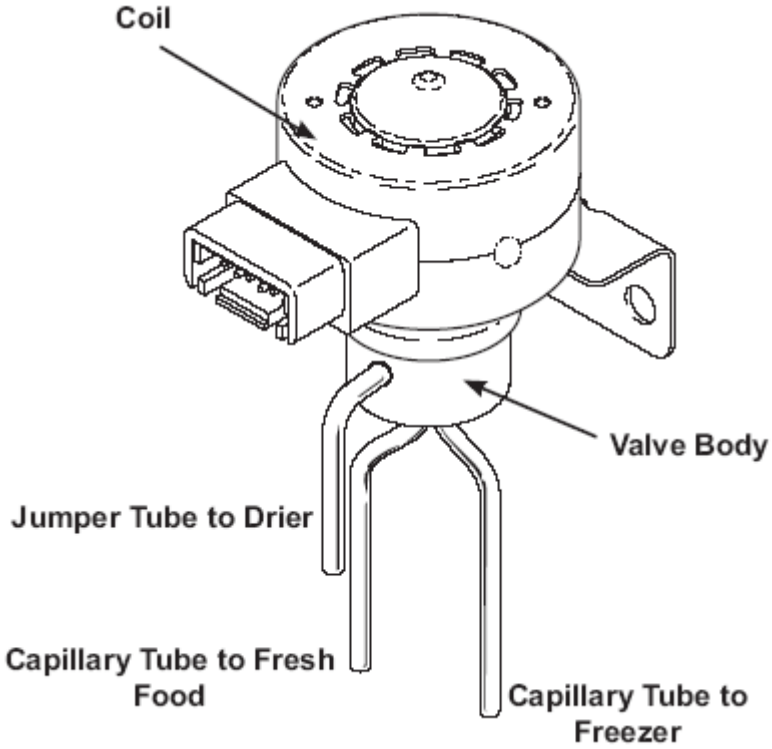



# 3-Way Valve Coil

- The valve coil receives 12 VDC pulses from the main board to change the position of the valve.
- These pulses come too quickly to measure with a volt meter.
- The coil does have a resistance value of approximately 46Ω.
- The resistance can be measured between the the following pins on the coil.

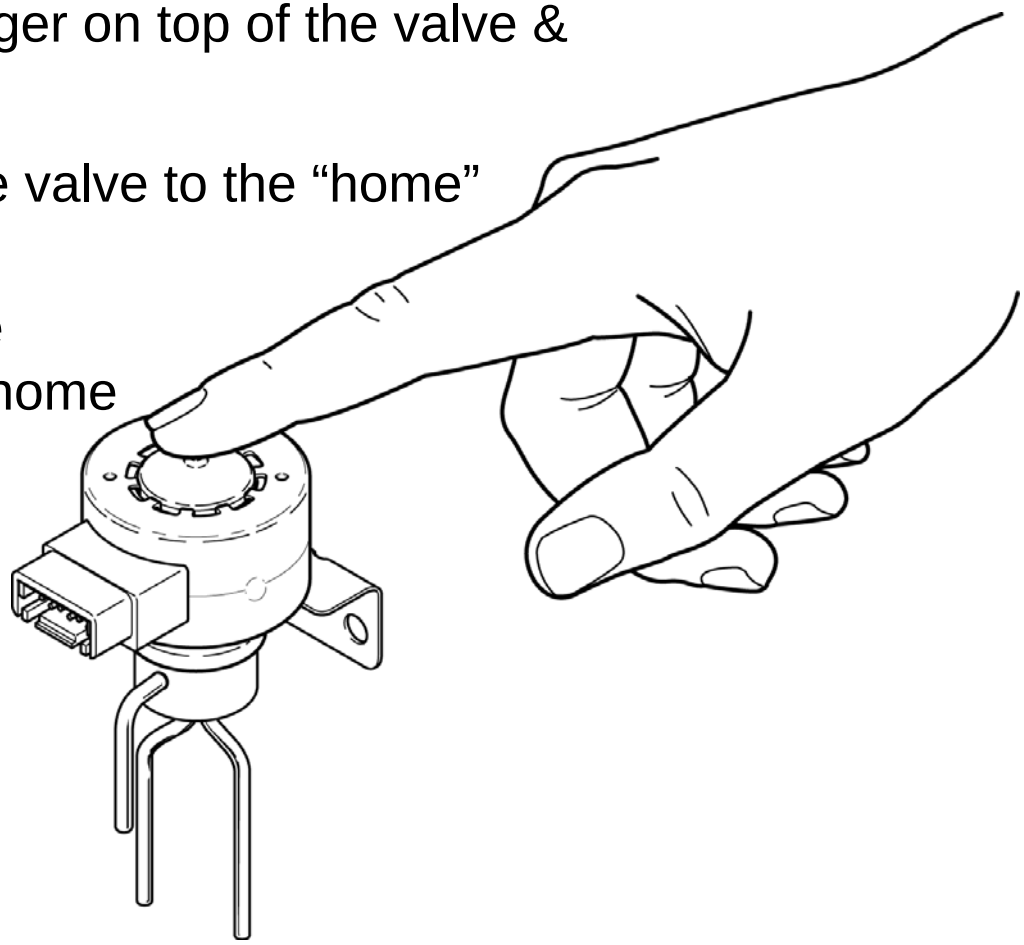


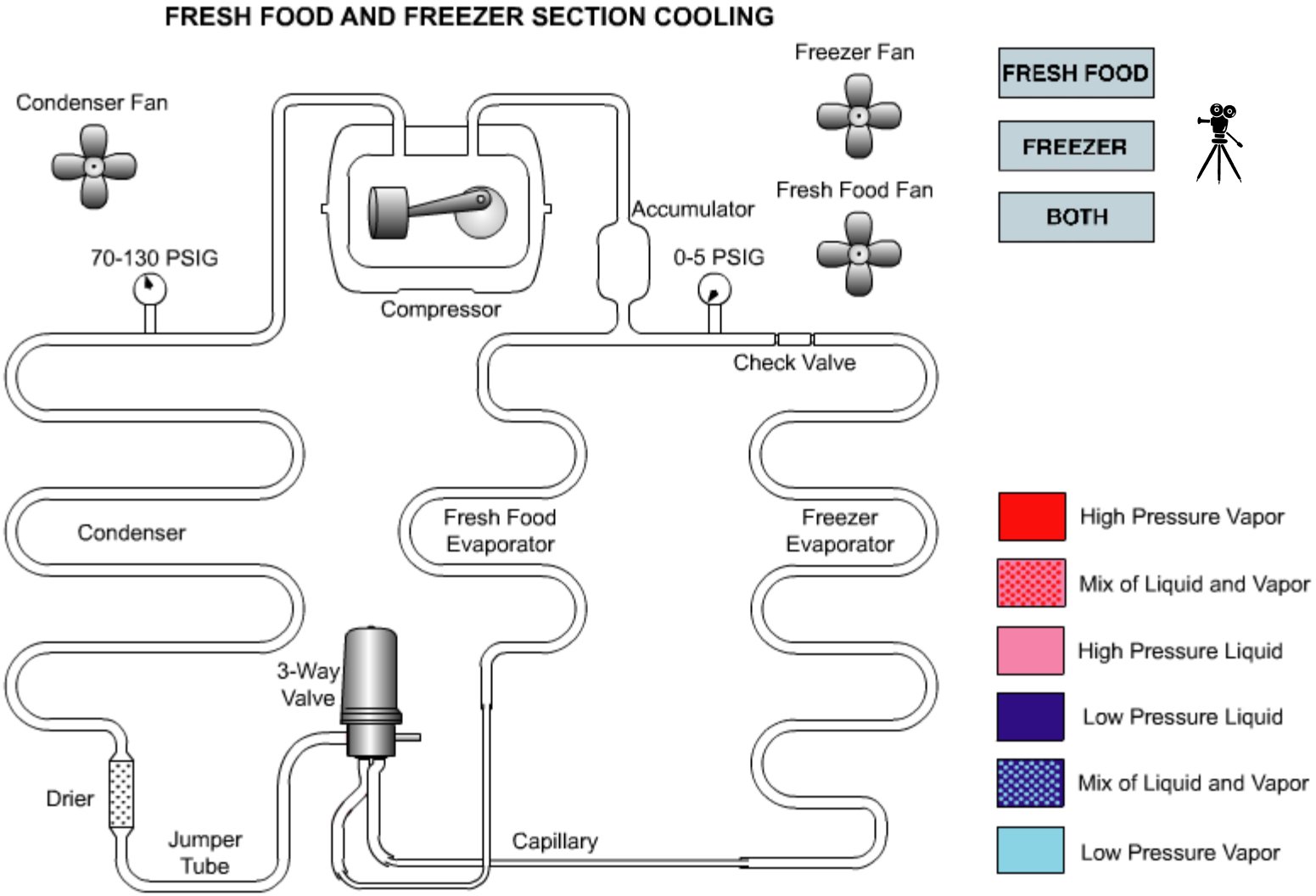


# Testing the 3-Way Valve

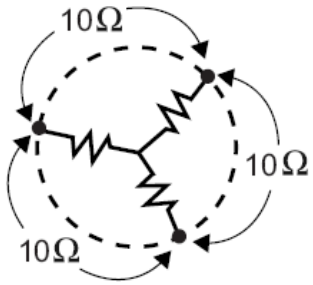
- The valve returns to “home” at the end of every freezer defrost cycle & whenever the refrigerator is reconnected to power.
- To test the valve, disconnect the refrigerator from power for at least 15 seconds, place a finger on top of the valve & reconnect power.
- The main control overdrives the valve to the “home” position.
- You should be able to “feel” the valve move as it returns to the home position.
- If movement is present, the main board and valve coil are operating correctly.



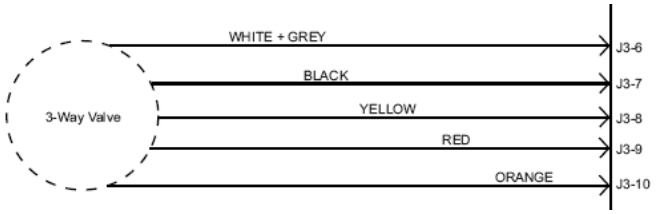
# Refrigerant Flow

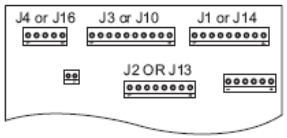


# ClimateKeeper

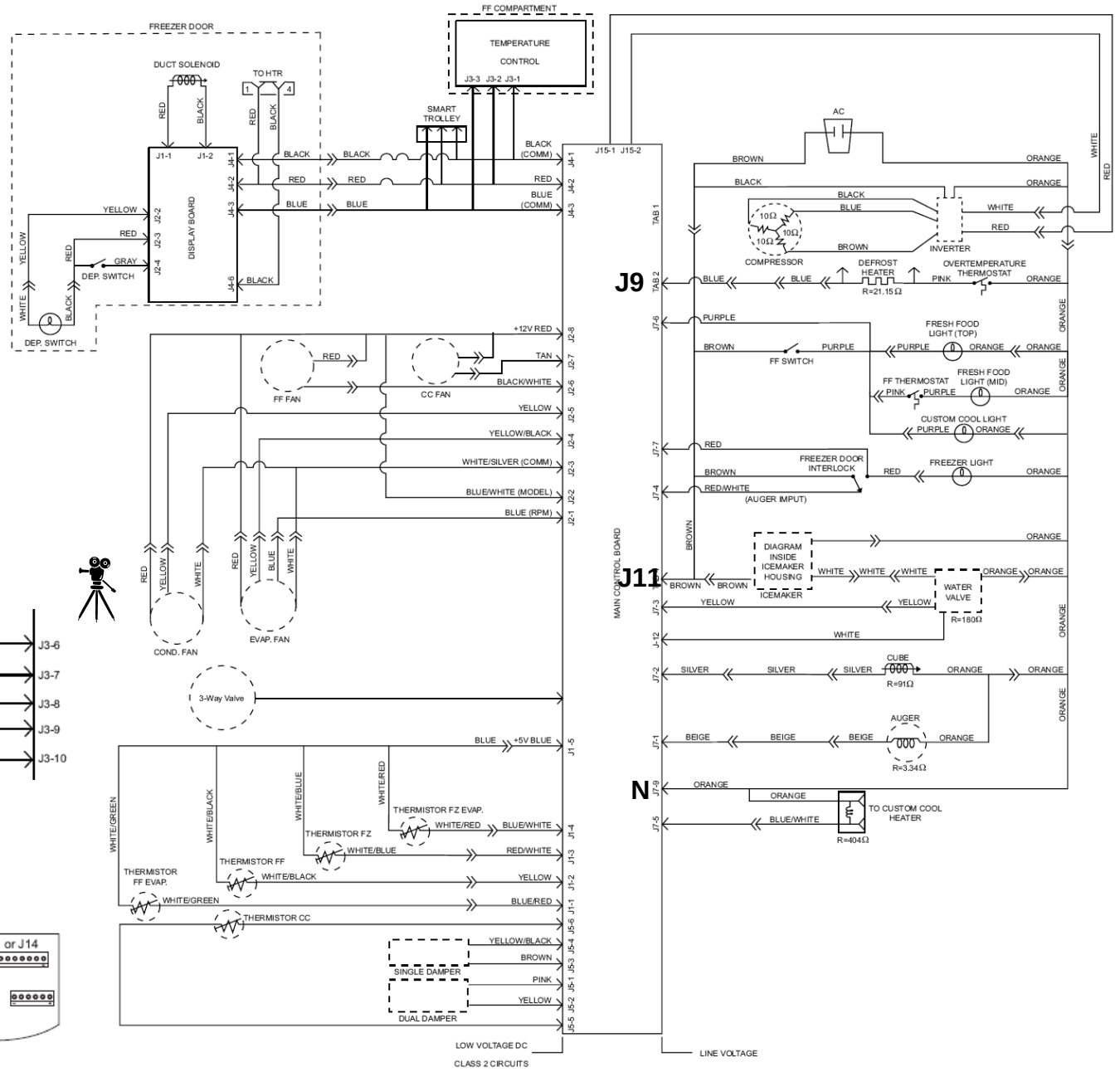



COMPRESSOR




Some of the low voltage DC connector labeling on this model may differ from other models. The function and diagnostics for these connectors are identical for all models.



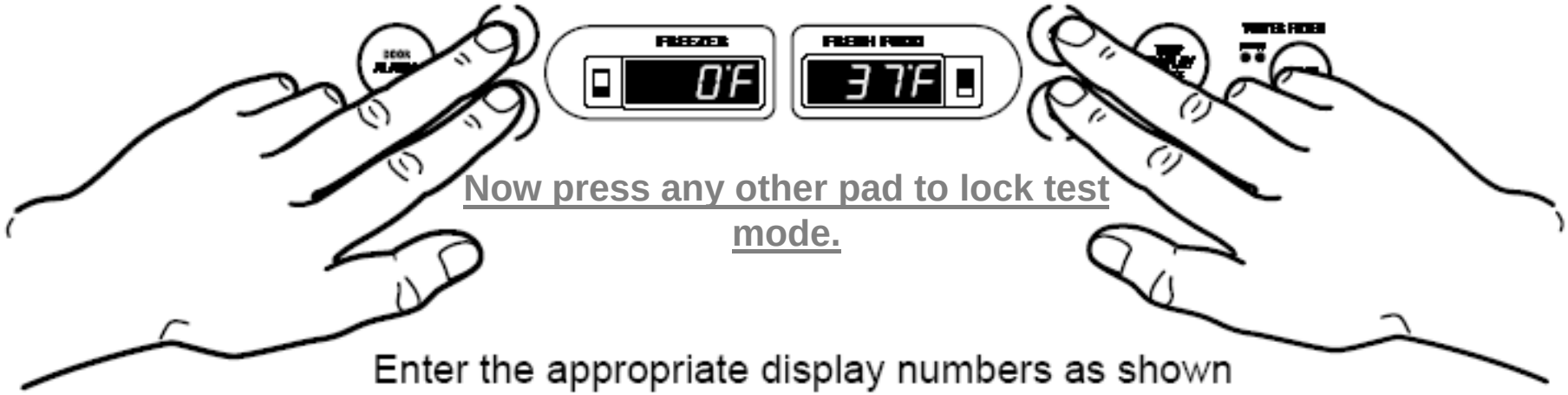
# Monogram SxS

**ZIS360NM**
**ZIS420NM**
**ZIS480NM**

# Monogram SxS

# Monogram SxS

**Make sure controls are set to either “37” & “0”**




**Now press any other pad to lock test mode.**

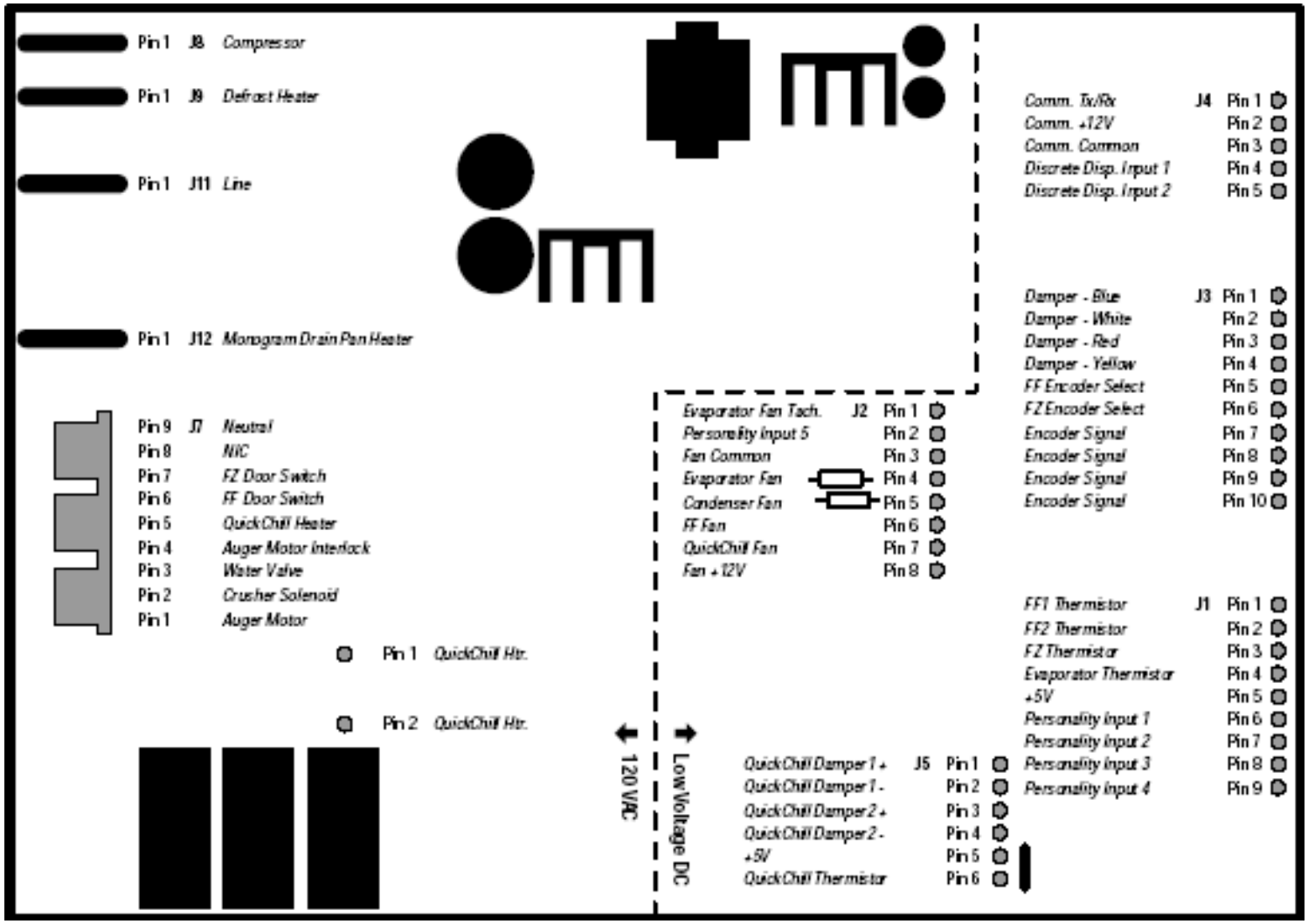
Enter the appropriate display numbers as shown below and press any pad other than the temperature pads to activate that test mode.

**Note 1:** Display order is: 1) Fresh Food 1, 2) Fresh Food 2, 3) Custom Cool, 4) Evaporator, 5) Freezer. 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 or overtemperature thermodisc is warm.

| Freezer Display | Fresh Food Display | Diagnostics | Results | Comments |
|---|---|---|---|---|
| 0 | 1 | Showroom Mode. | Unit in showroom mode. | FF door must be closed and reopened to start showroom mode. |
| 0 | 2 | Communication check between temperature control and main control board. | "P" on FZ display if OK.<br>"F" on FZ display means problem is found. | |
| 0 | 3 | Communication check between temperature control and dispenser. | "P" on FZ display if OK.<br>"F" on FZ display means problem is found. | |
| 0 | 4 | Communication check between dispenser and main control board. | "P" on FZ display if OK.<br>"F" on FZ display means problem is found. | |
| 0 | 6 | HMI (temperature control) Self Test. | All LED's and numeric segments will illuminate. | When "Express Thaw" pad is pressed "Express Thaw" LED's will turn off. When "Express Chill" pad is pressed "Express Chill" LED's will turn off. |
| 0 | 7 | Control and Sensor System Self Test. | Checks each thermistor and displays "P" for pass and "0" for fail. | See note 1 below. |
| 0 | 8 | Open Duct Door. | Duct door opens for 10 seconds then closes. | |
| 0 | 9 | Dispenser Recess Heater Test. | Turns the dispenser recess heater on for 60 seconds. | |
| 1 | 0 | Dampers Test. | Each damper will open, pause breifly, then close. | |
| 1 | 2 | 100% Run Time. | Sealed system on 100% of the time. Times out after 1 hour. | Cannot be entered if refrigerator is set to off. |
| 1 | 3 | Pre-chill Test. | Starts pre-chill mode. Unit returns to normal on its own. | Cannot be entered if refrigerator is set to off. |
| 1 | 4 | Defrost Test. | Toggles the defrost cycle. See note 2 below. | Must press again to turn heaters off. Cannot be entered if refrigerator is set to 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. | |
| 1 | 7 | Degree C/F. | Changes temperature display from F to C. | |

# Monogram SxS



# Monogram SxS

| 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 |
| 7 | Black | QuickChill fan | Common | J2 pin 8 to pin 7 = 12 VDC |
| 8 | Red | Fan supply voltage (12 VDC) | Output | J2 pin 8 to pin 3 = 12 VDC |

# Monogram SxS

| 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 main control board, temperature control (board), dispenser board, and QuickChill board. |
| 2 | Brown | Temperature control | VDC | 12-VDC supply. |
| 3 | Orange | Temperature control | VDC | DC common. |

# Monogram SxS

| Main Control Board<br>J5 Connector (Low-Voltage DC Side) | | | | |
|---|---|---|---|---|
| Pin | Wire Color | Component Termination | Input/ Output | Pin-to-Pin Voltage Reading |
| 1 | Yellow | QuickChill (Custom Cool) Damper | Input/ Output | J5 pin 1 to pin 2 = 12 VDC (reversing polarity) |
| 2 | Gray | QuickChill (Custom Cool) Damper | Input/ Output | J5 pin 2 to pin 1 = 12 VDC (reversing polarity) |
| 5 | Brown | Supply Voltage (5 VDC) | Output | J5 pin 10 to J2 pin 3 = 5 VDC |
| 6 | Blue | QuickChill (Custom Cool) Thermistor | Input | N/A |

# Monogram SxS

| Main Control Board<br>J7 Connector (120 VAC Side) | | | | |
|---|---|---|---|---|
| **Pin** | **Wire Color** | **Component Termination** | **Input/ Output** | **Pin-to-Pin Voltage Reading** |
| 1 | Black | Auger motor | Output | J7 pin 1 to J7 pin 9 = 120 VAC |
| 2 | Purple | Crusher solenoid | Output | J7 pin 2 to J7 pin 9 = 120 VAC |
| 3 | Blue | Water valve | Output | J7 pin 3 to J7 pin 9 = 120 VAC |
| 4 | Red | Freezer door switch | Input | J7 pin 4 to J7 pin 9 = 120 VAC (FZ door closed) |
| 5 | Violet | QuickChill Heater | Output | J7 pin 5 to J7 pin 9 = 120 VAC |
| 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 |
| J12 | Black | Output | J12 to J7 pin 9 = 120 VAC |

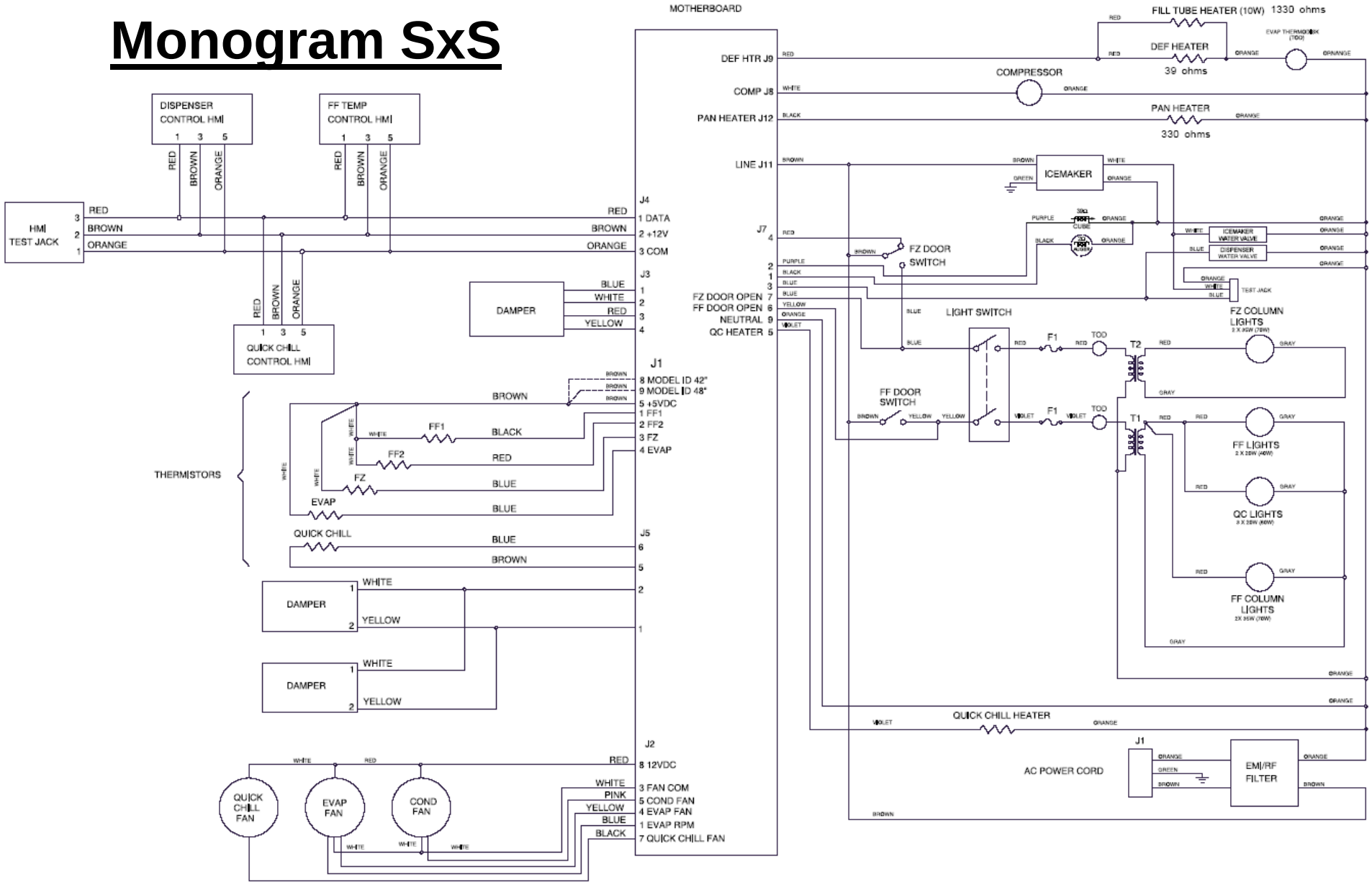
| Thermistor Values | | |
|---|---|---|
| Temperature Degrees (C) | Temperature Degrees (F) | Resistance in Kilo-ohms |
| -40 | -40 | 166.8 kΩ |
| -30 | -22 | 88 kΩ |
| -20 | -4 | 48.4 kΩ |
| -10 | 14 | 27.6 kΩ |
| 0 | 32 | 16.3 kΩ |
| 10 | 50 | 10 kΩ |
| 20 | 68 | 6.2 kΩ |
| 30 | 86 | 4 kΩ |
| 40 |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

## Testing

The most accurate method of testing a thermistor is to place it in a glass of ice water for several minutes. The thermistor should read approximately **16KΩ** in the glass of 33°F ice water.

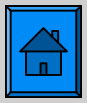
**Note:** Thermistors can also be checked for an open or shorted condition by using the diagnostic mode (see ***Service Diagnostics***).

# Monogram SxS



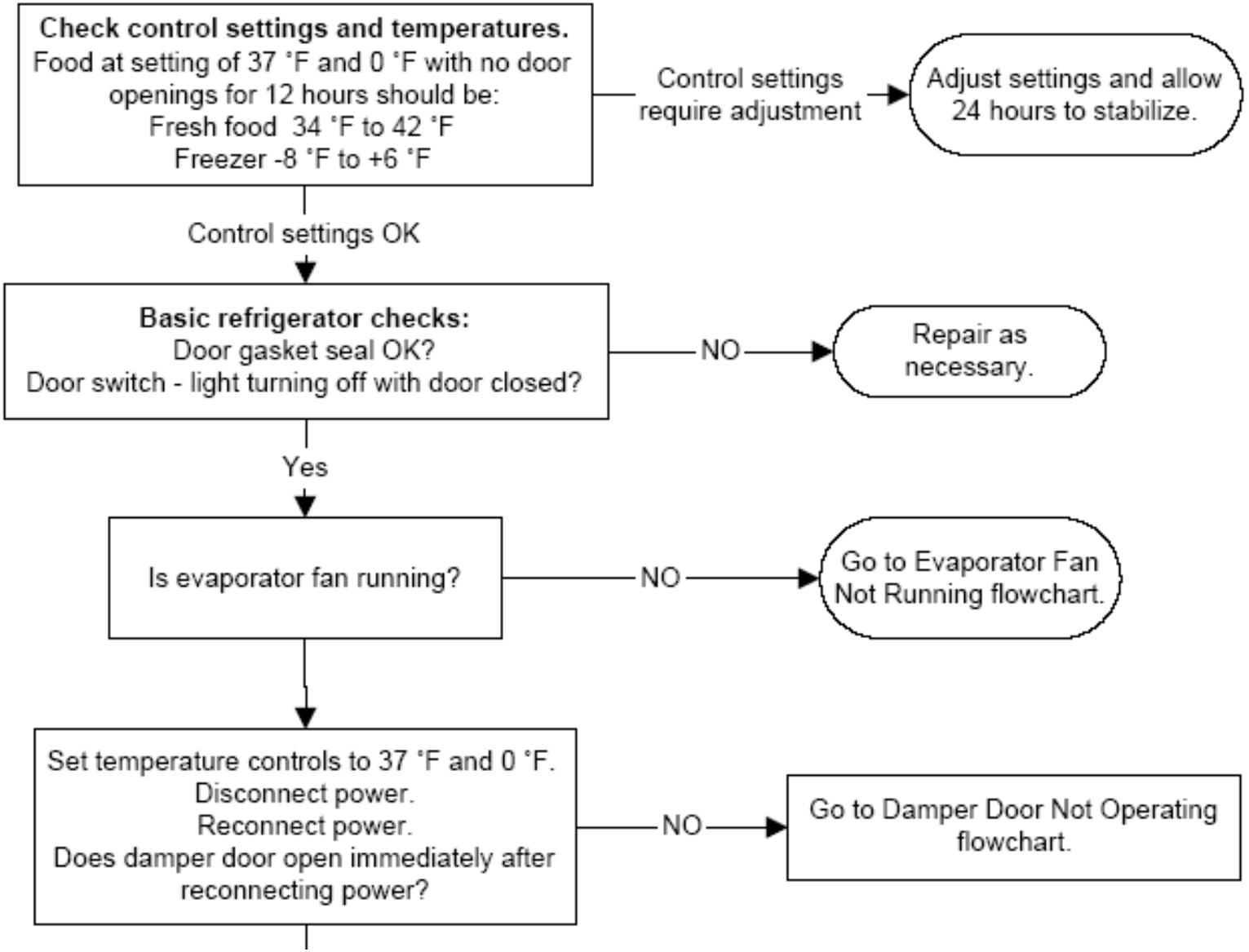


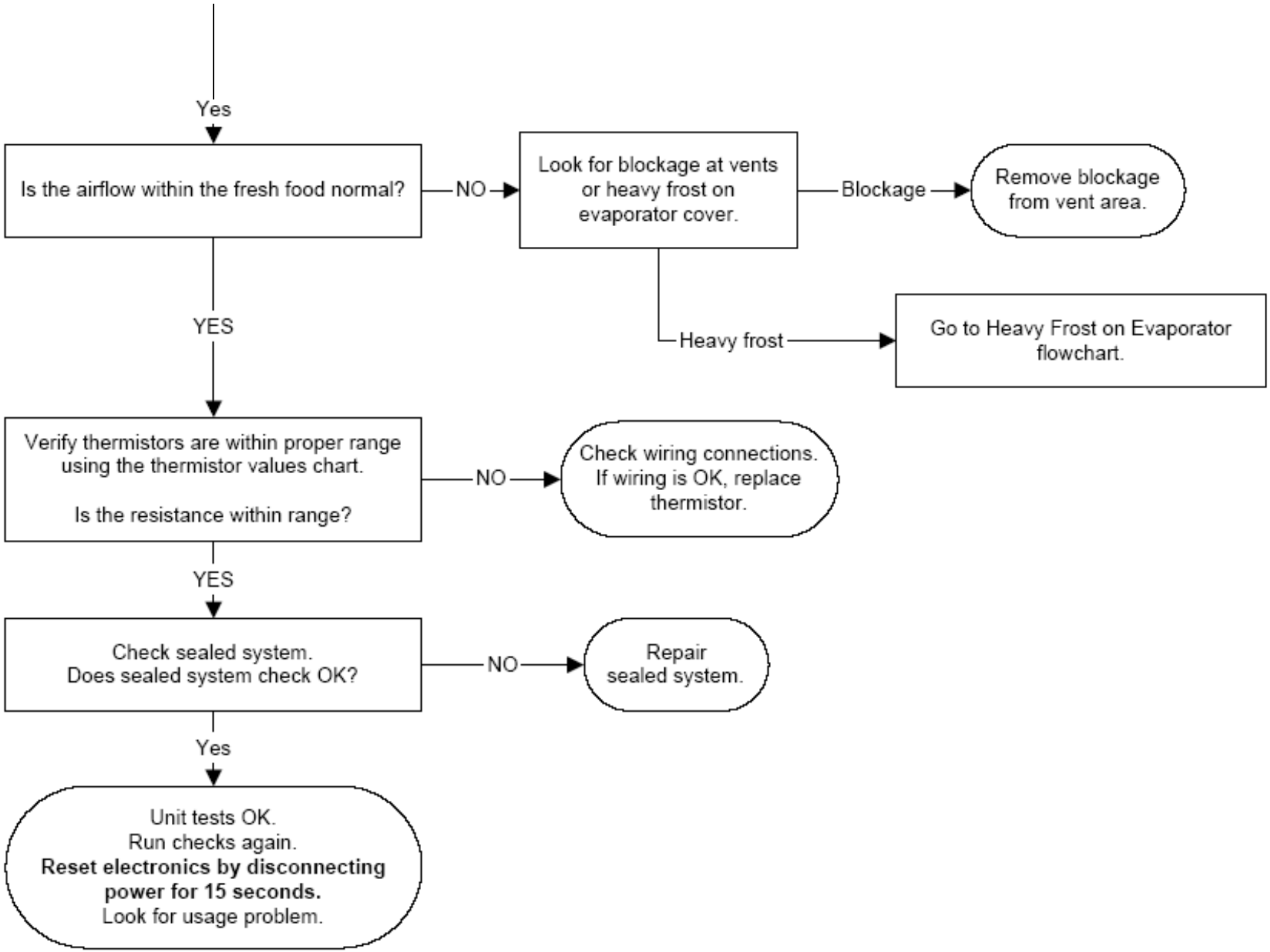


# Monogram SxS

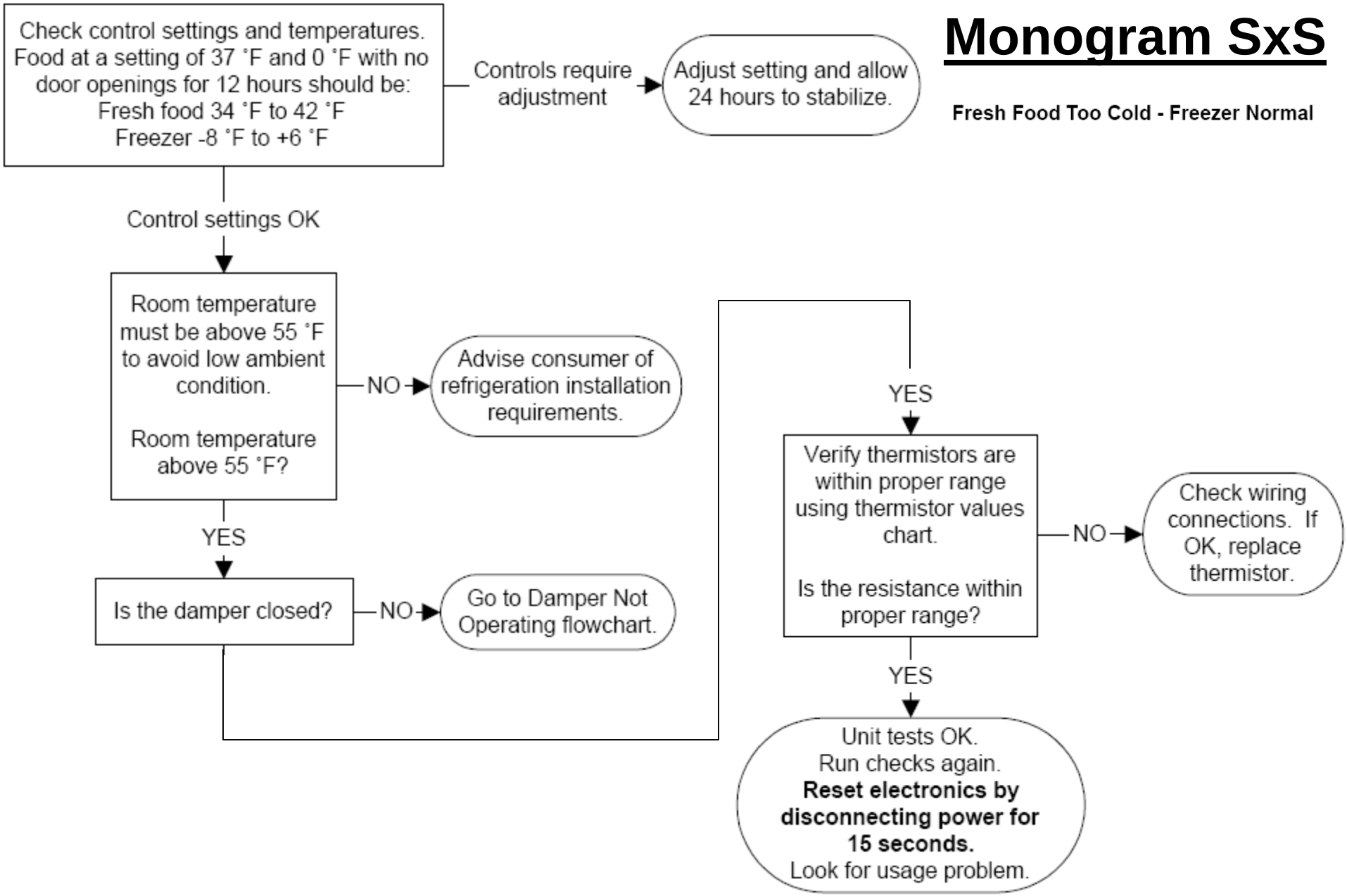
## Fresh Food Warm - Freezer Normal





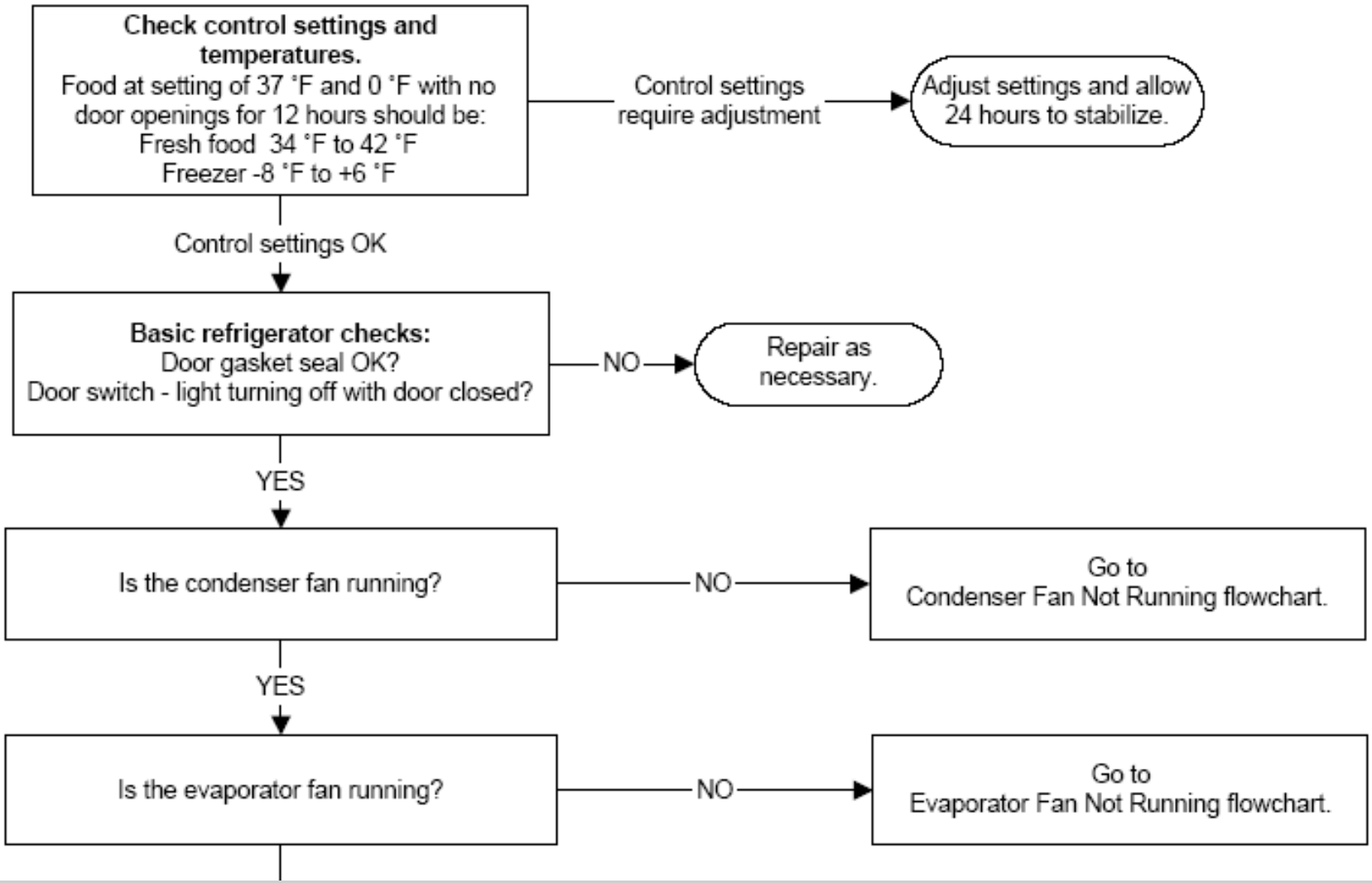
# Monogram SxS

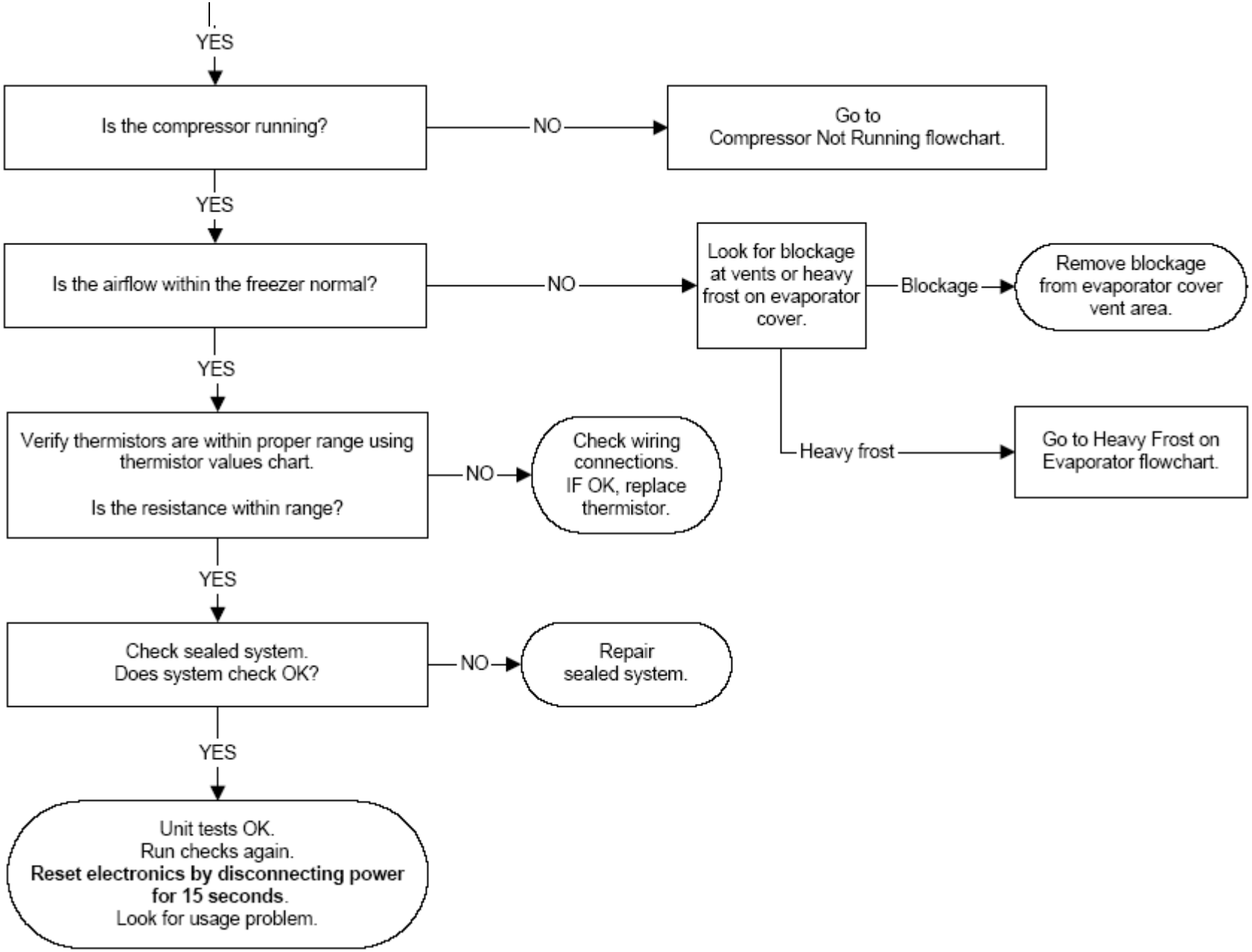
**Fresh Food Too Cold - Freezer Normal**



# Monogram SxS

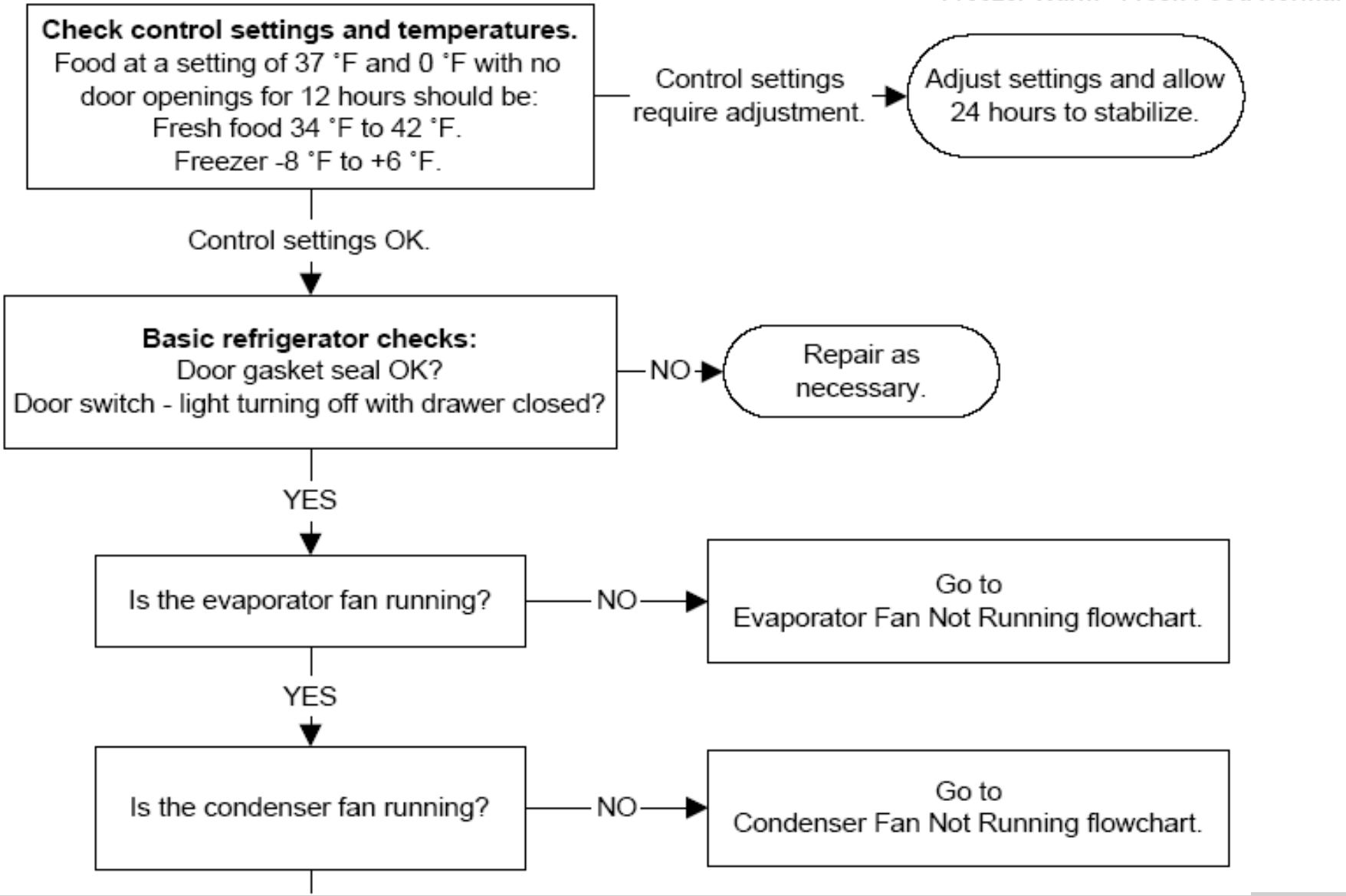
## Fresh Food Warm - Freezer Warm

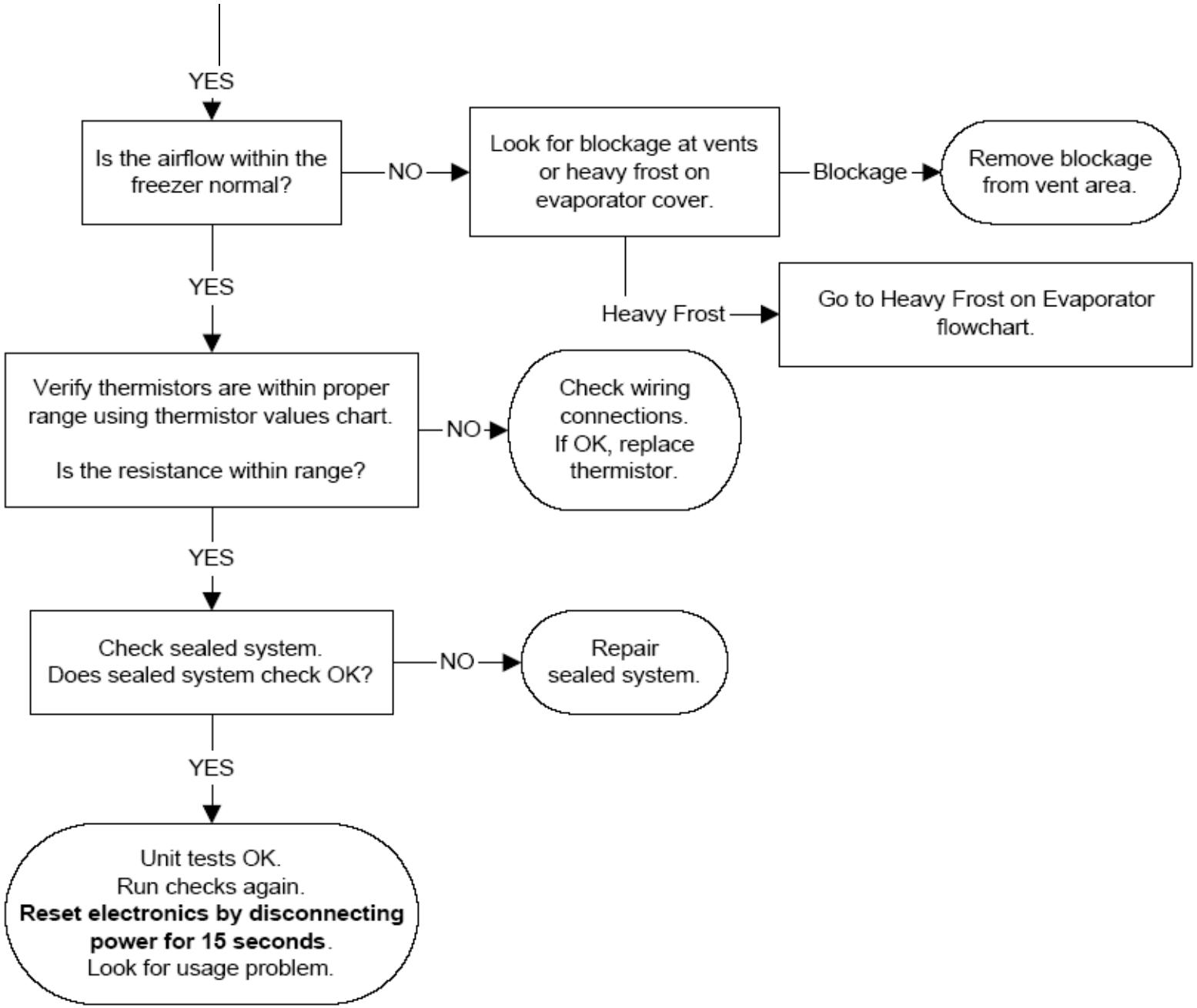




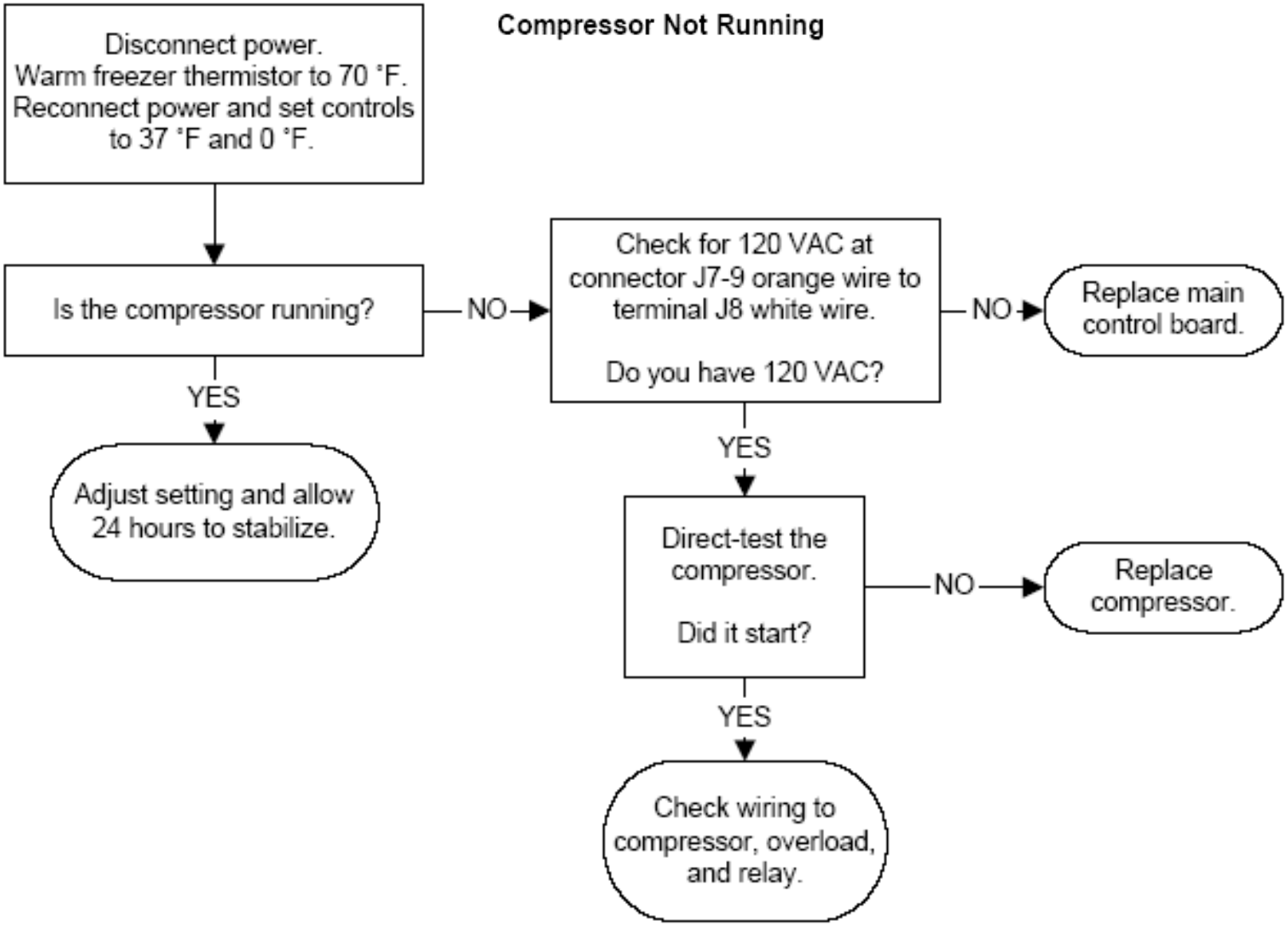
# Monogram SxS

**Freezer Warm - Fresh Food Normal**



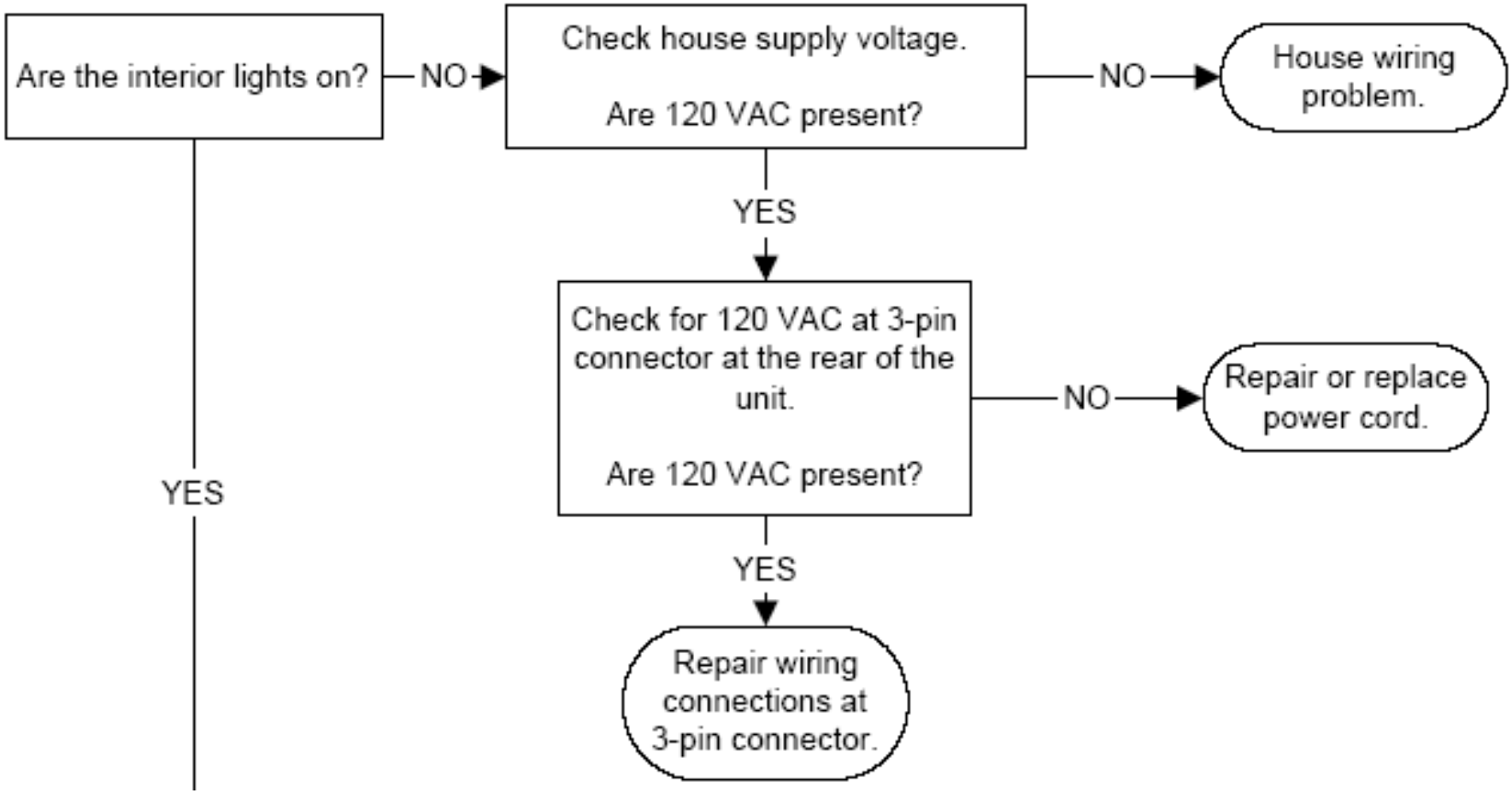


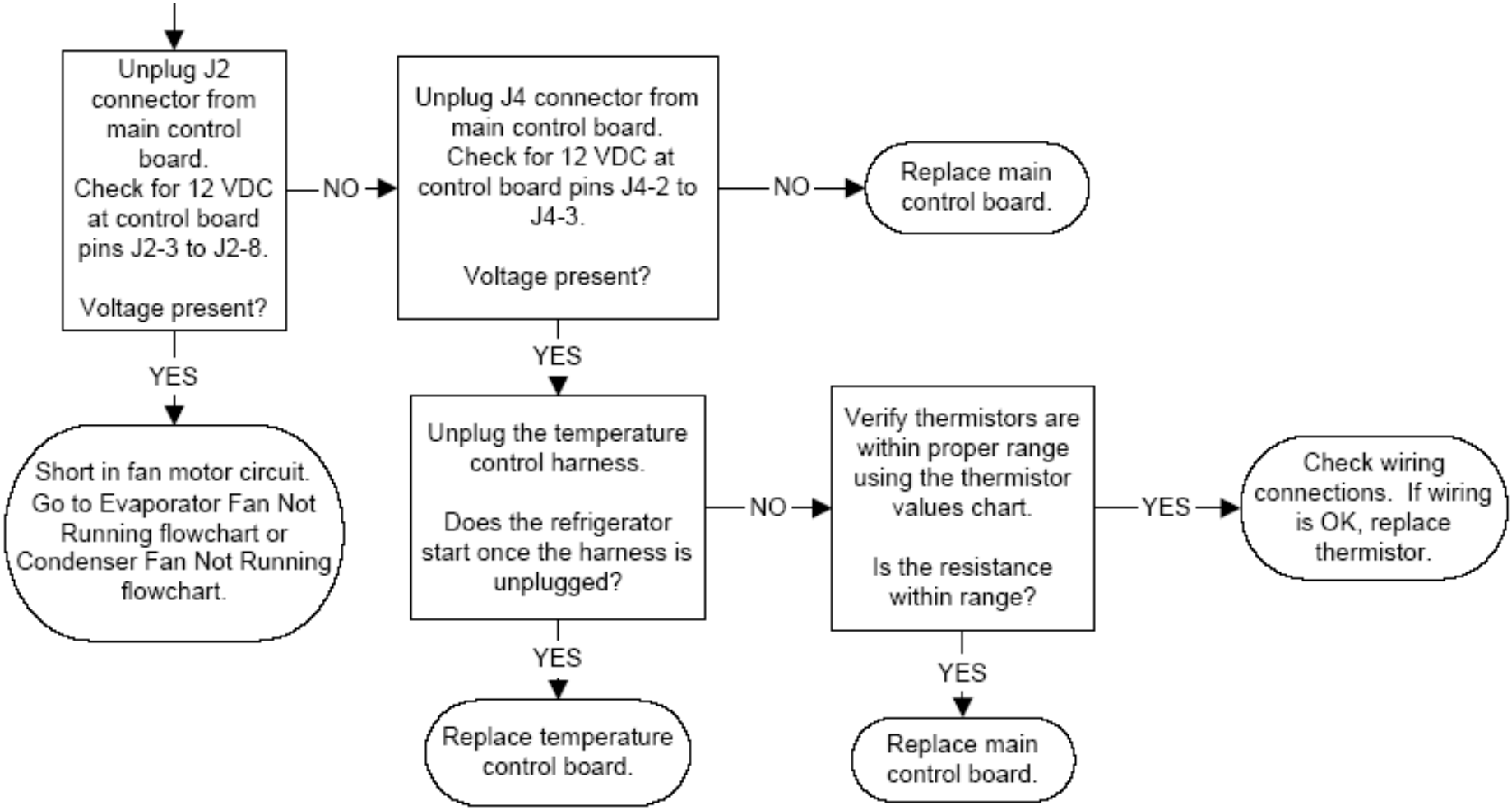
# Monogram SxS



# Monogram SxS

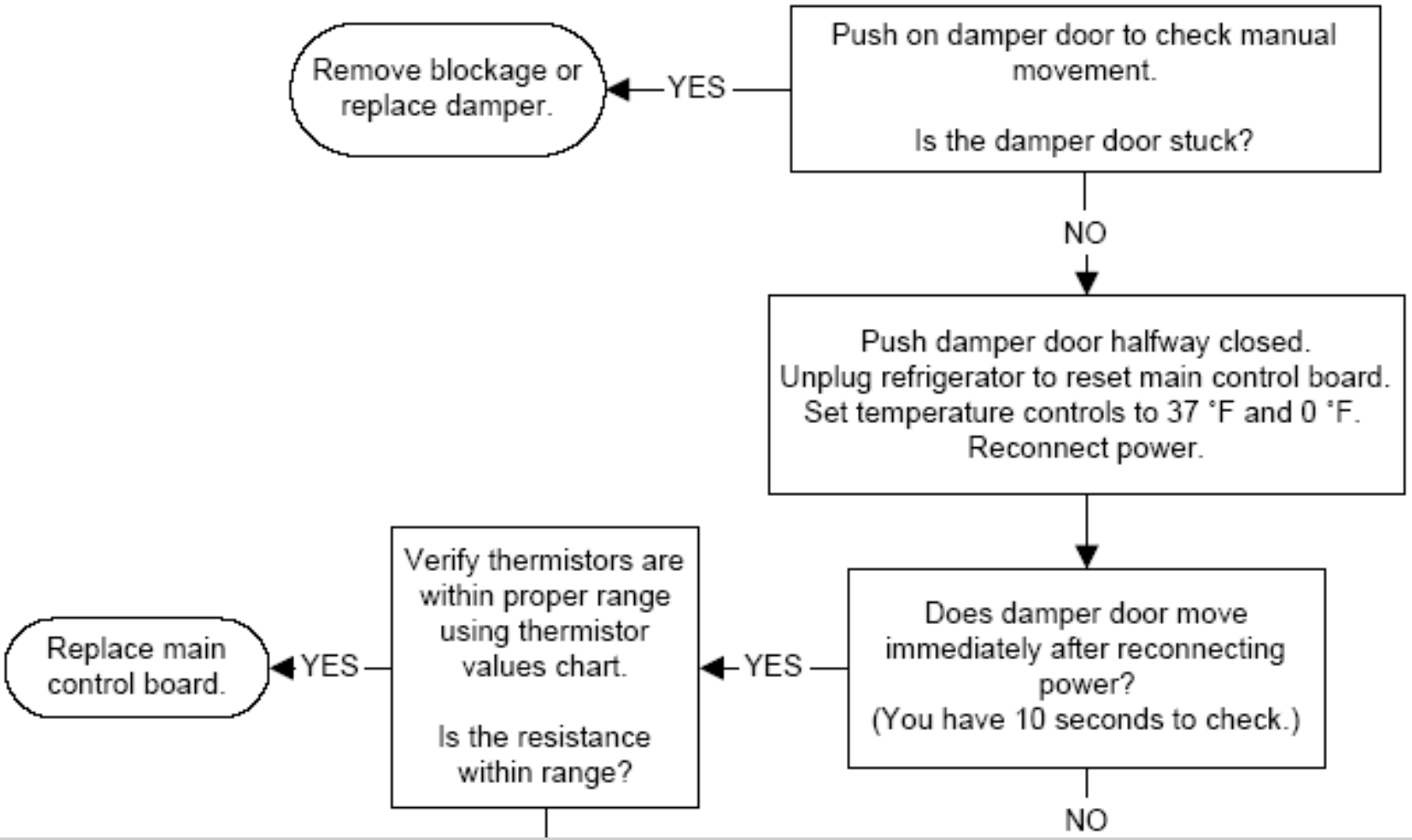
## Refrigerator Dead - No Sound, No Cooling

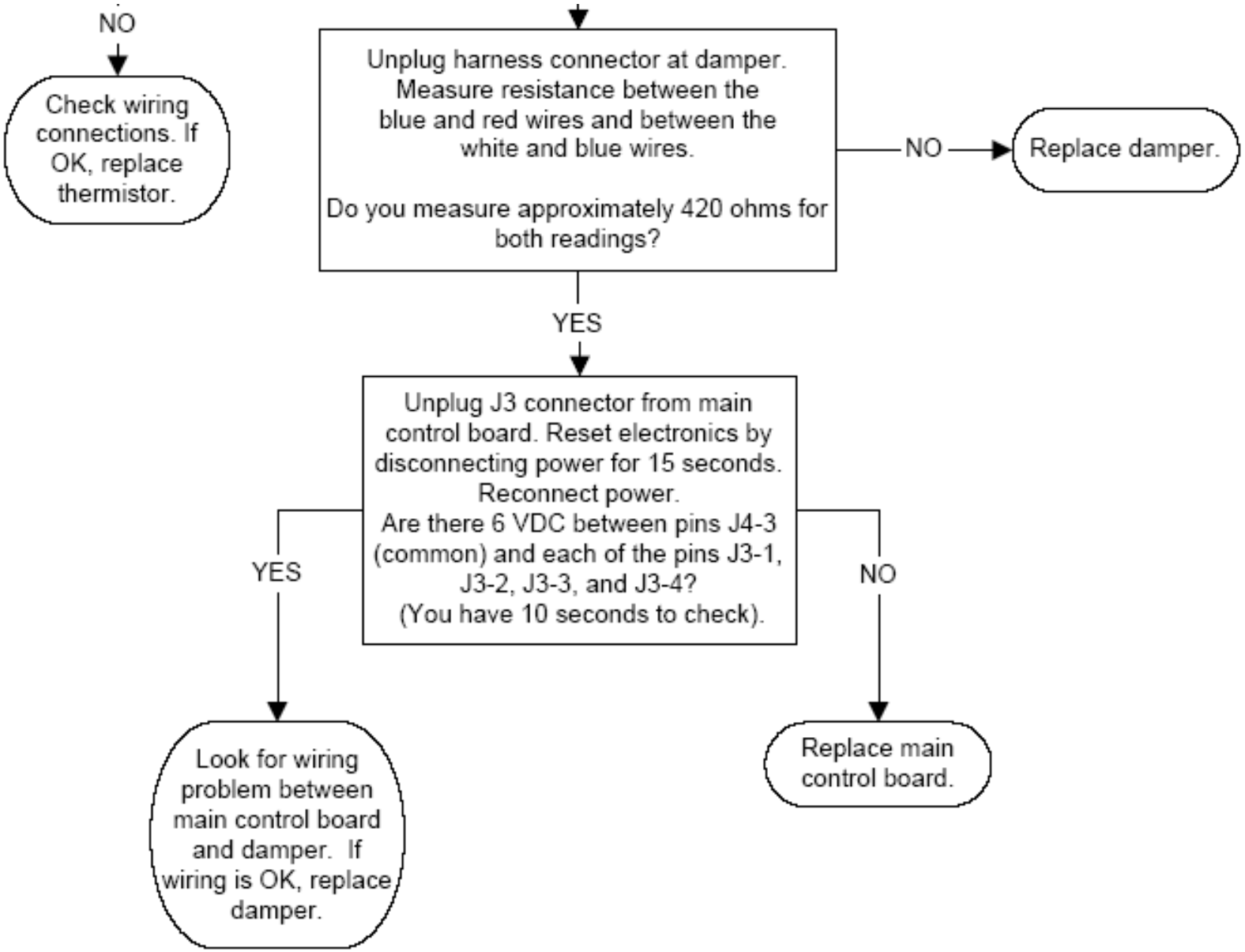




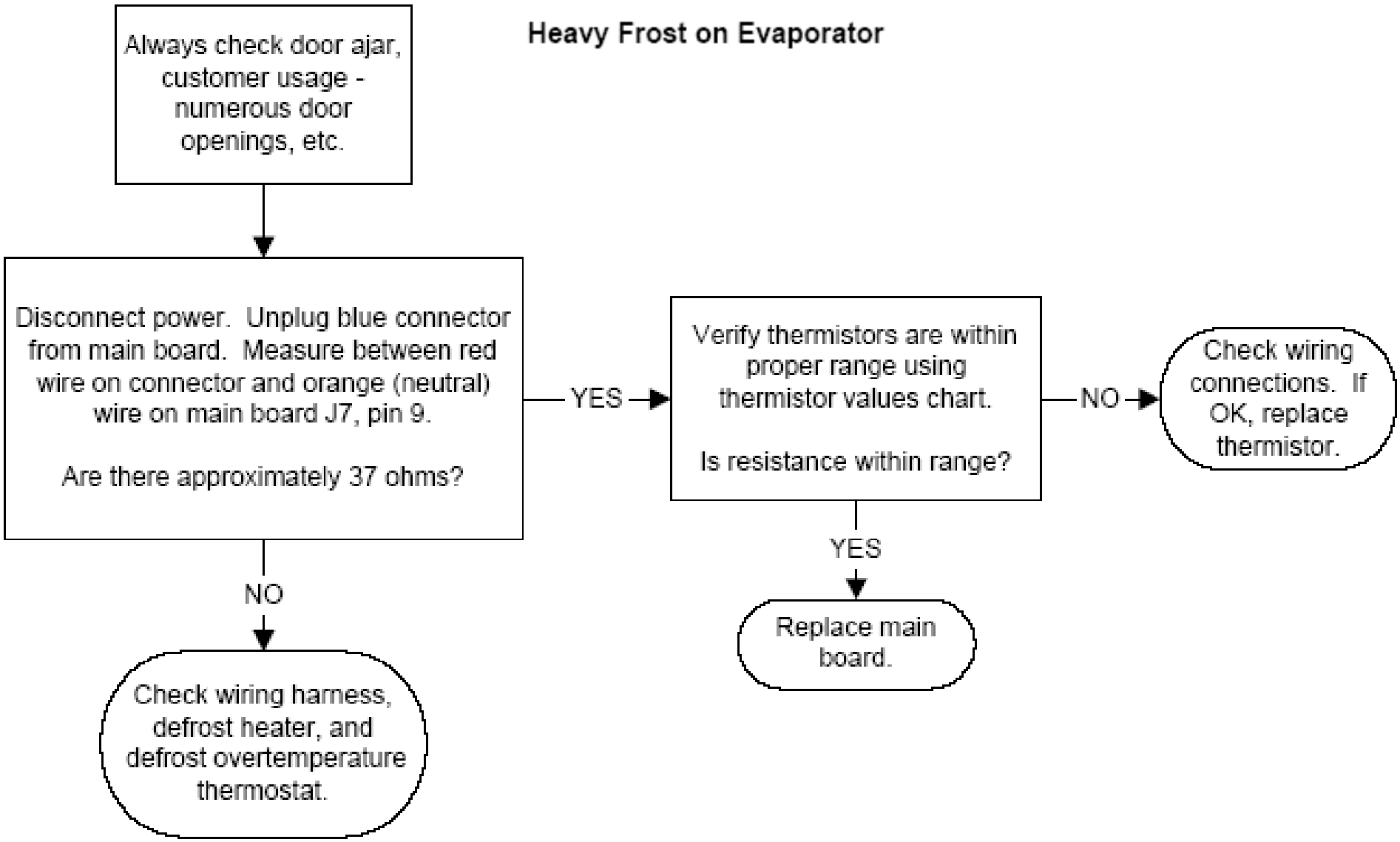
# Monogram SxS

## Damper Door Does Not Operate

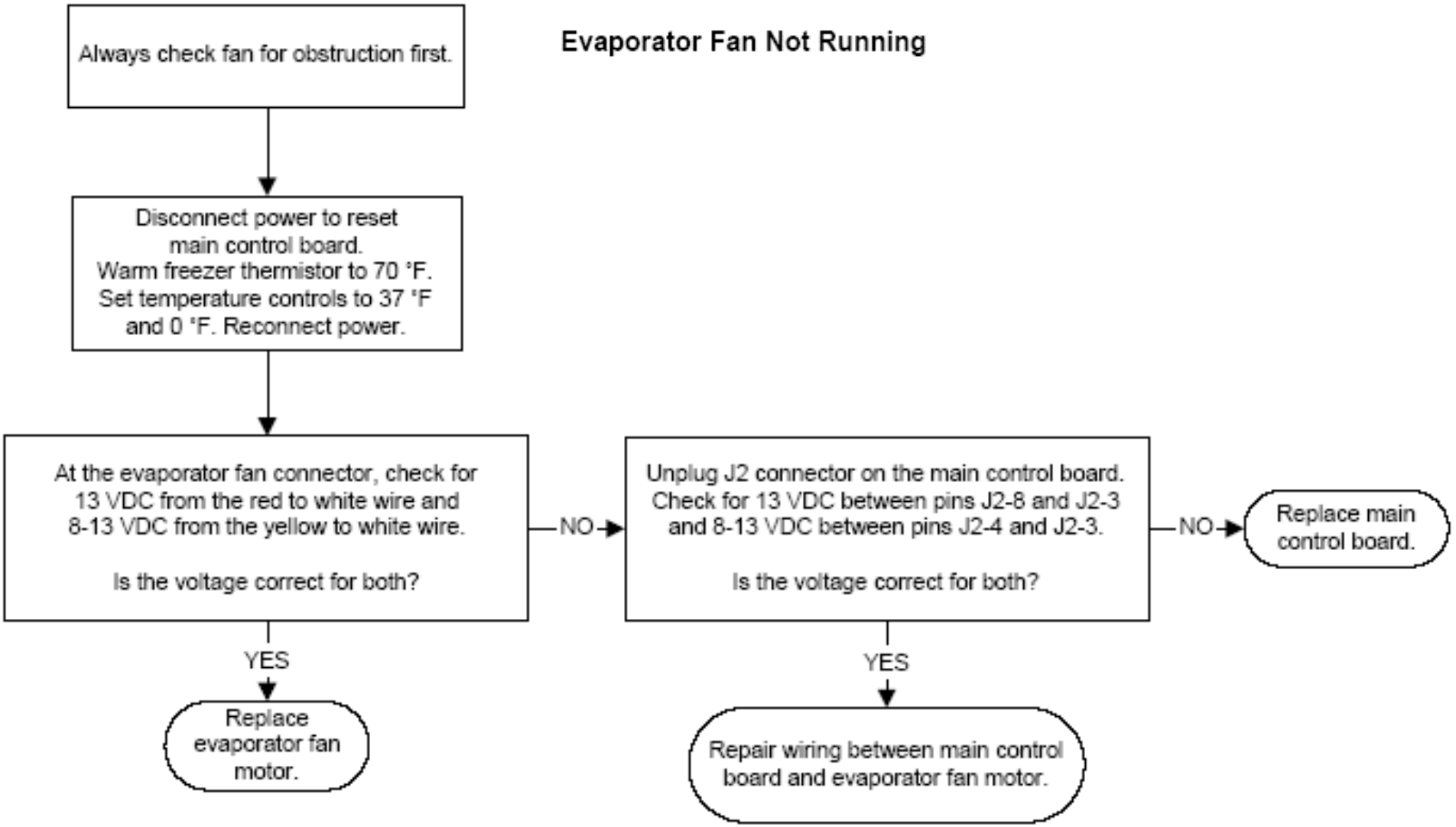




# Monogram SxS

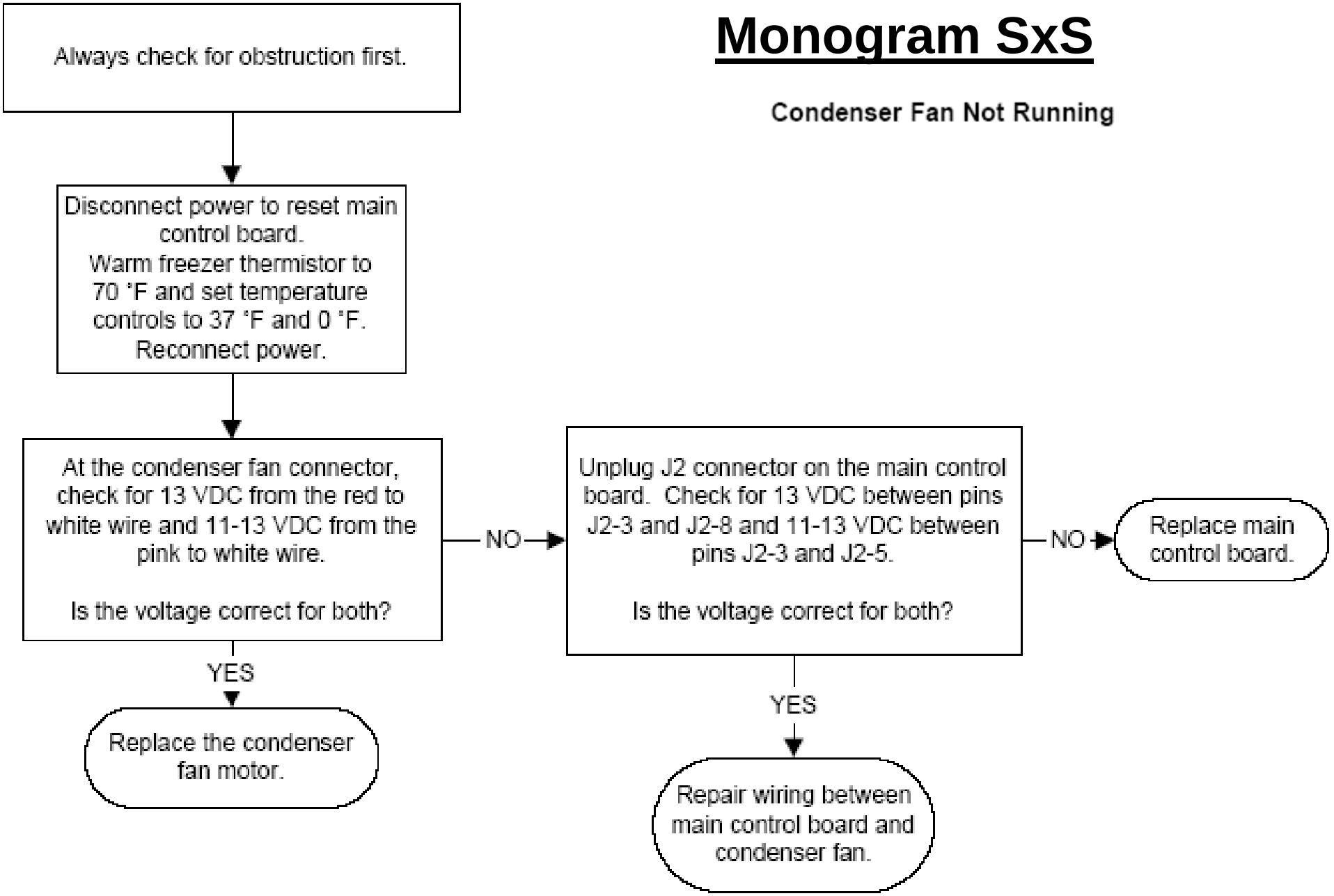


# Monogram SxS



# Monogram SxS

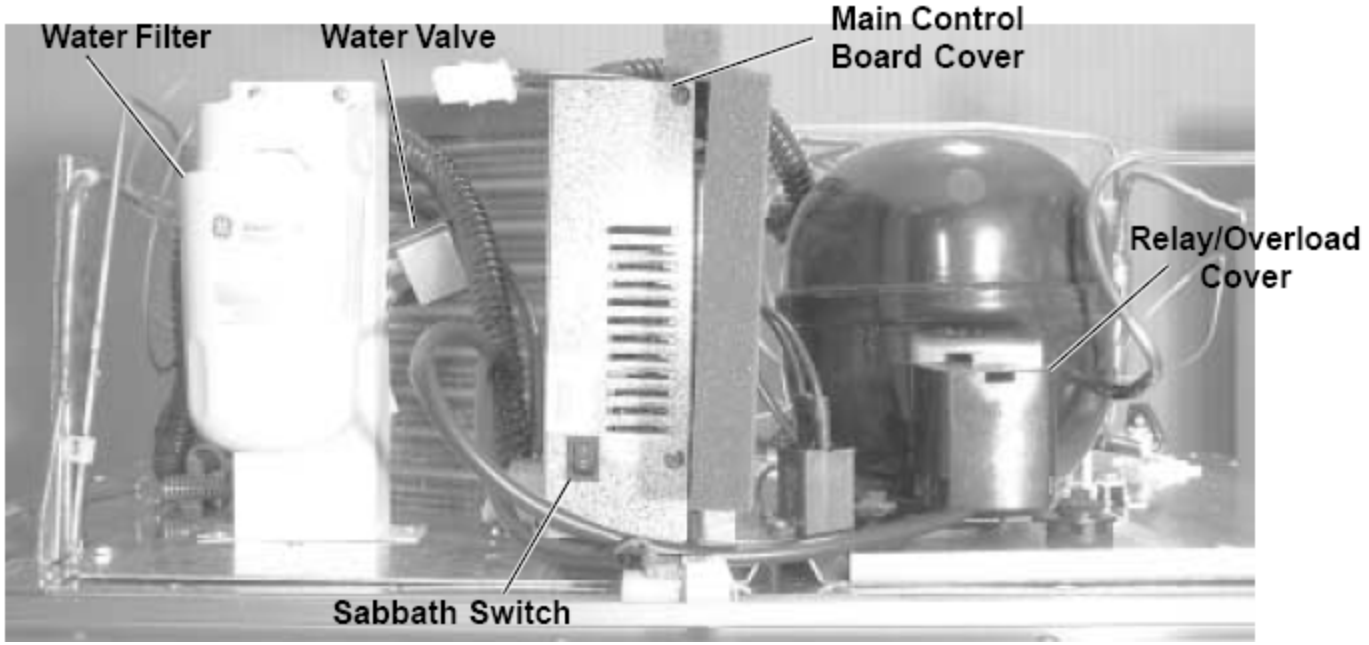
## Condenser Fan Not Running



# Monogram BMNF

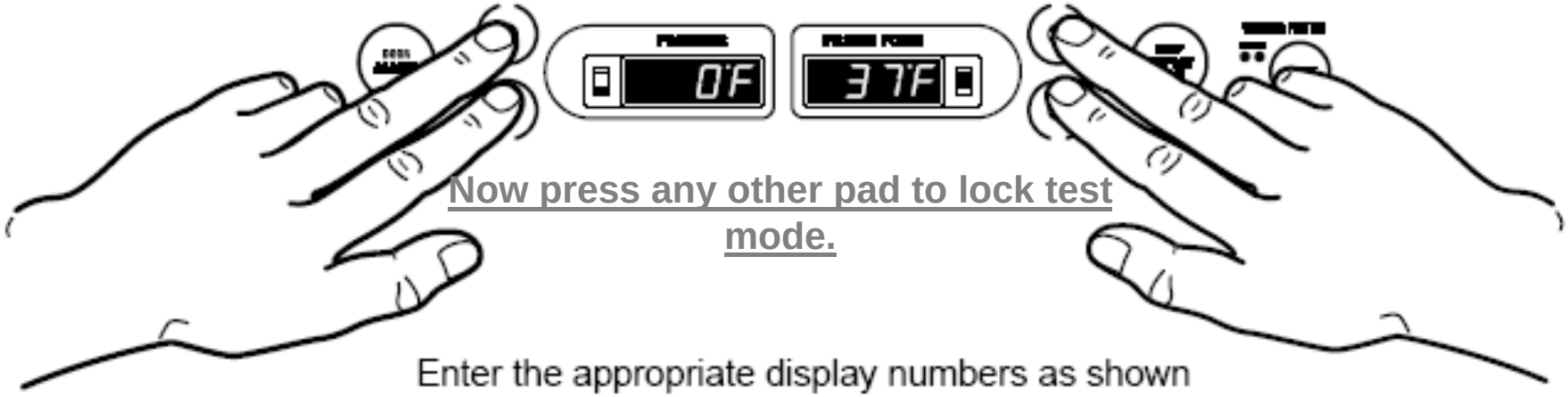
## ZIC36ON

# Monogram BMNF



# Monogram BMNF

**Make sure controls are set to either “37” & “0”**




**Now press any other pad to lock test mode.**

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

**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.

# Monogram BMNF

| 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 diplays "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. | |

# Monogram BMNF

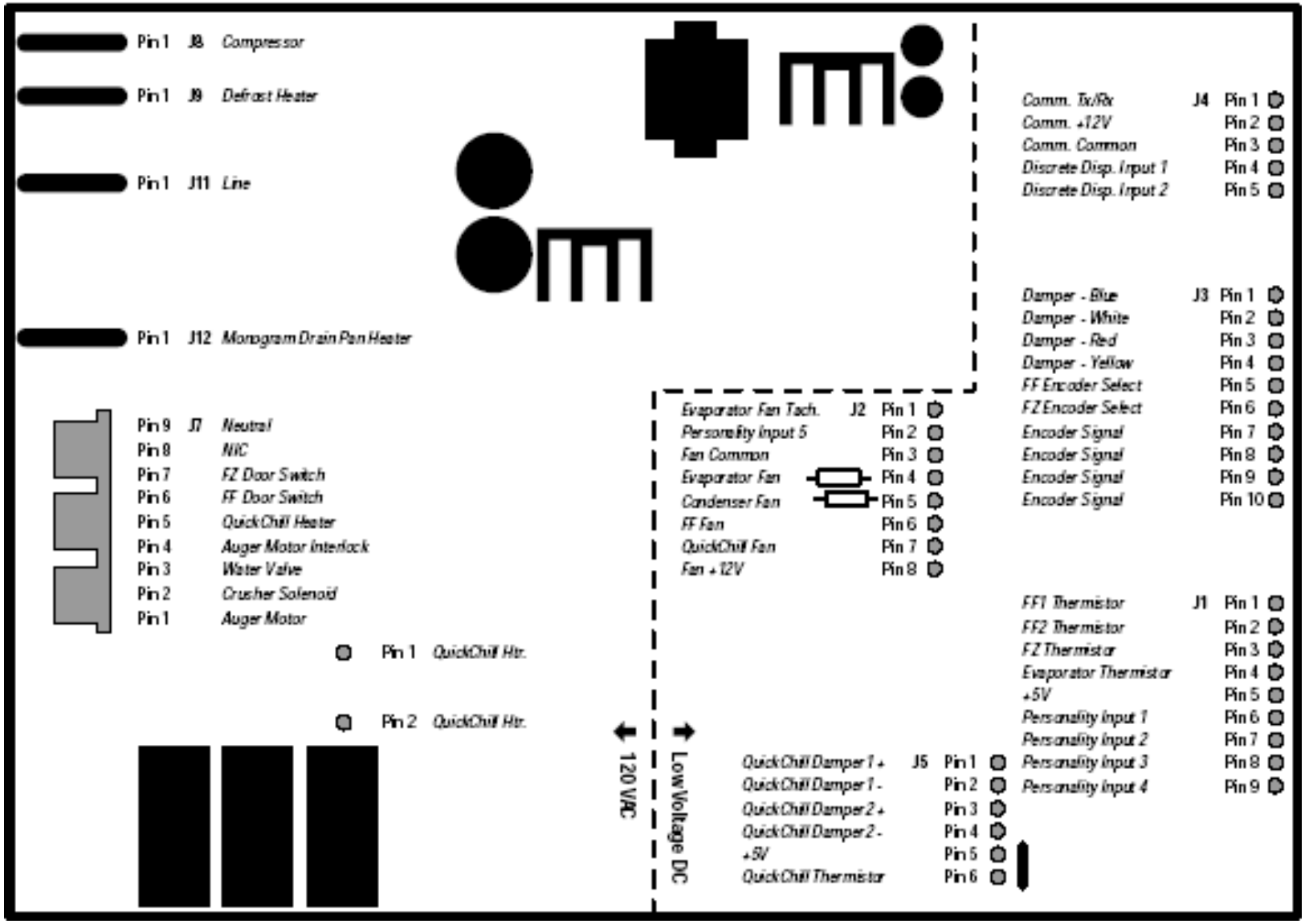
| Thermistor Values | | |
|---|---|---|
| Temperature Degrees (C) | Temperature Degrees (F) | Resistance in Kilo-ohms |
| -40 | -40 | 166.8 kΩ |
| -30 | -22 | 88 kΩ |
| -20 | -4 | 48.4 kΩ |
| -10 | 14 | 27.6 kΩ |
| 0 | 32 | 16.3 kΩ |
| 10 | 50 | 10 kΩ |
| 20 | 68 | 6.2 kΩ |
| 30 | 86 | 4 kΩ |
| 40 |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

**Testing**

The most accurate method of testing a thermistor is to place it in a glass of ice water for several minutes. The thermistor should read approximately **16KΩ** in the glass of 33°F ice water.

**Note:** Thermistors can also be checked for an open or shorted condition by using the diagnostic mode (see ***Service Diagnostics***).

# Monogram BMNF



# Monogram BMNF

| Main Control Board<br>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 |

# Monogram BMNF

| Main Control Board<br>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 |

# Monogram BMNF

| Main Control Board<br>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 =<br>Standing Voltage 2.3 VDC<br>Traveling Voltage = 6.0 VDC |
| 2 | White | Damper Stepper Motor | | J3 pin 2 to J4 pin 3 =<br>Standing Voltage 2.3 VDC<br>Traveling Voltage = 6.0 VDC |
| 3 | Red | Damper Stepper Motor | | J3 pin 3 to J4 pin 3 =<br>Standing Voltage 2.3 VDC<br>Traveling Voltage = 6.0 VDC |
| 4 | Yellow | Damper Stepper Motor | | J3 pin 4 to J4 pin 3 =<br>Standing Voltage 2.3 VDC<br>Traveling Voltage = 6.0 VDC |

# Monogram BMNF

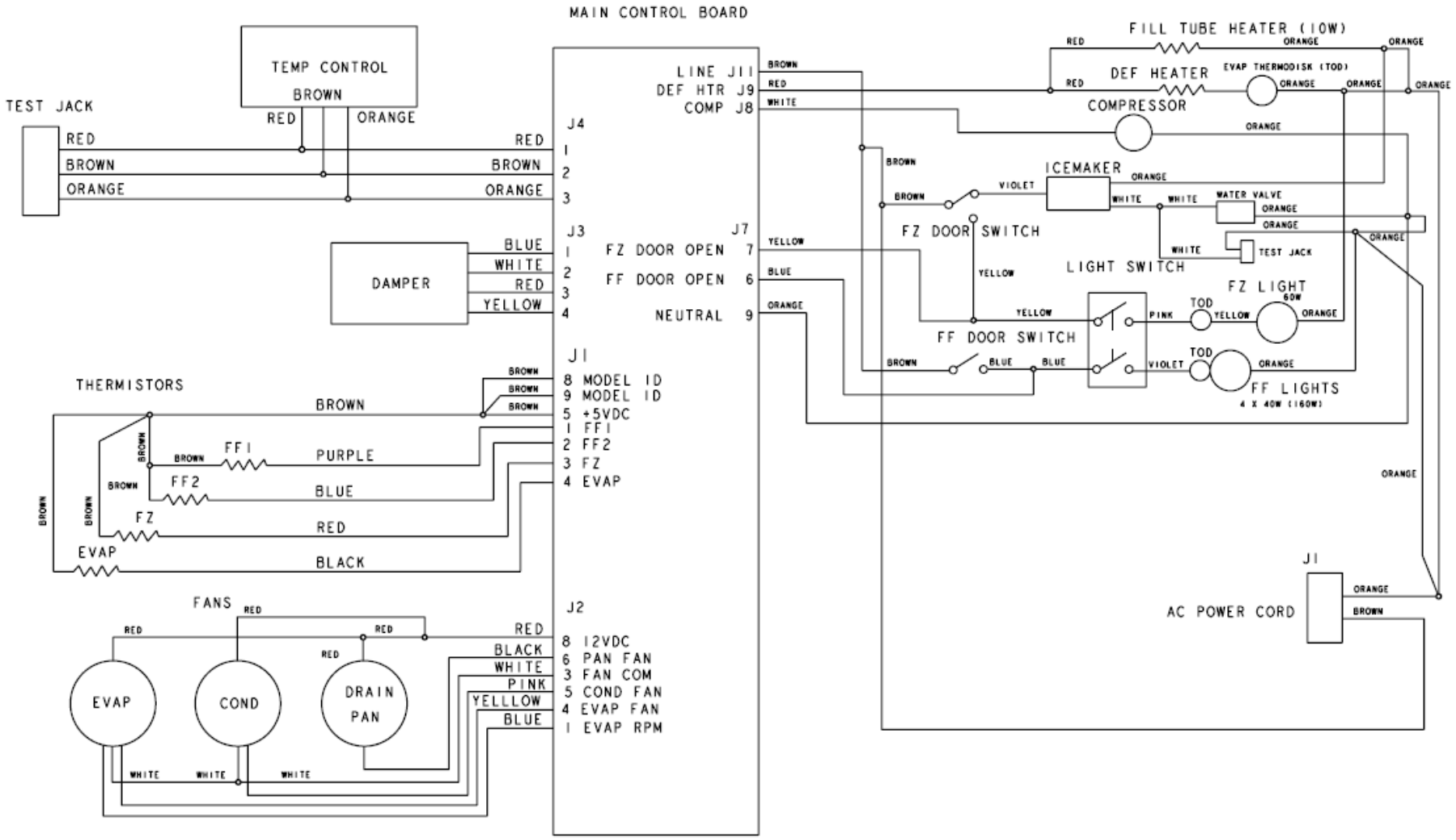
| Main Control Board<br>J4 Connector (Low-Voltage DC Side) | | | | |
|---|---|---|---|---|
| **Pin** | **Wire Color** | **Component Termination** | **Input/Output** | **Pin-to-Pin Voltage Reading** |
| 1 | Red | Temperature control | Communication | Two-way digital communication between temperature control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

| Main Control Board<br>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 |

# Monogram BMNF

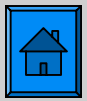
| Main Control Board J8, J9, J11, Connectors (High-Voltage Side) | | | |
|---|---|---|---|
| **Pin** | **Wire Color** | **Input/Output** | **Pin to Pin Voltage Reading** |
| J8 | White | Output | J8 to J7 pin 9 = 120 VAC |
| J9 | Red | Output | J9 to J7 pin 9 = 120 VAC |
| J11 | Brown | Input | J11 to J7 pin 9 = 120 VAC |

# Monogram BMNF





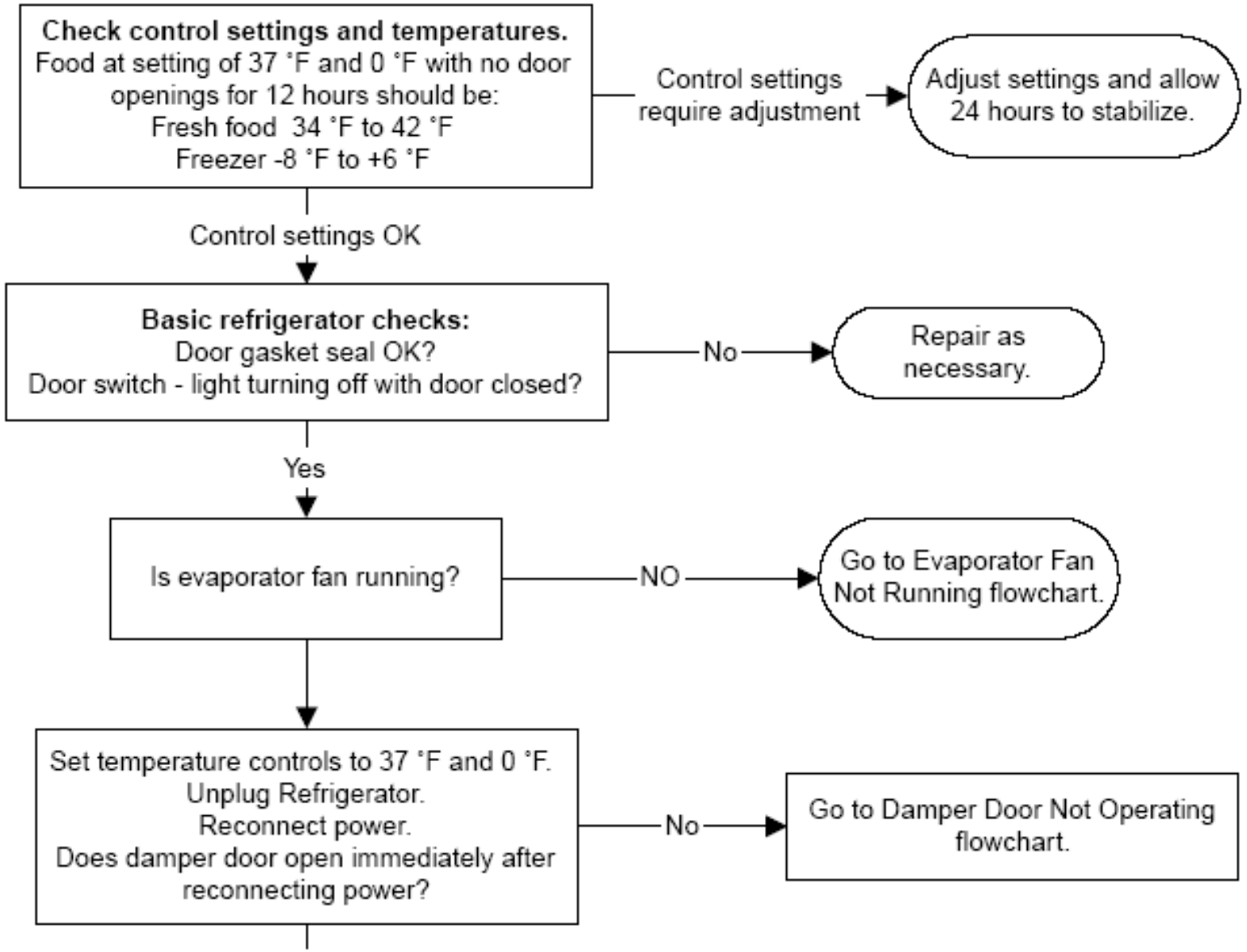


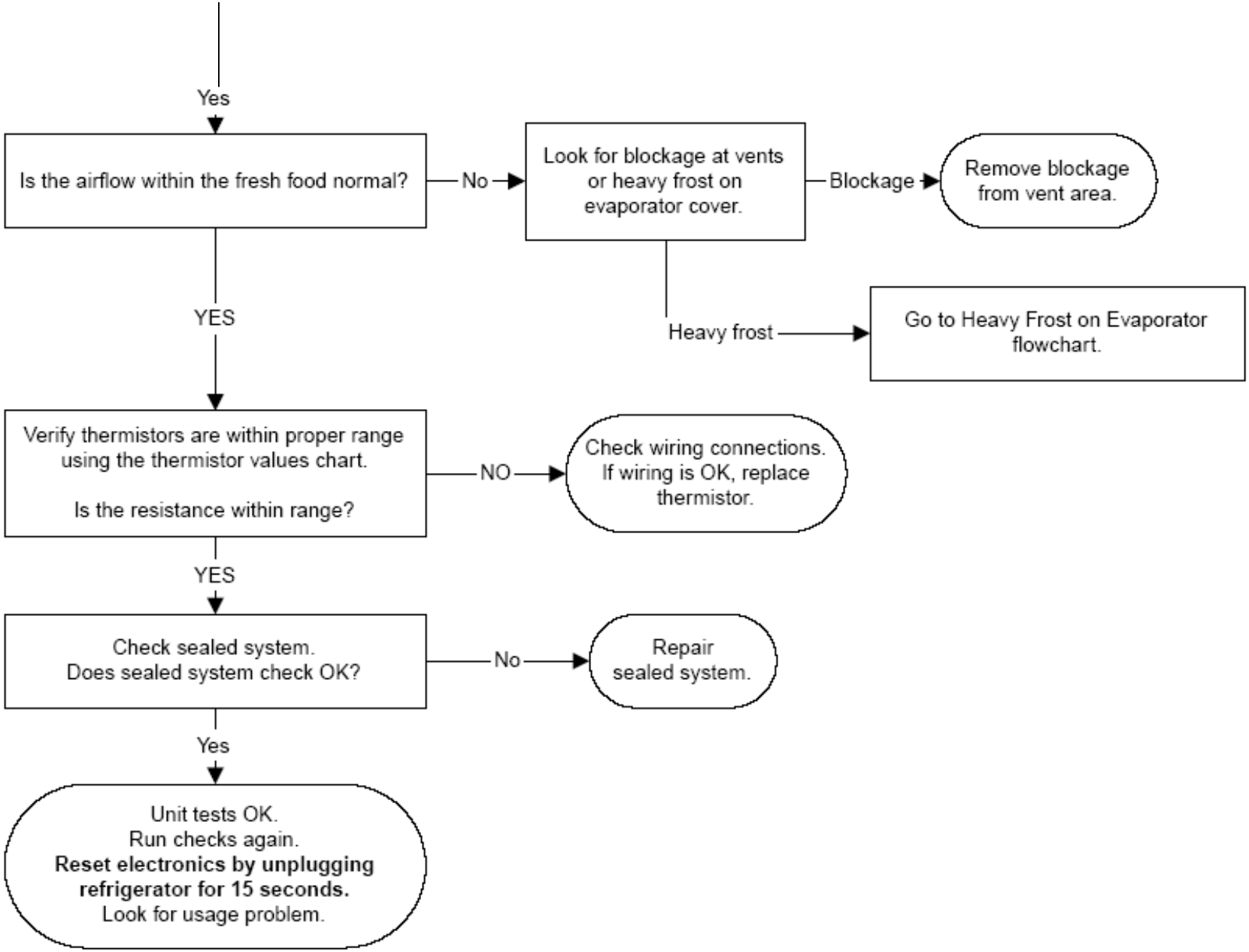





# Monogram BMNF

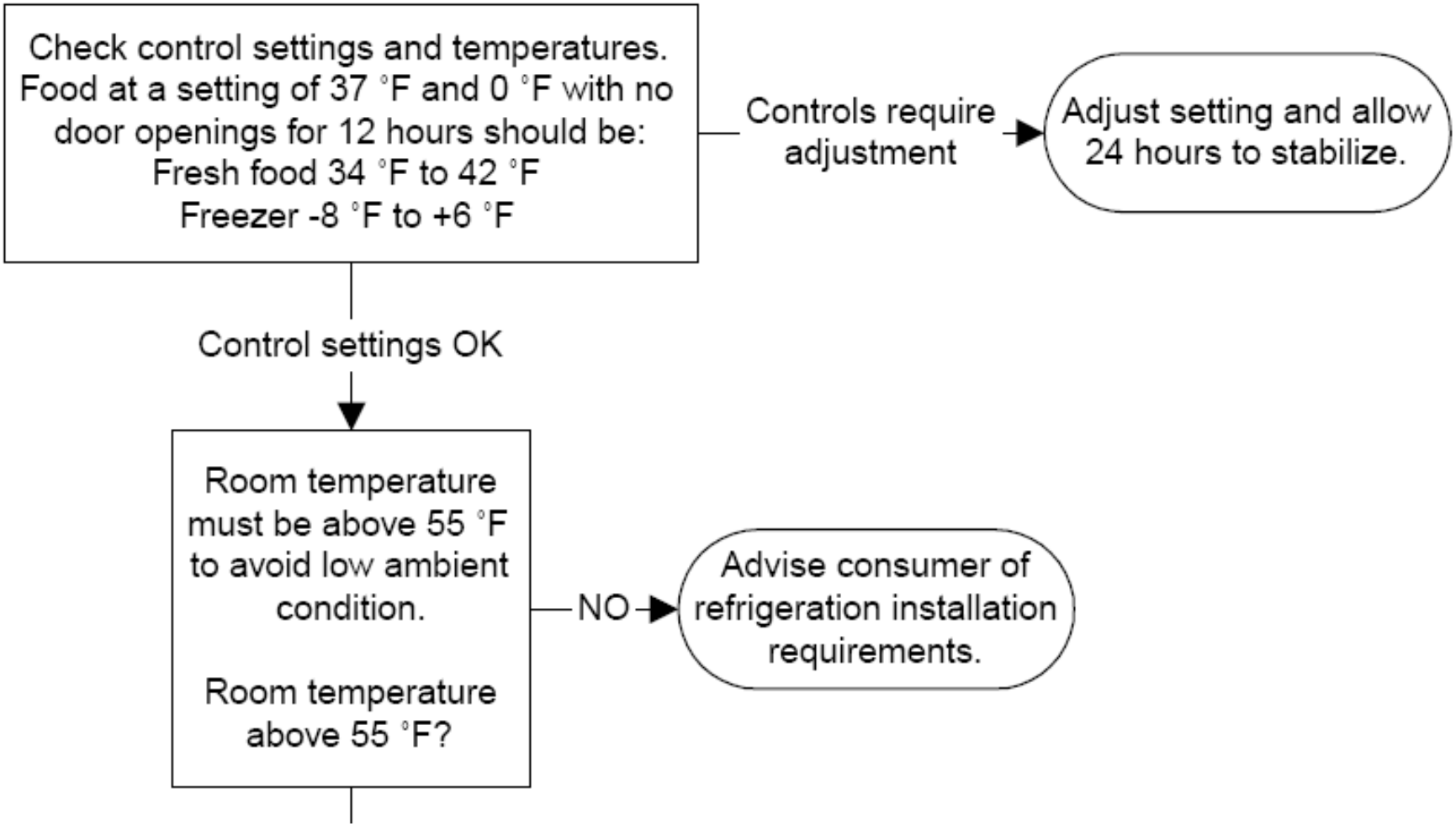
**Fresh Food Warm - Freezer Normal**

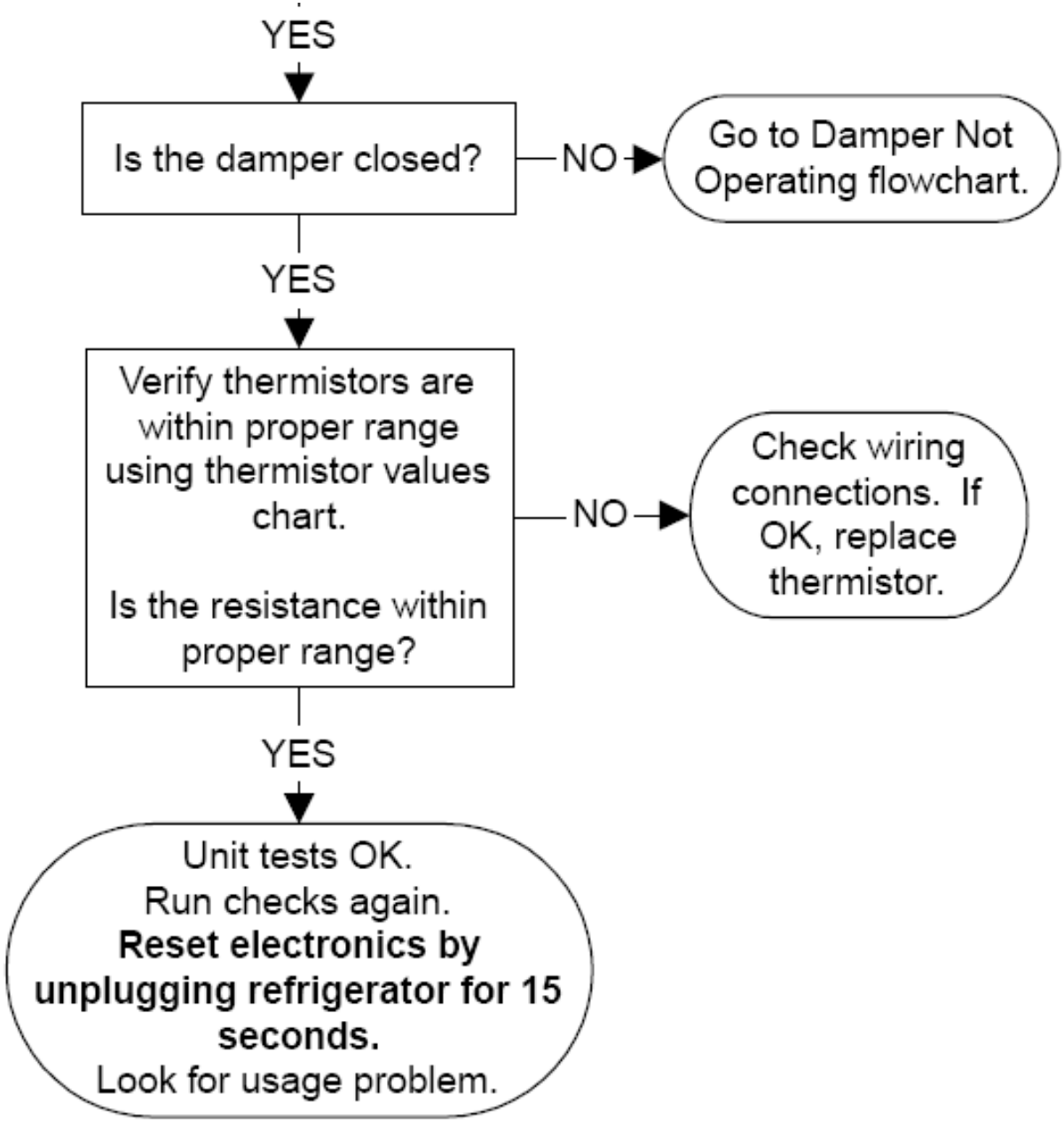




# Monogram BMNF

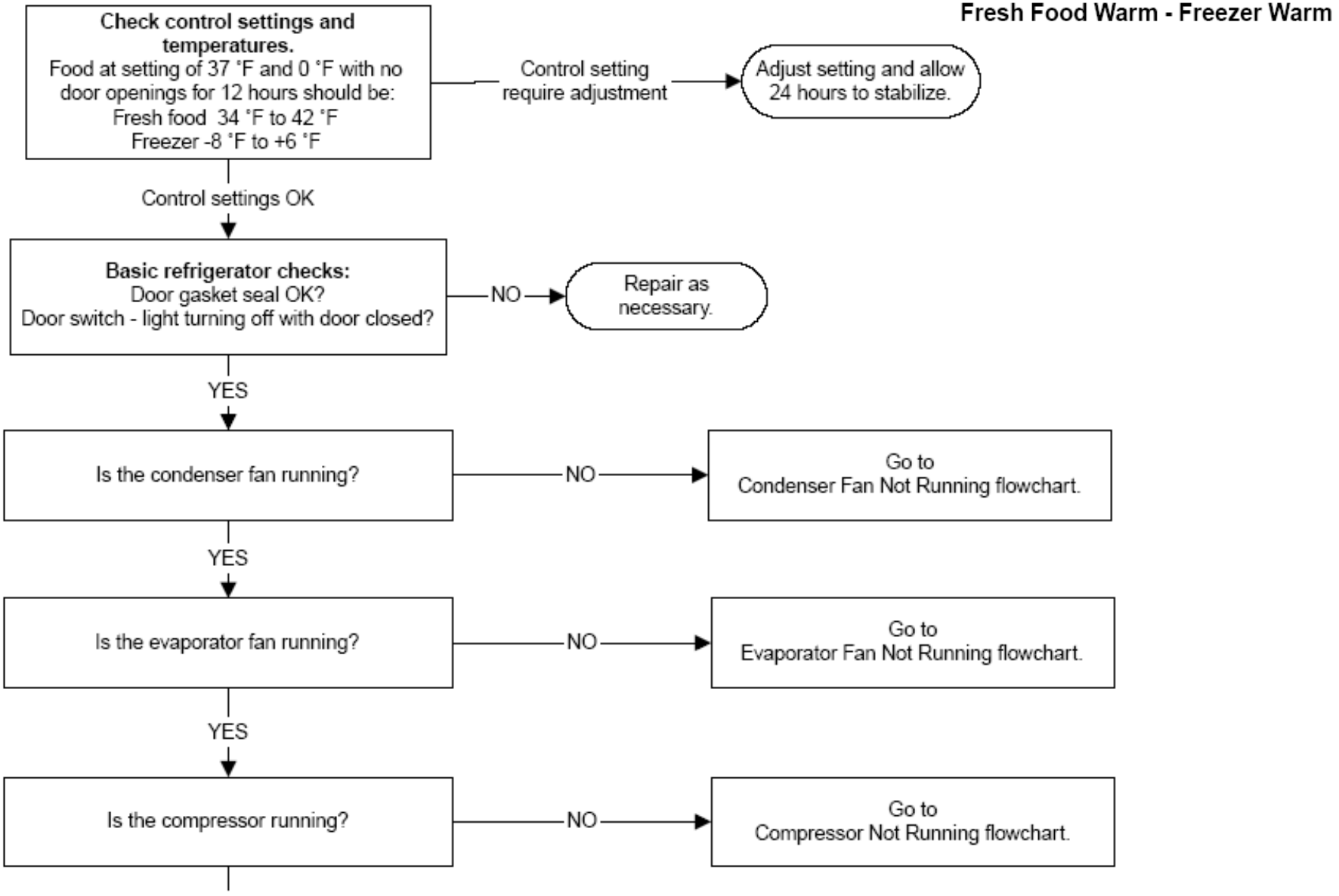
**Fresh Food Too Cold - Freezer Normal**

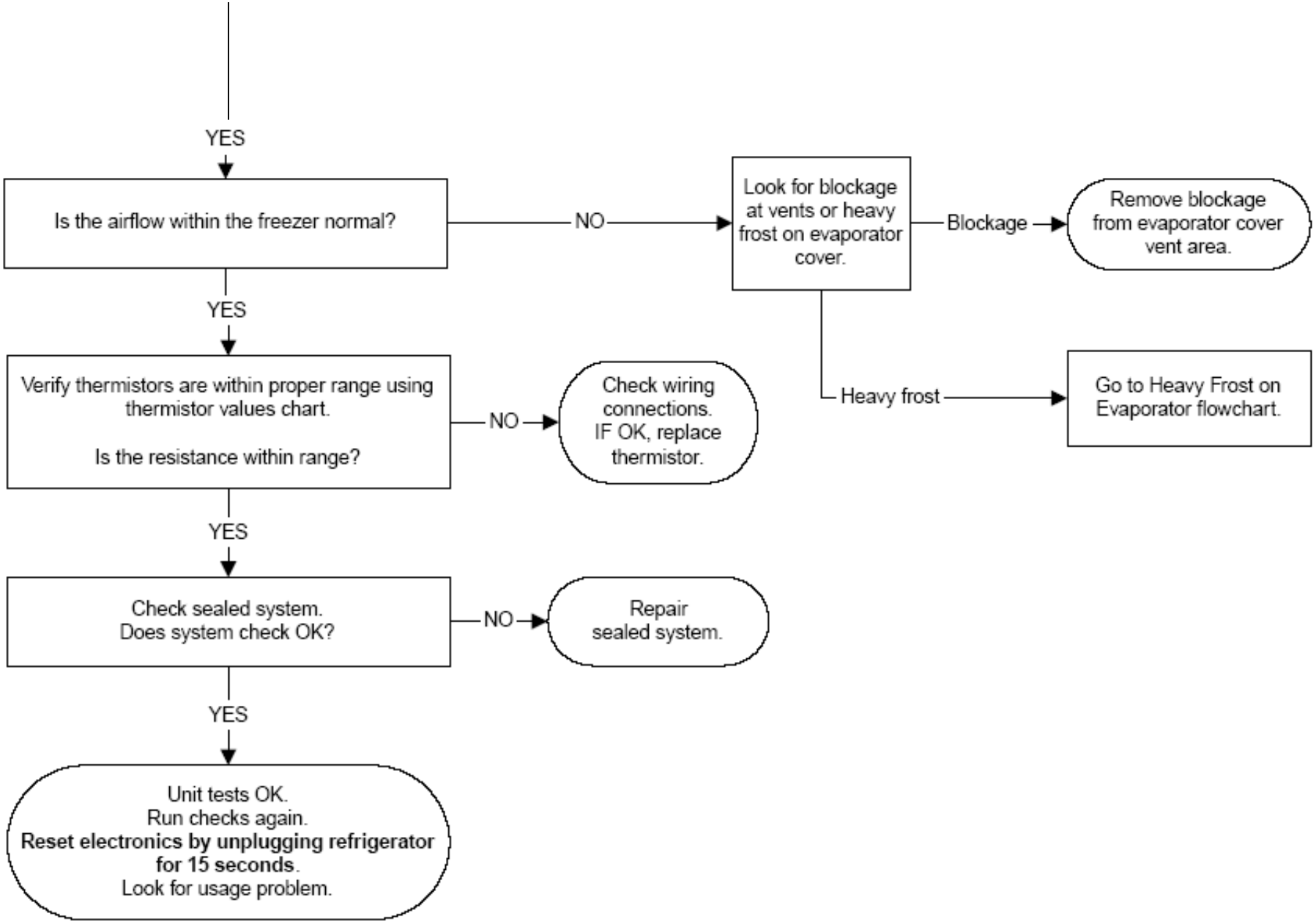



YES
Is the damper closed?
NO
Go to Damper Not Operating flowchart.
YES
Verify thermistors are within proper range using thermistor values chart.
Is the resistance within proper range?
NO
Check wiring connections. If OK, replace thermistor.
YES
Unit tests OK.
Run checks again.
Reset electronics by unplugging refrigerator for 15 seconds.
Look for usage problem.

# Monogram BMNF

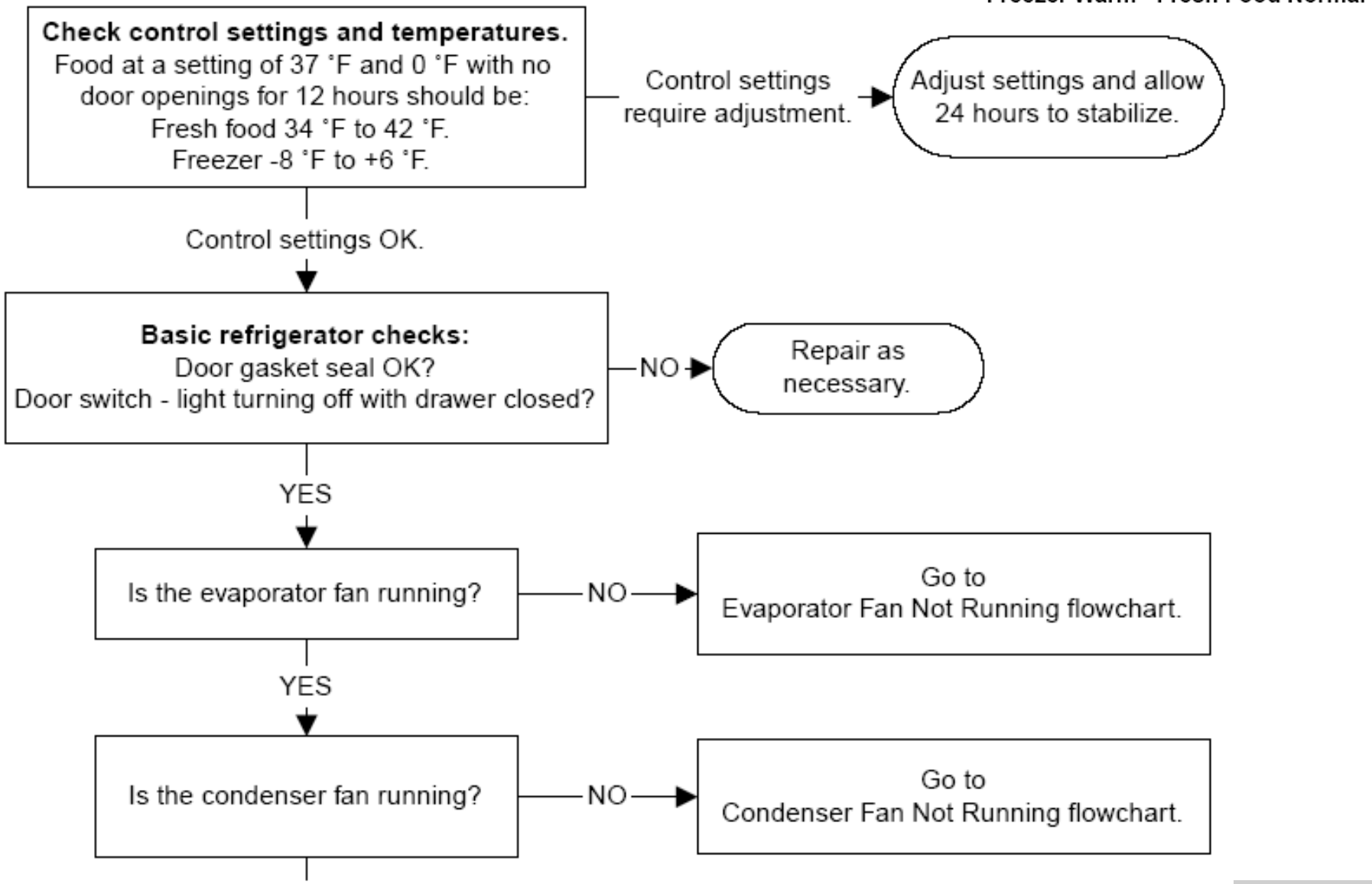
**Fresh Food Warm - Freezer Warm**

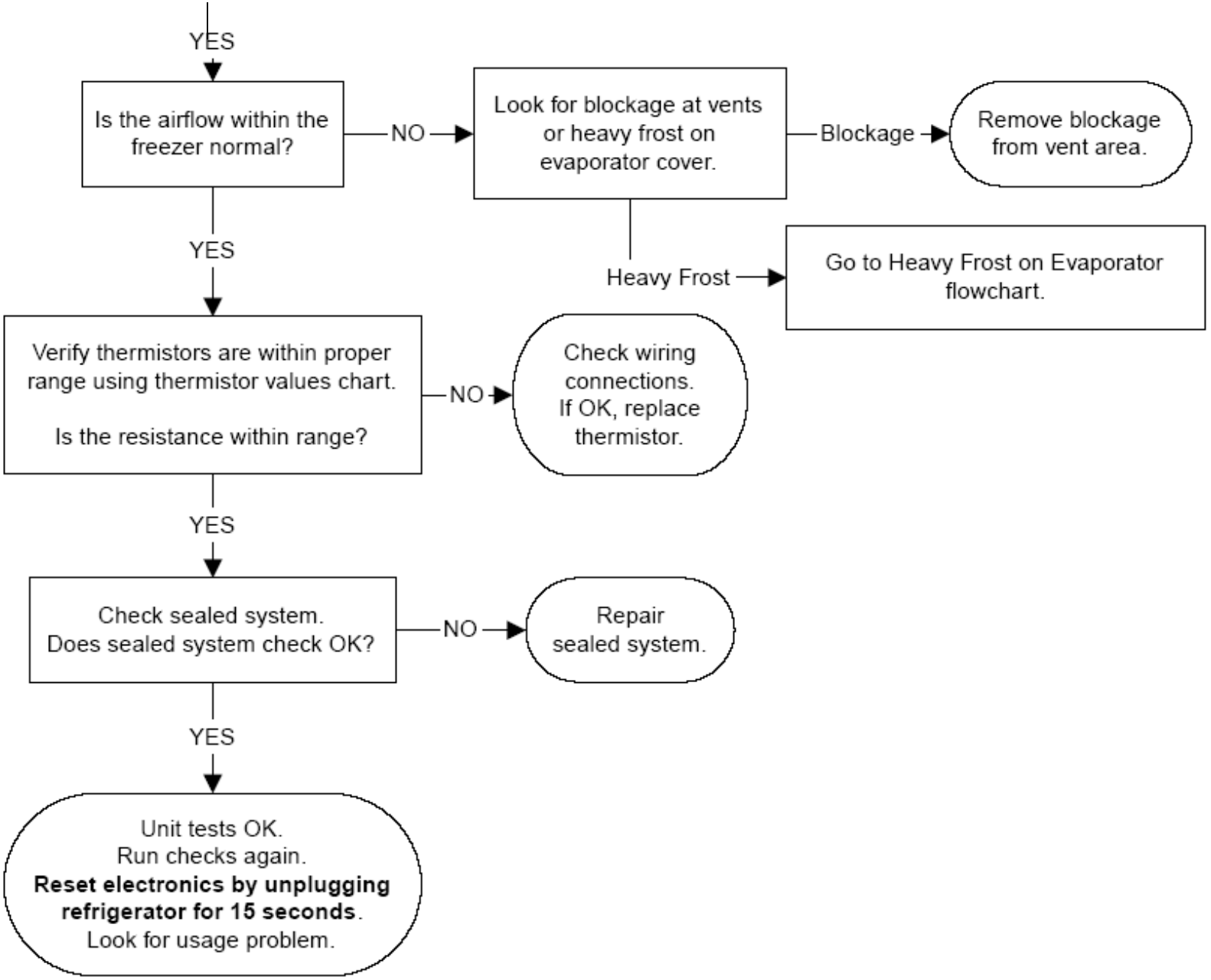




# Monogram BMNF

**Freezer Warm - Fresh Food Normal**





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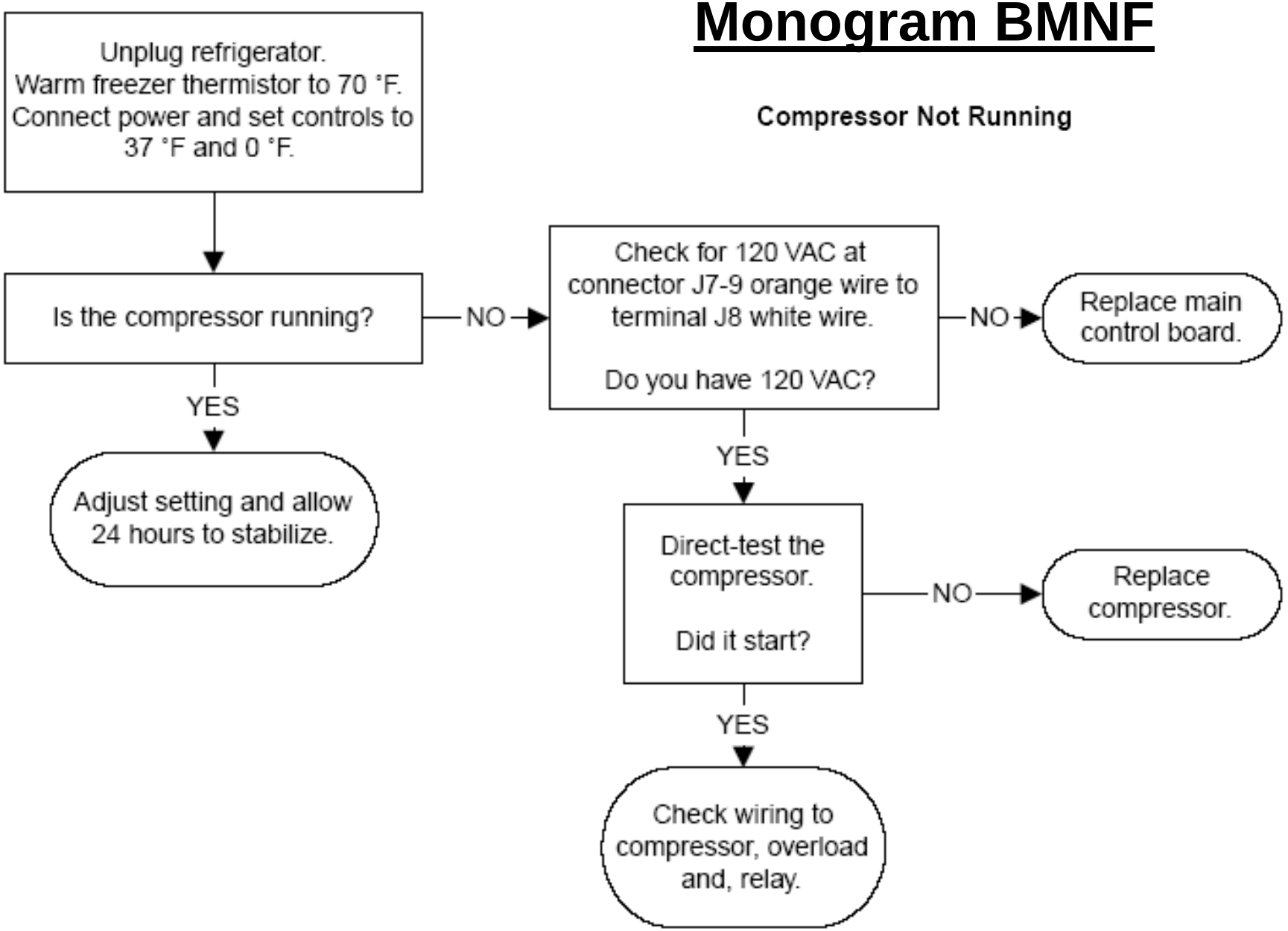
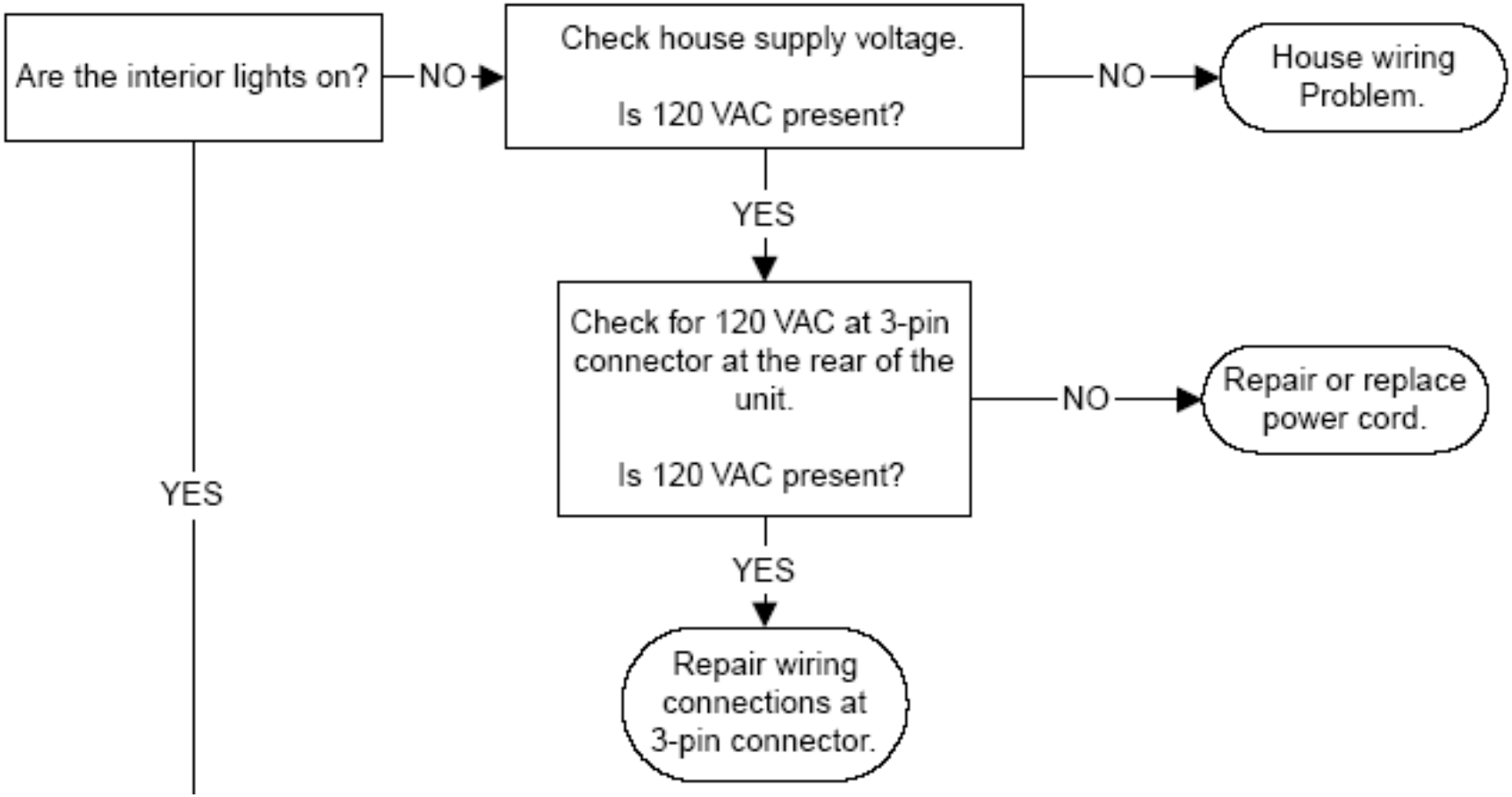
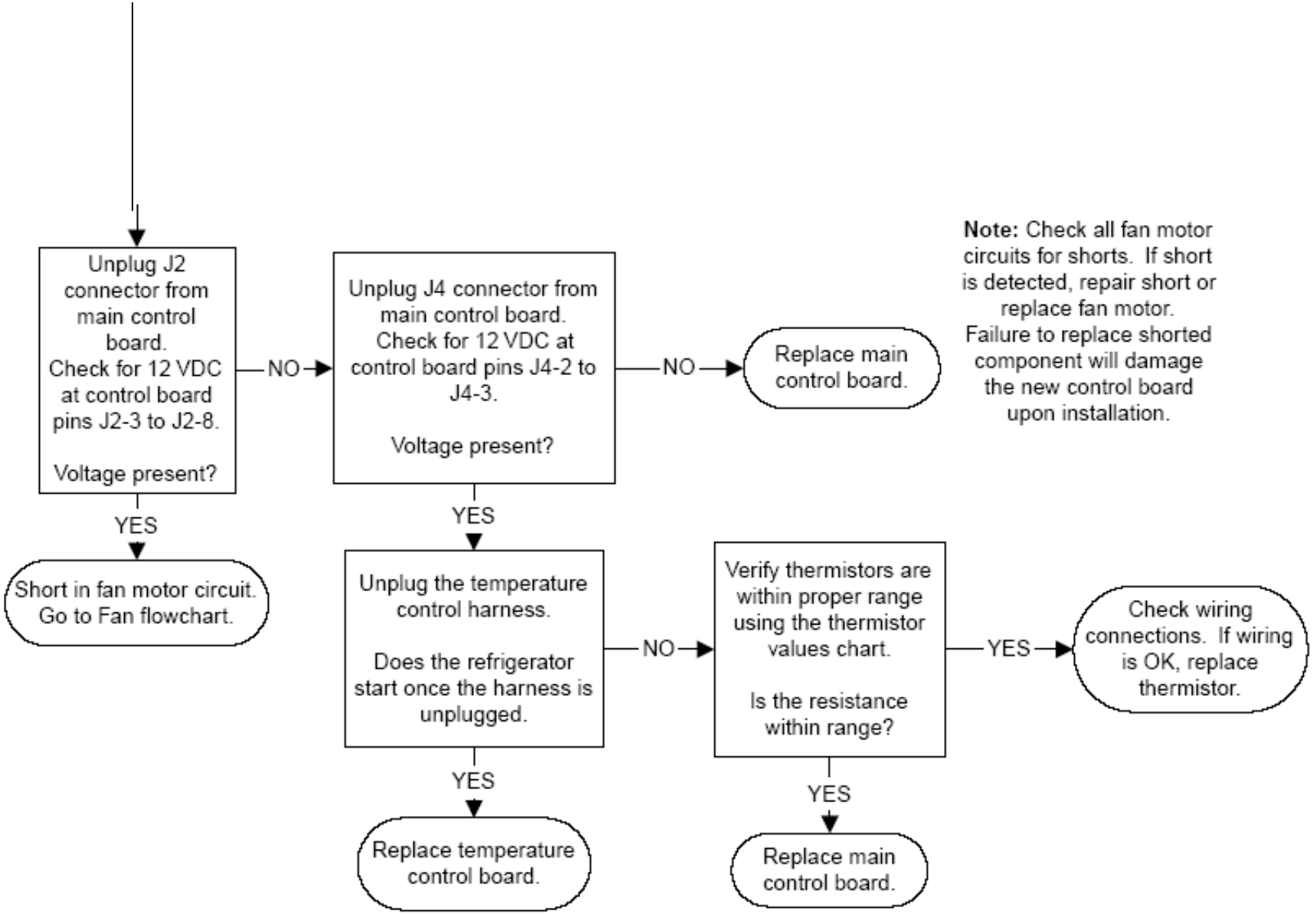


# Monogram BMNF

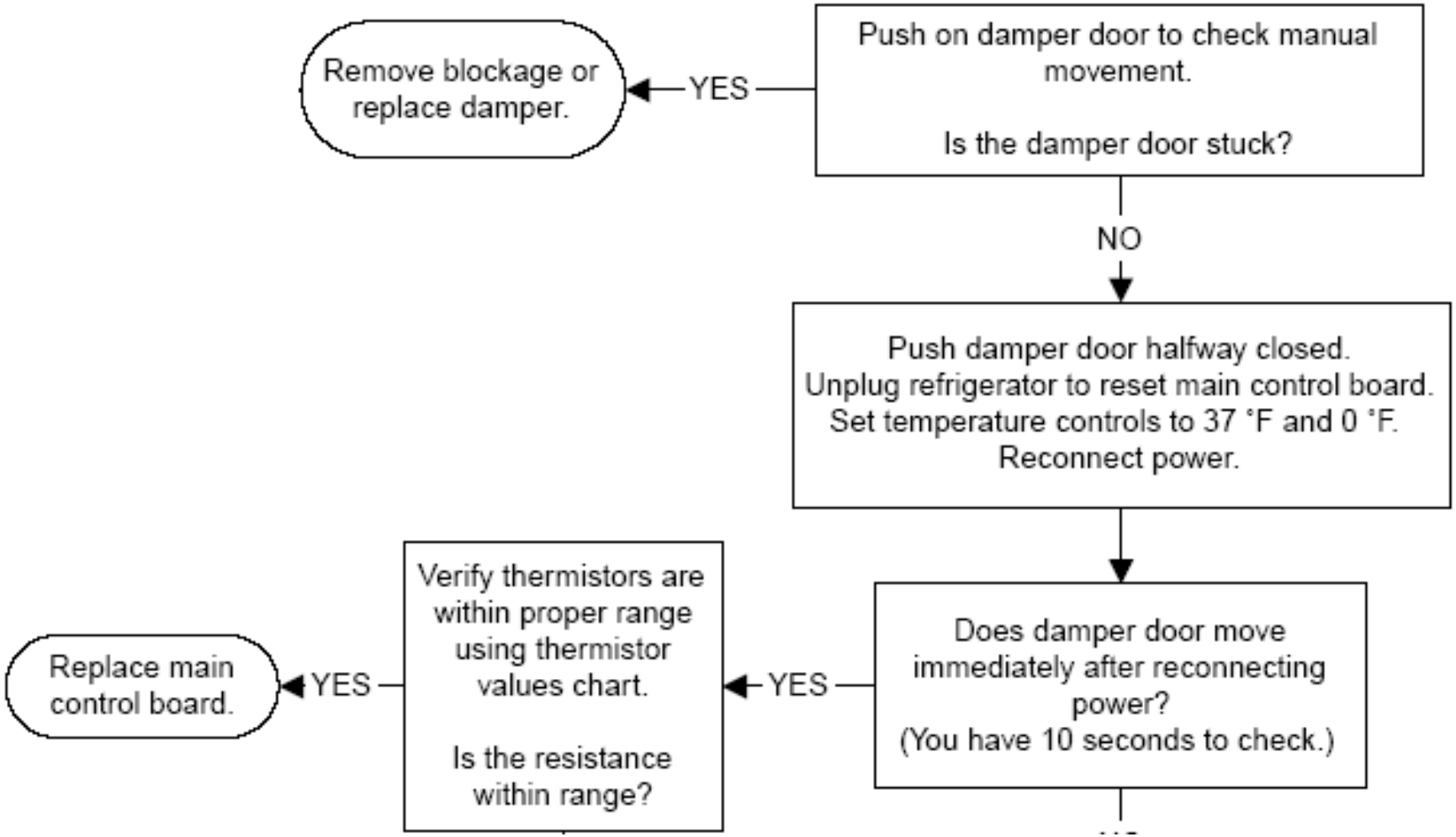
**Refrigerator Dead - No Sound, No Cooling**

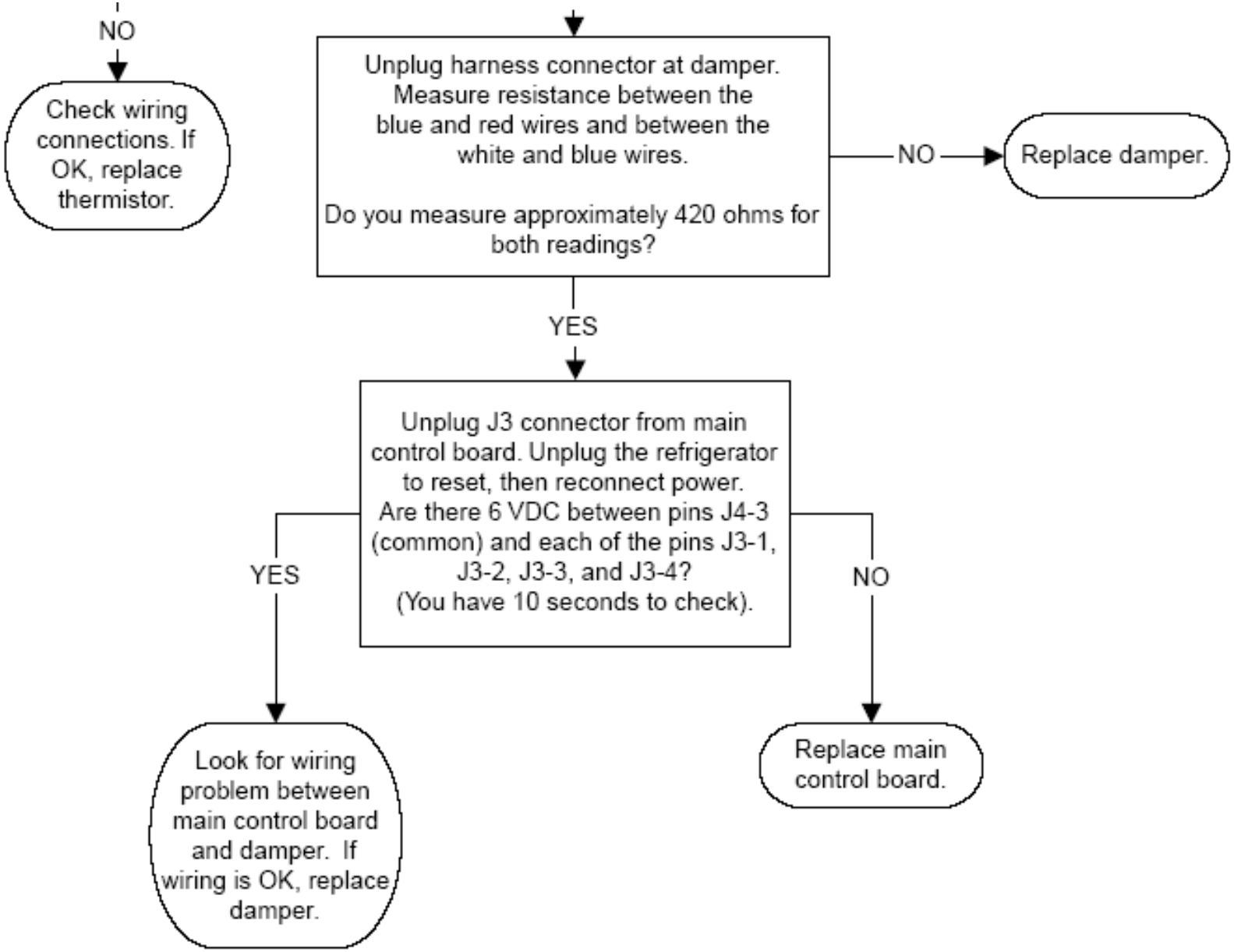




# Monogram BMNF

**Damper Door Does Not Operate**





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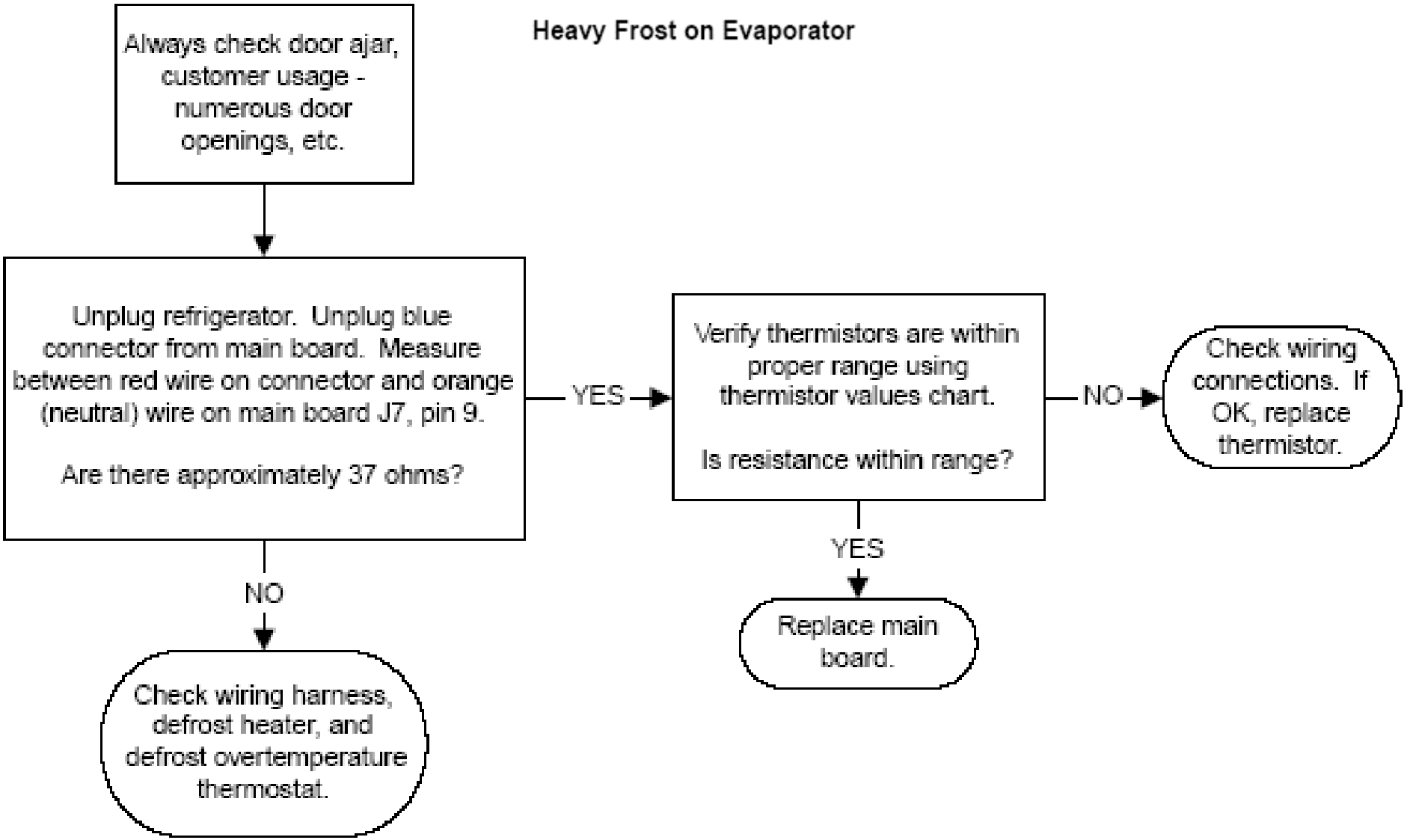

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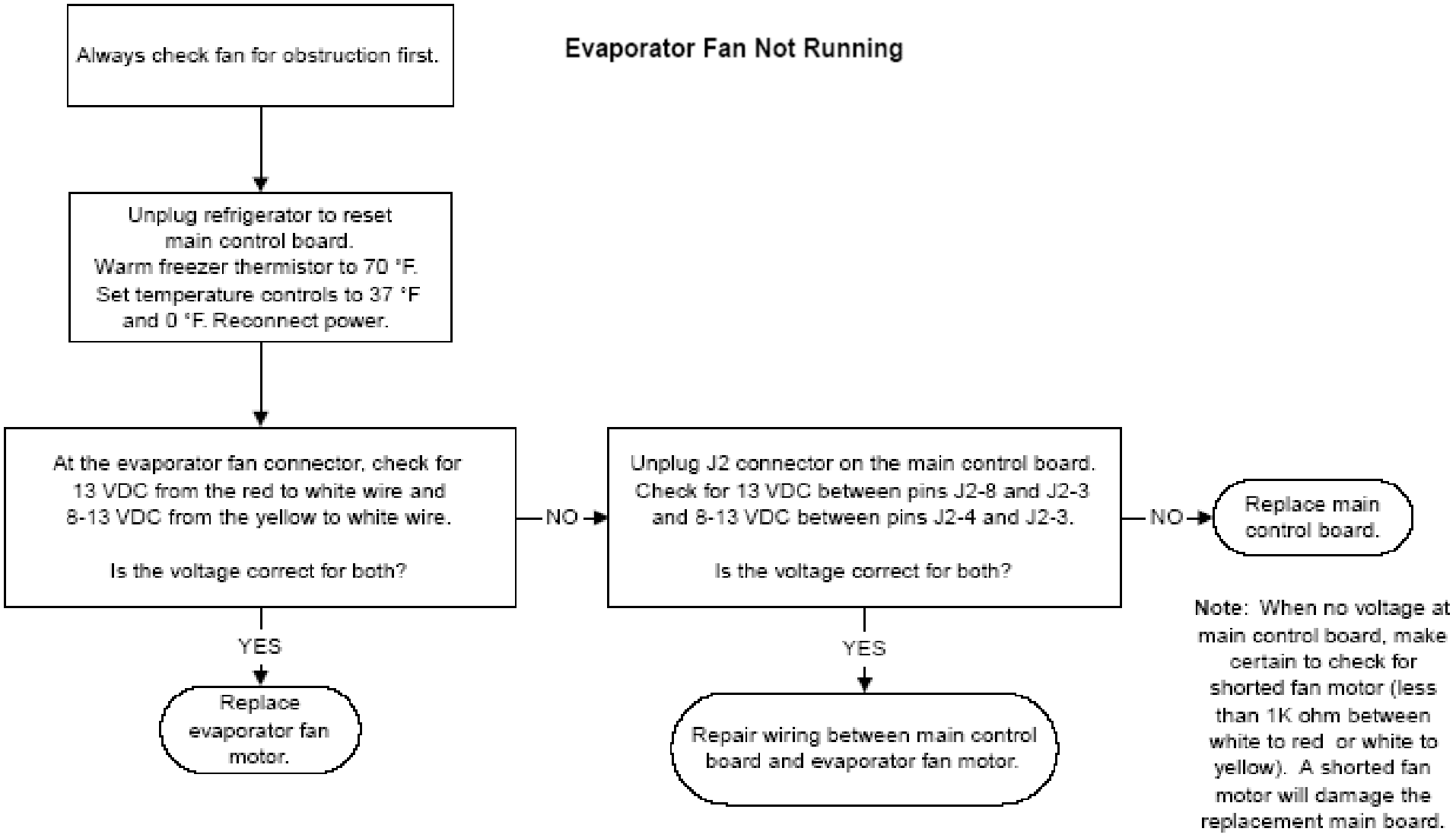
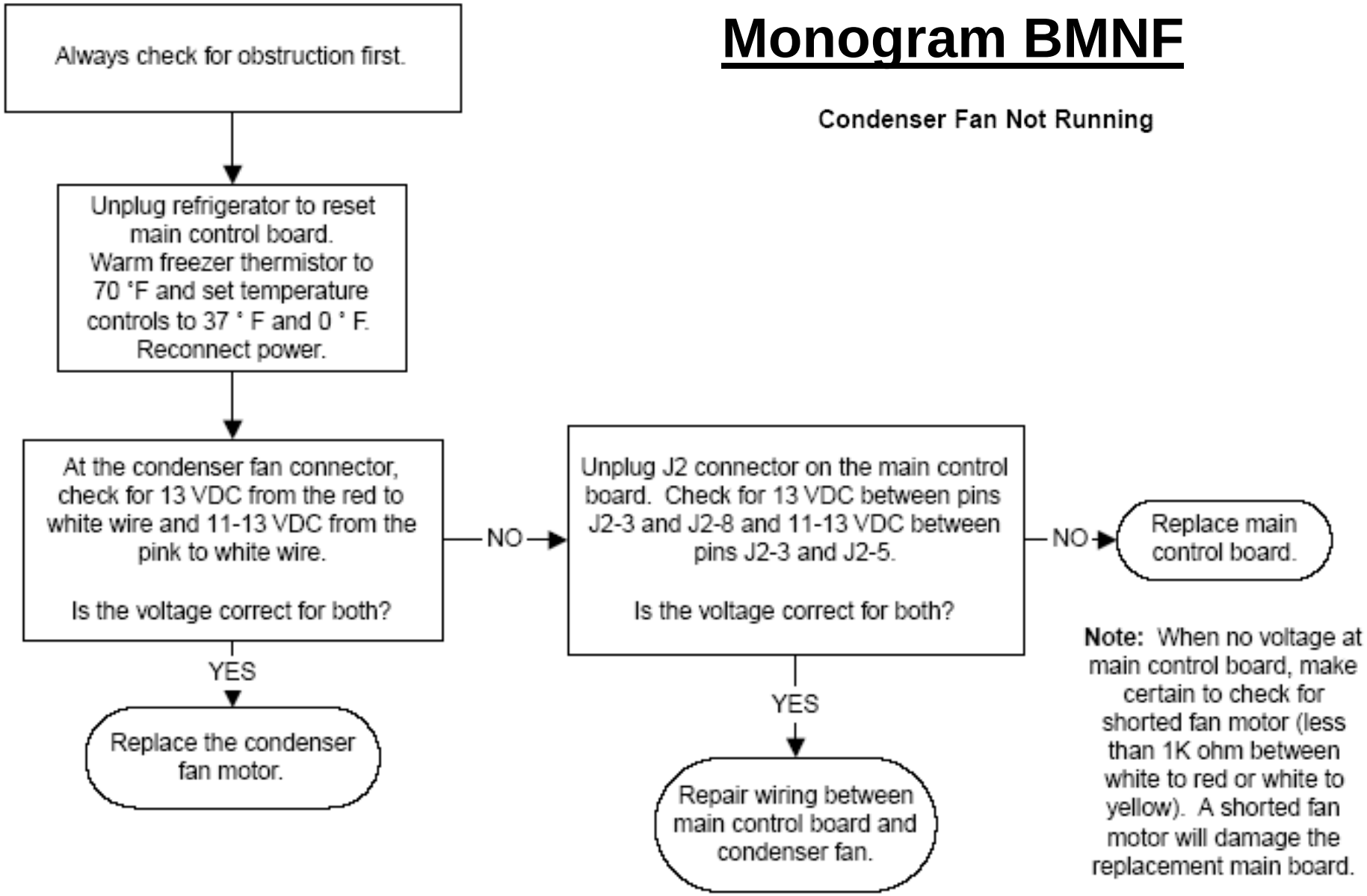


# Monogram BMNF

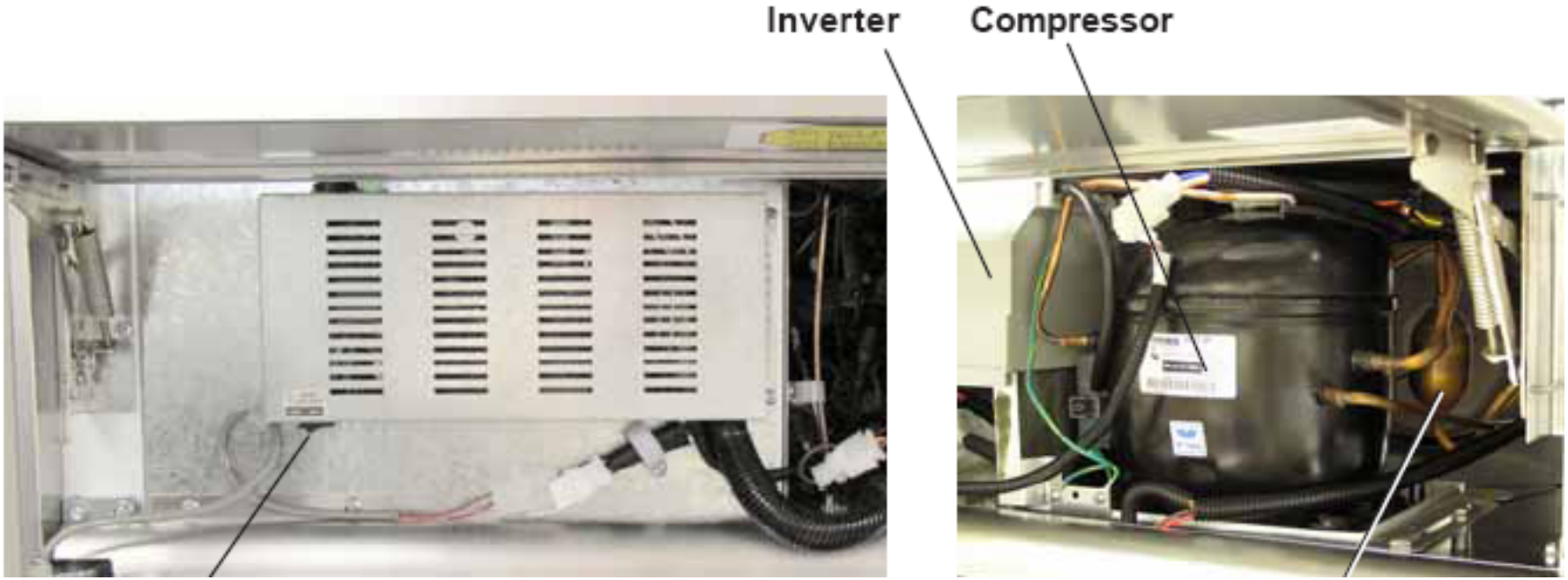
**Condenser Fan Not Running**



# Monogram Inverter SxS

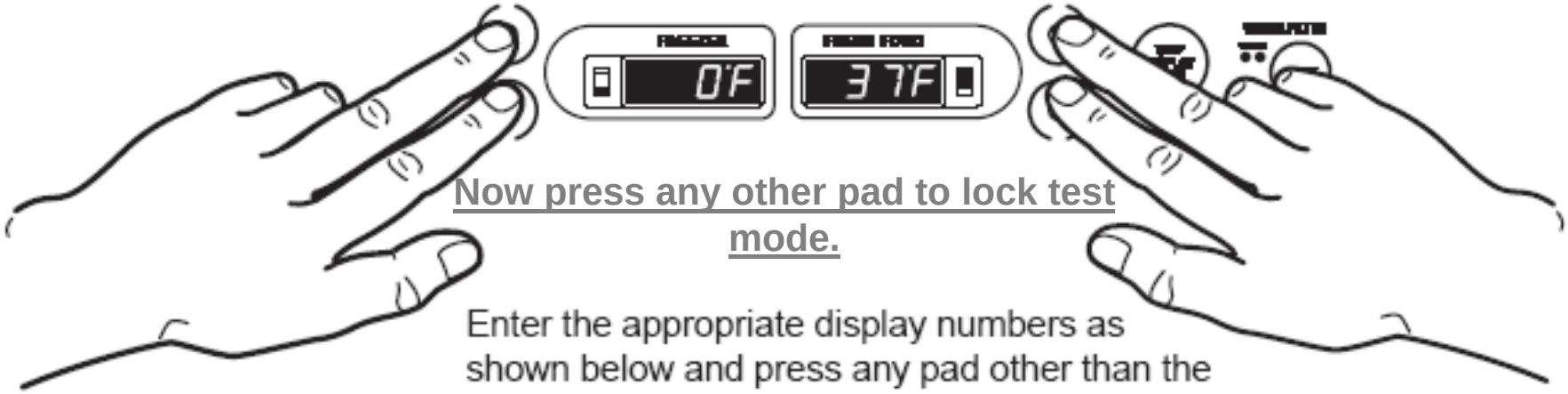
**ZIS360NR**
**ZIS420NR**
**ZIS480NR**

# Monogram Inverter SxS



# Monogram Inverter SxS

**Make sure controls are set to either “37” & “0”**




**Now press any other pad to lock test mode.**

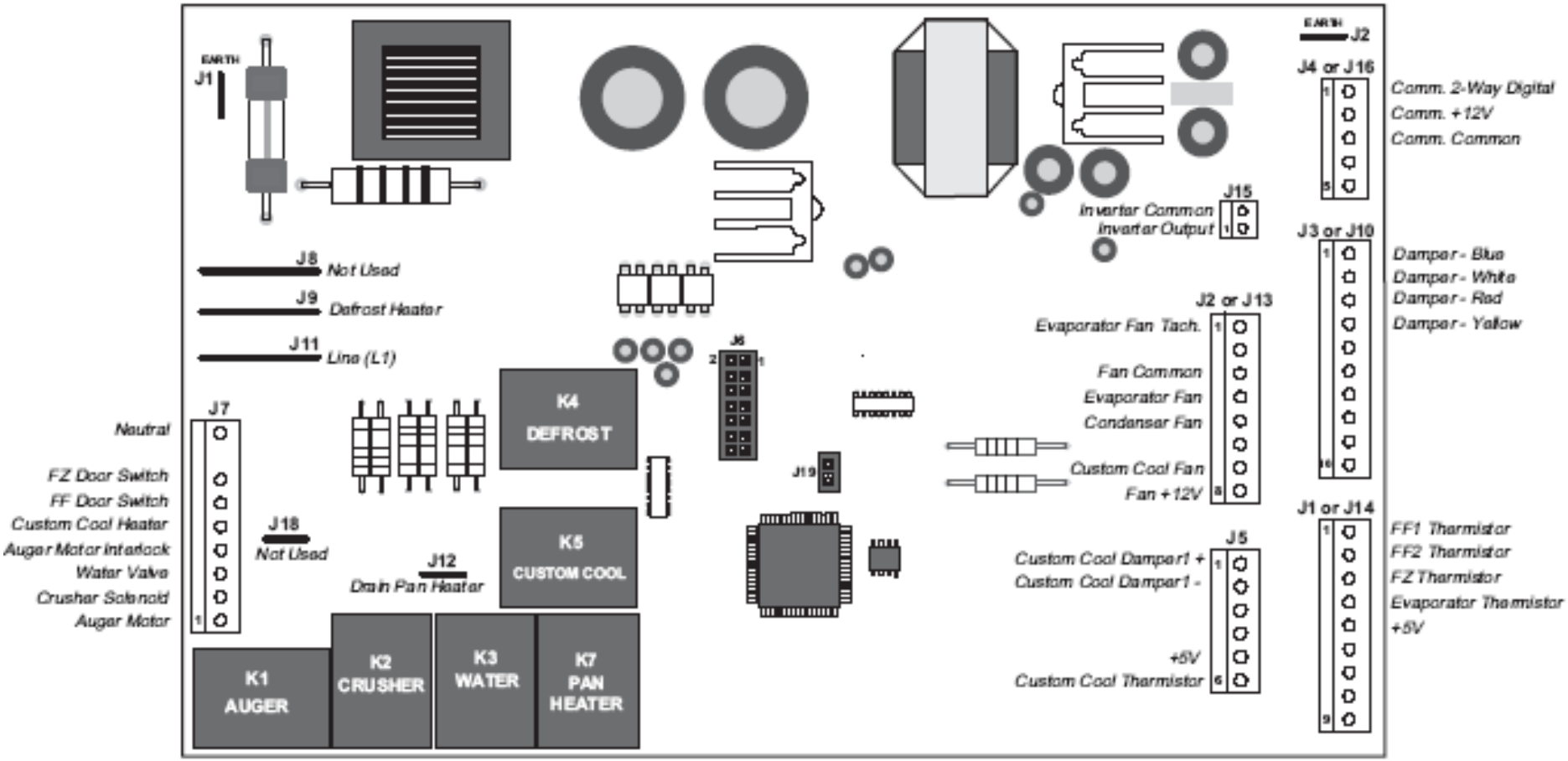
Enter the appropriate display numbers as shown below and press any pad other than the temperature pads to activate that test mode.

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

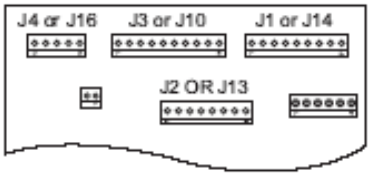
**Note 2:** You must enter the defrost test again to toggle the defrost heater off at the end of the test. The heater will not come on if the evaporator thermistor or overtemperature thermodisc is warm.

| Freezer Display | Fresh Food Display | Diagnostics | Results | Comments |
|---|---|---|---|---|
| 0 | 1 | Showroom Mode. | Unit in showroom mode. | FF door must be closed and reopened to start showroom mode. |
| 0 | 2 | Communication check between temperature control and main control board. | "P" on FZ display if OK.<br>"F" on FZ display means problem is found. | |
| 0 | 3 | Communication check between temperature control and dispenser. | "P" on FZ display if OK.<br>"F" on FZ display means problem is found. | |
| 0 | 4 | Communication check between dispenser and main control board. | "P" on FZ display if OK.<br>"F" on FZ display means problem is found. | |
| 0 | 6 | HMI (temperature control) Self Test. | All LED's and numeric segments will illuminate. | When "Express Thaw" pad is pressed "Express Thaw" LED's will turn off. When "Express Chill" pad is pressed "Express Chill" LED's will turn off. |
| 0 | 7 | Control and Sensor System Self Test. | Checks each thermistor and displays "P" for pass and "0" for fail. | See note 1 below. |
| 0 | 8 | Open Duct Door. | Duct door opens for 10 seconds then closes. | |
| 0 | 9 | Dispenser Recess Heater Test. | Turns the dispenser recess heater on for 60 seconds. | |
| 1 | 0 | Dampers Test. | Each damper will open, pause breifly, then close. | |
| 1 | 2 | 100% Run Time. | Sealed system on 100% of the time. Times out after 1 hour. | Cannot be entered if refrigerator is set to off. |
| 1 | 3 | Pre-chill Test. | Starts pre-chill mode. Unit returns to normal on its own. | Cannot be entered if refrigerator is set to off. |
| 1 | 4 | Defrost Test. | Toggles the defrost cycle. See note 2 below. | Must press again to turn heaters off. Cannot be entered if refrigerator is set to 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. | |
| 1 | 7 | Degree C/F. | Changes temperature display from F to C. | |

# Monogram Inverter SxS




Some of the low voltage DC connector labeling on this model may differ from other models. The function and diagnostics for these connectors are identical for all models.



| Main Control Board<br>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<br>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 |
| 7 | Black | QuickChill fan | Common | J2 pin 8 to pin 7 = 12 VDC |
| 8 | Red | Fan supply voltage (12 VDC) | Output | J2 pin 8 to pin 3 = 12 VDC |

| Main Control Board<br>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 =<br>Standing Voltage 2.3 VDC<br>Traveling Voltage = 6.0 VDC |
| 2 | White | Damper Stepper Motor | | J3 pin 2 to J4 pin 3 =<br>Standing Voltage 2.3 VDC<br>Traveling Voltage = 6.0 VDC |
| 3 | Red | Damper Stepper Motor | | J3 pin 3 to J4 pin 3 =<br>Standing Voltage 2.3 VDC<br>Traveling Voltage = 6.0 VDC |
| 4 | Yellow | Damper Stepper Motor | | J3 pin 4 to J4 pin 3 =<br>Standing Voltage 2.3 VDC<br>Traveling Voltage = 6.0 VDC |

| Main Control Board<br>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 main control board, temperature control (board), dispenser board, and QuickChill board. |
| 2 | Brown | Temperature control | VDC | 12-VDC supply. |
| 3 | Orange | Temperature control | VDC | DC common. |

# Monogram Inverter SxS

| Main Control Board<br>J5 Connector (Low-Voltage DC Side) | | | | |
|---|---|---|---|---|
| Pin | Wire Color | Component Termination | Input/ Output | Pin-to-Pin Voltage Reading |
| 1 | Yellow | QuickChill (Custom Cool) Damper | Input/ Output | J5 pin 1 to pin 2 = 12 VDC (reversing polarity) |
| 2 | Gray | QuickChill (Custom Cool) Damper | Input/ Output | J5 pin 2 to pin 1 = 12 VDC (reversing polarity) |
| 5 | Brown | Supply Voltage (5 VDC) | Output | J5 pin 10 to J2 pin 3 = 5 VDC |
| 6 | Blue | QuickChill (Custom Cool) Thermistor | Input | N/A |

# Monogram Inverter SxS

| Main Control Board<br>J7 Connector (120 VAC Side) | | | | |
|---|---|---|---|---|
| Pin | Wire Color | Component Termination | Input/ Output | Pin-to-Pin Voltage Reading |
| 1 | Black | Auger motor | Output | J7 pin 1 to J7 pin 9 = 120 VAC |
| 2 | Purple | Crusher solenoid | Output | J7 pin 2 to J7 pin 9 = 120 VAC |
| 3 | Blue | Water valve | Output | J7 pin 3 to J7 pin 9 = 120 VAC |
| 4 | Red | Freezer door switch | Input | J7 pin 4 to J7 pin 9 = 120 VAC (FZ door closed) |
| 5 | Violet | QuickChill Heater | Output | J7 pin 5 to J7 pin 9 = 120 VAC |
| 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 |
| J9 | Red | Output | J9 to J7 pin 9 = 120 VA |
| J11 | Brown | Input | J11 to J7 pin 9 = 120 VA |
| J12 | Black | Output | J12 to J7 pin 9 = 120 VA |

## Testing

The most accurate method of testing a thermistor is to place it in a glass of ice water for several minutes. The thermistor should read approximately **16KΩ** in the glass of 33°F ice water.

**Note:** Thermistors can also be checked for an open or shorted condition by using the diagnostic mode (see ***Service Diagnostics***).

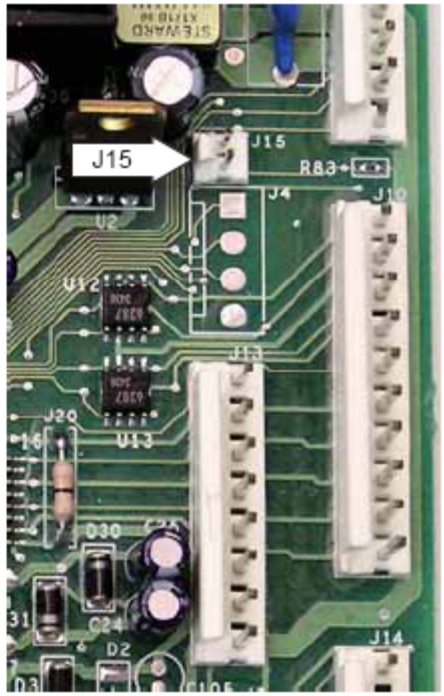
| Thermistor Values | | |
|---|---|---|
| Temperature Degrees (C) | Temperature Degrees (F) | Resistance in Kilo-ohms |
| -40 | -40 | 166.8 kΩ |
| -30 | -22 | 88 kΩ |
| -20 | -4 | 48.4 kΩ |
| -10 | 14 | 27.6 kΩ |
| 0 | 32 | 16.3 kΩ |
| 10 | 50 | 10 kΩ |
| 20 | 68 | 6.2 kΩ |
| 30 | 86 | 4 kΩ |
| 40 |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

# Monogram Inverter SxS

The inverter receives 120 VAC line-in from the power supply. The inverter converts this single-phase, 60 Hz, 120 VAC into 3-phase, 230 VAC, with frequency variations between 57 Hz and 104 Hz. This voltage is delivered to the compressor through 3 lead wires. Each wire will carry identical voltage and frequency. When checking inverter voltage output, connect the test-meter leads to any 2 of the 3 compressor lead wires. The same reading should be measured between any 2 of the 3 wires.

**Note:** The compressor leads must be connected to measure voltage output. If the compressor wires are not connected, or if an open occurs in one of the 3 lead wires or in the compressor, the inverter will stop voltage output.

The inverter receives commands from the main control board. The main control board will send a (PWM) run signal between 4 and 6 VDC effective voltage to the inverter. The signal voltage at the inverter should be equal to the signal voltage sent by the main control board. The inverter will select compressor speed (voltage output) based on this signal. A signal voltage from the main control board (J15 connector ) lower than 5 VDC indicates a faulty main control board. The main control board will only send a run signal to the inverter when the compressor should be on.




**Note:** When measuring signal voltage (from the main control board) at the inverter, disconnect the wire harness connector at the inverter and measure the voltage at the connector.

The inverter will monitor compressor operation and if the compressor fails to start or excessive current draw (4 amps maximum) is detected, the inverter will briefly stop voltage output. The inverter will then make 12 consecutive compressor start attempts (once every 12 seconds). If after 12 attempts the compressor has not started, an 8-minute count will initiate. After the 8-minute count, the inverter will attempt to start the compressor again. If the compressor starts, normal operation will resume. If the compressor fails to start, this process will be repeated. Removing power to the unit will reset the inverter count. When power is restored, the inverter will attempt to start the compressor within 8 seconds.

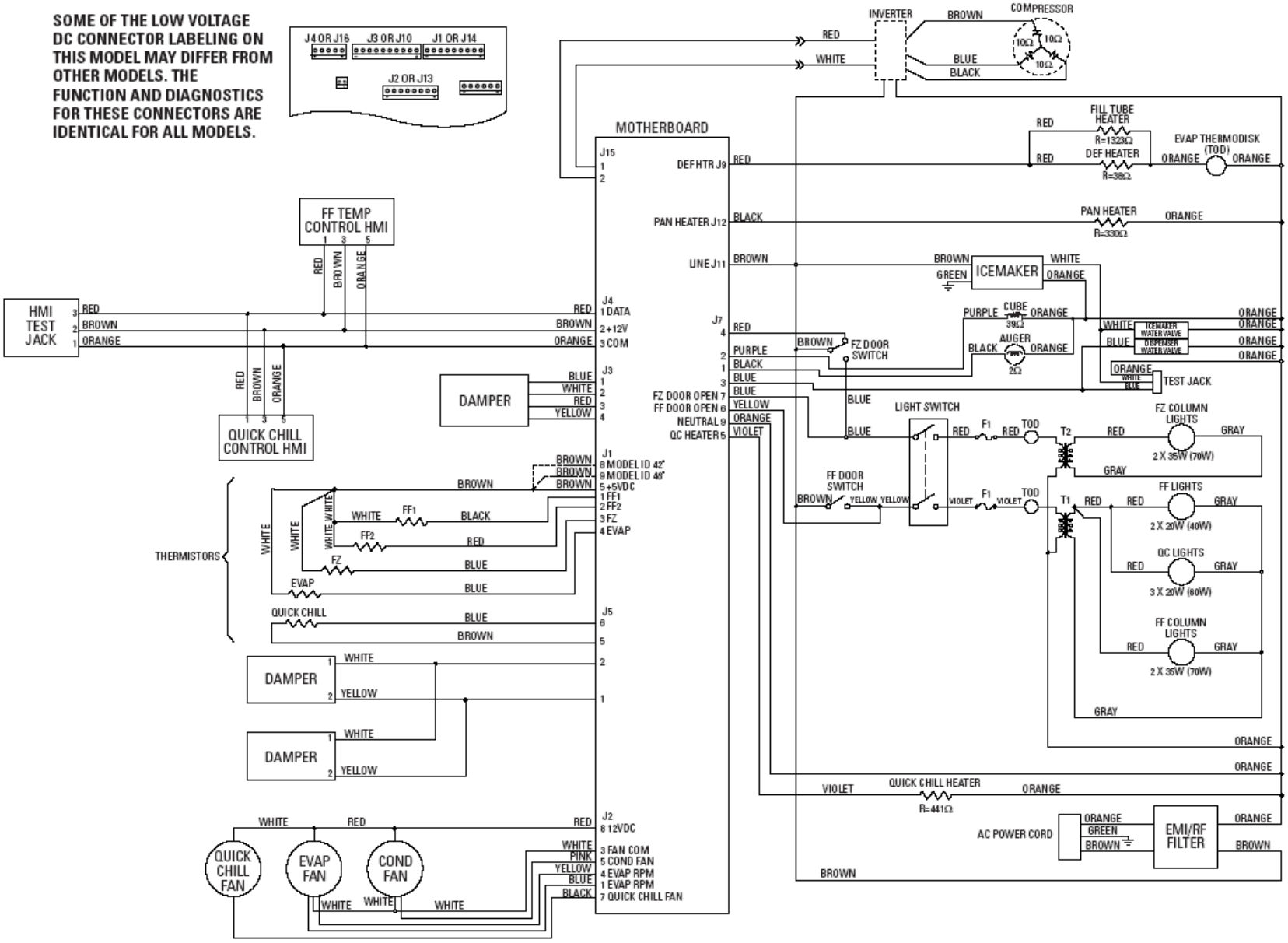
# Monogram Inverter Test

- Put Refrigerator into Diagnostic Mode.
- Set for the “1 – 2 Test” – Compressor Run Time.
- Lift up top hinged door.
- Remove cover from Main Control Board.
- Set meter to ACV.
- Place meter leads on Inverter wire connector (Black & Orange).
- Should read line voltage – if not check wires & repair, otherwise go to next step.
- Set meter to DCV.
- Place meter leads on Inverter wire connector (White & Red).
- Should read between 4VDC & 6VDC – if not go to next step, otherwise check compressor windings – any two terminals should read 10W & also check each terminal to case, replace compressor if any windings are defective – if not, replace Inverter.
- Place meter leads on J15-1 & J15-2.
- Should read between 4VDC & 6VDC – if not replace Main Board.
- If correct DCV at J15-1 & J15-2, repair broken wire or reconnect loose plug/pin.

**SOME OF THE LOW VOLTAGE DC CONNECTOR LABELING ON THIS MODEL MAY DIFFER FROM OTHER MODELS. THE FUNCTION AND DIAGNOSTICS FOR THESE CONNECTORS ARE IDENTICAL FOR ALL MODELS.**

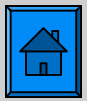



# ZIS360







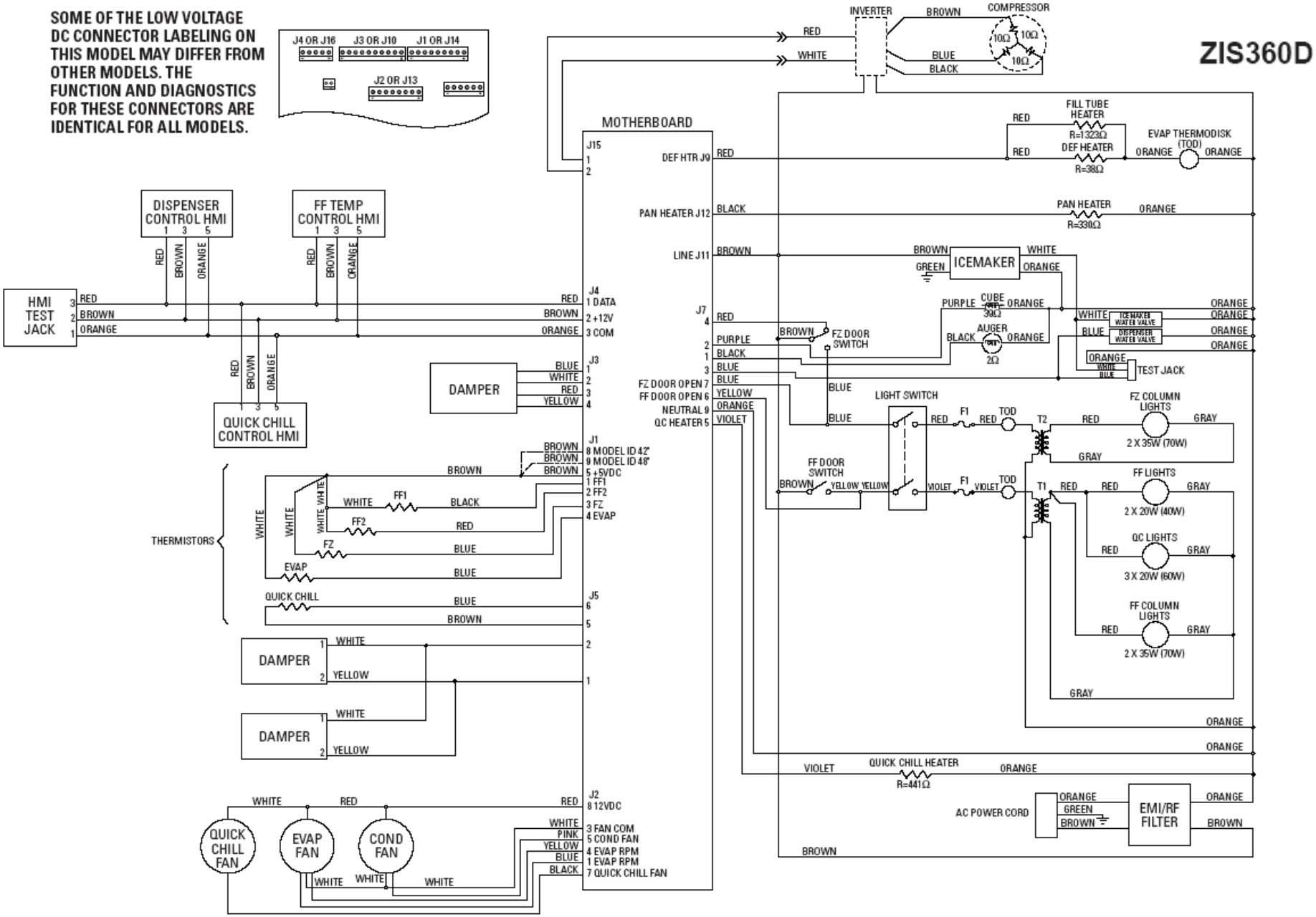





**SOME OF THE LOW VOLTAGE DC CONNECTOR LABELING ON THIS MODEL MAY DIFFER FROM OTHER MODELS. THE FUNCTION AND DIAGNOSTICS FOR THESE CONNECTORS ARE IDENTICAL FOR ALL MODELS.**



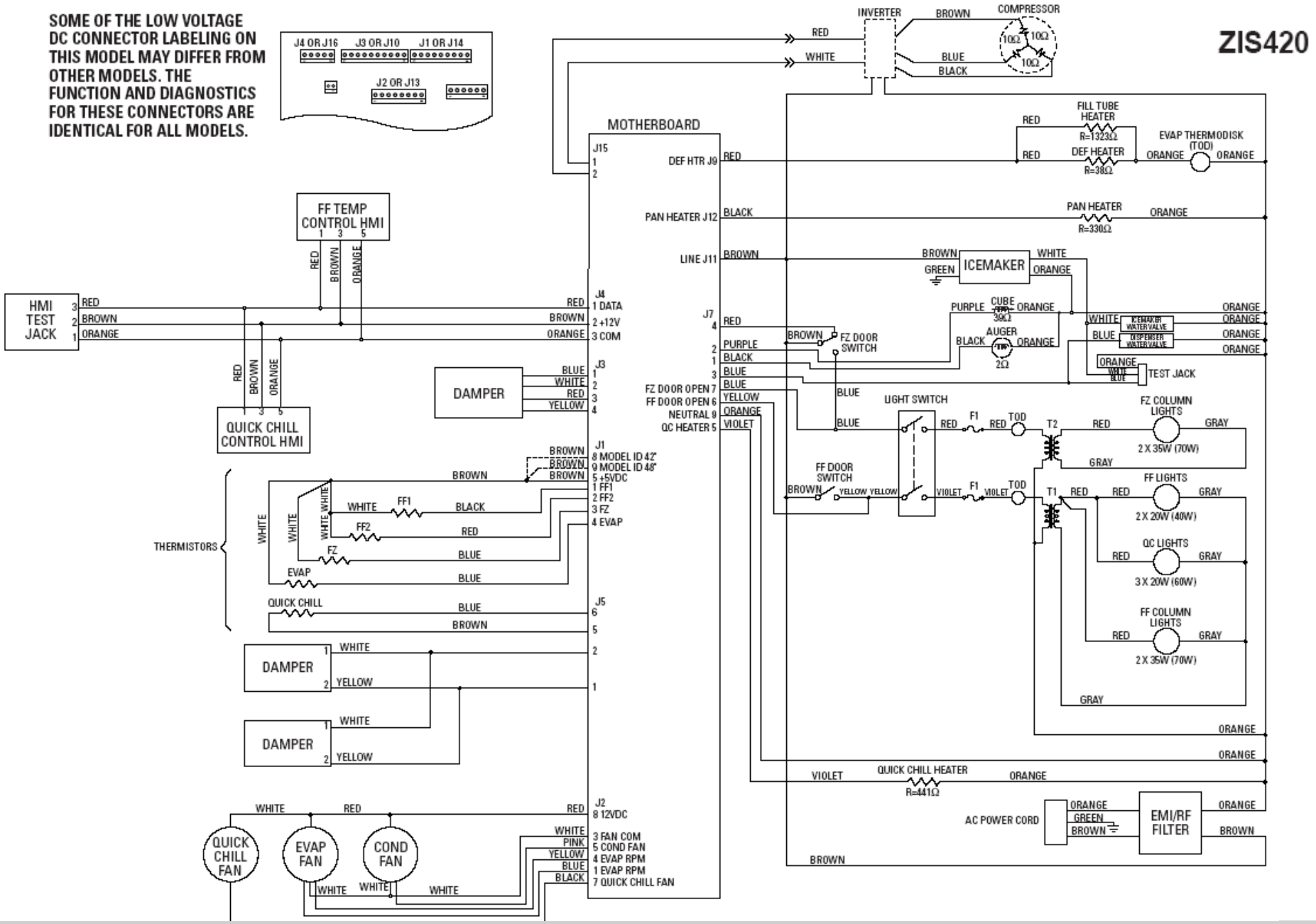

# ZIS360D



**SOME OF THE LOW VOLTAGE DC CONNECTOR LABELING ON THIS MODEL MAY DIFFER FROM OTHER MODELS. THE FUNCTION AND DIAGNOSTICS FOR THESE CONNECTORS ARE IDENTICAL FOR ALL MODELS.**




# ZIS420





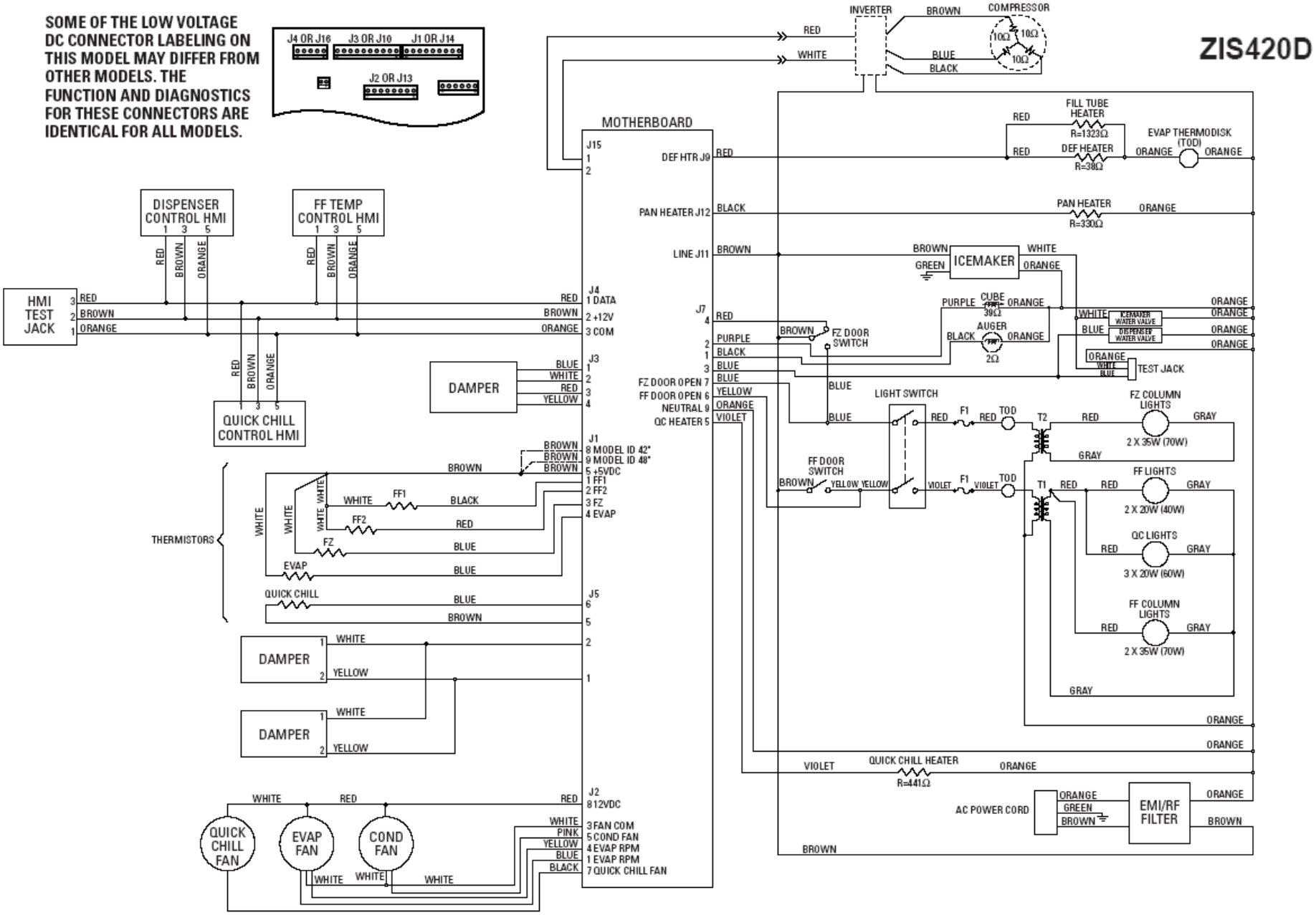


(SG51)

**SOME OF THE LOW VOLTAGE DC CONNECTOR LABELING ON THIS MODEL MAY DIFFER FROM OTHER MODELS. THE FUNCTION AND DIAGNOSTICS FOR THESE CONNECTORS ARE IDENTICAL FOR ALL MODELS.**

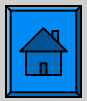



# ZIS420D







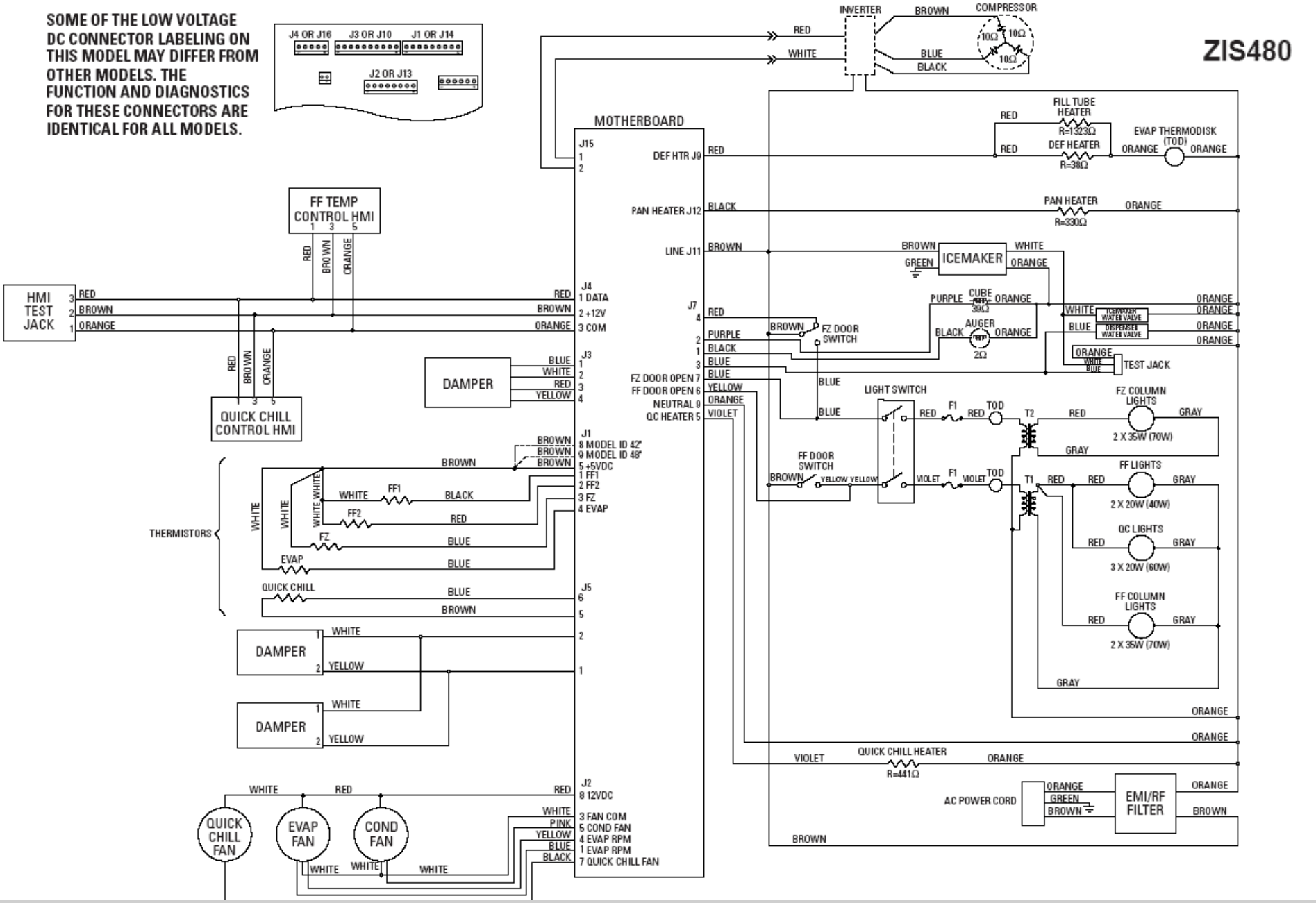





# ZIS480

**SOME OF THE LOW VOLTAGE DC CONNECTOR LABELING ON THIS MODEL MAY DIFFER FROM OTHER MODELS. THE FUNCTION AND DIAGNOSTICS FOR THESE CONNECTORS ARE IDENTICAL FOR ALL MODELS.**

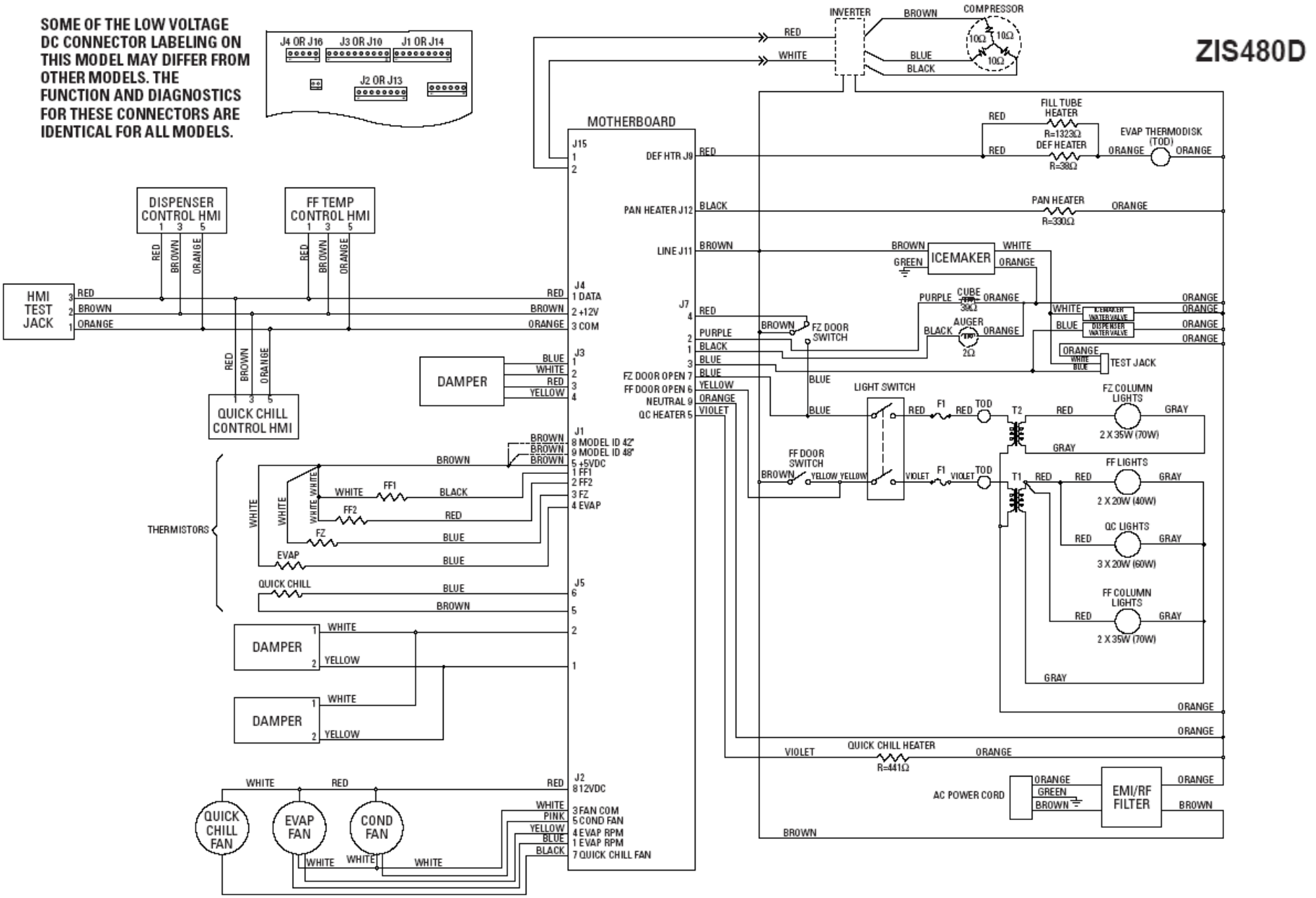


**SOME OF THE LOW VOLTAGE DC CONNECTOR LABELING ON THIS MODEL MAY DIFFER FROM OTHER MODELS. THE FUNCTION AND DIAGNOSTICS FOR THESE CONNECTORS ARE IDENTICAL FOR ALL MODELS.**

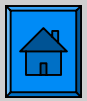



# ZIS480D



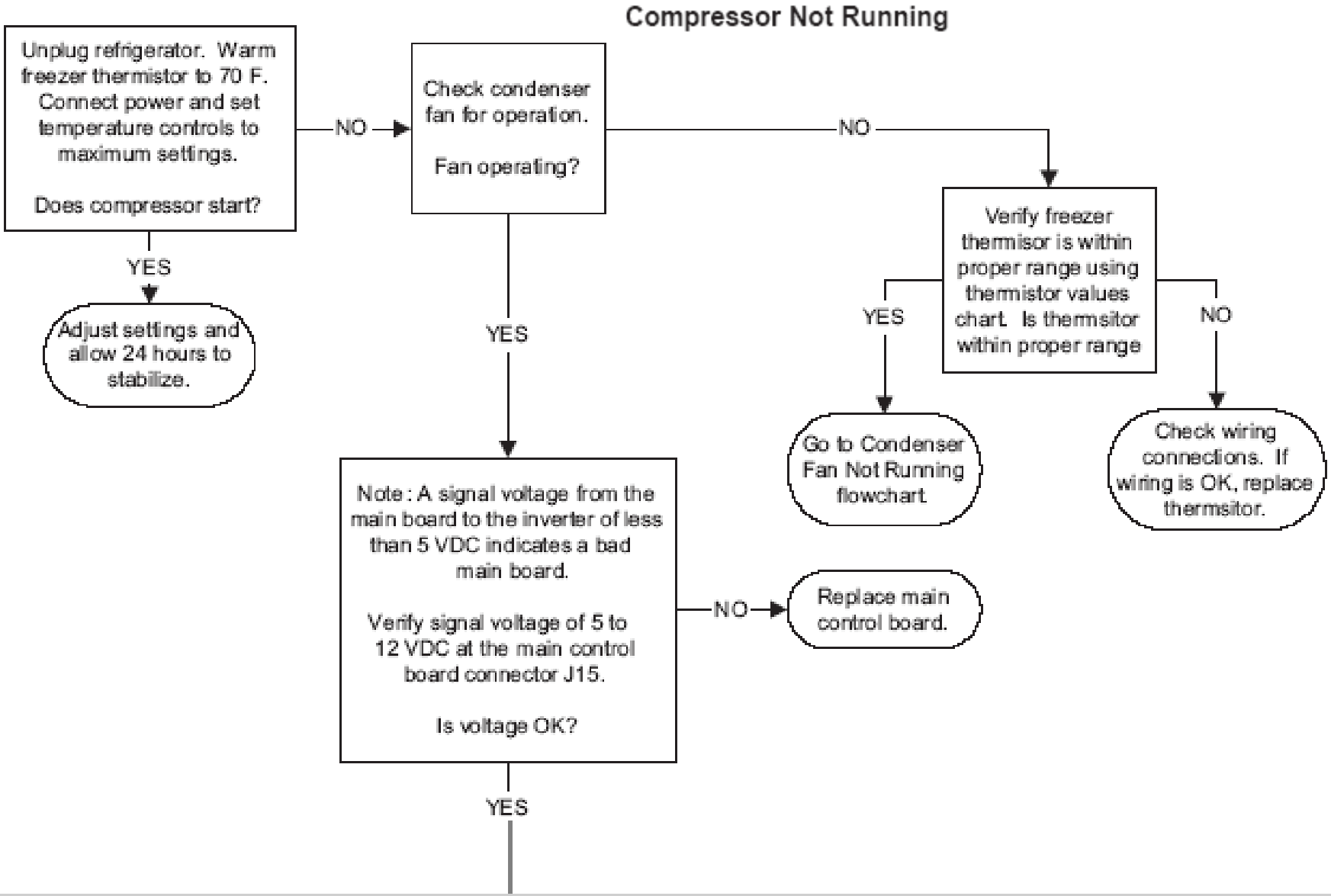


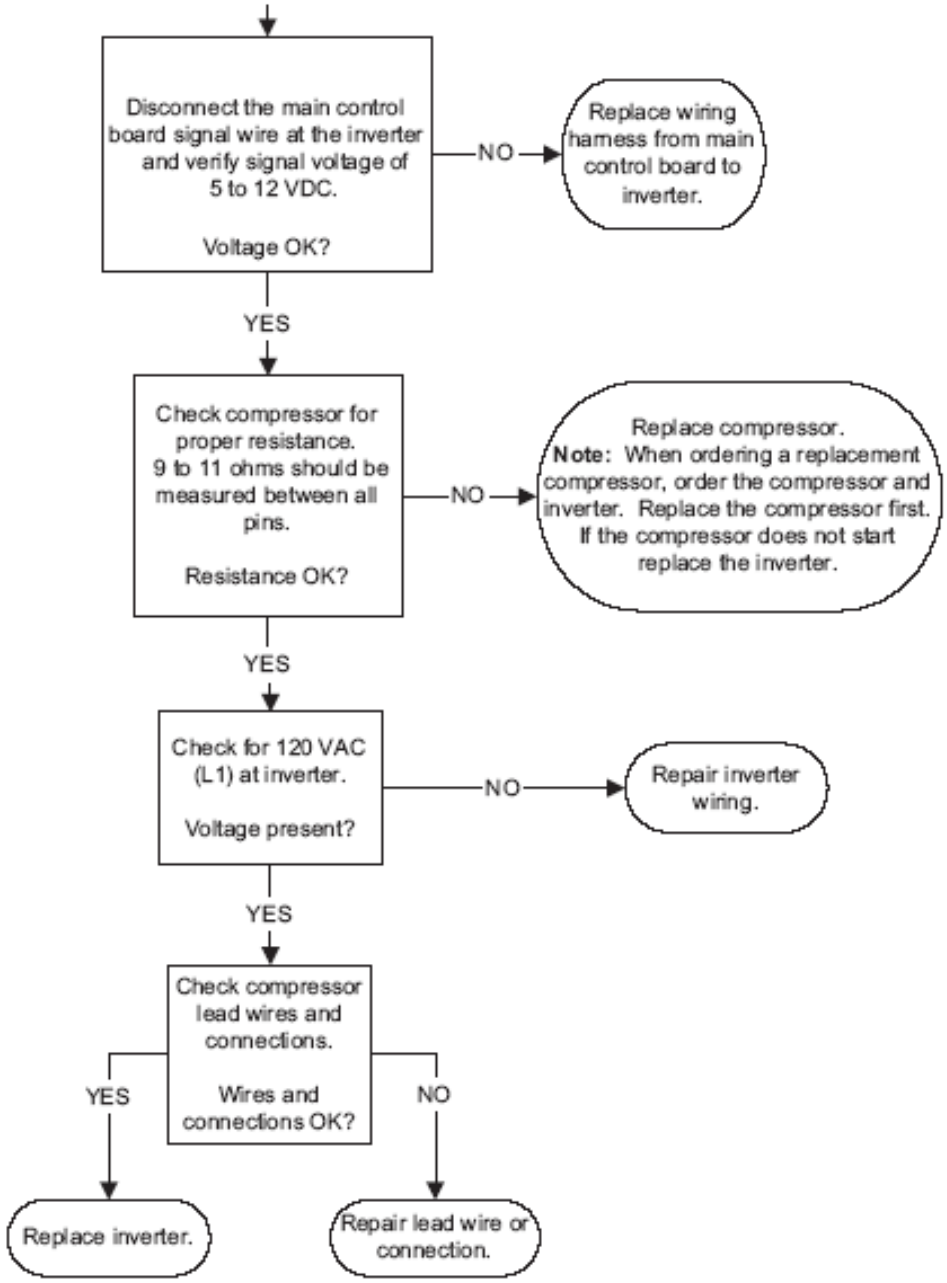




# Monogram Inverter SxS

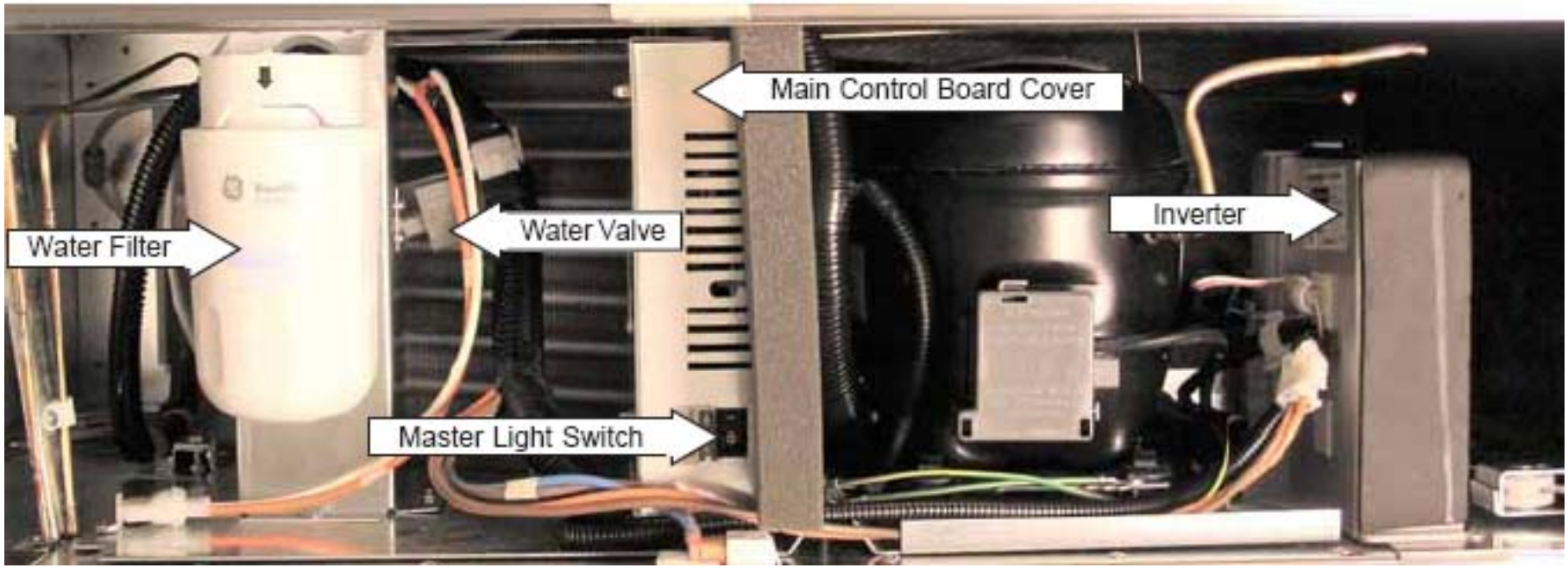



Disconnect the main control board signal wire at the inverter and verify signal voltage of 5 to 12 VDC.
Voltage OK?
NO
Replace wiring harness from main control board to inverter.
YES
Check compressor for proper resistance. 9 to 11 ohms should be measured between all pins.
Resistance OK?
NO
Replace compressor. Note: When ordering a replacement compressor, order the compressor and inverter. Replace the compressor first. If the compressor does not start replace the inverter.
YES
Check for 120 VAC (L1) at inverter.
Voltage present?
NO
Repair inverter wiring.
YES
Check compressor lead wires and connections.
Wires and connections OK?
YES
NO
Replace inverter.
Repair lead wire or connection.

# Monogram Inverter BMNF

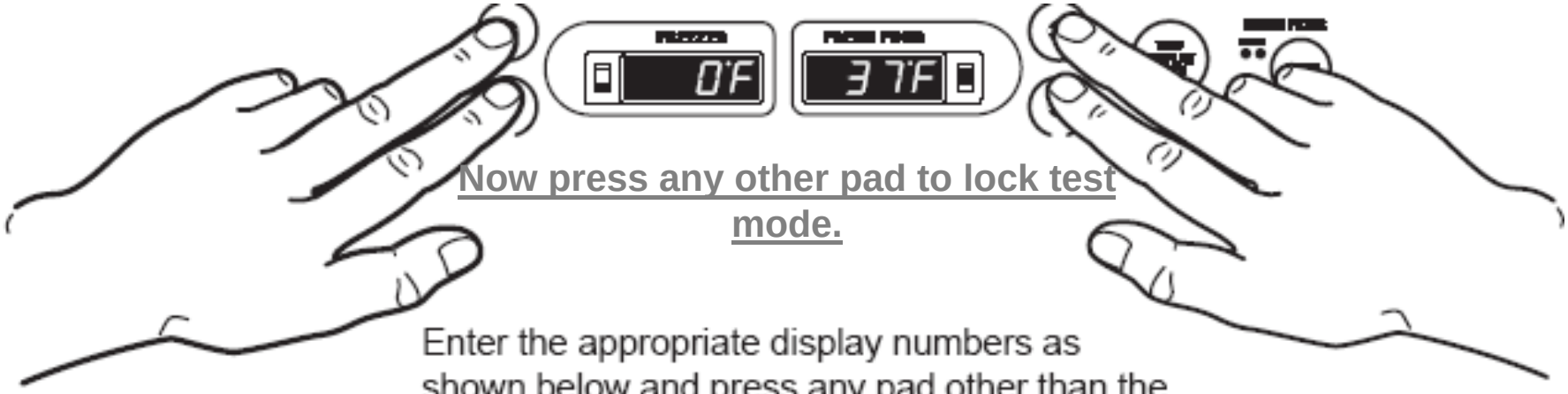
**ZIC360NR**
**ZICS360NR**

# Monogram Inverter BMNF



# Monogram Inverter BMNF

**Make sure controls are set to either “37” & “0”**




**Now press any other pad to lock test mode.**

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

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

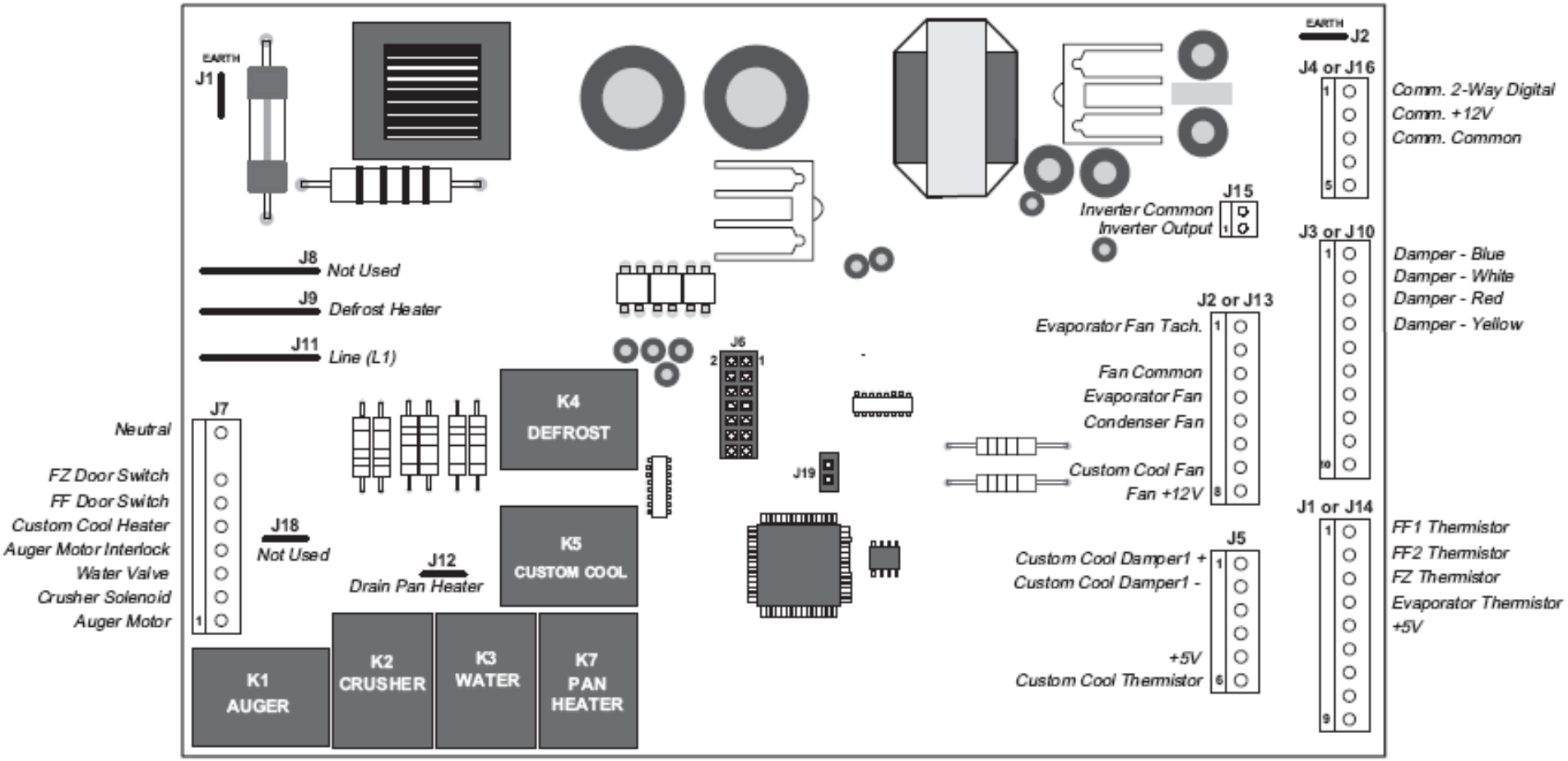
**Note 2:** You must enter the defrost test again to toggle the defrost heater off at the end of the test. The heater will not come on if the evaporator thermistor or overtemperature thermodisc is warm.

# Monogram Inverter BMNF

| Freezer Display | Fresh Food Display | Diagnostics | Results | Comments |
|---|---|---|---|---|
| 0 | 1 | Showroom Mode. | Unit in showroom mode. | FF door must be closed and reopened to start showroom mode. |
| 0 | 2 | Communication check between temperature control and main control board. | "P" on FZ display if OK. "F" on FZ display means problem is found. | |
| 0 | 3 | Communication check between temperature control and dispenser. | "P" on FZ display if OK. "F" on FZ display means problem is found. | |
| 0 | 4 | Communication check between dispenser and main control board. | "P" on FZ display if OK. "F" on FZ display means problem is found. | |
| 0 | 6 | HMI (temperature control) Self Test. | All LED's and numeric segments will illuminate. | When "Express Thaw" pad is pressed "Express Thaw" LED's will turn off. When "Express Chill" pad is pressed "Express Chill" LED's will turn off. |
| 0 | 7 | Control and Sensor System Self Test. | Checks each thermistor and displays "P" for pass and "0" for fail. | See note 1 below. |
| 0 | 8 | Open Duct Door. | Duct door opens for 10 seconds then closes. | |
| 0 | 9 | Dispenser Recess Heater Test. | Turns the dispenser recess heater on for 60 seconds. | |
| 1 | 0 | Dampers Test. | Each damper will open, pause breifly, then close. | |
| 1 | 2 | 100% Run Time. | Sealed system on 100% of the time. Times out after 1 hour. | Cannot be entered if refrigerator is set to off. |
| 1 | 3 | Pre-chill Test. | Starts pre-chill mode. Unit returns to normal on its own. | Cannot be entered if refrigerator is set to off. |
| 1 | 4 | Defrost Test. | Toggles the defrost cycle. See note 2 below. | Must press again to turn heaters off. Cannot be entered if refrigerator is set to 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. | |
| 1 | 7 | Degree C/F. | Changes temperature display from F to C. | |




# Monogram Inverter BMNF

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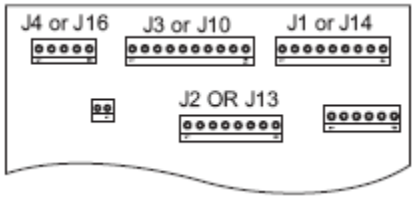


| Main Control Board<br>J1 Connector (Low-Voltage DC Side) | | | | |
|---|---|---|---|---|
| Pin | Wire Color | Component Termination | Input/ Output | Pin-to-Pin Voltage Reading |
| 1 | Purple | Fresh food thermistor 1 | Input | J1 pin 1 to pin 5 = 2.8 to 3.5 VDC |
| 2 | Blue | Fresh food thermistor 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<br>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 |
| 7 | Black | QuickChill fan | Common | J2 pin 8 to pin 7 = 12 VDC |
| 8 | Red | Fan supply voltage (12 VDC) | Output | J2 pin 8 to pin 3 = 12 VDC |

| Main Control Board<br>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 =<br>Standing Voltage 2.3 VDC<br>Traveling Voltage = 6.0 VDC |
| 2 | White | Damper Stepper Motor | | J3 pin 2 to J4 pin 3 =<br>Standing Voltage 2.3 VDC<br>Traveling Voltage = 6.0 VDC |
| 3 | Red | Damper Stepper Motor | | J3 pin 3 to J4 pin 3 =<br>Standing Voltage 2.3 VDC<br>Traveling Voltage = 6.0 VDC |
| 4 | Yellow | Damper Stepper Motor | | J3 pin 4 to J4 pin 3 =<br>Standing Voltage 2.3 VDC<br>Traveling Voltage = 6.0 VDC |

| Main Control Board<br>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 main control board, temperature control (board), dispenser board, and QuickChill board. |
| 2 | Brown | Temperature control | VDC | 12-VDC supply. |
| 3 | Orange | Temperature control | VDC | DC common. |

# Monogram Inverter BMNF

| Main Control Board<br>J5 Connector (Low-Voltage DC Side) | | | | |
|---|---|---|---|---|
| Pin | Wire Color | Component Termination | Input/ Output | Pin-to-Pin Voltage Reading |
| 1 | Yellow | QuickChill (Custom Cool) Damper | Input/ Output | J5 pin 1 to pin 2 = 12 VDC (reversing polarity) |
| 2 | Gray | QuickChill (Custom Cool) Damper | Input/ Output | J5 pin 2 to pin 1 = 12 VDC (reversing polarity) |
| 5 | Brown | Supply Voltage (5 VDC) | Output | J5 pin 10 to J2 pin 3 = 5 VDC |
| 6 | Blue | QuickChill (Custom Cool) Thermistor | Input | N/A |

# Monogram Inverter BMNF

| Main Control Board<br>J7 Connector (120 VAC Side) | | | | |
|---|---|---|---|---|
| Pin | Wire Color | Component Termination | Input/ Output | Pin-to-Pin Voltage Reading |
| 1 | Black | Auger motor | Output | J7 pin 1 to J7 pin 9 = 120 VAC |
| 2 | Purple | Crusher solenoid | Output | J7 pin 2 to J7 pin 9 = 120 VAC |
| 3 | Blue | Water valve | Output | J7 pin 3 to J7 pin 9 = 120 VAC |
| 4 | Red | Freezer door switch | Input | J7 pin 4 to J7 pin 9 = 120 VAC (FZ door closed) |
| 5 | Violet | QuickChill Heater | Output | J7 pin 5 to J7 pin 9 = 120 VAC |
| 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 |

# Monogram Inverter BMNF

| Main Control Board J8, J9, J11 Connectors (High-Voltage Side) | | | |
|---|---|---|---|
| Pin | Wire Color | Input/Output | Pin-to-Pin Voltage Reading |
| J9 | Red | Output | J9 to J7 pin 9 = 120 VA |
| J11 | Brown | Input | J11 to J7 pin 9 = 120 VA |
| J12 | Black | Output | J12 to J7 pin 9 = 120 VA |

**Testing**

The most accurate method of testing a thermistor is to place it in a glass of ice water for several minutes. The thermistor should read approximately **16KΩ** in the glass of 33°F ice water.

**Note:** Thermistors can also be checked for an open or shorted condition by using the diagnostic mode (see ***Service Diagnostics***).

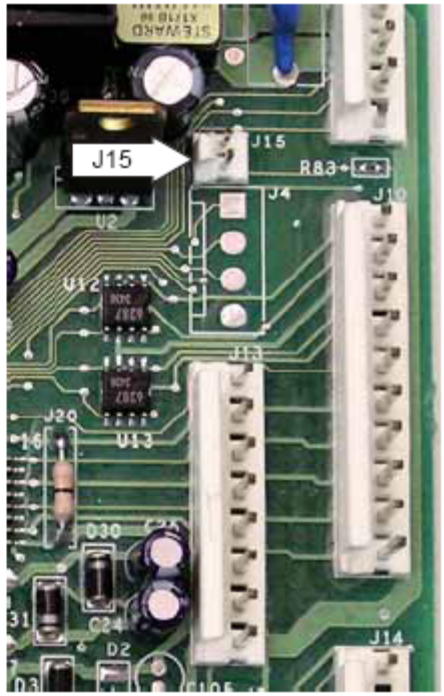
| Thermistor Values | | |
|---|---|---|
| Temperature Degrees (C) | Temperature Degrees (F) | Resistance in Kilo-ohms |
| -40 | -40 | 166.8 kΩ |
| -30 | -22 | 88 kΩ |
| -20 | -4 | 48.4 kΩ |
| -10 | 14 | 27.6 kΩ |
| 0 | 32 | 16.3 kΩ |
| 10 | 50 | 10 kΩ |
| 20 | 68 | 6.2 kΩ |
| 30 | 86 | 4 kΩ |
| 40 |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

# Monogram Inverter BMNF

The inverter receives 120 VAC line-in from the power supply. The inverter converts this single-phase, 60 Hz, 120 VAC into 3-phase, 230 VAC, with frequency variations between 57 Hz and 104 Hz. This voltage is delivered to the compressor through 3 lead wires. Each wire will carry identical voltage and frequency. When checking inverter voltage output, connect the test-meter leads to any 2 of the 3 compressor lead wires. The same reading should be measured between any 2 of the 3 wires.

**Note:** The compressor leads must be connected to measure voltage output. If the compressor wires are not connected, or if an open occurs in one of the 3 lead wires or in the compressor, the inverter will stop voltage output.

The inverter receives commands from the main control board. The main control board will send a (PWM) run signal between 4 and 6 VDC effective voltage to the inverter. The signal voltage at the inverter should be equal to the signal voltage sent by the main control board. The inverter will select compressor speed (voltage output) based on this signal. A signal voltage from the main control board (J15 connector ) lower than 5 VDC indicates a faulty main control board. The main control board will only send a run signal to the inverter when the compressor should be on.




**Note:** When measuring signal voltage (from the main control board) at the inverter, disconnect the wire harness connector at the inverter and measure the voltage at the connector.

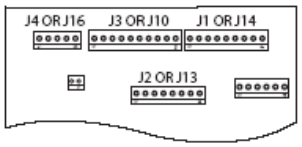
The inverter will monitor compressor operation and if the compressor fails to start or excessive current draw (4 amps maximum) is detected, the inverter will briefly stop voltage output. The inverter will then make 12 consecutive compressor start attempts (once every 12 seconds). If after 12 attempts the compressor has not started, an 8-minute count will initiate. After the 8-minute count, the inverter will attempt to start the compressor again. If the compressor starts, normal operation will resume. If the compressor fails to start, this process will be repeated. Removing power to the unit will reset the inverter count. When power is restored, the inverter will attempt to start the compressor within 8 seconds.

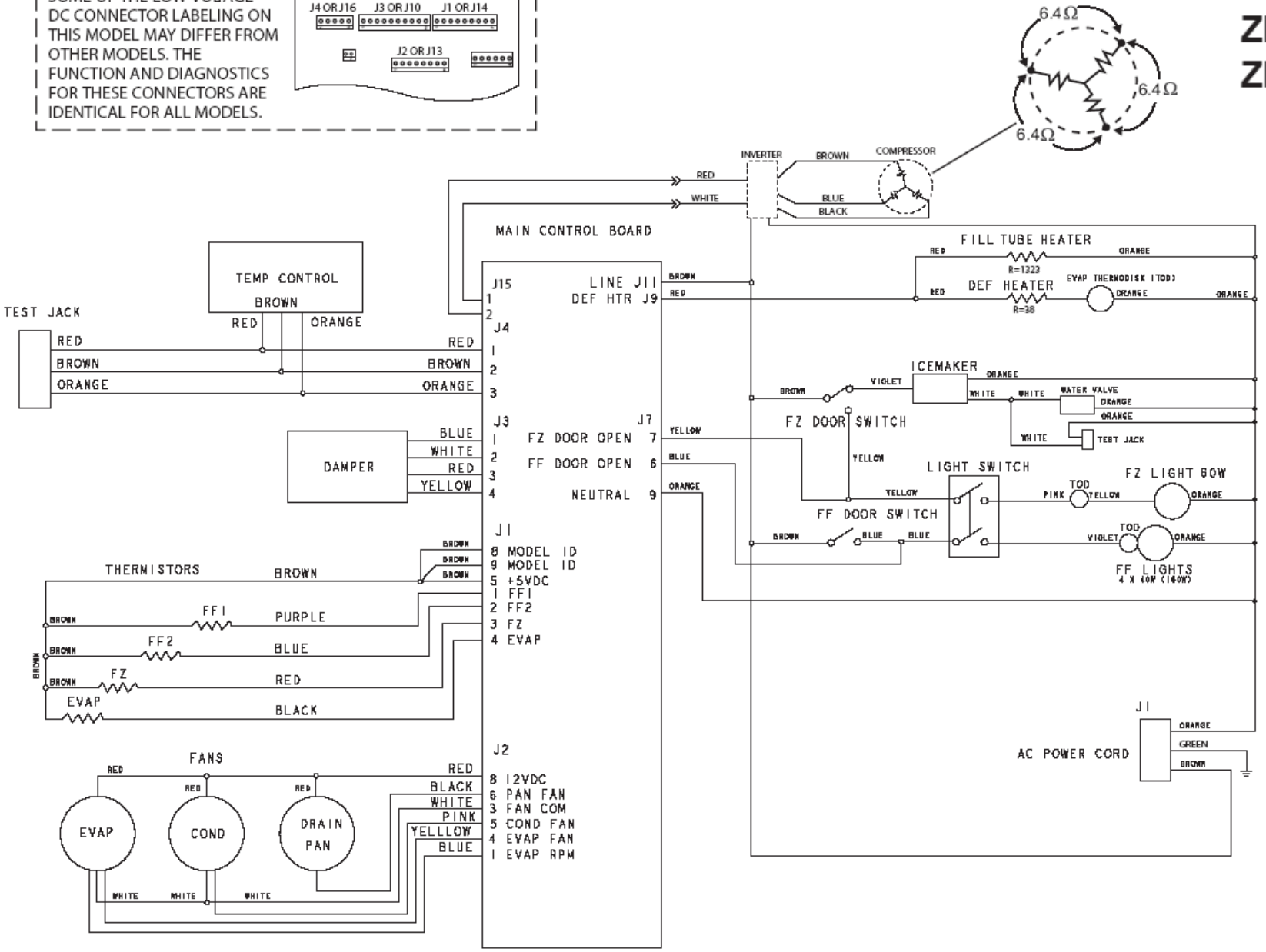
# Monogram BMNF Inverter Test

- Put Refrigerator into Diagnostic Mode.
- Set for the “1 – 2 Test” – Compressor Run Time.
- Lift up top hinged door.
- Remove cover from Main Control Board.
- Set meter to ACV.
- Place meter leads on Inverter wire connector (Black & Orange).
- Should read line voltage – if not check wires & repair, otherwise go to next step.
- Set meter to DCV.
- Place meter leads on Inverter wire connector (White & Red).
- Should read between 4VDC & 6VDC – if not go to next step, otherwise check compressor windings – any two terminals should read 10W & also check each terminal to case, replace compressor if any windings are defective – if not, replace Inverter.
- Place meter leads on J15-1 & J15-2.
- Should read between 4VDC & 6VDC – if not replace Main Board.
- If correct DCV at J15-1 & J15-2, repair broken wire or reconnect loose plug/pin.

# ZIC360NR
# ZICS360NR

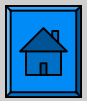
SOME OF THE LOW VOLTAGE DC CONNECTOR LABELING ON THIS MODEL MAY DIFFER FROM OTHER MODELS. THE FUNCTION AND DIAGNOSTICS FOR THESE CONNECTORS ARE IDENTICAL FOR ALL MODELS.







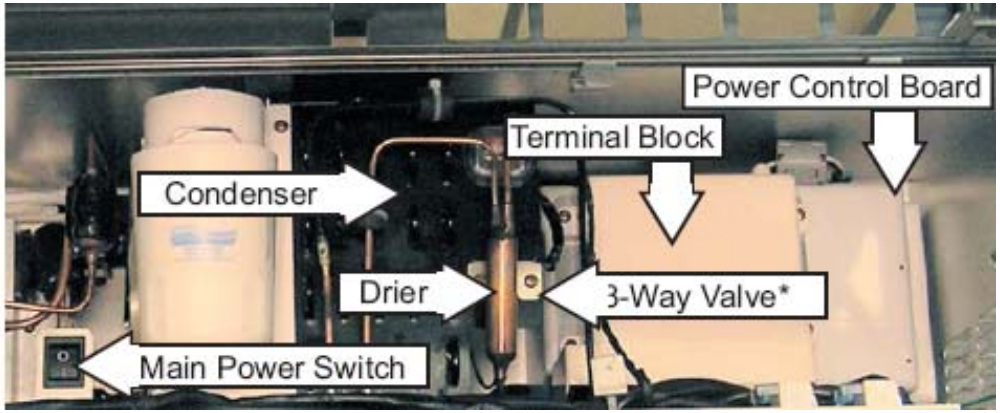





# Profile 42/48 Built-In

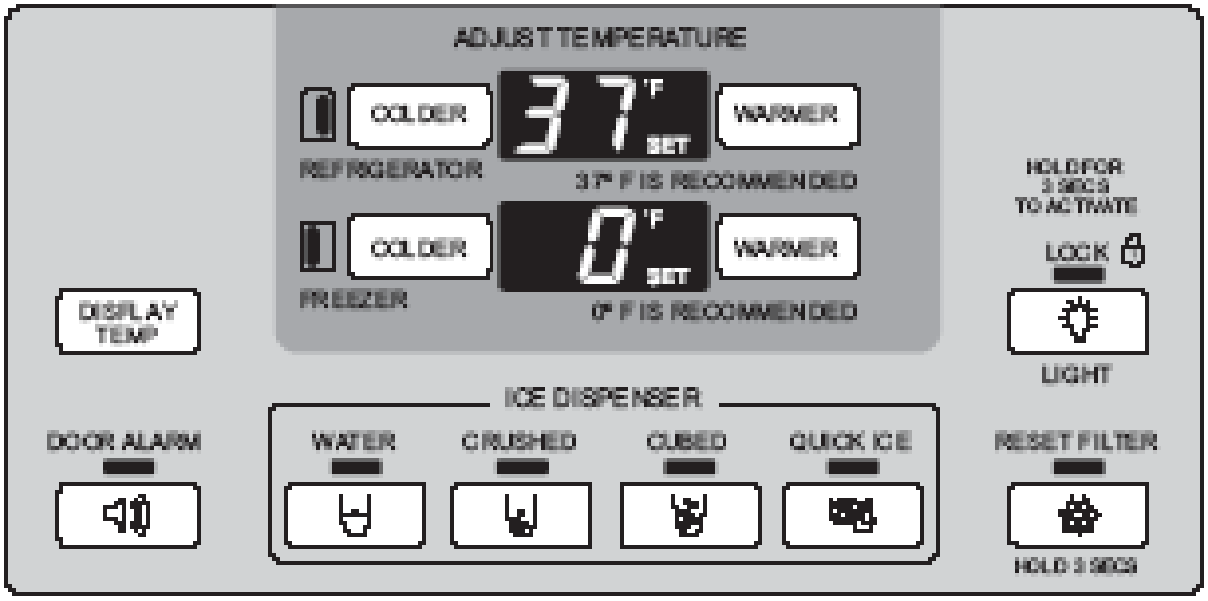
PSB42LSRBV
PSB42LGRWV
PSB42LGRBV
PSB48LSRBV
PSB48LGRWV
PSB48LGRBV

# Profile 42/48 Built-In


*The 3-way valve is located behind the condenser front plate.

# Enter Diagnostic Mode




- To enter Diagnostic Mode, the temp display MUST be lit up.
- Press the freezer & fresh food temp adjust pads simultaneously for 3 seconds.
- The temp displays will now flash “0”.
- Press any other key pad to lock in the Diagnostic Mode.
- Select the test mode by using the freezer or fresh food temp pads (colder/warmer).
- See chart on next page.
- To exit Diagnostic Mode, either do a “1” “5” Reset or a “1” “6” Test Exit – you can also disconnect power for 15 seconds or after 15 minutes of no pads pressed, mode will reset to normal operation.

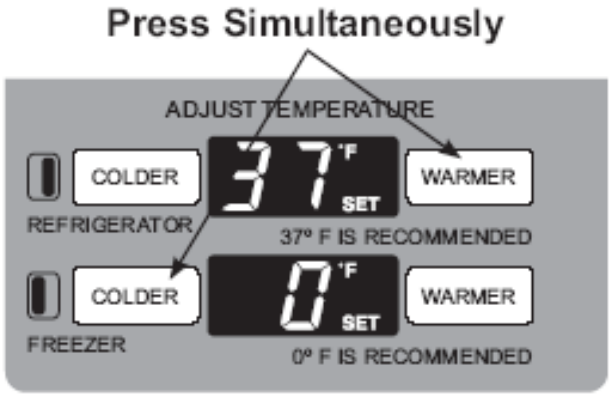
# Diagnostic Test Chart

| FZ Display | FF Display | Mode | Comments |
|---|---|---|---|
| 0 | 1 | Showroom Mode | See Note #1. |
| 0 | 2 | Do Not Use | |
| 0 | 3 | Do Not Use | |
| 0 | 4 | Do Not Use | |
| 0 | 5 | Do Not Use | |
| 0 | 6 | HMI Self-Test | See Note #2. |
| 0 | 7 | Control and Sensor Self-Test | See Note #3. |
| 0 | 8 | Do Not Use | |
| 0 | 9 | Dispenser Recess Heater Test | Turn the dispenser heater ON for 30 seconds. |
| 1 | 0 | Do Not Use | |
| 1 | 1 | Fan Speed Test | Each fan will run for 5 seconds. |
| 1 | 2 | 100% RunTime | See Note #4. |
| 1 | 3 | Do Not Use | |
| 1 | 4 | Toggle the State of Defrost | See Note #5. |
| 1 | 5 | Refrigerator Reset | Causes a system reset except for defrost. |
| 1 | 6 | Test Mode Exit | Exit test mode. |
| 1 | 7 | Do Not Use | |
| 1 | 8 | Do Not Use | |

**Note #1 (Showroom Mode)**

In the showroom mode, the compressor and fans do not operate. The fresh food and freezer lights operate as normal (ON when door is opened). The dispenser and dispenser display operate as normal. Temperature set points can be changed. Press the DISPLAY TEMP pad to display the actual cabinet temperature. To exit the showroom mode, cycle power OFF or enter test mode **1 5** to reset the unit.

**Note:** The showroom mode can also be entered outside of the service mode by simultaneously pressing the COLDER pad on the FREEZER display and the WARMER pad on the REFRIGERATOR display for 3 seconds (the display must be lit before pressing the pads).




**Note #2 (HMI Self-Test)**

Once the HMI self-test is started, all of the LEDs and seven segment LEDs will illuminate. The COLDER pad turns off the seven segment LEDs and the WARMER pad turns off the SET LED for both the FREEZER and REFRIGERATOR displays.

When all the available LEDs have been turned off for that specific temperature board, the COLDER and WARMER pads on the REFRIGERATOR display must be held simultaneously for 3 seconds to exit the HMI self-test. This can be done any time during the test.

**Note #3 (Control and Sensor System Self-Test)**

This test does a check on all thermistors, fans, and defrost circuits. The thermistor test will display pass, open or shorted. The fan and defrost tests will display pass or fail. Once this test is invoked, the test mode will stop flashing and the numbers from 1 to 10 (corresponding to the chart below) will appear on the HMI display.

| | | | |
|---|---|---|---|
| 1 | FZ Room Sensor | 6 | FZ Fan Error |
| 2 | FZ Defrost Sensor | 7 | FF Fan Error |
| 3 | FF Room Sensor | 8 | Condenser Fan Error |
| 4 | FF Defrost Sensor | 9 | FZ Defrost Error |
| 5 | Ambient Sensor | 10 | FF Defrost Error |

For each test, the HMI will respond by displaying the following:

P = Pass
F = Fail
O = Open Thermistor Circuit
S = Short Thermistor Circuit

The control will display an **O** if the thermistor value is greater than 149.2K Ω (-58°F (-50°C)). The control will display a **S** if the thermistor value is less than 1.34K Ω (149°F (65°C)).

**Note #4 (100% Run Time)**

This test runs the sealed system 100% of the time and will automatically time out after 1 hour. Cycle power OFF or enter test mode **1 5** to reset and exit this mode.

**Note:** The 3-way valve position during 100% run time depends on the fresh food temperature. If the fresh food temperature is satisfied, the 3-way valve opens to the freezer evaporator only. If it is not satisfied, the valve opens to the fresh food evaporator and refrigerant flows through both evaporators.

**Note #5 (Toggle the State of Defrost)**

Any time a pad on the temperature board (other than the COLDER and WARMER pads) is pressed, the status of the defrost heaters will toggle in the following sequence:

1. Fresh food heater ON.
2. Fresh food and freezer heaters ON.
3. Fresh food and freezer heaters OFF.

Pressing the pad a fourth time will cycle through the sequence again. During the sequence, heater current can be measured.

- Fresh food heater - approximately 1.2 amps when measured at the CN01 connector black wire.
- Fresh food and freezer heaters - approximately 4 amps when measured at the CN01 connector black wire.

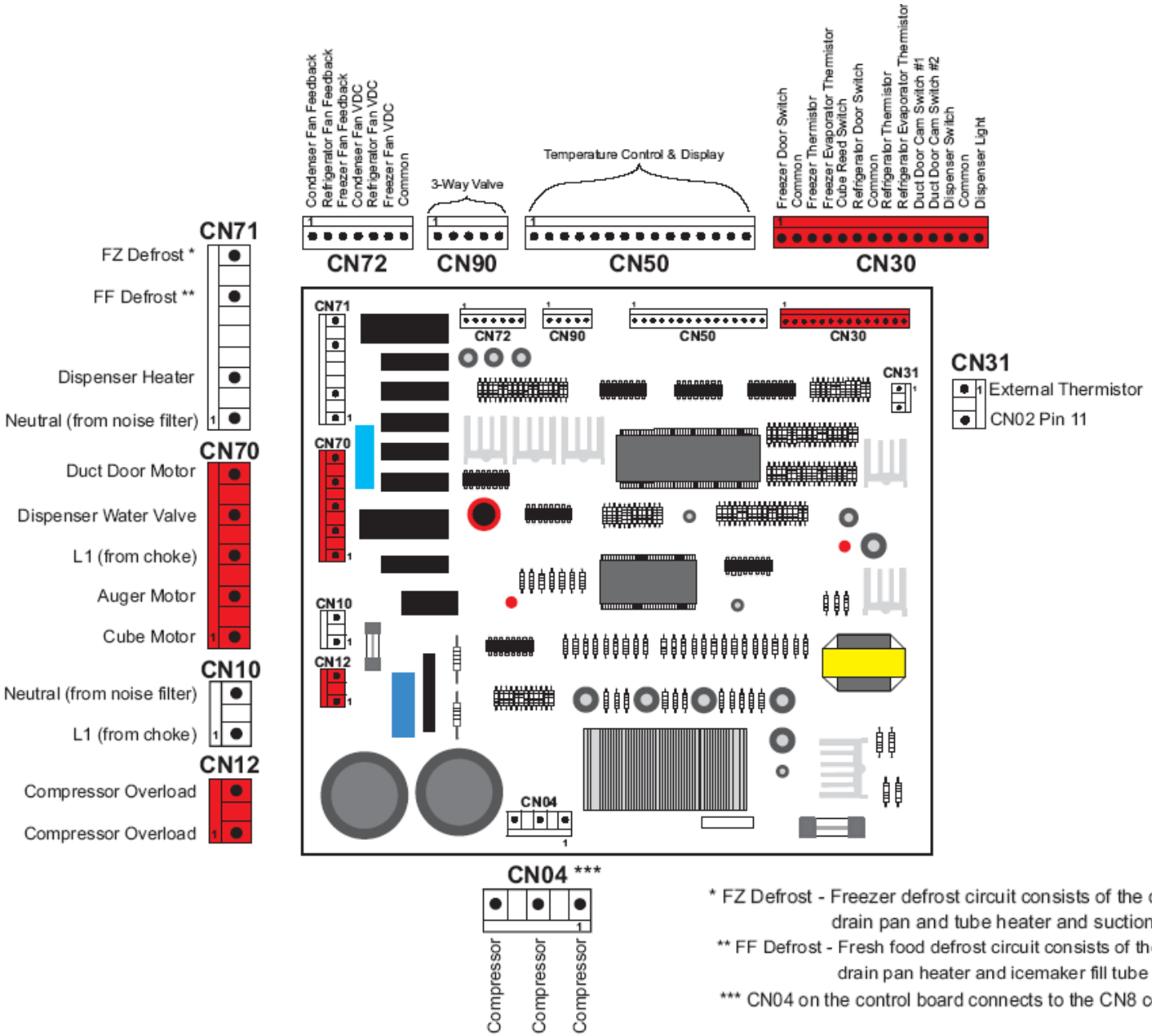
# Profile 42/48 Built-In

| °F | Resistance In Ohms (KΩ) | °C |
|---|---|---|
| -9 | 37K | -23 |
| -6 | 34K | -21 |
| 0 | 29K | -18 |
| 6 | 25K | -14 |
| 32 | 13K | 0 |
| 37 | 12K | 3 |
| 50 | 8.8K | 10 |
| 77 | 5K | 25 |
| 86 | 4.2K | 30 |
| 95 | 3.5K | 35 |

**Testing**

The most accurate method of testing a thermistor is to place it in a glass of ice water for several minutes. The thermistor should read approximately 13K Ω in the glass of 33°F ice water.

**Note:** Thermistors can also be checked for an open or shorted condition by using the diagnostic mode (see ***Service Diagnostics***).




* FZ Defrost - Freezer defrost circuit consists of the defrost heater, bi-metal thermostat, drain pan and tube heater and suction line drain pan heater.

** FF Defrost - Fresh food defrost circuit consists of the defrost heater, bi-metal thermostat, drain pan heater and icemaker fill tube heater.

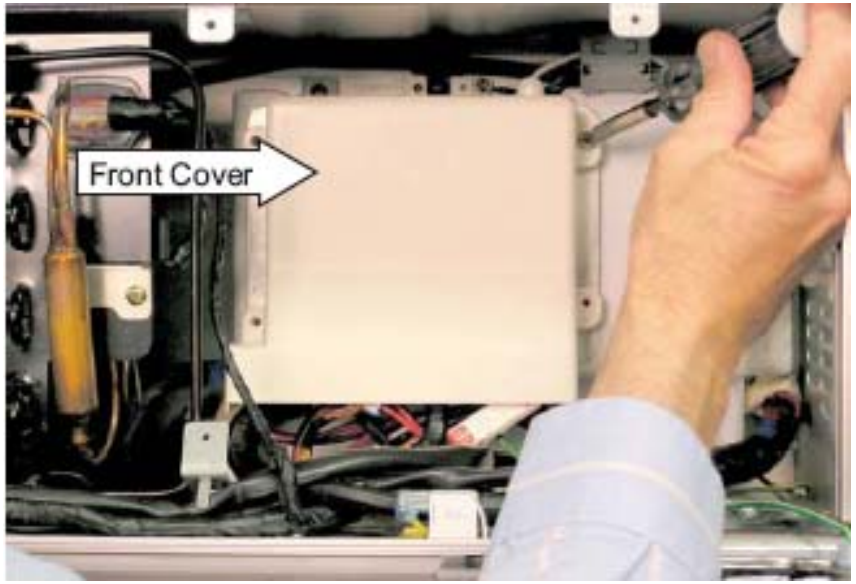
*** CN04 on the control board connects to the CN8 connector on the terminal block panel.

# Profile 42/48 Built-In

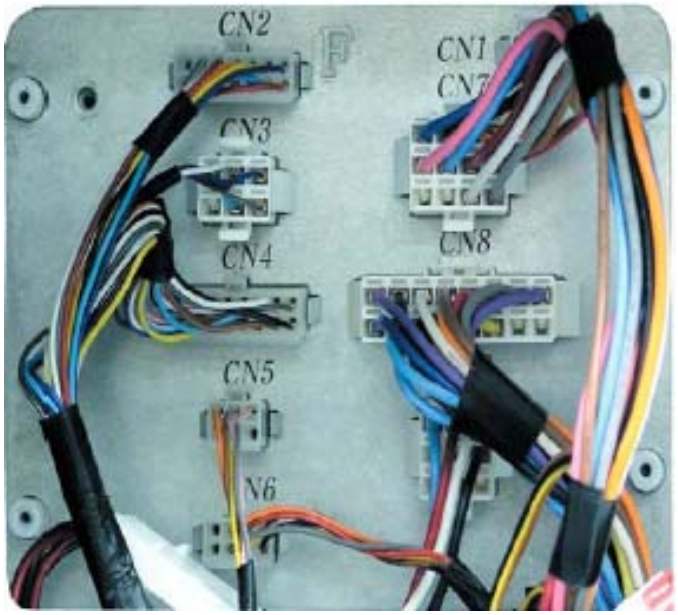
## Terminal Block Panel

The terminal block panel is located on the right side of the machine compartment and attached to the PCB housing cover. The terminal block consists of AC and DC wire harness connectors.

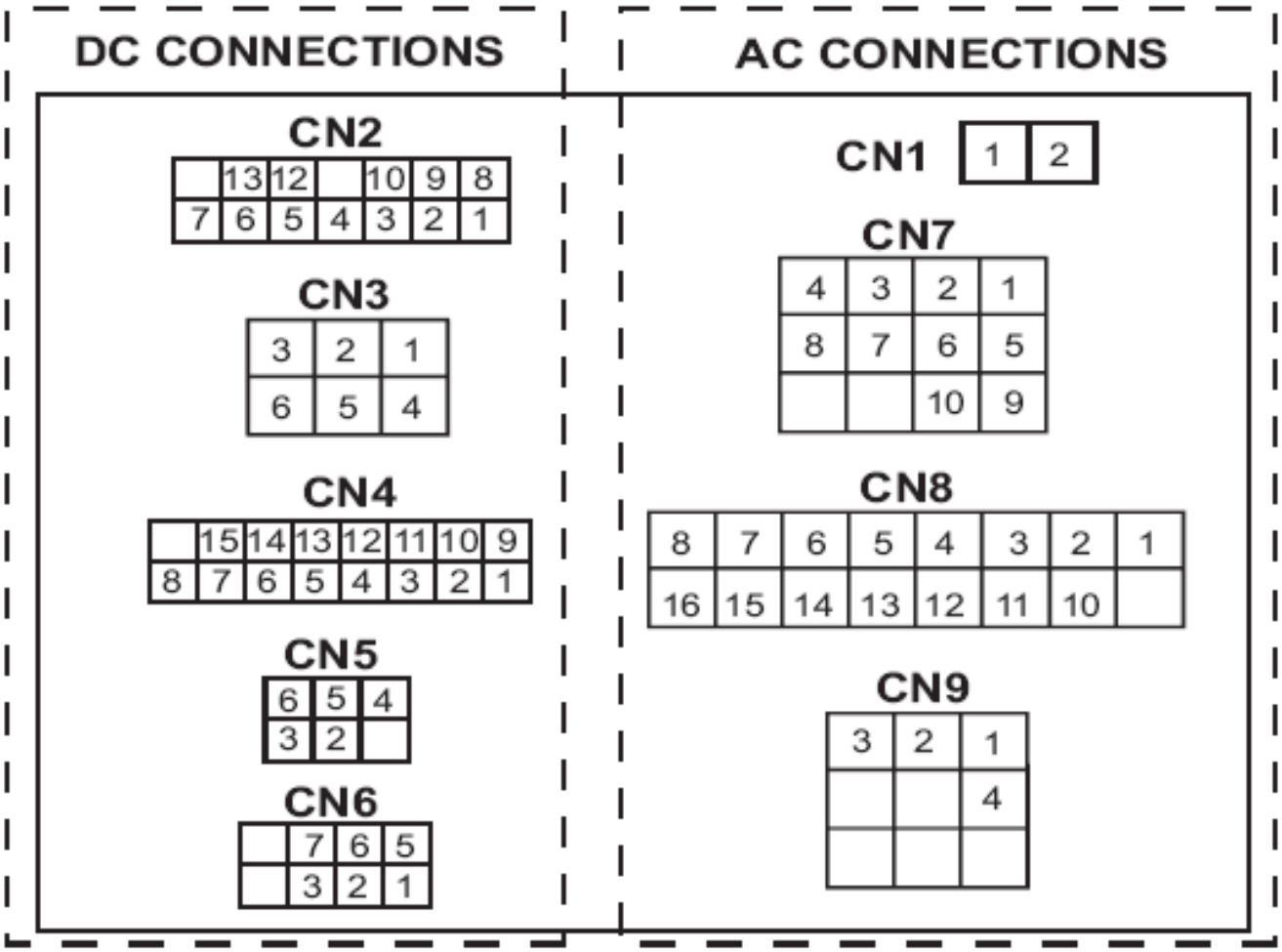
To access the wire harness connectors, remove the 4 Phillips-head screws that hold the front cover in place.




Terminal Block Panel with Cover Removed



# Profile 42/48 Built-In




**Note:** Throughout the service guide, reference to the terminal block connectors may or may not contain a zero (i.e., CN3 and CN03 are the same connector.)

# Profile 42/48 Built-In

| DC CONNECTIONS | | | |
|---|---|---|---|
| CON | PIN | DESCRIPTION | WIRE COLOR |
| CN2 | 1 | Condenser Fan Feedback | Red |
| CN2 | 2 | Condenser Fan VDC | Light Blue |
| CN2 | 3 | Condenser Fan Common | Gray |
| CN2 | 4 | 3-Way Valve | Red |
| CN2 | 5 | 3-Way Valve | Black |
| CN2 | 6 | FZ Door Switch | White/Yellow |
| CN2 | 7 | FZ & FF Door Switch (Common) | Gray |
| CN2 | 8 | 3-Way Valve | Blue |
| CN2 | 9 | 3-Way Valve | Yellow |
| CN2 | 10 | 3-Way Valve | Orange |
| CN2 | 11 | Empty | |
| CN2 | 12 | External Thermistor | Red |
| CN2 | 13 | FF Door Switch | White/Blue |
| CN2 | 14 | Empty | |

| | | | |
|---|---|---|---|
| CN3 | 1 | Duct Door Cam Switch #1 | Blue |
| CN3 | 2 | Duct Door Cam Switch #2 | Purple |
| CN3 | 3 | Dispenser Switch | White |
| CN3 | 4 | Dispenser Components (Common) | Gray |
| CN3 | 5 | Dispenser Light | Light Blue |
| CN3 | 6 | Empty | |

| AC CONNECTIONS | | | |
|---|---|---|---|
| CON | PIN | DESCRIPTION | WIRE COLOR |
| CN1 | 1 | L1 (Switched thru Master Switch) | Black |
| CN1 | 2 | Neutral (Switched thru Master Switch) | Red |

| | | | |
|---|---|---|---|
| CN7 | 1 | FZ Defrost (Switched L1) | Brown |
| CN7 | 2 | FZ Defrost (Neutral) | Orange |
| CN7 | 3 | Icemaker (L1) | Black |
| CN7 | 4 | Icemaker (Water) (Switched L1) | Blue |
| CN7 | 5 | Icemaker (Neutral) | Red |
| CN7 | 6 | Auger & Cube Motor (Switched Neutral) | P/Blue |
| CN7 | 7 | Cube Motor (Switched L1) | Light Blue |
| CN7 | 8 | Auger Motor (Switched L1) | Pink |
| CN7 | 9 | FZ Light (L1) | Black |
| CN7 | 10 | FZ Light (Switched Neutral) | White/Blue |
| CN7 | 11 | Empty | |
| CN7 | 12 | Empty | |

# Profile 42/48 Built-In

| DC CONNECTIONS | | | |
|---|---|---|---|
| CON | PIN | DESCRIPTION | WIRE COLOR |
| CN4 | 1 | Temperature Control & Display | Black |
| CN4 | 2 | Temperature Control & Display | Brown |
| CN4 | 3 | Temperature Control & Display | Red |
| CN4 | 4 | Temperature Control & Display | Orange |
| CN4 | 5 | Temperature Control & Display | Yellow |
| CN4 | 6 | Temperature Control & Display | Pink |
| CN4 | 7 | Temperature Control & Display | Blue |
| CN4 | 8 | Temperature Control & Display | Purple |
| CN4 | 9 | Temperature Control & Display | Gray |
| CN4 | 10 | Temperature Control & Display | White |
| CN4 | 11 | Temperature Control & Display | Light Blue |
| CN4 | 12 | Temperature Control & Display | White/Black |
| CN4 | 13 | Temperature Control & Display | White/Red |
| CN4 | 14 | Temperature Control & Display | White/Blue |
| CN4 | 15 | Temperature Control & Display | White/Yellow |
| CN4 | 16 | Empty | |

| AC CONNECTIONS | | | |
|---|---|---|---|
| CON | PIN | DESCRIPTION | WIRE COLOR |
| CN8 | 1 | Water Valve (Icemaker) (Switched L1) | Purple |
| CN8 | 2 | Water Valve (Dispenser) (Switched L1) | Gray |
| CN8 | 3 | Water Valve (Neutral) (Icemaker & Dispenser) | Red |
| CN8 | 4 | Duct Door Motor & Dispenser Heater (Neutral) | Red |
| CN8 | 5 | Dispenser Heater (Switched L1) | Brown |
| CN8 | 6 | Duct Door Motor (Switched L1) | White |
| CN8 | 7 | Compressor (3 Phase) | Black |
| CN8 | 8 | Compressor (3 Phase) | Purple |
| CN8 | 9 | Empty | |
| CN8 | 10 | FZ Door Switch (Auger & Cube Motor) | P/Blue |
| CN8 | 11 | FF Door Light Switch (Switched Neutral) | Yellow |
| CN8 | 12 | FZ Door Light Switch (Switched Neutral) | Orange |
| CN8 | 13 | FF Door Light Switch (L1) | Black |
| CN8 | 14 | Compressor Overload (Pwr Supply Neutral) | Light Blue |
| CN8 | 15 | Compressor Overload (Pwr Supply Neutral) | Light Blue |
| CN8 | 16 | Compressor (3 Phase) | Blue |

# Profile 42/48 Built-In

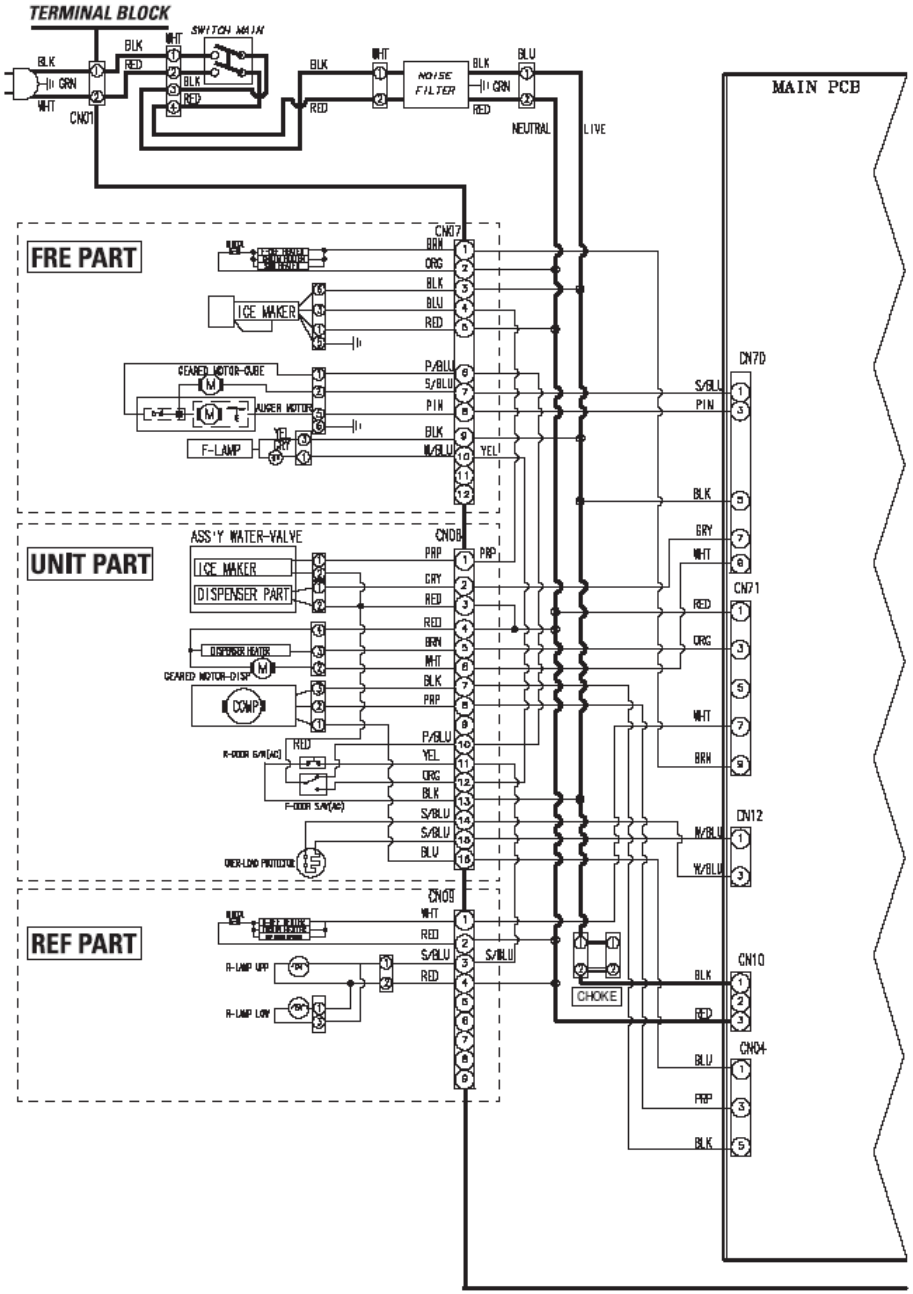
| DC CONNECTIONS | | | |
|---|---|---|---|
| CON | PIN | DESCRIPTION | WIRE COLOR |
| CN5 | 1 | Empty | |
| CN5 | 2 | FF Fan & Thermistors (Common) | Gray |
| CN5 | 3 | FF Thermistor | Yellow |
| CN5 | 4 | FF Evaporator Thermistor | Pink |
| CN5 | 5 | FF Fan Feedback | Brown |
| CN5 | 6 | FF Fan VDC | Orange |
| CN6 | 1 | FZ Fan Feedback | Black |
| CN6 | 2 | FZ Fan VDC | Yellow |
| CN6 | 3 | FZ Fan, Thermistors & Cube Switch (Common) | Gray |
| CN6 | 4 | Empty | |

| AC CONNECTIONS | | | |
|---|---|---|---|
| CON | PIN | DESCRIPTION | WIRE COLOR |
| CN9 | 1 | FF Defrost (Switched L1) | White |
| CN9 | 2 | FF Defrost (Neutral) | Red |
| CN9 | 3 | FF Lights (Switched L1) | Light Blue |
| CN9 | 4 | FF Lights (Neutral) | Red |
| CN9 | 5 | Empty | |
| CN9 | 6 | Empty | |
| CN9 | 7 | Empty | |
| CN9 | 8 | Empty | |
| CN9 | 9 | Empty | |

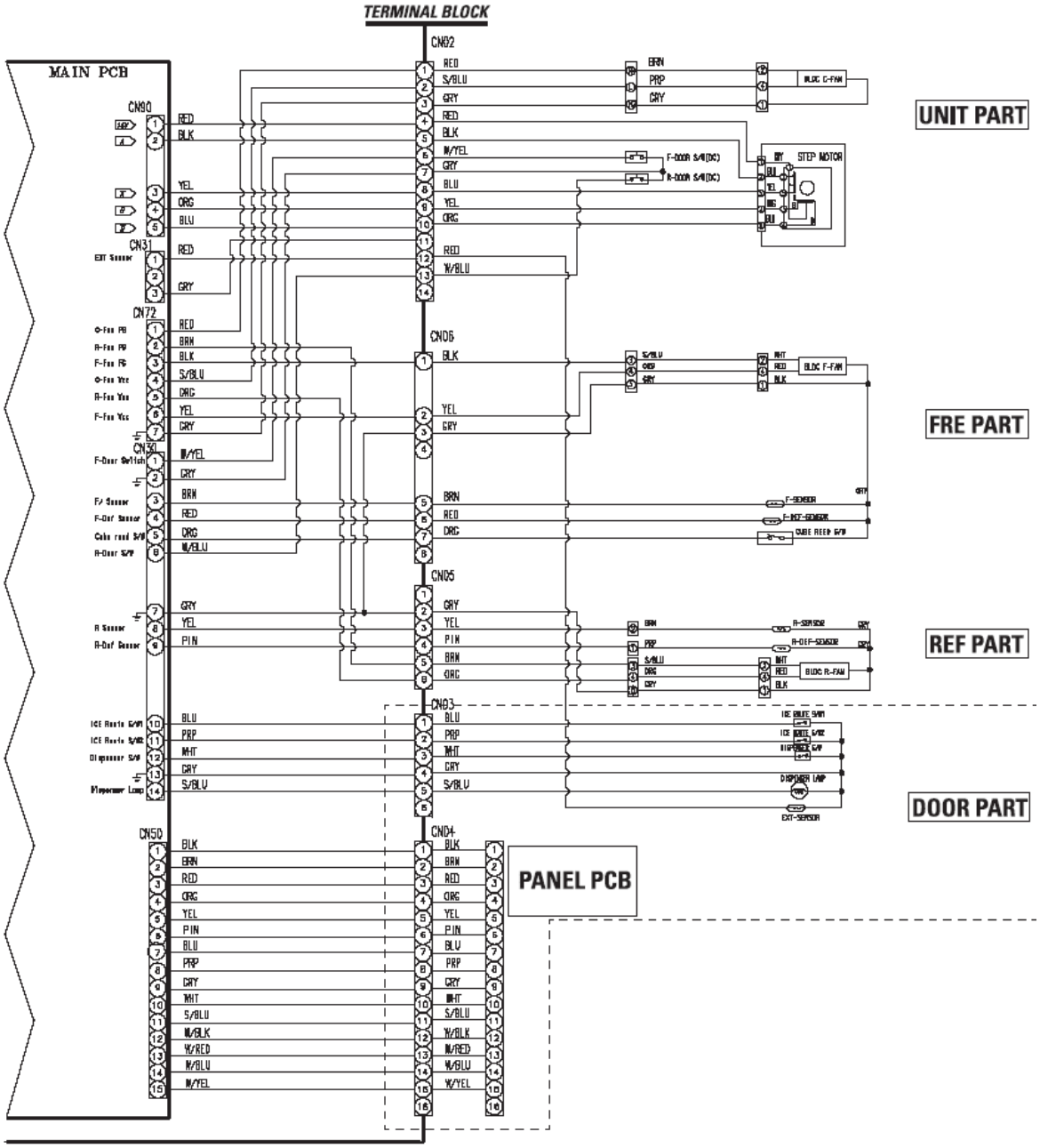
# Troubleshooting Notes

| Problem | Action |
|---|---|
| Refrigerator HMI displays a temperature of 80°F (27°C), even though the temperature in the refrigerator section is correct. | The HMI may display 80°F (27°C) if the refrigerator thermistor (air) is either open or shorted. Run service diagnostics (Test **0 7**) to confirm. |
| Freezer HMI displays -25°F (-32°C), even though the temperature in the freezer section is correct. | The HMI may display -25°F (-32°C) if the freezer thermistor (air) is open. Run service diagnostics (Test **0 7**) to confirm. |
| Freezer HMI displays 80°F (27°C), even though the temperature in the freezer section is correct. | The HMI may display 80°F (27°C) if the freezer thermistor (air) is shorted. Run service diagnostics (Test **0 7**) to confirm. |
| Unit is dead (except for interior lights). CN1 connector reads 120VAC. | Check the compressor overload. Control board will not receive voltage if the overload is open. |
| Ambient air thermistor fails service diagnostics test. HMI displays open circuit. | Check the thermistor connection behind the HMI display to see if the pins are pushed out of the connector. |

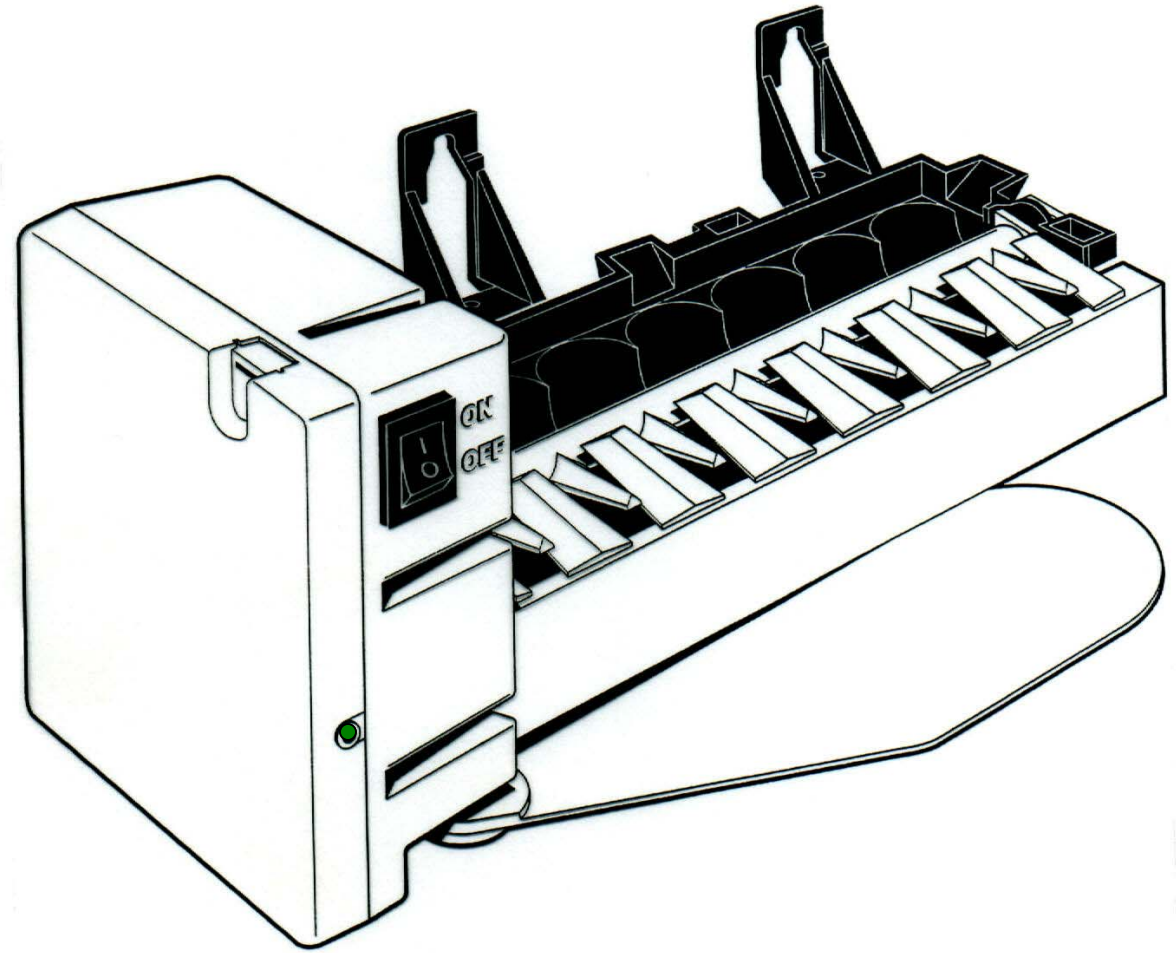
# AC Section



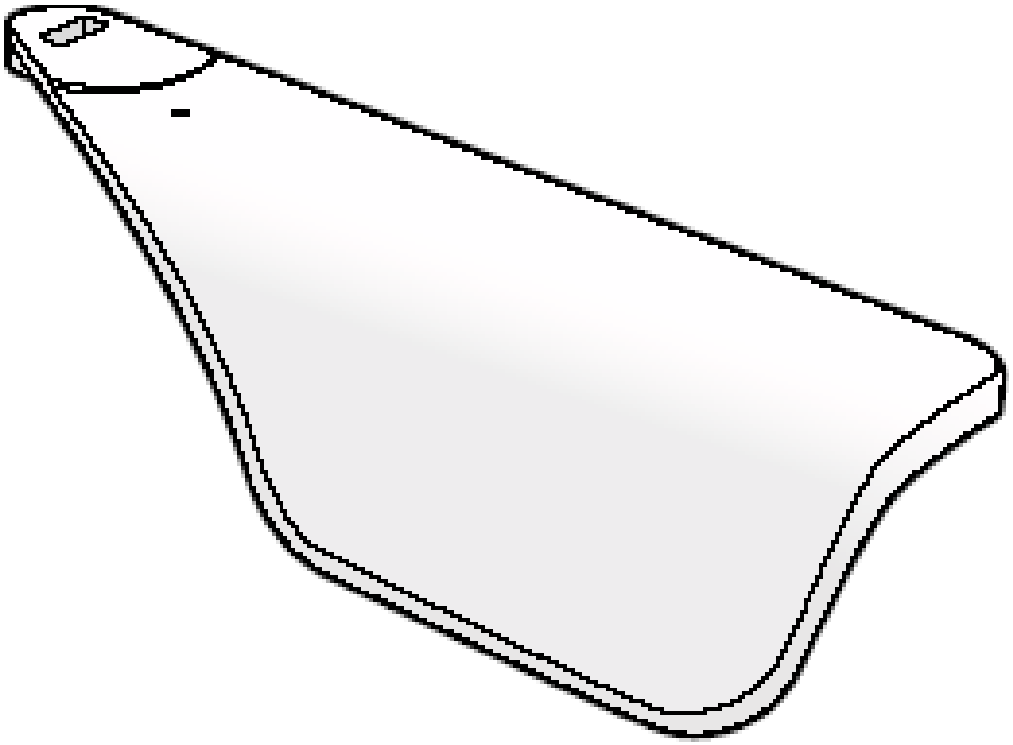
## DC Section



# Electronic IM

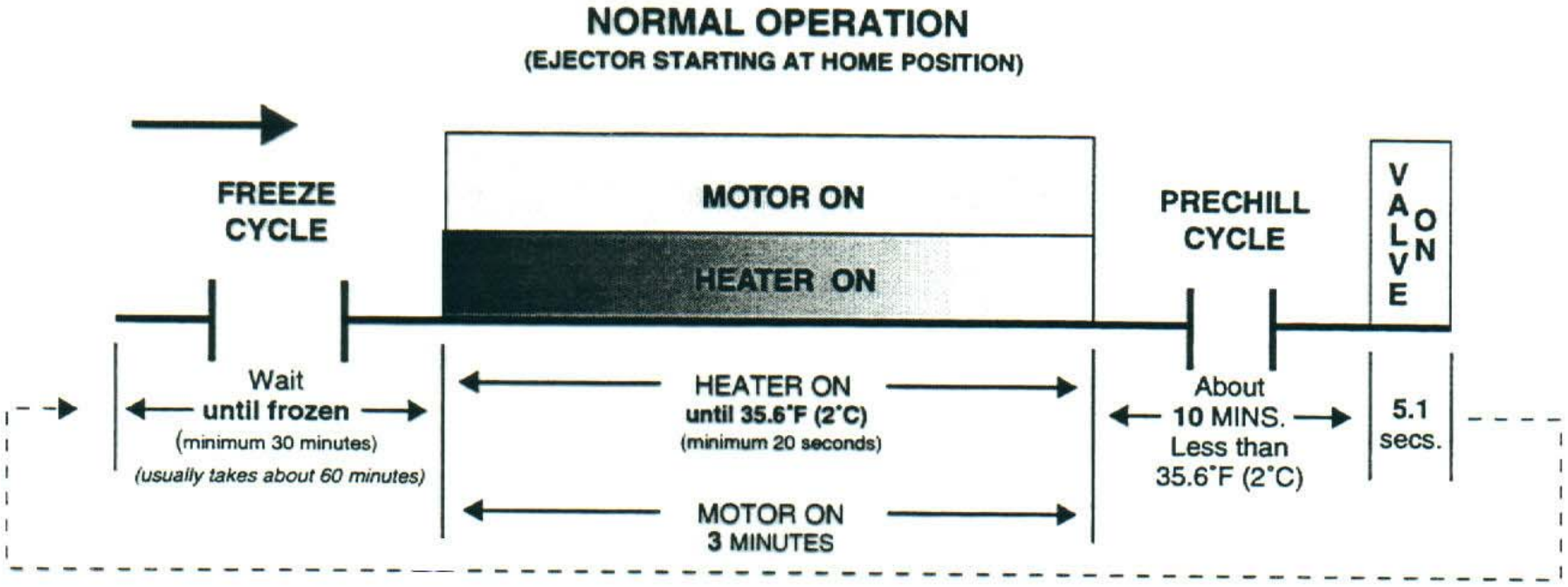


# Electronic IM Update

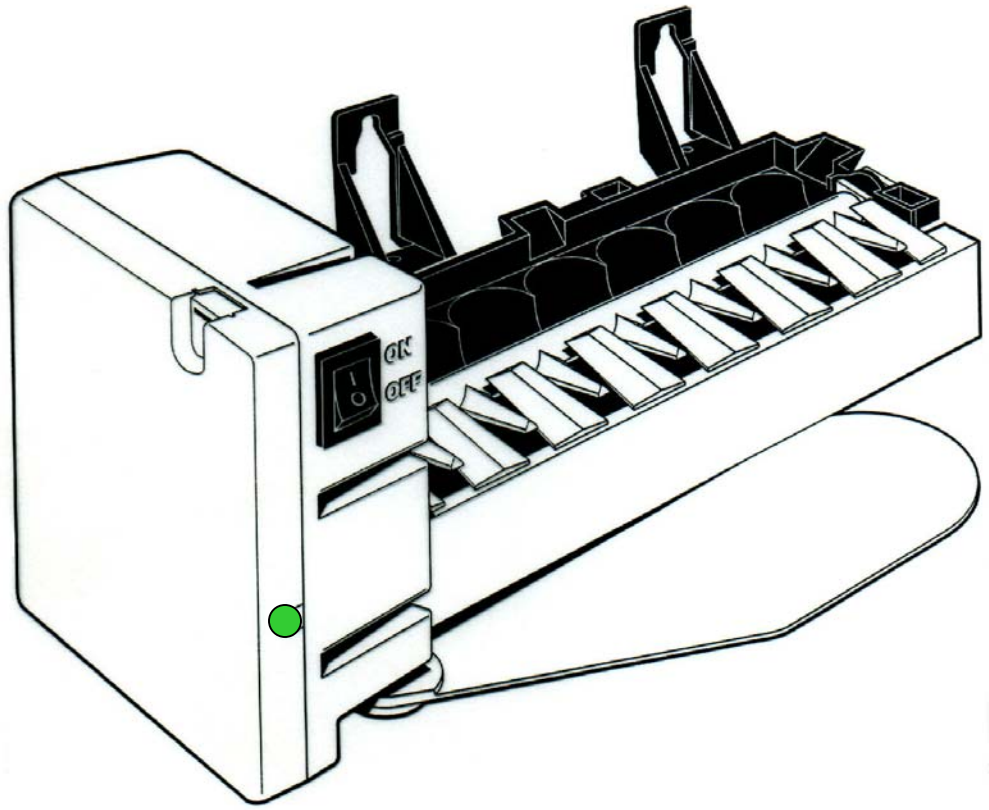


Icemaker Feeler Arm
WR49X10103

# Electronic IM Cycle



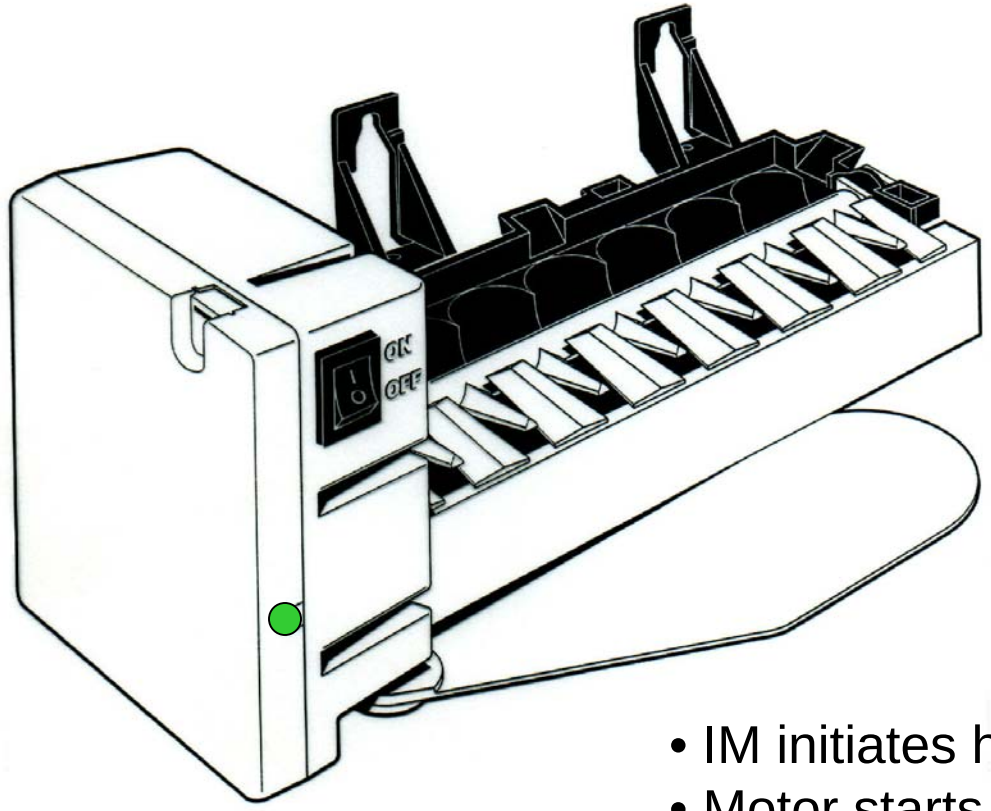
# Electronic IM Harvest Fix Cycle




If the harvest cycle is not complete within 7 minutes, the control will enter a "Harvest Fix" mode. In the harvest fix mode, the temperature of the mold will be raised in an attempt to melt any cubes that are jammed. The control will turn the heater off when the thermistor temperature reaches 68°F (20°C) and turn it back on again at 59°F (15°C). During this time, the motor will be cycled off for 10 seconds of every minute. If the motor reaches the home position, a second revolution of the ejector will occur to verify there is no more blockage. When the second revolution is complete, the control will enter the freeze cycle without allowing a water fill to insure against a double shot of water. The control will enter a Fault Mode if a harvest cycle (including harvest fix) is not complete within 30 minutes. Potential causes for a harvest to take longer than 30 minutes are:

- Stuck ejector - caused by a cube that was not cleared or a mechanical problem
- Bad heater - caused by the heater, control board or thermal cutout (TCO)
- Bad motor - caused by motor or control board
- Motor home position not operating - caused by control board or loose magnet - the result will be continuous ejector operation
- Thermistor - open or shorted

# Electronic IM Test Cycle




- Make sure IM is on – green indicator is lit.
- Turn IM off.
- Wait at least 20 seconds.
- Turn IM back on.
- Move feeler arm in 3 full times.

- IM initiates harvest test cycle.
- Motor starts to turn rake & mold heater is on.
- Rake turns 360⁰.
- Water valve energized for 5.1 seconds.

**SUPERCEDES**

Electronic Refrigerator Repair Quick Reference
Document dated: 09/02/02

# ELECTRONIC REFRIGERATOR REPAIR QUICK REFERENCE

| | DESCRIPTION | PARTS REQUIRED: SXS METAL LINER | PARTS REQUIRED: SXS PLASTIC LINER | PARTS REQUIRED: TOP FREEZER | SERVICE BULLETIN # | RATE $ Multiplier X Base Rate |
|---|---|---|---|---|---|---|
| A | *Symptom:* *Frozen auger motor*<br>Repair: Install rubber boot (WR02X11295) and new auger motor. Do not disassemble motor, add sealants, or use metal motor cover. | WR02X11295 - Rubber Boot only<br>Order Auger motor separately<br>Previous WR17X1111 metal motor cover, now supercedes to new WR02X11295 rubber boot motor shield. Order motor separately | WR02X11295 - Rubber Boot only<br>Order Auger motor separately<br>Previous WR17X1111 metal motor cover, now supercedes to new WR02X11295 rubber boot motor shield. Order motor separately | | ~~REF 22-01~~<br>Previous Bulletin Superceded to:<br>REF 33-02 | X<br>Reduced time - no longer necessary to completely dig motor<br>1 |
| B | *Symptoms:* *Ice cube jams. Auger stalls. Cubes when "Crushed" selected. Crushed cubes when "Cubes" selected. Plastic shavings in ice. Ice bucket overflow. Too much ice. Chiller shelf pops up.*<br>Repair: Send consumer a new ice bucket assembly | **20' & 22' models**<br>WR17X11307<br>**25' models**<br>WR17X11308 | **21' & 23' models**<br>WR17X11312<br>**25' & 27' models**<br>WR17X11316<br>**29' models**<br>WR17X11317 | | REF 02-02<br>REF 03-02<br>REF 14-02<br>REF 15-02 | Base rate if performed alone<br>1<br>No reimbursement if performed in conjunction with other repairs |
| C | *Symptoms:* *Moisture and/or ice droplets in freezer interior.*<br>Repair: ONLY on SxS metal liner models, replace main control board & evaporator cover.<br>On Top Freezer models install moisture kit only. | **20' & 22' models**<br>Ser. #s beginning with: AA, BA, FA, GA, HA, LA, MA, RA, SA, TA, WA, ZA, AD, DB, FD, GD<br>WR55X10188 & WR17X10894<br>**25' models**<br>Ser. #s beginning with: AA, BA, FA, GA, HA, LA, MA, RA, SA, TA, WA, ZA, AD, DB, FD, GD<br>WR55X10188 & WR17X11306 | On SxS Plastic Liner models, do NOT change the Main Control Board for this problem. Instead, check ice chute duct door flap and door gasket seal. | **All Top Frz models**<br>Serial Numbers Beginning with: FA, GA, HA, LA, MA, RA, SA, TA<br>WR49X10044 | **SxS Met/Plas**<br>REF 12-02<br>**Top Frz**<br>REF 18-01 | 2<br>2 |
| D | *Symptom:* *Moisture in fresh food door.*<br>Repair: Add foam gasket to each corner. 1/4" dimension from door edge is critical. | WR49X10053<br>Main Board will NOT alter or correct door moisture | | | REF 07-02 | 2 |
| E | *Symptoms:* *Moisture or ice in freezer door or dispenser area.*<br>Repair: On SxS Metal liners only, replace dispenser control board & add moisture kit to freezer door. | **Models w/ 0 to 4 dispenser pads**<br>WR49X10067 & WR55X10270<br>**Models w/ 5 or more dispenser pads**<br>WR49X10067 & WR55X10195 | Check to be certain that the ice chute duct door is closing properly. | | REF 21-02 | 3 |
| F | *Symptom:* *Noise from freezer fan - SxS models*<br>Repair: Replace freezer fan assembly. Replacing main control board will NOT correct fan noise. If moisture is present, also perform repair "C". | **20' & 22' models**<br>Ser. #s beginning with: AA, BA, FA, GA, HA, LA, MA, RA, SA, TA, WA, ZA, AD, DB, FD, GD<br>WR60X10101<br>**25' models**<br>Ser. #s beginning with: AA, BA, FA, GA, HA, LA, MA, RA, SA, TA, WA, ZA, AD, DB, FD, GD<br>WR60X10100 | **All SxS plastic liner models**<br>Serial Numbers Beginning with: AA, BA, FA, GA, HA, LA, MA, RA, SA, TA, WA, ZA, AD, DB, FD, GD<br>WR60X10102 | | REF 13-02<br>Bulletin appended: Only install moisture kit (repair C) if necessary. | X<br>Reduced time<br>1.5 |
| G | *Symptom:* *Noise from freezer fan - Top Freezer models*<br>Repair: Replace freezer fan assembly. Replacing main control board will NOT correct fan noise. If moisture is present, also perform repair "C". | | | **All Top Frz models**<br>Serial Numbers Beginning with: FA, GA, HA, LA, MA, RA, SA, TA, WA, ZA, AD, FD, GD<br>WR60X10097 | REF 13-02 | 1.5 |

OVER

General Electric Co.

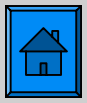
For Technical Assistance on *Electronic Refrigerators* call: 1-877-284-2321

*REVISED* 10/03/02

| DESCRIPTION | PARTS REQUIRED | | | SERVICE BULLETIN |
|---|---|---|---|---|
| | SXS METAL LINER | SXS PLASTIC LINER | TOP FREEZER | |
| Freezing water filter, water tank, CustomCool pan or vegetable pan<br><br>REPAIR: Add foam gaskets and insulation to insulate components and block airflow. | NA | WR49X10045<br>Do not replace main control board | NA | REF 31-02 |
| Frozen auger motor<br><br>REPAIR: Install a rubber boot and a new auger motor. Do not disassemble motor, add sealants, or use a metal cover. | WR02X11295 (boot)<br>Install new auger motor | | NA | REF 33-02 |
| Ice cubes overflowing the front of the bucket or chiller shelf pops up<br><br>REPAIR: If in the home, install a diverter on the ice bucket. If not in the home, send the consumer a new bucket. See next repair. | 20" and 22" Models<br>WR49X10056<br>25" Models<br>WR49X10055 | WR49X10055 | NA | REF 21-01<br>REF 03-02 |
| Ice cube jams, auger stall, ice cubes when crushed is selected, crushed when ice cubes are selected, plastic shavings in ice, ice bucket overflow, too much ice or chiller shelf pops up<br><br>REPAIR: Send the consumer a new ice bucket. | 20" and 22" Models<br>WR17X11307<br>25" Models<br>WR17X11308 | 21" and 23" Models<br>WR17X11312<br>25" and 27" Models<br>WR17X11316<br>29" Models<br>WR17X11317 | NA | REF 02-02<br>REF 03-02<br>REF 14-02<br>REF 15-02 |
| Ice spray at dispenser/glass breakage<br><br>REPAIR: Add a dispenser funnel extension. Two funnel designs - smooth or with tabs. | WR49X10032 (White)<br>WR49X10034 (Black)<br>WR49X10035 (Bisque) | WR17X11265 (White w/tab)<br>WR17X11268 (Black w/tab)<br>WR17X11270 (Bisque w/tab) | NA | REF 11-02 |
| Icemaker leaking on feeler arm or leaking between mold and motor housing<br><br>REPAIR: Replace icemaker fill cup with new deflector style. Make certain the icemaker is level. Replace icemaker if no gasket is found around thermistor. New design has a gasket. | WR30X10012<br>WR29X10058 (fill cup) | | WR30X10012 | REF 22-02 |
| Moisture in fresh food door<br><br>REPAIR: Add a foam gasket to each corner. 1/4" dimension from door edge is critical. | WR49X10053<br>Main board will not affect door moisture. | NA | NA | REF 07-02 |

- For the repair to work effectively, every step of the instructions must be followed.
- Do not replace the main control board unless directed to do so in the instructions.





| DESCRIPTION | PARTS REQUIRED | | | SERVICE BULLETIN |
|---|---|---|---|---|
| | SXS METAL LINER | SXS PLASTIC LINER | TOP FREEZER | |
| Moisture, ice droplets in freezer interior<br><br>REPAIR: Do NOT replace main control board on plastic liner SXS.<br><br>On metal liner SXS, you must replace evaporator cover and main board for repair to be effective.<br><br>On top freezer models serial FA-TA, add a moisture kit. | 20' and 22' Models Serial AA - GD only<br>WR55X10188<br>WR17X10894<br>25' Models Serial AA - GD only<br>WR55X10188<br>WR17X11306 | Check duct door flap and door gasket.<br><br>Do not change the main control board. | WR49X10044<br>(Serial FA - TA only) | REF 12-02<br><br>REF 18-01<br>(Top Freezer) |
| Moisture or ice in freezer door or dispenser area<br><br>REPAIR: On metal liner SXS, replace dispenser control board and add moisture kit to freezer door. | Models with 0 - 4 dispenser pads<br>WR49X10067<br>WR55X10270<br>Models with 5 or more dispenser pads<br>WR49X10067<br>WR55X10195 | Check to be certain duct door is closing properly. | NA | REF 21-02 |
| Noise from damper<br><br>REPAIR: Replace main control board. Software change to control damper closing. | WR55X10188 | | NA | REF 16-02 |
| Noise from freezer fan<br><br>REPAIR: Replace fan orifice kit. Replacing the main control board will not affect fan noise. If moisture is present, install moisture fix where applicable. | 20' and 22' Models Serial AA - GD only<br>WR60X10101<br>25' Models Serial AA - GD only<br>WR60X10100 | WR60X10102<br>(Serial AA to GD) | WR60X10097<br>(Serial FA to GD) | REF 13-02 |
| Ice on freezer floor<br>Leaking/unlevel drain trough or water on customer's floor<br><br>REPAIR: Add drain tube clip | NA | WR02X11337 | NA | REF 27-02 |
| Noise from drain tube - gurgling<br><br>REPAIR: Replace drain tube | NA | WR02X11426 | NA | REF 29-02 |

- For the repair to work effectively, every step of the instructions must be followed.
- Do not replace the main control board unless directed to do so in the instructions.