

Appliance Diagnostic Modes Refrigerator



imagination at work
GE Consumer & Industrial Technical Training



Refrigerator Table of Contents

- **GSS & PSS23/25/27/29 Series (#31-9072)**
- **GSS20/22/25 Series (#31-9071)**
- **ESS & HSS22/25 Series (#31-9071)**
- **SSS25 Series (#31-9071)**
- **ETS/GTS/HTS/PTS/STS22 Series (#31-9077)**
- **PTS25 Series (#31-9077)**
- **PDS & GBS20/22P Series (#31-9112)**
- **PSH23S & PSH25S Series (#31-9090)**
- **PSH23P/PSH25P/PSH27P/PSH30P Series (#31-9118)**



Refrigerator Table of Contents

- **ZIS360/420/480NM Series (#31-9091)**
- **ZIC360N Series (#31-9079)**
- **ZIS360/420/480NR Series (#31-9117)**
- **ZIC360NR/ZICS360NR Series (#31-9122)**
- **PSB42/48L Series (#31-9125)**
- **Electronic Ice Maker (#31-9063)**
- **Electronic Quick Reference Cart (#31-9097)**





Arctica SxS

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

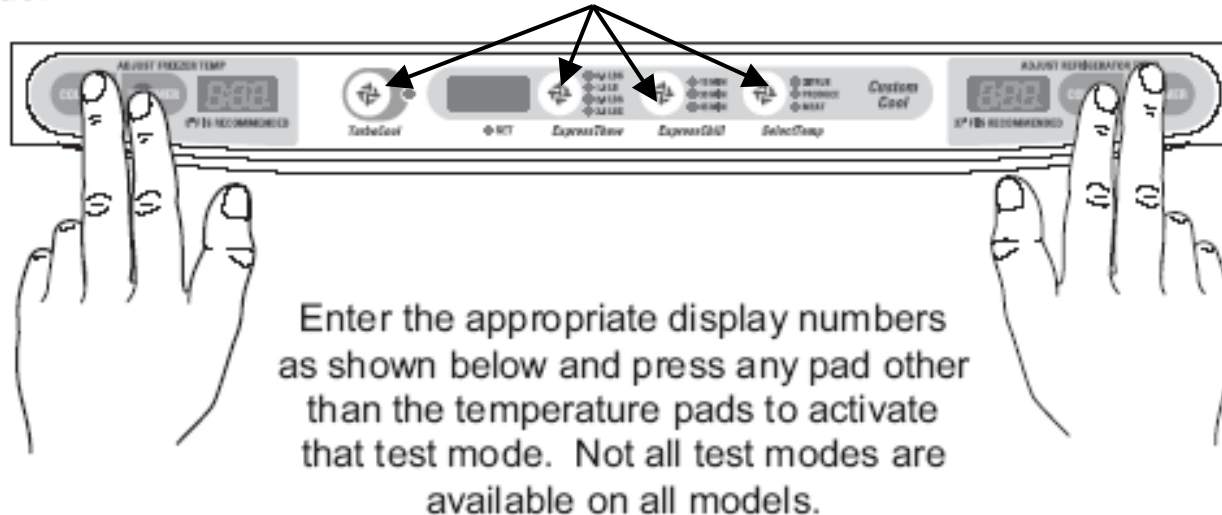


Arctica SxS

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.



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. F on the FZ display if not OK.
0	3	Temperature control panel to dispenser board communication	P on the FZ display if OK. F on the FZ display if not OK.
0	4	Dispenser board to main control board communication	P on the FZ display if OK. 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 $16\text{k}\Omega$ 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*).



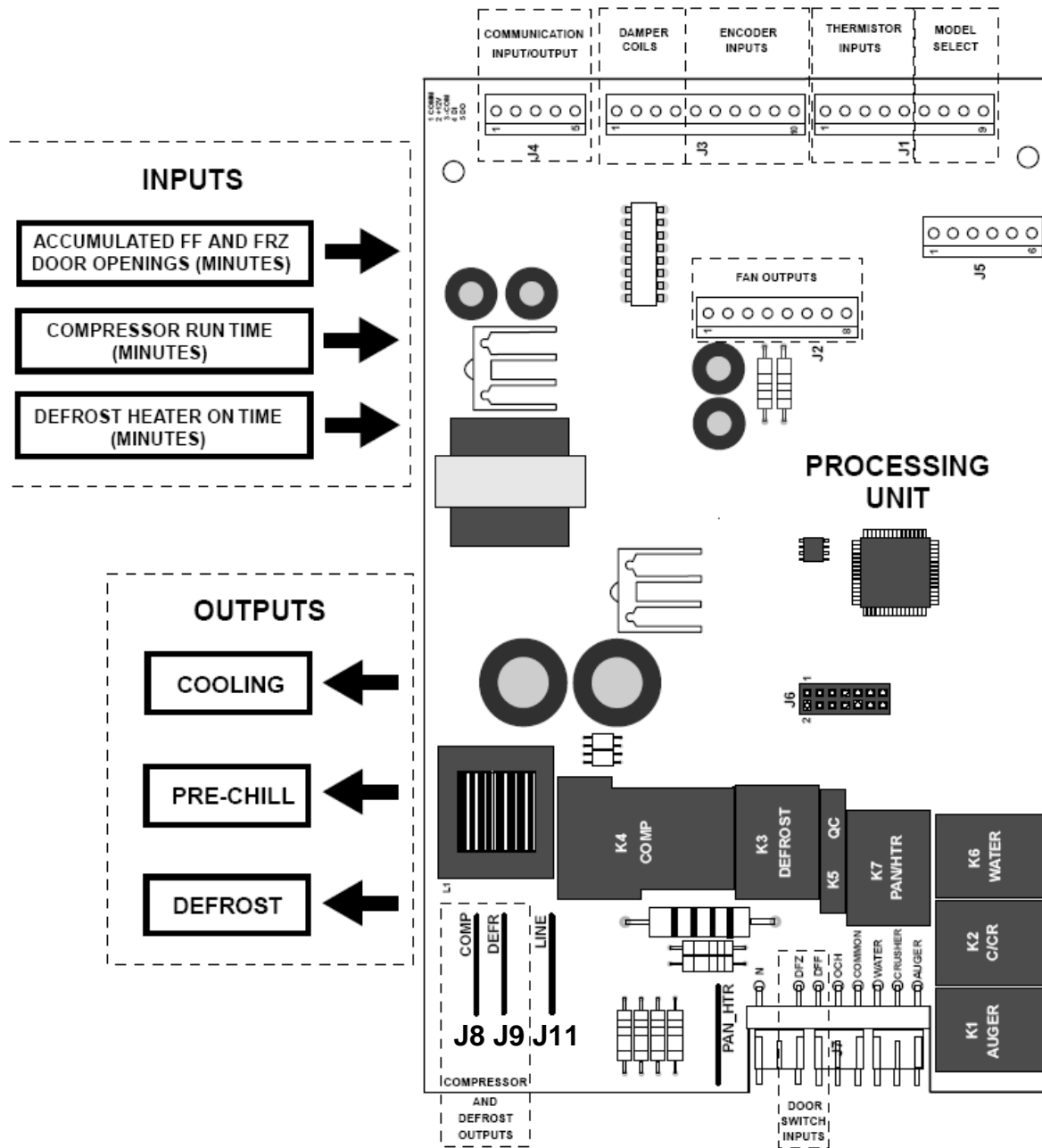
Table 2. Thermistor Values

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

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 thermostat#1	J1 pin 1 to pin 5 = 2.8 to 3.5 VDC
J1	2	Yellow	Fresh food thermostat#2	J1 pin 2 to pin 5 = 2.8 to 3.5 VDC
J1	3	Red/White	Freezer thermostat	J1 pin 3 to pin 5 = 2.8 to 3.5 VDC
J1	4	Blue/White	Evaporator thermostat	J1 pin 4 to pin 5 = 2.8 to 3.5 VDC
J1	5	Blue	Thermostats 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) 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	Dispenserboard common transmit/receive	See schematic
J4	2	Red	Dispenserboard common 12 VDC	See schematic
J4	3	Blue	Dispenserboard common ground	See schematic

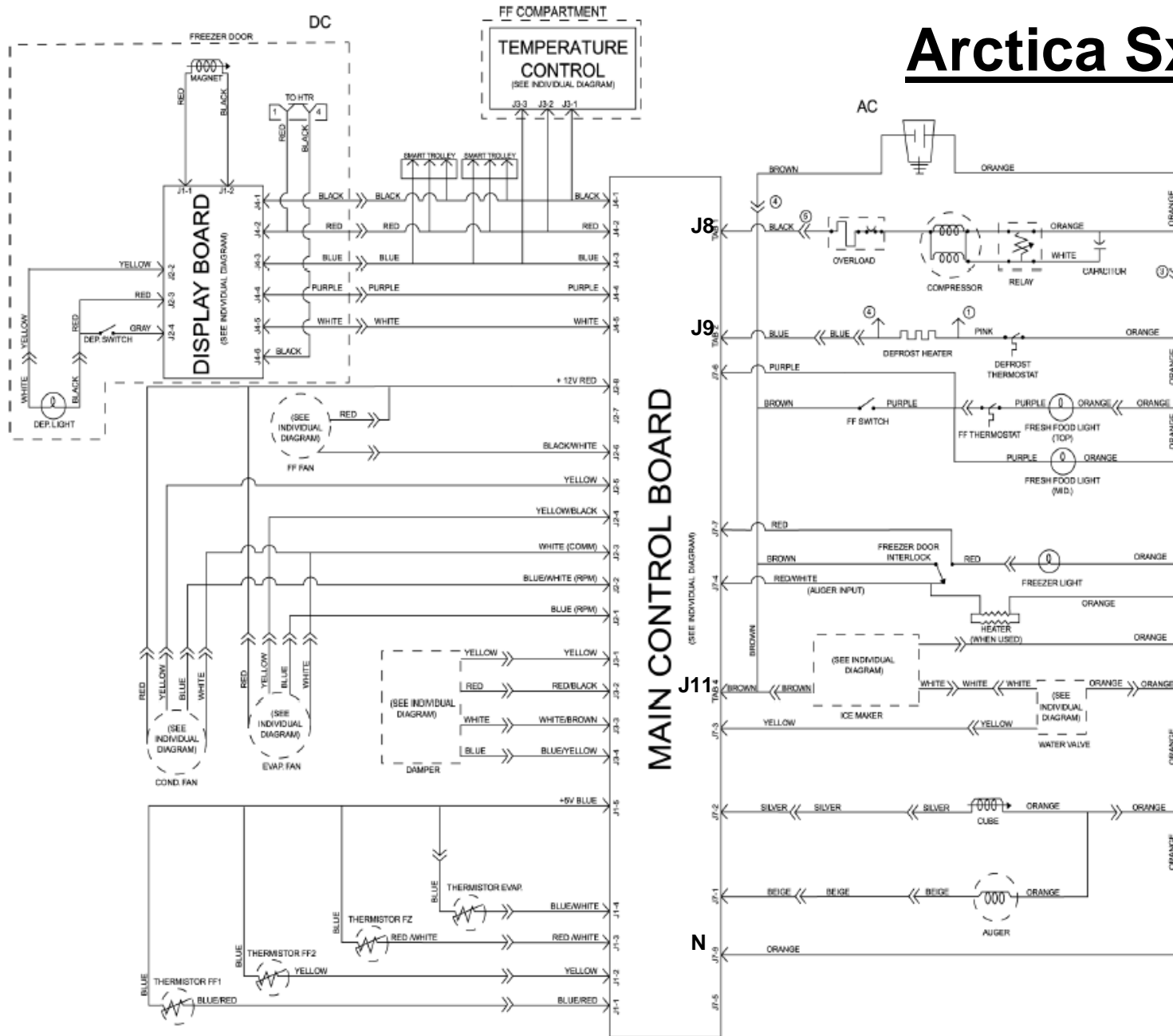


Arctica SxS

Main Control Board Locator Table (120-VAC Side)				
Connector	Pin	Wire Color	Component Termination	Pin to Pin Voltage Reading
J7	1	Beige	Augermotor	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	Augermotor 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

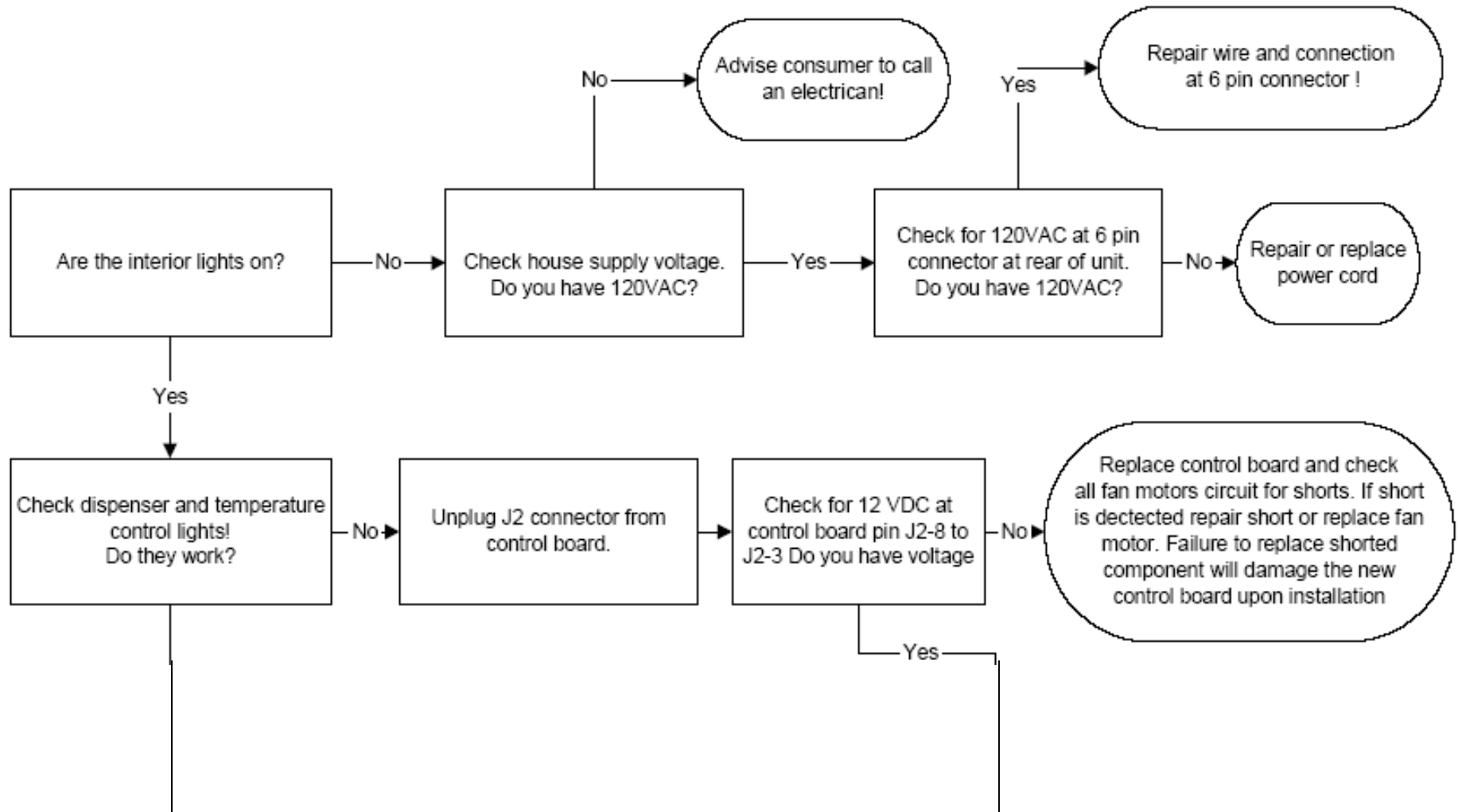


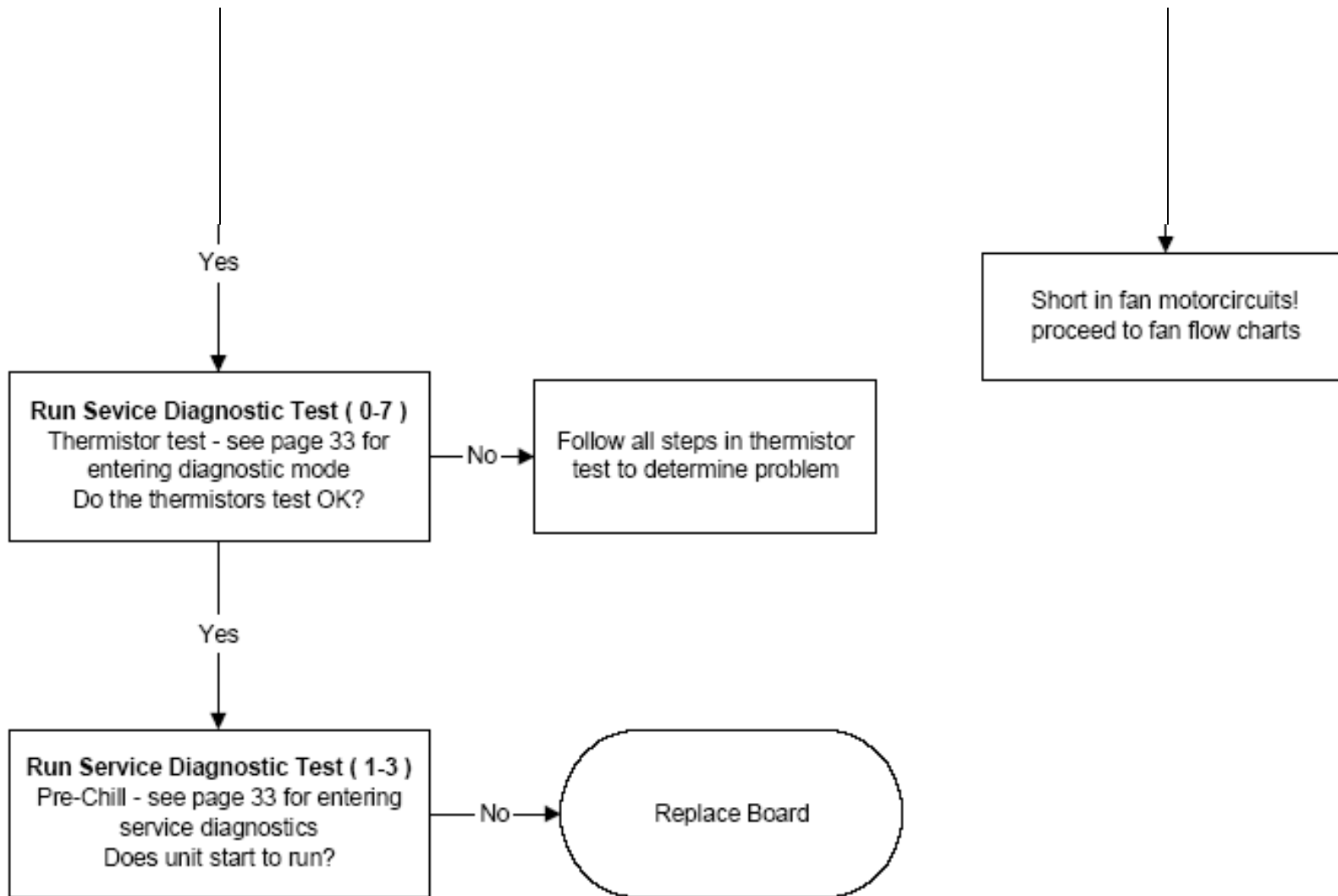
Arctica SxS



Arctica SxS

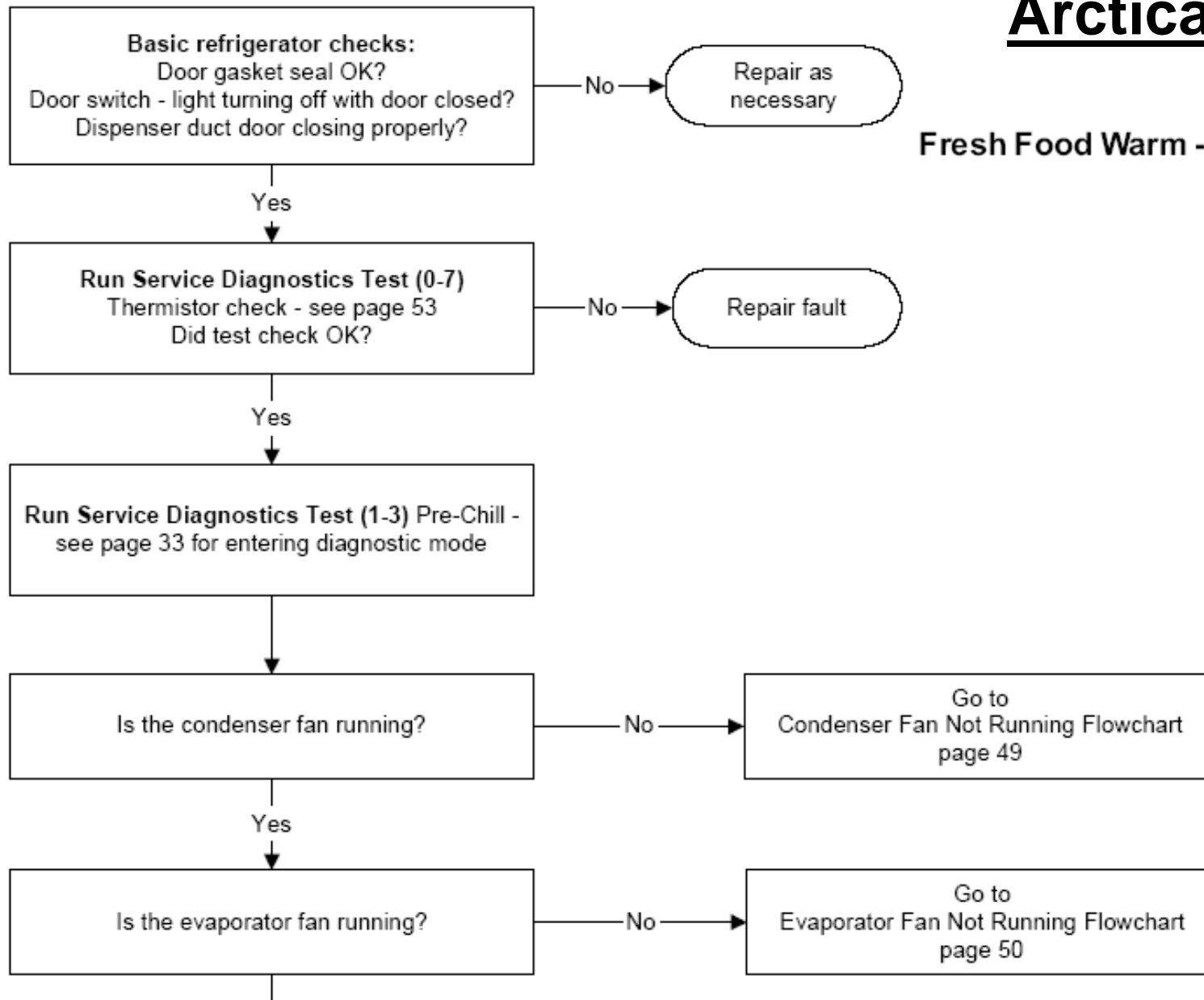
Unit Dead, No Sound & No Cooling

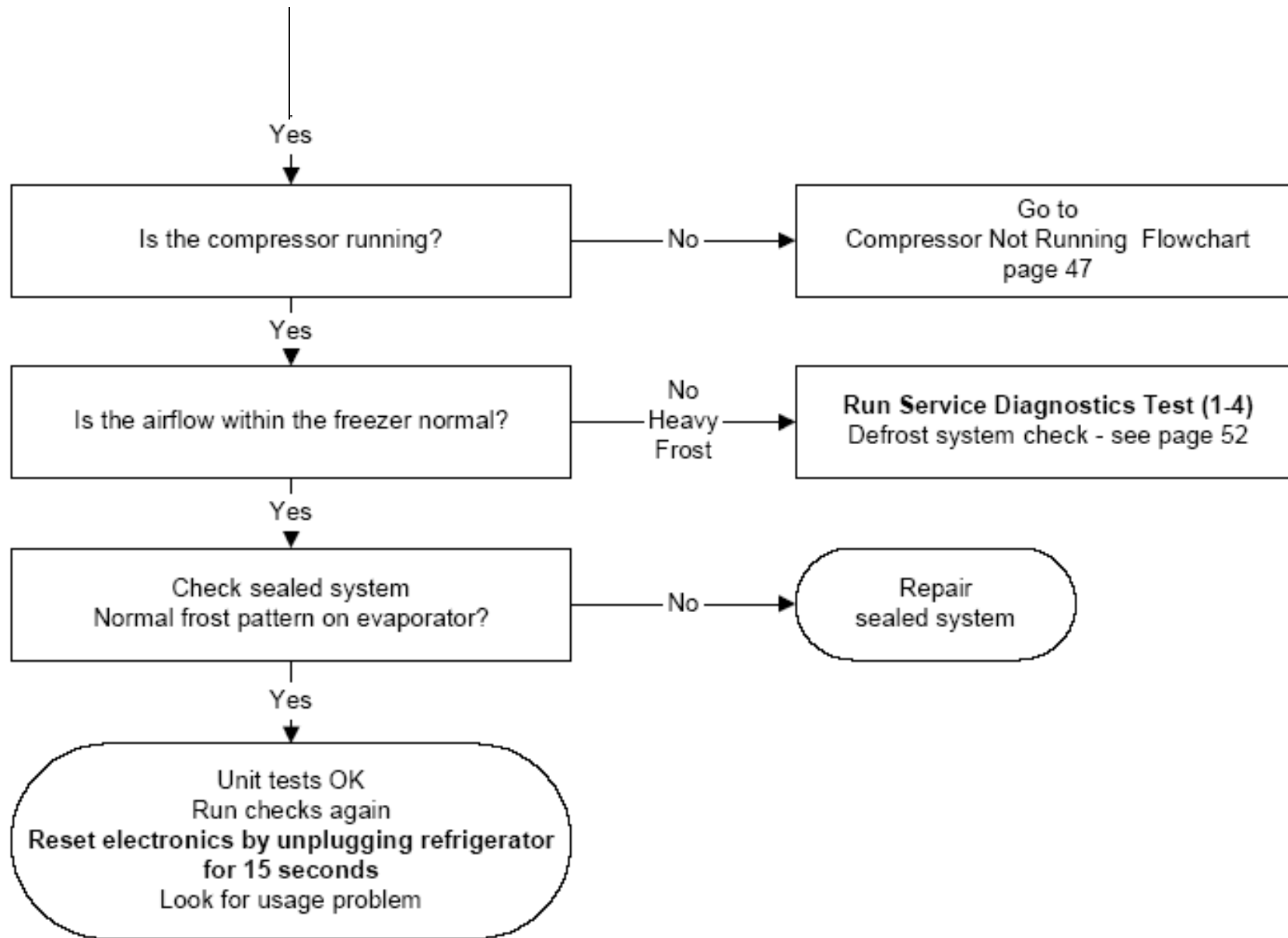




Arctica SxS

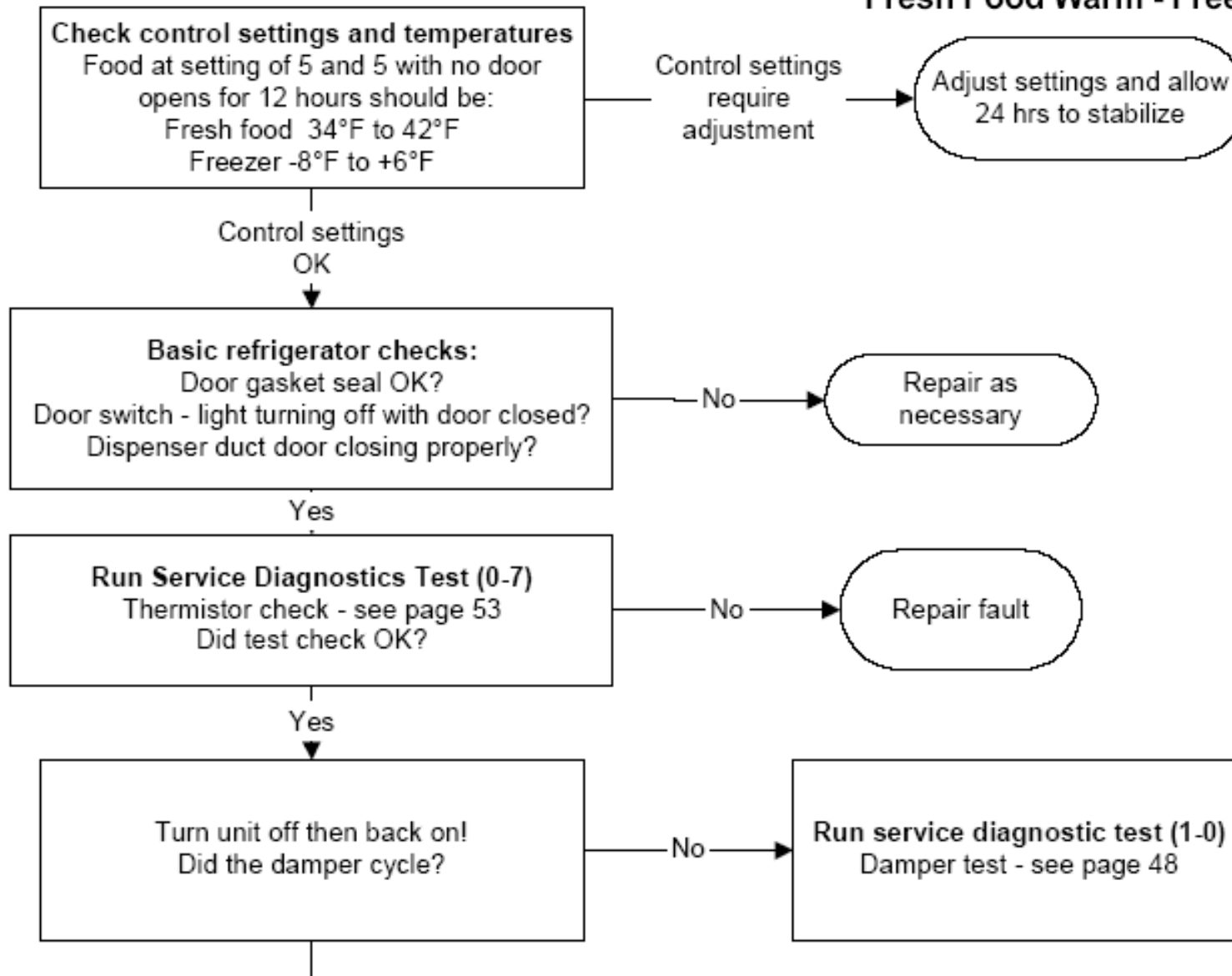
Fresh Food Warm - Freezer Warm

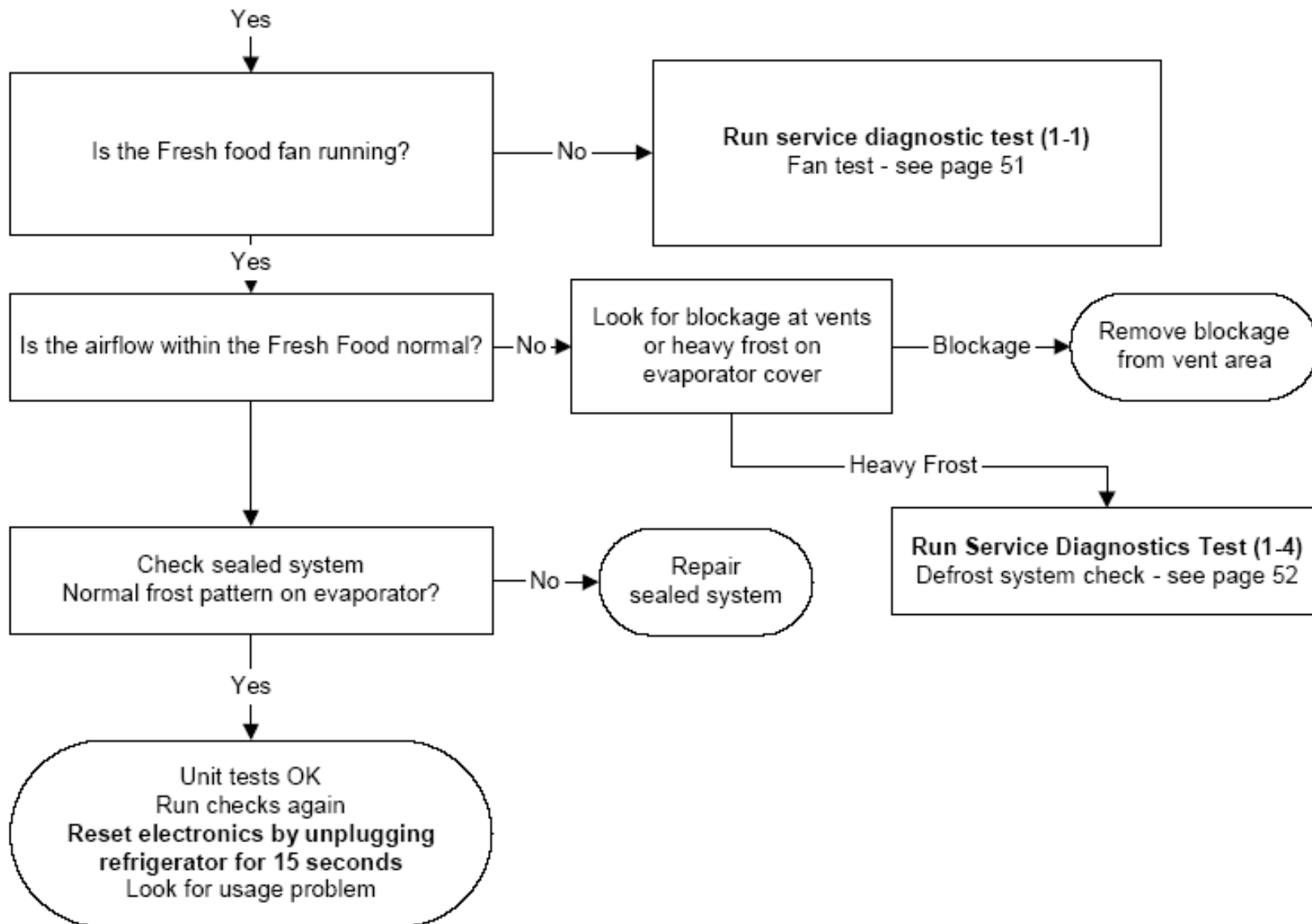




Arctica SxS

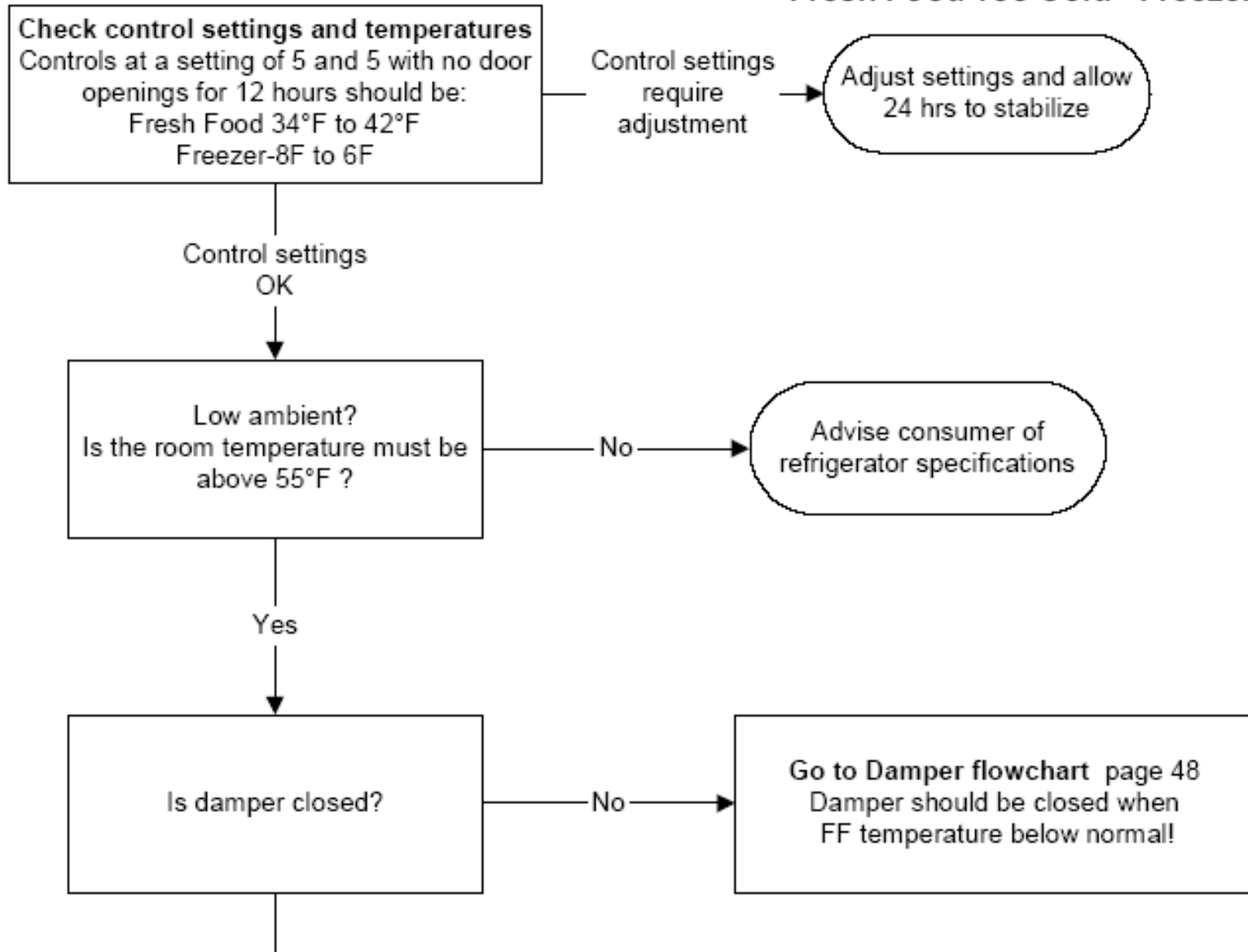
Fresh Food Warm - Freezer Normal

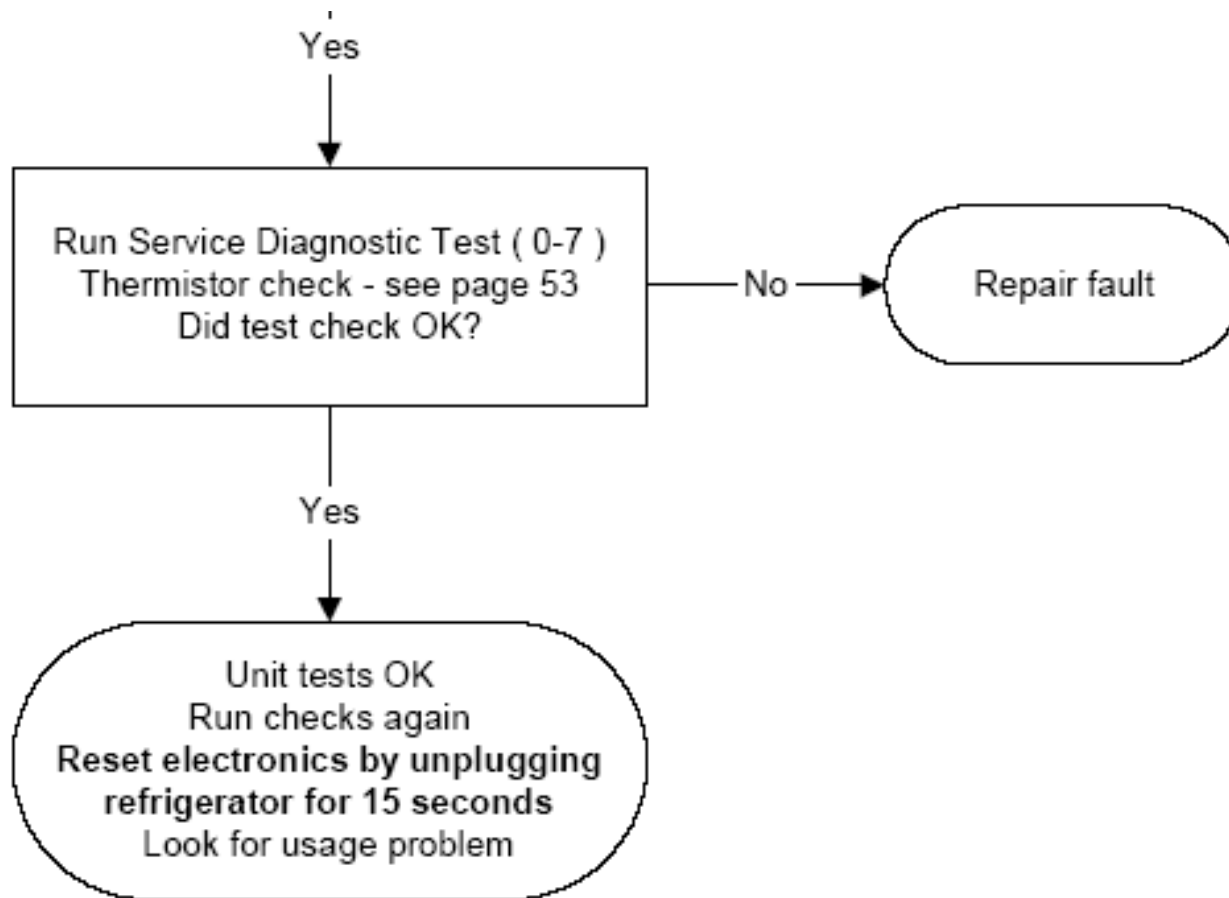




Arctica SxS

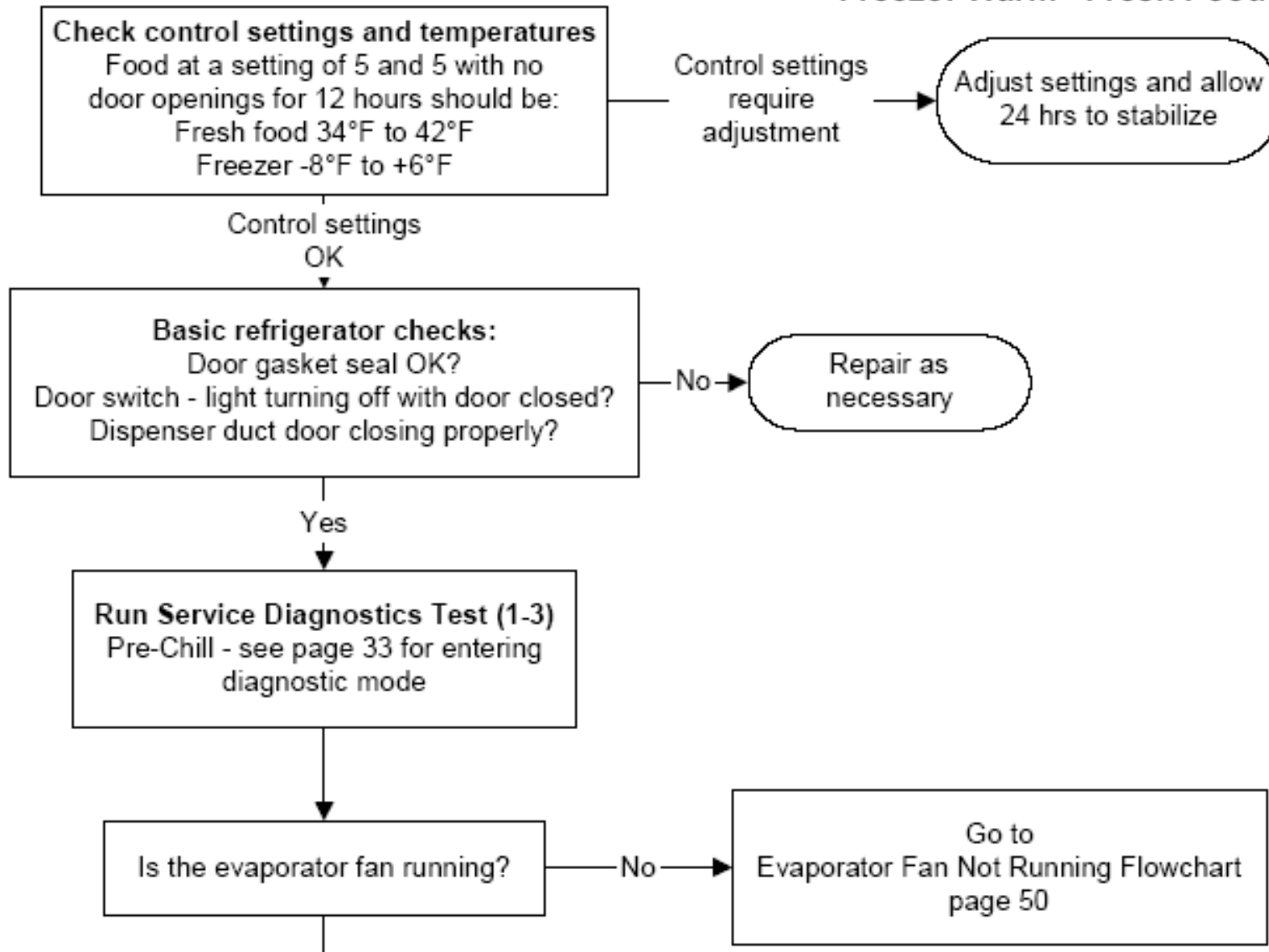
Fresh Food Too Cold - Freezer Normal

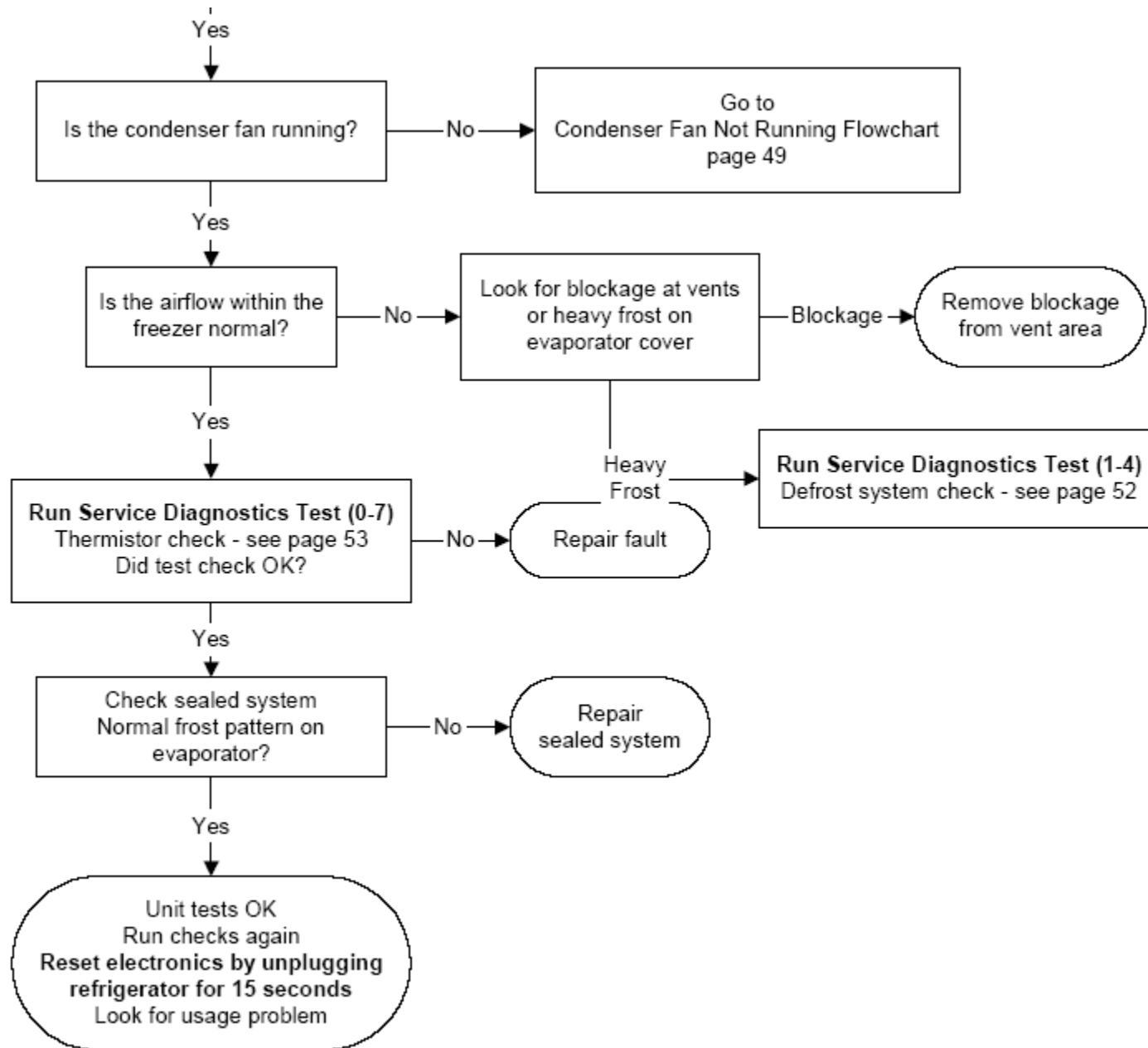




Arctica SxS

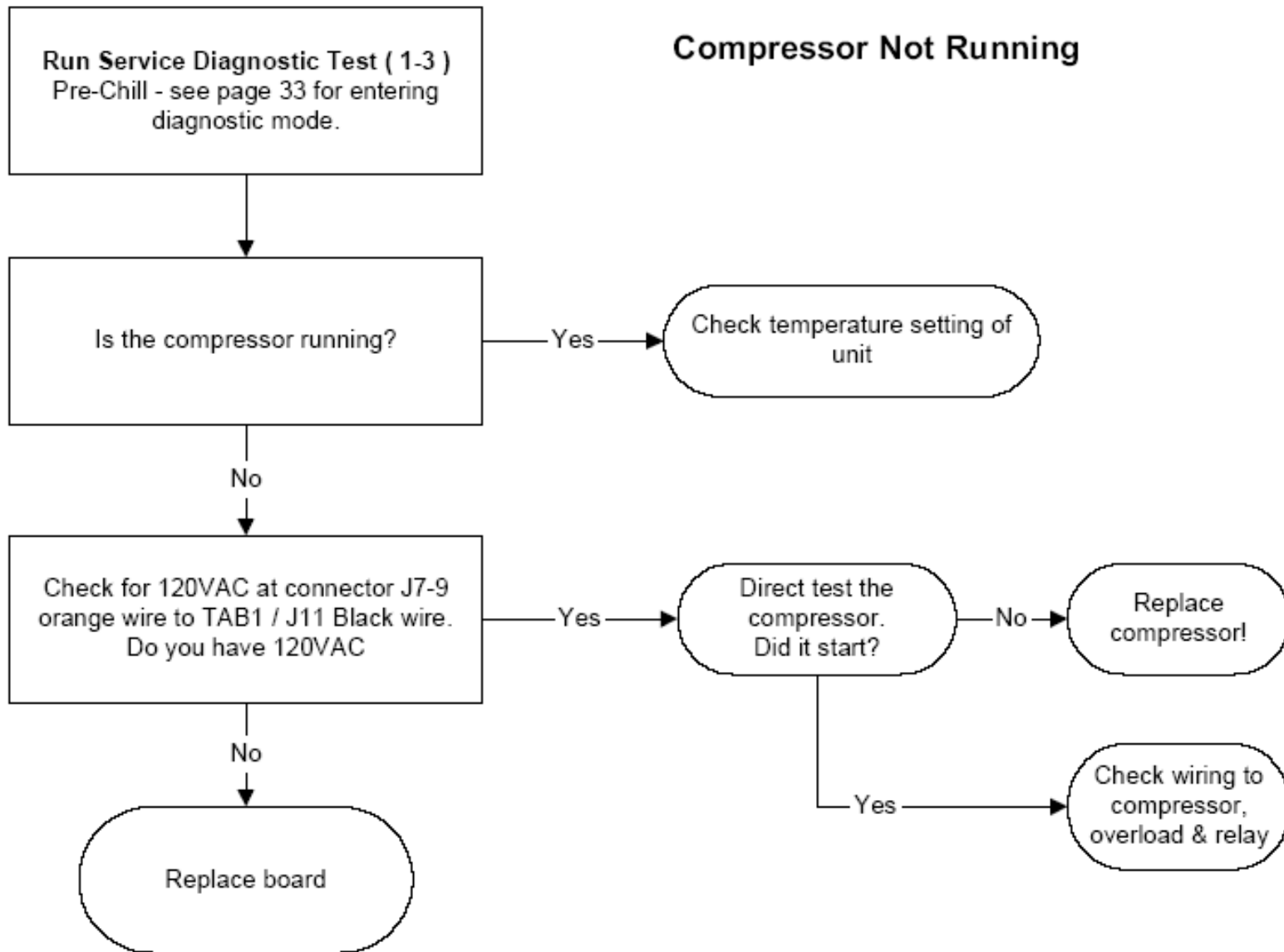
Freezer Warm - Fresh Food Normal





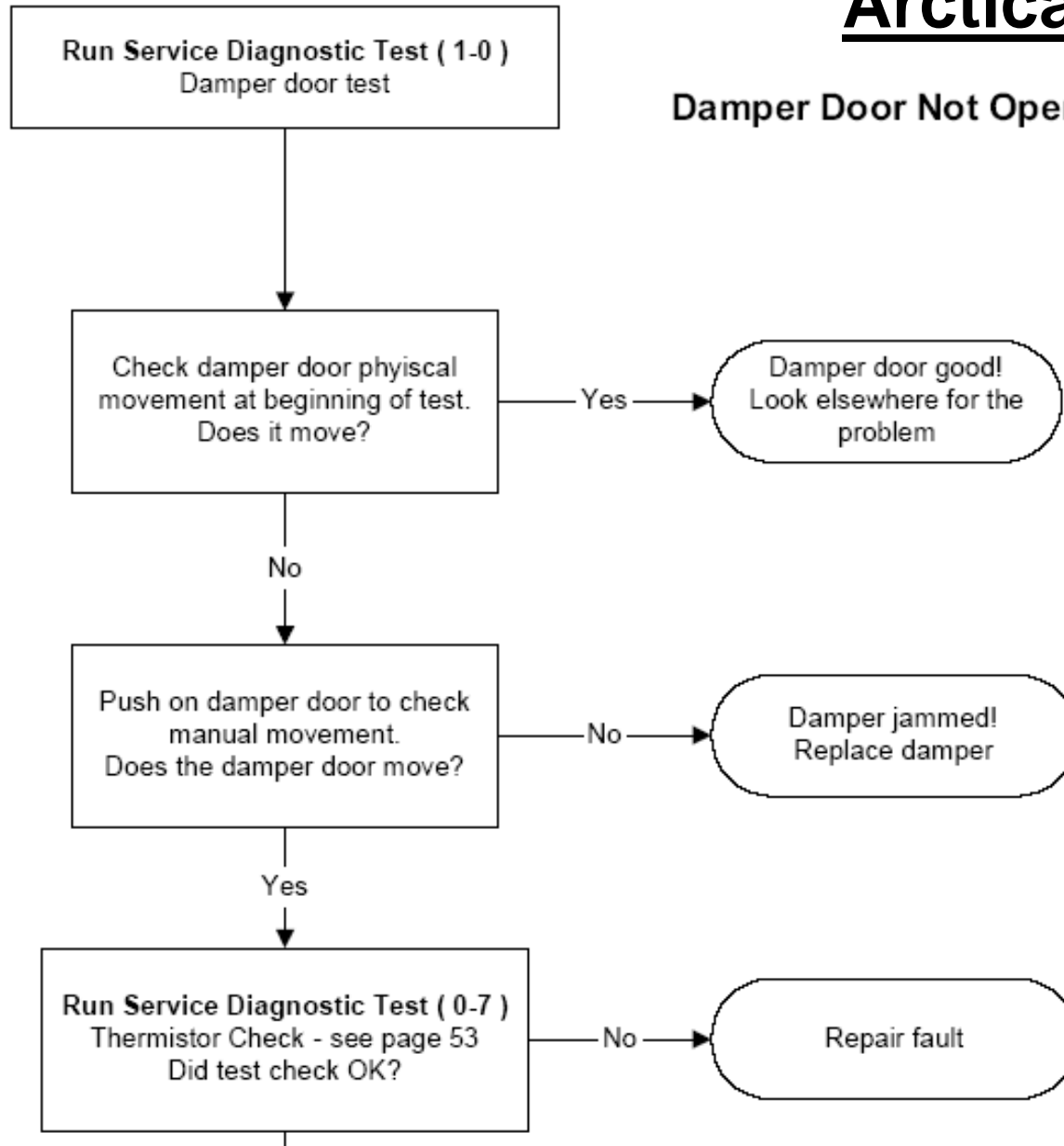
Arctica SxS

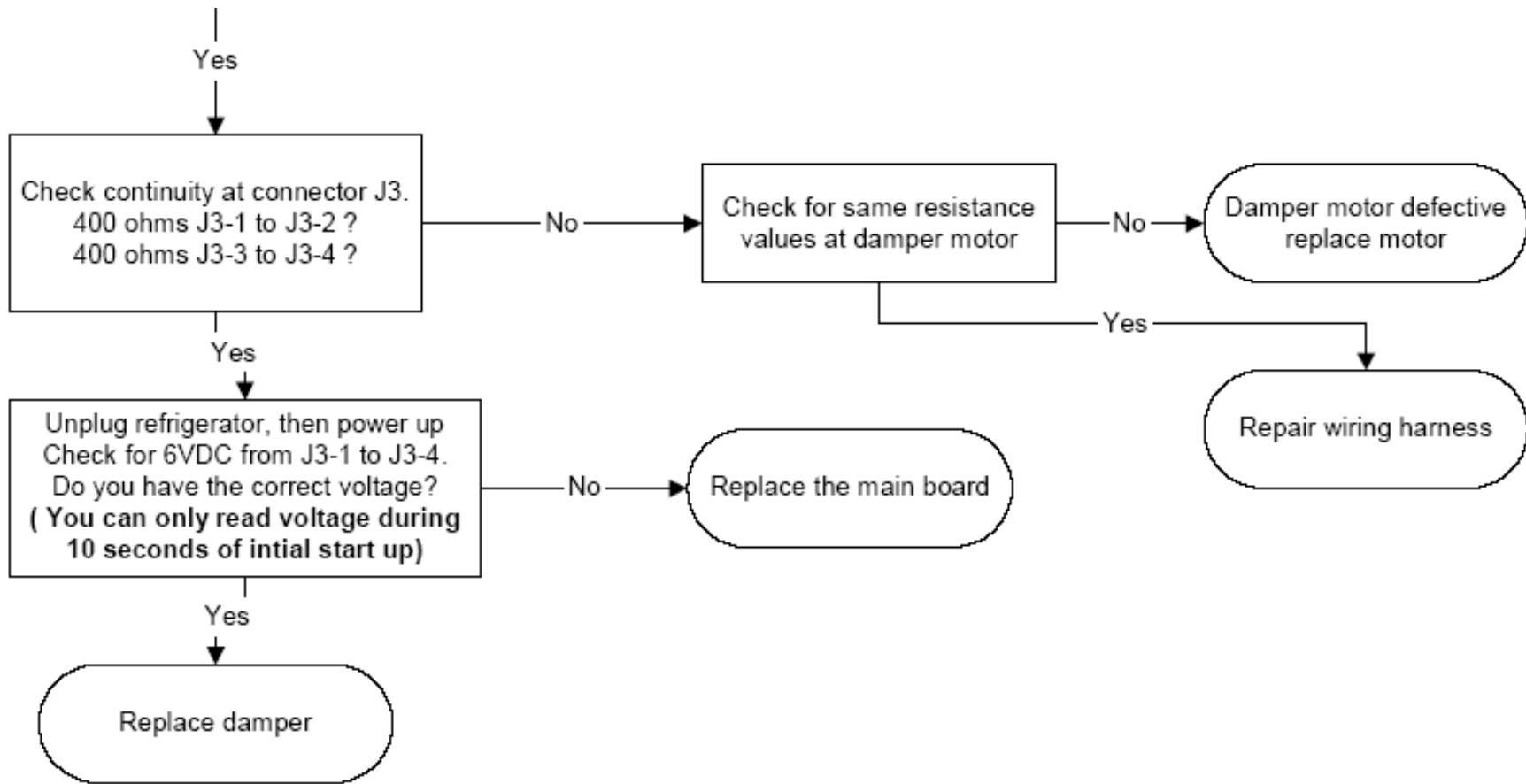
Compressor Not Running



Arctica SxS

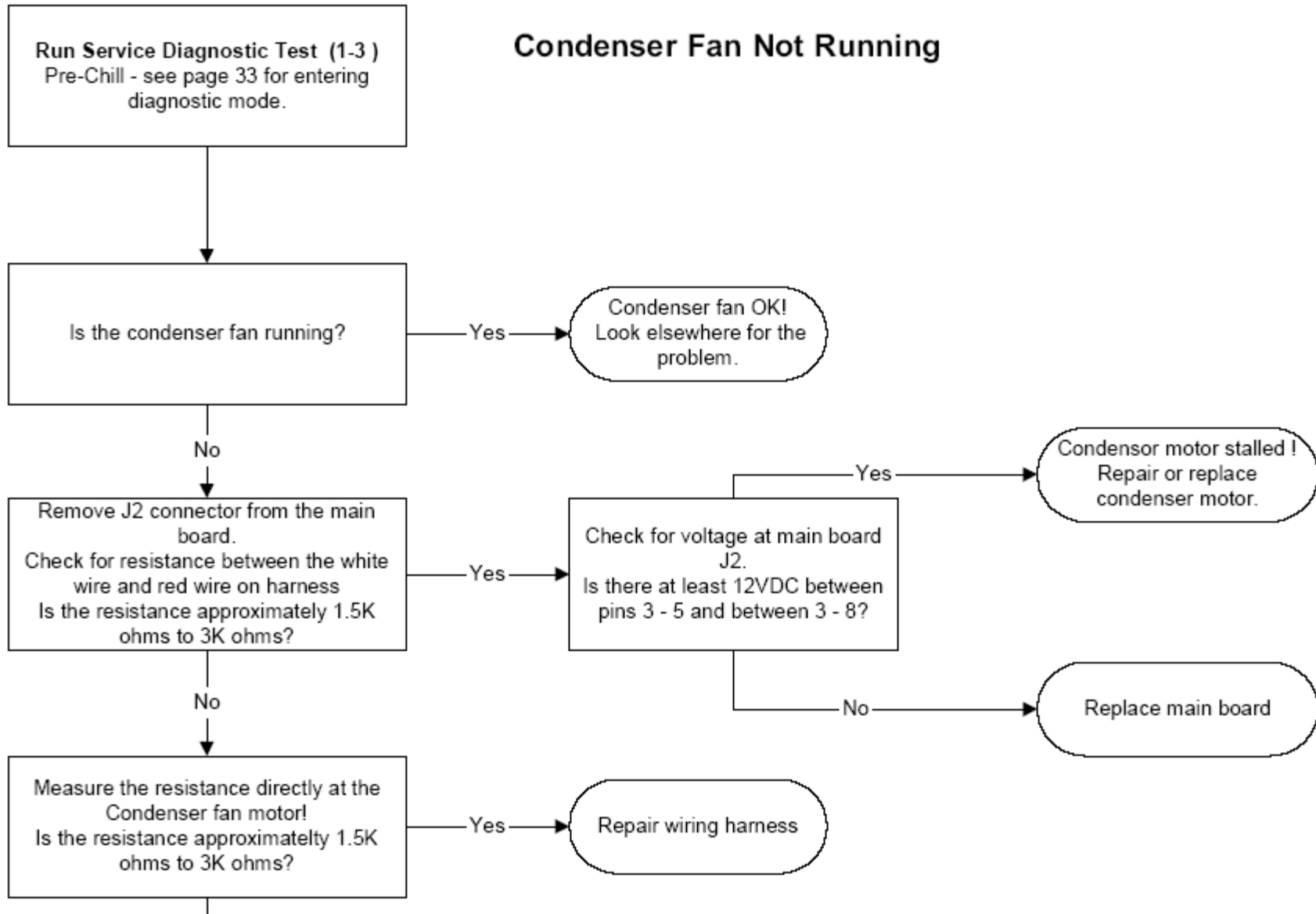
Damper Door Not Opening or Not Closing

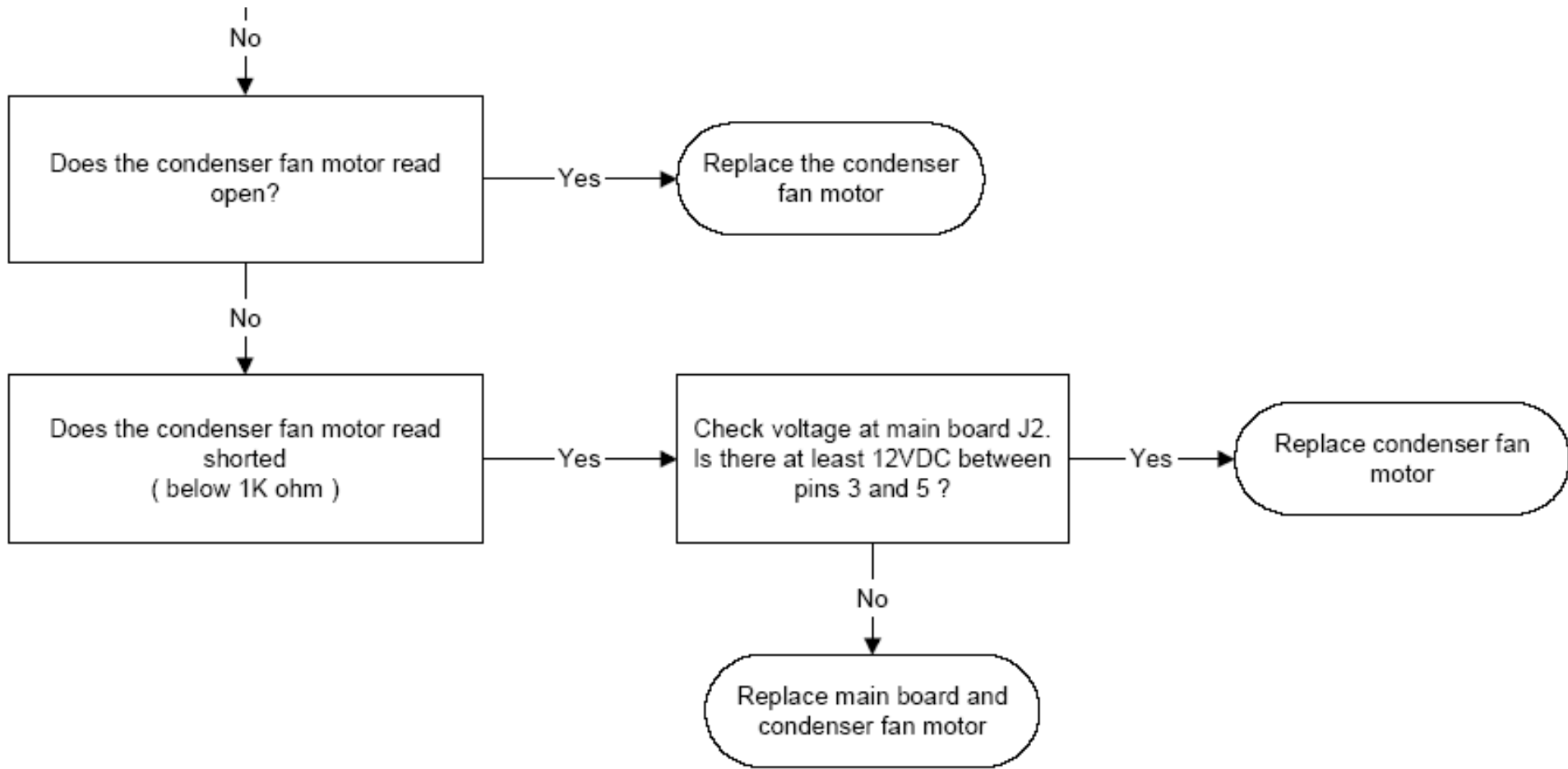




Arctica SxS

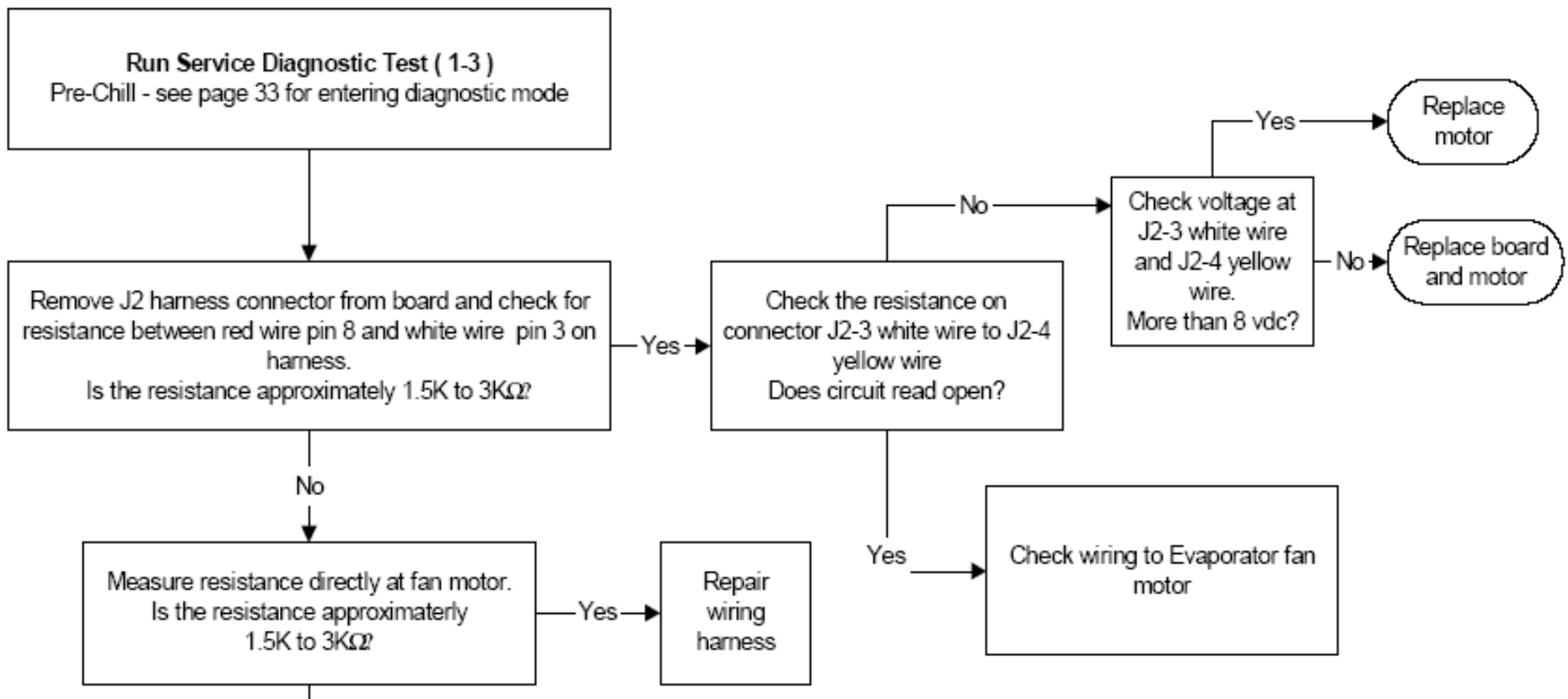
Condenser Fan Not Running

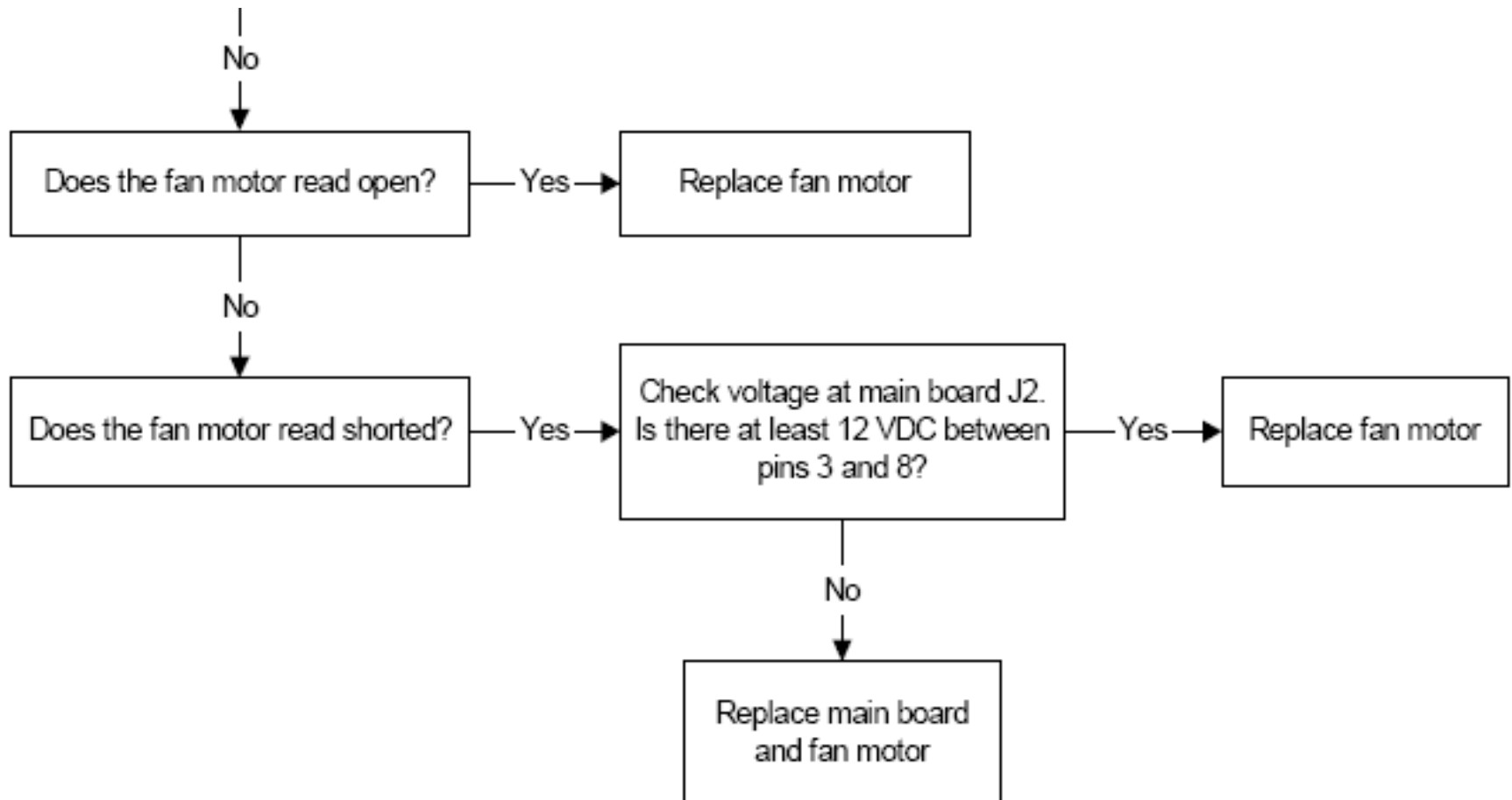




Arctica SxS

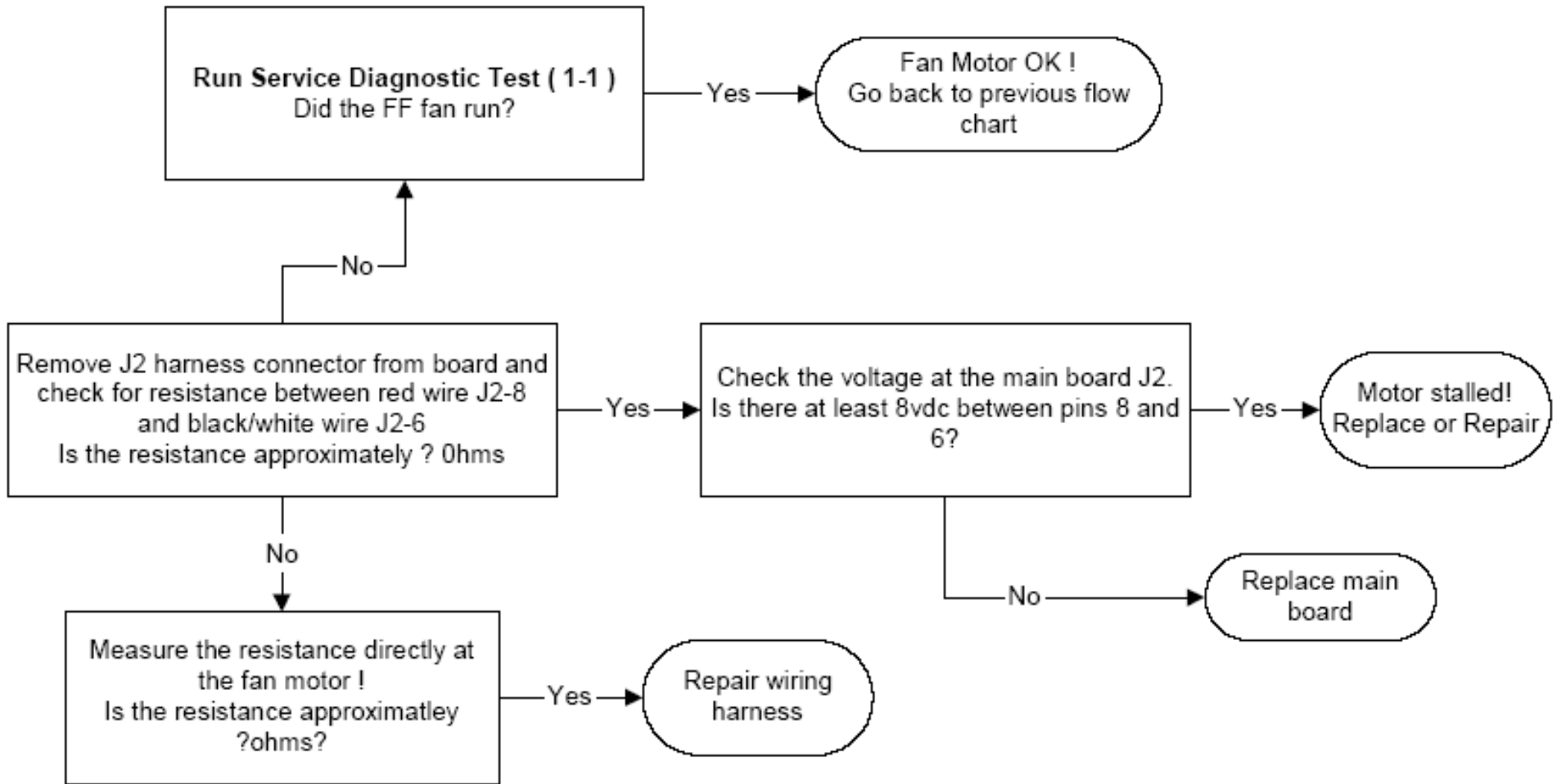
Evaporator Fan Not Running

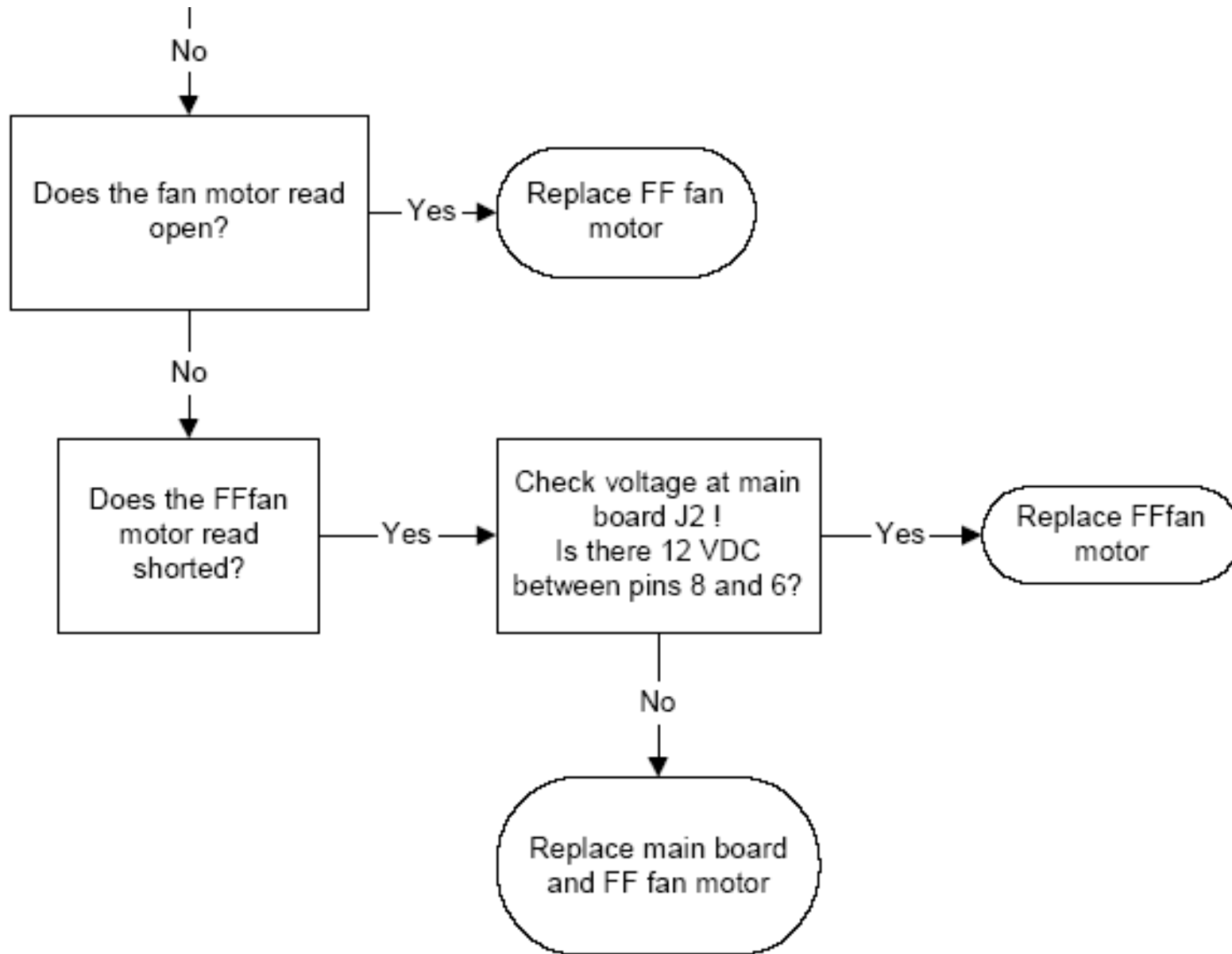




Arctica SxS

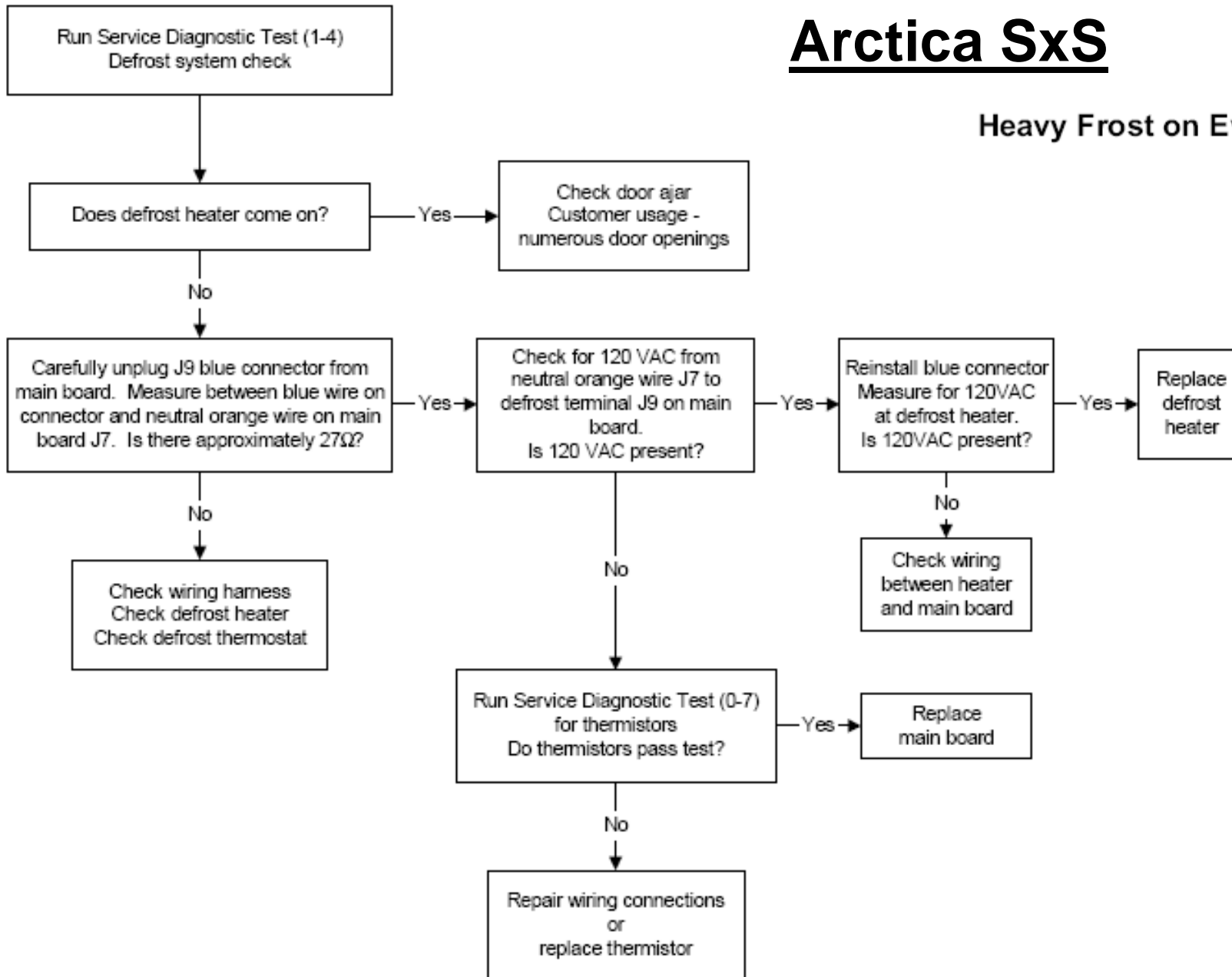
Fresh Food Fan Not Running





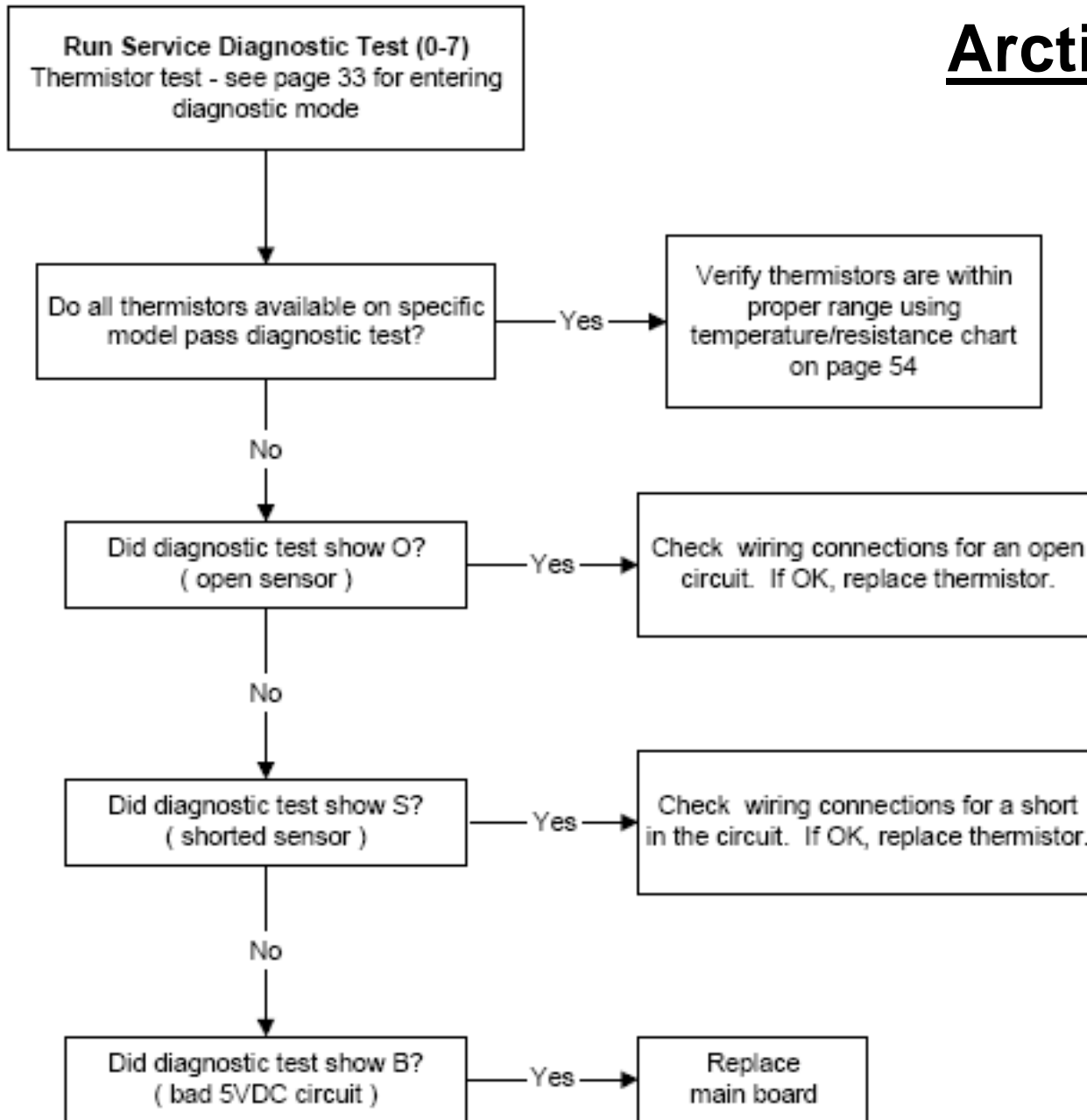
Arctica SxS

Heavy Frost on Evaporator



Arctica SxS

Thermistor Test





GE SxS

GSS20

GSS22

GSS25

ESS22

ESS25

HSS22

HSS25

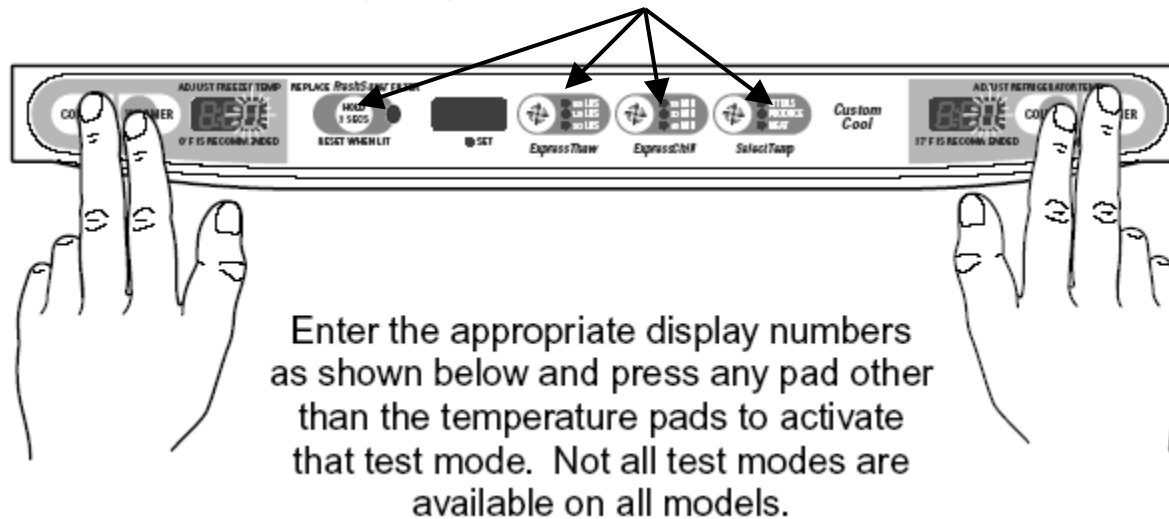
SSS25



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.



- 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

