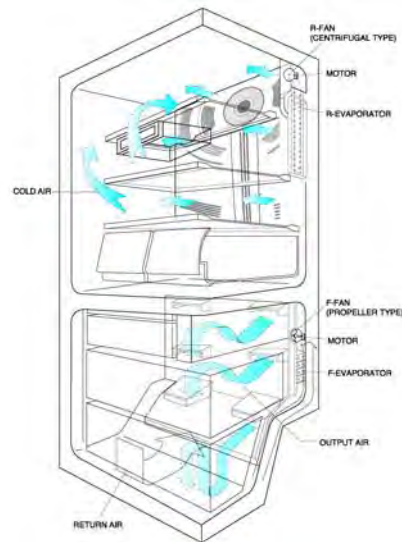
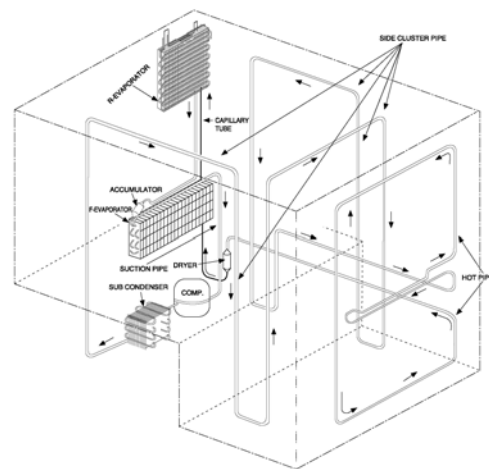
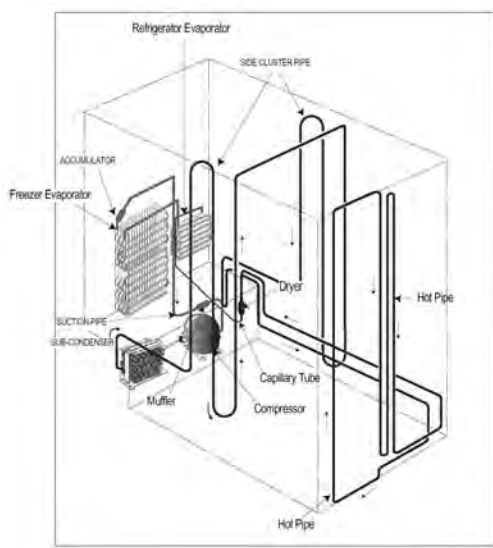


MAYTAG Training SERVICES

Samsung Refrigeration Familiarization



MAYTAG

Slide 1

Samsung Refrigerator Service Familiarization

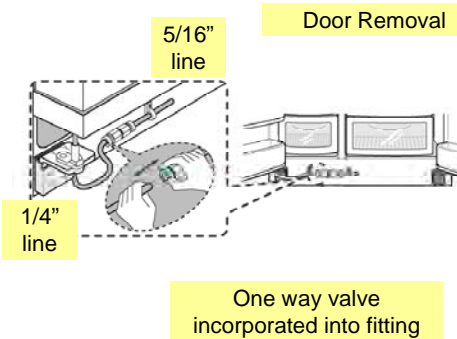
Slide 2

Samsung Side by Side



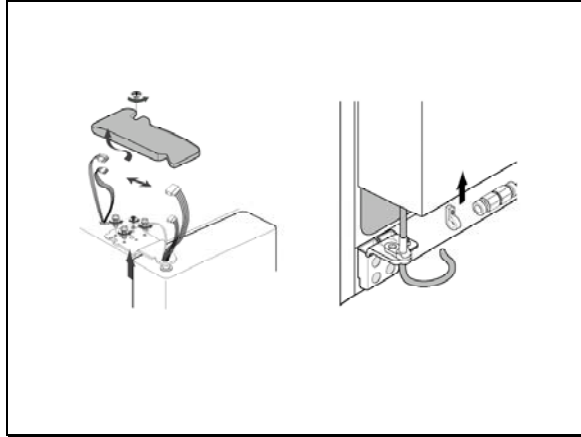
Based on model RS2577

Slide 3



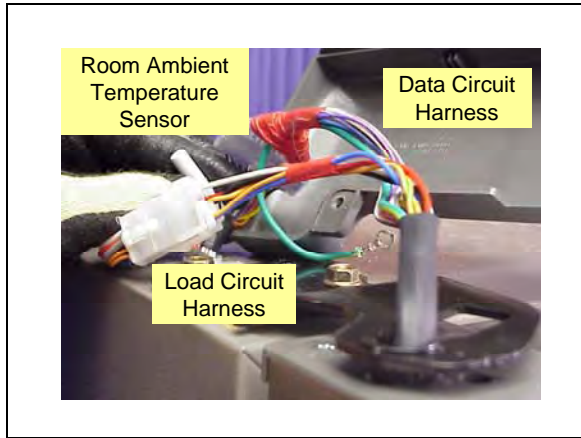
Unit uses John Guest fittings for water connection to dispenser. Make sure that the hose is cut square with no nicks for prevention of leaks at the water connection. The water line fitting incorporates a one-way valve.

Slide 4



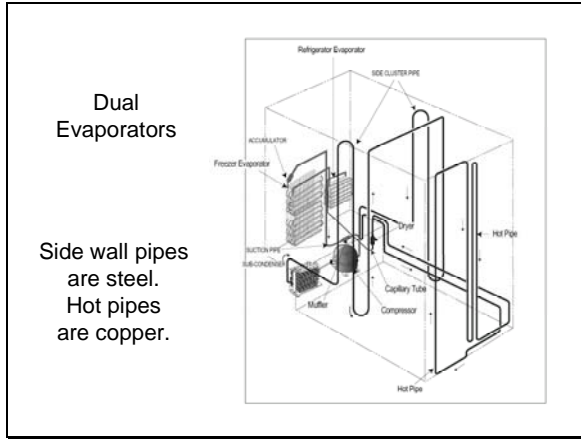
Under the freezer hinge cover are the electrical connections for the front display panel. All electronics and control circuits are in the rear control compartment. The display panel is just data input and display. There is also thermistor to monitor the exterior temperature under this hinge cover. The thermistor is on a very short harness.

Slide 5



Connections through the upper freezer door hinge.

Slide 6



Dual Evaporators

Side wall pipes are steel.
Hot pipes are copper.

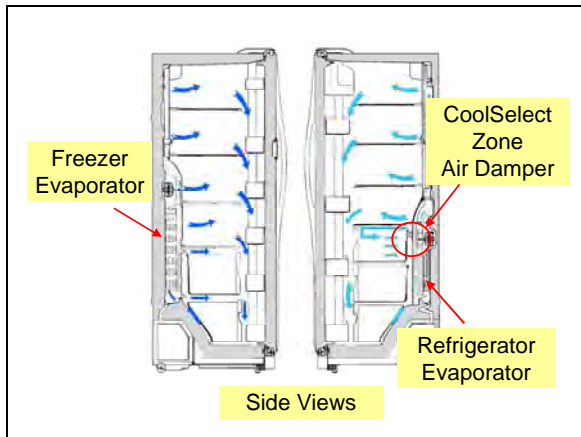
There are two evaporators in the system. The high side feeds into the fresh food compartment evaporator through a cap tube. The outlet of the fresh food evaporator supplies the freezer evaporator.

The sealed system uses a combination of a sub condenser in the machine compartment and a hot-wall condenser. Because of the hot-wall condenser, this type of system cannot be completely enclosed.

There are clearance requirements on all sides of the cabinet.

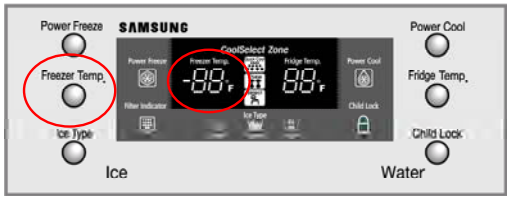
The pc (yoder) loop is made of copper while the hot wall pipes are steel.

Slide 7



There are multiple evaporator fan outlets distributed throughout each cavity.

Slide 8

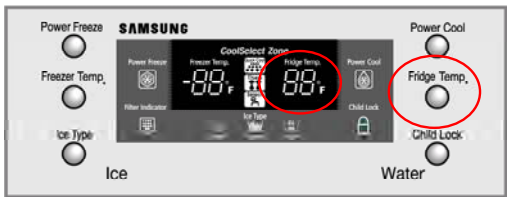


The image shows a Samsung refrigerator control panel with a digital display. The display shows 'CoolSelect Zone' with 'Freezer Temp' and 'Fridge Temp' indicators. The 'Freezer Temp' is currently set to -88°F. The 'Freezer Temp.' button is circled in red. Other buttons include Power Freeze, Ice Type, Ice, Power Cool, Fridge Temp., Child Lock, and Water.

Freezer Temperature Control:
To set freezer temperature, press the the Freezer Temp button.
The display shows the set temperature from -14F to +8F in sequence

The temperature settings will display the current set-point the first time that the “Fridge Temp” or “Freeze Temp” buttons are pressed. Each subsequent pressing of the controls will decrease the set-point until the minimum is reached. Pressing the control again will cycle the control to the maximum setting.

Slide 9

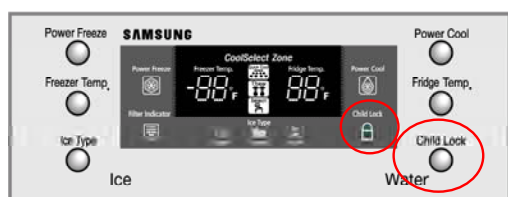


The image shows a Samsung refrigerator control panel with a digital display. The display shows 'CoolSelect Zone' with 'Freezer Temp' and 'Fridge Temp' indicators. The 'Fridge Temp' is currently set to 88°F. The 'Fridge Temp.' button is circled in red. Other buttons include Power Freeze, Ice Type, Ice, Power Cool, Fridge Temp., Child Lock, and Water.

Refrigerator Temperature Control:
To set refrigerator temperature, press the the Fridge Temp button.
The display shows the set temperature from 34F to 46F in sequence

The temperature settings will display the current set-point the first time that the “Fridge Temp” or “Freeze Temp” buttons are pressed. Each subsequent pressing of the controls will decrease the set-point until the minimum is reached. Pressing the control again will cycle the control to the maximum setting.

Slide 10

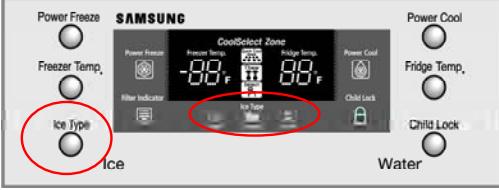


The image shows a Samsung refrigerator control panel with a digital display. The display shows 'CoolSelect Zone' with 'Freezer Temp' and 'Fridge Temp' indicators. The 'Freezer Temp' is currently set to -88°F and the 'Fridge Temp' is set to 88°F. The 'Child Lock' button is circled in red. Other buttons include Power Freeze, Ice Type, Ice, Power Cool, Fridge Temp., Child Lock, and Water.

Child Lock Function:
Press the child lock button for 3 seconds, the child lock indicator comes on with an audible tone.
To unlock this function, press and hold the child lock button for 3 seconds.

Press the child lock button for 3 seconds, the child lock indicator comes on with an audible tone. No function commands except the ice type button will be accepted. This function will prevent accidental settings. To unlock this function, press and hold the child lock button for 3 seconds.

Slide 11




The image shows a Samsung refrigerator control panel. The central display shows 'CoolSelect Zone' with 'Fridge Temp.' and 'Freezer Temp.' indicators. The 'Ice Type' button is circled in red. Other buttons include Power Freeze, Freezer Temp., Filter Indicator, Power Cool, Fridge Temp., Child Lock, and Water. The 'Ice' and 'Water' labels are at the bottom.

Ice Type:
The ice type button selects Cubed/Crushed/Ice-off options in sequence. If ice off is selected, the ice maker will stop working.

The ice type button selects Cubed/Crushed/Ice-off options in sequence. The default setting is Cubed Option. If ice off is selected, the ice maker will stop working, this option will be terminated when Cubed or Crushed options are selected.

Slide 12




The image shows a Samsung refrigerator control panel. The 'Power Freeze' button is circled in red. The central display shows 'CoolSelect Zone' with 'Fridge Temp.' and 'Freezer Temp.' indicators. Other buttons include Ice Type, Filter Indicator, Power Cool, Fridge Temp., Child Lock, and Water. The 'Ice' and 'Water' labels are at the bottom.

Power Freeze:
When the power freeze button is depressed, the power freeze indicator light comes on immediately. The compressor and fan run continuously for a set time and temperature depending on model.

Power Freeze:
When the power freeze button is depressed, the power freeze indicator light comes on immediately. The compressor and fan run continuously for a set time and temperature depending on model.

Refer to the service flash. Pre June 2003 production Power Freeze operation differs from post June 2003 operation.

Slide 13



The image shows a Samsung refrigerator control panel. The 'Power Cool' button is circled in red. The central display shows 'CoolSelect Zone' with 'Fridge Temp.' and 'Freezer Temp.' indicators. Other buttons include Power Freeze, Freezer Temp., Filter Indicator, Ice Type, Power Cool, Fridge Temp., Child Lock, and Water. The 'Ice' and 'Water' labels are at the bottom.

Power Cool:
When the power cool button is depressed, the power cool indicator light comes on immediately. The compressor and fan run continuously until the refrigerator reaches 25F

Power Cool:
When the power cool button is depressed, the power cool indicator light comes on immediately. The compressor and fan run continuously until the refrigerator reaches 25F.

Slide 14

Filter indicator light is normally green. After 5 months of service it changes to orange, at the 6th month it changes to red. To reset: Press the Ice Type and Child Lock buttons for 3 seconds

Filter indicator light: This indicator light is normally green, after 5 months of service it changes to orange, at the 6th month it changes to red.

To reset: depress the Ice Type and Child Lock buttons for 3 seconds. This is strictly a time-based function, this does not monitor water usage.

Slide 15

Self-Diagnostic Function

* Self-diagnostics check list

| NO | Error |
|----|-------------------------|
| ① | ICE MAKER SENSOR |
| ② | R-SENSOR |
| ③ | R-DEF-SENSOR |
| ④ | R-FAN ERROR |
| ⑤ | IM function error |
| ⑥ | CoolSelect Zone™ SENSOR |
| ⑦ | R-DEFROST ERROR |
| ⑧ | EXIT-SENSOR |
| ⑨ | F-SENSOR |
| ⑩ | F-DEF ERROR |
| ⑪ | F-FAN ERROR |
| ⑫ | C-FAN ERROR |
| ⑬ | F-DEFROST ERROR |

Press both buttons simultaneously for 8 seconds

If any LEDs blink, the corresponding sensors and components must be checked for an error.

When power is first applied, the system performs a power-up self check. Any failure of an active component will result in a specific segment of the display illuminating. There are two versions of the self-diagnostic output. On units produced before June 2003 will not display for Refrigerator Defrost errors (7) or Freezer Defrost Errors (13). The self diagnostics can be activated by pressing the “Power Cool” and “Power Freeze” buttons at the same time for eight seconds.

Slide 16

Load Operation Check Function

* Table of Load Mode Check List

| NO | Contents |
|----|----------------------------------|
| ① | R-FAN High or AC motor operation |
| ② | R-FAN Low |
| ③ | R-DEF heater |
| ④ | Start mode |
| ⑤ | Overload mode |
| ⑥ | Low-temperature mode |
| ⑦ | Exhibition mode |
| ⑧ | COMP |
| ⑨ | F-FAN High |
| ⑩ | F-FAN Low |
| ⑪ | F-DEF-Heater |
| ⑫ | C-FAN High |
| ⑬ | C-FAN Low |
| ⑭ | Dispenser-Heater |
| ⑮ | Damper |
| - | Normal condition |

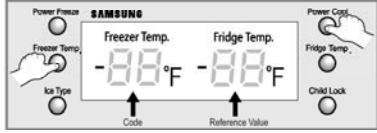
Press both buttons simultaneously for 6 seconds, all LED lights will be turned off. At this time press button ⑥

All currently powered (active) components can be displayed by holding down both the “Power Freeze” and “Power Cool” buttons for six seconds followed immediately by the “Fridge Temp” button. The display will indicate everything that is currently energized. There is a twenty second time-out on this function.

Slide 17

Set Point Shift Function

Press both buttons simultaneously for 12 seconds

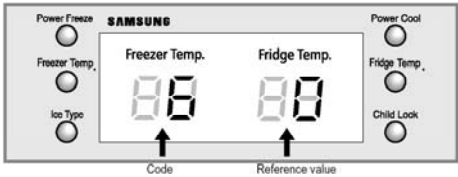


- 1) Initially, all products set the code, "0"
- 2) After 20 seconds from adjustment, a new setting will be stored in EEPROM and return to the normal display.
- 3) Freezer Temp, Fridge Temp., Ice maker water supply, Ice tray temperature, and CoolSelect Zone™ temperature can be adjusted with this function.

Offsets are included that will allow for adjusting to the characteristics of the thermistors. Hold the Freezer Temp and Power Cool buttons for twelve seconds. It is highly recommended that these adjustments are avoided.

Slide 18

Example) If you are lowering the current temperature of the freezer by -6.0°F



The Fridge Temp display shows which mode the adjustment is being made to. There are four different thermistors that can be adjusted. Freezer offset is mode "0". Fresh Food offset is mode "1". Ice Maker thermistor offset is mode "4". CoolSelect zone is mode "20". Icemaker fill time can be adjusted when in mode "3". It is strongly suggested that the icemaker fill time should not be adjusted. The Freezer Temp display indicates the amount of the offset based upon memory tables. It is imperative that the reference tables be used when making an offset adjustment. The values displayed in the Freezer Temp display are not the actual offset temperatures. In this example, the freezer thermistor is being offset by -6 degrees.

Slide 19

Freezer Temp Sensor Shift

Reference Value: 00

| Code | Temp. shift | Code | Temp. shift |
|------|-------------|------|-------------|
| 0 | 0 | 8 | 1.0 F |
| 1 | -1.0 F | 9 | 2.0 F |
| 2 | -2.0 F | 10 | 3.0 F |
| 3 | -3.0 F | 11 | 4.0 F |
| 4 | -4.0 F | 12 | 5.0 F |
| 5 | -5.0 F | 13 | 6.0 F |
| 6 | -6.0 F | 14 | 7.0 F |
| 7 | -7.0 F | 15 | 8.0 F |

Slide 20

Example) If you are raising the current temperature of the refrigerator by +3.0 F

In this example, the fresh food thermistor is being offset by +3.0 degrees.

Slide 21

Refrigerator Temp Sensor Shift

Reference Value: 00

| Code | Temp. shift | Code | Temp. shift |
|------|-------------|------|-------------|
| 0 | 0 | 8 | 1.0 F |
| 1 | -1.0 F | 9 | 2.0 F |
| 2 | -2.0 F | 10 | 3.0 F |
| 3 | -3.0 F | 11 | 4.0 F |
| 4 | -4.0 F | 12 | 5.0 F |
| 5 | -5.0 F | 13 | 6.0 F |
| 6 | -6.0 F | 14 | 7.0 F |
| 7 | -7.0 F | 15 | 8.0 F |

Slide 22

Water Supply Time Shift

| Reference Value | 8 |
|-----------------|----------------------|
| Code | Time to supply water |
| 0 | 5 sec |
| 1 | 6 sec |
| 2 | 7 sec |
| 3 | 8 sec |
| 4 | 7 sec |
| 5 | 8 sec |
| 6 | 9 sec |
| 7 | 10 sec |
| 8 | 12 sec |
| 9 | 13 sec |
| 10 | 15 sec |
| 11 | 17 sec |
| 12 | 19 sec |
| 13 | 21 sec |
| 14 | 23 sec |
| 15 | 25 sec |

It is strongly recommended that the icemaker fill time should not be adjusted.

Slide 23

Icemaker Temp Sensor Shift

4) Shift the Ice maker temperature sensor

| Reference Value | 4 |
|-----------------|------------------------------|
| Code | Ice maker temperature sensor |
| 0 | 19 F |
| 1 | 21 F |
| 2 | 17.5 F |
| 3 | 16 F |
| 4 | 14 F |
| 5 | 12 F |
| 6 | 10.5 F |
| 7 | 8.5 F |

Pre June, 2003

4) Shift the Ice maker temperature sensor

| Reference Value | 4 |
|-----------------|------------------------------|
| Code | Ice maker temperature sensor |
| 0 | 14 F |
| 1 | 12 F |
| 2 | 10.5 F |
| 3 | 8.5 F |
| 4 | 16 F |
| 5 | 17 F |
| 6 | 19 F |
| 7 | 21 F |

Post June, 2003

Two different sets of icemaker thermistor offset adjustments have been used. One set is for pre-June 2003 production.

Slide 24

CoolSelect Temp Sensor Shift

| Reference Value | -20 |
|-----------------|-------------------------------------|
| Code | CoolSelect Zone™ temperature sensor |
| 0 | 0 F |
| 1 | +1.0 F |
| 2 | -2.0 F |
| 3 | -3.0 F |
| 4 | 1.0 F |
| 5 | 2.0 F |
| 6 | 3.0 F |
| 7 | 4.0 F |

Slide 25

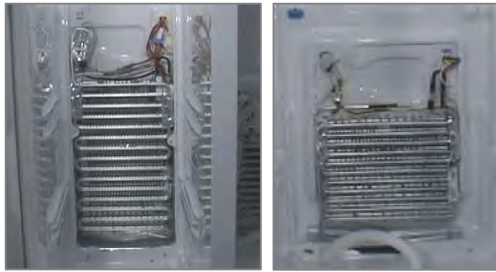
Thermistor Spec Chart

| Temp (°F) | Res (kΩ) | Volt (V) | Temp (°F) | Res (kΩ) | Volt (V) | Temp (°F) | Res (kΩ) | Volt (V) |
|-----------|----------|----------|-----------|----------|----------|-----------|----------|----------|
| -41.0 | 90370 | 4.941 | 13.2 | 21.410 | 2.405 | 68.3 | 6.015 | 1.575 |
| -41.0 | 92700 | 4.916 | 13.0 | 20.800 | 2.380 | 69.6 | 5.795 | 1.568 |
| -40.0 | 88950 | 4.939 | 12.8 | 19.990 | 2.310 | 71.8 | 5.581 | 1.591 |
| -39.2 | 84750 | 4.886 | 11.8 | 18.250 | 2.260 | 74.4 | 5.378 | 1.568 |
| -38.4 | 79800 | 4.833 | 10.4 | 17.020 | 2.208 | 75.2 | 5.185 | 1.570 |
| -34.6 | 75870 | 4.416 | 21.2 | 17.180 | 3.159 | 77.0 | 5.080 | 1.587 |
| -29.6 | 74300 | 4.588 | 20.0 | 18.180 | 3.150 | 78.6 | 4.921 | 1.626 |
| -31.0 | 66150 | 4.380 | 24.8 | 15.740 | 3.057 | 80.6 | 4.650 | 1.597 |
| -29.2 | 64710 | 4.337 | 26.6 | 15.080 | 3.006 | 82.4 | 4.487 | 1.540 |
| -27.4 | 61480 | 4.301 | 28.4 | 14.450 | 2.955 | 84.2 | 4.329 | 1.511 |
| -26.6 | 58430 | 4.289 | 30.2 | 13.880 | 2.904 | 86.0 | 4.178 | 1.474 |
| -23.8 | 55550 | 4.237 | 32.0 | 13.290 | 2.853 | 87.8 | 4.033 | 1.437 |
| -22.0 | 52840 | 4.204 | 33.8 | 12.740 | 2.801 | 89.6 | 3.884 | 1.401 |
| -20.2 | 50290 | 4.170 | 35.6 | 12.220 | 2.750 | 91.4 | 3.740 | 1.366 |
| -18.4 | 47770 | 4.134 | 37.4 | 11.720 | 2.698 | 93.2 | 3.601 | 1.332 |
| -16.6 | 44450 | 4.098 | 39.2 | 11.250 | 2.647 | 95.0 | 3.508 | 1.298 |
| -14.8 | 42360 | 4.061 | 41.0 | 10.800 | 2.596 | 96.8 | 3.390 | 1.266 |
| -13.0 | 41190 | 4.023 | 42.8 | 10.370 | 2.545 | 98.6 | 3.276 | 1.234 |
| -11.2 | 39240 | 3.985 | 44.6 | 9.959 | 2.495 | 100.4 | 3.187 | 1.203 |
| -9.4 | 37380 | 3.945 | 46.4 | 9.569 | 2.445 | 102.2 | 3.082 | 1.172 |
| -7.6 | 35650 | 3.905 | 48.2 | 9.195 | 2.395 | 104.0 | 2.982 | 1.143 |
| -5.8 | 33950 | 3.863 | 50.0 | 8.839 | 2.346 | 105.8 | 2.884 | 1.113 |
| -4.0 | 32430 | 3.822 | 51.8 | 8.494 | 2.298 | 107.6 | 2.790 | 1.085 |
| -2.2 | 30920 | 3.779 | 53.6 | 8.168 | 2.249 | 109.4 | 2.690 | 1.057 |
| -0.4 | 29500 | 3.734 | 55.4 | 7.852 | 2.199 | 111.2 | 2.593 | 1.030 |
| 1.4 | 28140 | 3.688 | 57.2 | 7.552 | 2.151 | 113.0 | 2.500 | 1.003 |
| 3.2 | 26870 | 3.644 | 59.0 | 7.266 | 2.104 | 114.8 | 2.429 | 0.977 |
| 5.0 | 25660 | 3.597 | 60.8 | 6.992 | 2.057 | 116.6 | 2.362 | 0.952 |
| 6.8 | 24510 | 3.551 | 62.6 | 6.731 | 2.012 | 118.4 | 2.298 | 0.926 |
| 8.6 | 23420 | 3.504 | 64.4 | 6.481 | 1.966 | 120.2 | 2.206 | 0.904 |
| 10.4 | 22390 | 3.456 | 66.2 | 6.242 | 1.922 | | | |

Thermistors are all the same sensor with different harnesses attached depending on the mounting. It is possible to either check the resistance of the sensor with the connection unplugged, or check the DC voltage of the sensor.

Slide 26

Defrost Function



Since there are two evaporators in the system, there are two evaporator defrost heaters.

Defrost is adaptive and will terminate based upon the evaporator thermistor temperature readings. The system is designed to defrost the fresh food section twice as often as the freezer section. This compensates for the fact that the fresh food section is accessed more frequently than the freezer section. The fresh food section can defrost independently of the freezer section, but the freezer section will always defrost at the same time as the fresh food section. The fresh food section will defrost once for every six to eight hours of compressor run time while the freezer section will defrost every twelve to sixteen hours of compressor run time.

When started from room temperature, the first defrost cycle will begin after four hours of compressor run time.

The defrost temperature is monitored at the bottom right of the freezer evaporator and at the top left outlet of the refrigerator evaporator.

Forced Operation Function

- 1) Compressor Check
- 2) Refrigerator Defrost Heater Check
- 3) Ref and Fr Defrost Heater Check
- 4) Cancellation of Function

Used to Test Sealed System Components

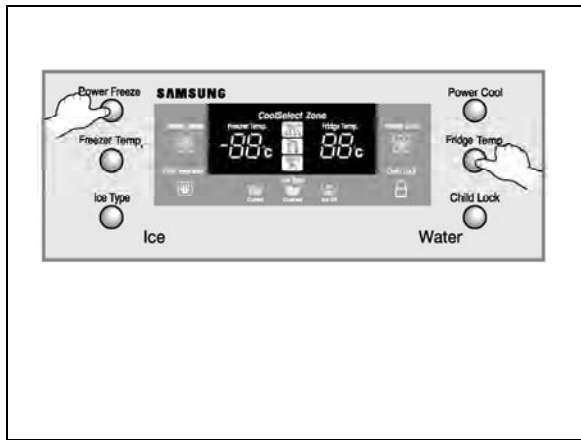
Note: Unit will beep continuously as long as the unit remains in forced operation function

The forced operation check allows a forced check of the cooling system. Each mode will operate until the next mode is selected or until the test is cancelled. The forced mode cannot be activated if the unit is defrosting either of the evaporator coils.

The compressor will run for 24 hours and then begin cycling at -25 degrees centigrade in the freezer and 1 degree centigrade in the fresh food compartment.

Loss of power will also cancel this function. There is no delay in compressor start so if there is high head pressure, an overload condition can be encountered.

The three individual tests are; Forced compressor pull-down, Refrigerator defrost check and refrigerator and freezer defrost check.



To enter the forced operation mode, depress the Power Freeze and the Fridge Temp buttons for eight seconds.

Slide 29

Forced Operation Functions

Press any button except "ICE TYPE" or "CHILD LOCK" to enter the Pull-Down Mode. (Compressor Check)

Wait approx. 5 seconds before pressing another button to enter the Refrigerator-Defrost Mode. (Ref Heater Check)

Wait approx. 5 seconds before pressing another button to enter the Ref-Freezer-Defrost Mode. (Ref & Freezer Heater Check)

Cancellation: Wait approx. 5 seconds before pressing another button to Cancel or unplug the unit.

Pressing the "Ice Type" or "Child Lock" buttons will cancel this mode of operation.

During each test the timing of the beeps will vary.

Slide 30

Condenser Fan Delay

| | Ranges of ambient temp. | Operation |
|----------------------|-------------------------|--|
| C-FAN Delay function | Above 66 F | C-FAN is ON as soon as the compressor is on. |
| | 61 F - 65 F | C-FAN is ON with 5 minutes delay from the compressor on. |
| | Below 60 F | C-FAN is OFF regardless of the compressor operation. |



The condenser fan operation will change depending on the ambient temperature. Above 65 degrees Fahrenheit, the condenser fan will begin operation with the compressor. Between 61 and 65 degrees, the condenser fan energizes five minutes after the compressor energizes. Below 60 degrees, the condenser fan will not operate. This function is used to promote good oil distribution within the compressor.

Slide 31



Model Specifications can be found on the tag located on the back of the product above the access panel

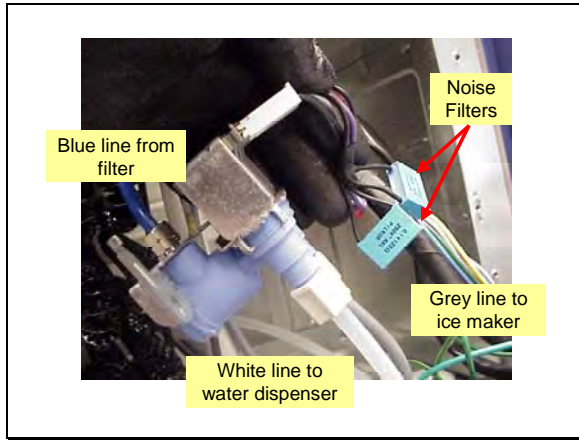
Model number and specifications are located on rear of cabinet.

Slide 32



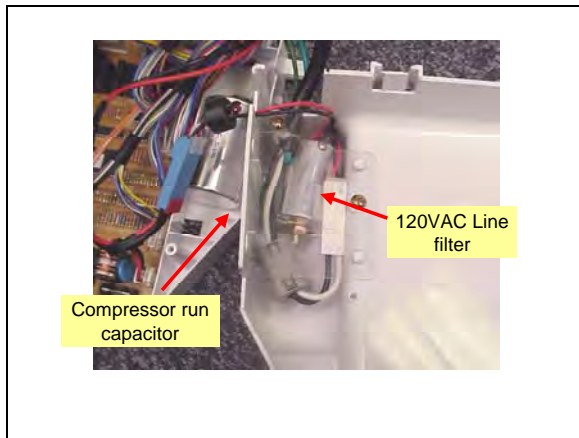
Machine Compartment Service Video

Slide 33



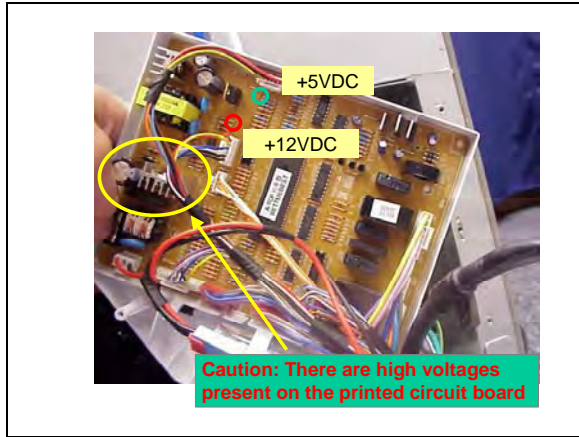
There are electrical noise filters connected in parallel with the water valves.

Slide 34



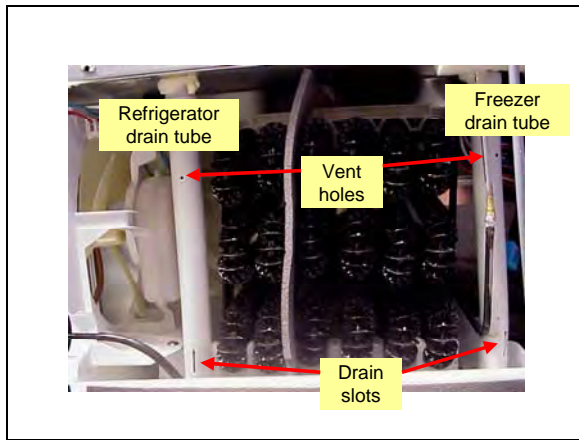
The compressor run capacitor and an AC line filter are located in the control panel housing. The red input wire is L1 and the black wire is neutral.

Slide 35



There are high voltages present on the larger heat sink mounted to the board.

Slide 36



Each evaporator has its own drain hose. Make sure that these hoses are installed with the slots near the bottom.

Slide 37

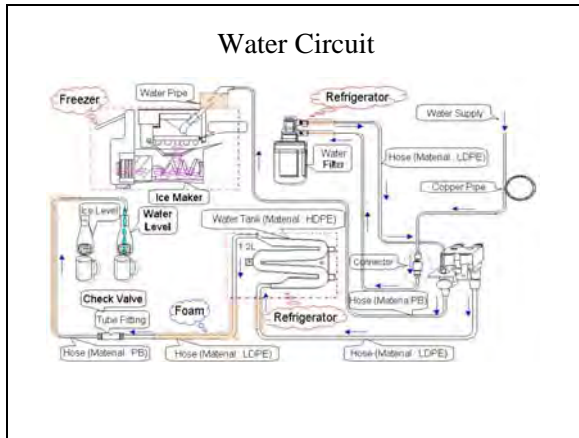


Compressor component routing. The rubber grommet on the discharge tube is for noise reduction. The compressor relay cover pries out and down from the compressor housing. The compressor uses a PTC starting device. The compressor harness and PTC can be removed either separately or as an assembly.

Slide 38

Water System and
Dispenser Service

Slide 39



Water system routing. The water filter is under supply pressure. There is a built-in shut off valve to stop flow if the filter is removed. All filter heads in units manufactured before June 2003 should be replaced.

Slide 40



Dispenser System Service Video

Slide 41

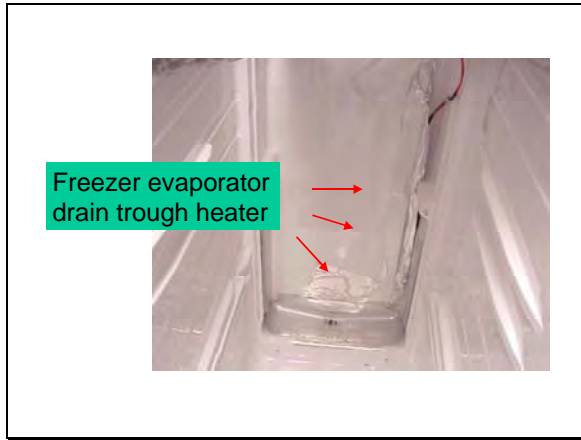
SXS Freezer Components

Slide 42



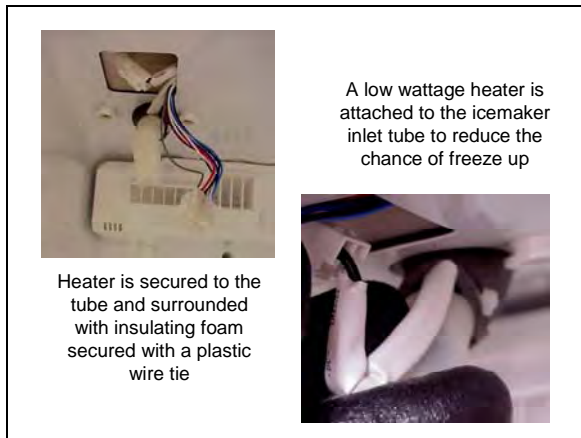
Freezer Compartment Service Video

Slide 43



There is a drain trough heater to prevent drain freeze-ups.

Slide 44



A fill tube heater is used to prevent icemaker fill tube freeze-ups.

Slide 45

Refrigerator Components

Slide 46



Three drawers. The upper drawer provides for independent temperature control. This is called the CoolSelect zone.

One of the independent modes of operation is a thaw function that uses the refrigerator defrost heater to provide increased temperature for a set period of time, after the set time period elapses, the CoolSelect zone returns to normal operation. The CoolSelect zone can also provide for reduced temperature.

Slide 47



When used in the thaw mode, the display will show the remaining time set in the mode.

The Quick Cool mode provides for 100% cooling for up to 60 minutes. The display will show the remaining time in that mode.

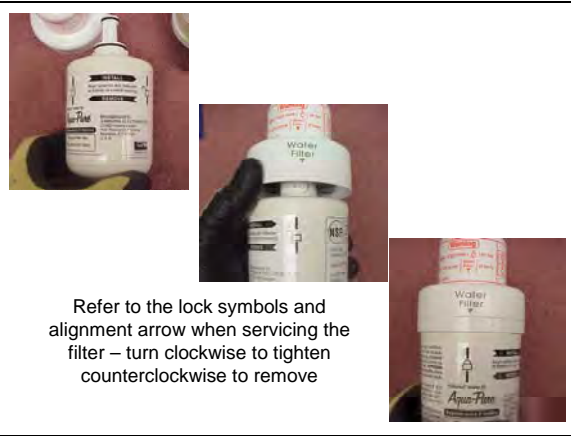
The temperature selector provides for independent temperature control including a soft freeze at 23 degrees.

Slide 48



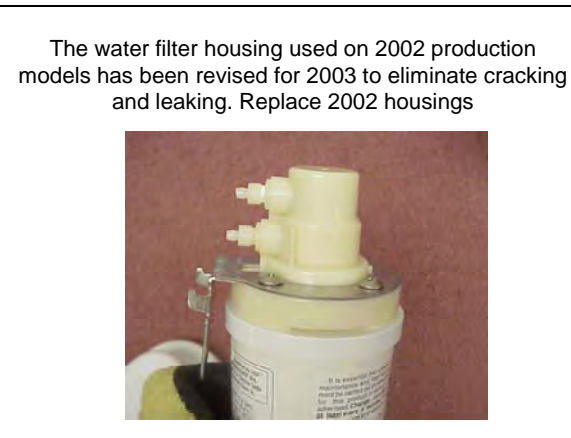
Fresh Food Section Service Video

Slide 49



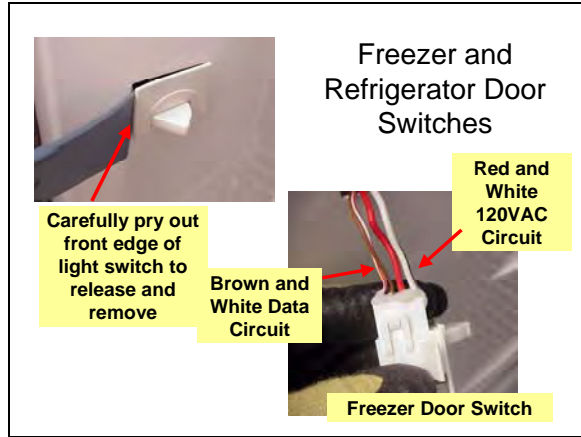
Filters remove in the unlock position and are secured in the locked position. The filter head has a built in by-pass system to prevent water leakage when removed. The filter is under positive pressure. It is connected directly to the incoming water supply.

Slide 50



All pre 2003 filter housings should be replaced for increased reliability.

Slide 51



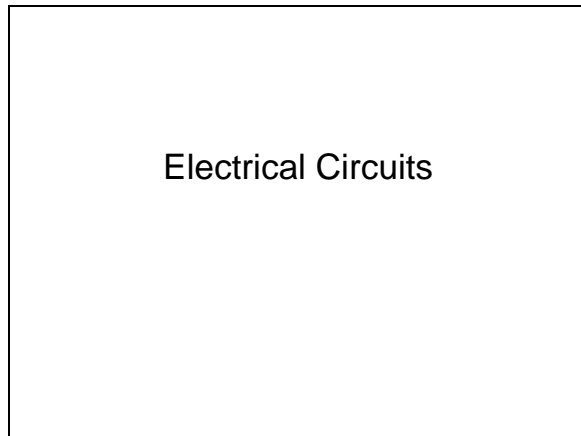
Door switches are double pole, double throw switches. Low voltage contacts are used to inform system control when a door is open. High voltage contacts are used to route power to the interior lamps.

Slide 52

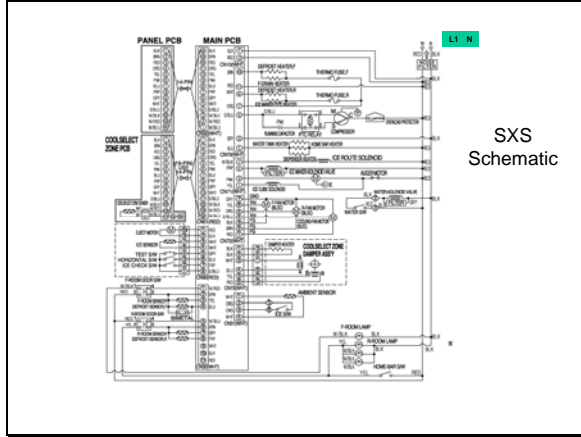


Handle and Trim Service Video

Slide 53

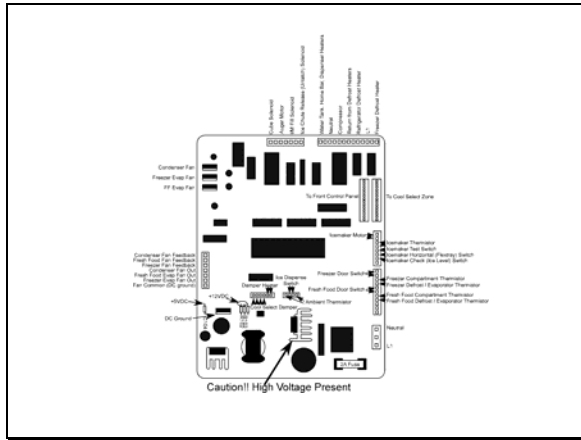


Slide 54



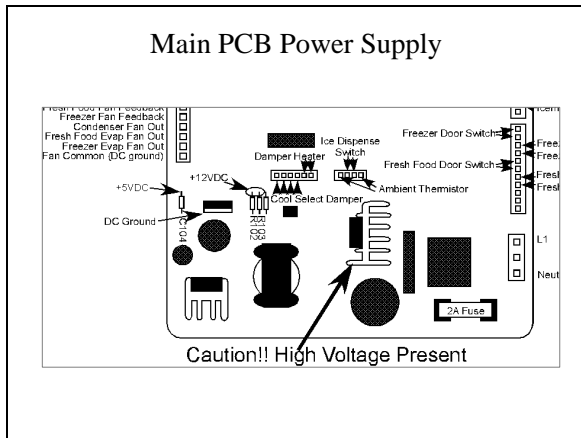
See Page 32

Slide 55



See Page 33

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+12VDC and +5VDC supplies are critical for proper operation. If the +12VDC is below +11.9VDC there is a strong possibility that compartment temperatures will be abnormal. There is no repair of the power supply, just replacement of the complete control board. Be cautious of the large heat sink in the power supply, high voltages are present.

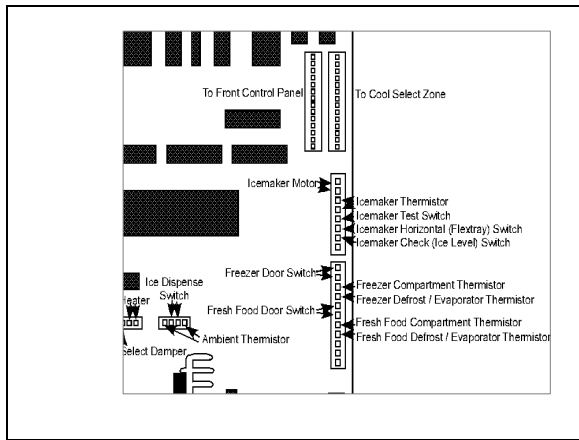
Slide 57

Thermistor Spec Chart

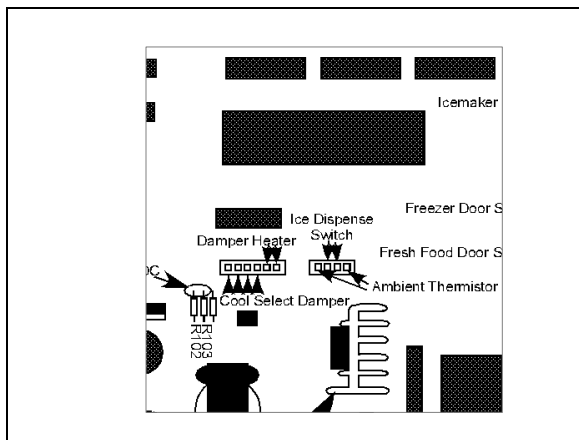
| Temp (°F) | Res (kΩ) | Volt (V) | Temp (°F) | Res (kΩ) | Volt (V) | Temp (°F) | Res (kΩ) | Volt (V) |
|-----------|----------|----------|-----------|----------|----------|-----------|----------|----------|
| -42.6 | 38.870 | 4.541 | 12.2 | 21.410 | 3.460 | 68.3 | 6.015 | 1.916 |
| -41.6 | 32.700 | 4.518 | 14.0 | 20.480 | 3.350 | 69.3 | 5.755 | 1.894 |
| -40.0 | 28.950 | 4.494 | 15.6 | 19.560 | 3.210 | 71.3 | 5.581 | 1.871 |
| -39.2 | 24.150 | 4.468 | 17.6 | 18.750 | 3.060 | 73.4 | 5.376 | 1.848 |
| -38.4 | 19.800 | 4.443 | 19.4 | 17.920 | 2.900 | 75.2 | 5.195 | 1.827 |
| -34.6 | 15.870 | 4.416 | 21.2 | 17.160 | 2.750 | 77.0 | 5.050 | 1.807 |
| -32.6 | 12.000 | 4.388 | 23.0 | 16.400 | 2.600 | 78.9 | 4.921 | 1.786 |
| -31.0 | 8.810 | 4.360 | 24.8 | 15.740 | 2.457 | 80.5 | 4.850 | 1.767 |
| -29.2 | 6.470 | 4.331 | 26.6 | 15.080 | 2.306 | 82.4 | 4.807 | 1.749 |
| -27.4 | 4.910 | 4.301 | 28.4 | 14.450 | 2.155 | 84.2 | 4.739 | 1.711 |
| -25.6 | 3.810 | 4.269 | 30.2 | 13.860 | 2.004 | 86.0 | 4.719 | 1.714 |
| -23.8 | 3.050 | 4.237 | 32.0 | 13.290 | 1.853 | 87.8 | 4.633 | 1.677 |
| -22.0 | 2.560 | 4.204 | 33.8 | 12.740 | 1.701 | 89.6 | 4.584 | 1.641 |
| -20.2 | 2.020 | 4.170 | 35.6 | 12.220 | 1.550 | 91.4 | 4.565 | 1.586 |
| -18.4 | 1.770 | 4.134 | 37.4 | 11.720 | 1.408 | 93.2 | 4.621 | 1.522 |
| -16.6 | 1.540 | 4.096 | 39.2 | 11.250 | 1.267 | 95.0 | 4.608 | 1.458 |
| -14.8 | 1.320 | 4.057 | 41.0 | 10.800 | 1.126 | 96.8 | 4.590 | 1.386 |
| -13.0 | 1.110 | 4.017 | 42.8 | 10.370 | 1.045 | 98.6 | 4.575 | 1.314 |
| -11.2 | 0.920 | 3.975 | 44.6 | 9.950 | 0.955 | 100.4 | 4.567 | 1.233 |
| -9.4 | 0.730 | 3.945 | 46.4 | 9.550 | 0.865 | 102.2 | 4.562 | 1.172 |
| -7.6 | 0.560 | 3.905 | 48.2 | 9.160 | 0.795 | 104.0 | 4.562 | 1.143 |
| -5.8 | 0.410 | 3.863 | 50.0 | 8.790 | 0.746 | 105.8 | 4.564 | 1.113 |
| -4.0 | 0.280 | 3.822 | 51.8 | 8.430 | 0.706 | 107.6 | 4.570 | 1.085 |
| -2.2 | 0.200 | 3.779 | 53.6 | 8.080 | 0.676 | 109.4 | 4.580 | 1.057 |
| -0.4 | 0.150 | 3.734 | 55.4 | 7.850 | 0.656 | 111.2 | 4.593 | 1.030 |
| 1.4 | 0.110 | 3.689 | 57.2 | 7.630 | 0.635 | 113.0 | 4.610 | 1.003 |
| 3.2 | 0.080 | 3.644 | 59.0 | 7.420 | 0.614 | 114.8 | 4.629 | 0.977 |
| 5.0 | 0.060 | 3.599 | 60.8 | 7.220 | 0.593 | 116.6 | 4.652 | 0.952 |
| 6.8 | 0.045 | 3.551 | 62.6 | 7.030 | 0.572 | 118.4 | 4.679 | 0.928 |
| 8.6 | 0.035 | 3.504 | 64.4 | 6.840 | 0.566 | 120.2 | 4.706 | 0.904 |
| 10.4 | 0.028 | 3.456 | 66.2 | 6.660 | 0.562 | | | |

Thermistors are all the same sensor with different harnesses attached depending on the mounting. It is possible to either check the resistance of the sensor with the connection unplugged, or check the DC voltage of the sensor. See Page 33

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Slide 59



Slide 60

Main PCB Fan Motor Circuitry

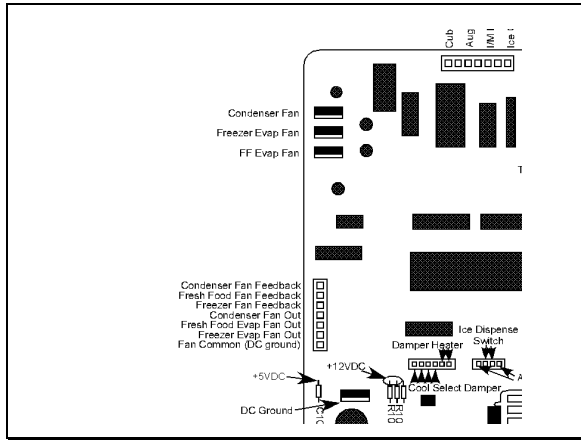
| Voltage of Motor | | | |
|------------------|-------------------------|-------------------------|-------------------------|
| | Test Point b (F-Fan) | Test Point c (R-Fan) | Test Point d (C-Fan) |
| High | 11.1V | 10V | 10V |
| Low | 10V | 10V | 8.3V |

| CN72 | Resistance | CN72 | Resistance |
|-------|------------|-------|------------|
| Pin 6 | 2k | Pin 3 | 17.7k |
| Pin 5 | 1.8k | Pin 2 | 18.2k |
| Pin 4 | 1.2k | Pin 1 | 7.6k |

Resistance checks of the Fans are with connector CN72 disconnected.

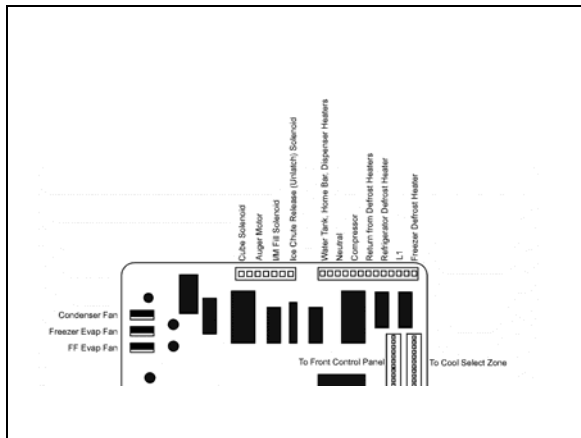
The Freezer and condenser fan operate in two speed modes. The fresh food evaporator fan is only operated at the lower speed.

Slide 61



Evaporator and condenser fan output voltages can be checked at the metal tab of the output transistors. Reference to DC ground which is the tab of the +5VDC regulator.

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All of the 120VAC outputs are located along one edge of the control board.

Slide 63

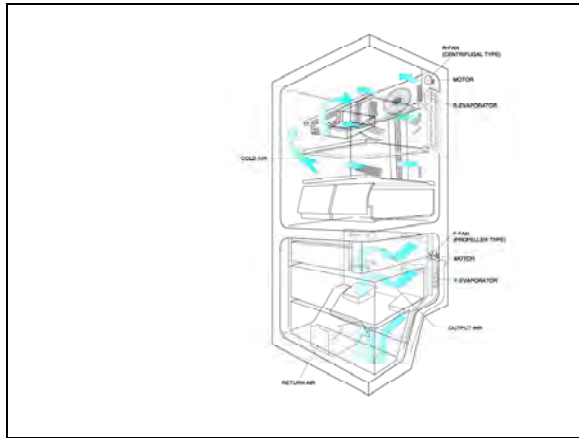
Samsung Bottom Freezer



Based on model RB1855

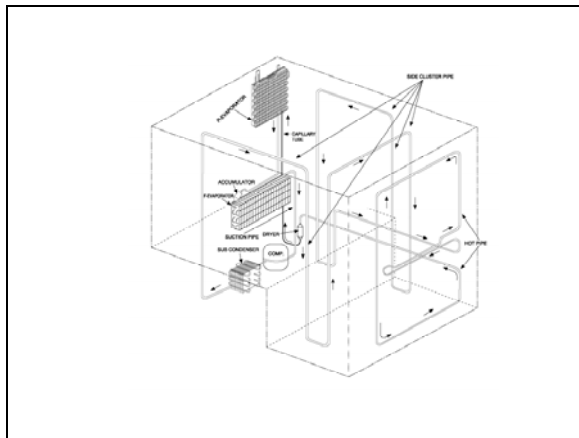
The bottom freezer incorporates electronic control.

Slide 64



Each compartment uses multiple air outlets for even temperature control.

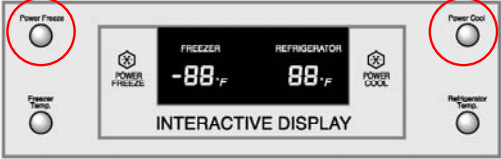
Slide 65



There are two evaporators, one in each compartment.
This is a hot-walled refrigerator and requires one inch of clearance around the installation.
The Sub-condenser empties into a steel hot-wall condenser that feeds a copper hot gas loop around the door openings.
The hot gas loop supplies the fresh food evaporator and the refrigerant flows to the freezer evaporator before returning to the compressor.

Slide 66

Self Diagnostics



Press Power Freeze and Power Cool for Five Seconds.

To enter the self diagnostics function, press the Power Freeze and Power cool buttons for five seconds.

Slide 67

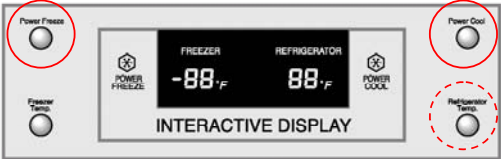
Table 1. Display table of self diagnosis.

| No | Item | LED Display | Details | Remarks |
|----|--------------------|-------------------|--|---|
| 1 | R-sensor | REFRIGERATOR S | • Connector contact failure • Short-circuit | • Suspected to be below -58 °F • Suspected to be over 150 °F |
| 2 | R-defroster sensor | REFRIGERATOR d | • Connector contact failure • Short-circuit | • Suspected to be below -58 °F • Suspected to be over 150 °F |
| 3 | Outer sensor | FREEZER E S | • Connector contact failure • Short-circuit | • Suspected to be below -58 °F • Suspected to be over 150 °F |
| 4 | F-sensor | FREEZER F S | • Connector contact failure • Short-circuit | • Suspected to be below -58 °F • Suspected to be over 150 °F |
| 5 | F-defroster sensor | FREEZER d S | • Connector contact failure • Short-circuit | • Suspected to be below -58 °F • Suspected to be over 150 °F |

The self-diagnosis will test the thermistors and display any failures found in the sensor circuits.

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Operational Load Check




Press Power Freeze and Power Cool for three seconds followed by the Refrigerator Temp button within two seconds.

To enter the Operational Load Check function, press the Power Freeze and Power cool buttons for three seconds followed by the Refrigerator Temp button within two seconds.

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Table 2. Display table of the presently operating parts.

| No | Content | Display LED | Operation | Remark |
|----|--------------------|-------------------------|---|---|
| 1 | R-fan | a: REFRIGERATOR 1 digit | Includes R-fan activation | Ref. 6 button scan and display circuitry  |
| 2 | R-defrost heater | c: REFRIGERATOR 1 digit | Defrost heater activation | |
| 3 | Initial start mode | d: REFRIGERATOR 1 digit | Initial power is activated ON | |
| 4 | Over load mode | e: REFRIGERATOR 1 digit | Outer temperature is over 95°F | |
| 5 | Low temp mode | f: REFRIGERATOR 1 digit | Outer temperature is below 68°F | |
| 6 | Exhibition mode | g: REFRIGERATOR 1 digit | Exhibition mode is operated together | |
| 7 | Comp | a: FREEZER 1 digit | Led ON when COMP activation is included | |
| 8 | F fan | b: FREEZER 1 digit | Led ON when F-fan activation is included | |
| 9 | F-defrost heater | d: FREEZER 1 digit | Led ON when F-heater activation is included | |
| 10 | F-Lamp | a: FREEZER 10 digit | Led ON when F-lamp activation is included | |
| 11 | R-Lamp | b: FREEZER 10 digit | Led ON when R-lamp activation is included | |

During the operation load check, the illuminated digits will indicate the currently powered components as well as indicate special modes of operation.

The display LED listed refers to the two digit display for either the refrigerator or freezer temperature. Each display has a tens digit as well as a ones digit. The tens digit is the left-hand seven segment display (8) and the ones digit is the right-hand seven segment (8) display.

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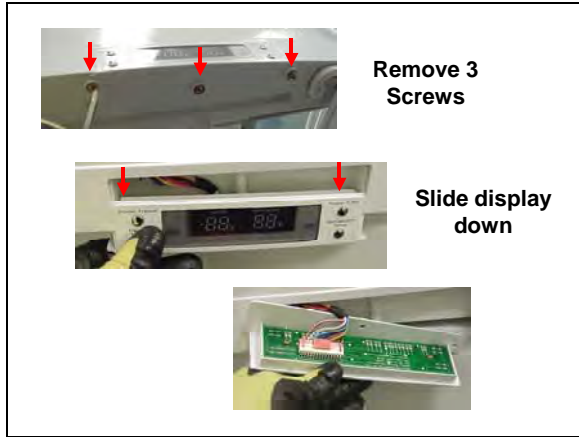
Fresh Food Compartment Service Video

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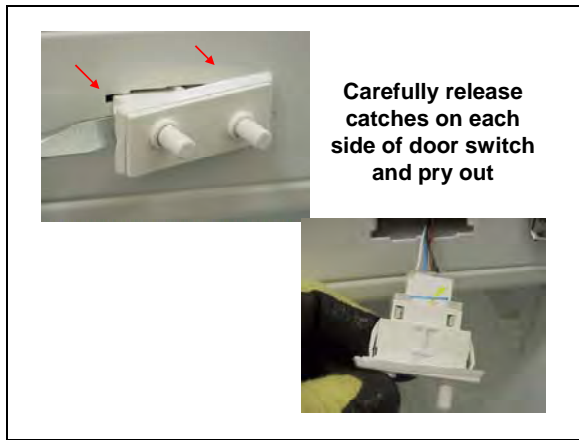
Freezer Compartment Service Video

Slide 72



The electronic display is mounted to the bottom edge of the fresh food door with three screws.

Slide 73



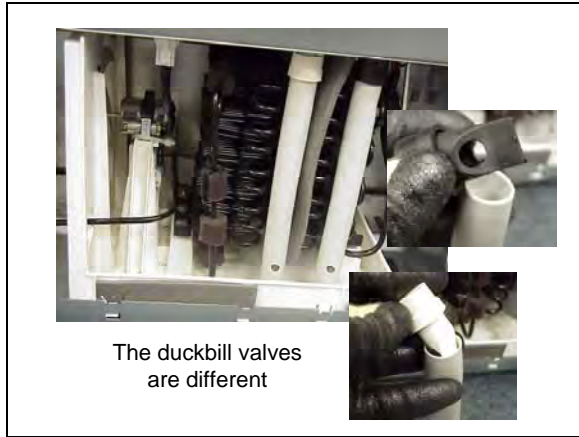
Gently remove door switch assembly.

Slide 74



Door gaskets on the current bottom freezer models are not replaceable.

Slide 75



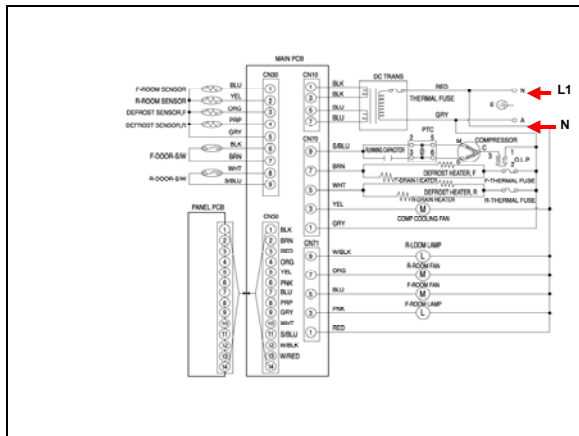
There is a defrost drain tube for each compartment. The duckbill valves differ. There are standoffs in the condensate tray that the drain tubes must slide over.

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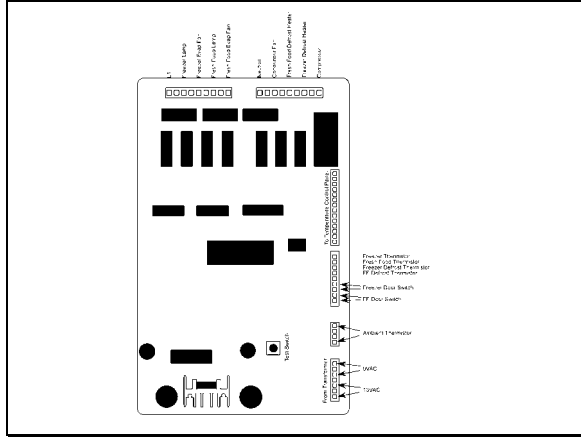
Machine Compartment Service Video

Slide 77



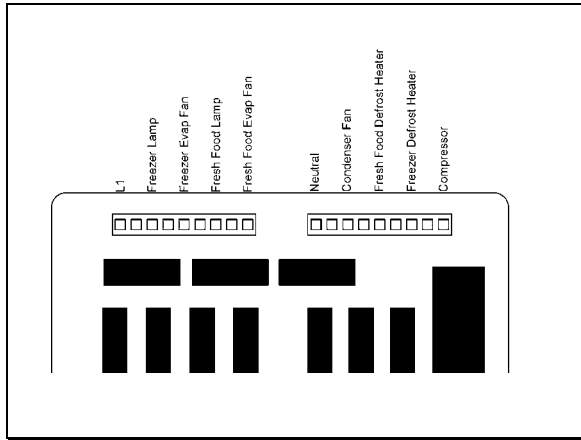
On the bottom freezer models, the red wire is hot or L1 and the gray wire is neutral. See Page 34

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The bottom freezer uses a more simplified control board.
See Page 35

Slide 79



All loads are 120VAC components.

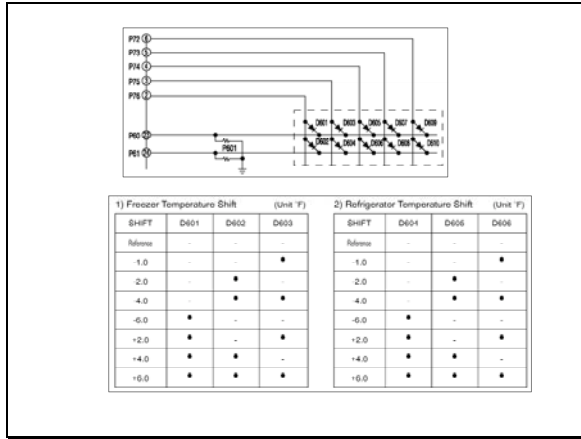
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Thermistor Spec Chart

| Temp (F) | Res (Ohm) | Volts (V) | Temp (F) | Res (Ohm) | Volts (V) | Temp (F) | Res (Ohm) | Volts (V) |
|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|
| -43.0 | 86 670 | 4.541 | 17.2 | 21 410 | 2.400 | 85.0 | 6 803 | 1.875 |
| -41.8 | 82 700 | 4.516 | 14.0 | 20 400 | 2.400 | 83.8 | 6 792 | 1.874 |
| -40.0 | 79 850 | 4.484 | 14.0 | 19 500 | 2.375 | 75.8 | 6 581 | 1.781 |
| -38.3 | 84 190 | 4.463 | 17.5 | 18 730 | 2.360 | 73.4 | 6 376 | 1.748 |
| -36.4 | 79 890 | 4.443 | 18.4 | 17 920 | 2.320 | 75.2 | 6 195 | 1.707 |
| -34.6 | 75 870 | 4.416 | 21.3 | 17 180 | 2.300 | 77.6 | 6 000 | 1.667 |
| -32.0 | 71 800 | 4.390 | 23.0 | 16 430 | 2.190 | 79.8 | 5 821 | 1.628 |
| -31.0 | 68 150 | 4.360 | 24.0 | 15 740 | 2.151 | 80.8 | 4 850 | 1.589 |
| -29.2 | 64 710 | 4.331 | 26.5 | 15 000 | 2.056 | 82.4 | 4 487 | 1.545 |
| -27.4 | 61 480 | 4.301 | 28.4 | 14 430 | 2.055 | 84.2 | 4 328 | 1.511 |
| -25.6 | 58 430 | 4.269 | 30.0 | 13 980 | 2.004 | 86.0 | 4 179 | 1.474 |
| -23.8 | 55 550 | 4.237 | 32.0 | 13 390 | 2.053 | 87.8 | 4 033 | 1.437 |
| -22.0 | 52 840 | 4.204 | 33.8 | 12 740 | 2.001 | 89.6 | 3 894 | 1.401 |
| -20.2 | 50 230 | 4.170 | 35.6 | 12 220 | 2.750 | 91.4 | 3 760 | 1.366 |
| -18.4 | 47 710 | 4.124 | 37.4 | 11 720 | 2.690 | 93.2 | 3 631 | 1.332 |
| -16.6 | 45 450 | 4.088 | 39.2 | 11 250 | 2.647 | 95.0 | 3 506 | 1.298 |
| -14.8 | 43 280 | 4.061 | 41.0 | 10 800 | 2.596 | 96.8 | 3 390 | 1.266 |
| -13.0 | 41 180 | 4.023 | 42.8 | 10 370 | 2.545 | 98.6 | 3 278 | 1.234 |
| -11.2 | 39 240 | 3.985 | 44.6 | 9 950 | 2.495 | 100.4 | 3 167 | 1.203 |
| -9.4 | 37 390 | 3.945 | 46.4 | 9 550 | 2.445 | 102.2 | 3 062 | 1.172 |
| -7.6 | 35 550 | 3.905 | 48.2 | 9 160 | 2.395 | 104.0 | 2 962 | 1.142 |
| -5.8 | 33 800 | 3.863 | 50.0 | 8 780 | 2.345 | 105.8 | 2 864 | 1.111 |
| -4.0 | 32 430 | 3.822 | 51.8 | 8 404 | 2.296 | 107.6 | 2 770 | 1.085 |
| -2.2 | 30 920 | 3.778 | 53.6 | 8 166 | 2.245 | 109.4 | 2 680 | 1.061 |
| -0.4 | 29 500 | 3.734 | 55.4 | 7 952 | 2.199 | 111.2 | 2 593 | 1.030 |
| 1.4 | 28 140 | 3.689 | 57.2 | 7 752 | 2.151 | 113.0 | 2 510 | 1.003 |
| 3.2 | 26 870 | 3.644 | 59.0 | 7 566 | 2.104 | 114.8 | 2 429 | 0.977 |
| 5.0 | 25 650 | 3.597 | 60.8 | 7 390 | 2.057 | 116.6 | 2 352 | 0.952 |
| 6.8 | 24 510 | 3.551 | 62.6 | 7 230 | 2.012 | 118.4 | 2 278 | 0.928 |
| 8.6 | 23 420 | 3.504 | 64.4 | 7 080 | 1.966 | 120.2 | 2 206 | 0.904 |
| 10.4 | 22 390 | 3.456 | 66.2 | 6 942 | 1.922 | | | |

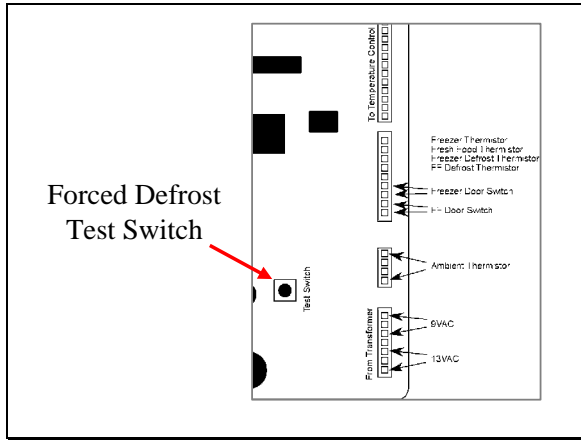
Thermistors are all the same sensor with different harnesses attached depending on the mounting. It is possible to either check the resistance of the sensor with the connection unplugged, or check the DC voltage of the sensor.
On the bottom freezer refrigerator there is no offset adjustment of the thermistors.
See Page 31

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While the fresh food and freezer thermistors can be adjusted by clipping out diodes on the main board. It is suggested that this approach not be used. Either replace the thermistor that is out of range or replace the main control board depending on the fault condition.

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There is a low voltage transformer that supplied 9VAC and 13VAC. The test switch will initiate a defrost cycle. The first time it is pressed, the fresh food section defrosts independent of the freezer section. Pressing a second time will initiate a combined fresh food and freezer defrost. Pressing the test button a third time will cancel the forced defrost.

Thermistor Specification Chart

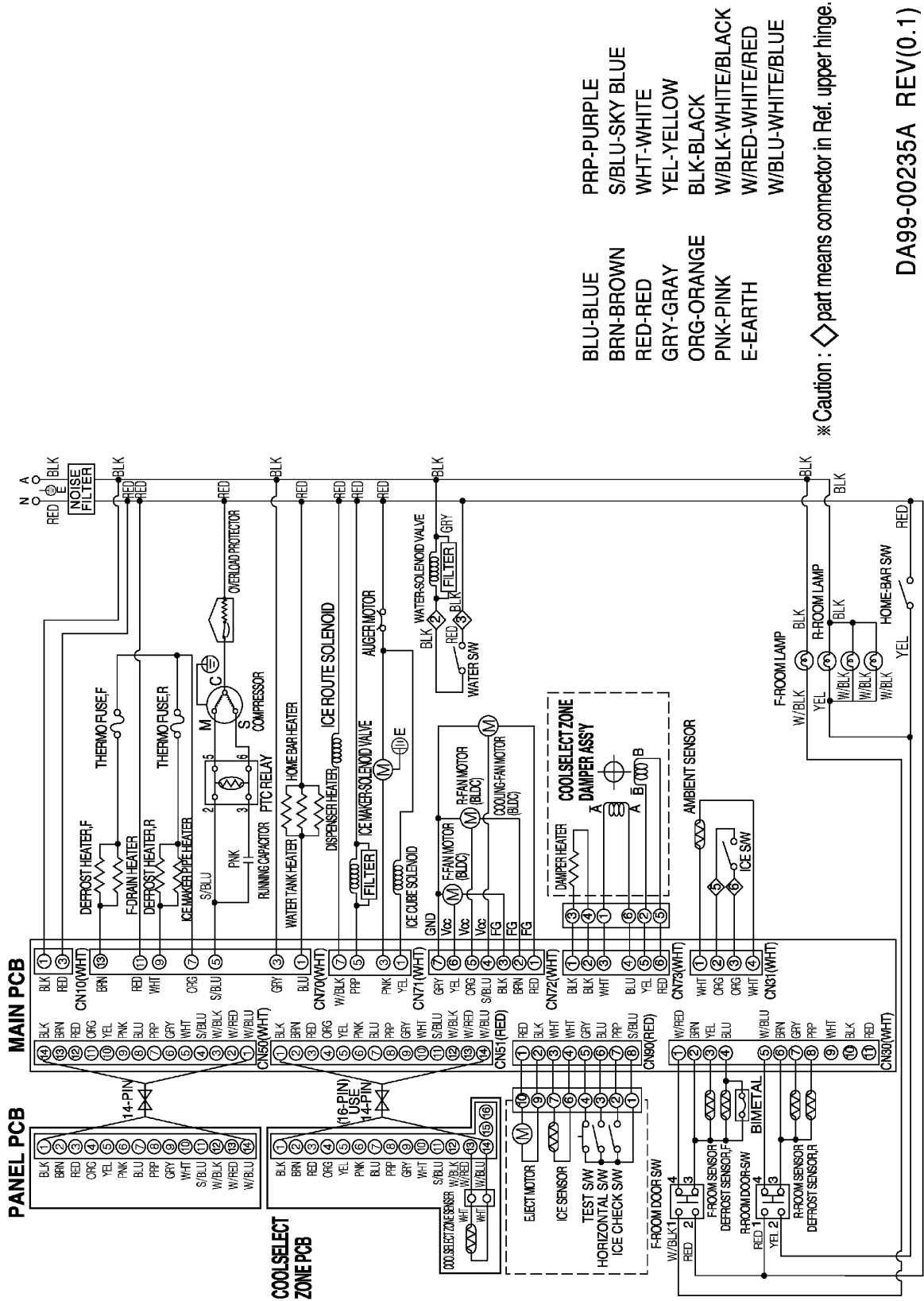
| Temp (°F) | Res (kΩ) | Volt (V) |
|-----------|----------|----------|
| -43.6 | 98.870 | 4.541 |
| -41.8 | 93.700 | 4.518 |
| -40.0 | 88.850 | 4.494 |
| -38.2 | 84.150 | 4.469 |
| -36.4 | 79.600 | 4.443 |
| -34.6 | 75.670 | 4.416 |
| -32.8 | 71.800 | 4.389 |
| -31.0 | 68.150 | 4.360 |
| -29.2 | 64.710 | 4.331 |
| -27.4 | 61.480 | 4.301 |
| -25.6 | 58.430 | 4.269 |
| -23.8 | 55.550 | 4.237 |
| -22.0 | 52.840 | 4.204 |
| -20.2 | 50.230 | 4.170 |
| -18.4 | 47.770 | 4.134 |
| -16.6 | 45.450 | 4.098 |
| -14.8 | 43.260 | 4.061 |
| -13.0 | 41.190 | 4.023 |
| -11.2 | 39.240 | 3.985 |
| -9.4 | 37.390 | 3.945 |
| -7.6 | 35.650 | 3.905 |
| -5.8 | 33.990 | 3.863 |
| -4.0 | 32.430 | 3.822 |
| -2.2 | 30.920 | 3.778 |
| -0.4 | 29.500 | 3.734 |
| 1.4 | 28.140 | 3.689 |
| 3.2 | 26.870 | 3.644 |
| 5.0 | 25.650 | 3.597 |
| 6.8 | 24.510 | 3.551 |
| 8.6 | 23.420 | 3.504 |
| 10.4 | 22.390 | 3.456 |

| Temp (°F) | Res (kΩ) | Volt (V) |
|-----------|----------|----------|
| 12.2 | 21.410 | 3.408 |
| 14.0 | 20.480 | 3.360 |
| 15.8 | 19.580 | 3.310 |
| 17.6 | 18.730 | 3.260 |
| 19.4 | 17.920 | 3.209 |
| 21.2 | 17.160 | 3.159 |
| 23.0 | 16.430 | 3.108 |
| 24.8 | 15.740 | 3.057 |
| 26.6 | 15.080 | 3.006 |
| 28.4 | 14.450 | 2.955 |
| 30.2 | 13.860 | 2.904 |
| 32.0 | 13.290 | 2.853 |
| 33.8 | 12.740 | 2.801 |
| 35.6 | 12.220 | 2.750 |
| 37.4 | 11.720 | 2.698 |
| 39.2 | 11.250 | 2.647 |
| 41.0 | 10.800 | 2.596 |
| 42.8 | 10.370 | 2.545 |
| 44.6 | 9.959 | 2.495 |
| 46.4 | 9.569 | 2.445 |
| 48.2 | 9.195 | 2.395 |
| 50.0 | 8.838 | 2.346 |
| 51.8 | 8.494 | 2.296 |
| 53.6 | 8.166 | 2.248 |
| 55.4 | 7.852 | 2.199 |
| 57.2 | 7.552 | 2.151 |
| 59.0 | 7.266 | 2.104 |
| 60.8 | 6.992 | 2.057 |
| 62.6 | 6.731 | 2.012 |
| 64.4 | 6.481 | 1.966 |
| 66.2 | 6.242 | 1.922 |

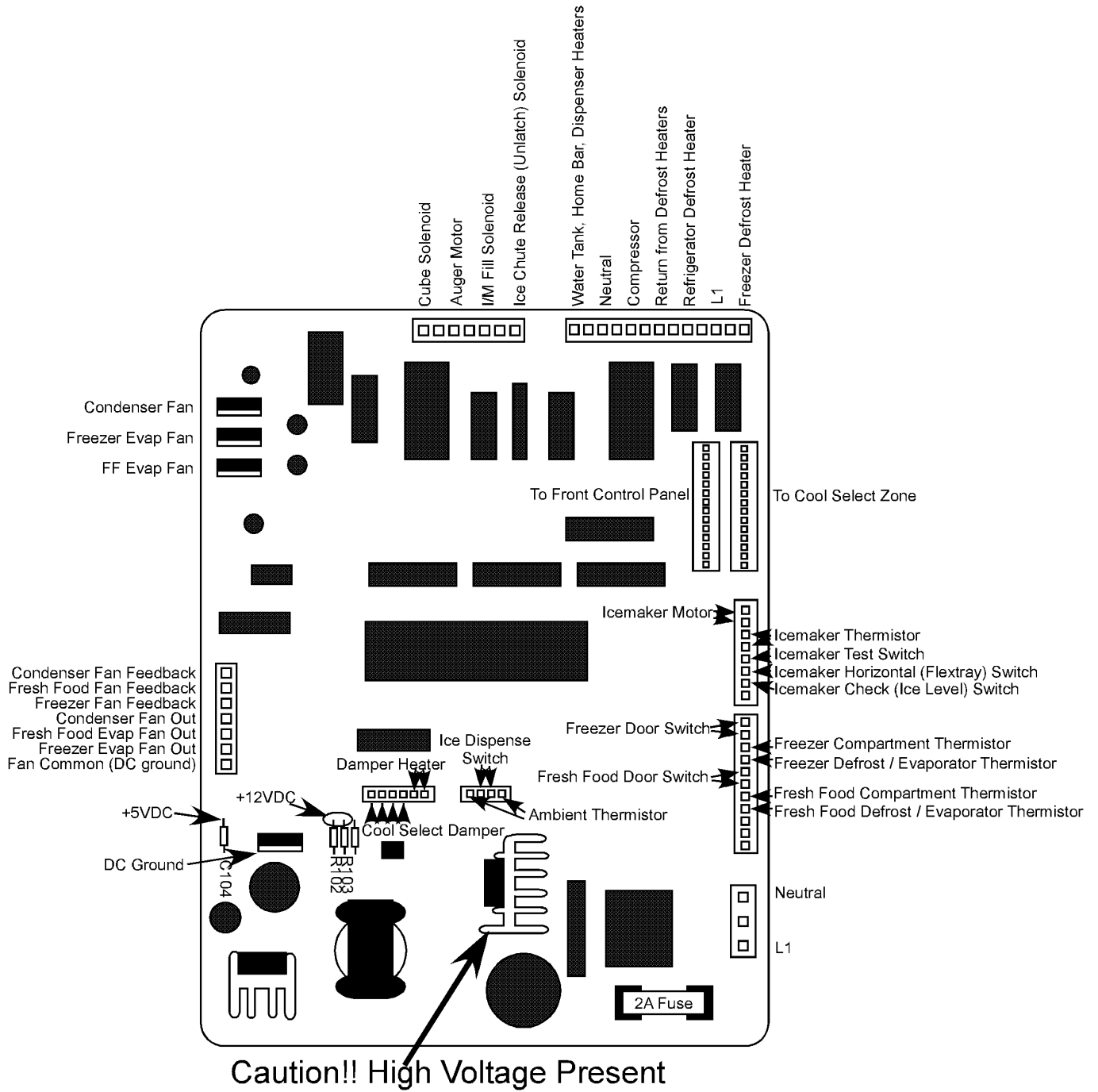
| Temp (°F) | Res (kΩ) | Volt (V) |
|-----------|----------|----------|
| 68.0 | 6.013 | 1.878 |
| 69.8 | 5.792 | 1.834 |
| 71.6 | 5.581 | 1.791 |
| 73.4 | 5.379 | 1.749 |
| 75.2 | 5.185 | 1.707 |
| 77.0 | 5.000 | 1.667 |
| 78.8 | 4.821 | 1.626 |
| 80.6 | 4.650 | 1.587 |
| 82.4 | 4.487 | 1.549 |
| 84.2 | 4.329 | 1.511 |
| 86.0 | 4.179 | 1.474 |
| 87.8 | 4.033 | 1.437 |
| 89.6 | 3.894 | 1.401 |
| 91.4 | 3.760 | 1.366 |
| 93.2 | 3.631 | 1.332 |
| 95.0 | 3.508 | 1.298 |
| 96.8 | 3.390 | 1.266 |
| 98.6 | 3.276 | 1.234 |
| 100.4 | 3.167 | 1.203 |
| 102.2 | 3.062 | 1.172 |
| 104.0 | 2.962 | 1.143 |
| 105.8 | 2.864 | 1.113 |
| 107.6 | 2.770 | 1.085 |
| 109.4 | 2.680 | 1.057 |
| 111.2 | 2.593 | 1.030 |
| 113.0 | 2.510 | 1.003 |
| 114.8 | 2.429 | 0.977 |
| 116.6 | 2.352 | 0.952 |
| 118.4 | 2.278 | 0.928 |
| 120.2 | 2.206 | 0.904 |

Side by Side Schematic

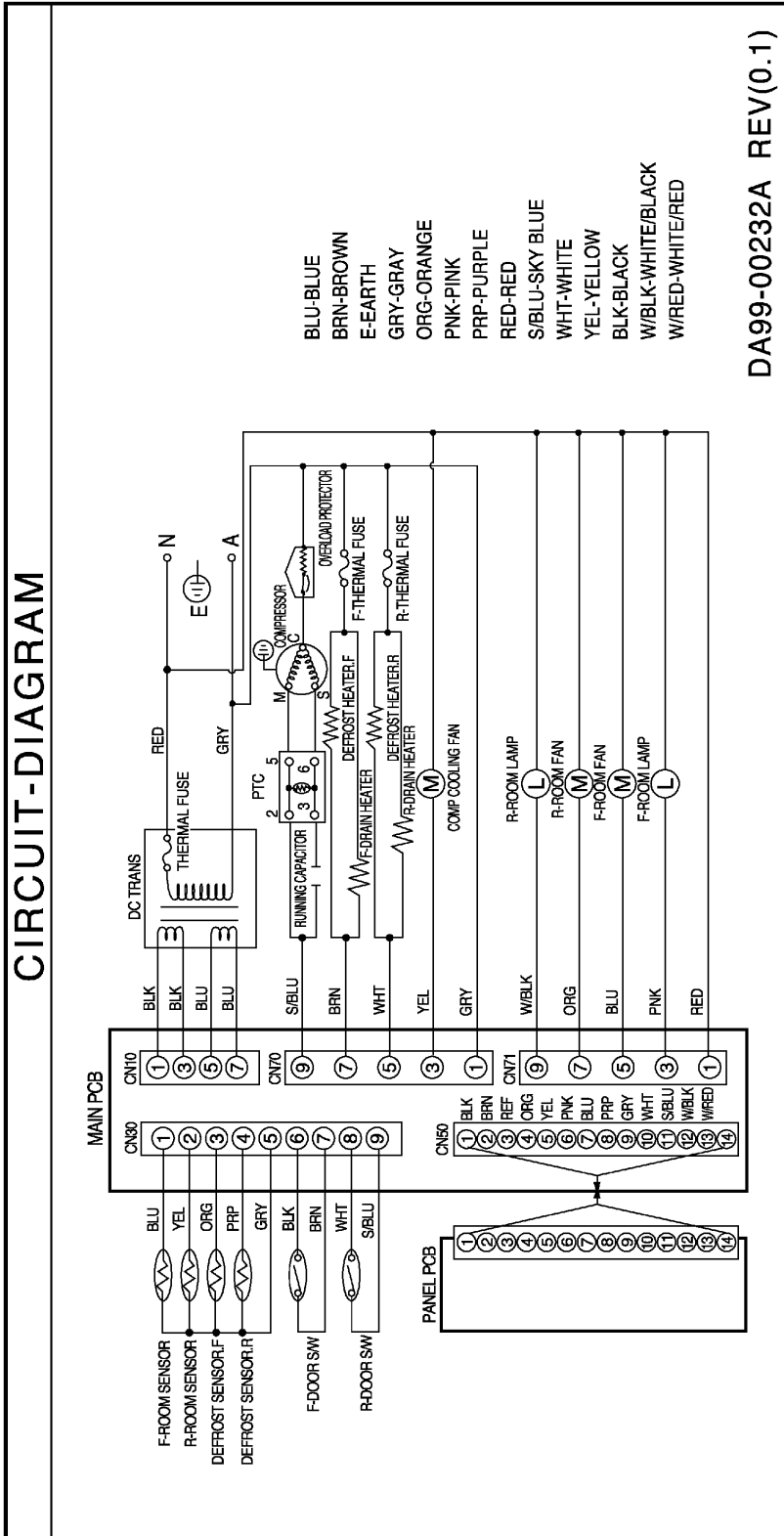
CIRCUIT-DIAGRAM



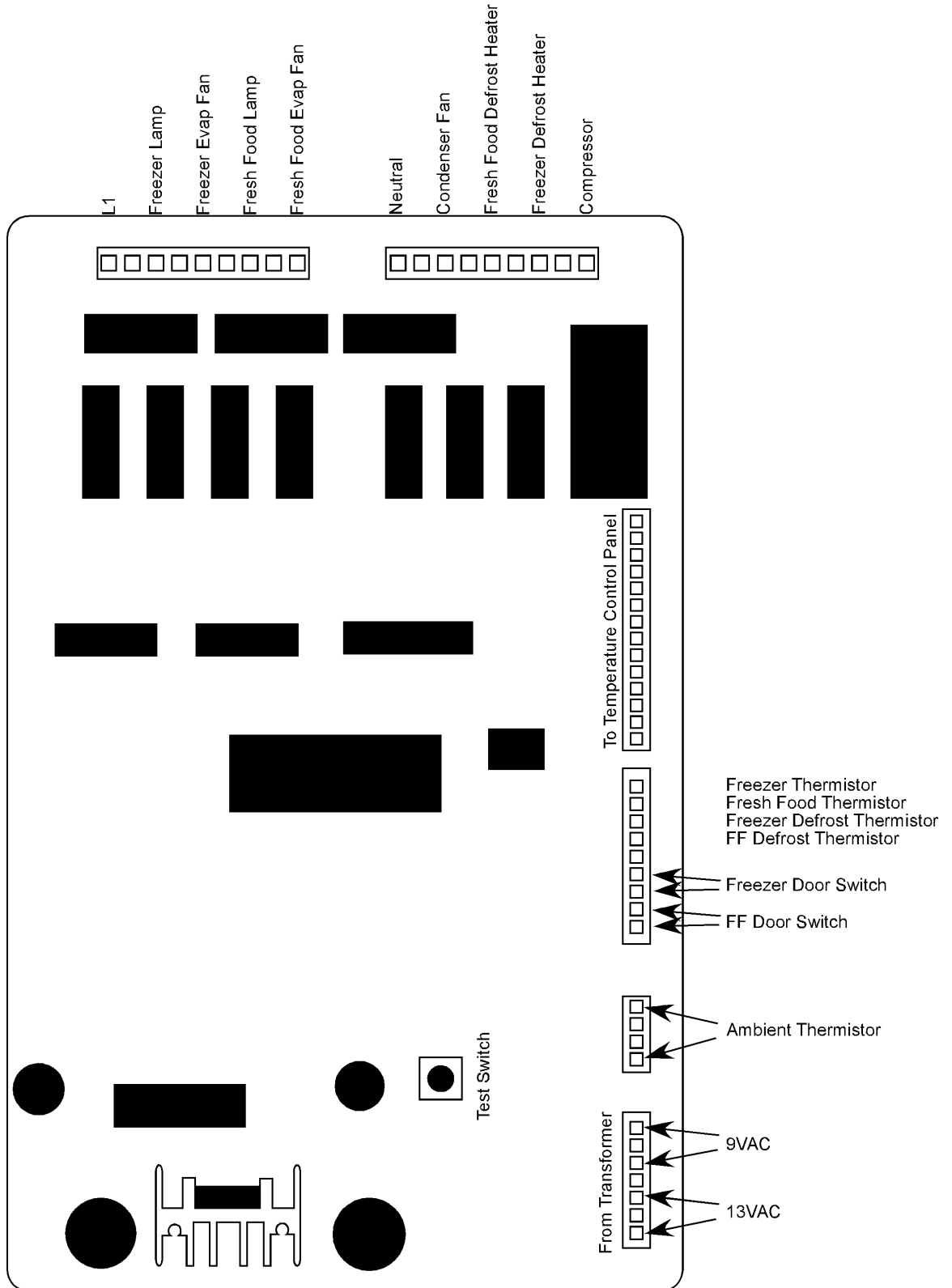
Side by Side Control Board



Bottom Freezer Schematic



Bottom Freezer Control Board





***Be Aware, Be Alert
Always work safely.
On the Job, On the Road, In the Home
Every Time, All the Time***

**MAYTAG *Training*
SERVICES**