## Dead Unit Diagnostics

For dead unit diagnostics, remove the access panels and locate the power cord connection behind the EMI filter on the left side of the unit. Verify power from the house supply (power cord) by checking for line voltage on the black to white wires at the EMI filter. If the house voltage checks O.K. – check for power coming out of the EMI filter.

If the house voltage checks good at the EMI filter, pull the control board and check for power input to the main control board at the K101 connector pins 1-2 (black to white). If there is no power check the wiring connections.

If there is line input to the main board, check for power output to the power supply. The main board supplies line power to the power supply board thru K122 pins 3-5 (black to white). The power supply then returns DC power to the main board on K123, 12vdc pins 1-3 (brown to black) and 5vdc on pins 2-3 (blue to black). Pin 4 is used for communication between the boards to activate the FF wall LEDs.
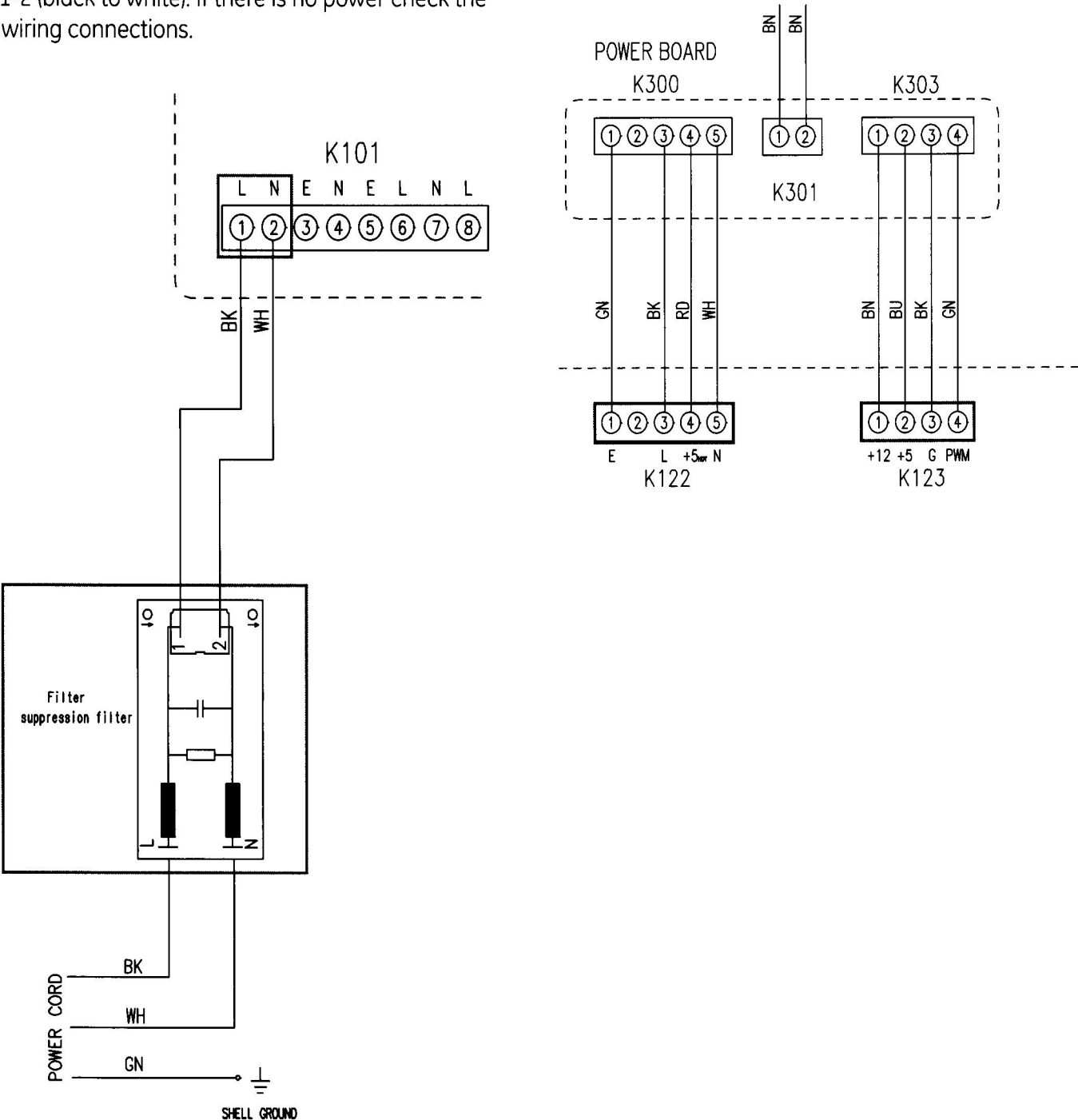
Diagnostic Mode

Before performing diagnostic checks determine which section you will be testing. Convertible drawer units consist of 2 separate sealed systems with 3 compartments so it is important to identify the correct diagnostic codes for the compartment you are testing. The upper section is commonly referred to as the fresh food section even though it may be set for wine. The bottom convertible drawer section is referred to as the freezer section even though it can be configured for fresh food or wine modes of operation. The center ice drawer will always be operating in freezer mode.

To Enter Diagnostic Mode:

Diagnostic mode can be entered only when in normal mode. Press the zone pad making sure the upper zone is displayed. Simultaneously press the **lock** and **+** key for 5 seconds. When diagnostic mode is entered, both digits of the diagnostic code number will be displayed on the customer control, and the option keys will turn into horizontal lines. Use the **+** keys to increment and the **-** keys to decrement the diagnostic code numbers. When the code number is displayed, press any other horizontal key to begin that diagnostic system test. The test mode must be selected within 30 seconds of entering the diagnostic mode or it will time out, normal refrigerator operation will resume, and the displays will return to the primary control interface state. Once a test mode is selected, the display will flash to confirm the mode selected. When in diagnostic mode, the interior LEDs will be off unless activated in diagnostics. Initial diagnostic codes (1-14) and extended diagnostic codes (50-62, 64-71, and 78-86) are accessible in the diagnostic mode. See table below.

To Exit Diagnostic Mode:

At the end of a test session, enter **11** on the display and then press any key other than the **+** or **-** keys to execute a system restart and exit the test mode. Another option is to unplug the unit and plug it back into the outlet.

Diagnostic Code Number	Test	Page
01	Showroom Mode	65
02	Customer Control to Main Control Communications	65
03	N/A	65
04	Customer Control Self Test	66
05	Sensor Self Test	66
06	Dampers	66
07	Fan Speed	67
08	Sealed System 100% Run Time	67
09	Toggle Defrost Off	67
10	System Reset	67
11	Test Mode Exit	67
12	Main Board Version Check	67
13	Customer Control Version Check	67
14	Degree C/F	67
50	Fresh Food Compressor	68
51	Freezer Compressor	68
52	Fresh Food Top Damper - Wine Unit	69
53	Fresh Food Bottom Damper - Wine Unit	69
54	Freezer Top Damper	69
55	Freezer Bottom Damper	69
56	Fresh Food Fan	70
57	Freezer Fan	70

Diagnostic Code Number	Test	Page
58	Fresh Food Condenser Fan	71
59	Freezer Condenser Fan	71
60	Fresh Food Strip and Wall LEDs	72
61	Freezer Top Strip LEDs	73
62	Freezer Bottom Strip LEDs	73
64	Fresh Food Drain Heater	73
65	Freezer Drain Heater	74
66	Fresh Food Evaporator Defrost Heater	74
67	Freezer Evaporator Defrost Heater	75
68	Ice Maker Fill Tube Heater	75
69	Freezer Mullion Heater	76
70	Fresh Food Back Wall Heater – Wine Unit	76
71	Freezer Back Wall Heater	77
78	Buzzer Test	77
79	Display Control Test	77
80	Fresh Food Top Air Thermistor - Wine Unit	78
81	Fresh Food Bottom Air Thermistor	78
82	Freezer Top Air Thermistor	79
83	Freezer Bottom Air Thermistor	79
84	Fresh Food Evaporator Thermistor	78
85	Freezer Evaporator Thermistor	79
86	Refrigerator Door, Freezer and Convertible Drawers, and Icemaker, Status Sensors	80

Initial Diagnostic Codes

Diagnostic Code Number	Mode	Comments
01	Showroom Mode	Diagnostic code 01 is an optional means of entering or exiting showroom mode. Default factory settings are loaded upon entry and normal light and control functions will be enabled. However, the cooling system will remain OFF, so the compressors, fans, and dampers will not function in this mode. Door alarm feature and control Lock will be same as in normal operating mode. If the cooling system off set point is selected while in this mode, **SHO** should be displayed instead of **OFF**. In the event of a power failure the unit will restore to showroom mode upon the return of power. Press and hold the **ALARM** and - for 5 seconds to exit showroom mode.
02	Customer Control to Main Control Communications	A communications check between the customer control and the main control board will be performed. If the control passes the check, **-P-** will be displayed on the customer control. If there is a communication error, **-F-** will be displayed.
03	N/A	No function available

Diagnostic Code Number	Mode	Comments
04	Customer Control Self Test	All LEDs and numerical segments on the customer control will illuminate. Slew keys can be used to return to diagnostic mode selection. All other buttons can be used to toggle the status of the associated LED. Each 7-segment display will be incremented with any key press.
05	Sensor Self Test	Temperature sensors are checked in the following order: (0) Fresh Food Top - ZIW30 (wine reserve) model only (reports **O** on non-wine units (1) Fresh Food Bottom - Fresh Food temperature all units (2nd bottom zone cooling on wine units (2) Freezer Top - Ice Drawer Temperature (3) Freezer Bottom - Convertible Drawer Temperature (4) Fresh Food Evaporator Temperature (5) Freezer Evaporator Temperature Each sensor number will briefly be displayed on the customer control followed by a **P** for pass, (only indicates some resistance is seen at the main board) **O** for open, or **S** for short. Extended diagnostic thermistor testing will display the reported temperature reading of a thermistor. When checking the temperature, an open thermistor will read 124 degrees, shorted will read 125 degrees in the display.
06	Damper Test	Diagnostic code 6 will cycle all of the air dampers. The fans will operate in this test so you can check for air flow at the vents to verify damper operation. The dampers cycle in the following sequence: (1) Fresh Food Top - ZIW30 (wine reserve) models only (2) Fresh Food Bottom - ZIW30 (wine reserve) models only (3) Freezer Top - Ice Drawer (4) Freezer Bottom - Convertible model To repeat this test press any of the option lines on the customer control. If the control has reset to the temperature display mode, re-enter diagnostic mode by pressing and holding **Lock** and **+** for 5 seconds.

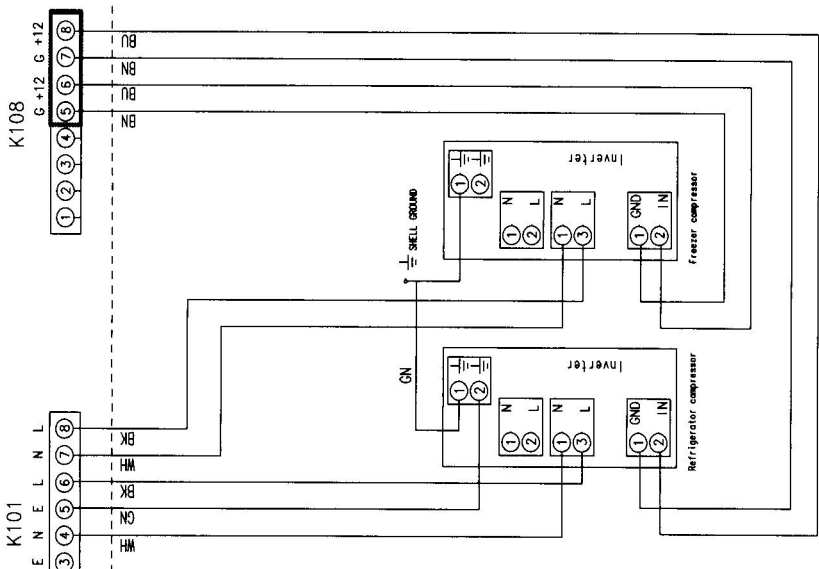| Diagnostic Code Number	Mode	Comments
07	Fan Speed Test	System fans are cycled ON in the following order: Fresh Food fan on for 5 seconds (F1) Freezer fan on for 5 seconds (F2) Condenser fan (rear) on for 5 seconds (F3) Condenser fan (front) on for 5 seconds (F4) (F#) shown in the display for each fan motor
08	Sealed System 100% Run Time	The compressors will run on HIGH 100% of the time. This mode will time out after one hour of time, or it can be manually terminated with a system reset. This mode cannot be entered if the cooling system is set to **OFF** or **Demo**.
09	Toggle Defrost Off	Diagnostic code 9 will turn off the defrost cycle if the unit is in or enters into defrost. This mode cannot be entered if the cooling system is set to **OFF**. Extended diagnostic modes 66 and 67 will test the evaporator defrost heaters. Diagnostic code 66 operates the Fresh Food defrost heater and 67 operates the Freezer defrost heater. Run diagnostic #9 to terminate the heater operation.
10	System Reset	Performs a system reset on the main board except for a defrost cycle or compressor 100% run diagnostic.
11	Test Mode Exit	Exits the diagnostic test mode and returns the unit to normal operation. Perform a board reset or diagnostic mode exit to ensure all loads are reset after diagnostic testing and/or repairs.
12	Main Board Version Check	Used to display the software version running the main board. Software version number will be displayed 2 digits at a time (6 digits total).
13	Customer Control Version Check	Used to display the software version running the customer control. Customer control software version number will be displayed 2 digits at a time (6 digits total).
14	Degree C/F	The **ZONE** key can be used to toggle between Celsius (**CEL**) or Fahrenheit (**FAH**) temperature display.

Extended Diagnostic Codes

Service Code Number	Mode	Comments
50 and 51	Compressors	Diagnostic codes 50 and 51 are used to turn on the compressors. Code 50 turns on the front compressor (Fresh Food section) and 51 turns on the rear compressor (Freezer section). Line voltage is sent to the compressor inverters on K101 pins 4-6 (white to black) for the front compressor and 7-8 (white to black) for the rear compressor. The board will run the individual compressor for thirty seconds. Condenser fans do not run in this test.
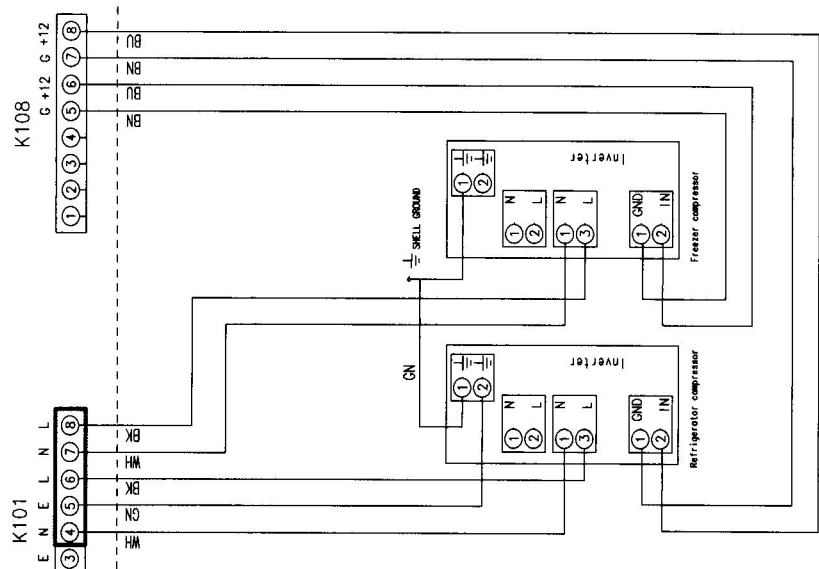
When the main board activates a compressor it sends the inverter a turn on signal from the K108 connector. K108 pins 7-8 (brown to blue) should read 5 VDC (125 Hz) for the front compressor and pins 5-6 (brown to blue) 5 VDC (125 Hz) for the rear compressor. In normal (non-diagnostic mode) the control board will delay the compressor on signal for 5 minutes for system equalization.
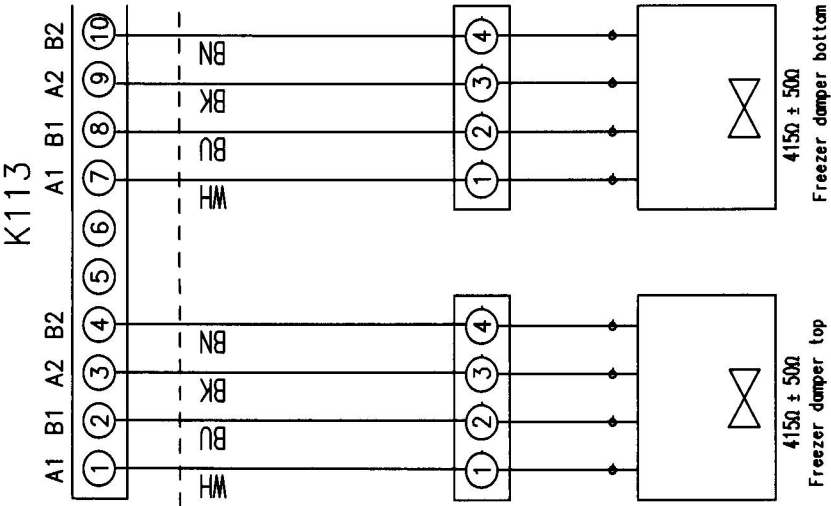
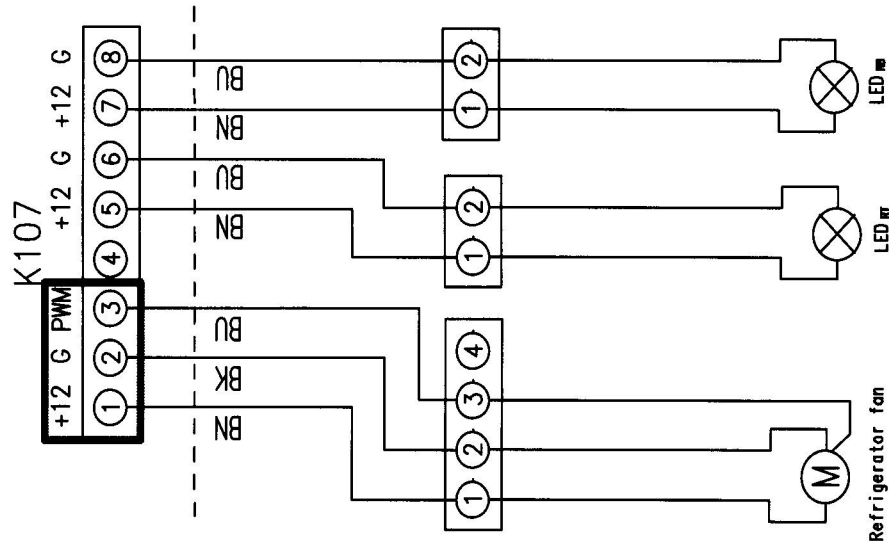| Service Code Number	Mode	Comments
52 and 53	Fresh Food Dampers - Top and Bottom – Wine Unit	Diagnostic codes 52 and 53 operate the dampers in the ZIW30 wine models. Code 52 will operate the top damper and code 53 operates the bottom damper. The resistance or voltage can be read at the K120 connector, pins 1-4 for the bottom damper and pins 7-10 for the top damper. When the damper is cycled there should be 6.5 VDC on (white to blue and black to brown). The evaporator fan will run in this test so you can check for air flow at the vents.

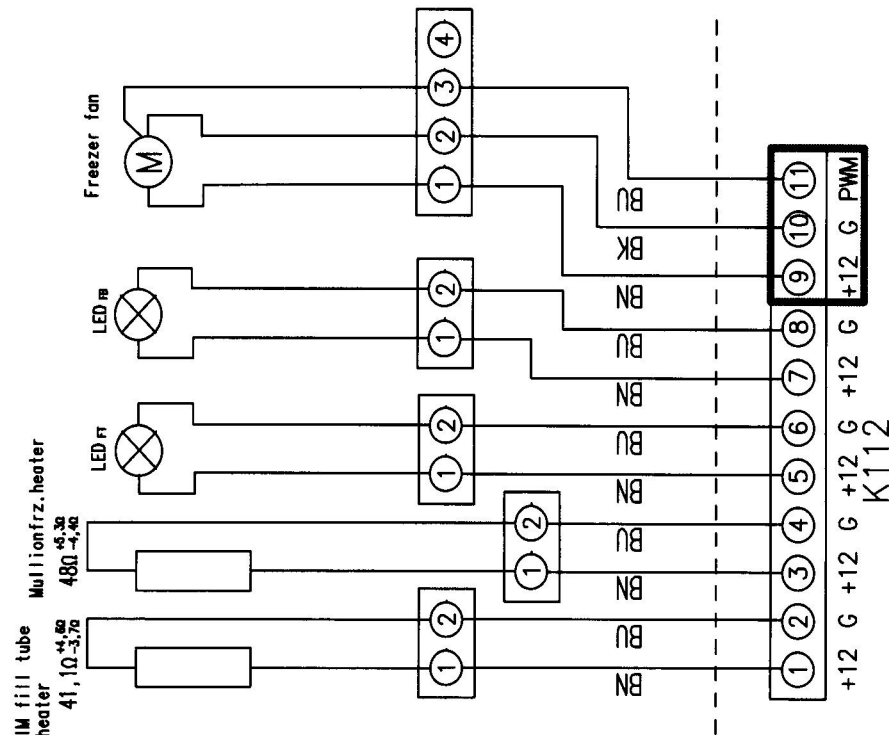| Service Code Number	Mode	Comments
54 and 55	Freezer Dampers - Top and Bottom	Diagnostic codes 54 and 55 operate the Freezer dampers. Code 54 will operate the top damper and code 55 operates the bottom damper. The resistance or voltage can be read at the K113 connector, pins 1-4 for the top damper and pins 7-10 for the bottom damper. When the damper is cycled there should be 6.5 VDC on (white to blue and black to brown). The freezer fan operates for an air flow check.

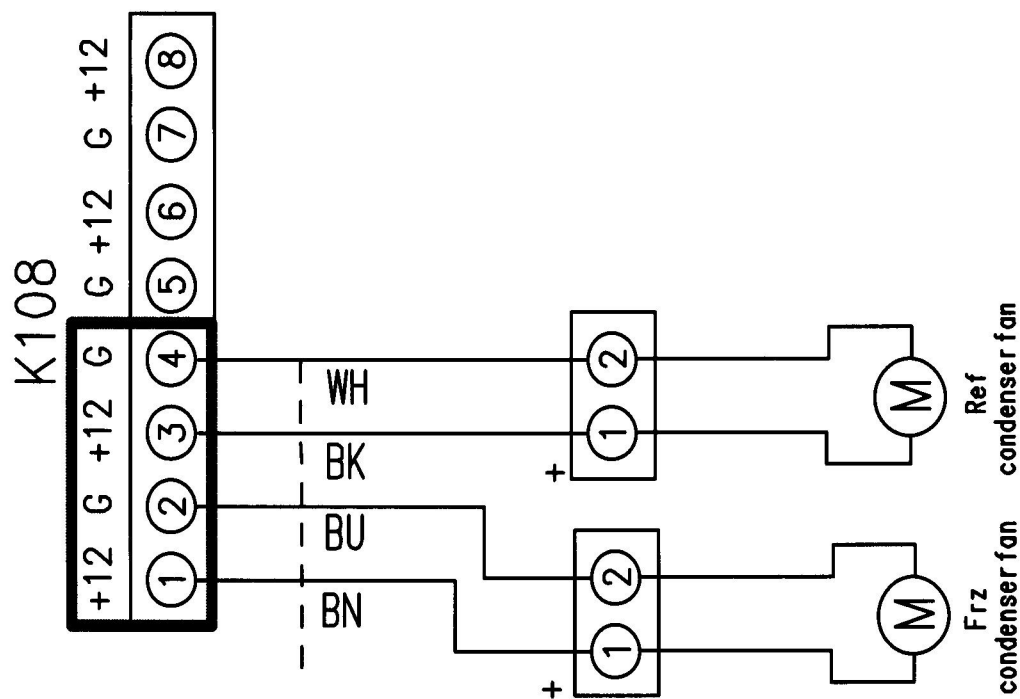| Service Code Number	Mode	Comments
56	Fresh Food Fan	Diagnostic code 56 turns on the Fresh Food fan motor. When activated the main board sends 12 VDC to the fan motor on K107 pins 1-2 (brown to black). Pin 3 (PWM) should read 5 VDC to pin 2 (black to blue) if the fan motor is operating. For edge connector testing on the main board, you may need to pull the connector partially off of the edge of the board to access the circuit.

| Service Code Number	Mode	Comments
57	Freezer Fan	Diagnostic code 57 turns on the Freezer fan motor. When activated the main board sends 12 VDC to the fan motor on K112 pins 9-10 (brown to black). Pin 11 (PWM) should read 5 VDC to pin 2 if the fan motor is operating (black to blue). As with the Fresh Food fan motor, you should hear the fan running when activated in diagnostic mode.

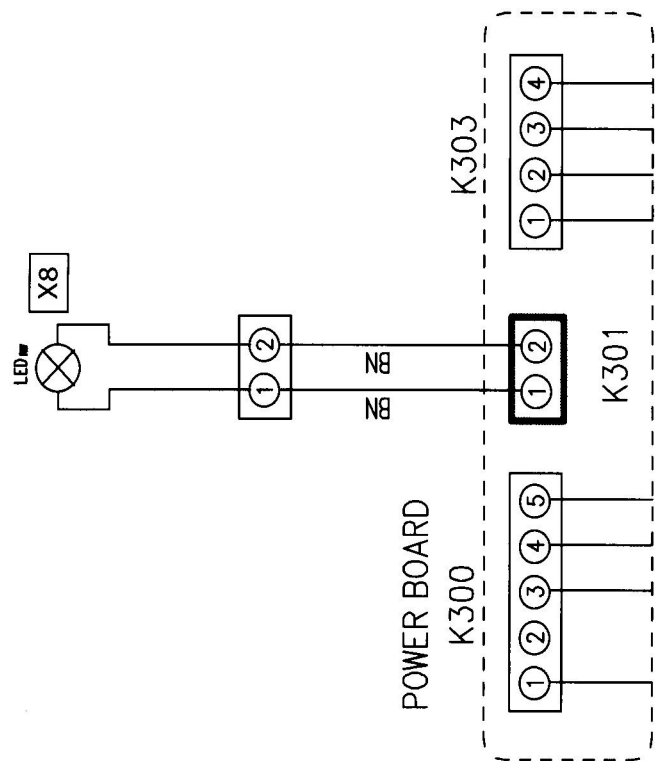| Service Code Number	Mode	Comments
58 and 59	Fan Condenser Refrigerator	Diagnostic code 58 and 59 turns on the condenser fan motors. Code 58 operates the Fresh Food condenser fan motor (front) and 59 operates the Freezer condenser fan motor (rear). When activated the main board sends 12 VDC to the Freezer condenser fan motor on K108 pins 1-2 (brown to blue), and to the Fresh Food condenser fan motor pins 3-4 (black to white).

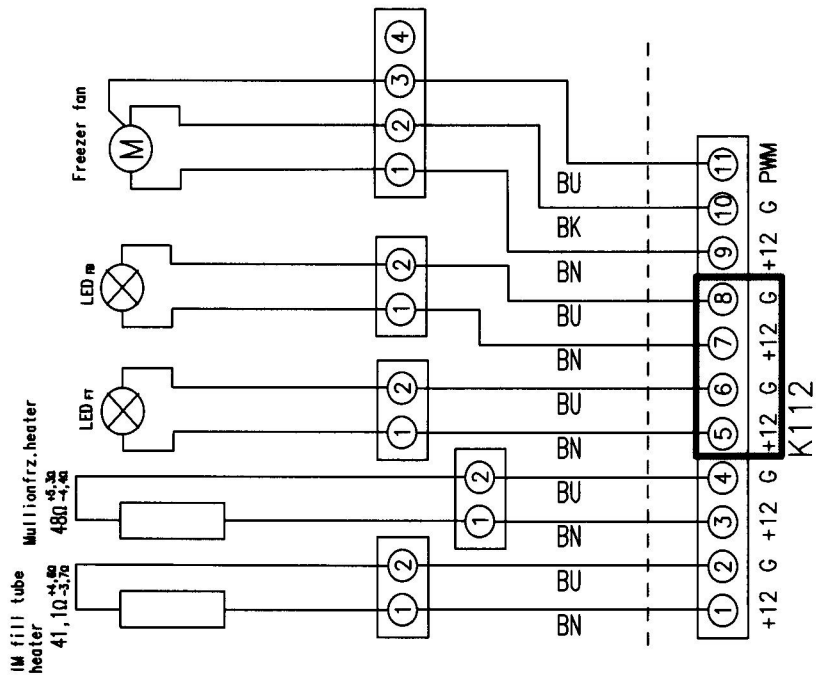| Service Code Number	Mode	Comments
60	Fresh Food Strip and Wall LEDs	Diagnostic code 60 will turn on the strip LED lights in the Fresh Food ceiling and the Fresh Food vegetable drawer, and the circular LED wall lights. This test will turn on these LEDs from dim to 100% within 3 seconds of activation. The main board outputs 12 VDC on pins 5-6 (brown to blue) for the ceiling strip and 7-8 (brown to blue) for the vegetable drawer strip on the K107 connector.
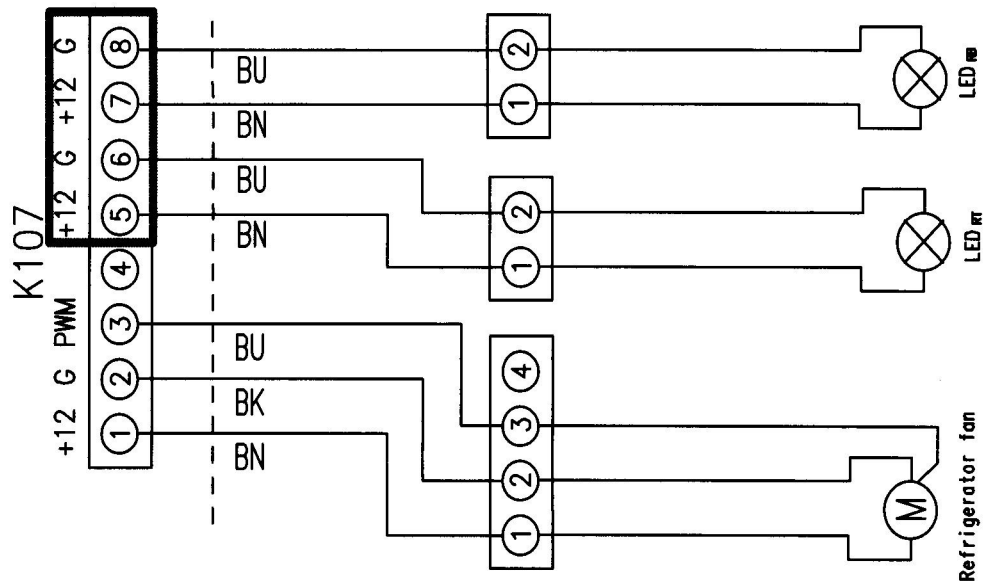
The power supply board controls the wall LEDs, not the main board. The power supply sends out 24 VDC on a series circuit for all LED boards from K301. Each LED board will drop 3 VDC and if one fails they all fail. The individual LED boards can be tested using the Diode function on a multi-meter. Checking across the 2 pin connector on each board should result with a .7 VDC reading on the meter, an open (OL) reading would indicate a failed LED.
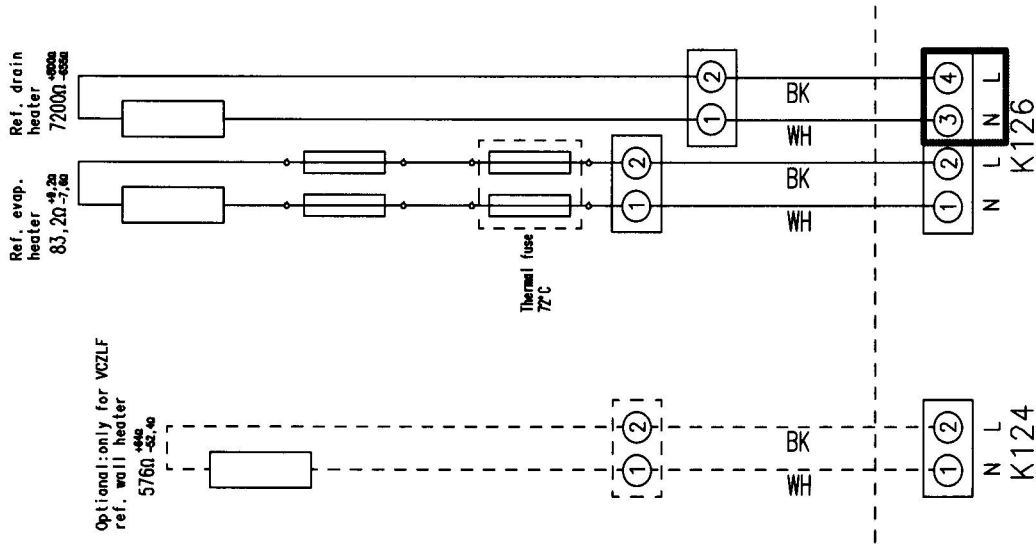
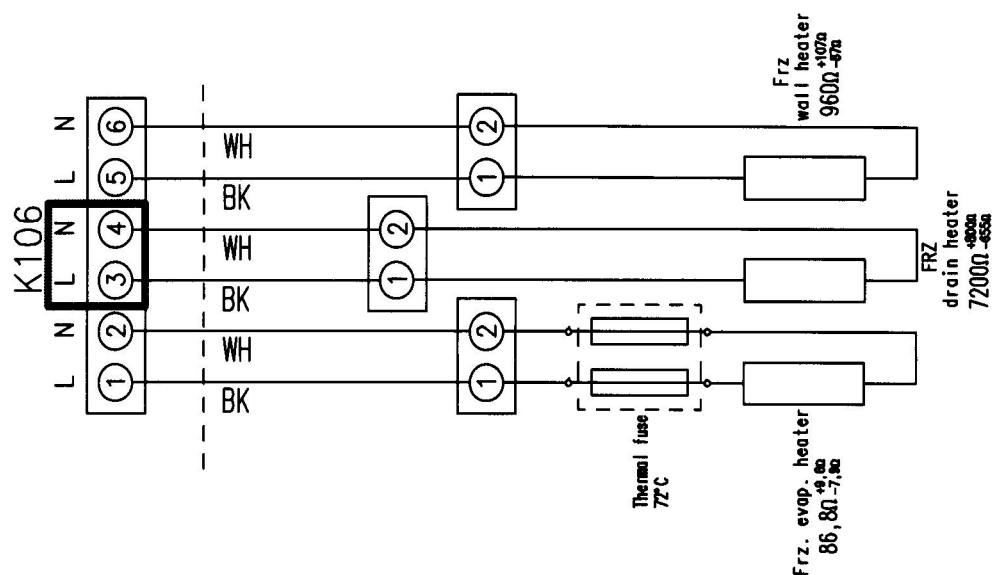| Service Code Number	Mode	Comments
61 and 62	Freezer Strip LEDs	Diagnostic code 61 & 62 will turn on the LED strips in the bottom 2 drawers. This test will turn on these strips from dim to 100% within 3 seconds of activation. Test 61 turns on the ice drawer LED strip and 62 turns on the convertible drawer LED strip. The main board outputs 12 VDC on pins 5-6 (brown to blue) for the ice drawer and 7-8 (brown to blue) for the bottom drawer at the K112 connector.

Service Code Number	Mode	Comments
64	Fresh Food Drain Heater	Diagnostic code 64 turns on the Fresh Food drain heater. When activated the main board sends 120 VAC to the drain heater from K126 pins 3-4 (white to black). The drain heater resistance (7200Ω) can also be checked from the same connection. Will activate test in a warm cabinet.

-73-

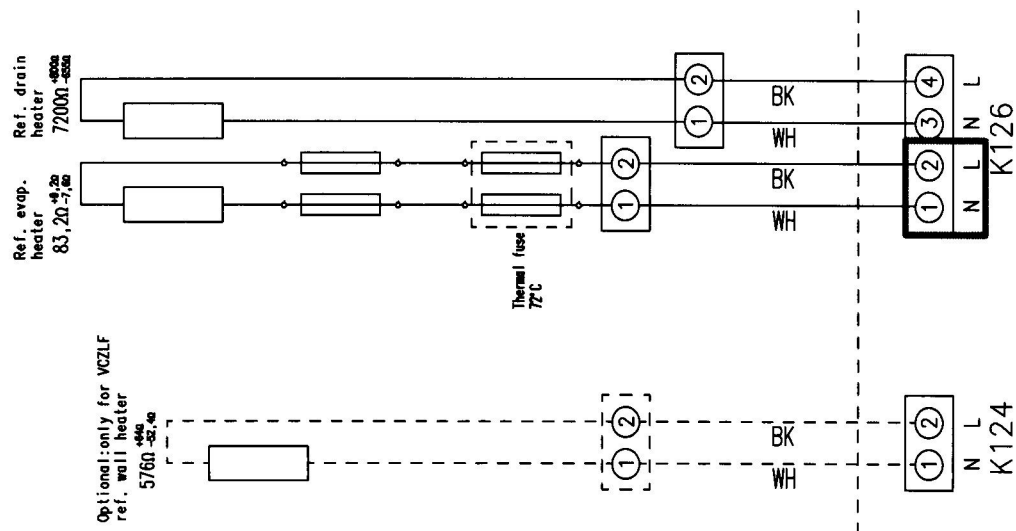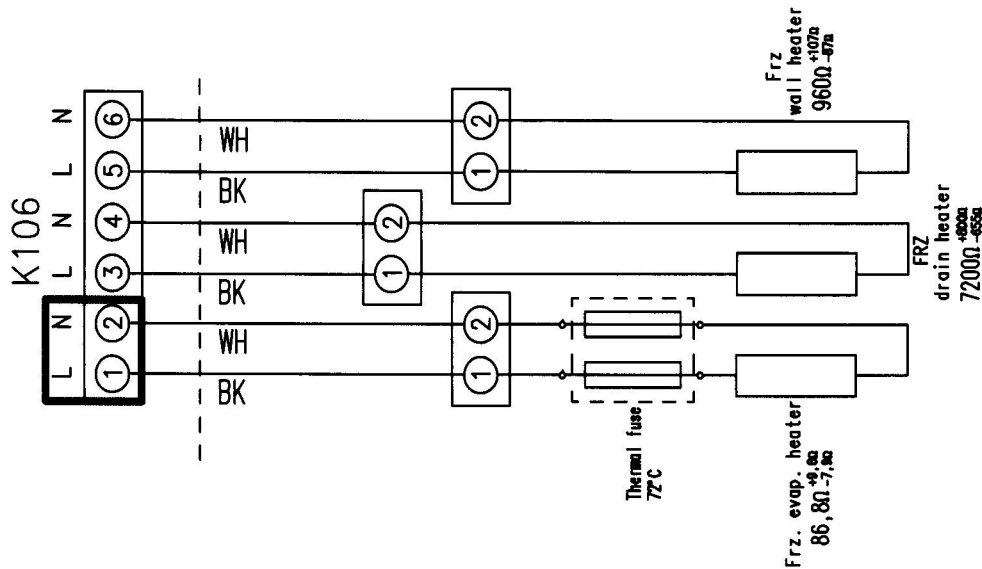| Service Code Number	Mode	Comments
65	Freezer Drain Heater	Diagnostic code 65 turns on the Freezer defrost drain heater. When activated the main board sends 120 VAC to the drain heater from K106 pins 3-4 (white to black). The drain heater resistance (7200Ω) can also be checked from the same connection. Will activate test in a warm cabinet.

Frz wall heater 960Ω +10%/-5%

FRZ drain heater 7200Ω +8%/-5%

Frz. evap. heater 86,8Ω +4%/-7,5%

Thermal fuse 72°C

Service Code Number	Mode	Comments
66	Fresh Food Evaporator Defrost Heater	Diagnostic code 66 turns on the Fresh Food evaporator defrost heater. When activated the main board sends 120 VAC to the defrost heater from K126 pins 1-2 (white to black). The defrost heater resistance (83Ω) can also be checked from the same connection. Use diagnostic test #9 to turn off the defrost heater. Will activate test in a warm cabinet.

Ref. drain heater 7200Ω +8%/-5%

Ref. evap. heater 83,2Ω +4%/-7,5%

Optional:only for VCZLF ref. wall heater 576Ω +6%/-37,4%

Thermal fuse 72°C

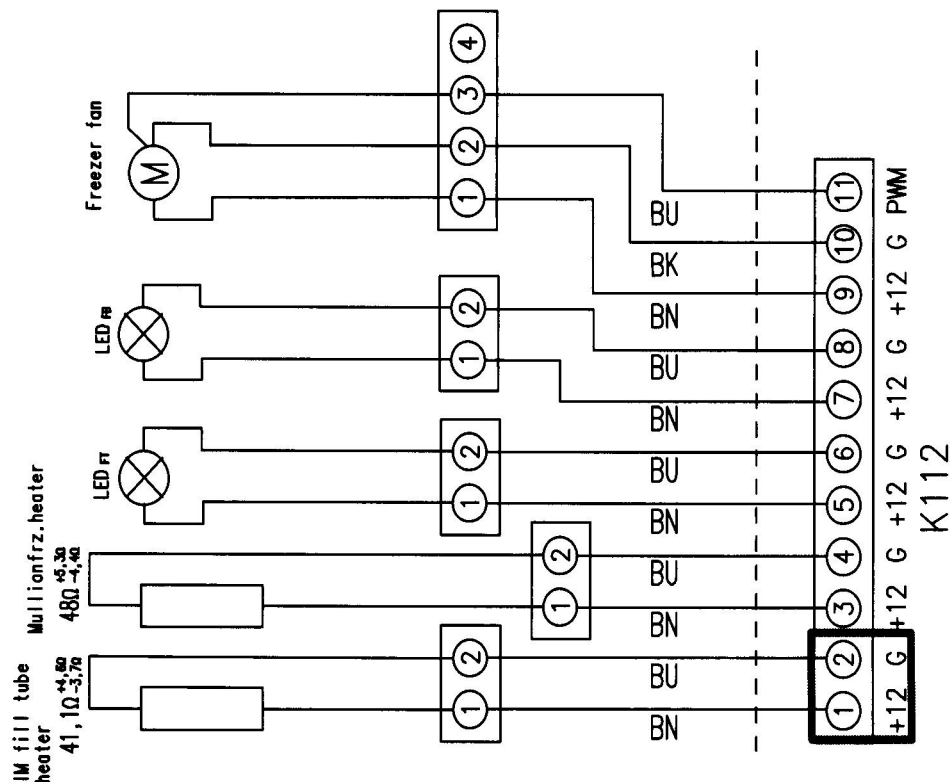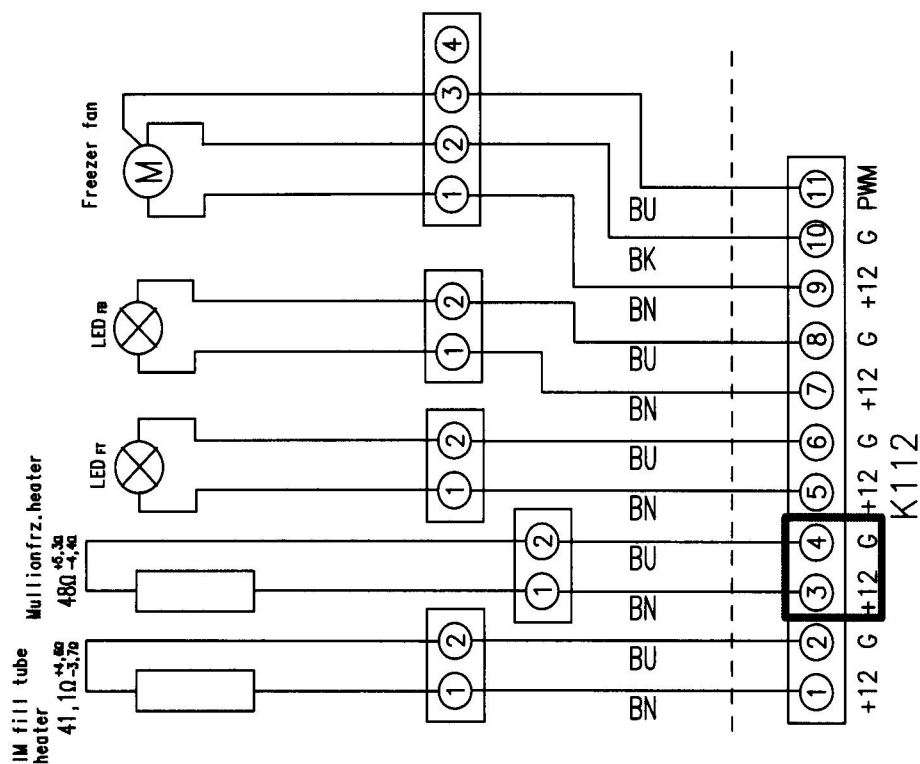| Service Code Number	Mode	Comments
67	Freezer Evaporator Defrost Heater	Diagnostic code 67 turns on the Freezer evaporator defrost heater. When activated the main board sends 120 VAC to the defrost heater from K106 pins 1-2 (white to black). The defrost heater resistance (85Ω) can also be checked from the same connection. Use diagnostic test #9 to turn off the defrost heater. Will activate test in a warm cabinet.

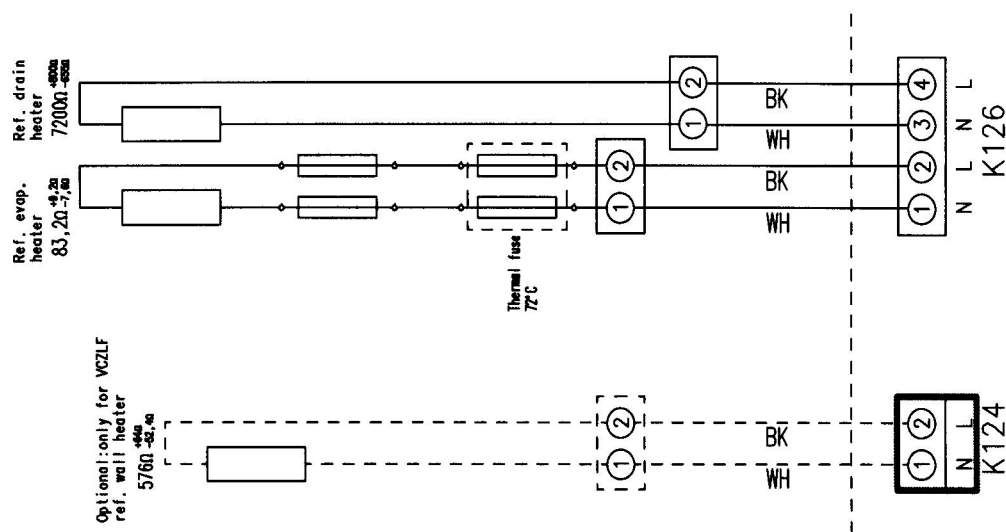| Service Code Number	Mode	Comments
68	Ice Maker Fill Tube Heater	Diagnostic code 68 turns on the icemaker fill tube heater. When activated the main board sends 12 VDC to the fill tube heater from K112 pins 1-2 (brown to blue). The fill tube heater resistance (41Ω) can also be checked from the same connection. Will activate test in a warm cabinet.

Service Code Number	Mode	Comments
69	Freezer Mullion Heater	Diagnostic code 69 turns on the Freezer mullion heater. When activated the main board sends 12 VDC to the mullion heater from K112 pins 3-4 (brown to blue). The mullion heater resistance (48Ω) can also be checked from the same connection. This heater is activated when the customer has moisture selected on the control. When selected there will be a moisture droplet illuminated on the control with a diagonal line thru it.

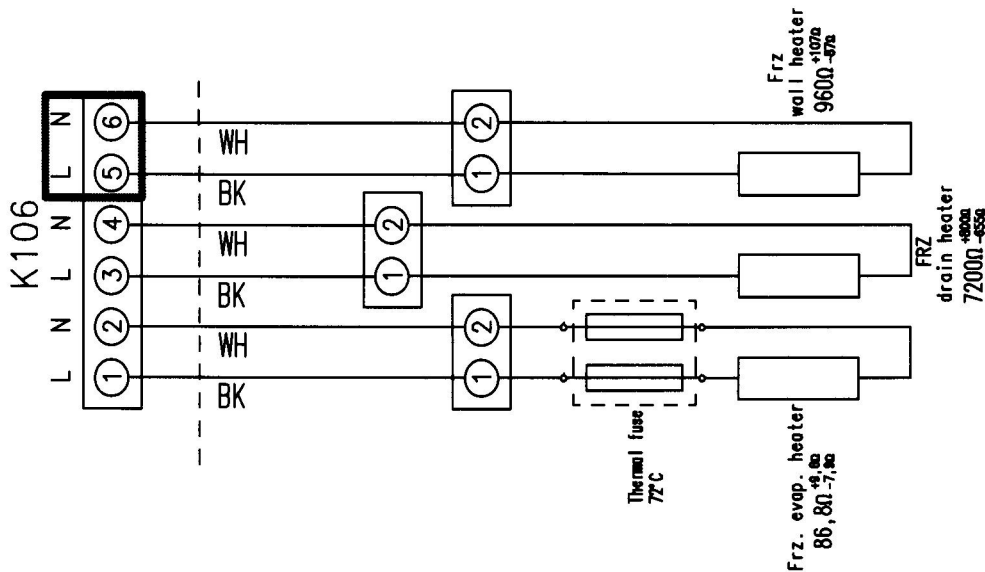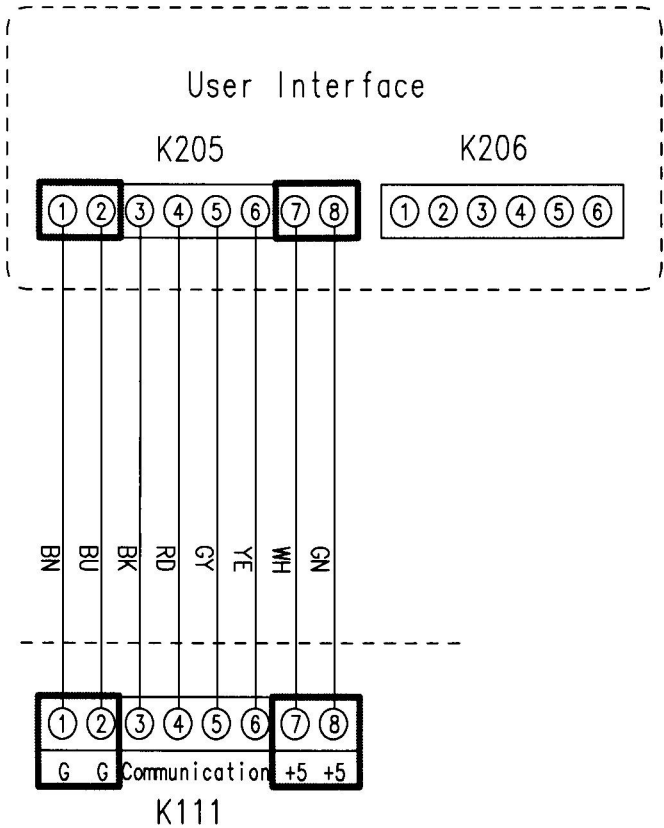| Service Code Number	Mode	Comments
70	Fresh Food Back Wall Heater – Wine Unit	Diagnostic code 70 turns on the Fresh Food back wall heater for the ZIW30 wine mode. This heater is only used on the ZIW30 (Wine) unit. When activated the main board sends 120 VAC to the wall heater from K124 pins 1-2 (white to black). The wall heater resistance (576Ω) can also be checked from the same connection.

Service Code Number	Mode	Comments
71	Freezer Back Wall Heater	Diagnostic code 71 turns on the Freezer back wall heater for wine mode. This heater is used on All convertible units. When activated the main board sends 120 VAC to the wall heater from K106 pins 5-6 (black to white). The wall heater resistance (960Ω) can also be checked from the same connection.

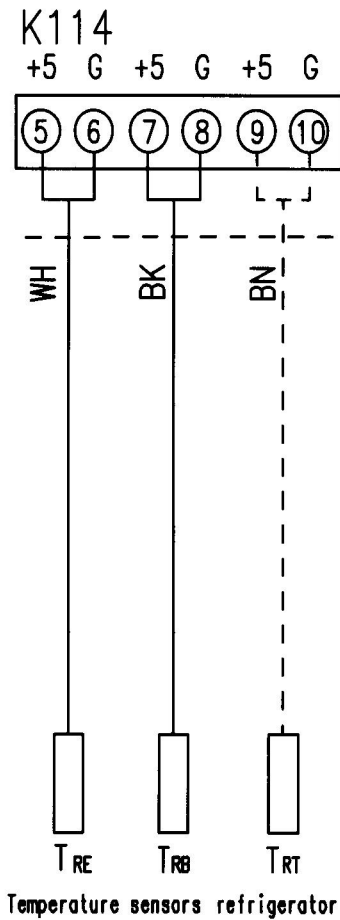| Service Code Number	Mode	Comments
78 and 79	Buzzer and Display Control Test	Diagnostic code 78 activates/tests the display control beeper. Code 79 will light all segments of the display. If the display does not light in any mode check for supply voltage at K205 pins 7-8 to common on pins 1-2 for 5 VDC. If the voltage is not present check the main board K111 for the same control voltages.

Service Code Number	Mode	Comments
80, 81, and 84	Fresh Food Thermistors	Diagnostic code 80, 81 and 84 displays the Fresh Food thermistor temperatures. 80 – Fresh Food Top Air Thermistor (ZIW30 wine reserve only). K114 9-10 brown 81 – Fresh Food Bottom Air Thermistor - all units. K114 7-8 black 84 – Fresh Food Evaporator - K114 5-6 white To verify resistance, remove the connector from the main board.

Thermistor Values Table			
Temperature	77°F / 25°C	32°F / 0°C	0°F / -18°C
Resistance	5.0 KΩ	16.3 KΩ	42.5 KΩ

Note: The thermistors have a negative coefficient. As the temperature increases, the thermistor's resistance value decreases.

K114

+5 G +5 G +5 G

⑤ ⑥ ⑦ ⑧ ⑨ ⑩

WH   BK   BN

T RE   T RB   T RT

Temperature sensors refrigerator

Service Code Number	Mode	Comments
82, 83, and 85	Freezer Thermistors	Diagnostic code 82, 83 and 85 displays the Freezer thermistor temperatures. 82 – Freezer Top Air (ice drawer) Thermistor - K119 9-10 black 83 – Freezer Bottom Air (convertible drawer) Thermistor - K119 7-8 white 85 – Freezer Evaporator Thermistor - K119 5-6 white To verify resistance, remove the connector from the main board.

Thermistor Values Table			
Temperature	77°F / 25°C	32°F / 0°C	0°F / -18°C
Resistance	5.0 KΩ	16.3 KΩ	42.5 KΩ

Note: The thermistors have a negative coefficient. As the temperature increases, the thermistor's resistance value decreases.
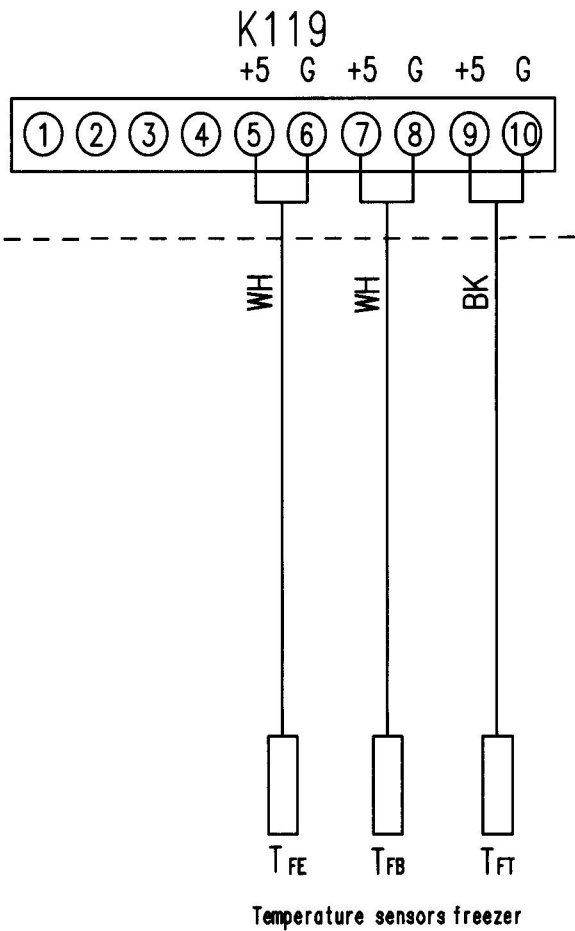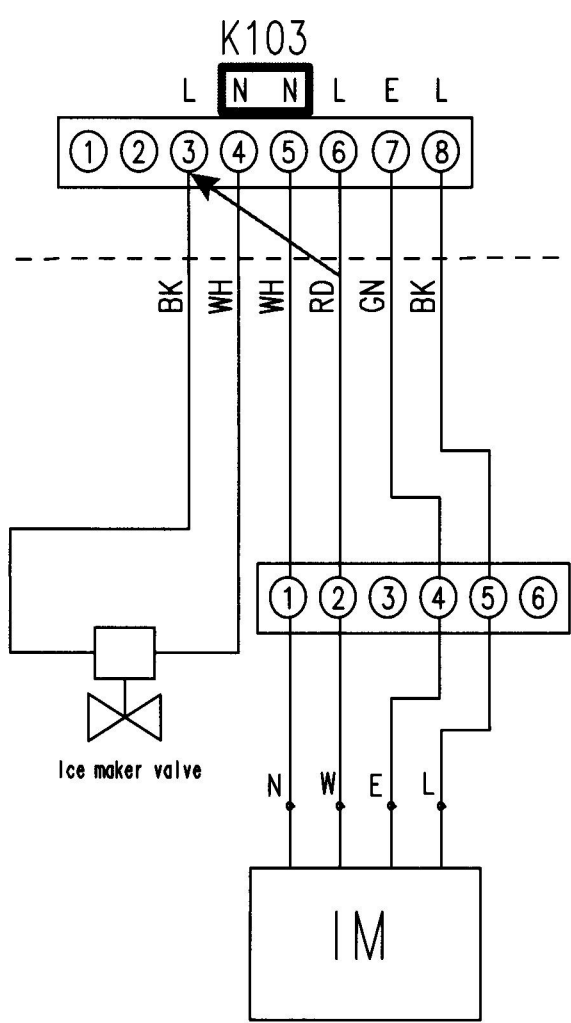

Temperature sensors freezer

Service Code Number	Mode	Comments
86	Refrigerator Door, Freezer and Convertible Drawers, and Icemaker, Status Sensors	Diagnostic code 86 checks the door/drawers reed sensors. This test will display door and drawer status in the temperature display. The control will display the door status as either open **O** or closed **C**. The Fresh Food door status is controlled by a magnet attached to the bottom of the door that operates a reed switch in the customer control.The door open signal is handled thru the customer control board communication with the main board. The drawer status is controlled by magnets on the drawer slides that operate the reed switches located in the back left side of the liner wall. Voltage can be checked at the main board K115 connector, (convertible drawer 3-4 and freezer drawer 5-6), for 5 VDC with drawer open, and 0 VDC with drawer closed. Icemaker status can be checked at the main board K115 connector. The icemaker status is controlled by a magnet located on the left rear corner of the ice container that operates the reed switch attached to the bottom of the icemaker. With the ice container in place, icemaker status can be checked at the main board K115, 1-2 for 5 VDC when drawer open, and 0 VDC when drawer closed.

Reed senzor

R ᴵᴹ   Rꜰʙ   Rꜰᴛ

BN BU BN BU BN BU

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

+5 G +5 G +5 G

K115
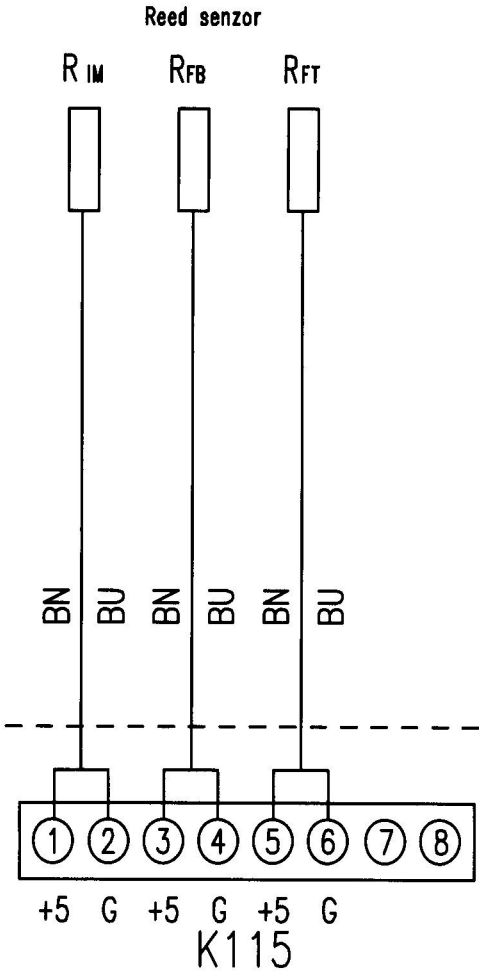
The icemaker and water valve connects to the main board but the main board does not control ice production or water valve operation. The consumer does have the ability to turn the icemaker off thru the customer control. When the icemaker is turned off, the main board quits sending line power to pin 8 (black) line wire. Pins 4-5 connect to board neutral and pins 6-3 connect thru the board from the icemaker to the water valve to activate the water valve directly.

K103

Ice maker valve

IM
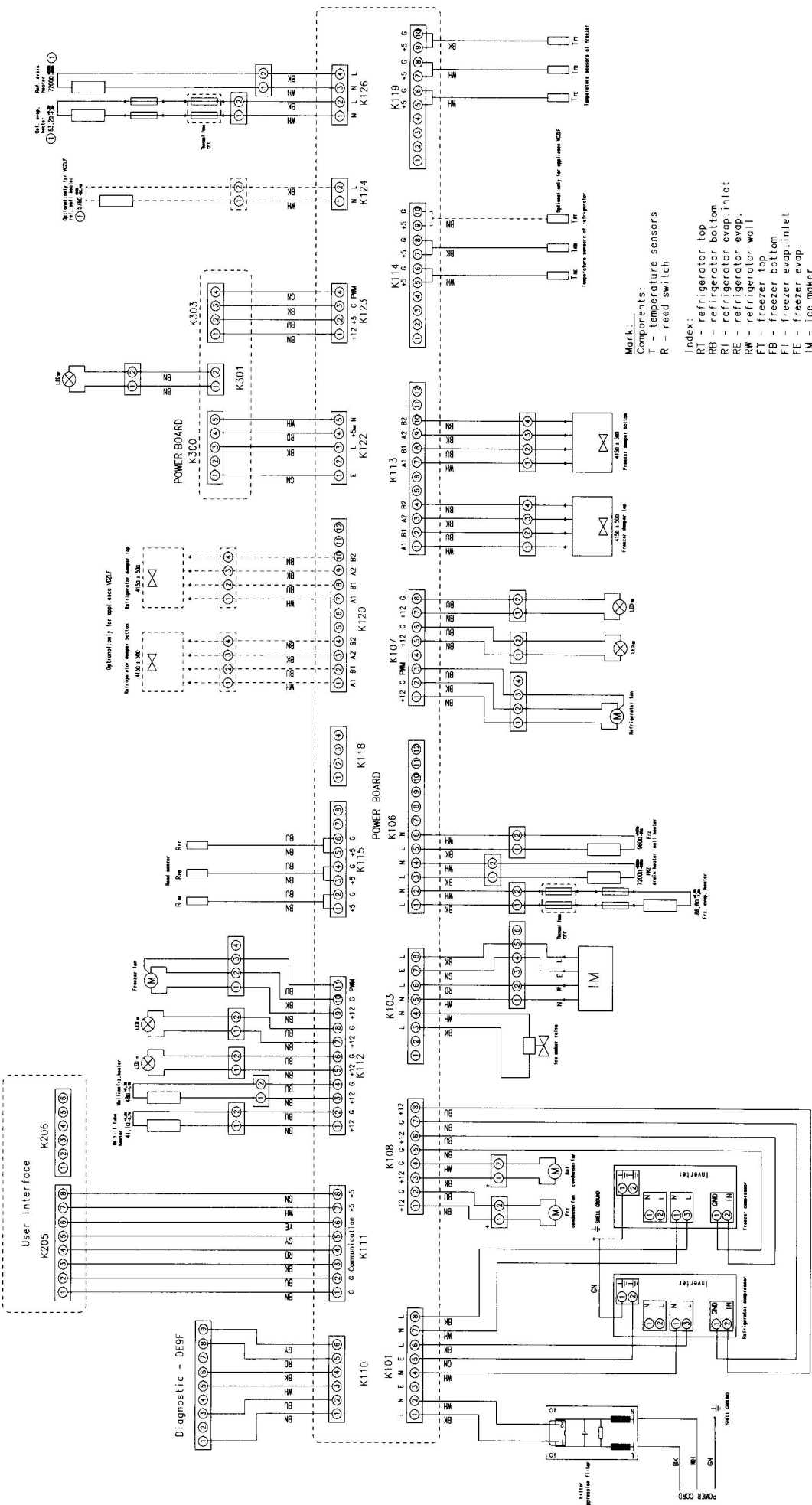
Schematic

Note: The schematic includes an index to identify individual components, locations and use. Temperature sensors are identified by **T** and reed switches by **R** in the first letter designation. The second letter will identify the compartment location of the component and the third letter identifies the function or location. I.E; **TFE** = Temperature, Freezer, Evaporator. Other components like the LED lighting units will indicate location. I.E; **RW** = Refrigerator Wall.

Components with dashed lines (**Optional VCZLF**) are found only in ZIW30 (Wine) units.

Mark:
Components:
T - temperature sensors
R - reed switch

Index:
RT - refrigerator top
RB - refrigerator bottom
RI - refrigerator evap.inlet
RE - refrigerator evap.
RW - refrigerator wall
FT - freezer top
FB - freezer bottom
FI - freezer evap.inlet
FE - freezer evap.
IM - ice maker

YOUR MONOGRAM REFRIGERATOR AND FREEZER WARRANTY
Staple sales slip or cancelled check here. Proof of original purchase date is needed to obtain service under warranty.

WHAT IS COVERED

From the Date of the Original Purchase

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

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

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

LIMITED THIRTY-DAY WARRANTY ON WATER FILTER CARTRIDGE (Water filter, if included)
From the date of the original purchase we will provide, free of charge, replacement parts for *any part of the water filter cartridge* that fails because of a manufacturing defect. During this limited thirty-day warranty, we will also provide, free of charge, a replacement water filter cartridge.

• •

This warranty is extended to the original purchaser and any succeeding owner for products purchased for ordinary home use in the 48 mainland states, Hawaii, Washington, D.C. or Canada. If the product is located in an area where service by a GE Authorized Servicer is not available, you may be responsible for a trip charge or you may be required to bring the product to an Authorized GE Service location for service. In Alaska the warranty is the same except that it is LIMITED because you must pay to ship the product to the service shop or for the service technician's travel costs to your home.

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

Should your appliance need service, during warranty period or beyond, call 800.444.1845. Please have your serial number and model number available when calling for service.

WHAT IS NOT COVERED

• Service trips to your home to teach you how to use the product.

• Replacement of house fuses or resetting of circuit breakers.

• Damage to the product caused by accident, fire, floods or acts of God.

• Failure of the product if it is used for other than its intended purpose or used commercially.

• Damage caused after delivery.

• Improper installation, delivery or maintenance. If you have an installation problem, contact your dealer or installer. You are responsible for providing adequate electrical, plumbing and other connecting facilities.

• Replacement of the light bulbs, if included, or water filter cartridge, if included, other than as noted above.

• Replacement of the water filter cartridge, if included, due to water pressure that is outside the specified operating range or due to excessive sediment in the water supply.

• Loss of food due to spoilage.

• Incidental or consequential damage caused by possible defects with this appliance.

• Product not accessible to provide required service.

EXCLUSION OF IMPLIED WARRANTIES—Your sole and exclusive remedy is product repair as provided in this Limited Warranty. Any implied warranties, including the implied warranties of merchantability or fitness for a particular purpose, are limited to one year or the shortest period allowed by law.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. To know what your legal rights are in your state, consult your local or state consumer affairs office or your state's Attorney General.

Warrantor: General Electric Company,
Louisville, KY 40225

GE Appliances
General Electric Company
Louisville, KY 40225
GEAppliances.com