LG
Life's Good

# LG TRAINING PRESENTATIONS

## Spring 2011 Appliance Training

LFX25976

Linear Compressor Refrigerator

LMHM2017

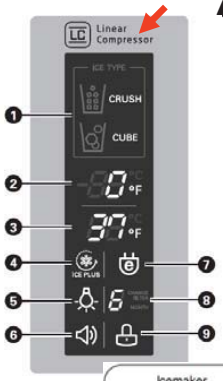
Microwave with Warming Lamp

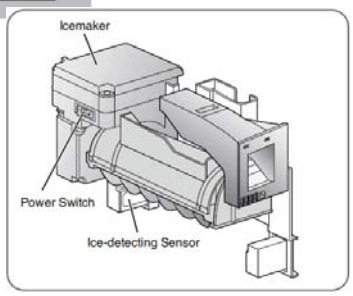
LSE3092ST

Drop-In Electric Range

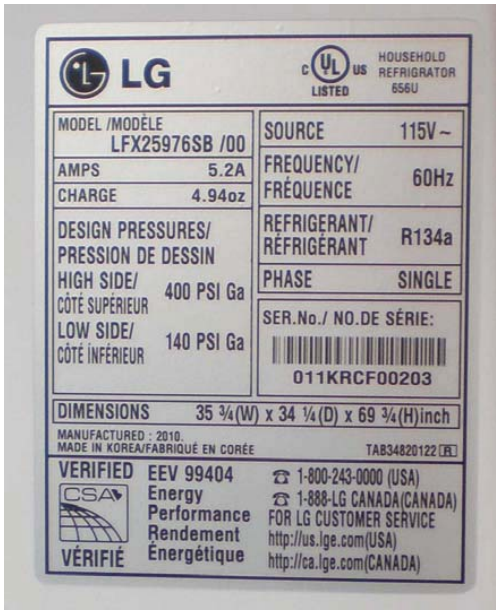
## Introducing LFX25976**

WHAT'S NEW




## INTRODUCTION



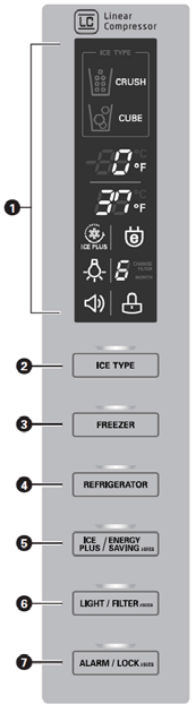

**Model & Serial Number / Cabinet Frame Right**

## INTRODUCTION

| Bottom-Freezer Refrigerator Models LFX25976 | |
|---|---|
| **Description** | French Door Refrigerator |
| **Electrical Requirements** | 115 VAC @ 60 Hz |
| **Min. / Max. Water Pressure** | 20~120 PSI (1.4~8.4 kgf/cm²) |
| **Dimensions** | 35 3/4" (W) X 34 1/4" (D) X 69 3/4" (H), 46 1/2" (D w/ door open)<br>908 mm (W) X 870 mm (D) X 1772 mm (H), 1181 mm (D w/ door open) |
| **Net Weight** | 328 lb. (149 kg) |
| **Refrigerator Storage Capacity** | 17.6 cu. ft. |
| **Freezer Storage Capacity** | 7.1 cu. ft. |

| Application Guidelines/Water Supply Parameters | |
|---|---|
| Service Flow | 0.5 gpm (1.9 lpm) |
| Water Supply | Potable Water |
| Water Pressure | 20 -120 psi (138 - 827 kPa) |
| Water Temperature | 33°F - 100°F (0.6°C - 38°C) |

## INTRODUCTION




**1 LED DISPLAY**
The LED display shows the temperature settings, dispenser options, water filter, door alarm, and locking status messages.

**2 ICE TYPE BUTTON**
The ICE TYPE button is used to select Cubed Ice or Crushed Ice.

**3 FREEZER BUTTON**
Press the FREEZER button to adjust the temperature in the freezer compartment.
**NOTE:** When pressed simultaneously with the REFRIGERATOR button for more than five seconds, the temperature display will change from Fahrenheit to Celsius or vice versa.

**4 REFRIGERATOR BUTTON**
Press the REFRIGERATOR button to adjust the temperature in the refrigerator compartment.
**NOTE:** When pressed simultaneously with the FREEZER button for more than five seconds, the temperature display will change from Fahrenheit to Celsius or vice versa.

**5 ICE PLUS/ENERGY SAVING BUTTON**
Press this button to activate the ICE PLUS function to increase icemaking capabilities up to 20 percent.
OR, Press and hold this button for at least 3 seconds to activate or deactivate the Energy Saving mode.

**6 LIGHT/FILTER BUTTON**
The LIGHT/FILTER button controls the lamp in the dispenser.
Press and hold the LIGHT/FILTER button for more than 3 seconds to reset the filter indicator after the water filter has been replaced.

**7 ALARM/LOCK BUTTON**
Press this button to control the door-open alarm.
Press and hold this button at least 3 seconds to lock or unlock all the other function buttons on the control panel, including operation of the dispenser.

## INTRODUCTION

**❶ DISPENSER SELECTION INDICATOR**
Shows Cubed ice or Crushed Ice selection that will be dispensed when the push switch is pressed.

**❷ FREEZER TEMPERATURE**
Indicates the set temperature of the freezer compartment in Celsius or Fahrenheit.

**❸ REFRIGERATOR TEMPERATURE**
Indicates the set temperature of the refrigerator compartment in Celsius or Fahrenheit.

**❹ ICE PLUS**
When the ICE PLUS/ENERGY SAVING button is pressed, the display will indicate the selected function has been activated.

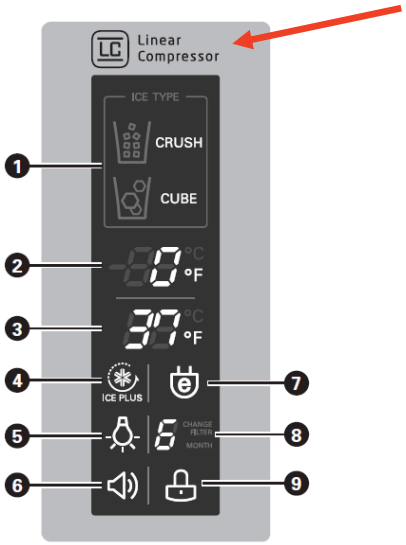
**❺ DISPENSER LIGHT INDICATOR**
When the LIGHT button is pressed, the display will indicate the selected function: The dispenser light is on, this indicator will appear on the display panel.

**❻ DOOR ALARM INDICATOR**
This indicator shows that the door-open warning alarm is activated.

**❼ ENERGY SAVING**
This indicater shows that Energy Saving mode is activated.

**❽ WATER FILTER STATUS**
This indicator shows the current status for the water filter. See Resetting the Filter Indicator.

**❾ LOCK STATUS**
This indicator shows the current status for the control panel functions is set to LOCK.

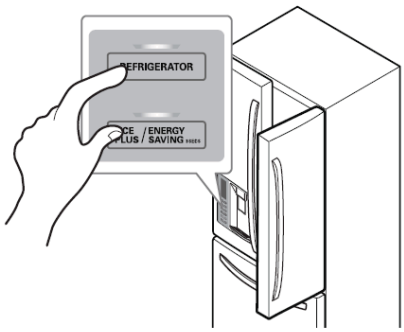



## INTRODUCTION

### ⚠CAUTION

**Display mode setting and its cancellation**

- With the refrigerator door open, keep pressing the REFRIGERATOR button and ICE PLUS/ENERGY SAVING button more than 5 seconds, then it goes to the display mode.
- Perform the same way again to cancel the display mode.
- All freezing units do not work at the display mode.



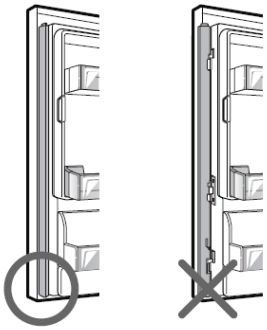
## INTRODUCTION

### Power Saving Mode


- The display will remain off until the next time the door is opened.
  The display will also turn on when any button is pressed, and it will remain on for 20 seconds after the last door opening or button selection.
- To deactivate the Power-Saving Mode, press the FREEZER and ICE PLUS/ENERGY SAVING buttons simultaneously and hold them for 5 seconds until the tone sounds.

**NOTE:** Power Saving Mode function is set on the product.

### Caution When Closing the Door

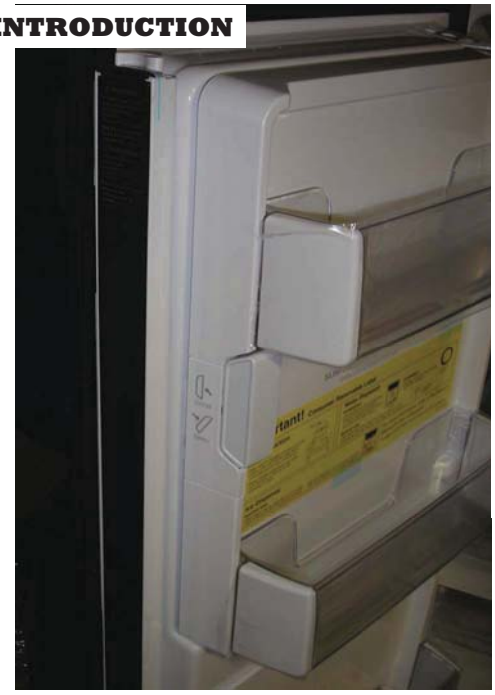


### ⚠CAUTION

To reduce the risk of door scratches, please make sure that the refrigerator door mullion is always folded in.

If dew gathers on the refrigerator door mullion at any point, deactivate the Energy Saving mode until the issue resolves itself.

## INTRODUCTION



**Door Mullion Folded In**

**Caution: Door Mullion Folded Out / Fold In B4 Closing**

## INTRODUCTION

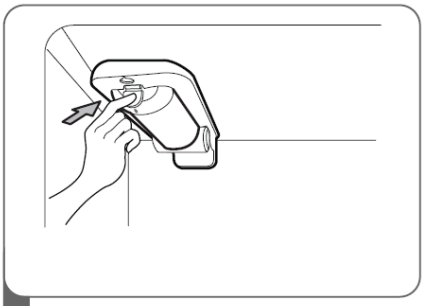
### Temperature Display

To change the temperature display from Fahrenheit to Celsius:

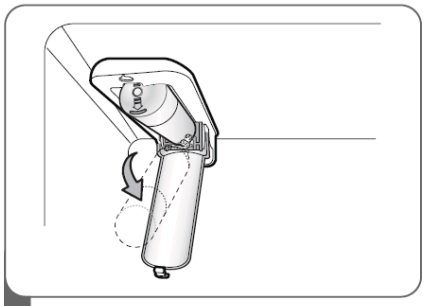

- Simultaneously press and hold the FREEZER and REFRIGERATOR buttons for more than 5 seconds.
- Do the same to convert back to Fahrenheit.

## INTRODUCTION

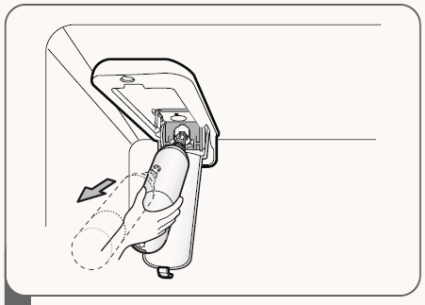
**1. Remove the old cartridge.**



1 Press the push button to open the filter cover.



2 Pull the cartridge downward.



3 Pull out the filter cartridge.

**NOTE :** When opened at a full angle the cartridge should easily come out.

**Part # ADQ36006101**

**INTRODUCTION** **Water Filter & BYPASS**


**Part # ADQ36006101**

**INTRODUCTION**

**TWIST TRAY**
**Ice Maker**

1) 0ºF Ice Room Required.

2) Tray Sensor must reach ±15ºF plus 80 minutes of run time B4 harvest.

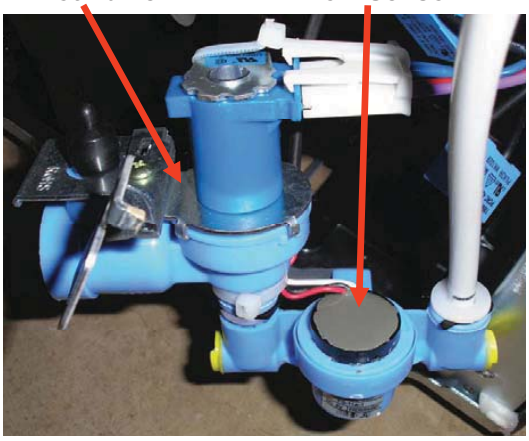
3) Makes a minimum of 100 to 120 cubes per 24 Hr. period.

4) Icemaker Fill is 100 to 110ml or 3.5 to 4.0 ounces of $H_2O$.

## INTRODUCTION

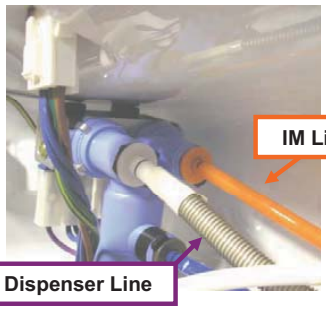
Pilot Valve

Flow Sensor

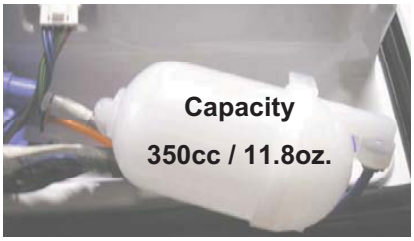


Flow Sensor allows Display Board Micom to monitor IM Fill and Water Dispenser Amounts. (See Wiring Diagram!)

Ice & Water Valves in Left Door




Water Reservoir




## WARRANTY

**LG ELECTRONICS U.S.A., INC.**
**LG REFRIGERATOR LIMITED WARRANTY - U.S.A.**

Should your LG Refrigerator ("Product") fail due to a defect in materials or workmanship under normal home use, during the warranty period set forth below, LG will at its option repair or replace the product. This limited warranty is valid only to the original retail purchaser of the product and applies only when purchased and used within the United States including U.S. Territories. Proof of original retail purchase is required to obtain warranty service under this limited warranty.

| WARRANTY PERIOD | | | |
|---|---|---|---|
| Refrigerator | Sealed System (Condenser, Dryer, Connecting Tube, Refrigerant and Evaporator) | | Linear Compressor |
| One (1) year from the date of original retail purchase | One (1) year from the date of original retail purchase | Seven (7) years from the date of original retail purchase | Ten (10) years from the date of original retail purchase |
| Parts and Labor (internal/functional parts only) | Parts and Labor | Parts only (Consumer will be charged for labor) | Part only (Consumer will be charged for labor) |

**Noises associated with normal operation and failure to follow instructions found in the use and care and installation guides or operating the unit in an unsuitable environment will not be covered under this warranty.**

- Replacement products and parts are warranted for the remaining portion of the original warranty period or ninety (90) days, whichever is greater.
- Replacement products and parts may be new or remanufactured.

**THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT ANY IMPLIED WARRANTY IS REQUIRED BY LAW, IT IS LIMITED IN DURATION TO THE EXPRESS WARRANTY PERIOD ABOVE. NEITHER THE MANUFACTURER NOR ITS U.S. DISTRIBUTOR SHALL BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY NATURE, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR PROFITS, OR ANY OTHER DAMAGE WHETHER BASED IN CONTRACT, TORT, OR OTHERWISE.** Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above exclusion or limitation may not apply to you. This warranty gives you specific legal rights and you may also have other rights that vary from state to state.

## WARRANTY

**THIS LIMITED WARRANTY DOES NOT COVER:**

1. Service trips to deliver, pick up, install, or repair the product; instruct the customer on operation of the product; repair or replace fuses or correct wiring or plumbing, or correction of unauthorized repairs/installation.
2. Failure of product to perform during power failures and interruptions or inadequate electrical service.
3. Damage caused by leaky or broken water pipes, frozen water pipes, restricted drain lines, inadequate or interrupted water supply or inadequate supply of air.
4. Damage resulting from operating the product in a corrosive atmosphere or contrary to the instructions outlined in the product owner's manual.
5. Damage to the product caused by accidents, pests and vermin, lightning, wind, fire, floods, or acts of God.
6. Damage resulting from misuse, abuse, improper installation, repair, or maintenance. Improper repair includes use of parts not approved or specified by LG.
7. Damage or failure caused by unauthorized modification or alteration, or if it is used for other than the intended purpose, or any water leakage where the unit was not properly installed.
8. Damage or failure caused by incorrect electrical current, voltage, or plumbing codes, commercial or industrial use, or use of accessories, components, or consumable cleaning products that are not approved by LG.
9. Damage caused by transportation and handling, including scratches, dents, chips, and/or other damage to the finish of your product, unless such damage results from defects in materials or workmanship and is reported within one (1) week of delivery (Call: 1-800-243-0000).
10. Damage or missing items to any display, open box, discounted, or refurbished product.
11. Products with original serial numbers that have been removed, altered, or can not be readily determined. Model and Serial numbers, along with original retail sales receipt, are required for warranty validation.
12. Increases in utility costs and additional utility expenses.
13. Replacement of light bulbs, filters, or any consumable parts.
14. Repairs when your product is used in other than normal and usual household use (e.g. commercial use, offices, and recreational facilities) or contrary to the instructions outlined in the product owner's manual.
15. Costs associated with removal of your product from your home for repairs.
16. The removal and reinstallation of the product if it is installed in an inaccessible location or is not installed in accordance with published installation instructions, including LG's owner's and installation manuals.
17. Shelves, door bins, drawers, handles, accessories, and other parts besidesÂthose that were originally included with this particular model.

**The cost of repair or replacement under these excluded circumstances shall be borne by the consumer.**

**For complete warranty details and customer assistance, please call or visit our website:**

Call 1-800-243-0000 (24 hours a day, 365 days a year) and select the appropriate option from the menu, or visit our website at **http://us.lgservice.com**

Or by mail: LG Customer Information Center:
P. O. Box 240007, 201 James Record Road Huntsville, Alabama 35813
ATTN: CIC

**Write your warranty information below:**

**Product Registration Information:**

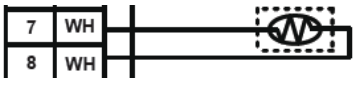
**Model:** _____

**Serial Number:** _____

**Date of Purchase:** _____

## REF Section

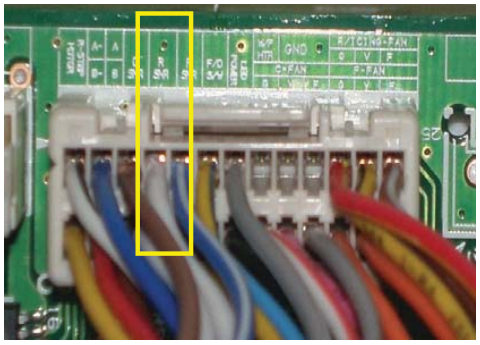
### REF Section Thermistor




**Refrigerator Sensor**
**41°F = 24KΩ @ 2.4$V_{DC}$**

**CON4 Pins 7 & 8**

## REF Section



Main PWB CON4

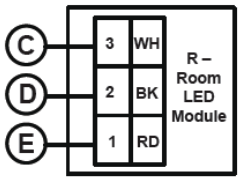
Refrigerator Temperature Sensor

| Temperature | Result |
|---|---|
| 23°F / -5°C | 38.5 ~ 36.5 kΩ |
| 32°F / 0°C | 30.5 ~ 29.5 kΩ |
| 41°F / 5°C | 24.5 ~ 23.5 kΩ |
| 50°F / 10°C | 20 ~ 19 kΩ |
| 59°F / 15°C | 16 ~15.5 kΩ |

| TEMP | RESISTANCE | VOLTAGE |
|---|---|---|
| -39°F (-40°C) | 225.1 kΩ | 4.48 V |
| -30°F (-35°C) | 169.8 kΩ | 4.33 V |
| -21°F (-30°C) | 129.3 kΩ | 4.16 V |
| -13°F (-25°C) | 99.30 kΩ | 3.95 V |
| -4°F (-20°C) | 76.96 kΩ | 3.734 V |
| 5°F (-15°C) | 60.13 kΩ | 3.487 V |
| 14°F (-10°C) | 47.34 kΩ | 3.22 V |
| 23°F (-5°C) | 37.55 kΩ | 2.95 V |
| 32°F (0°C) | 30 kΩ | 2.67 V |
| 41°F (5°C) | 24.13 kΩ | 2.40 V |
| 50°F (10°C) | 19.53 kΩ | 2.14 V |
| 59°F (15°C) | 15.91 kΩ | 1.89 V |
| 68°F (20°C) | 13.03 kΩ | 1.64 V |
| 77°F (25°C) | 10.74 kΩ | 1.45 V |
| 86°F (30°C) | 8.89 kΩ | 1.27 V |
| 95°F (35°C) | 7.40 kΩ | 1.10 V |
| 104°F (40°C) | 6.20 kΩ | 0.96 V |

## REF Section

REF LED




**LED Module**
**Pin 1 (E) – 12$V_{DC}$ Constant**
**Pin 2 (D) – Ground**
**Pin 3 (C) – Switched 12$V_{DC}$ from Door Switch / LED Module turns ON.**

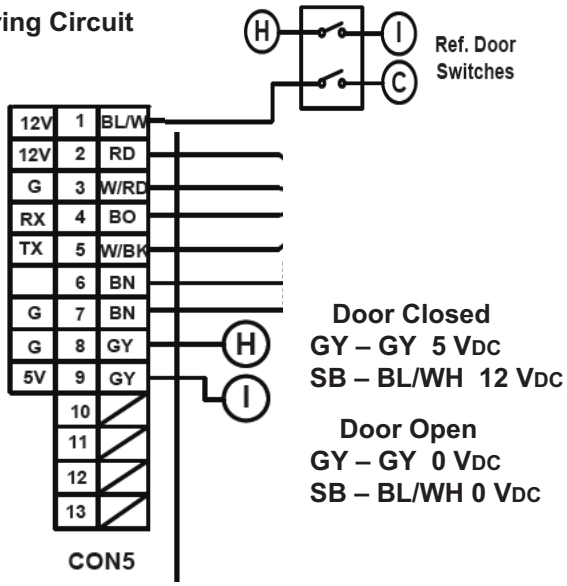
| Door Closed | Door Open |
|---|---|
| BK – WH 0 VDC | BK – WH 12 VDC |
| BK – RD 12 VDC | BK – RD 12 VDC |

## REF Section

**Both are Normally Closed Switches**
**GY – GY is a Sensing Circuit**
**(C)SB – BL/WH is the Triggering Circuit**

**Main PWB CON5**

**Refrigerator Door Switches**

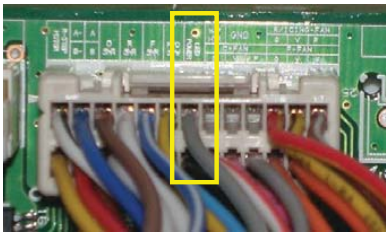



**Door Closed**
**GY – GY 5 VDC**
**SB – BL/WH 12 VDC**

**Door Open**
**GY – GY 0 VDC**
**SB – BL/WH 0 VDC**

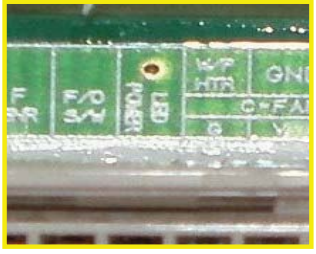
## REF Section

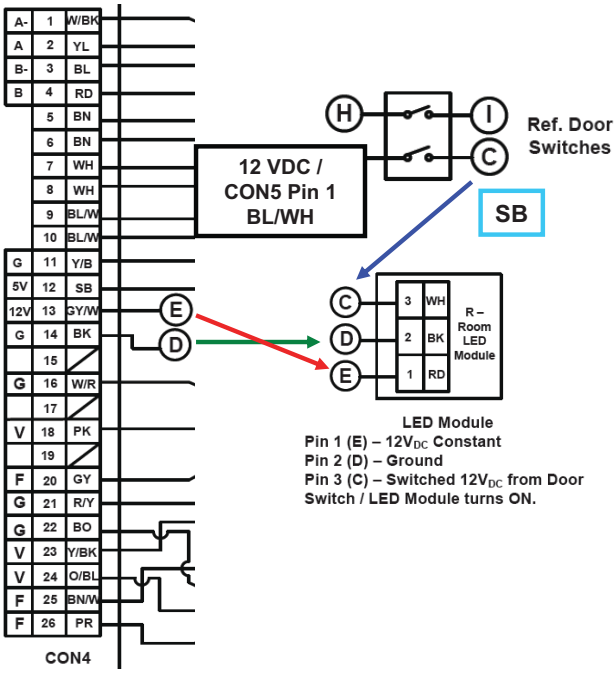
**REF Door Switch**



**CON4 LED Power**

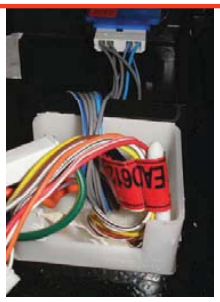
**GY/WH (12VDC) – BK (GND)**
**12 VDC Open or Closed**






**LED Module**
**Pin 1 (E) – 12VDC Constant**
**Pin 2 (D) – Ground**
**Pin 3 (C) – Switched 12VDC from Door Switch / LED Module turns ON.**

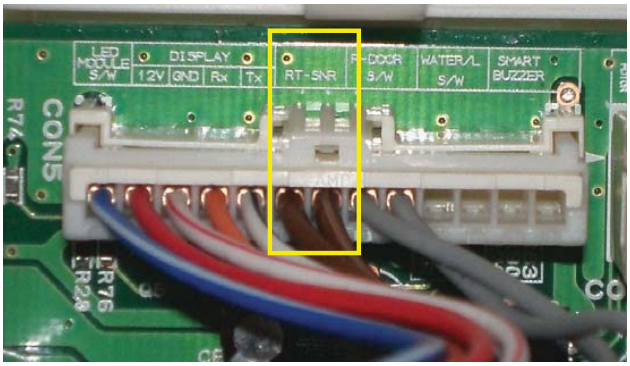
## REF Section

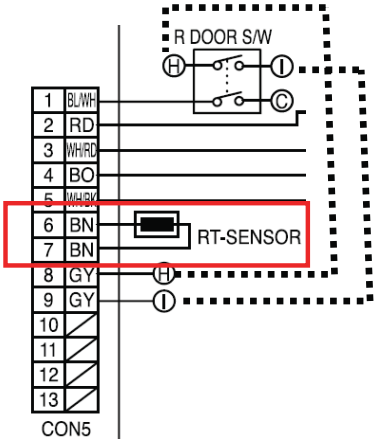


Room Thermistor

Same as REF Thermistor

| | | |
|---|---|---|
| 68°F (20°C) | 13.03 kΩ | 1.64 V |
| 77°F (25°C) | 10.74 kΩ | 1.45 V |
| 86°F (30°C) | 8.89 kΩ | 1.27 V |
| 95°F (35°C) | 7.40 kΩ | 1.10 V |
| 104°F (40°C) | 6.20 kΩ | 0.96 V |

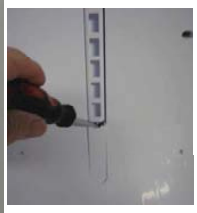



CON5 Room Temperature Thermistor (Sensor)

## REF Section

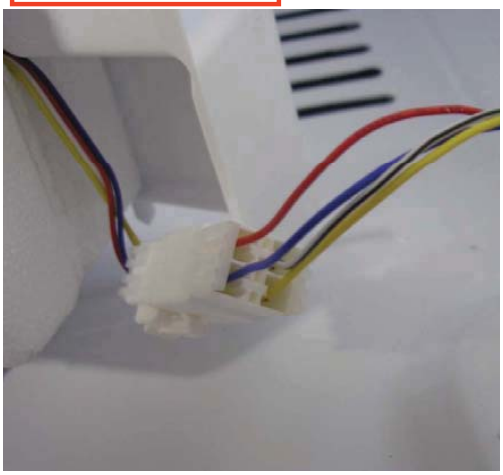

Remove Caps



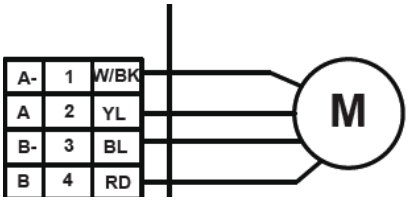
Remove White Screws Only

Pull to Remove Air Duct

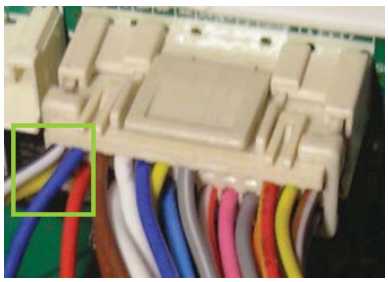
## REF Section



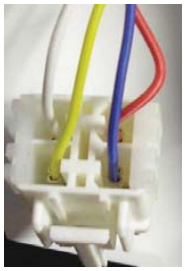
Stepping Motor Connector




Refrigerator Stepping Motor
1 to 3 / 350Ω ± 10%
2 to 4 / 350Ω ± 10%
(Both Stators +/- DCmv @ 25Hz in Test Mode)



CON 4
RD – YL 350Ω
BL – WH/BLK 350Ω



RD – YL 350Ω
BL – WH 350Ω

## REF Section

ICE ROOM AIR FLOW

Top

Supply Air Duct

Return Air Duct

## DOOR ASSEMBLY

Remove 4 phillips screws

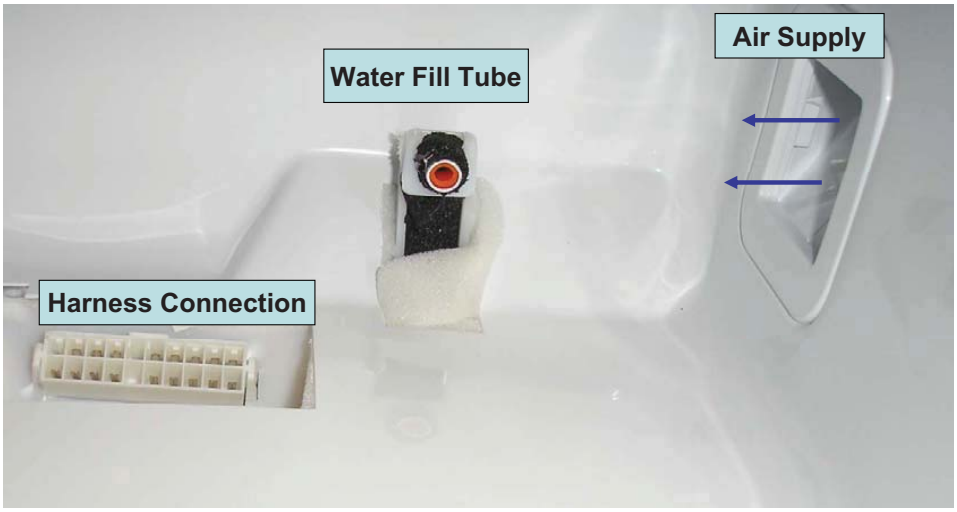
Pull UP & BACK

## DOOR ASSEMBLY

Disconnect Harness

DOOR ASSEMBLY

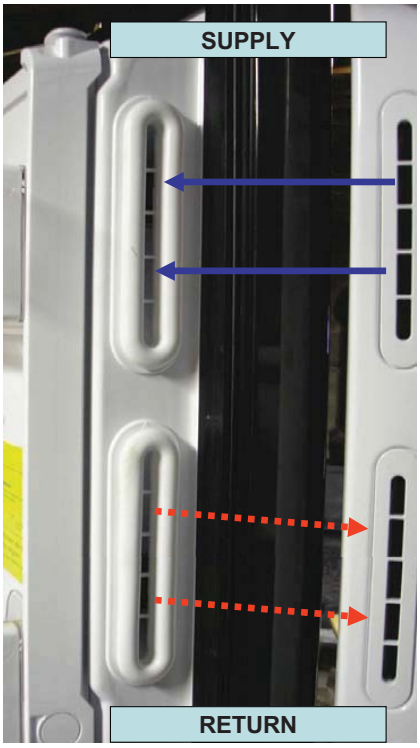
Ice Room Cavity TOP




DOOR ASSEMBLY

## DOOR ASSEMBLY

ICE ROOM AIR FLOW



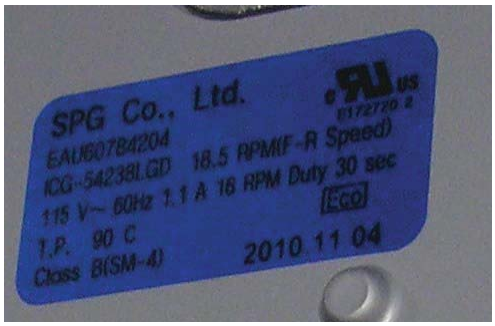

## AC MOTOR ASSEMBLY

## AC MOTOR ASSEMBLY

**Auger Motor**

**120 VAC Reversible Motor**

**Uses 14mfd Run Cap on Rear of Refrigerator**


## AC MOTOR ASSEMBLY

**Auger Motor**

**120 VAC Reversible Motor**

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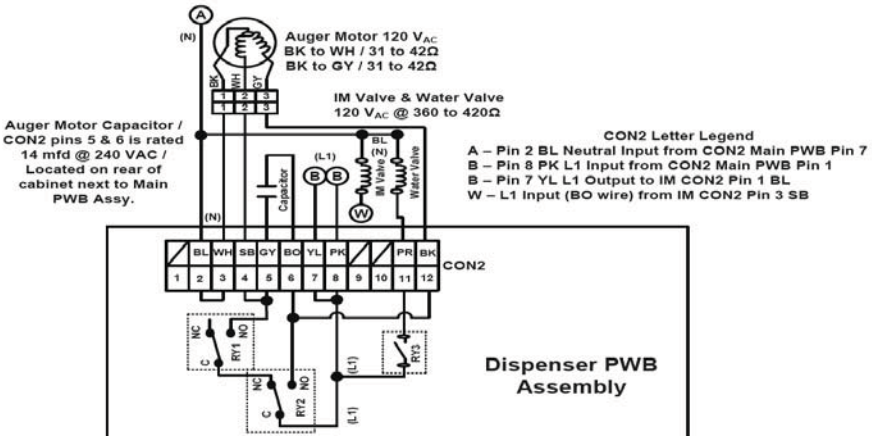
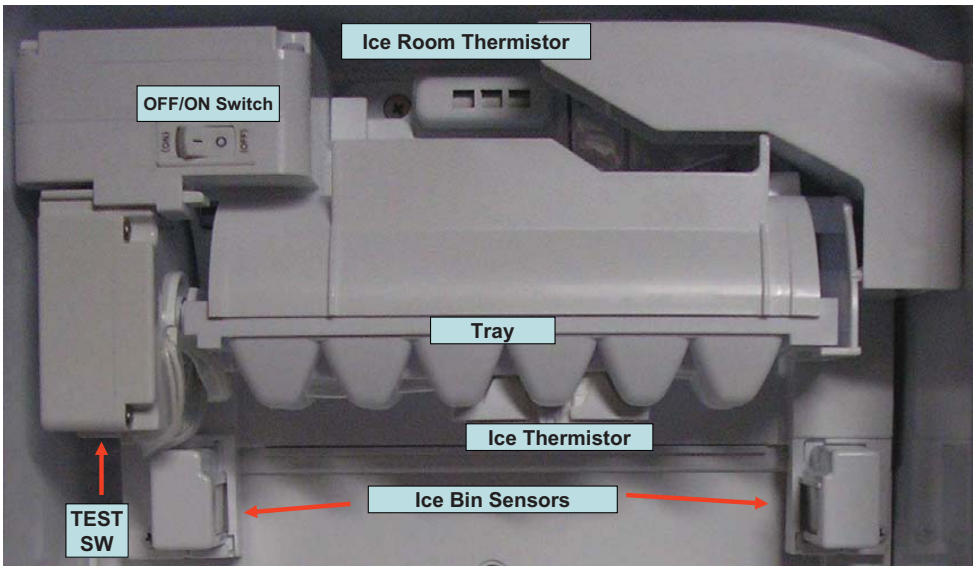


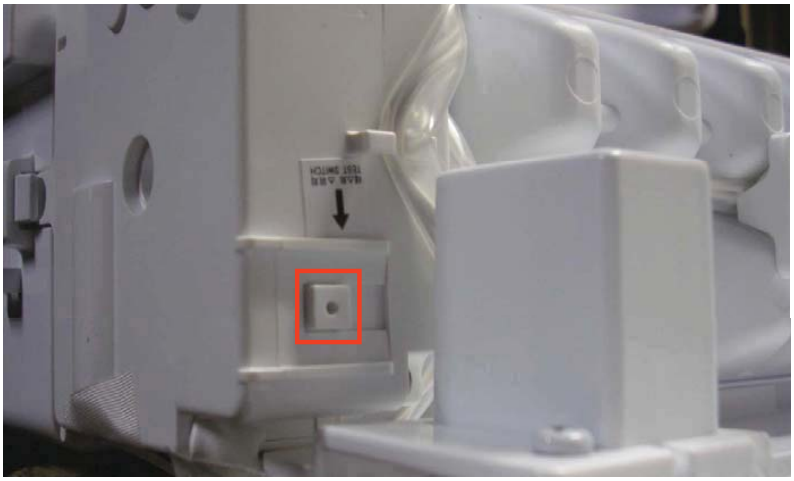
## ICE MAKER ASSEMBLY




## ICE MAKER ASSEMBLY


Senses Tray Temperature
(Set Point is 16º to 18ºF)

## ICE MAKER ASSEMBLY



**PRESS & HOLD Test Switch 3 Seconds to initiate Test Mode**

## ICE MAKER ASSEMBLY

### ICE MAKER FACTS

1. **Normal Cycle is 70 to 80 minutes PLUS Tray Temperature**
2. **Icemaker Tray must reach 16ºF to 18ºF sensed by tray sensor. (Note: Ice Room temperature should be 0º to 5ºF.)**
3. **Infrared ice level sensors stop ice production when ice bin is FULL! (See: Test Procedure)**
4. **Produces a minimum of 100 to 120 cubes per 24 Hours**
5. **Fill amounts range from 100ml to 110ml or 3.5 to 4.0 ounces. Fill monitored by Display PWB using Flow Meter.**
6. **Test Button on bottom of icemaker drive module can be PRESSED to start a cycle & perform a fill test.**
7. **Icemaker ON/OFF switch in OFF position**

   **a. Icemaker Stops**

   **b. Ice Room Temperature rises to approx. 20ºF (<32ºF)**

   **c. Cubes remain frozen!**

ICE MAKER ASSEMBLY

## MORE ICE MAKER FACTS

1. Icemaker Input Voltage is 12$V_{DC}$ from Display PWB. See CON102 pins 1 & 3 Display PWB Assembly Diagram.
2. Icemaker Motor operates on 12$V_{DC}$
3. Icemaker communicates to Display PWB thru 5$V_{DC}$ signals
4. No Components of the Icemaker are replaceable
5. Replace Icemaker as an assembly
6. Troubleshooting is simple!
7. Reminder: Icemakers require water, proper temperature & time to produce ice cubes!!

ICE MAKER ASSEMBLY

## Troubleshooting

**No Ice or Not Enough Ice**

1. Is the ON/OFF switch pressed to ON?
2. Is the water supply valve turned ON?
3. Measure the Ice Room Temperature; Is it between 0º to 5ºF? If no, check freezer temp setting & airflow!
4. Is there water (or frozen cubes) in the tray? If no, see Next Slide for Failure Code *ER-gF*
5. Press the Test Switch: Does the tray turn and does it fill with water? If the icemaker harvests and fills, the Icemaker is OK!! If no, see Next Slide for Failure Code *ER-It*
6. Perform Ice Detector Sensing Circuit Test (6 Slides forward!)

ICE MAKER ASSEMBLY

## Icemaker Failure Codes

**Press *ICE PLUS & FREEZER* Buttons Simultaneously**
**If either Failure Code Appears follow Test Procedures!**


**Harvest Error**
**Motor did not run or turn the tray!**


**Fill Error**
**Water Fill Not Sensed!**

ICE MAKER ASSEMBLY


**Harvest Error**
**Motor did not run or turn the tray!**

**Press the Test Button / IF icemaker does not run (turn tray)**
**perform 12V$_{DC}$ input test (see Next Slide)!**

## ICE MAKER ASSEMBLY


**12V$_{DC}$ Input Voltage Test**

1) **Place meter leads between WH & PR on the AC Motor Assembly Connector.**
2) **If 12V$_{DC}$ is present, replace the Icemaker Assembly!**

## ICE MAKER ASSEMBLY


**Fill Error**
**Water Fill Not Sensed!**

**Press the Test Button / IF Icemaker <u>Does Not Fill</u>**

1) **Test IM Valve & Pilot Valve (See Wiring Diagrams)**
2) **Test 120V$_{AC}$ outputs from Icemaker / Test 120V$_{AC}$ from Main PWB to Pilot Valve. (See Wiring Diagrams)**
3) **Continued Next Slide**

## ICE MAKER ASSEMBLY


**Fill Error**
**Water Fill Not Sensed!**

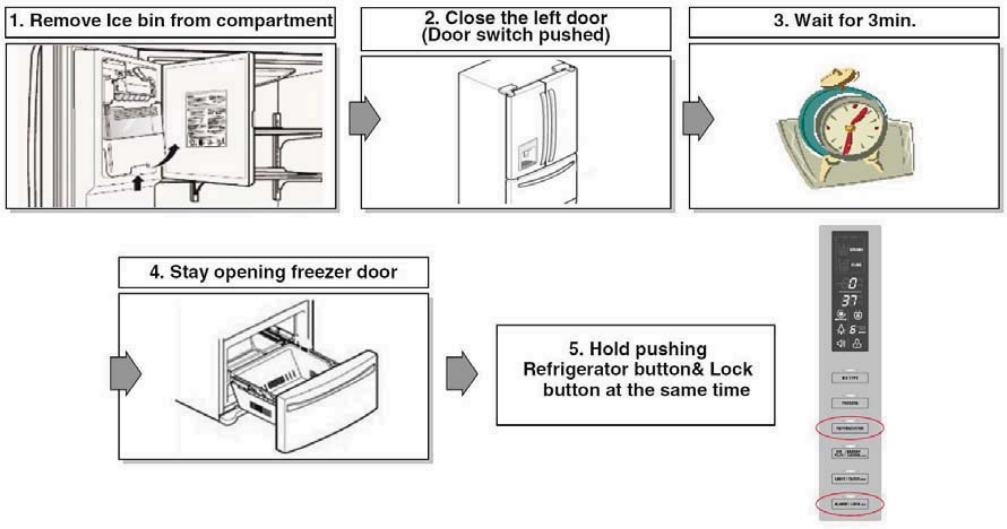
**Press the Test Button / IF Icemaker <u>Does Fill</u>**

**3) Test for pulsing 2 to 5VDC from Flow Meter @ Small Connector Left Door Hinge between BR/WH & GY/WH wires. (See Wiring Diagrams)**

**4) In no pulsing VDC above, test for 5VDC from YL to BR/WH**

## ICE MAKER ASSEMBLY

**2st STEP (Ice-detecting sensor Diagnosis)**



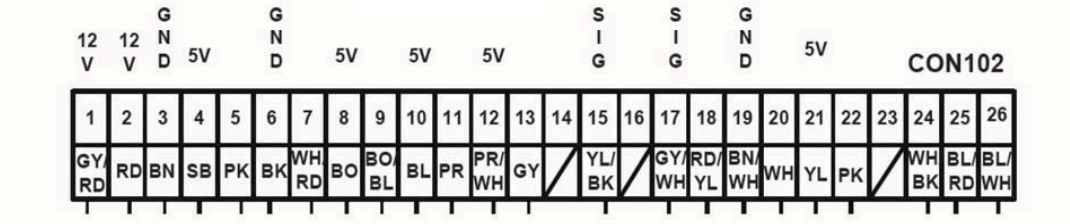

If "ETY" is shown on the display after the procedure above, Ice-detecting sensor is normal.
If "FULL" is shown on the display after the procedure above, Ice-detecting sensor is abnormal.
※ *ETY = empty*

## Advanced Icemaker Troubleshooting on Display PWB Assembly

**Listed Below are the 5VDC signals from the IM to Display PWB / These tests require the technician to remove the Dispenser Recessed Assembly!**

**Twist Tray Icemaker Testing**

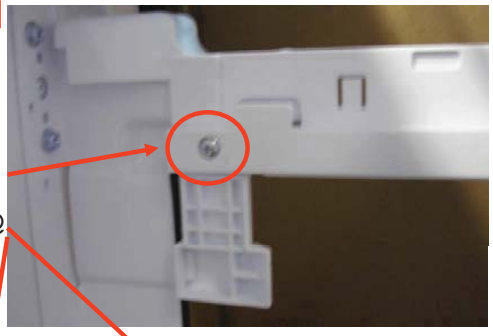
| CON102 Display PWR BD Inputs from IM | Pin No. | Wire Color | IM Switch OFF | IM Switch ON | Error Code Harvest Error | Error Code Fill Error | Bucket Full |
|---|---|---|---|---|---|---|---|
| R/D State | 5 | PK | 0V | 5V | 5V | 5V | 5V |
| I/M Test | 7 | WH/RD | 0V | 5V | 5V | 5V | 5V |
| IM State 1 Harvest | 9 | BO/BL | 5V | 0V | 5V | 5V | 0V |
| IM State 2 Fill | 11 | PR | 5V | 0V | 0V | 5V | 0V |
| IM State 3 Ice Making | 13 | GY | 5V | 0V | 0V | 0V | 5V |
| | | | | | ER-It | ER-gF | |
| Note: GND Reference for all VDC | 3 | BN | | | | | |
| 12 VDC Supply | 1 | GY/WH | | | | | |




**Freezer Section**

**Removing Freezer Door**

1) **Remove the Bin**
2) **Remove screw Rte Rear**
3) **Remove 2 WH screws @ front of slide**
4) **Lift door to remove**

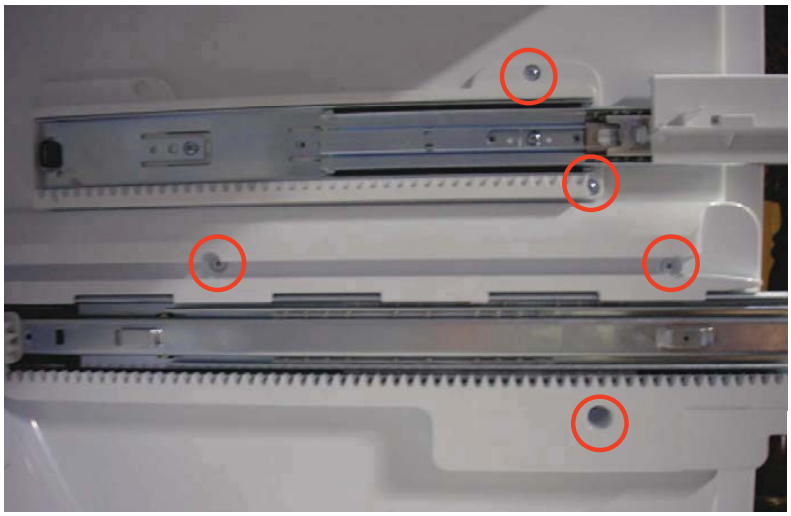


**Remove Screw**

**Remove White Screws (Right & Left Rails)**

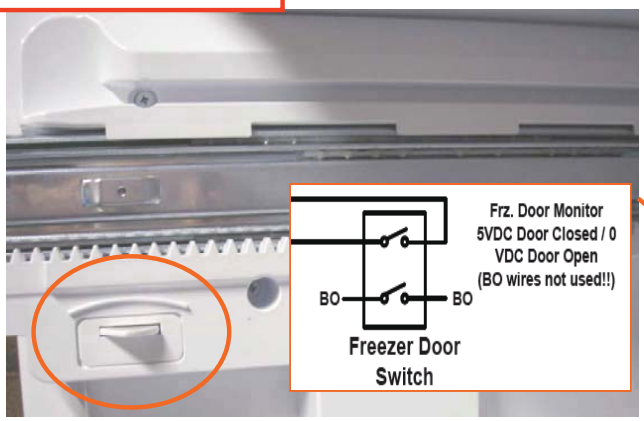
## Freezer Section

Remove Both Side Rails (Basket & Drawer)



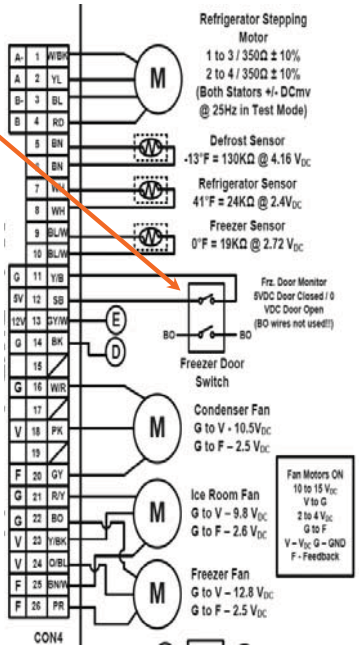
Remove circled screws.

## Freezer Section



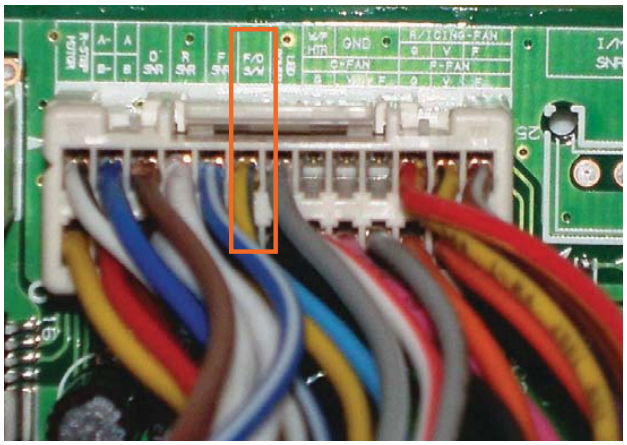

Freezer Door Switch

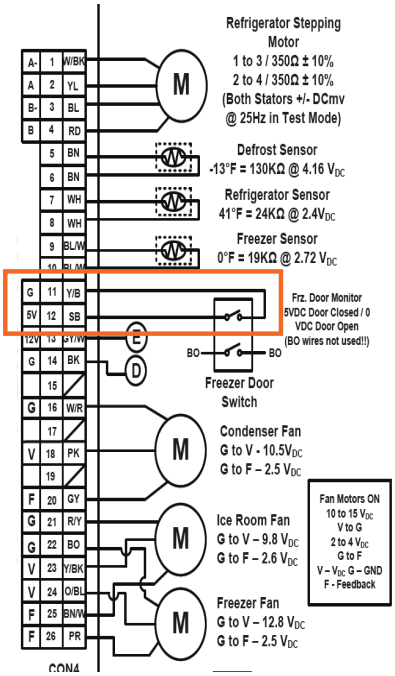
NORMALLY CLOSED



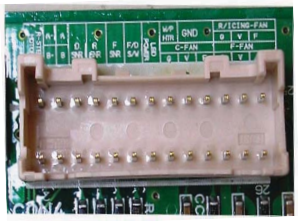
## Freezer Section

### Freezer Door Switch

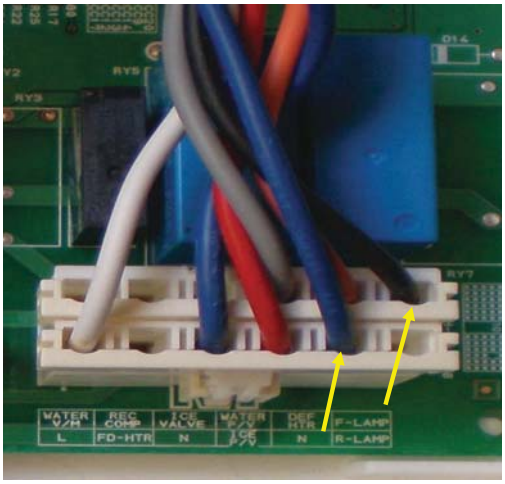





**YL/BL – SB**
**0 VDC – Door Open**
**5 VDC – Door Closed**



## Freezer Section



**Door Open BK – BL =120 VAC**

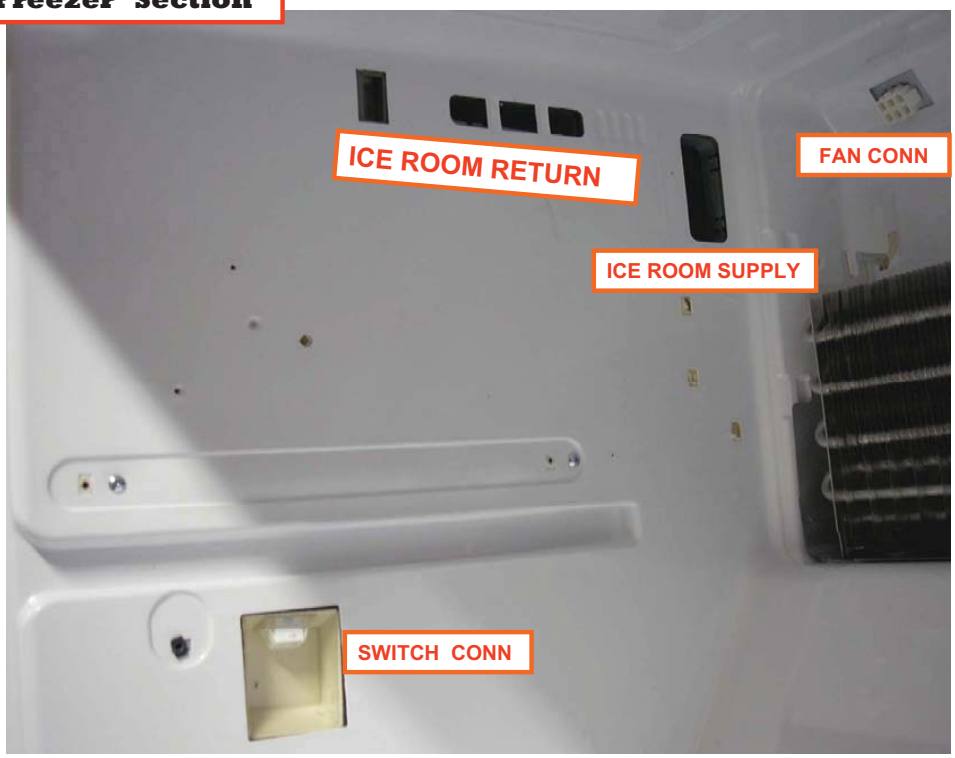
Connector in Freezer

**Max 60 Watt**

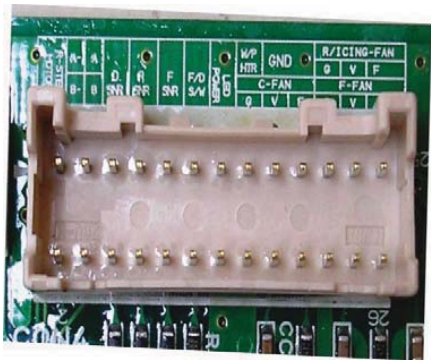
## Freezer Section

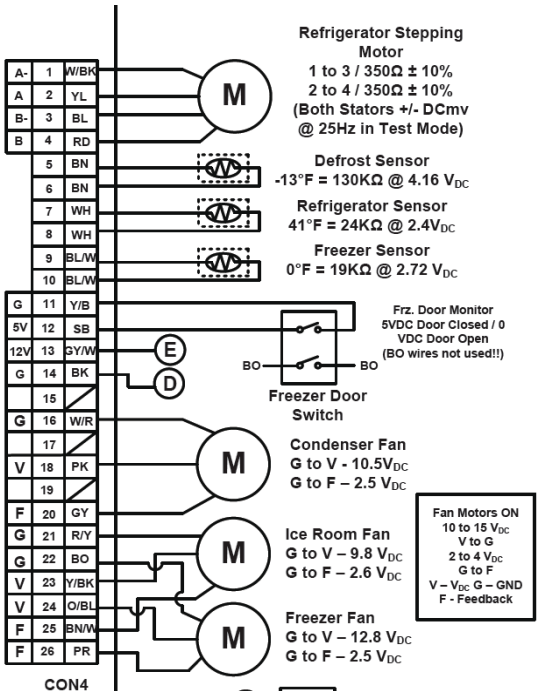
To remove REAR PANEL:
After Removing Side Rails-
Remove 1 Screw – Pull on Panel

## Freezer Section



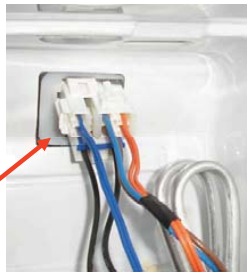
## CON4 MAIN PWB





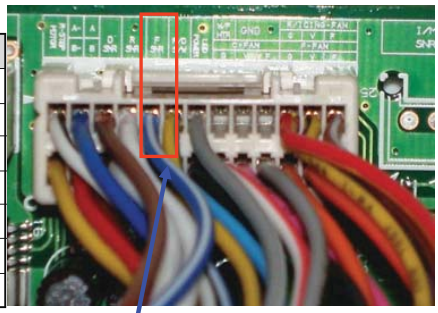

## Freezer Section

Freezer Thermistor



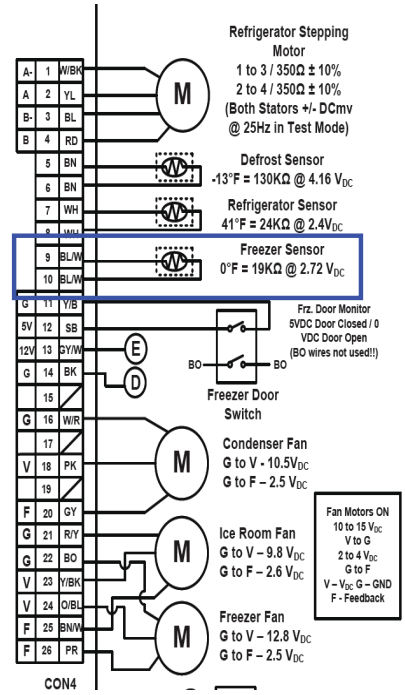
BL – BL

| (1) To (2) | Result |
|---|---|
| -22°F / -30°C | 40.5 ~ 38.5 kΩ |
| -13°F / -25°C | 30.5 ~ 28.5 kΩ |
| -4°F / -20°C | 23 ~ 21.5 kΩ |
| 5°F / -15°C | 17.5 ~ 16.5 kΩ |
| 14°F / -10°C | 13.5 ~ 12.5 kΩ |
| 23°F / -5°C | 10.5 ~ 9.5 kΩ |
| 32°F / 0°C | 8 ~7.5 kΩ |



CON4
BL/WH – BL/WH

## Freezer Section




| TEMP | RESISTANCE | VOLTAGE |
|---|---|---|
| -39°F (-40°C) | 225.1 kΩ | 4.48 V |
| -30°F (-35°C) | 169.8 kΩ | 4.33 V |
| -21°F (-30°C) | 129.3 kΩ | 4.16 V |
| -13°F (-25°C) | 99.30 kΩ | 3.95 V |
| -4°F (-20°C) | 76.96 kΩ | 3.734 V |
| 5°F (-15°C) | 60.13 kΩ | 3.487 V |
| 14°F (-10°C) | 47.34 kΩ | 3.22 V |
| 23°F (-5°C) | 37.55 kΩ | 2.95 V |
| 32°F (0°C) | 30 kΩ | 2.67 V |
| 41°F (5°C) | 24.13 kΩ | 2.40 V |
| 50°F (10°C) | 19.53 kΩ | 2.14 V |
| 59°F (15°C) | 15.91 kΩ | 1.89 V |
| 68°F (20°C) | 13.03 kΩ | 1.64 V |
| 77°F (25°C) | 10.74 kΩ | 1.45 V |
| 86°F (30°C) | 8.89 kΩ | 1.27 V |
| 95°F (35°C) | 7.40 kΩ | 1.10 V |
| 104°F (40°C) | 6.20 kΩ | 0.96 V |

## Freezer Section

**Defrost Control**

**BK – BK Heater**

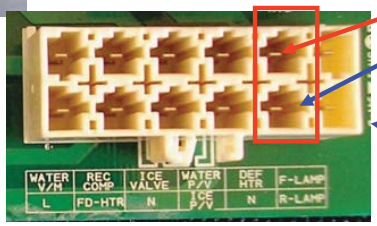
**BO – BO Defrost Thermistor**

**Check the Blue to Orange.**

<CON3>

**BL – BN**

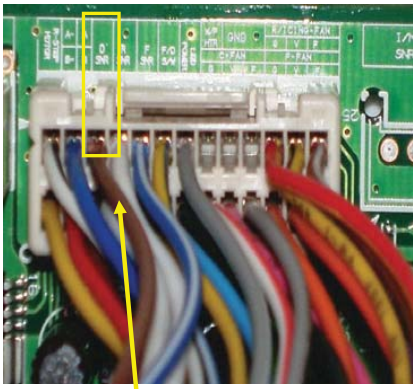
**Thermal Fuse**




**120 VAC**

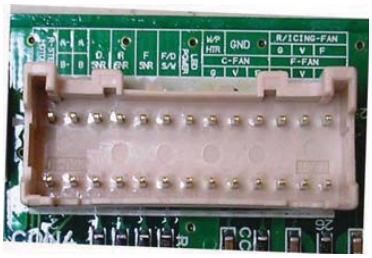
**CON3 Main PWB**

## Freezer Section



BN - BN

Defrost Thermistor



| TEMP | RESISTANCE | VOLTAGE |
|---|---|---|
| -39°F (-40°C) | 225.1 kΩ | 4.48 V |
| -30°F (-35°C) | 169.8 kΩ | 4.33 V |
| -21°F (-30°C) | 129.3 kΩ | 4.16 V |
| -13°F (-25°C) | 99.30 kΩ | 3.95 V |
| -4°F (-20°C) | 76.96 kΩ | 3.734 V |
| 5°F (-15°C) | 60.13 kΩ | 3.487 V |
| 14°F (-10°C) | 47.34 kΩ | 3.22 V |
| 23°F (-5°C) | 37.55 kΩ | 2.95 V |
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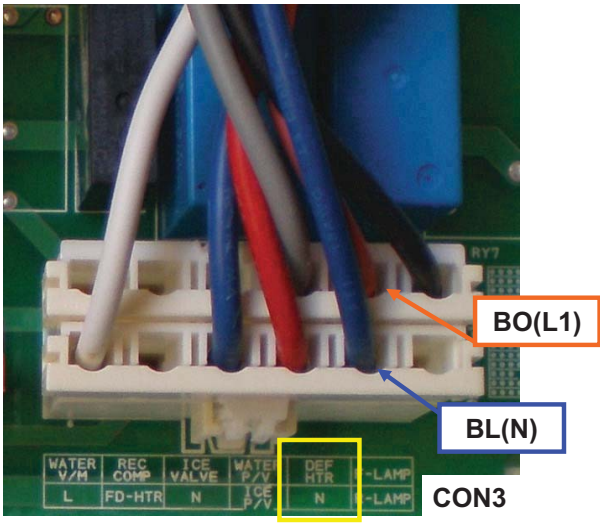
## Freezer Section

### THERMAL FUSE & DEFROST HEATER

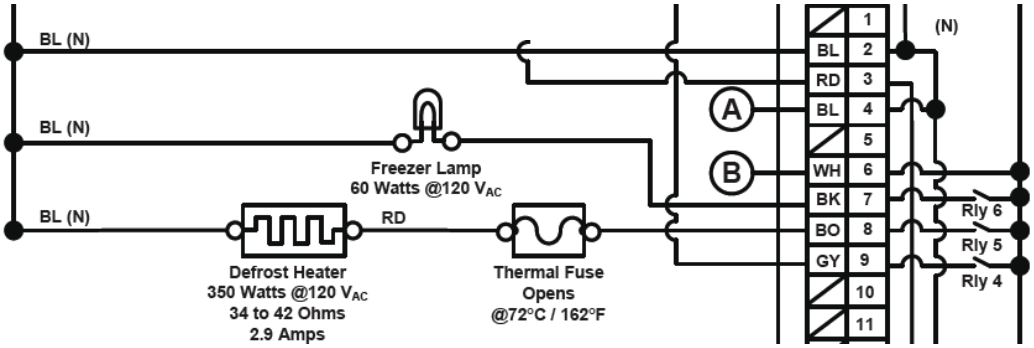



CON3

BL(N) to BO(L1) – 120 VAC

**Freezer Section**

## THERMAL FUSE & DEFROST HEATER

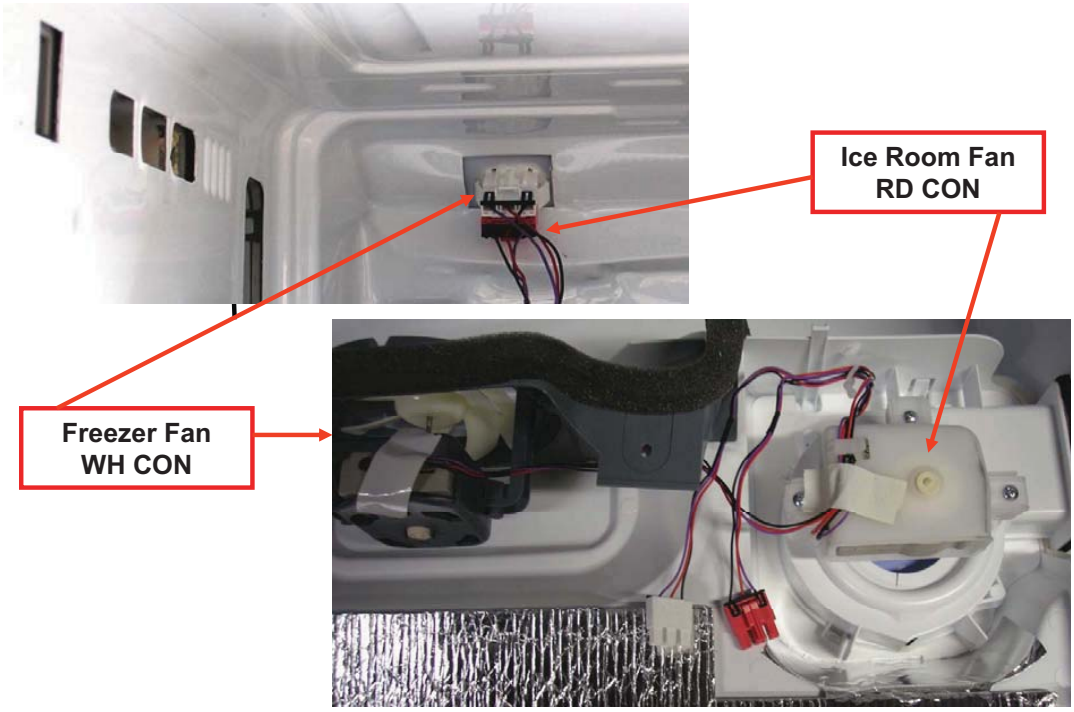



Main PWB CON3

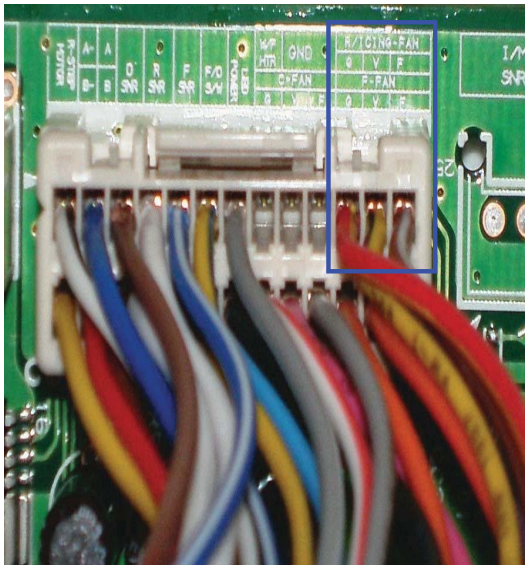
**To Test:**

1) Disconnect Power
2) Disconnect CON3 on the Main PWB
3) Ohm Test Heater & Fuse from Pins 2 to 8 – (34 to 42Ω)
4) Reconnect CON3 & Reconnect Power
5) Press Test Button on Main PWB 3 Times
6) Place Amp Meter around BO – (± 3 amps )

**Freezer Section**

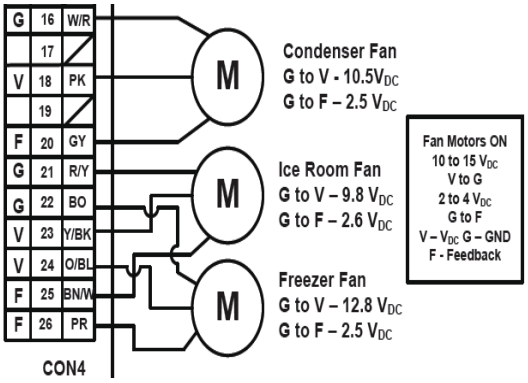


## Freezer Section




### ICING FAN

RD/YL - YL/BK = 9 to 15 V (G – V)
RD/YL - BN/WH = 2.5 V (G – F)



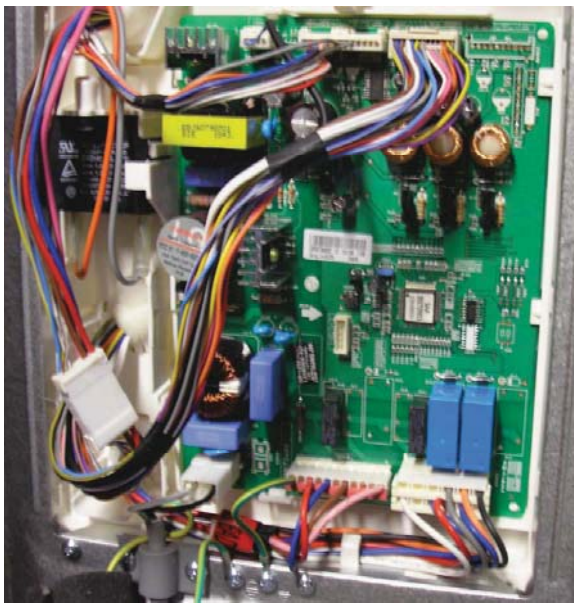

### FREEZER FAN

BO – O/BL = 12 to 15 V (G – V)
BO – PR = 2.5 V (G – F)

G-V = Supply Voltage
G- F = Signal Voltage

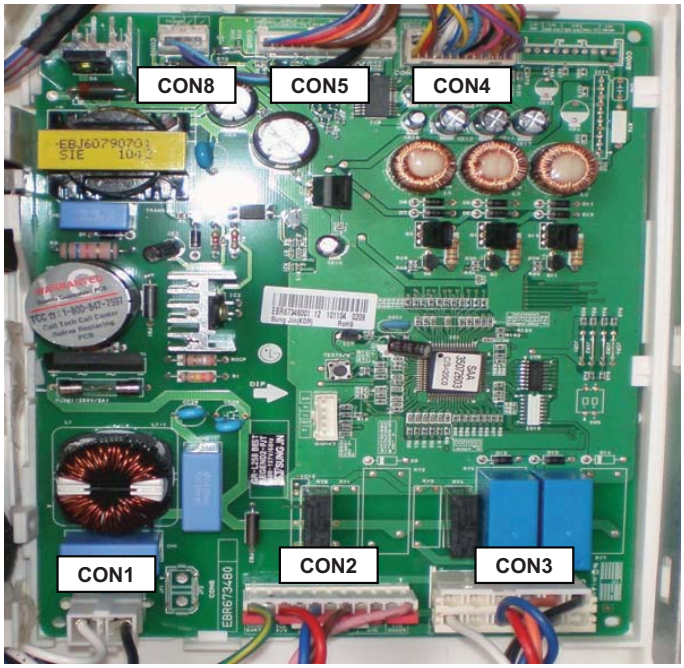
## REAR

**Main PCB Assembly**
**Loc 500A EBR67348001**

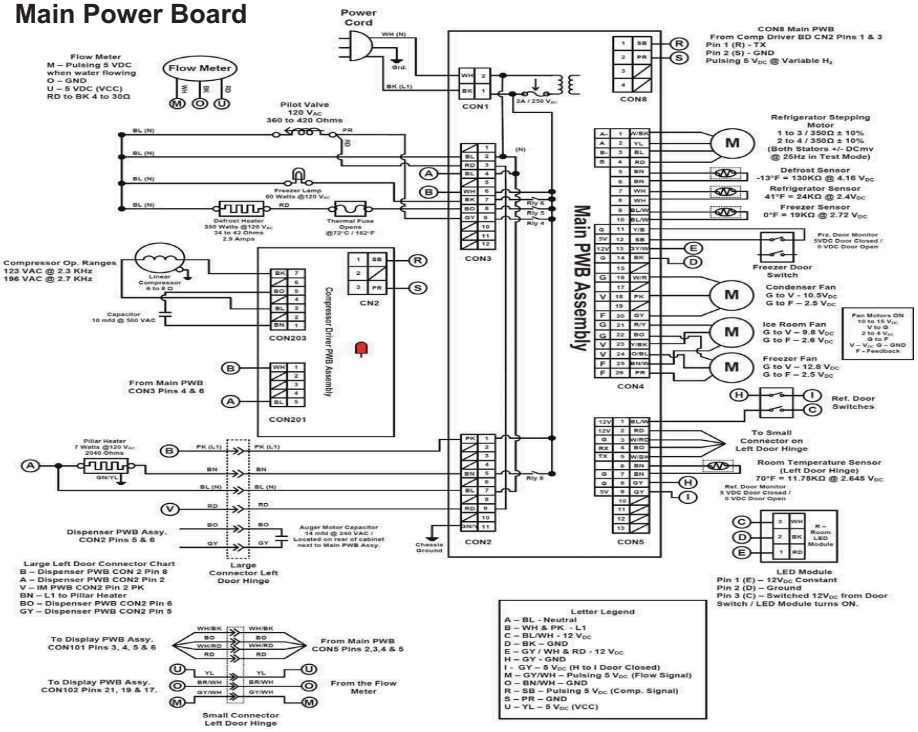


REAR

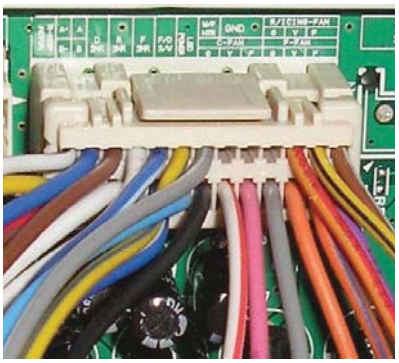
## Main PCB Assembly
## Loc 500A EBR67348001

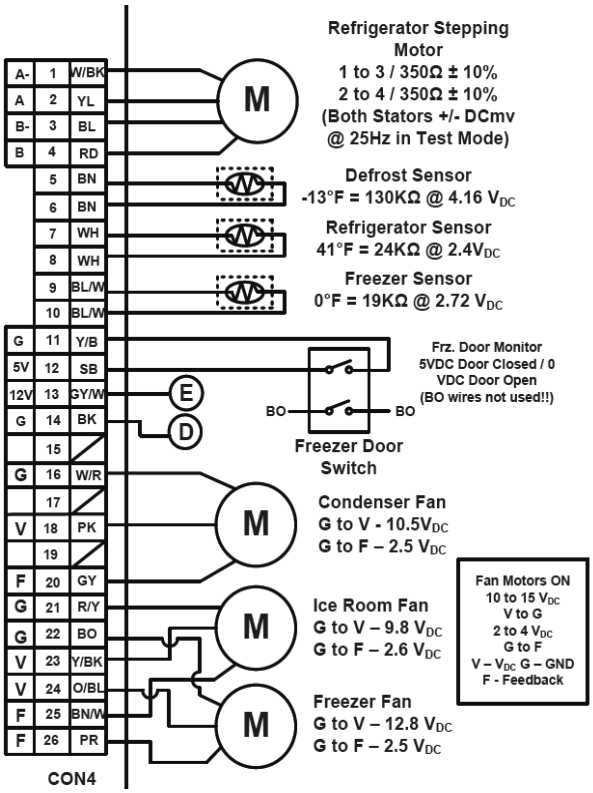



## Main Power Board



## CON4 MAIN PWB

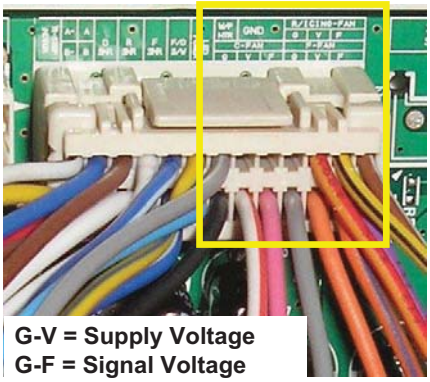




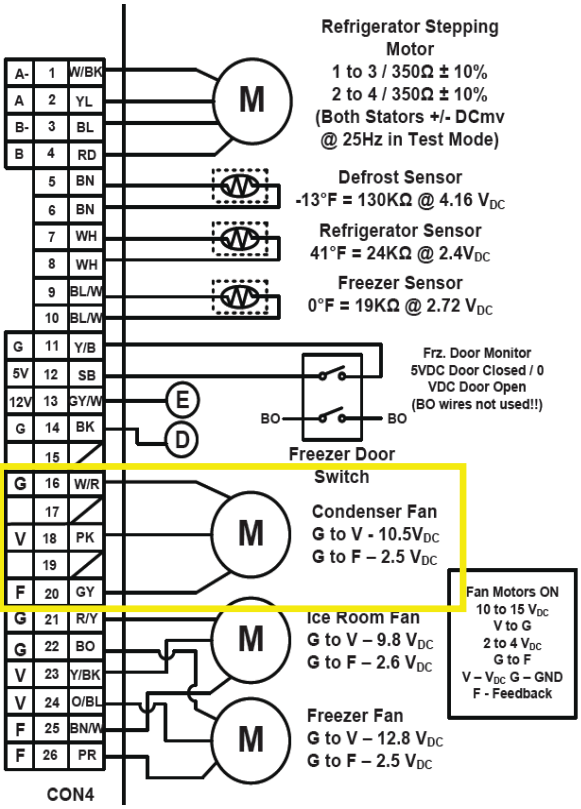

**REAR**

## CON4 Main PWB Fans

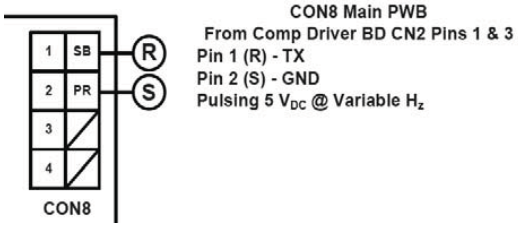
Condenser Fan

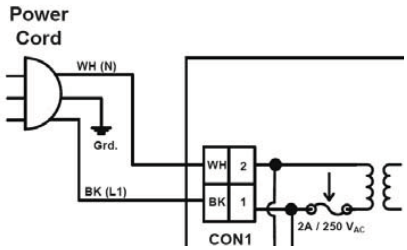


G-V = Supply Voltage
G-F = Signal Voltage



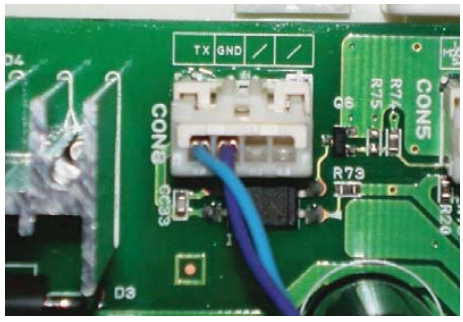
## CON 8 & 1



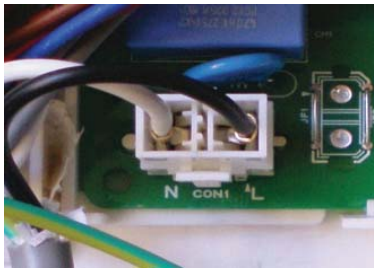




120 VAC SUPPLY

CON 8




CON 1



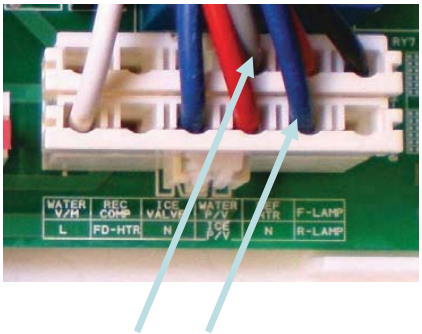

REAR

## WATER INLET VALVE

WATER FLOW SENSOR
4 – 30 Ω RD - BK

AJU72992601 - Valve Assembly

CON 3

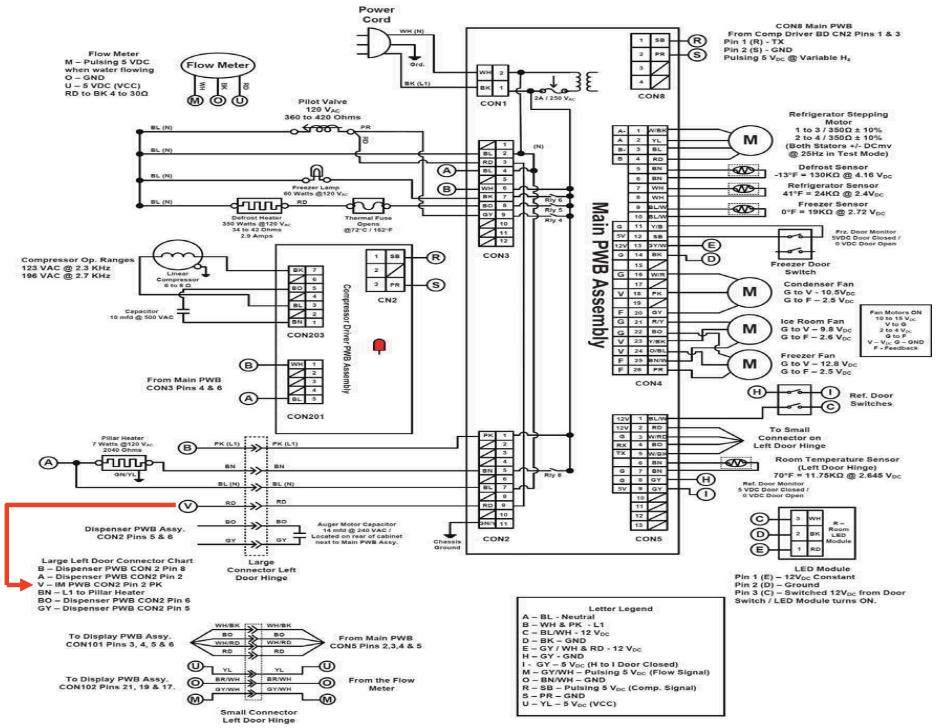



GY – BL = 120 VAC
360 – 420 Ω

NOTE: GY connects to PR
at the Valve

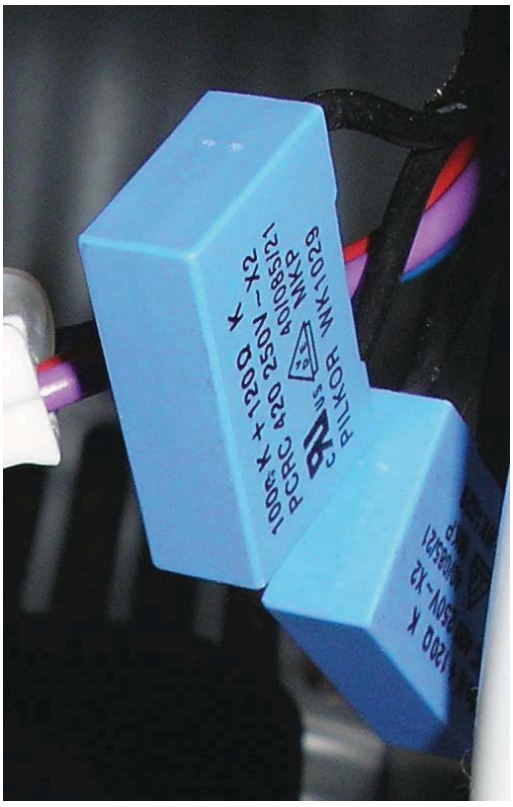
RD also connects
to the Valve

See Diagram




**NOISE FILTER**

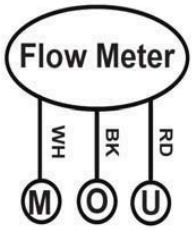
**Capacitors on Pilot Valve A/C Connections**



**REAR**

## WATER INLET VALVE and NOISE FILTER

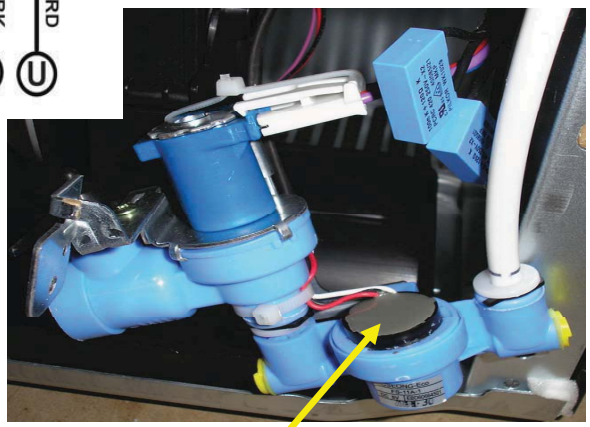
Flow Meter
M – Pulsing 5 VDC when water flowing
O – GND
U – 5 VDC (VCC)
RD to BK 4 to 30Ω



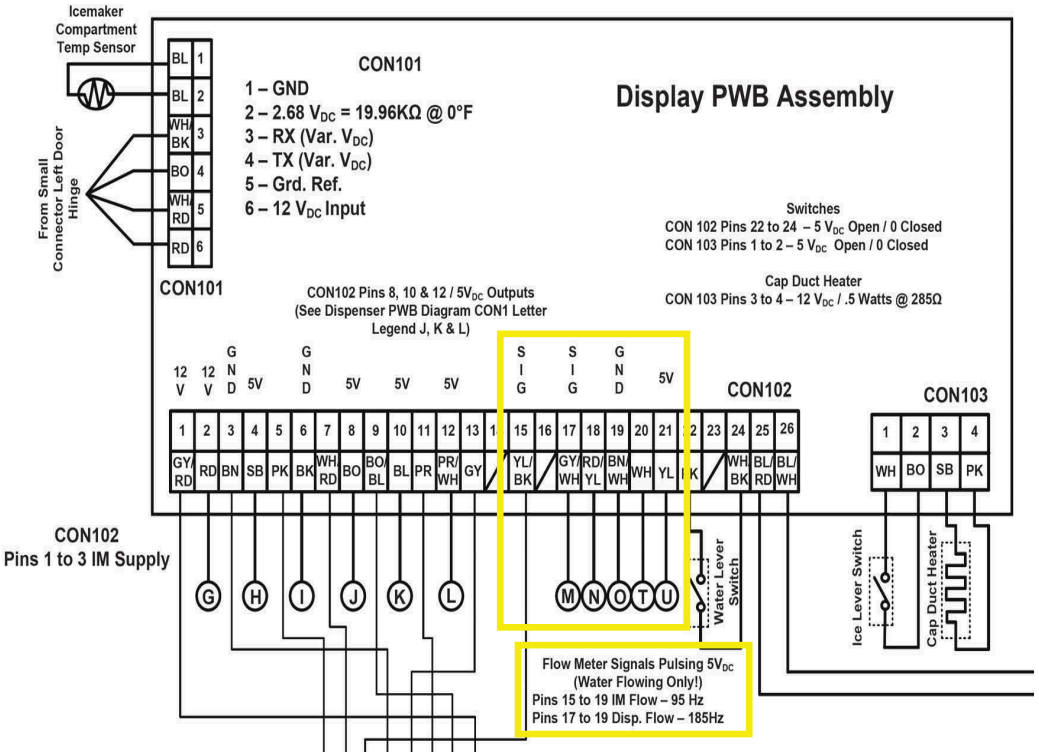

**Flow Meter for I/M water flow can be checked at top left hinge small connector. GR/WH & BR/WH Pulsing 5VDC**

**Flow Meter can also be checked at Display Assem on CON102**

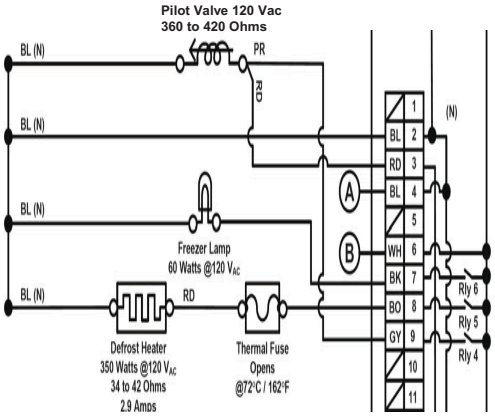
Flow Meter Signals Pulsing $5V_{DC}$
(Water Flowing Only!)
Pins 15 to 19 IM Flow – 95 Hz
Pins 17 to 19 Disp. Flow – 185Hz



**WATER FLOW SENSOR**



## CON 3 Main Bd




### Component Energized

**Blue 2 to Red** 120 VAC = Pilot Valve I/M

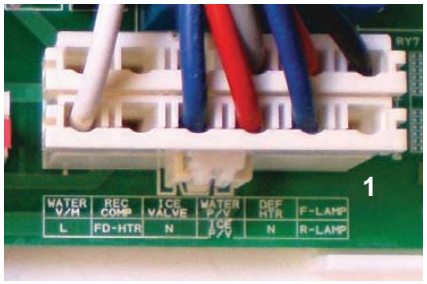
**Blue 2 to Gray changes to Purple** 120VAC = Pilot Valve Dispenser

**Blue 4 to White** 120 VAC = Compressor

**Blue 2 to Black** 120 VAC = Freezer Lamp

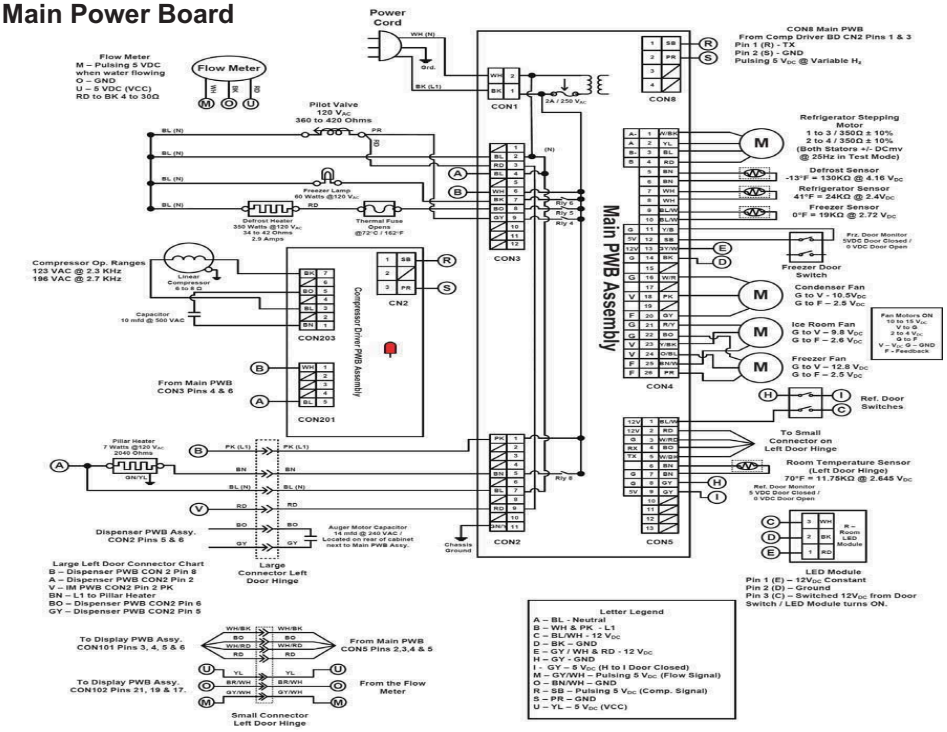
**Blue 2 to Orange** 120 VAC = Defrost

**Blue 2 to Gray** 120 VAC = Water Valve

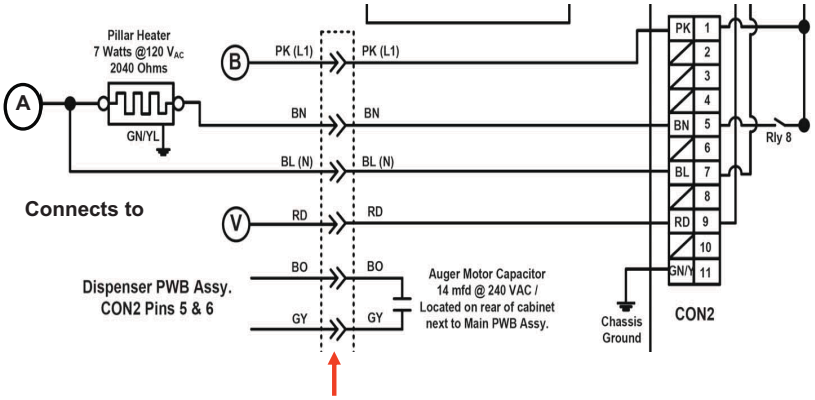



Con 3

## Main Power Board



## CON2 MAIN PCB




PINK = L1

BR to BL = 120 VAC
Pillar Heater

Blue = Neutral

Red to BL = 120 VAC
Pilot Valve

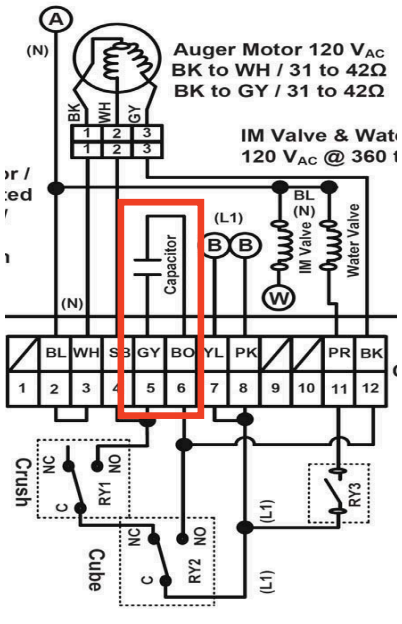
**Large Left Door Connector Chart**
B – Dispenser PWB CON 2 Pin 8
A – Dispenser PWB CON2 Pin 2
V – IM PWB CON2 Pin 2 PK
BN – L1 to Pillar Heater
BO – Dispenser PWB CON2 Pin 6
GY – Dispenser PWB CON2 Pin 5

**REAR**

## Auger Motor Capacitor

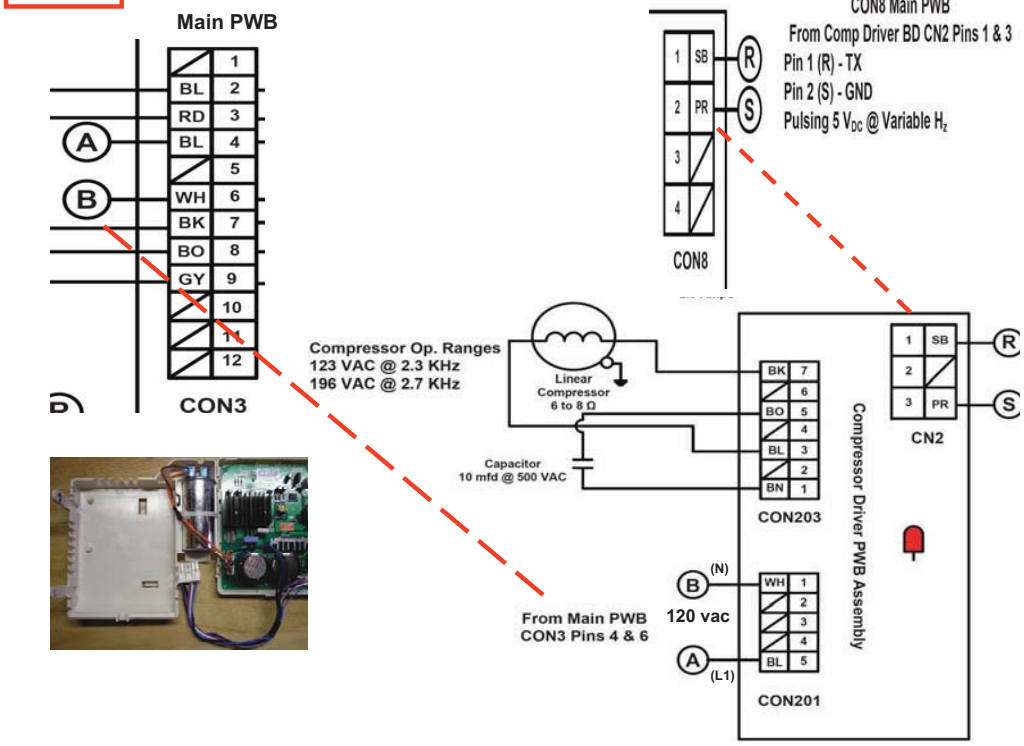
14 mfd @ 240 vac - located on
rear of cabinet next to Main PCB


## Dispenser PCB CON 2
## Pins 5 & 6



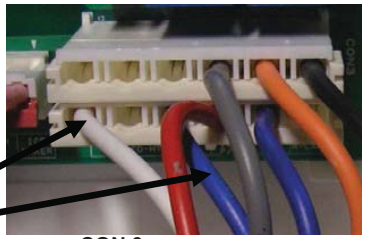
REAR

## Inverter Board for Linear Compress





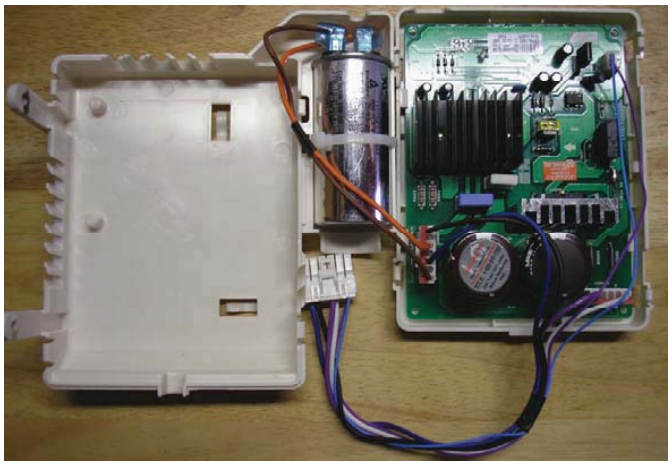

REAR



CON 3

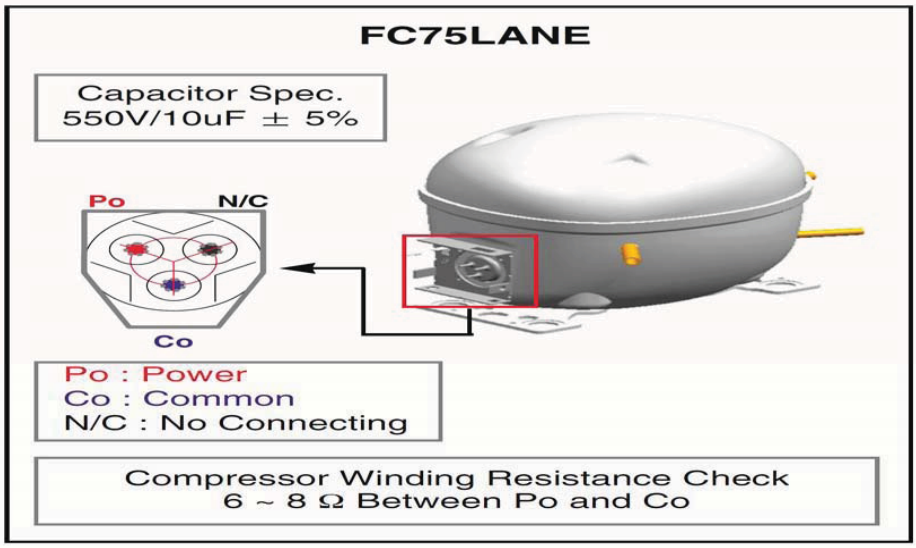
120 VAC

0 – 5 VDC Pulsing Signal



ABQ73004302 Case Assm, PCB

## Error Codes and Troubleshooting the Linear Compressor



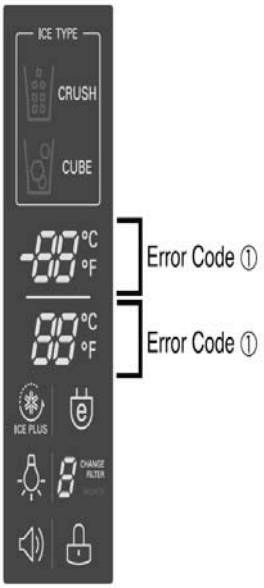

## Error Codes and Troubleshooting

**Error Code Display**

**3 hours before the error is displayed: Press *Ice Plus* and *Freezer* simultaneously for Error Display.**

**3 hours after the error all errors except "Er rt", "Er gF" and "Er It" will display automatically. To display these "non-critical" Error Codes ("") you must press *Ice Plus* & *Freezer* to recall these errors.**

**Note: "Er rt", "Er gF" & "Er It" DO NOT display automatically!! Press *Ice Plus* & *Freezer*!**



## Error Display

N/A on LFX25976

| NO | Error Detection Category | Error Display | | Error Generation Factors | Remark |
|---|---|---|---|---|---|
| | | Freezer Temperature | Freezer Temperature | | |
| 1 | Normality | | | None | Normal operation of Display |
| 2 | Freezer Sensor Error | Er | FS | Short or Disconnection of Freezer Sensor | Check each sensor and its connector. |
| 3 | Refrigerator Sensor Error | Er | rS | Short or Disconnection of Refrigerator Sensor | |
| 4 | Defrosting Sensor Error | Er | dS | Short or Disconnection of Defrosting Sensor | |
| 5 | Icing Sensor Error | Er | IS | Short or disconnection of the sensor about Ice maker (Icing sensor, Ice maker sensor) | |
| 6 | Pantry sensor error | Er | SS | Short or Disconnection of Pantry Sensor | |
| 7 | Room Temp Sensor Error | Er | rt | Short or Disconnectoin of Room temp.sensor | |
| 8 | Ice maker kit defect | Er | It | Other Electric system error such as moter, gear, Hall IC, operation circuit within I/M kit | When the ice does not drop even when the I/M Test S/W is pressed (same as model applied Twisting Ice Maker before) |
| 9 | Flow Meter(Sensor) Defect | Er | gF | Error of flow meter or water input or low water pressure | Error of flow meter or water input or low water pressure or flow meter connection |
| 10 | Poor Defrosting | Er | dH | Even though it is passed 1 hour since then Defrosting, if Defrosting sensor is not over 46°F(8°C), it is caused | Temperature Fuse Disconnection, Heater disconnection, DRAIN Jam, Poor Relay for Heater |
| 11 | Abnormality of BLDC FAN Motor for Ice Making | Er | IF | It is caused when feedback signal isn't over 65 seconds during BLDC FAN motor operating | Poor BLDC Motor connection, DRIVE IC, and TR |
| 12 | Abnormality of BLDC FAN Motor for Freezer | Er | FF | It is caused when feedback signal isn't over 65 seconds during BLDC FAN motor operating | Poor BLDC Motor connection, DRIVE IC, and TR |
| 13 | Abnormality of BLDC FAN MOTOR For Refrigerator | Er | rF | It is caused when feedback signal isn't over 65 seconds during BLDC FAN motor operating | Poor BLDC Motor connection, DRIVE IC, and TR |
| 14 | Abnormality of BLDC FAN Motor for Mechanic Room | Er | CF | It is caused when feedback signal isn't over 65 seconds during BLDC FAN motor operating | Poor BLDC Motor connection, DRIVE IC, and TR |
| 15 | Communication Error | Er | CO | Communication Error between Micom of Main PCB and Display Micom | Poor Communication connection,Poor TR of Transmitter and Receiver Tx/Rx between display and main board. |

**If you push the test button on the Main PCB, the refrigerator will be enter the TEST MODE.**


Main PWB

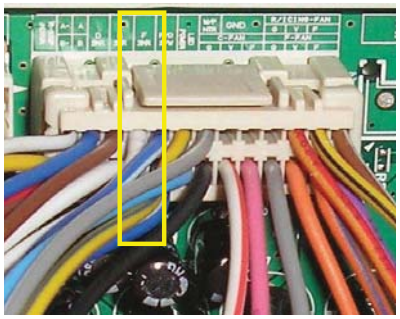
* 1 time : Comp / Damper / All FAN on
(All things displayed)

* 2 times : Damper closed
(22 22 displayed)


Same as 1 time Comp / Fans on but Damper closes

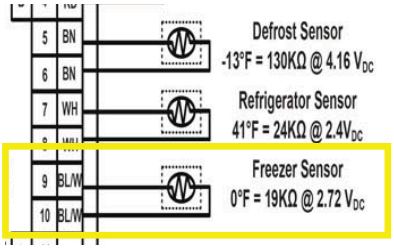
* 3 times : Forced defrost mode
(33 33 displayed)

| Freezer Sensor Error | Er | FS | Short or Disconnection of Freezer Sensor |
|---|---|---|---|

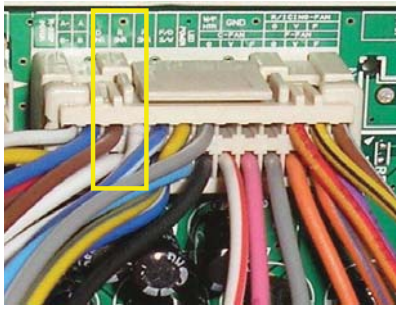


**Conn 4 Main PWB**
**BL/WH – BL/WH**

| (1) To (2) | Result |
|---|---|
| -22°F / -30°C | 40.5 ~ 38.5 kΩ |
| -13°F / -25°C | 30.5 ~ 28.5 kΩ |
| -4°F / -20°C | 23 ~ 21.5 kΩ |
| 5°F / -15°C | 17.5 ~ 16.5 kΩ |
| 14°F / -10°C | 13.5 ~ 12.5 kΩ |
| 23°F / -5°C | 10.5 ~ 9.5 kΩ |
| 32°F / 0°C | 8 ~7.5 kΩ |

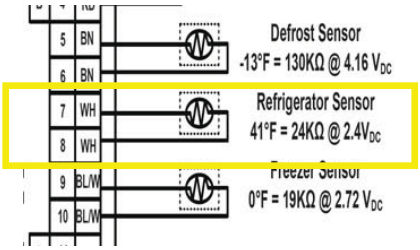



| Refrigerator Sensor Error | Er | rS | Short or Disconnection of Refrigerator Sensor |
|---|---|---|---|

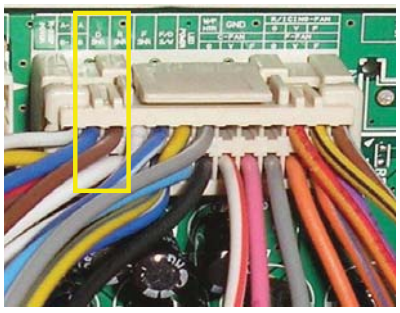


**CON 4 Main PWB**
**White - White**

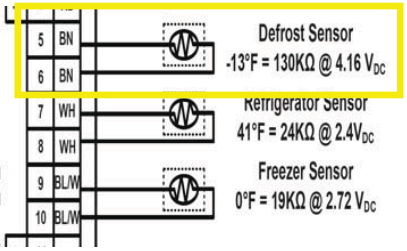
| Temperature | Result |
|---|---|
| 23°F / -5°C | 38.5 ~ 36.5 kΩ |
| 32°F / 0°C | 30.5 ~ 29.5 kΩ |
| 41°F / 5°C | 24.5 ~ 23.5 kΩ |
| 50°F / 10°C | 20 ~ 19 kΩ |
| 59°F / 15°C | 16 ~15.5 kΩ |



| Defrosting Sensor Error | Er | dS | Short or Disconnection of Defrosting Sensor |
|---|---|---|---|

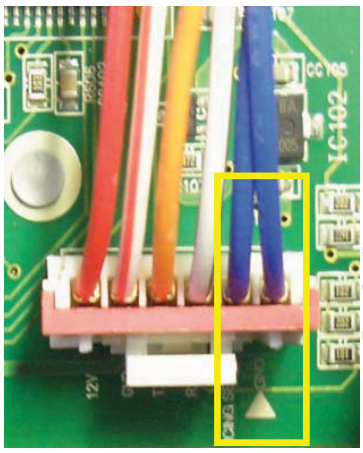


**Defrost Thermistor**
**CON 4 Main PWB**
**BN-BN**



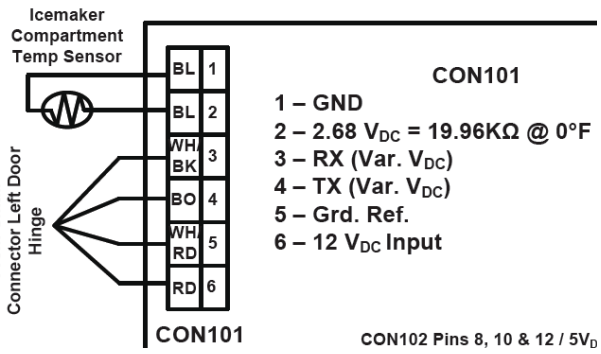

| TEMP | RESISTANCE | VOLTAGE |
|---|---|---|
| -39°F (-40°C) | 225.1 kΩ | 4.48 V |
| -30°F (-35°C) | 169.8 kΩ | 4.33 V |
| -21°F (-30°C) | 129.3 kΩ | 4.16 V |
| -13°F (-25°C) | 99.30 kΩ | 3.95 V |
| -4°F (-20°C) | 76.96 kΩ | 3.734 V |
| 5°F (-15°C) | 60.13 kΩ | 3.487 V |
| 14°F (-10°C) | 47.34 kΩ | 3.22 V |
| 23°F (-5°C) | 37.55 kΩ | 2.95 V |
| 32°F (0°C) | 30 kΩ | 2.67 V |
| 41°F (5°C) | 24.13 kΩ | 2.40 V |
| 50°F (10°C) | 19.53 kΩ | 2.14 V |
| 59°F (15°C) | 15.91 kΩ | 1.89 V |
| 68°F (20°C) | 13.03 kΩ | 1.64 V |
| 77°F (25°C) | 10.74 kΩ | 1.45 V |
| 86°F (30°C) | 8.89 kΩ | 1.27 V |
| 95°F (35°C) | 7.40 kΩ | 1.10 V |
| 104°F (40°C) | 6.20 kΩ | 0.96 V |

| Icing Sensor Error | Er | IS | Short or disconnection of the sensor about Ice maker (Icing sensor, Ice maker sensor) |
|---|---|---|---|



**CON 101**
**Located on Dispenser**

**Display PWB**

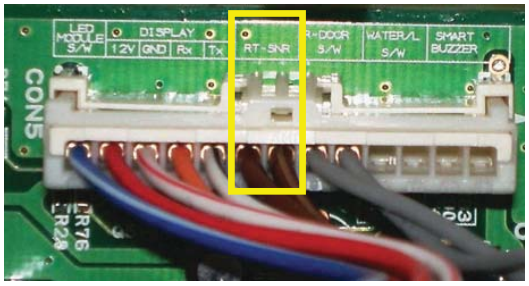


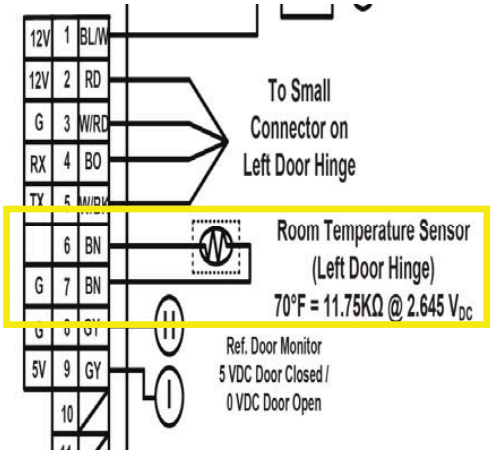
| | | | |
|---|---|---|---|
| Room Temp Sensor Error | Er | rt | Short or Disconnectoin of Room temp.sensor |

***Press Ice Plus and Freezer simultaneously for Error Display***

**CON5 Main PWB BN-BN**

**Same values as Refrig Thermistor Located**

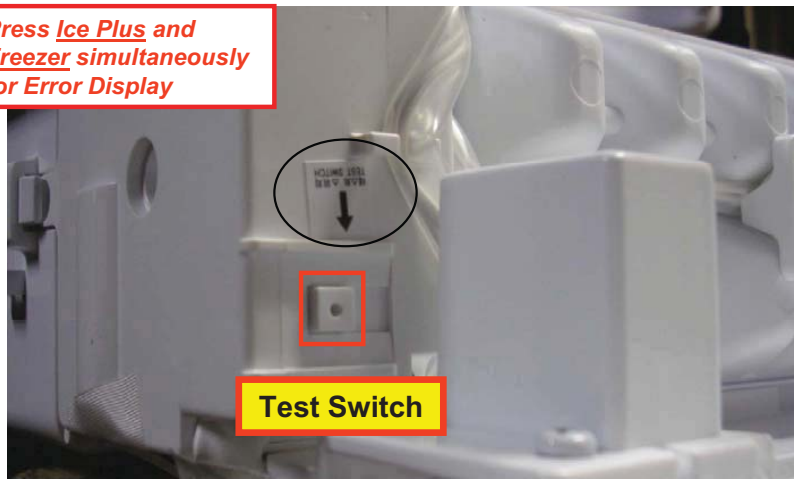



| | | |
|---|---|---|
| 68°F (20°C) | 13.03 kΩ | 1.64 V |
| 77°F (25°C) | 10.74 kΩ | 1.45 V |
| 86°F (30°C) | 8.89 kΩ | 1.27 V |
| 95°F (35°C) | 7.40 kΩ | 1.10 V |
| 104°F (40°C) | 6.20 kΩ | 0.96 V |

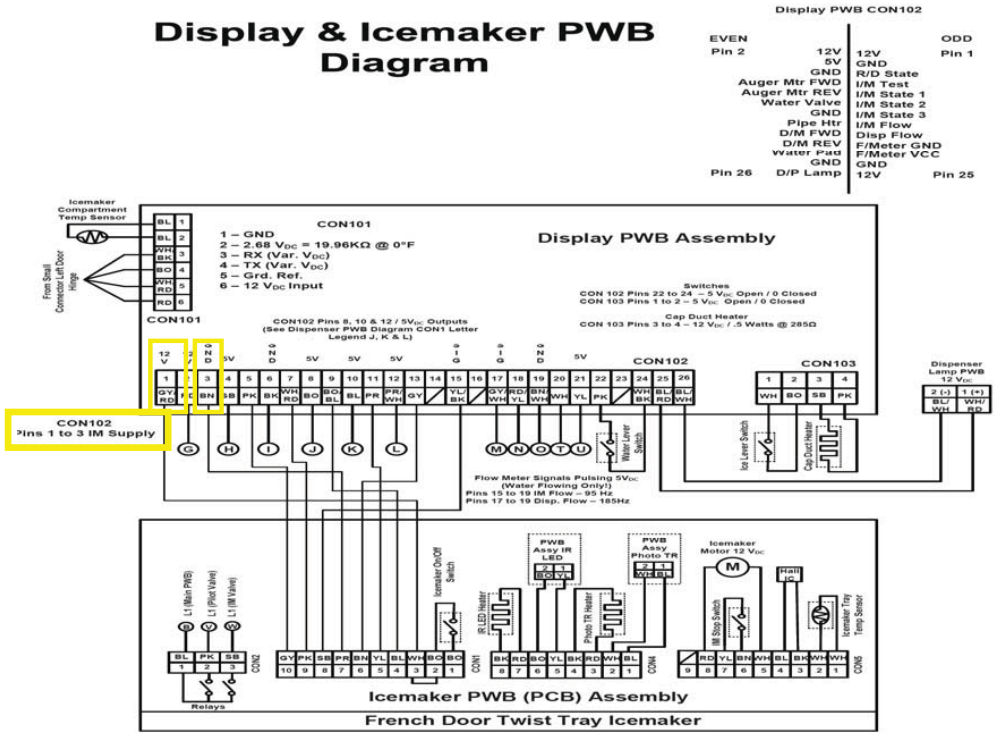
| | | | | |
|---|---|---|---|---|
| Ice maker kit defect | Er | It | Other Electric system error such as moter, gear, Hall IC, operation circuit within I/M kit | When the ice does not drop even when the I/M Test S/W is pressed (same as model applied Twisting Ice Maker before) |

***Press Ice Plus and Freezer simultaneously for Error Display***



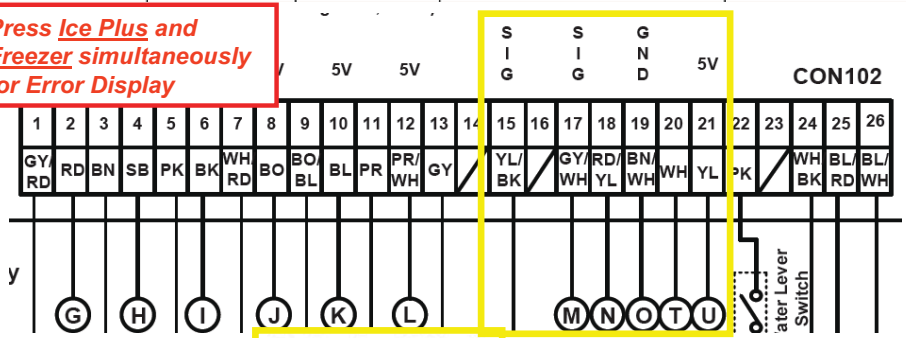

**PRESS & HOLD Test Switch 3 Seconds to initiate Test Mode I/M has no power indicator light. Simple power test: turn I/M Off back On should hear motor alignment briefly.**

**See I/M Section**



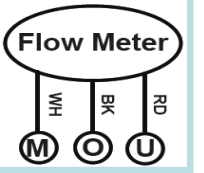

| Flow Meter(Sensor) Defect | Er | gF | Error of flow meter or water input or low water pressure | Error of flow meter or water input or low water pressure or flow meter connection |
|---|---|---|---|---|

***Press Ice Plus and Freezer simultaneously for Error Display***

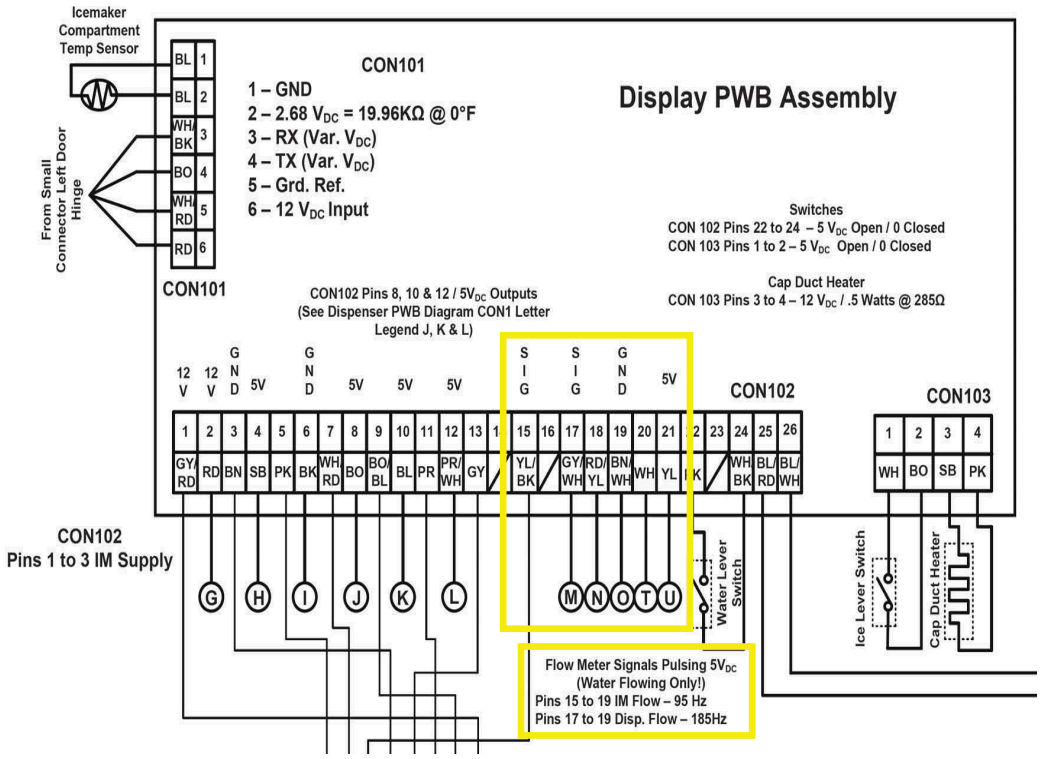



Flow Meter Signals Pulsing $5V_{DC}$
(Water Flowing Only!)
Pins 15 to 19 IM Flow – 95 Hz
Pins 17 to 19 Disp. Flow – 185Hz

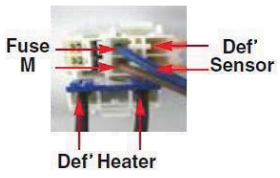
**Flow Meter**
**M – Pulsing 5 VDC when water flowing**
**O – GND**
**U – 5 VDC (VCC)**
**RD to BK 4 to 30Ω**

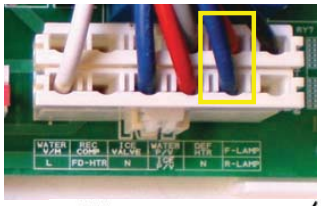



**WATER FLOW SENSOR**
**4 – 30 Ω RD - BK**

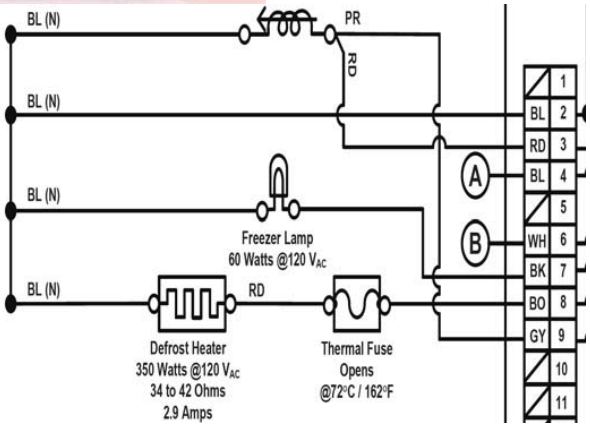



| | | | | |
|---|---|---|---|---|
| Poor Defrosting | Er | dH | Even though it is passed 1 hour since then Defrosting, if Defrosting sensor is not over 46°F(8°C), it is caused | Temperature Fuse Disconnection, Heater disconnection, DRAIN Jam, Poor Relay for Heater |

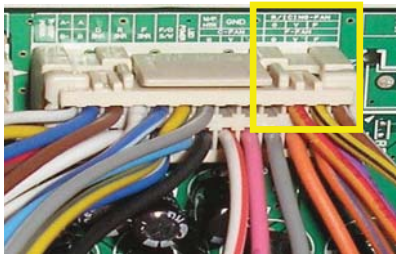


**Main PWB CON3**
**Blue to Orange**
**120vac in defrost**

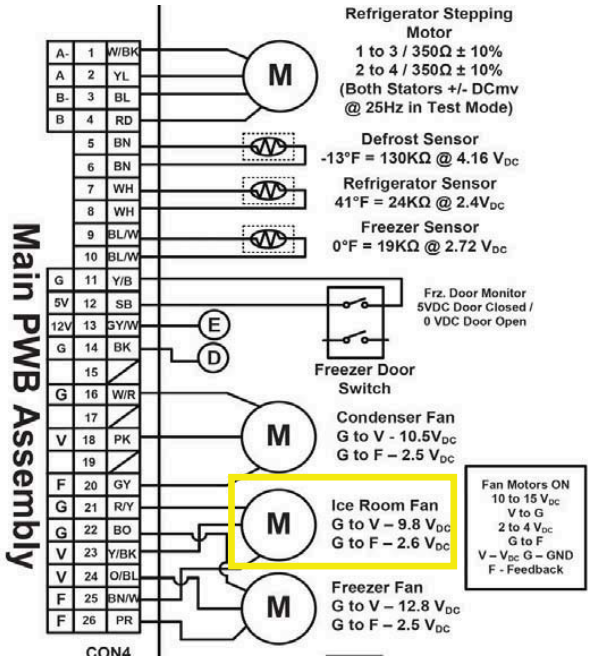


| Abnormality of BLDC FAN Motor for Ice Making | Er | IF | It is caused when feedback signal isn't over 65 seconds during BLDC FAN motor operating | Poor BLDC Motor connection, DRIVE IC, and TR |
|---|---|---|---|---|



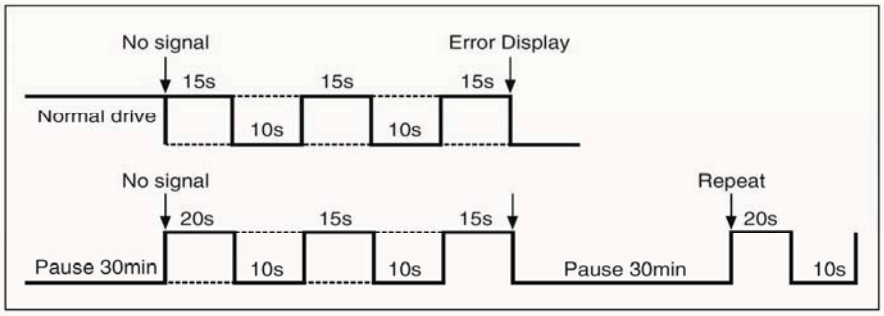
**Rd/YL - YL/BK = 12 V (G – V)**
**Rd/YL - BN/WH = 2.5 V (G – F)**

**V-G = Supply Voltage**
**F-G = Signal Voltage**

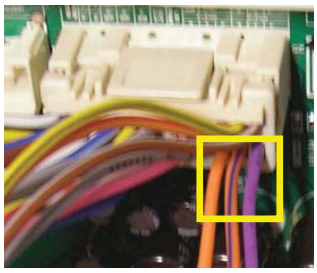



## 10-4 How to check the Fan-Error

(1) EBR673480
After sending a signal to the fan, the MICOM checks the BLDC fan motor s lock status. If there is no feedback signal from the BLDC fan, the fan motor stops for 10 seconds and then is powered again for 15 seconds. To determine that there is a fan motor malfunction, this process is repeated 3 times. If the fan motor is determined to be defective, the error code will be shown in the display for 30 minutes. At this point, the process will be repeated until the fan motor operates normally. If normal operation is achieved, the error display is erased and the MICOM is reset automatically.

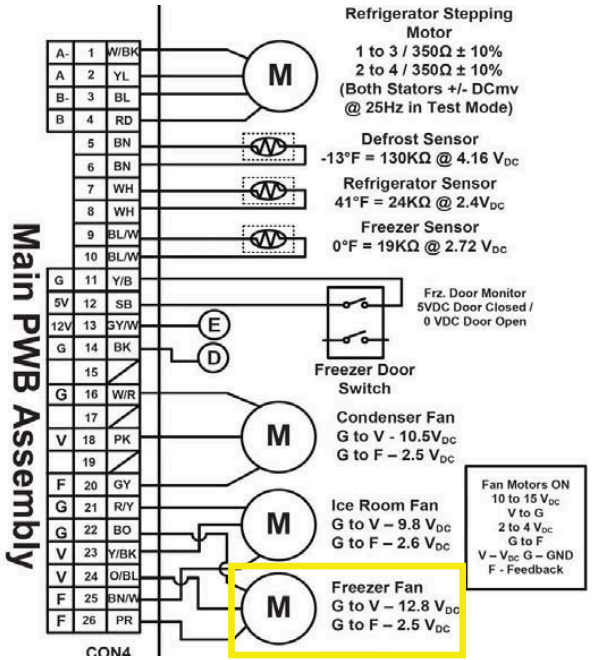


| Abnormality of BLDC FAN Motor for Freezer | Er | FF | It is caused when feedback signal isn't over 65 seconds during BLDC FAN motor operating | Poor BLDC Motor connection, DRIVE IC, and TR |
|---|---|---|---|---|

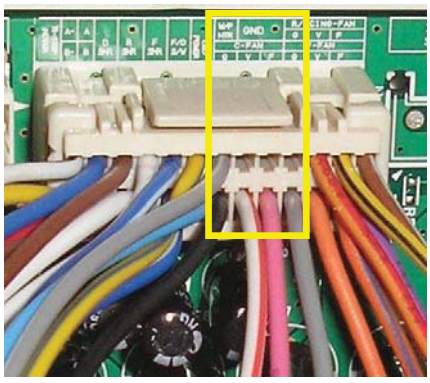


**BO - BO/BL = 15 V (G – V)**
**BO - PR = 2.5 V (G – F)**

**V-G = Supply Voltage**
**F-G = Signal Voltage**

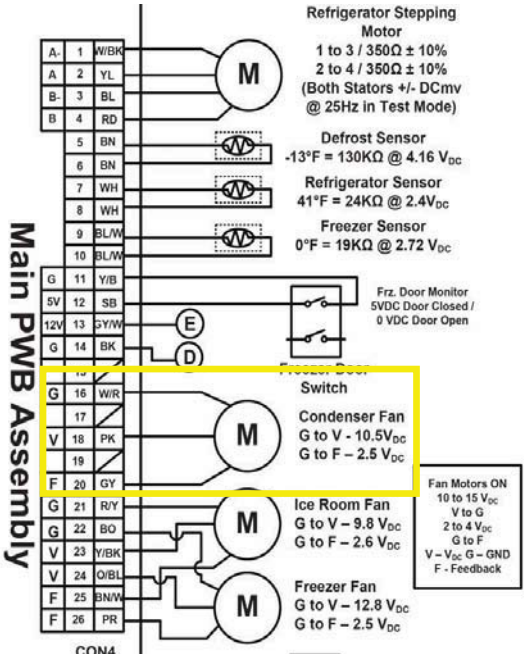



| Abnormality of BLDC FAN Motor for Mechanic Room | Er | CF | It is caused when feedback signal isn't over 65 seconds during BLDC FAN motor operating | Poor BLDC Motor connection, DRIVE IC, and TR |
|---|---|---|---|---|

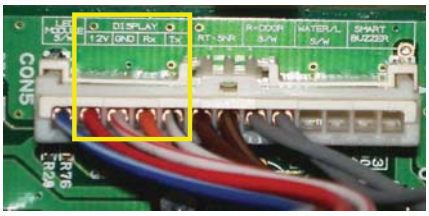


**PK – WH/RD = 10.5 VDC(V - G)**
**GY – WH/RD = 2.5 VDC(F - G)**

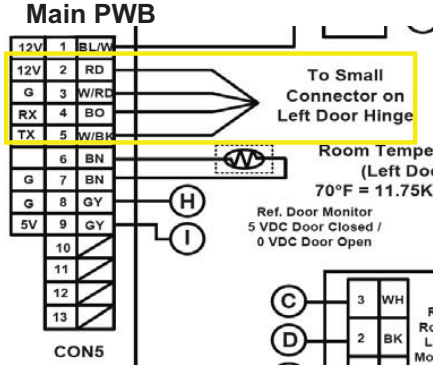
**V-G = Supply Voltage**
**F-G = Signal Voltage**

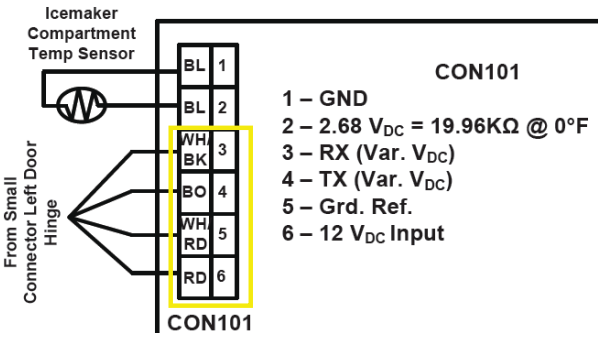


| | | | | |
|---|---|---|---|---|
| Communication Error | Er | CO | Communication Error between Micom of Main PCB and Display Micom | Poor Communication connection,Poor TR of Transmitter and Receiver Tx/Rx between display and main board. |



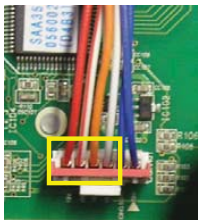

Main PWB




**CON101**

1 – GND
2 – 2.68 $V_{DC}$ = 19.96KΩ @ 0°F
3 – RX (Var. $V_{DC}$)
4 – TX (Var. $V_{DC}$)
5 – Grd. Ref.
6 – 12 $V_{DC}$ Input

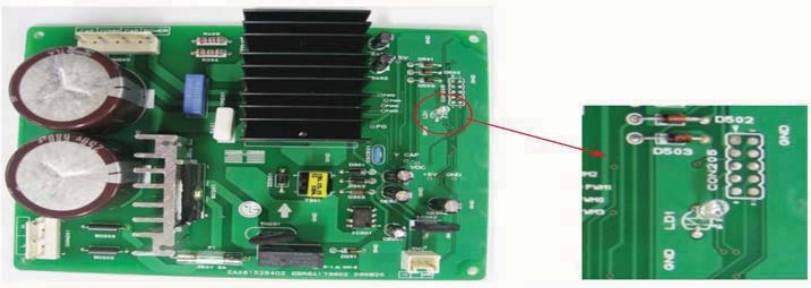


**CON 101 Display Bd**

## Compressor Troubleshooting

Step 1) Loosen up screw of Case Assembly PCB and open the Cover PCB

Step 2) Check for blinking frequency of LED, PWB




If compressor is normal, it does not blink
: Refer to the next page to find out what actions to take according to how many times LED blink

**Actions to take according to Led blinking frequency**

| No | LED operating condition | Cause | Service guideline |
|---|---|---|---|
| 1 | LED two - time repetiton (Stroke Trip)<br>··on - on - off - on - on - off - on - on - off ··repeating | PCB Parts defect or Compressor or Connector miss connecting (Piston over run) | 1. Please check, Whether connector of compressor is attached rightly or not. after power off<br>2. After the first action, You check on normal operation of compressor.<br>3. If the same symptom arises after the second action, replace PCB |
| 2 | LED four - time repetiton (Overload Protect)<br>··on - on - on - on - off - on - on - on - on - off ··repeating | Outlet clogging | 1. After resetting power, check if it is running normal<br>2. If the same symptom arises after the first action<br>3. If the same symptom arises after the second action, replace compressor |
| 3 | LED five - time repetiton (Piston Lock Trip)<br>··on - on - on - on - on - off - on - on - on - on - on - off ··repeating | Piston constraint | 1. After resetting power, check if it is running normal<br>2. If the same symptom arises after the first action<br>3. If the same symptom arises after the second action, replace compressor |
| 4 | LED six - time repetiton (Current Trip)<br>··on - on - on - on - on - on - off - on - on - on - on - on - on - off ··repeating | Circuit over current error Or cycle error | 1. After resetting power, check if it is running normal<br>2. If the same symptom arises after the first action<br>3. If the same symptom arises after the second action, replace compressor |
| 5 | LED seven- time repetiton (IPM Fault Trip)<br>··on - on - on - on - on - on - on - off - on - on -on - on - on - on- on - off ··repeating | PCB parts defect (IPM) | 1. After resetting power, check if it is running normal<br>2. If the same symptom arises after the first action, replace PCB |

# 12. TROUBLESHOOTING

## 12-1 INFORMATION OF LINEAR COMPRESSOR

- The information tag provides compressor model, refrigerant, serial number and safety approval

**Name Plate**


**Size : 90mm X 20mm**


**Compressor Label**

1. Compressor Model

F C 7 5 L A N E

- Series name DLF/FA/FB
- Displacement ex)90=9.0c m /stroke
- Application Cgtegory
  - L : LBP with R134a
  - H : HBP with R134a
  - N : LBP with R600a
- Operating Type A : A-Inverter E : E-Inverter
- Rated Voltage & Frequency - M : 220V 50/60Hz - N : 115V 50/60Hz
- Efficiency version A : 1st generation B : 2nd generation

2. Refrigerant
3. Serial Number

00 00 9 2003 5 13 0012

Buyer Code
Model Code
Line
Year
Month
Date
Serial No.

| | |
|---|---|
| 1 : January | O : October |
| ~ | N : November |
| 9 : September | D : December |

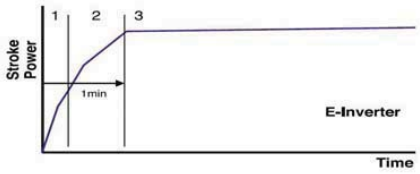
4. Safety Approval Ex)

- There are two types of controllers used in the linear compressor system.
  - The "E"-inverter system is used with the FC75LANE compressor.
  - The "A"-inverter system is used with the FC90LANA compressor.

| LFX25976 | Refrigerator | | Comp Drive | | Compressor |
|---|---|---|---|---|---|
| FC75LANE E-Inverter System | Comp On/Off | → | Inverter CVCF | → | Self Modulation |
| FC90LANA A-Inverter System | Controls the algorithm according to various conditions | → | Inverter VVVF | → | Stroke Modulation |

*VVVF : Variable Voltage Variable Frequency
**CVCF : Constant Voltage Constant Frequency

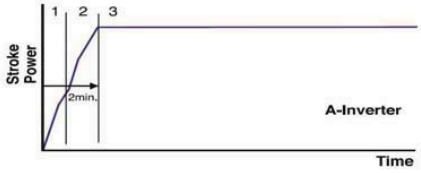
- To reduce noise level, the piston stroke is slowly increased to full power during start up.




**LFX25976**

Step 1) Start up - Half stroke interval for first 1 second.
Step 2) Ramp up - Stroke increases every 0.8sec until maximum stroke length is reached (about 1 min)
Step 3) CVCF interval - 180V / 60Hz

**CVCF – Constant voltage constant frequency**




Step 1) Start up - Half stroke interval for first 20 seconds.
Step 2) Ramp up - Stroke increases until maximum stroke length is reached (about 1 min, 40 sec)
Step 3) VVVF interval - target voltage and frequency controlled by Control Board signals

**VVVF – Variable Voltage Variable frequency**

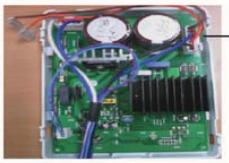
- There are 6 protection logics designed to protect the linear compressor system. When a failure is detected, the compressor will shut and will try to restart after a set period of time for each type of failure. The LED located on the inverter drive PCB will flash the appropriate code to indicate the detected failure. This code will continue to flash until the unit is disconnected from the power source.

**Inverter Error Codes**

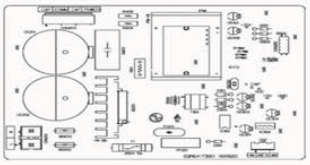
| | App. | Requirement | Waiting Time | The number of LED flashes |
|---|---|---|---|---|
| FCT0 | A-Inv. | Compressor current and voltage error. | 20 sec. | 1 |
| Stroke Trip | E-Inv.<br>A-Inv. | Piston stroke overrun detected. | 1 min. | 2 |
| Locked Piston Trip | E-Inv.<br>A-Inv. | Piston is locked. | 2 min. 30 sec. | 5 |
| Current Trip | E-Inv.<br>A-Inv. | Current overload detected. | 6 min. | 6 |
| IPM Fault | E-Inv.<br>A-Inv. | High current detected due to IPM failure. | 20 sec. | 7 |
| Communication Error | A-Inv. | Miscommunication with Refrigerator | 0 | 8 |

- Bridge Diodes converts 115V AC (Alternating current) to 115V DC (Direct current) The Voltage Multiplying circuit then increases the 115V DC to 230V DC. Then the IPM (Intelligent Power Module) converts the 230V DC to 230V AC. The converted AC power can be regulated to any required voltage and frequency.

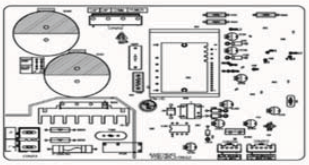
**LFX25976**



E-Inverter FC75LANE

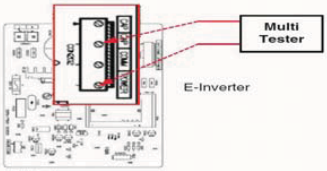


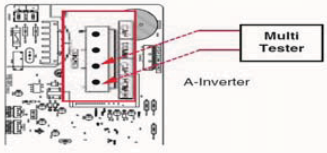
A-Inverter FC90LANA

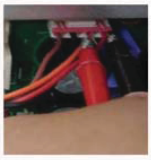


- There is a PCB located in the PCB case next to the compressor. That is the driver PCB, the linear compressor.

- Measure the voltage at locations on the connector (as shown picture) with a multi-tester.



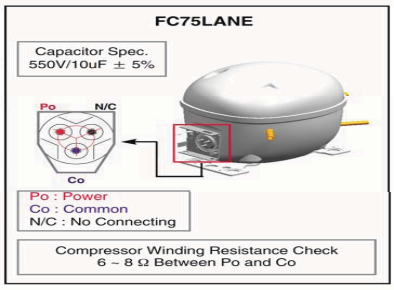
**IPM Voltage Check**

- To ensure proper diagnosis, make sure that the unit has been plugged in for at least 10 min.
- To determine if the compressor is receiving the proper voltage, check the PCB output voltage during operation.
- Normal operating voltage will be between 80V AC and 180V AC.

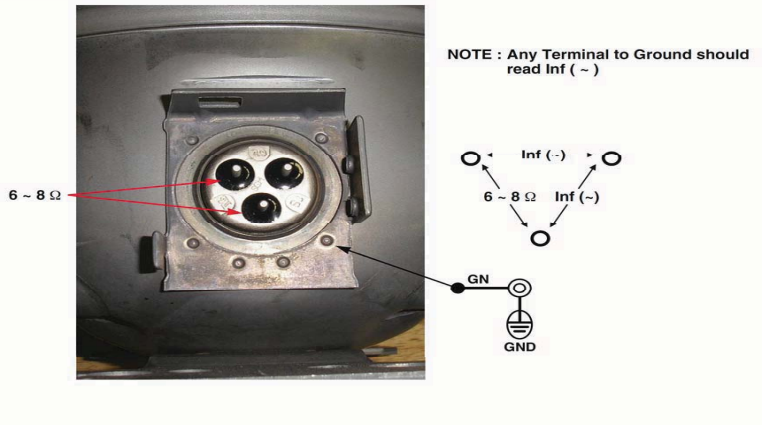
**Note : Higher voltage readings may occur under "heavy" load conditions.**

## What to check before replacing Compressor

1) **Check Voltage readings at Compressor Driver PWB**
   **A) Do you have 120vac to CON201?**
   **B) Do you have a variable 5vdc at CN2?**
   **C) Have you checked run cap with a capacitor checker?**
   **D) After 10 minute run time is compressor voltage between 80vac to 180vac? Will vary with load.**
   **E) Apply 120vac directly to compressor does it run? <u>Do you feel heat on the discharge line?</u>**
   **Note: Compressor will be slightly noisier running at full stroke.**




LG Linear Compressor



# LSE3092ST Slide In Range

# LSE3092ST Slide In Range

**Features**

**Extra Large Oven Capacity 5.4 cu ft**

**Brilliant Blue Interior**

**5 Surface Elements / 2 Expandable**

**Lower Drawer is a Baking Drawer**

**Dual True Convection with 3 Modes**

**Gliding and Split Rack**

**WideView™ Window**

# LSE3092ST Slide In Range

**Operational Features**

- **Large Oven is Electronically Controlled.**
- **Surface Elements are conventional*.**
- **Lower Baking Drawer is conventional*.**
- **If Main Power Board, Power Supply Board, Safety Thermostat Opens or connecting wiring fail, the large oven & clock will not operate! The surface elements and the lower baking drawer will continue to operate.**
- **During Self Clean the (BK) L2 power is interrupted to the surface elements and lower baking drawer via relays! They will not operate during Self Clean!**
- **Conventional* – Using Mechanical Switches!**

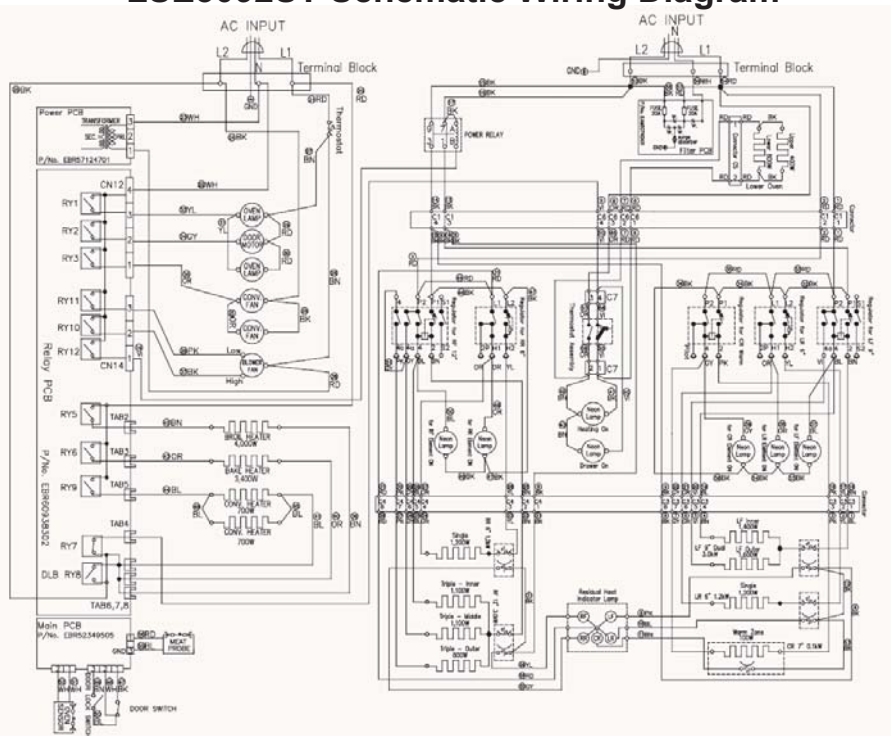
# LSE3092ST Slide In Range

# LSE3092ST Slide In Range

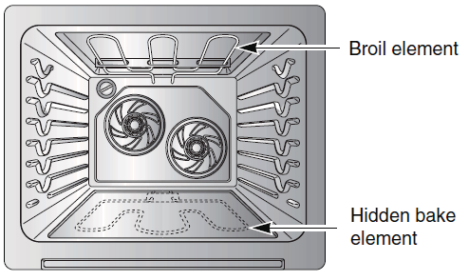

## SPECIFICATIONS

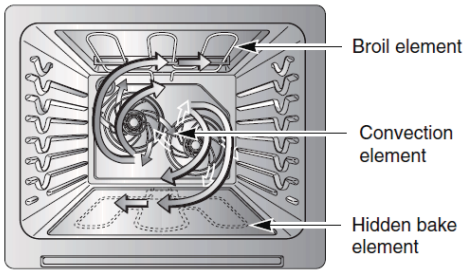
| Model Number | | LSE3092ST |
|---|---|---|
| Category | | Convection |
| Overall | Width | 30" |
| | Installation type | Freestanding |
| | Color availability | STS |
| Control | Oven | Glass Touch |
| | Cooktop | Knob |
| | Display | Scroll VFD |
| | Electronic clock & timer | Yes |
| | Control lock capability | Yes |
| | Audible preheat signal | Yes |
| | Special function | Option(6 categories)<br>1. Convection auto conversion On/Off<br>2. Thermostat Adjustment<br>3. Language -English or Spanish<br>4. Preheating alarm light On/Off<br>5. Beeper Volume<br>(loud, normal, low, mute)<br>6. Temperature unit (F / C) |
| Cooktop | Material | Ceramic glass |
| | # of element | 5 |
| Power | LR | 6"-1.2kw |
| | RR | 6"-1.2kw |
| | CR | warming zone - 100w |
| | LF | 9"Dual(6"/9" - 1.4/3.0kw) |
| | RF | 12"Triple(6"/9"/12"-1.1/2.2/3.0kw) |
| Oven | Capacity(cu.ft) | 5.4 |
| | Broil element | 4000 watts |
| | Bake element | 3400 watts |
| | Convection System | Yes |
| | -Convection element | Yes (700w x 2, 240v) |
| | Interior oven light | 120V, 40Watts |
| | Proof | Yes |
| | Cook & warm | Yes |
| | Favorites | Yes<br>1. Bread 2. Meat 3. Chicken |
| | Healthier Roast | Yes (1.Beef, 2.Pork, 3.Lamb, 4.Chicken, 5.Turkey) |
| | Door lockout | Yes |
| | Broiler pan | Yes |
| Drawer | Type | Oven drawer |
| | Element | 1,200 watts (Upper heater - 400W, Lower heater – 800W) |
| | Rack | Yes |
| Dimensions (inch) | Oven Interior(W x H x D) | 24 1/2 x 19-11/16 |
| | Exterior - Width | 29 7/8 |
| | Exterior - Height | 36 (cooktop) |
| | Exterior - Depth | 26-3/8 (Door), 28-7/8 (with handle) |
| | Net weight: Lbs (Kg) | 216 lbs (98kg) |
| Power | Rating | 15.3Kw(120/240V) / 11.5Kw(120/208V) |

## LSE3092ST Schematic Wiring Diagram




## LSE3092ST Slide In Range



# Bake mode

Internal Use Only

**The oven can be programmed to bake at any temperature from 170°F to 550°F. Default temperature is 350°F (175℃). It uses the outer broil element, bake element, convection element to preheat the oven and keep the oven temperature with using the bake element and broil elements. Heating element(s) will cycle on and off in intervals.**

**→ Convection fan will operate during Pre Heat only.**

| Operating Guide | Important Note |
|---|---|
| **To set the Bake Temperature to 375°F :**<br>  <br>1. Touch **UPPER OVEN** or **LOWER OVEN** that you want to use. The display will show the main menu of the upper oven or the lower oven.<br>  <br>  <br>2. Touch **Bake**. 350°F will appear in the display.<br>3. Touch **3,7 and 5.**<br>  <br>4. Touch **START.** The display will show the changing temperature starting at 100°F.<br><br>**To change the Bake Temperature while cooking (example changing from 375°F to 425°F):**<br>  <br>1. Touch **Options**.<br>  <br>2. Touch **Temp.** Numeric keys will appear in the display.<br>  <br>3. Touch **4,2 and 5.**<br>  <br>4. Touch **OK** to accept the change or touch **Clear** to reset the temperature you input. | Place food in the oven after preheating if the recipe calls for it. Preheating is so important for good results when baking cakes, cookies, pastry, and breads. After the oven has reached the desired temperature, a melody will sound once. Preheating will take approximately 10~15 minutes.<br><br>The heating elements turn off immediately when the door is opened. They will turn on again in approximately 5 seconds after the door is closed. If you leave the oven door open for more than 30 minutes, all settings are canceled.<br><br>Touch **UPPER CLEAR/OFF** or **LOWER CLEAR/OFF** to cancel the Bake feature at anytime. |

**PREHEATING**

**DURING COOKING**

# Convection Bake

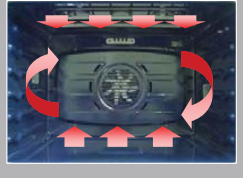
Internal Use Only

**Convection baking uses a fan to circulate the oven's heat evenly and continuously within the oven. This improved heat distribution allows for even cooking and excellent results using multiple racks at the same time. Foods cooked on a single oven rack will generally cook faster and more evenly with Convection Bake. It uses the outer broil and convection element to preheat the oven and keep the oven temperature with using bake element, broil elements and convection element.**

| Operating Guide | Important Note |
|---|---|
| **To set the Convection Bake and temperature to 375°F:**<br>  <br>1. Touch **UPPER OVEN** or **LOWER OVEN** that you want to use. The display will show the main menu of the upper oven or the lower oven.<br>  <br>  <br>2. Touch **Conv. Bake**. 350°F will appear in the display.<br>3. Touch **3,7 and 5.**<br>  <br>4. Touch **START.** The display will show the changing temperature starting at 100°F. A melody will sound when the oven temperature reaches its recipe temperature. But if you set the Convection Auto Conversion feature, the melody will sound when the adjusted oven temperature(for this example it is 350°F) is reached. | The heating elements and a fan turn off immediately when the door is opened. They will turn on again in approximately 5 seconds after the door is closed. If you leave the oven door open for more than 30 minutes, all settings are canceled.<br><br>Touch **UPPER CLEAR/OFF** or **LOWER CLEAR/OFF** to cancel the Convection Bake feature at anytime.<br><br>**Convection Auto Conversion**<br>**The Auto Conversion feature will automatically convert the convection temp. The temperature will be reduced 25 degrees from the actual temperature set. Factory setting is "Enabled".** |

**PREHEATING**

**DURING COOKING**

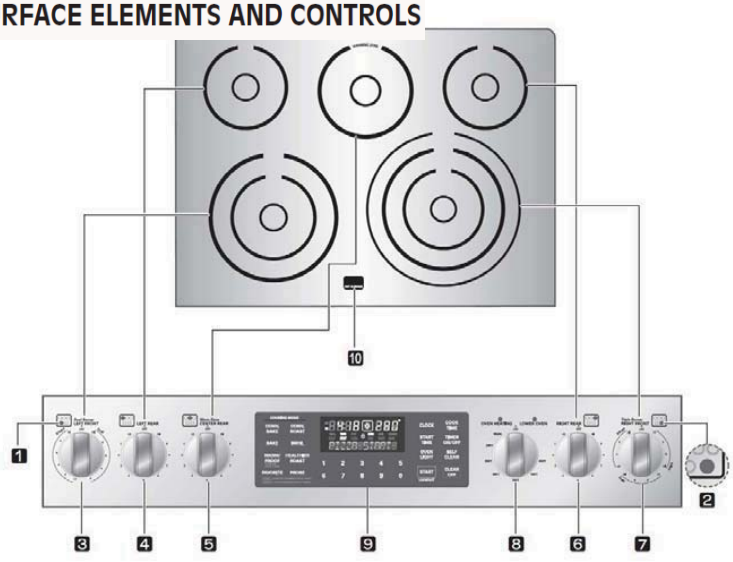


## LSE3092ST Slide In Range

# BASIC OPERATING INSTRUCTIONS

***SEE USER'S GUIDE FOR DETAILED OPERATING INSTRUCTIONS!***

## LOCATIONS OF SURFACE ELEMENTS AND CONTROLS




**1 SURFACE COOKING AREA LOCATOR :** Identify which element the knob controls.

**2 ELEMENT ON/OFF INDICATOR LIGHT :** Shows whether the surface element is turned on/off or hot.

**3 LEFT FRONT (DUAL) CONTROL KNOB :** Use to control Left Front Element.

**4 LEFT REAR (SINGLE) CONTROL KNOB :** Use to control Left Rear Element.

**5 CENTER (WARM) CONTROL KNOB :** Use to control Center Element.

**6 RIGHT REAR (SINGLE) CONTROL KNOB :** Use to control Right Rear Element.

**7 RIGHT FRONT (TRIPLE) CONTROL KNOB :** Use to control Right Front Element.

**8 LOWER OVEN CONTROL KNOB :** Use to control LOWER OVEN.

**9 ELECTRIC OVEN CONTROL :** Use to control Electric Oven.

**10 HOT SURFACE INDICATOR LIGHT :** It will glow as long as any surface cooking area is too hot to touch.

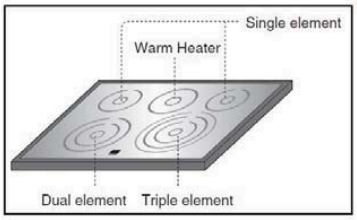
## COOKING AREAS

The cooking areas on your range are identified by permanent circles on the glass cooktop surface. For the most efficient cooking, fit the pan size to the element size.

**Pans should not extend more than ½ to 1-inch beyond the cooking area.**

When a control is turned on, a glow can be seen through the glass cooktop surface. **The element will cycle on and off to maintain the preset heat setting, even on Hi.**

For more information on cookware, refer to Cookware Recommendations.




## USING THE PROPER COOKWARE

Using the right cookware can prevent many problems, such as food taking longer to cook or achieving inconsistent results. Proper pans will reduce cooking times and cook food more evenly. Stainless steel is recommended.

***Check pans for flat bottoms by using a straight edge or ruler***

❶ Place a ruler across the bottom of the pan.
❷ Hold it up to the light.
❸ No light should be visible under the ruler.

***NOTE:***

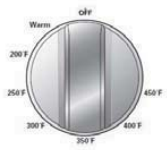
- Do not use a small pan on a large element. Not only does this waste energy, but it can also result in spillovers burning onto the cooking area which requires extra cleaning.
- Do not use non-flat specialty items that are oversized or uneven such as round bottom woks, rippled bottom, and/or oversized canners and griddles.
- Do not use foil or foil-type containers. Foil may melt onto the glass. If metal melts on the cooktop, do not use. Call an authorized Service agent.

| Recommended | Incorrect |
|---|---|
| Flat bottom and straight sides. | Curved, grooved, or warped pan bottoms. Pans with uneven bottoms do not cook efficiently and sometimes may not boil liquid. |
| Heavy-gauge pans. | Very thin-gauge metal or glass pans. |
| Pan sizes match the amount of food to be prepared and the size of the surface element. | Pans are smaller or larger than the element. |
| Weight of handle does not tilt pan. Pan is well balanced. | Cookware with loose or broken handles. Heavy handles that tilt the pan. |
| Tight-fitting lids. | Loose-fitting lids. |
| Flat bottom woks. | Woks with a ring-stand bottom. |

## USING THE LOWER OVEN

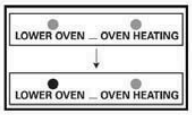
The purpose of the Lower Oven is to bake foods using the same cooking times and temperatures you would in a standard oven. Foods ideal for baking in the lower oven drawer include pizza, frozen foods, casseroles, biscuit, rolls and many desserts.

***To set the Lower oven control:***

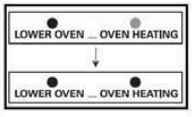



❶ Push the knob in.

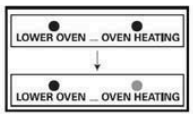
❷ Turn the knob to any desired setting between **Warm** to **450˚F**.




❸ When the knob is in the on position, the **"LOWER OVEN"** indicator light will glow. It remains ON until the knob is moved to the OFF position.




❹ The **"OVEN HEATING"** indicator light glows when heating elements in the drawer are active. Food can continue to cook when the indicator light is on.




❺ Preheat is complete after the **"OVEN HEATING"** signal has turned off.

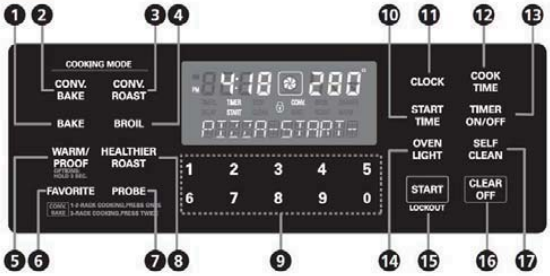
***NOTE:***

- The Lower Oven does not shut off automatically.
- The maximum food height that can be placed in the Lower Oven is 4 inches.
- When turning the knob to use WARM function, check the "**OVEN HEATING**" signal is ON.
- Opening the door may cause heat loss. Repeatly opening may result in poor cooking results.

The Lower Oven uses less energy then a standard oven. It takes more time for preheating than a standard oven. Allow the following approximate times for preheating:

| Lower oven Temperature | Preheat Time |
|---|---|
| Warm | 10 Minutes |
| 350˚F | 20 minutes |
| 425˚F | 30 minutes |

## CONTROL PANEL FEATURES




1. **BAKE :** Use to select the Bake function.
2. **CONV. BAKE :** Use to select the Conv. Bake function.
3. **CONV. ROAST :** Use to select the Conv. Roast funtion.
4. **BROIL :** Use to select the Broil funtion.
5. **WARM/PROOF (OPTIONS)**
   - Use to select the Warm/Proof funtion.
   - Use to change the special settings (Press and hold for 3 seconds)
6. **FAVORITE :** Use to select the Favorite Cooking.
7. **PROBE :** Use to select the Probe function.
8. **HEALTHIER ROAST :** Use to select Healthier Roast function.
9. **NUMBER PADS :** Use to enter temperature and all times.
10. **START TIME :** Use to set Delay Time (Bake and Conv Bake)
11. **CLOCK :** Use to set the Time of Day.
12. **COOK TIME :** Use to set the amount of cook time. The oven will shut off automatically.
13. **TIMER ON/OFF :** Use to set or cancel the timer.
14. **OVEN LIGHT :** Use to turn the oven lights on and of
15. **START :** Use to START all oven functions. To activate CONTROL LOCKOUT press and hold fo 3 seconds.
16. **CLEAR OFF :** Use to stop cooking, cancel settings
17. **SELF CLEAN :** Use to select the Self Cleaning function.

***NOTE:***
**If F– and a number appear in the display and the oven control signals, this indicates a function error code.**
See page 46.
Touch the **CLEAR/OFF** pad. Allow the oven to cool for one hour. Put the oven back into operation.
If the function error code repeats, disconnect the power to the oven and call for service.
**If your oven was set for a timed oven operation and a power outage occurred,** the clock and all programmed functions must be reset.
**The time of day will flash in the display when there has been a power outage.**

**OWNER'S MANUAL INFO**

## *SPECIAL FEATURES*

**Setting the CLOCK (12Hr / 24 Hr)**
**TIMER ON/OFF**
**Setting CONVECTION AUTO Conversion**
**Adjusting the OVEN THERMOSTAT**
**Selecting LANGUAGE**
**Setting Preheating Alarm Light ON/OFF**
**Adjusting BEEPER volume**
**Selecting Fahrenheit or Celsius Temperature**

## *OPERATING*

**Bake, Broil, Dual Convection Bake, Convection Roast**
**Timed Cook, Delayed Timed Cook, Warm, Proof,**
**Healthier Roast, Meat Probe, The Favorite, Oven Lockout,**
**Self Clean Also CARE & CLEANING**

**NOTE: Step by Step Instructions are located in the OWNER'S MANUAL**

# CLOCK

### *How to set the Clock*

The clock must be set to the correct time of day for the automatic oven timing functions to work properly. The time of day cannot be changed during a timed baking or Self Clean cycle.

**CLOCK** ❶ Touch the **CLOCK** pad once to set.

**1 2 3** ❷ Touch the ***number*** pad to enter the time. Touch the number pad with the correct time of day. For example, to set 12:34, touch the number pad **1, 2, 3** and **4**.
If number pad is not touched within 30 seconds after you touch the **CLOCK** pad, the display reverts to the original setting. If this happens, touch the **CLOCK** pad and reenter the time of day.

**START** LOCKOUT ❸ Touch **START.** This enters the time and starts the clock.

To check the time of day when the display is showing other information, simply touch the **CLOCK** pad.

### *How to change hour mode on Clock (12HR or 24HR)*

Your control is set to use a 12-hour clock. If you would prefer to have a 24-hour time clock, follow the steps below.

**CLOCK** ❶ Touch the **CLOCK** pad for 3 seconds.

**1 2** ❷ Touch the number **1** pad for 12-hour, **2** pad for 24-hour.

**START** LOCKOUT ❸ Touch the **START** pad to accept the desired change.

### *Power outage*

If a flashing time is in the display, you have experienced a power failure. Reset the clock.
Touch the **CLOCK** pad once to reset.Enter the correct time of day by touching the appropriate number pads. Touch the **START** pad.

### *How to set convection auto conversion function*

When using convection bake and roast, the Convection Auto Conversion feature will automatically convert entered regular baking temperatures to convection baking temperatures.
This feature is activated so that the display will show the actual converted (reduced) temperature. For example, if you enter a regular recipe temperature of 350°F and press the START function, the display will show the converted temperature of 325°F.

**WARM/ PROOF** OPTIONS: HOLD 3 SEC. ❶ Touch and hold the **WARM/PROOF** pad for 3 seconds. “AUTO” will appear in the display.

**1** or **2** ❷ Touch the **# 1** pad to ENABLE or touch the **# 2** pad to DISABLE.

**START** LOCKOUT ❸ Touch the **START** pad to accept the change.

### *How to adjust the oven thermostat*

You may find that your new oven cooks differently than the one it replaced. Use your new oven for a few weeks to become more familiar with it. If you still think your new oven is too hot or too cold, you can adjust the thermostat yourself.

Do not use thermometers,such as those found in grocery stores, to check the temperature setting of your oven. These thermometers may vary 20–40 degrees.

***NOTE:***

This adjustment will not affect the broiling or the Self Clean temperatures. The adjustment will be retained in memory after a power failure.

The oven temperature can be increased (+) or decreased (-) as much as 35°F or 19°C.

***NOTE:***

Once the temperature is increased or decreased, the display will show the adjusted temperature until it is readjusted.

***NOTE:***

The thermostat adjustment for Bake will also affect Convection Bake or Convection Roast.

***To Adjust the Oven Temperature***


❶ Touch and hold the **WARM/PROOF** pad for 3 seconds. “AUTO” will appear in the display.

❷ Touch the **WARM/PROOF** pad **1** time and “Adj" will be displayed.


❸ Using the ***number*** pad enter the temperature correction you wish to adjust.
For example, to adjust the oven temperature 15 degrees, touch 1 and 5.


❹ Touch **WARM/PROOF** once to increase (+) or twice to decrease (-) the temperature.

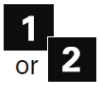

❺ Touch the **START** pad to accept the change.

### *How to select fahrenheit or celsius temperature*

Your oven control is set to use the Fahrenheit temperature. This can be changed to Celsius.

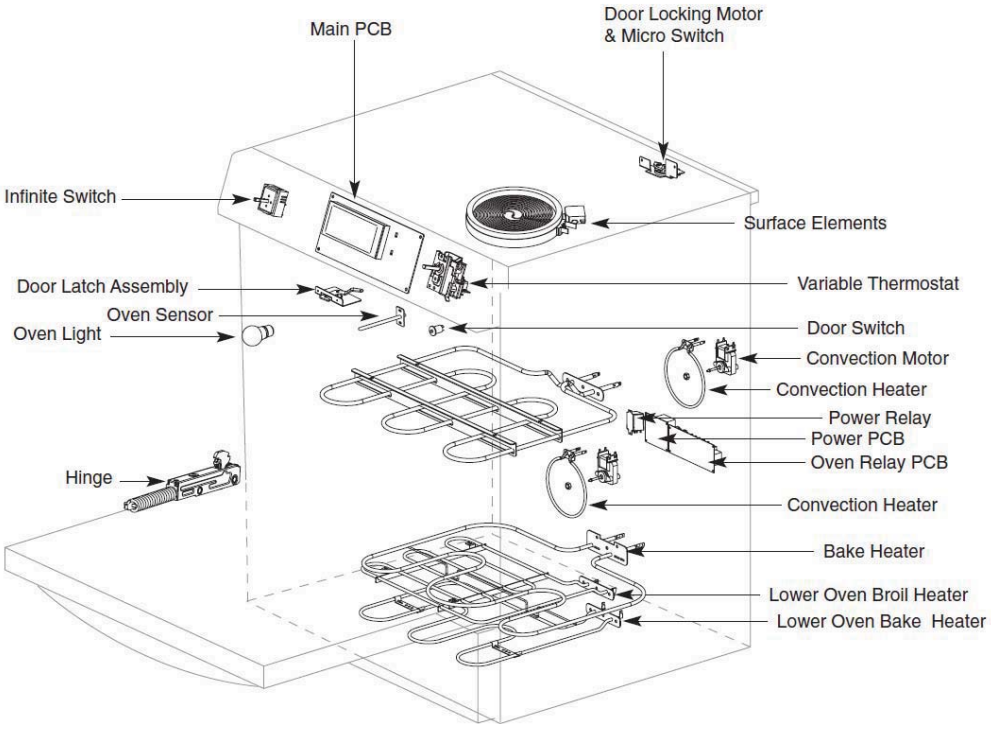

❶ Touch and hold the **WARM/PROOF** pad for 3 seconds. “AUTO” will appear in the display.

❷ Touch the **WARM/PROOF** pad 5 times and “UNIT” will be displayed.




❸ Touch the **# 1** pad for F (Fahrenheit) or touch the **# 2** pad for C (Celsius).


❹ Touch the **START** pad to accept the change.




# LSE3092ST Slide In Range

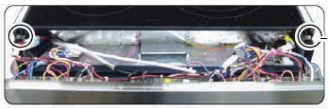
**Before Servicing Disconnect Power**

**To Remove Console**

1) Remove 2 Side Screws

2) Remove the 4 screws circled


3) Pull the console forward

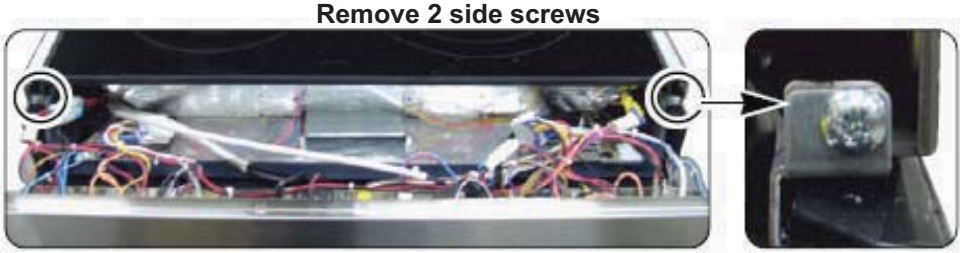


4) Cover Handle and lay the console as shown!

## REMOVING COOKTOP

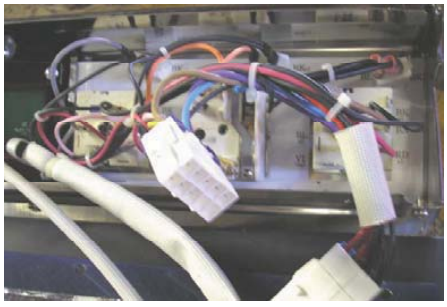
**Rear Screws**

**Remove 2 side screws**



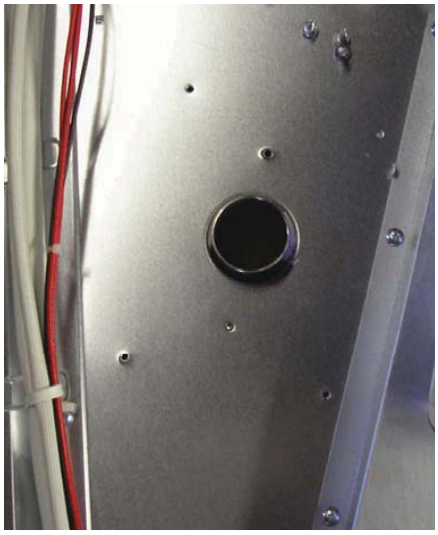
## REMOVING COOKTOP

**DISCONNECT LEFT & RIGHT CONNECTORS**

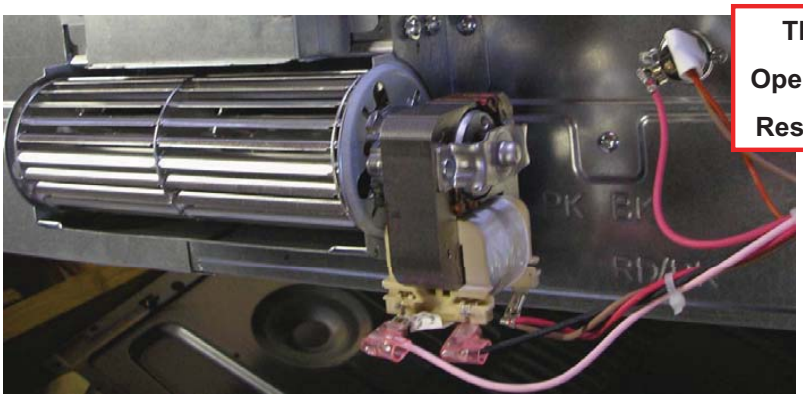


**COOKTOP CAN NOW BE REMOVED**

## OVEN VENT (Below the Cooktop!)



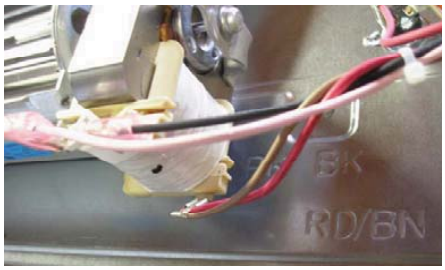
## OVEN SAFETY THERMOSTAT & VENT MOTOR



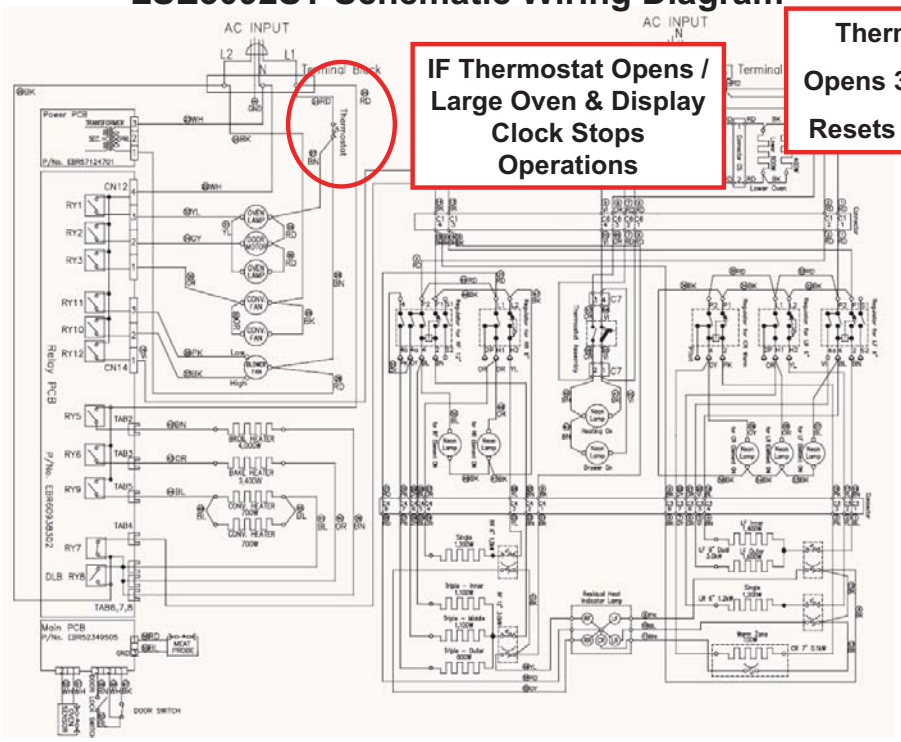

**Thermo**
**Opens 356ºF**
**Resets 32ºF**

**Fan Operating Temp Ranges**
- **Fan ON 220ºF (Display)**
- **Fan OFF 210ºF (Measured)**

**2 Speed Fan / Operating Voltage 120 VAC**



# LSE3092ST Schematic Wiring Diagram




**IF Thermostat Opens / Large Oven & Display Clock Stops Operations**

**Thermo**

**Opens 356ºF**

**Resets 32ºF**

## OVEN SAFETY THERMOSTAT & VENT MOTOR

**SERVICE BULLETIN**

**LG Electronics Monterrey México**

| Approval | Service | Support | R&D Mgr | R&D Mgr |
|---|---|---|---|---|
| | Nora Ramírez | Ricardo Palomares | Guillermo Picazzo | Dae Hyun Kim |

Code: **0ETO20100051**

Date of Issue: **March-16-10**

Factory Model: LSE3092ST

Buyer Model: FS1646BS.FSTLLGA

Serial Number: 001MM00001 ~ 001MM00240

Total pages including cover (qty): 1

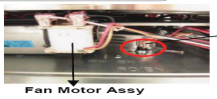
Effective Date: **March-16-10**

| No | LOC No. | BEFORE CHANGE | | AFTER CHANGE | | Code | REMARK |
|---|---|---|---|---|---|---|---|
| | | PART No. | DESC/SPEC | PART No. | DESC/SPEC | | |
| 1 | 5124 | 5901W1E002H | Fan Assembly | 5901W1E002H | Fan Assembly | A3 | |
| 2 | 5016 | 6930W1A003X | Thermostat | 6930W1A003X | Thermostat | A3 | |

**Issue:**

No Power to unit after self clean cycle. Unit shuts off after about 40 minutes of self clean cycle

**Cause:**




Improper thermal protector in blower fan motor, causes fan motor to stop running during self clean.
This is not PCB problem.

**Solution:**

Replace the following parts to correct this issue:
1) Fan Motor Assy
Part # 5901W1E002H
Location # 5124
2) Thermostat
Part # 6930W1A003X
Location # 5016
(Thermostat is cut-off)

Interchangeability *Code

| | Alphabetic Code | | |
|---|---|---|---|
| A | Original → Early, New → Late | Original or new parts may be used in early or late Production. Use original parts until exhausted, then stock new Parts. |
| B | Original → Early, New → Late | Original parts may be used in early production sets only. New parts may be used in early or late production sets. Use original parts where possible, then stock new parts. |
| C | Original → Early, New → Late | New parts only may be used in early or late production set. Stock new parts. |
| D | Original → Early, New → Late | Originals parts only may be used in early production sets. New parts may be used in late production sets only. Stock original and new parts. |

| Numeric Code | |
|---|---|
| 1 | To improve performance |
| 2 | To improve productivity |
| 3 | To improve reliability |
| 4 | Change of material or dimension |
| 5 | Addition |
| 6 | Deletion |
| 7 | Correction |

| Agreement | SVC | QA | MAT |
|---|---|---|---|
| | | | |

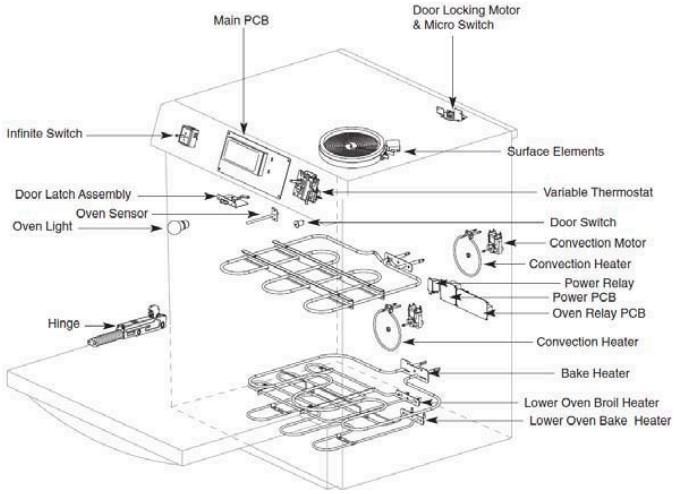
LG(61)-FO-DI-008.03

Page 1

# LSE3092ST Slide In Range

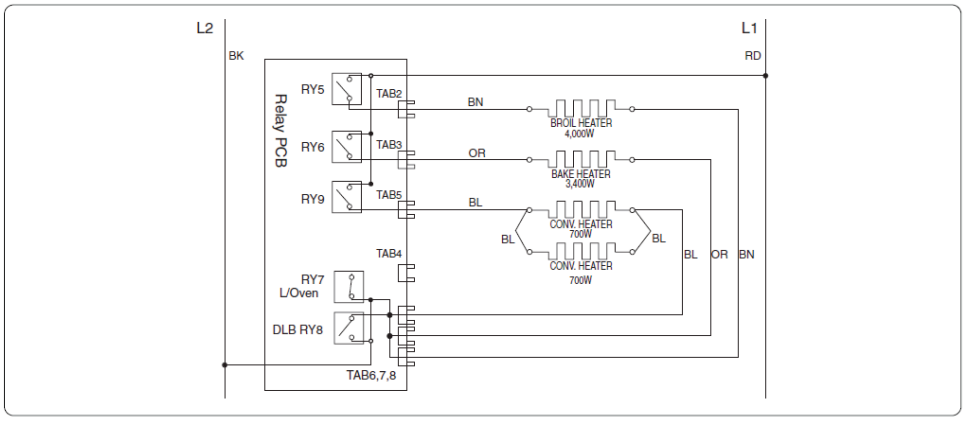
**Before Servicing Disconnect Power**

## TROUBLESHOOTING OVEN USING STRIP CIRCUIT DIAGRAMS



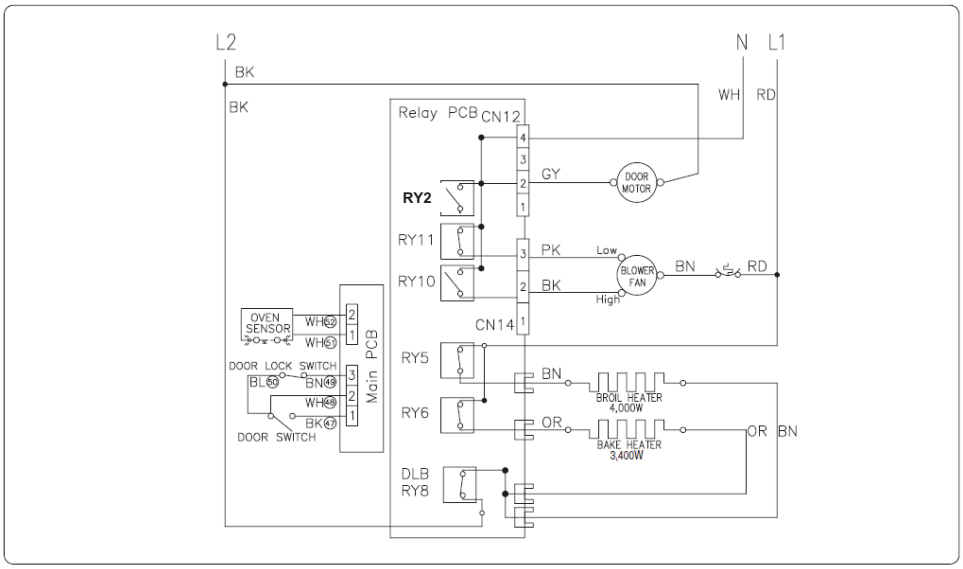

# LSE3092ST Slide In Range

**CONV. BAKE / CONV. ROAST**



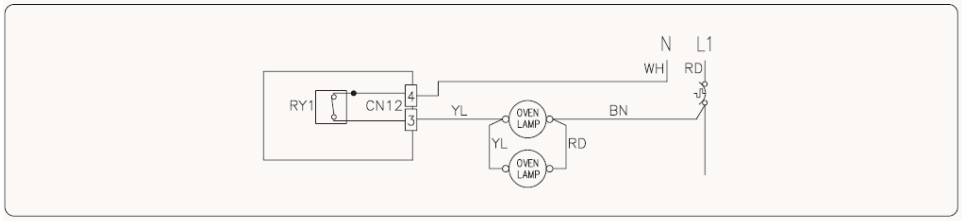
# LSE3092ST Slide In Range

**SELF CLEANING**

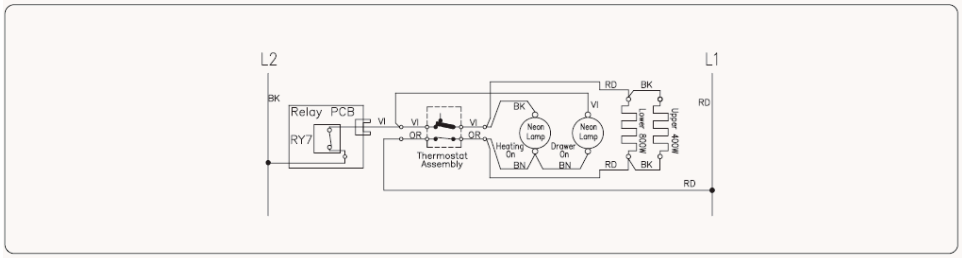



# LSE3092ST Slide In Range

**OVEN LIGHT**



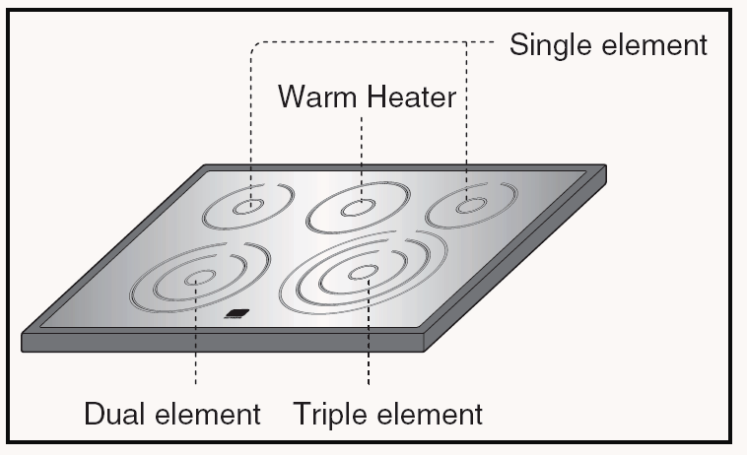

**LOWER OVEN DRAWER**



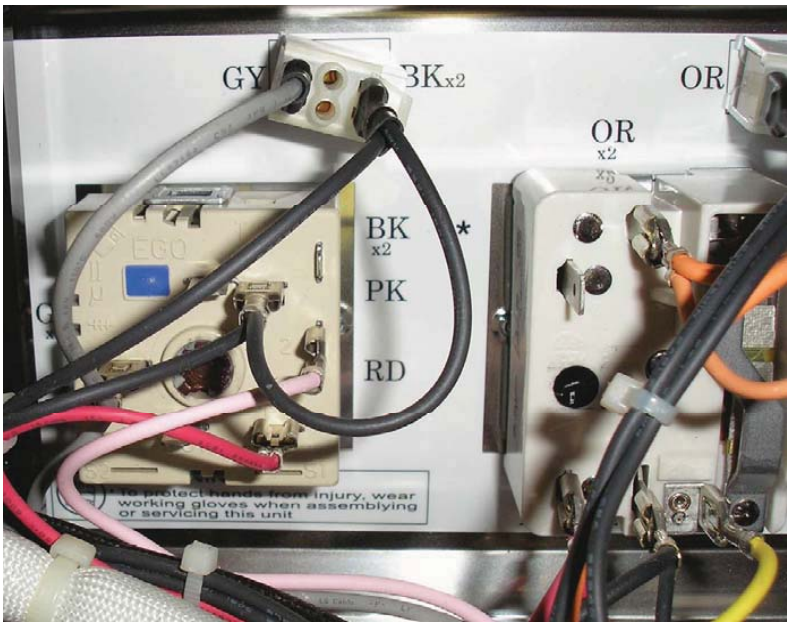
# LSE3092ST Slide In Range

**Before Servicing Disconnect Power**

**TROUBLESHOOTING SURFACE ELEMENTS USING STRIP CIRCUIT DIAGRAMS**




# LSE3092ST Surface Element Controls




**NOTE:** **Wire colors are noted by the connectors!**

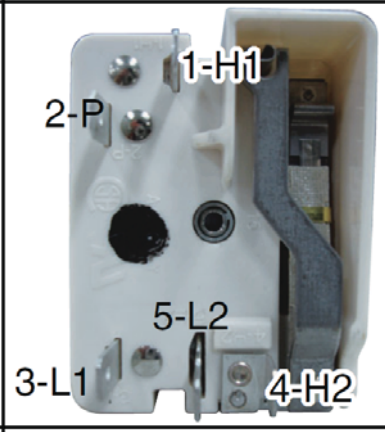
## LINE VOLTAGE & POWER RELAY

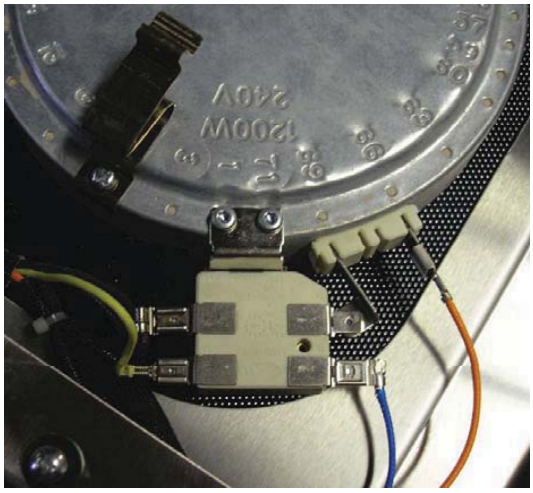
**N.C. Contacts 9 – 3 & 7 – 1 supply (BK) L2 to Surface Unit Switches. The N.C. contacts will OPEN during the SELF CLEAN cycle by energizing the 120VAC Relay coil thru Relay 12.**

**NOTE: Surface Units will NOT energize during SELF CLEAN**




## Left Rear / Right Rear Surface Units (Single Elements)

| | | Position | Wire color |
|---|---|---|---|
| **LR/RR Switch** |   | 1 - H1 | OR-OR |
| | | 2 - P | - |
| | | 3 - L1 | RD+RD |
| | | 4 - H2 | YL |
| | | 5 - L2 | BK-BK |

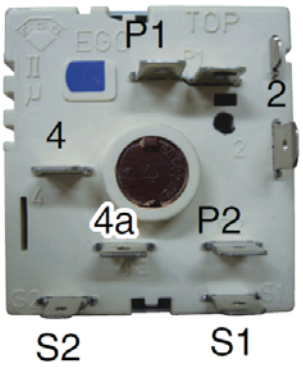


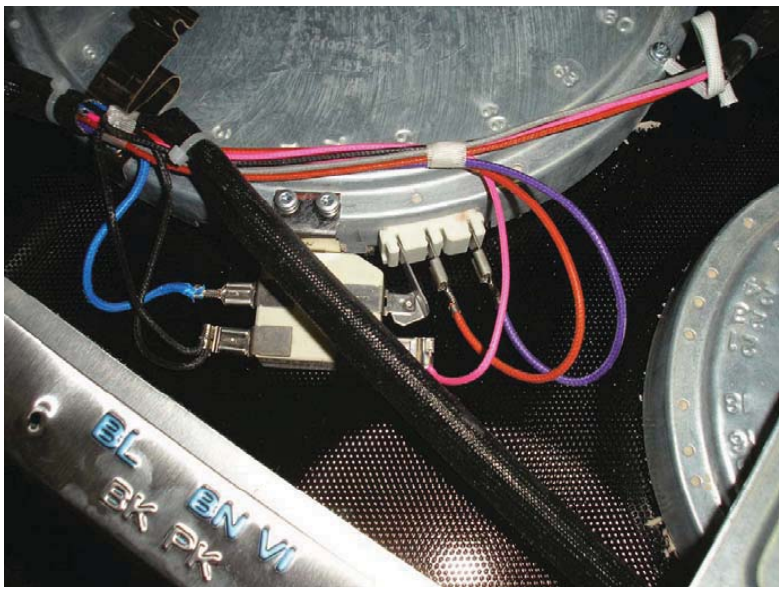

**Left Rear Element Shown / Blue Wire goes to Hot Surface Indicator**

## Right Rear Surface Units

**N.C. Contacts 9 – 3 supply's (BK) L2 to Surface Unit Switch. The N.C. contacts will OPEN during the SELF CLEAN cycle.**

**Left Front Surface Unit (Dual Element)**

| | | | |
|---|---|---|---|
| **LF** Switch |  | P1 | BK+BK |
| | | P2 | RD+RD |
| | | 2 | BN<br>INNER |
| | | 4 | BL+BL |
| | | 4a | VI<br>OUTER |
| | | S1/S2 | - |

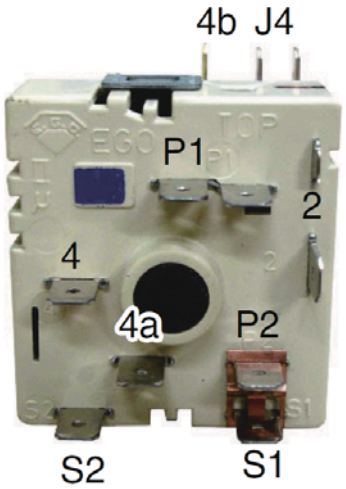


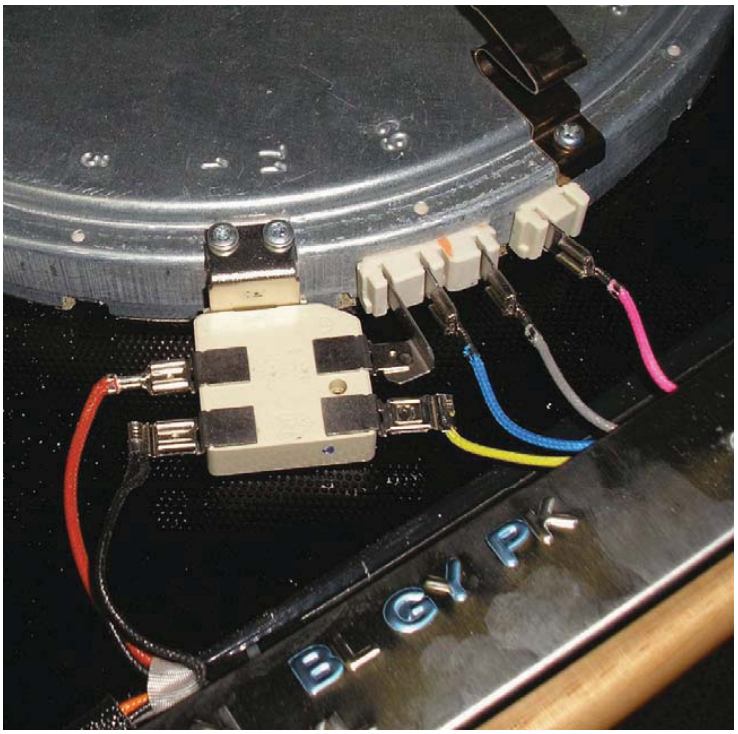
## Left Front Surface Unit

**N.C. Contacts 7 – 1 supply's (BK) L2 to Surface Unit Switch. The N.C. contacts will OPEN during the SELF CLEAN cycle.**

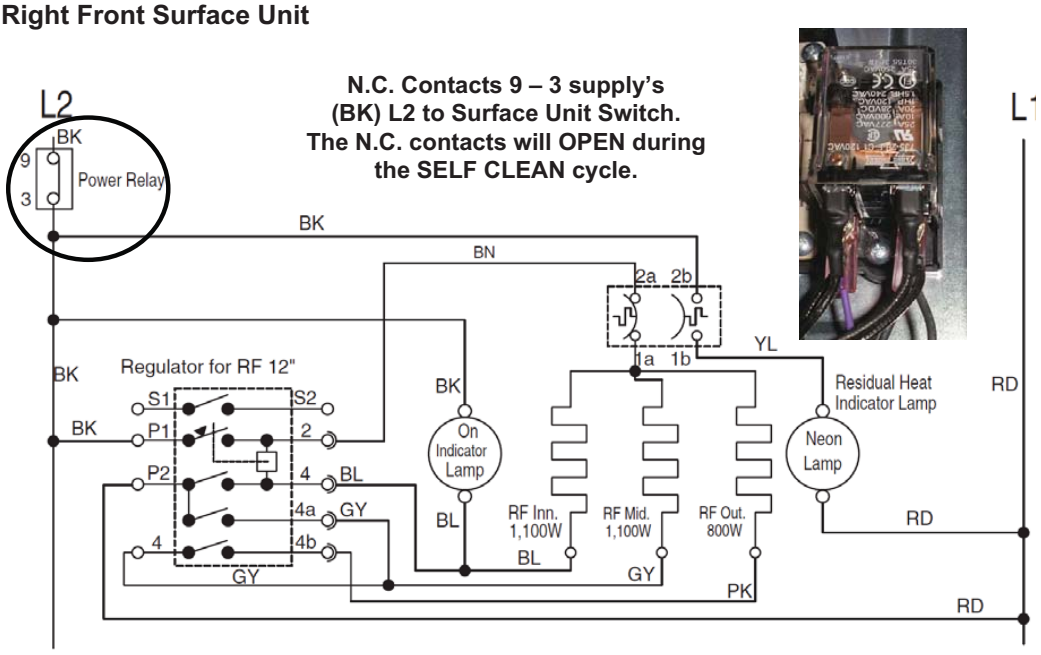



## Right Front Surface Unit ( Triple Element )

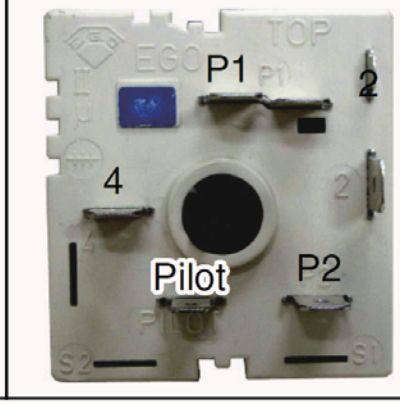
| | | | |
|---|---|---|---|
| **RF Switch** |  | P1 L2 | BK+BK |
| | | P2 L1 | RD+RD |
| | | 2 To Surface Unit | BN |
| | | 4 INNER | BL+BL |
| | | 4a MIDDLE | GY+GY |
| | | J4 | GY |
| | | 4b OUTER | PK |
| | | S1/S2 | - |

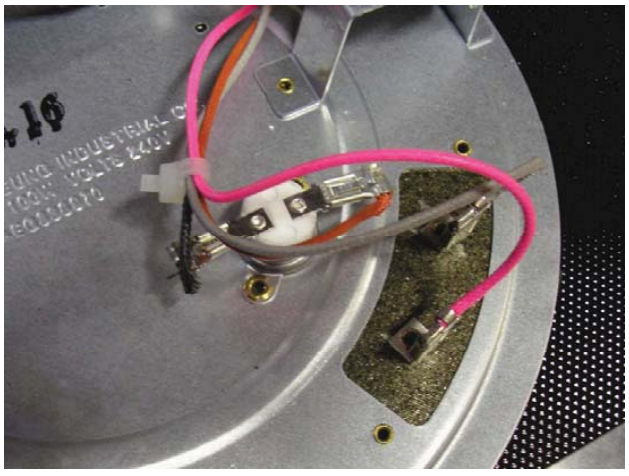



**Right Front Surface Unit**



**Center Rear Surface Unit (Warming Unit)**

| | | | |
|---|---|---|---|
| **CR** Switch |  | P1 | BK+BK |
| | | P2 | RD |
| | | 2 | PK |
| | | 4 | GY+GY |
| | | Pilot | - |



**Center Rear Surface Unit (Warming Unit)**

**N.C. Contacts 7 – 1 supply's (BK) L2 to Surface Unit Switch. The N.C. contacts will OPEN during the SELF CLEAN cycle.**




# LSE3092ST Slide In Range

## Failure Codes

**F1 – Oven Temperature Sensor is Open or Disconnected**

**F2 – Oven Temperature is Shorted**

**F3 – Touch Pad is disconnected or has failed**

**F5 – Shorted or Open Meat Probe Sensor**

**F6 – Oven is overheating, too hot, or temperature sensor failure**

**F10 – Door Locking Error**

**F11 – Main Oven Heating Failure – Temperature increase not detected**

***"For all F Code Failures refer to the Tech Sheet or Service Manual "***

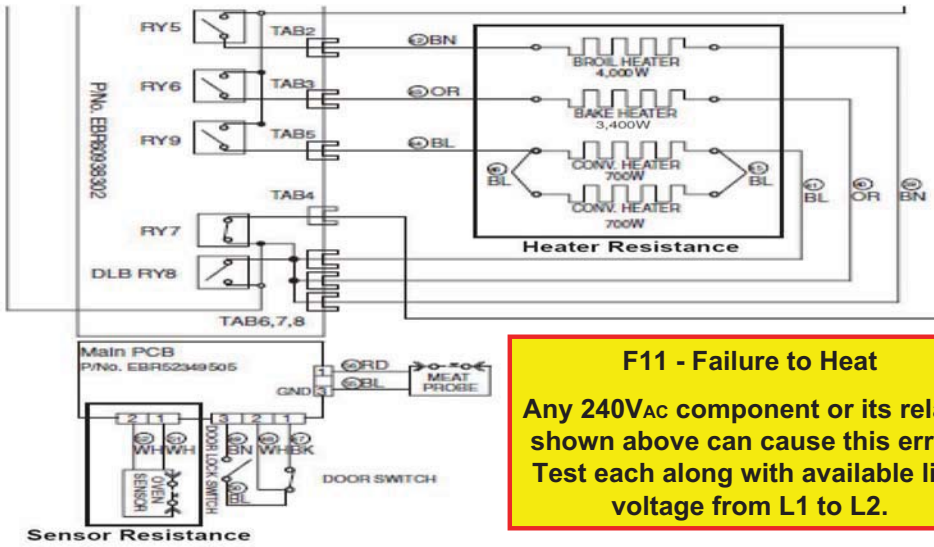
# LSE3092ST Slide In Range


**F11 Error Display / Main Oven Heating Failure**

**Diagnostic Example!**

## FAILURE MODE FLOW CHART

| Symptom | Check Point |
|---|---|
| 1. No heating<br>2. F11 | 1.Check Electric Wiring<br>2.Check Heater's Resistance.<br>3.Check the Sensor. |




**F11 - Failure to Heat**

**Any 240VAC component or its relays shown above can cause this error! Test each along with available line voltage from L1 to L2.**

# FAILURE MODE FLOW CHART

Oven does not heat, F-11

↓ Yes

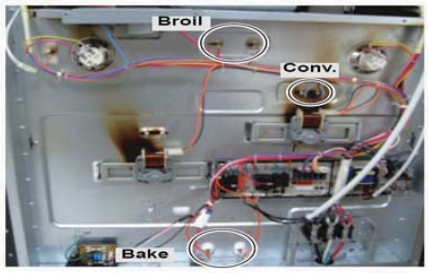
**Power Off**

**1**

Is the disconnect or loose connector?
1. Between Main PCB and Relay PCB (CN7,CN10)
2.Electric wiring of relay PCB All taps.
3.Electric wiring of electric element

No → Reconnect or repair the connector


All taps.




↓ No

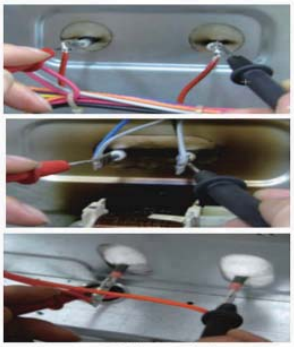
**Power Off**

**2**

Is the heater normal?

Measure the resistance of each heater.
(The resistance is shown below)

No → Replace the Failed heater




**Range Of the resistance**

| Heater | Resistance[Ω] Approximately |
|---|---|
| Broil | 13.0 |
| Bake | 17.0 |
| Convection | 80 |

↓ yes

# FAILURE MODE FLOW CHART

**3**

**Range Of the resistance**

| Heater | Resistance[Ω] Approximately |
|---|---|
| Broil | 13.0 |
| Bake | 17.0 |
| Convection | 80 |

↓ Yes

**Power On**

**4**

Is the value of thermistor normal?
Check: using the test mode

Yes → Go to No 6

**To enter the test mode, follow these steps:**

1. **press the "CLEAR" key**
2. **press the "BAKE", "BROIL" key at the same time**


3. **press the "BAKE", "BROIL" key at the same time again.**


4. **press the NUM "3" key**


**Normal :** the sensor value is from 70_ to 90˚F at 25˚C.

↓ No

**Power Off**

**5**

Is the resistance of thermistor normal?

Check:

Pins 1and 2 of CN5 wiring in main PCB
**Normal**- approximately 1.09_ at 25_

No → Replace the failed thermistor


↓ No

**6**

Replace the Relay PCB (EBR60938302)

If it doesn't work even though changing the Relay PCB, you should replace the Main PCB.(EBR52349505)

**Note: After entering and running the Test Mode, the Failure Code is cleared!!**

# LSE3092ST Slide In Range


Display: OVEN COOLING

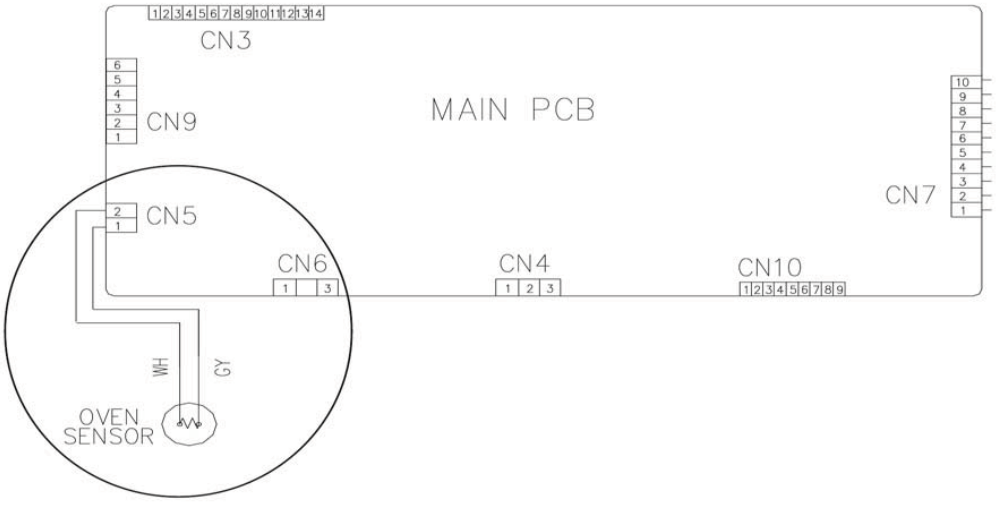

Display AFTER Depressing BAKE & BROIL to Enter Test Mode

**F1 Sensor Failure / Main Oven Heating Failure**

**2nd Diagnostic Example!**

## *FAILURE MODE FLOW CHART*

| Symptom | Check Point |
|---|---|
| 1. Sensing Fail<br>2. F-1<br>3. F-2 | 1.Check the Electric Wiring<br>2.Check the Test Mode<br>3.Check the Sensor's Resistance |



## FAILURE MODE FLOW CHART

Sensing Fail, F-1, F-2?

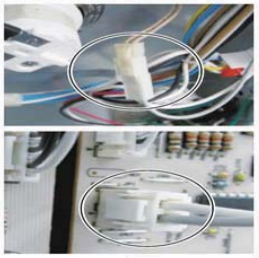
↓Yes

**Power Off**

**1**

Is the disconnect or loose connector?
1.Sensor connection
2. CN05 of Main PCB

Yes → Reconnect or repair the connector



Sensor connection



CN05 connection

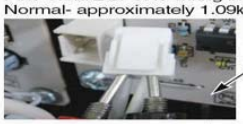
↓No

**Power Off**

**2**

Is the resistance of thermistor normal?
Check:
Pins 1and 2 of CN5 wiring in main PCB
Normal- approximately 1.09kΩ at 25 Ω

Yes → Replace the failed thermistor




↓No

**Power On**

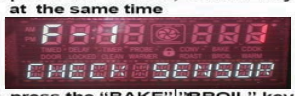
**3**

Is the value of thermistor normal?
Check: using the test mode

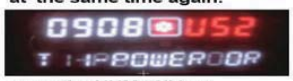
Yes → Go to No 1

**To enter the testmode, follow these steps:**

1. **press the "clear" key**
2. **press the "BAKE","BROIL" key at the same time**




3. **press the "BAKE","BROIL" key at the same time again.**



4. **press the NUM "3" key**

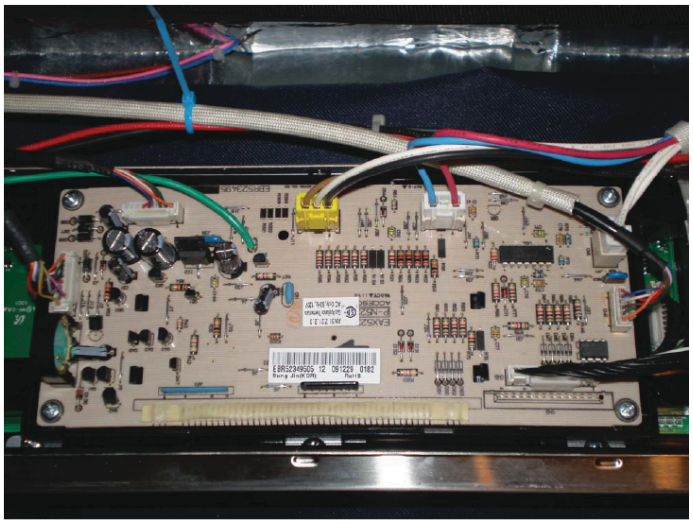
**Normal: Sensor value is 70° to 90°F. The 980° display shows Sensor Open or Disconnected!!**

↓No

Replace the Main PCB.
(EBR52349501)

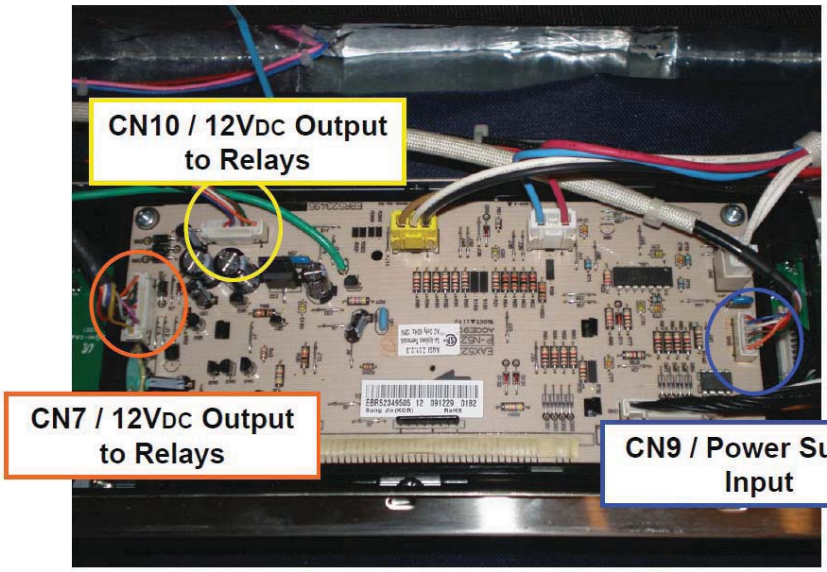
**Note: After entering and running the Test Mode, the Failure Code is cleared!!**

## LSE3092ST Range Power Supply Voltages & Testing



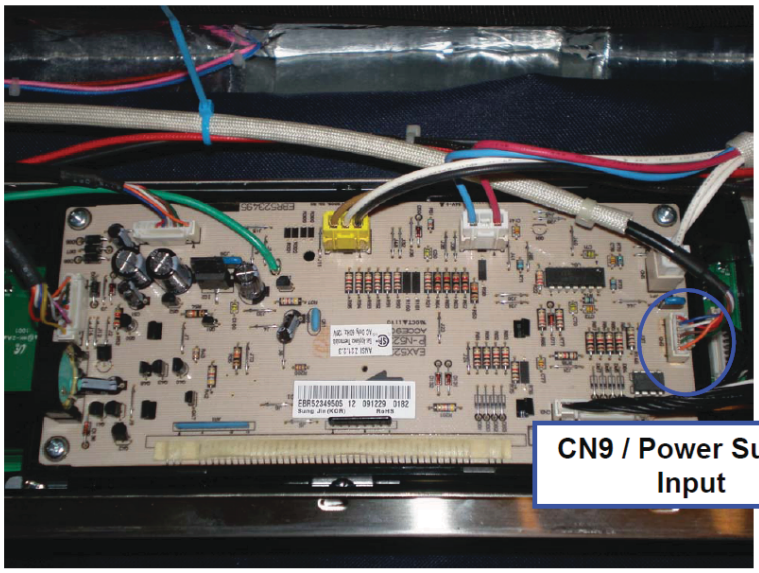
**Main PWB / Rear View / In the Console**

## LSE3092ST Range Power Supply Voltages & Testing




Main PWB / Rear View / In the Console

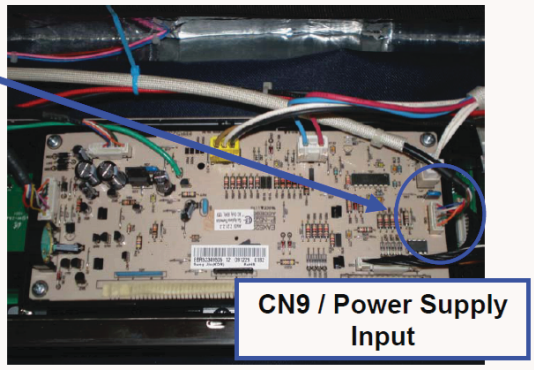
## LSE3092ST Range Power Supply Voltages & Testing




Main PWB / Rear View / In the Console

## LSE3092ST Range Power Supply Voltages & Testing


Power Supply Board




Main PWB / Rear View

## LSE3092ST Range Power Supply Voltages & Testing

**CN9 / Wiring Colors & Voltages**

Pin1 – RD or OR (Not Used!)

Pin2 – BL or GN – 12 to 15VDC

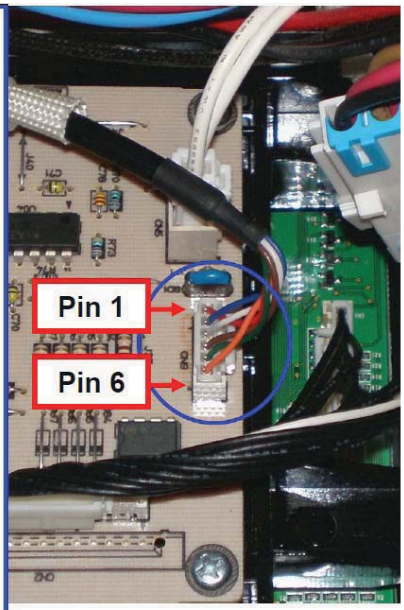
Pin3 – WH or BN – GND

Pin4 – BN or WH - (-24 to -35VDC)

Pin5 – GN or BL - 3.4 to 4.6 VAC / Pins 5 to 6

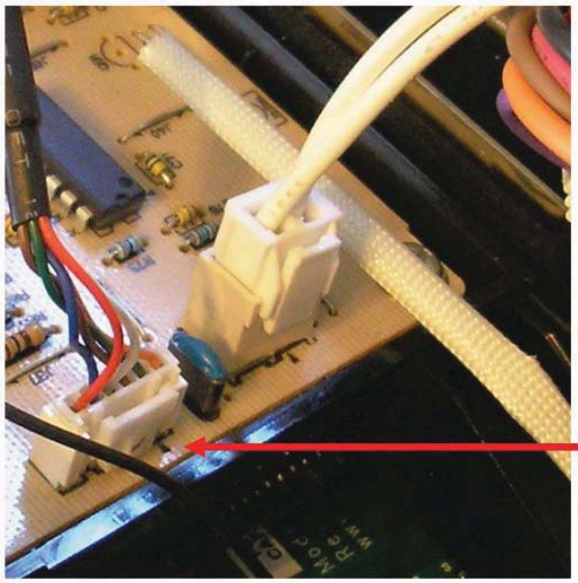
Pin6 – OR or RD - 3.4 to 4.6 VAC / Pins 5 to 6

*(These voltages supply the control board, which enables this board to operate the clock; control the Oven Lights, Fans, Bake, Broil, Convection, Self Clean, Door Lock Motor & Power Relay via the relays on the Relay Board.)*




Main PWB / Rear View

## LSE3092ST Range Power Supply Voltages & Testing



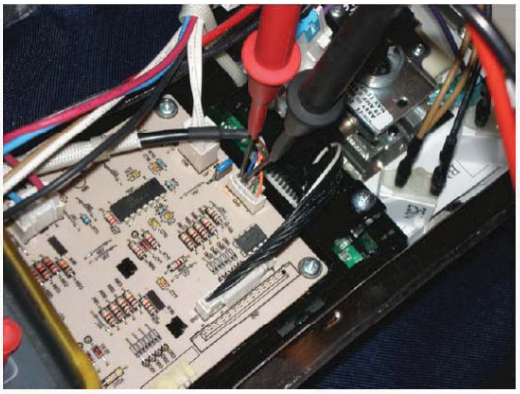
**CN9 Pin 1**

**The Arrow Point is the reference pin.**
***Always LOOK for this!!***

**Main PWB / Rear View**

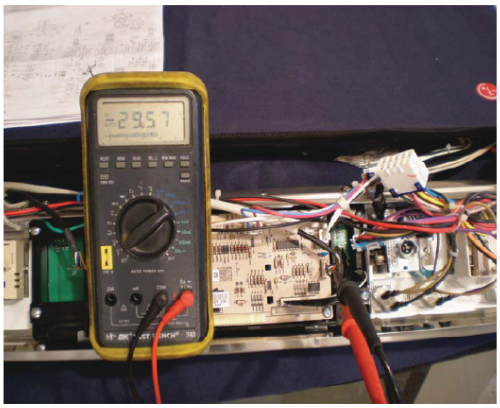
## LSE3092ST Range Power Supply Voltages & Testing

**12 to 15 VDC (1st Voltage)**

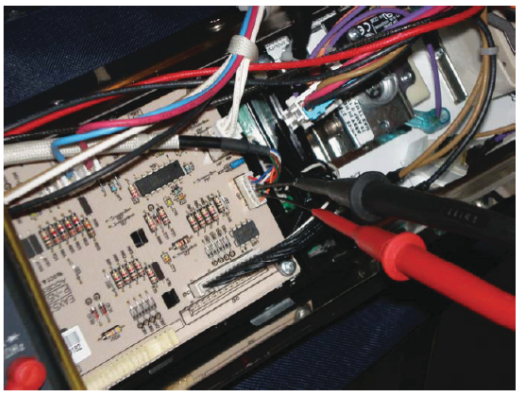


**Measure from Pin 3 (GND) to Pin 2 15VDC**

## LSE3092ST Range Power Supply Voltages & Testing

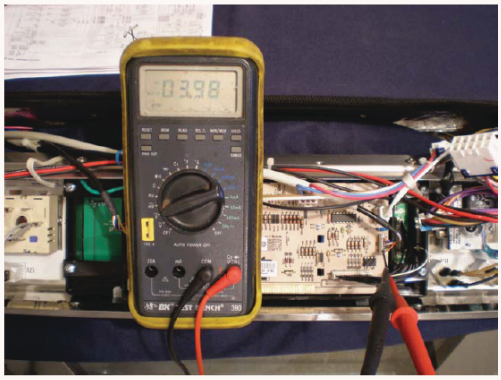


-24 to -35VDC (2nd Voltage)

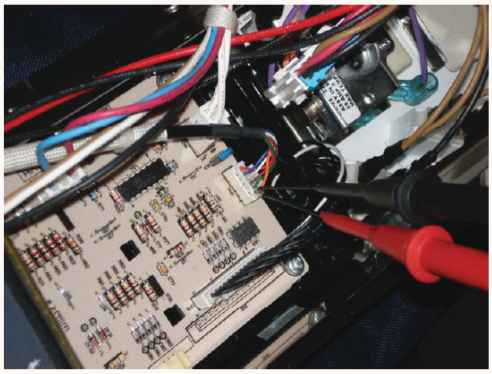


Measure from Pin 3 (GND) to Pin 4 (-24 to -35VDC)

## LSE3092ST Range Power Supply Voltages & Testing

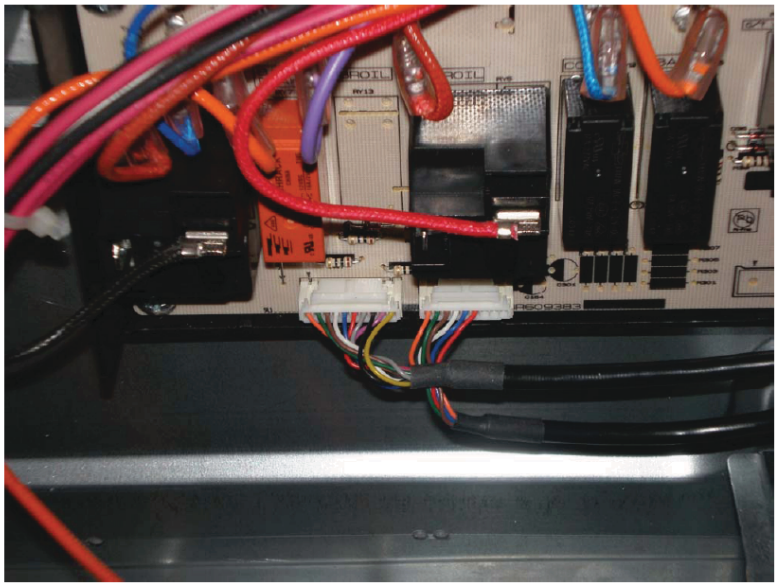


3.4 to 4.6 VAC (3rd Voltage)



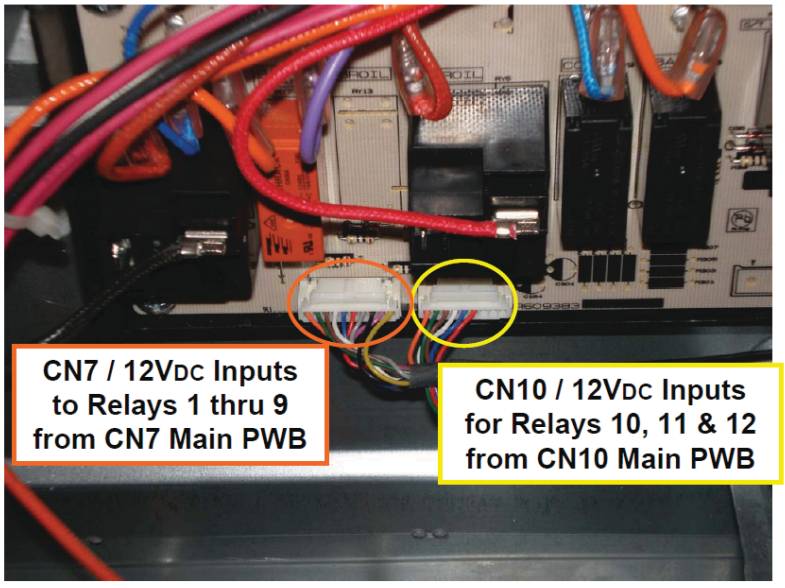
Measure from Pin 5 to Pin 6

## LSE3092ST Range Relay Board Voltages & Testing



Relay Board / Rear of Range

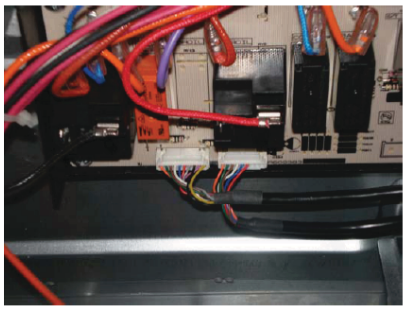
## LSE3092ST Range Relay Board Voltages & Testing




Relay Board / Rear of Range

## LSE3092ST Range Relay Board Voltages & Testing

| Relays |
|---|
| RLY 1 – Oven Lamps (Bulbs) |
| RLY 2 – Door Lock Motor |
| RLY 3 – Convection Fan Motors |
| RLY 5 – Broil Heater |
| RLY 6 – Bake Heater |
| RLY 7 – Lower Oven TStat (L2) |
| RLY 8 – Double Line Break (L2) |
| RLY 9 – Convection Heaters |
| RLY10 – Blower Fan (High) |
| RLY11 – Blower Fan (Low) |
| RLY12 – Power Relay |



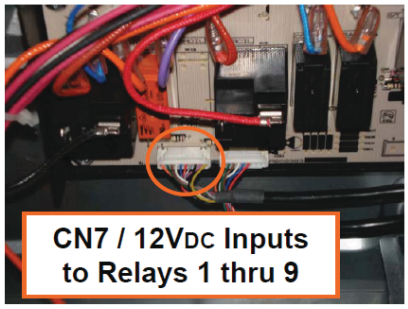
Relay Board / Rear of Range

**Relay Coil Voltages**

All Relay Coils are 12VDC coils. The Main Power Board (Console) provides the +12VDC & switches the GND side to each relay coil to energize or de-energize its load.

## LSE3092ST Range Relay Board Voltages & Testing

| CN7 (10 Pin Connector) | | |
|---|---|---|
| Pin No | Wire Color | Function |
| 1 | OR | 12VDC for CN10 RLYs. |
| 2 | GN | Relay 1 |
| 3 | BN | Relay 2 |
| 4 | WH | Relay 3 |
| 5 | BL | 12VDC for CN7 RLYs. |
| 6 | RD | Relay 5 |
| 7 | GY | Relay 6 |
| 8 | BK | Relay 7 |
| 9 | PR | Relay 9 |
| 10 | YL | Relay 8 |



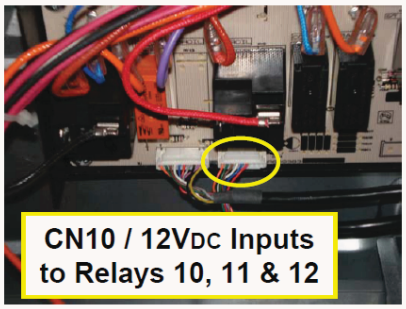

Relay Board / Rear of Range

**Relay Coil Voltages**

All Relay Coils are 12VDC coils. The Main Power Board (Console) provides the +12VDC & switches the GND side to each relay coil to energize or de-energize its load.

## LSE3092ST Range Relay Board Voltages & Testing

| CN10 (9 Pin Connector) | | |
|---|---|---|
| Pin No | Wire Color | Function |
| 1 | OR | Not Used! |
| 2 | GN | Not Used! |
| 3 | BN | Relay 12 |
| 4 | WH | Relay 10 |
| 5 | BL | Relay 11 |
| 6 | RD | Not Used! |
| 7 | Not Used! | |
| 8 | Not Used! | |
| 9 | Not Used! | |

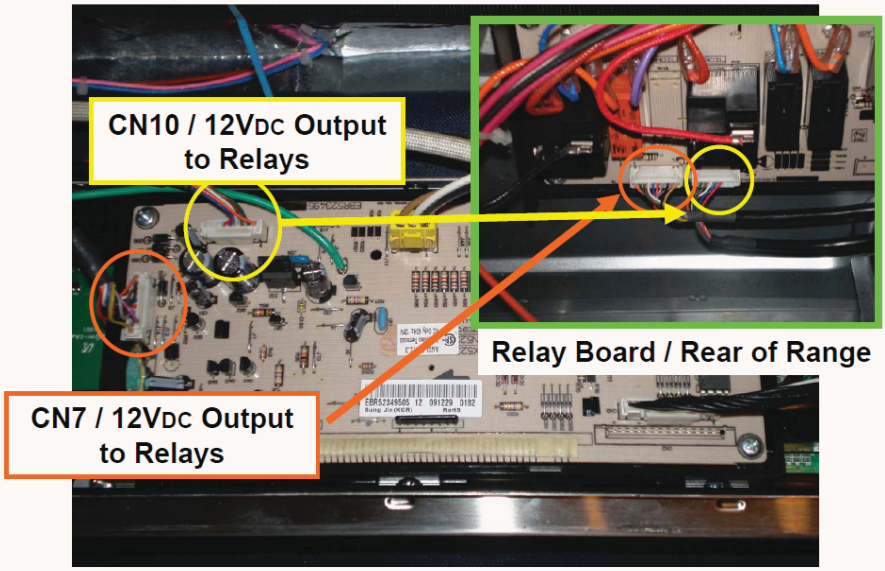



Relay Board / Rear of Range

**Relay Coil Voltages**

All Relay Coils are 12VDC coils. The Main Power Board (Console) provides the +12VDC & switches the GND side to each relay coil to energize or de-energize its load.

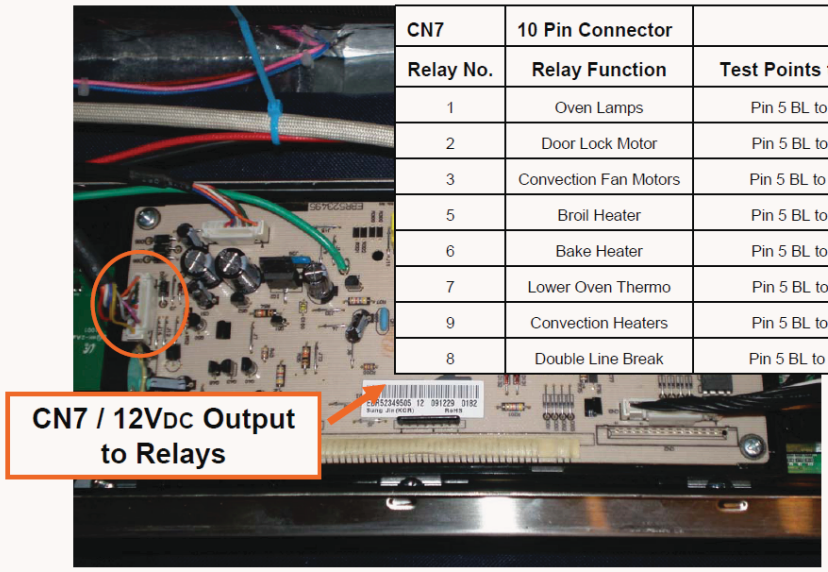
## LSE3092ST Range Relay Board Voltages & Testing




Relay Board / Rear of Range

Main PWB to Relay Board Connectivity

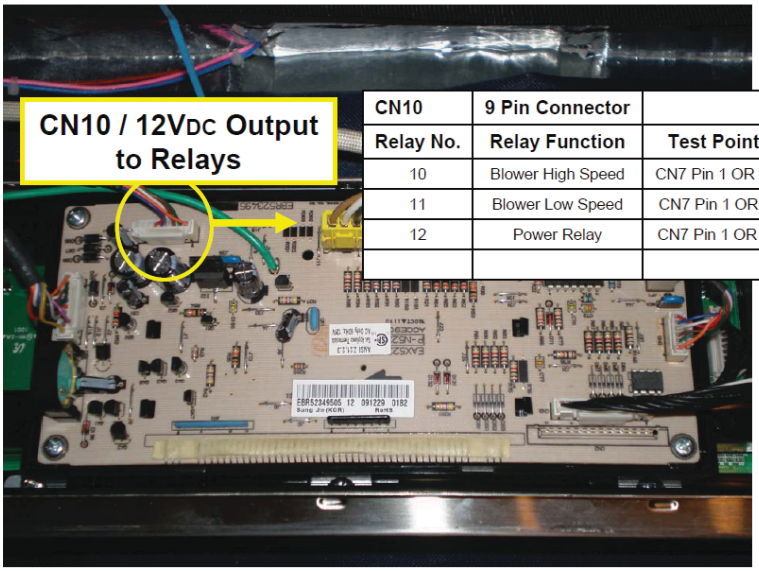
## LSE3092ST Range Relay Board Voltages & Testing




| CN7 | 10 Pin Connector | |
|---|---|---|
| Relay No. | Relay Function | Test Points to Measure |
| 1 | Oven Lamps | Pin 5 BL to Pin 2 GN |
| 2 | Door Lock Motor | Pin 5 BL to Pin 3 BN |
| 3 | Convection Fan Motors | Pin 5 BL to Pin 4 WH |
| 5 | Broil Heater | Pin 5 BL to Pin 6 RD |
| 6 | Bake Heater | Pin 5 BL to Pin 7 GY |
| 7 | Lower Oven Thermo | Pin 5 BL to Pin 8 BK |
| 9 | Convection Heaters | Pin 5 BL to Pin 9 PR |
| 8 | Double Line Break | Pin 5 BL to Pin 10 YL |

**Main PWB to Relay Board Connectivity**

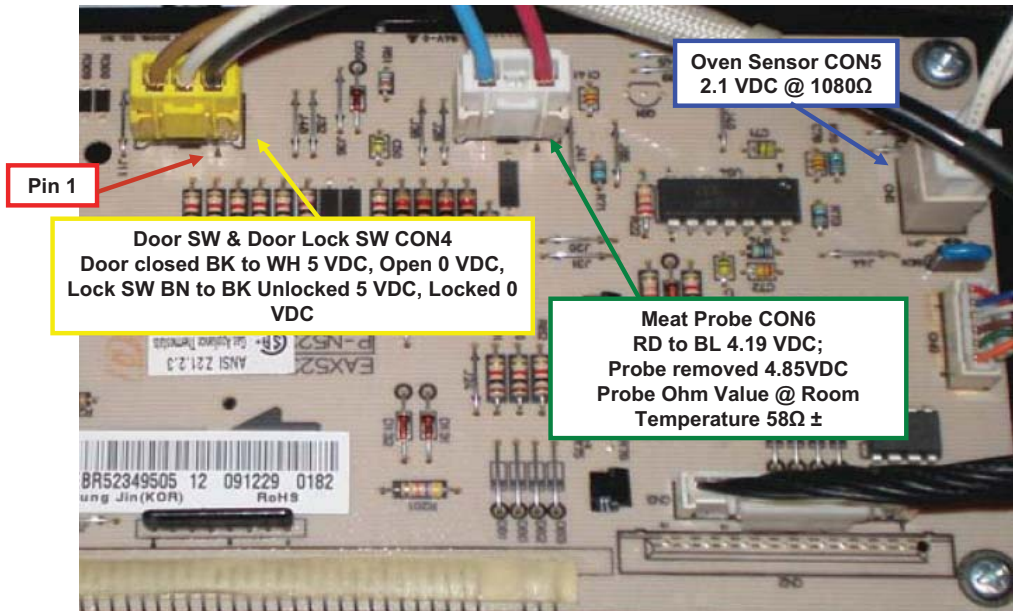
## LSE3092ST Range Relay Board Voltages & Testing



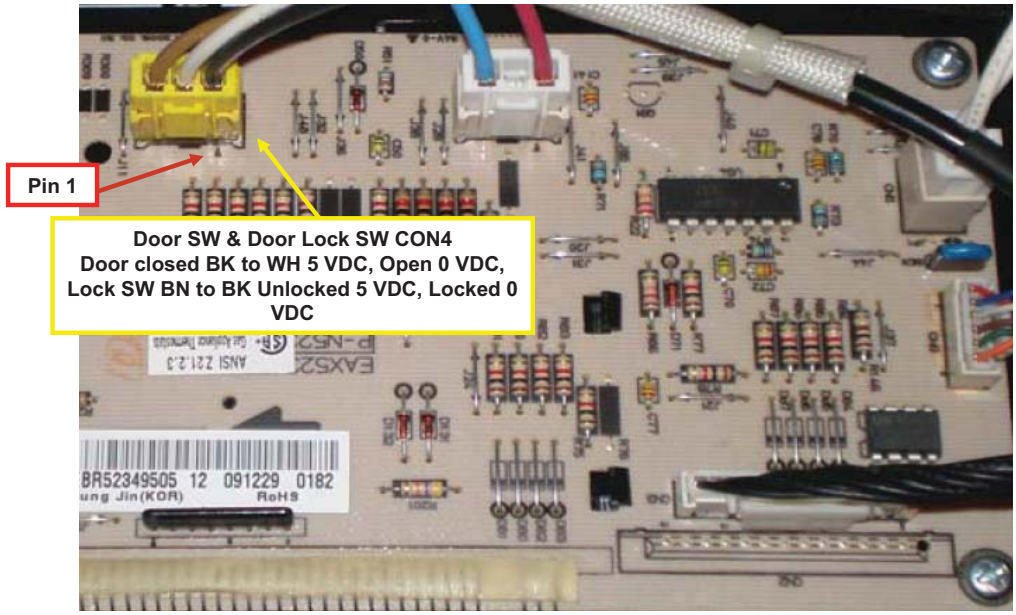

| CN10 | 9 Pin Connector | |
|---|---|---|
| Relay No. | Relay Function | Test Points to Measure |
| 10 | Blower High Speed | CN7 Pin 1 OR to CN10 Pin 4 WH |
| 11 | Blower Low Speed | CN7 Pin 1 OR to CN10 Pin 5 BL |
| 12 | Power Relay | CN7 Pin 1 OR to CN10 Pin 3 BN |
| | | |

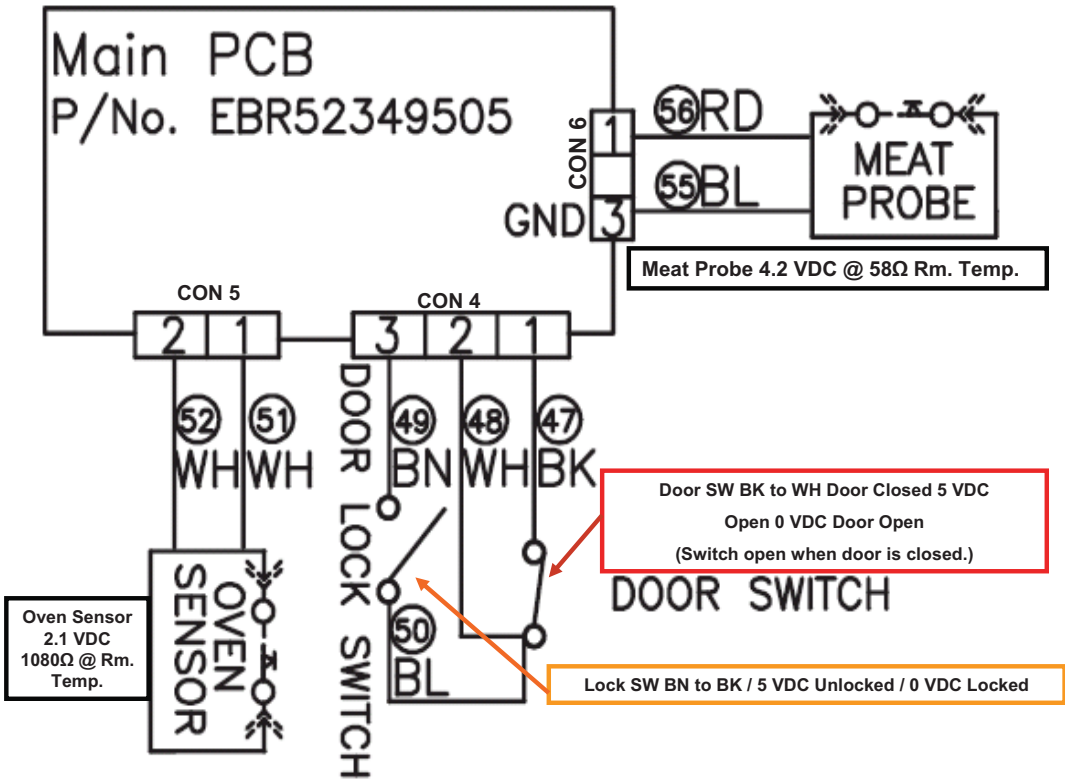
**Main PWB to Relay Board Connectivity**

## LSE3092ST Range Power Board Connectors




## LSE3092ST Door Switch & Door Lock Connector

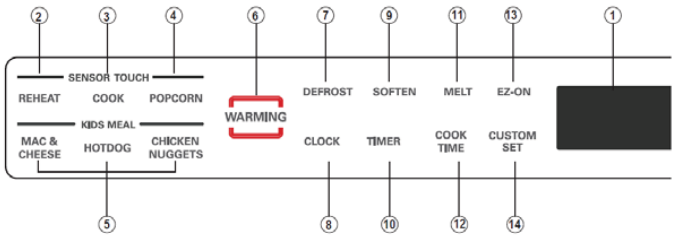


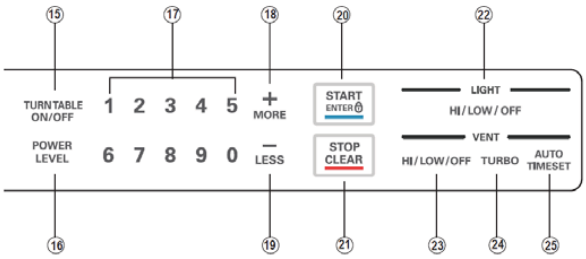

Main PCB
P/No. EBR52349505
CON 6
1
GND 3
56 RD
55 BL
MEAT PROBE
Meat Probe 4.2 VDC @ 58Ω Rm. Temp.
CON 5
2 1
CON 4
3 2 1
52 WH
51 WH
49 BN
48 WH
47 BK
DOOR LOCK SWITCH
50 BL
Door SW BK to WH Door Closed 5 VDC
Open 0 VDC Door Open
(Switch open when door is closed.)
DOOR SWITCH
Oven Sensor
2.1 VDC
1080Ω @ Rm.
Temp.
OVEN SENSOR
Lock SW BN to BK / 5 VDC Unlocked / 0 VDC Locked

# MICROWAVE WITH WARMING LAMP

**LMHM2017****

## SLIDE OUT VENT



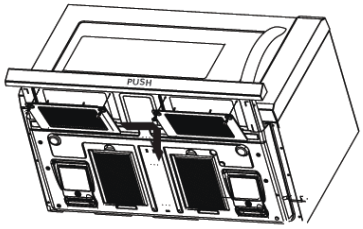



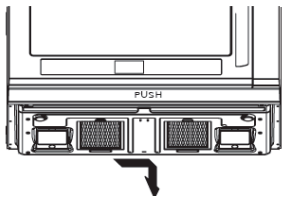
1. **DISPLAY:** The Display includes a clock and indicators to tell you time of day, cooking time setting, and cooking functions selected.
2. **REHEAT:** Touch this pad to reheat Pizza Slice, Dinner Plate, Soup/Sauce, and Casserole. The oven's sensor will tell the oven how long to cook depending on the amount of humidity coming from the food.
3. **COOK:** Touch this pad to cook Baked Potato, Vegetable, Casserole, Rice, and Frozen Entree. The oven's sensor will tell the oven how long to cook depending on the amount of humidity coming from the food.
4. **POPCORN:** Touch this pad when popping popcorn in your microwave oven. The oven's sensor will tell the oven how long to cook depending on the amount of humidity it detects from the popcorn.
5. **KIDS MEAL:** Select type of dish to reheat HOT DOG, MAC & CHEESE or CHICKEN NUGGETS.
6. **WARMING:** Touch this pad to keep hot cooked foods warm in your oven.
7. **DEFROST:** Touch this key to defrost food by entering weight, cook time or Quickly.
   Touch this key 2 times to Quick Defrost Cook.
   Touch this key 3 times to Time Defrost Cook.
8. **CLOCK:** Touch this pad to enter the time of day.
9. **SOFTEN:** Touch this pad to soften Butter, Ice Cream, Cream Cheese, and Frozen Juice.
10. **TIMER :** Touch this pad to set the kitchen timer.
11. **MELT:** Touch this pad to melt Butter / Margarine, Chocolate, Cheese, and Marshmallows.
12. **COOK TIME:** Touch this pad to to set a cooking time.
13. **EZ-ON:** Touch this pad to set and start quickly at 100% power level.
14. **CUSTOM SET:** Touch this pad to change the oven's default setting for sound, clock, disply speed, and defrost weight.
15. **TURNTABLE ON/OFF:** Touch this pad to turn on/off the turntable. This option is not available in sensor cook, defrost, kids meal, soft and melt modes.
16. **POWER LEVEL:** Touch this pad to select a cooking power level.
17. **NUMBER:** Touch number pads to enter cooking time, power level, quantities, or weights.
18. **MORE:** Touch this pad to add ten seconds of cooking time each time you press it.
19. **LESS:** Touch this pad to subtract ten seconds of cooking time each time you press it.
20. **START/ENTER:** Touch this pad to start a function. If you open the door after oven begins to cook, touch START/ENTER again.
21. **STOP/CLEAR:** Touch this pad to stop the oven or to clear all entries.
22. **LIGHT HI/LOW/OFF:** Touch this pad to turn the light on high, low, or off.
23. **VENT HIGH/LOW/OFF:** Touch this pad to turn the fan on high, low ,or off.
24. **VENT TURBO:** Touch this pad to choose the most powerful fan speed.
25. **VENT AUTO TIME SET:** Touch this pad when setting ventilation time. (1, 3, 5, 10, and 30 minutes.)

## CLEANING THE GREASE FILTERS

The grease filter should be removed and cleaned often, at least once a month.

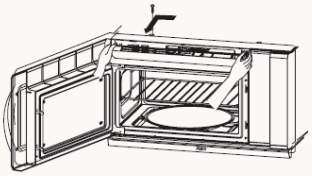
1. Disconnect power or unplug microwave oven.
2. To remove the grease filter, open the Slide-out hood. Remove the screws holding the filter bracket in place. The filter can removed/replaced by sliding front.



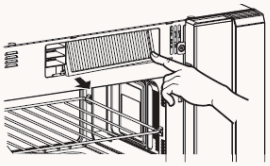



## CHARCOAL FILTER REPLACEMENT

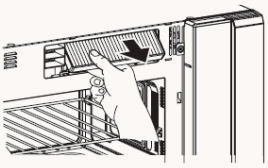
1. Unplug microwave oven or disconnect power.
2. Open the door and remove the one vent grille mounting screw. (1 middle screws)



3. Slide the grille left and tip forward, then lift out to remove.

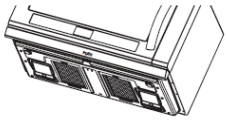


4. Remove old filter.

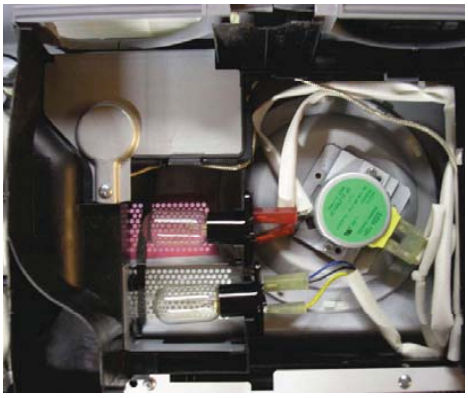


## COOKTOP/NIGHT LIGHT REPLACEMENT

1. Unplug microwave oven or disconnect power.

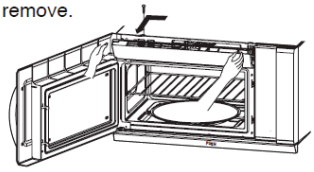


2. Remove the lamp cover mounting screws.
3. Replace bulb(s) with 20~40 watt appliance bulb(s).
4. Replace lamp cover, and mounting screws.
5. Plug in microwave oven or reconnect power.

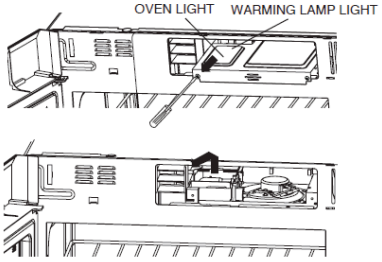


## OVEN AND WARMING LAMP LIGHT REPLACEMENT

1. Unplug microwave oven or disconnect power.
2. Open the door and remove the vent grille mounting screw.
3. Slide the grille left and tip the cover forward, then lift out to remove.



4. Remove the bulb holder mounting screw, and lift up the bulb holder which you want to replace.



## TECH SHEET

## TECH SHEET

### MICROWAVE OVEN TECH SHEET

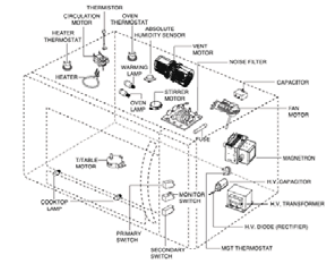
**CAUTION**

Disconnect from Electrical Supply Before Servicing Unit

**PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY**

A. Do not operate or allow the oven to be operated with the door open.
B. Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
1. Interlock Operation
2. Proper Door Closing
3. Seal and Sealing Surfaces (Arcing, Wear and Other Damage)
4. Damage to or Loosening of Hinges and Latches
5. Evidence of Dropping or Abuse.
C. Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, waveguide or transmission line, and cavity for proper alignment, integrity and connections.
D. Any defective or mis-adjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
E. A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.
F. Do not attempt to operate the oven if the door glass is broken.

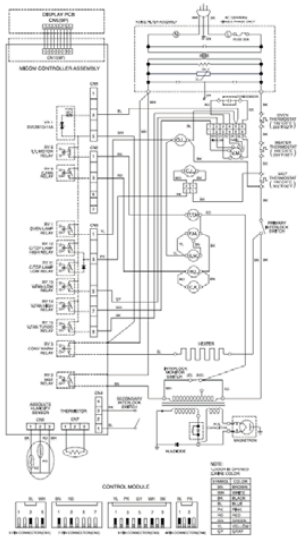
**Parts Layout**




PART NO.: MBM62255901

**Schematic Diagram**

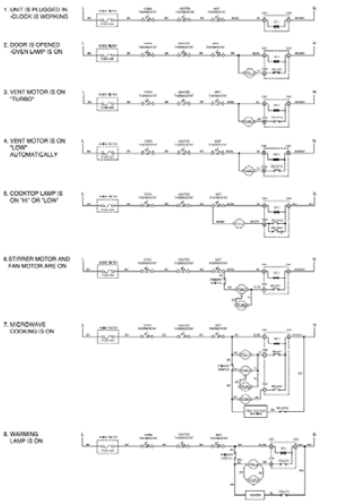
**CAUTION: Disconnect from electrical supply before servicing unit.**



**Complete the following steps before checking microwave circuitry:**

1. Check the line voltage, household fuse or circuit breaker.
2. Check for loose wiring or mis-wiring within microwave.
3. Disconnect white wire from high-voltage transformer and discharge high-voltage capacitor.

**NOTE:** 1. All testing must be done with an ohmmeter having a sensitivity of 20,000 ohm per volt or greater and powered by at least a 9-volt battery.
2. All operational checks with microwave energy must be done with a load (1 liter water in a measuring glass cup) in the microwave oven.



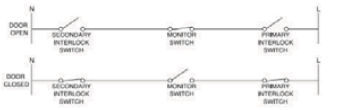
## TECH SHEET

### Switch Chart

**PRIMARY, MONITOR, AND SECONDARY SWITCH CHECKOUT PROCEDURE**

| SWITCH | CHECK BY | DOOR OPEN | DOOR CLOSED |
|---|---|---|---|
| Primary Interlock | Disconnect the wires at the Primary Interlock Switch. Check from the common terminal (Black wires) to the normally opened terminal (Red wires). | — | + |
| Secondary Interlock | Disconnect the wires at the Secondary Interlock Switch. Check from the common terminal (Blue wire) to the normally opened terminal (Pink wire). | — | + |
| Monitor | Disconnect the wires at the Monitor Switch. Check from the common terminal (White wire) and normally closed terminal (Red wire). | + | — |

(+) CONTINUITY
(—) NO CONTINUITY




**NOTE:** These Diagrams are not intended to show a complete circuit, they represent the position of switches during "DOOR OPEN" and "DOOR CLOSED", (continuity checks only).

**POWER OUTPUT MEASUREMENT**

(A) 1. Fill two test bowls with 59 °F(15 °C) – 75 °F(24 °C) 1 liter water respectively.
2. Use accurate thermometer ( °F or °C) and measure water temperature respectively.
(B) Place the two bowls on turntable of the oven.
(C) 1. Set cooking time to 2 minutes. ("2:00" appears in display)
2. Touch START key and operate oven for exactly 2 minutes.
(D) 1. Take out the two bowls at once.
2. Stir both water with thermometer and measure the water temperature rise respectively.
(E) 1. Get temperature rise by calculating the difference (water temperature after cooking minus initial temperature) in each test bowls.
2. Then calculate average value of both temperature rises in degrees Fahrenheit ( °F) or Centigrade ( °C).
(F) Power Output shall be indicated by the following ranges of water temperature rise as shown in the chart below.
(G) Power Output will be influenced by line voltage of power supply. Consequently, correct power output must be measured within 120V AC ±1 volt while unit is operating.

| Average Temp. Rise | | * 108V (Low Voltage) Temp. Rise |
|---|---|---|
| Min. | Max. | Min. |
| 16,2 °F (9,0 °C) | 22,1 °F (12,3 °C) | 15,3 °F (8,5 °C) |

### Component tests

**⚠ WARNING**

**Personal Injury/Product Hazard**

- Disconnect the power supply cord from the outlet before removing the outer cabinet from the unit.
- Discharge the high voltage capacitor and remove the lead wires from the primary winding of the high voltage transformer before conducting any of the following tests.
- Conduct all operation tests with 1 liter of water in the oven.
- Conduct a microwave energy test after performing any test or repairs to the microwave.
- Check that all wire leads are in the correct position before operating the microwave oven.
- Grasp wire connectors when removing the wire leads from microwave parts.

Failure to follow these instructions may result in electrical shock or other personal injury or in product damage.

### High voltage components

| Components | Test | Results |
|---|---|---|
| **Transformer** | 1. Remove wire leads.<br>2. Measure resistance. (ohm meter scale: Rx1)<br>• Primary winding<br>• Secondary winding<br>• Filament winding<br>3. Measure resistance. (ohm meter scale: Rx1000)<br>• Primary winding to ground<br>• Filament winding to ground | Approx. 0,2 to 0,5 ohms<br>Approx. 50 to 120 ohms<br>0 ohm<br>Normal: Infinite<br>Normal: Infinite |
| **Magnetron** | 1. Remove wire leads. Install the magnetron seal in the correct position. Check that the seal is in good condition.<br>2. Measure resistance. (ohm meter scale: Rx1)<br>• Filament terminal<br>3. Measure resistance. (ohm meter scale: Rx1000)<br>• Filament to chassis | Normal: Less than 1 ohm<br>Normal: Infinite |
| **Capacitor** | 1. Remove wire leads.<br>2. Measure resistance. (ohm meter scale: Rx1000)<br>• Terminal to terminal<br>• Terminal to case | Normal:<br>Momently indicates several ohm, and then gradually returns to infinite<br>Normal: Infinite. |
| **Diode**<br>Some inexpensive ohm meters may indicate infinite resistance in both directions. | 1. Measure continuity. Forward. (ohm meter scale: Rx1000)<br>2. Measure continuity. Reverse. (ohm meter scale: Rx1000) | Normal:Continuity.<br>Abnormal: Infinite.<br>Normal: Infinite.<br>Abnormal: Continuity. |

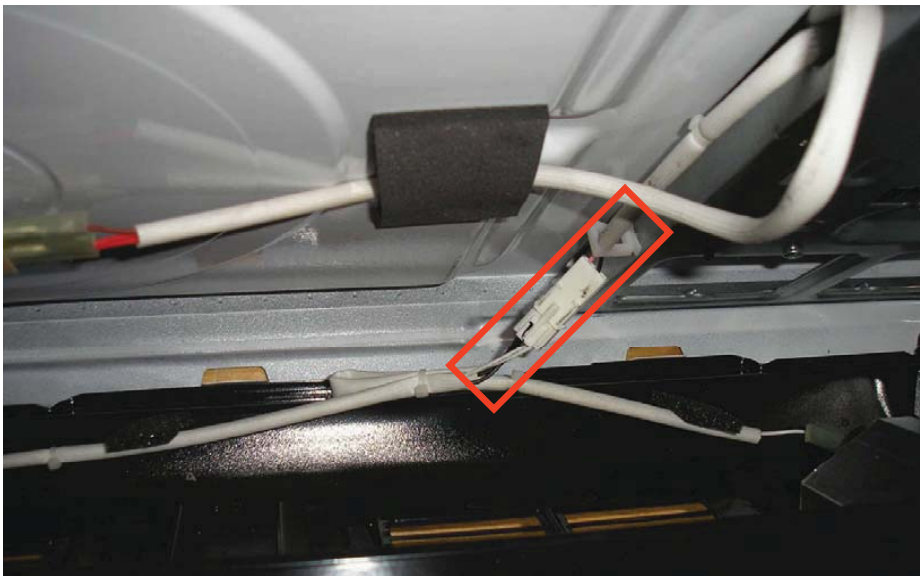
### Other components

| Components | Test | Results |
|---|---|---|
| **Relay 2** | 1. Measure continuity. (ohm meter scale: Rx1)<br>2. Remove the lead wires and operate oven at power level 1 through power level 2. | Power Level: 1 4 Sec / 2 6 Sec / 3 8 Sec / 4 10 Sec / 5 12 Sec / 6 14 Sec / 7 16 Sec / 8 18 Sec / 9 20 Sec / 10 22 Sec<br>Open: 18 Sec / 16 Sec / 14 Sec / 12 Sec / 10 Sec / 8 Sec / 6 Sec / 4 Sec / 2 Sec / 0 Sec<br>Close: 0 Sec |
| **Fan Motor** | 1. Remove wire leads.<br>2. Measure resistance. (ohm meter scale: Rx1) | Normal: Approximately<br>Terminal ② - ④: 35 to 50 ohms<br>Terminal ② - ⑤: 5 to 15 ohms<br>Abnormal:<br>Infinite or several. |
| **Ventilation Motor** | 1. Remove lead wires.<br>2. Measure resistance. (ohm meter scale: Rx1)<br>Turbo speed: Blue and black wire<br>High speed: Blue and white wire<br>Low speed: Blue and gray wire | Normal:<br>Approximately<br>Turbo Speed:<br>20 to 30 ohms<br>High Speed:<br>40 to 50 ohms<br>Low Speed:<br>45 to 55 ohms |
| **Turntable Motor** | 1. Remove wire leads.<br>2. Measure resistance. (ohm meter scale: Rx1000) | Normal:<br>Approximately<br>2.0 to 3.0 Kohms<br>Abnormal:<br>Infinite or several. |
| **Absolute Humidity Sensor** | 1. Disconnect sensor connector from micom computer board.<br>2. Measure resistance terminal to terminal (ohm meter scale: H X 1000) | Normal:<br>Approximately<br>BK-RD: 6.0 Kohms<br>RD-WH: 3.0 Kohms<br>BK-WH: 3.0 Kohms<br>Abnormal:<br>Infinite or approx. 0 ohm |
| **Stirrer Motor** | 1. Remove lead wires.<br>2. Measure resistance. (ohm meter scale: Rx1000) | Normal:<br>Approximately<br>120 to 135 ohms<br>Abnormal: Infinite |
| **Circulation Motor** | 1. Remove lead wires.<br>2. Measure resistance. (ohm meter scale: Rx1) | Normal:<br>Approximately<br>55 to 70 ohms<br>Abnormal: Infinite |
| **Heater** | 1. Remove lead wires.<br>2. Measure resistance. (ohm meter scale: Rx1) | Normal:<br>Approximately<br>25 to 35 ohms<br>Abnormal: Infinite |


**SLIDE OUT HOOD (BOTTOM VIEW)**

**REMOVE 8 SCREWS**


**DISCONNECT 120 VAC SUPPLY**

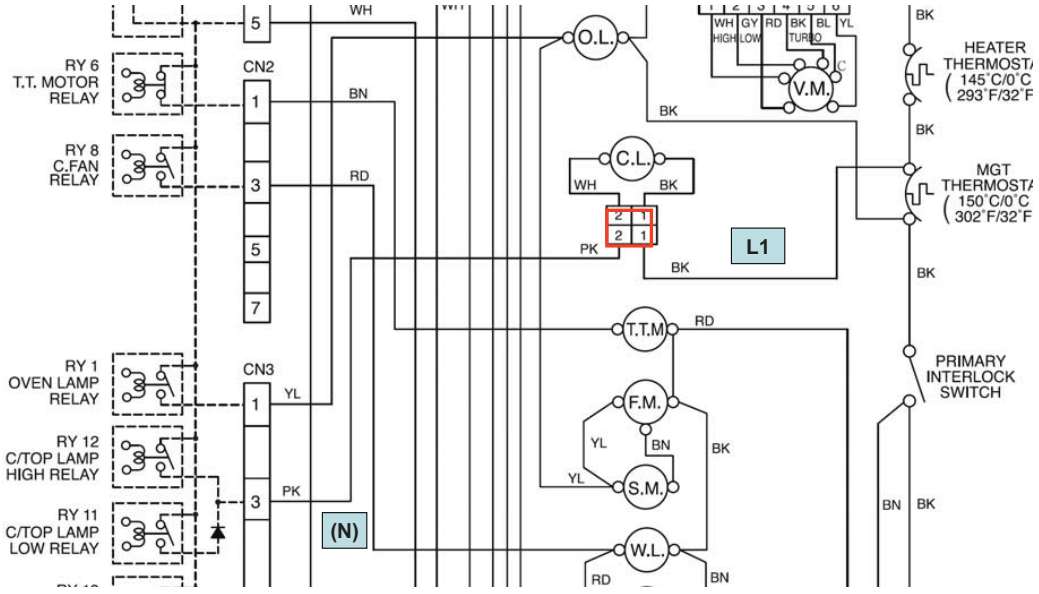


## Cabinet Bottom

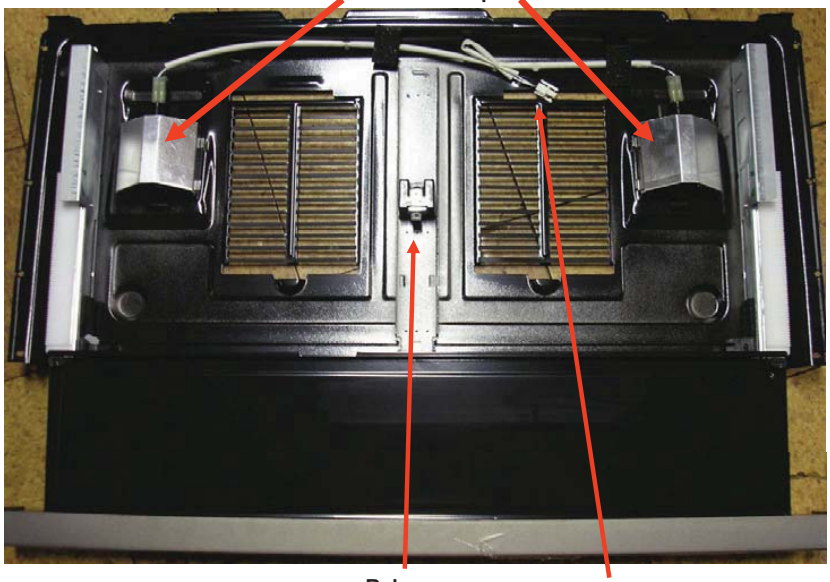
Turntable Mtr

120 VAC Connector

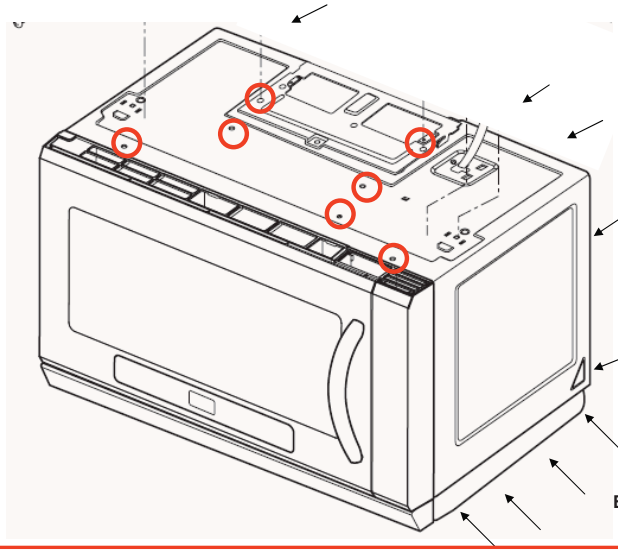
Exhaust Vents to Blower Assembly



## Slide Out Vent Assembly

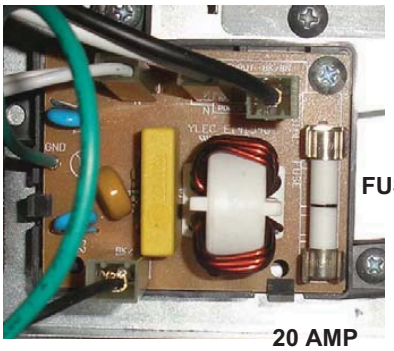



## Removing the Cabinet



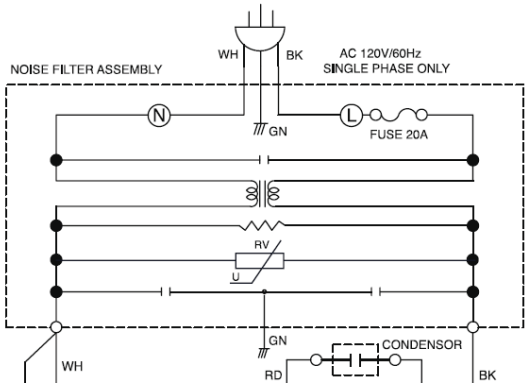

Removing the 8 Bottom Screws will Remove Slide Out Vent Assembly

## NOISE FILTER ASSEMBLY



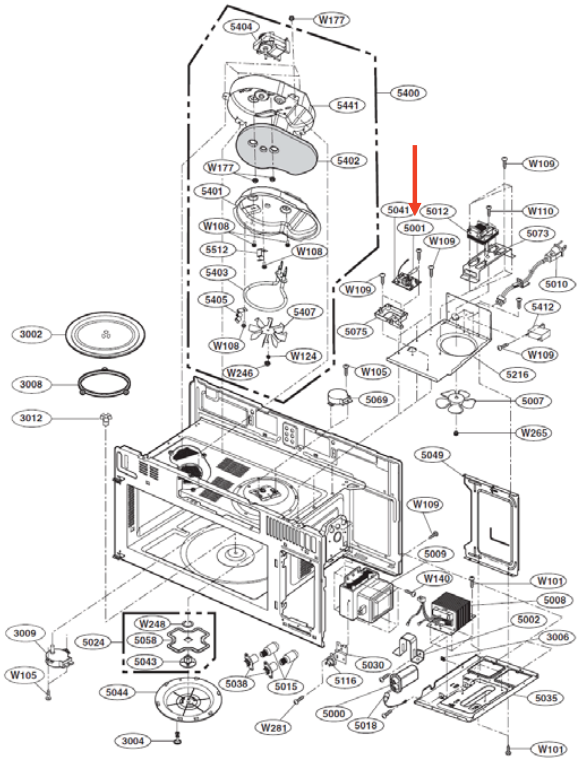
FUSE

20 AMP

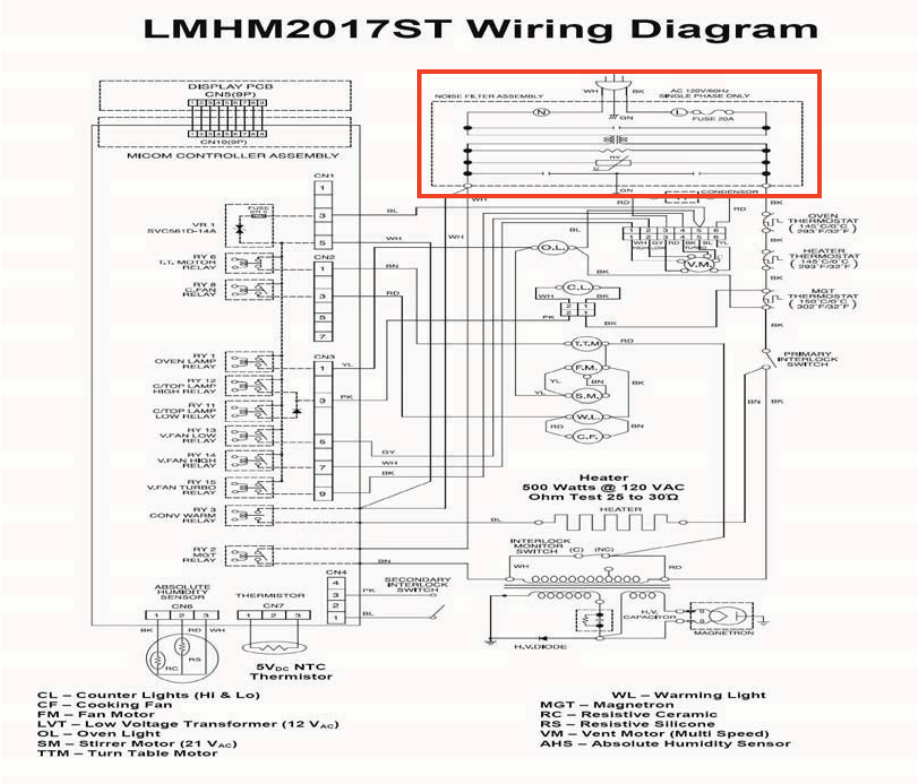



**Can be replaced after removing:**

1) Disconnect 120 VAC
2) Front Exhaust Vent
3) Main Control Panel



# LMHM2017ST Wiring Diagram

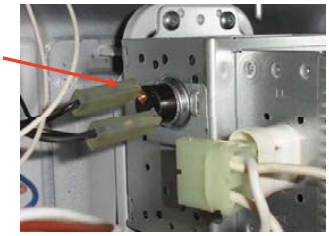


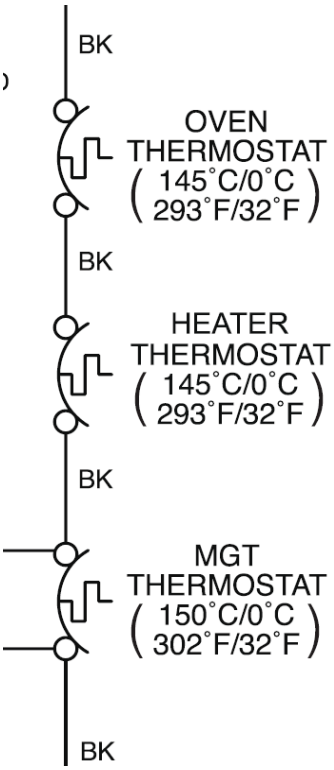

## SAFETY THERMOSTATS

**Easily accessible AFTER cabinet cover is removed**

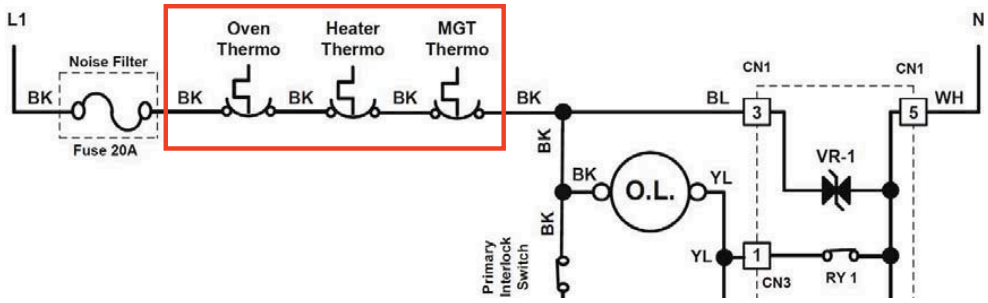
**Next to Heating Element**

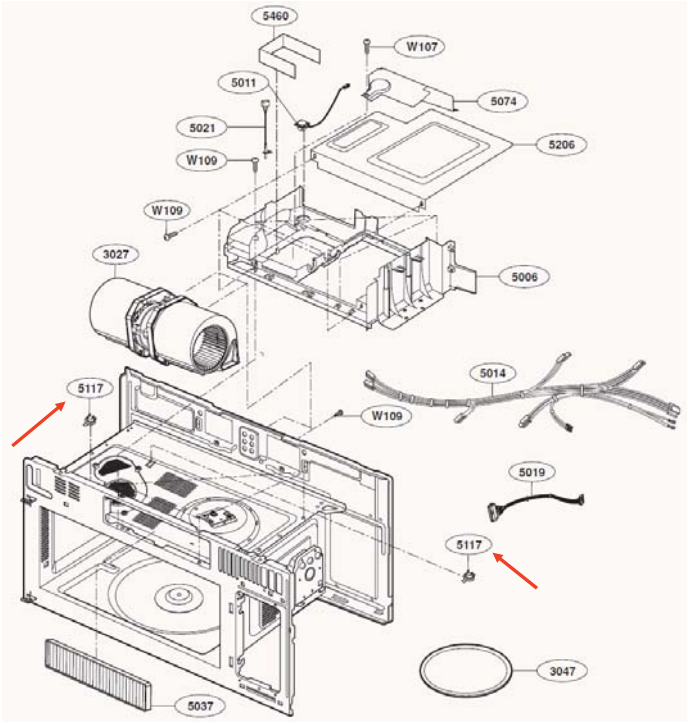
**On Mag**

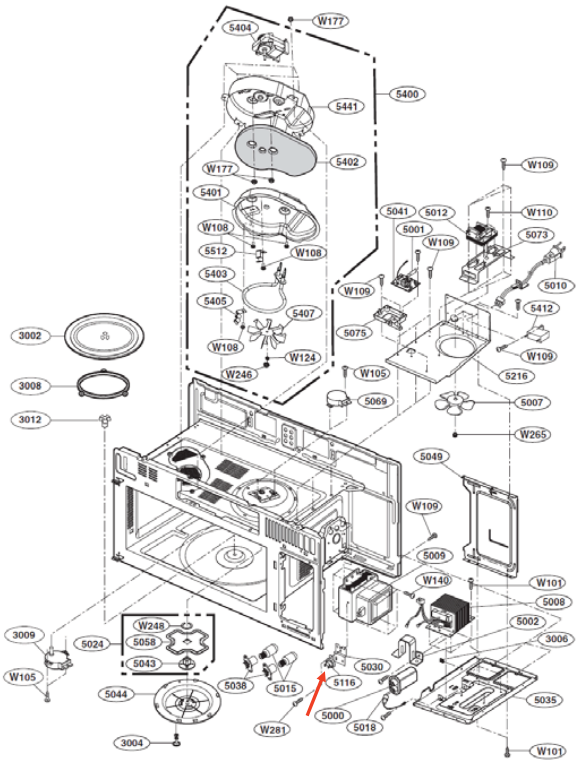




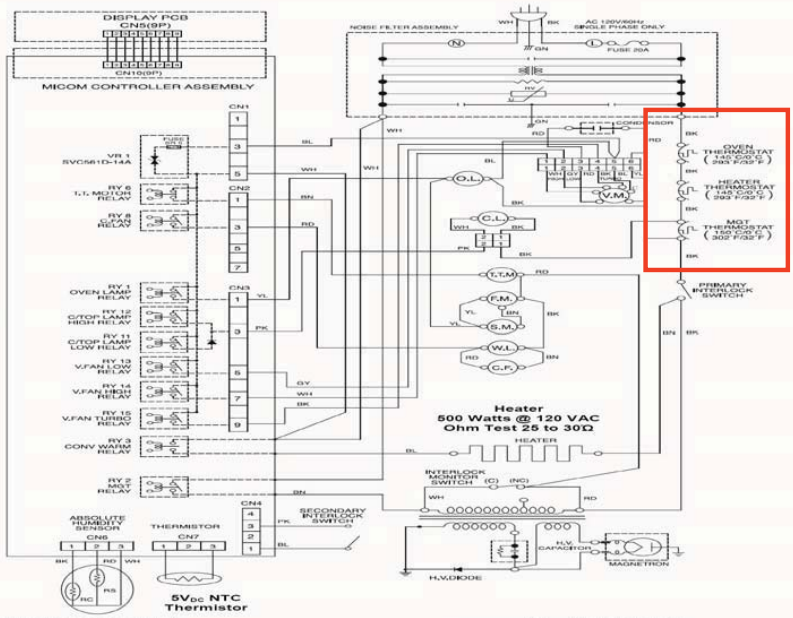
Microwave Cooking is ON






# LMHM2017ST Wiring Diagram

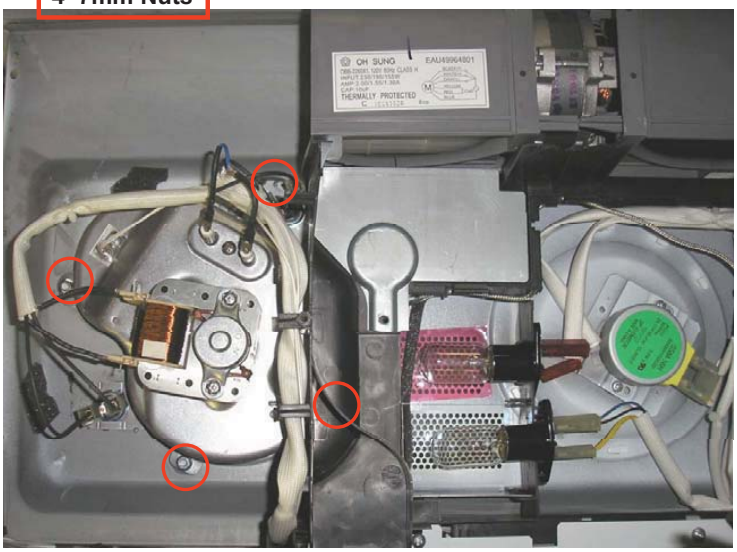



CL – Counter Lights (Hi & Lo)
CF – Cooking Fan
FM – Fan Motor
LVT – Low Voltage Transformer (12 $V_{AC}$)
OL – Oven Light
SM – Stirrer Motor (21 $V_{AC}$)
TTM – Turn Table Motor

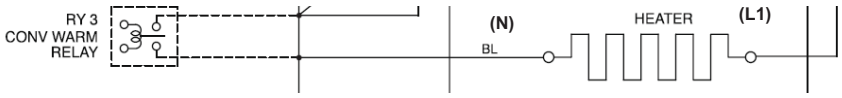
WL – Warming Light
MGT – Magnetron
RC – Resistive Ceramic
RS – Resistive Silicone
VM – Vent Motor (Multi Speed)
AHS – Absolute Humidity Sensor

## HEATING ELEMENT & FAN ASSEMBLY

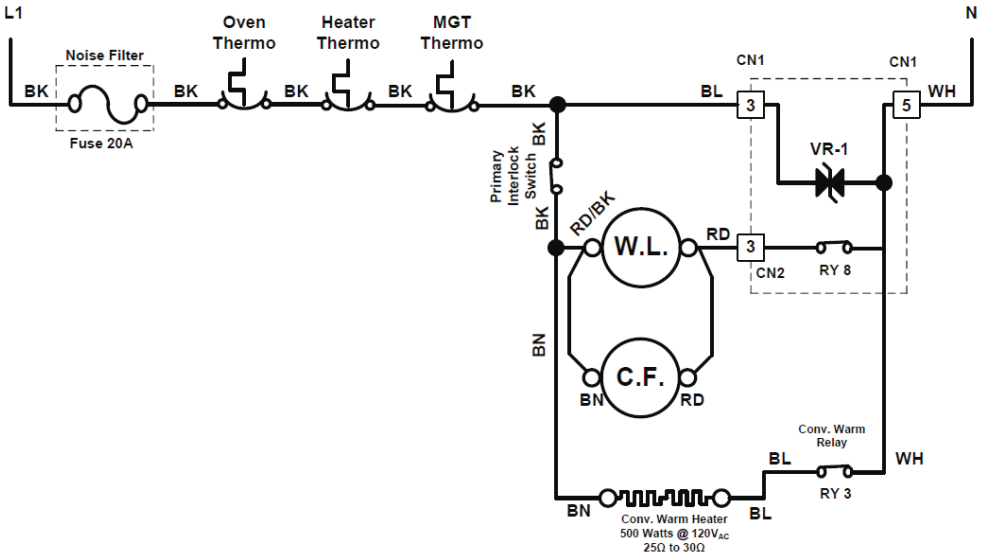
4 7mm Nuts

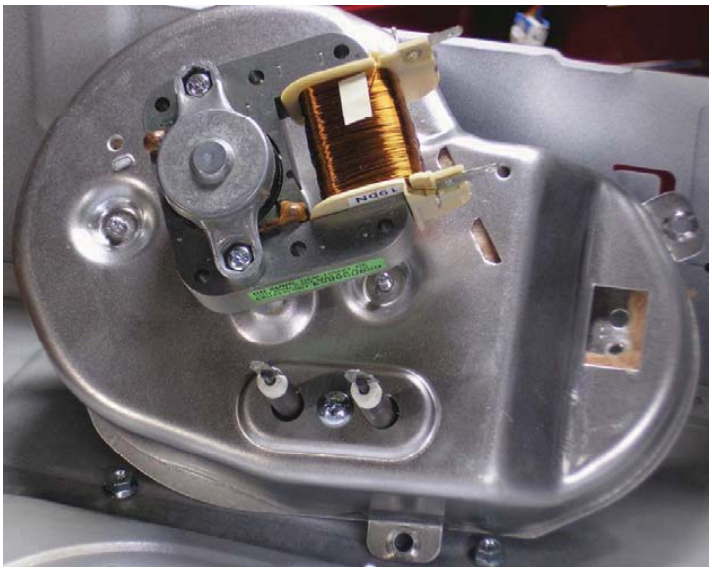


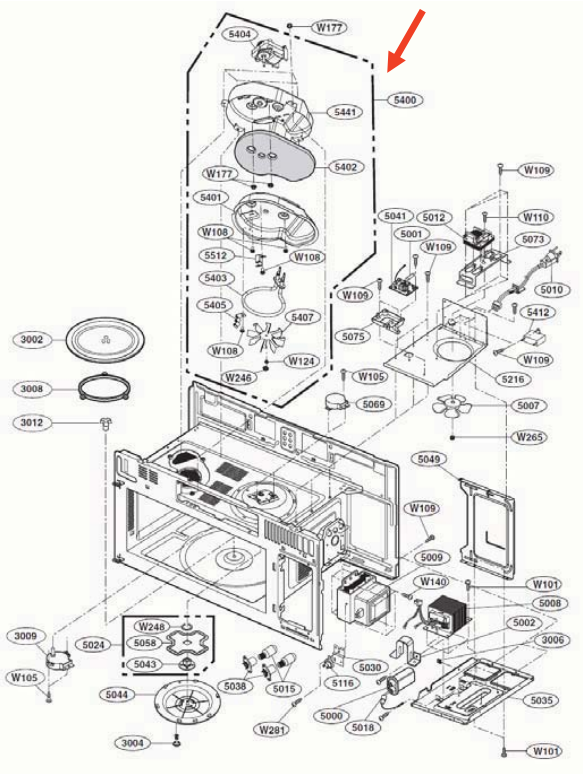
**500 Watts / 120 VAC**



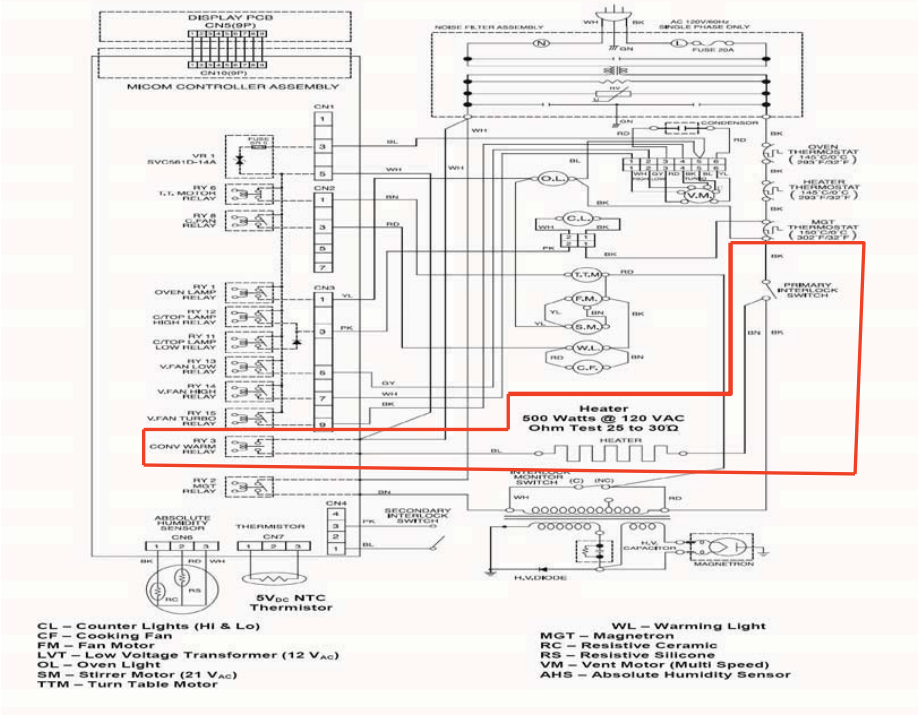

**Warming Lamp is ON**



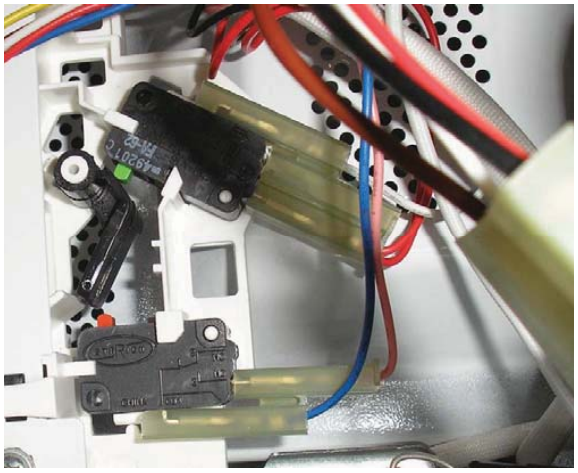


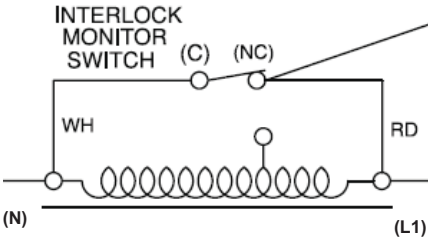

W177
5404
5400
5441
5402
W177
5401
W109
5041
5012
W110
5001
W109
5073
W108
5512
W108
5010
5403
W109
5405
5407
5412
W108
W124
5075
W109
W246
W105
5216
5069
5007
3002
3008
3012
W265
5049
W109
5009
W140
W101
5008
5002
3006
W248
3009
5024
5058
5043
5030
W105
5038
5015
5116
5044
5035
5000
5018
W281
3004
W101

## LMHM2017ST Wiring Diagram

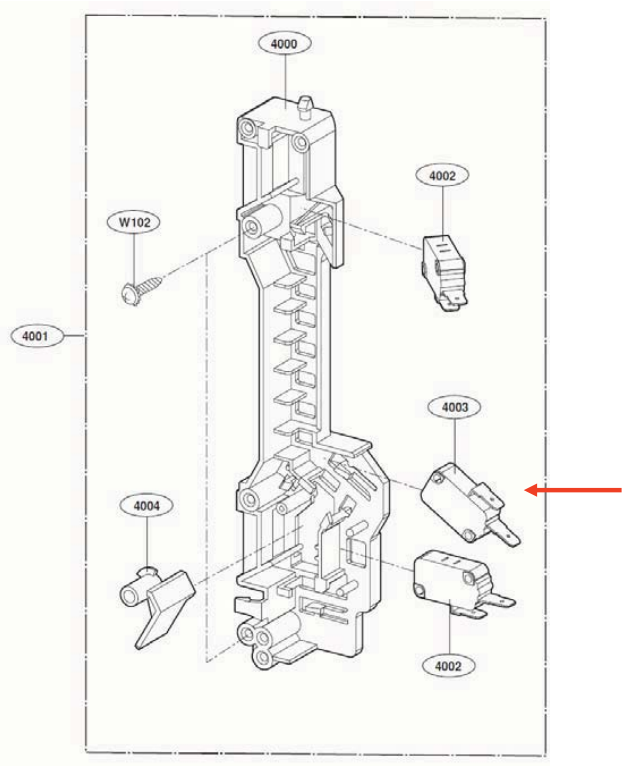



## Interlock Monitor Switch - N.C.

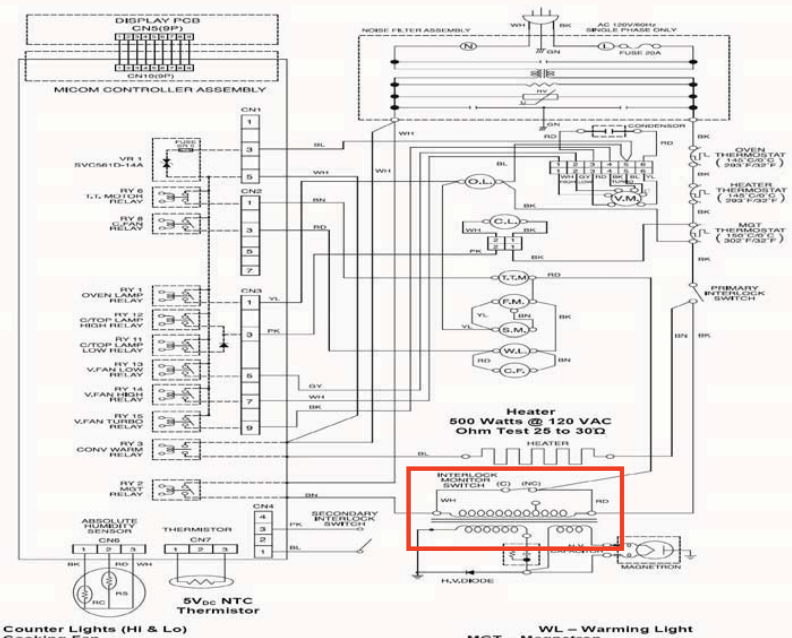





**NC Switch – Must OPEN**
**Creates a DEAD SHORT if Door is NOT Closed Properly**
**OR contacts Fail to Open**




# LMHM2017ST Wiring Diagram

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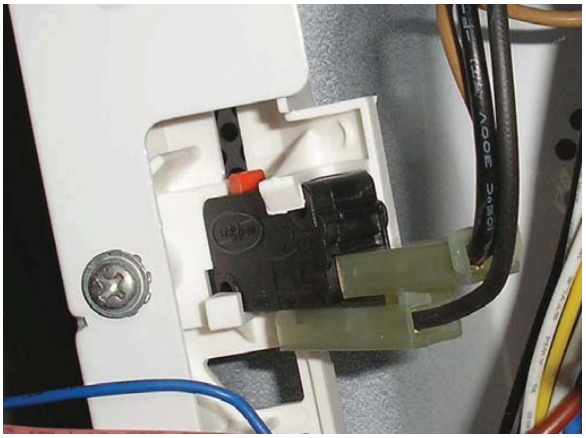
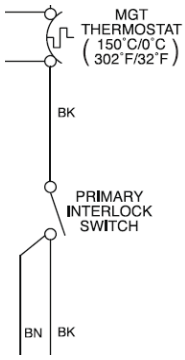
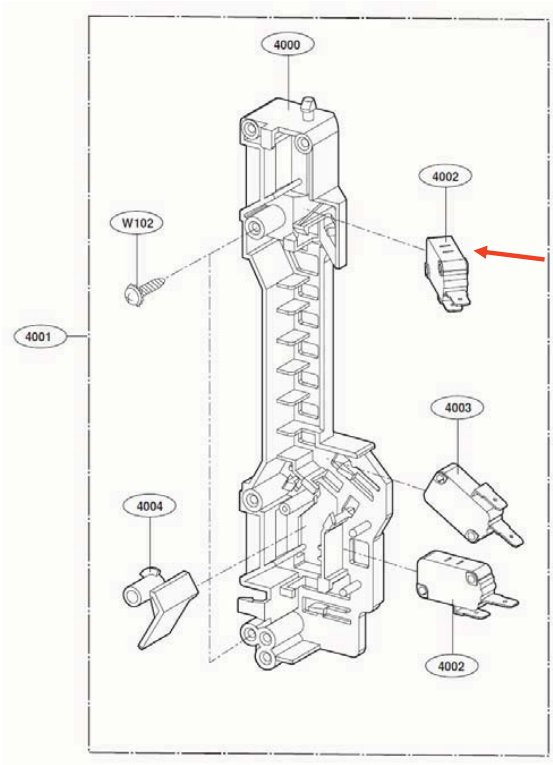
AHS – Absolute Humidity Sensor

## Primary Interlock Switch - N.O.

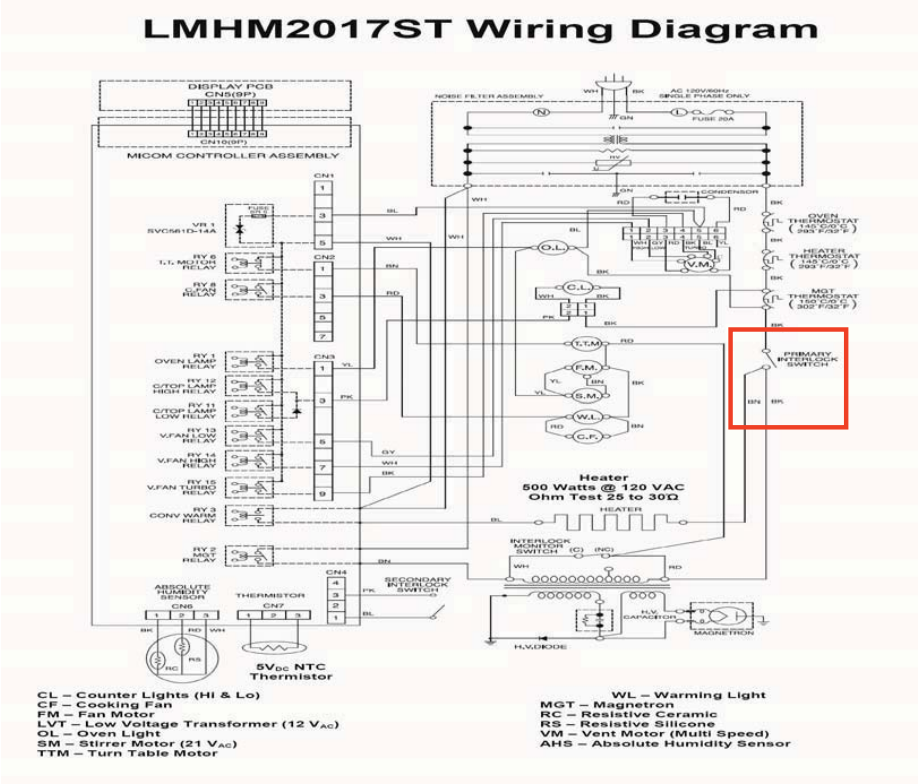




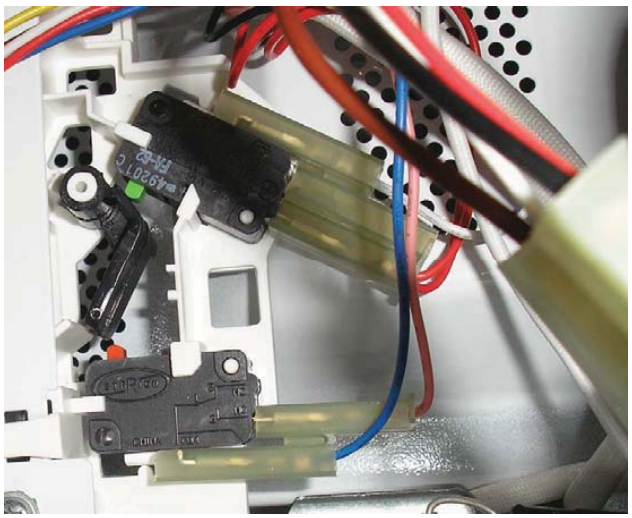

**Switch must CLOSE to create Circuit**
**Door must be Properly Closed**

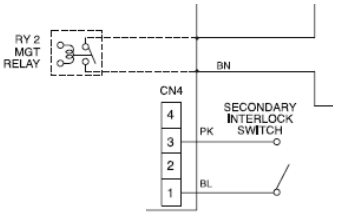


## LMHM2017ST Wiring Diagram

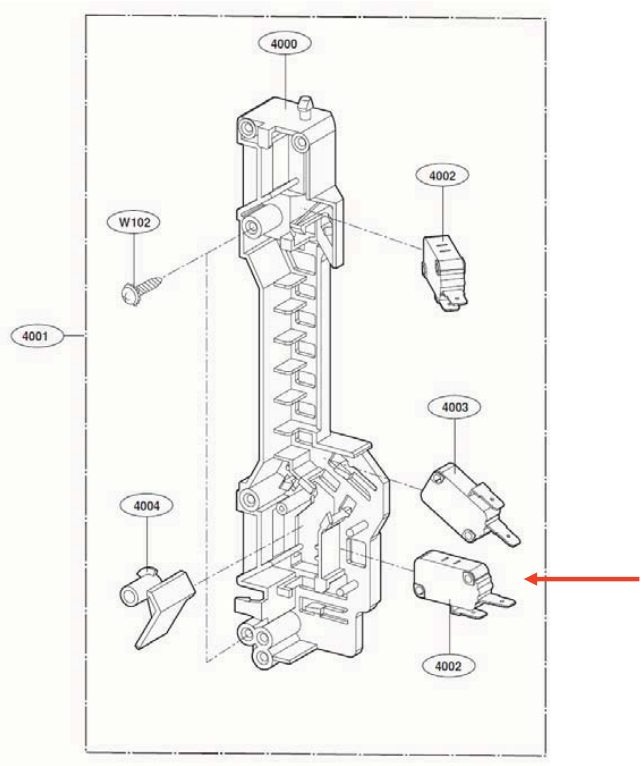



### Secondary Interlock Switch - N.O.

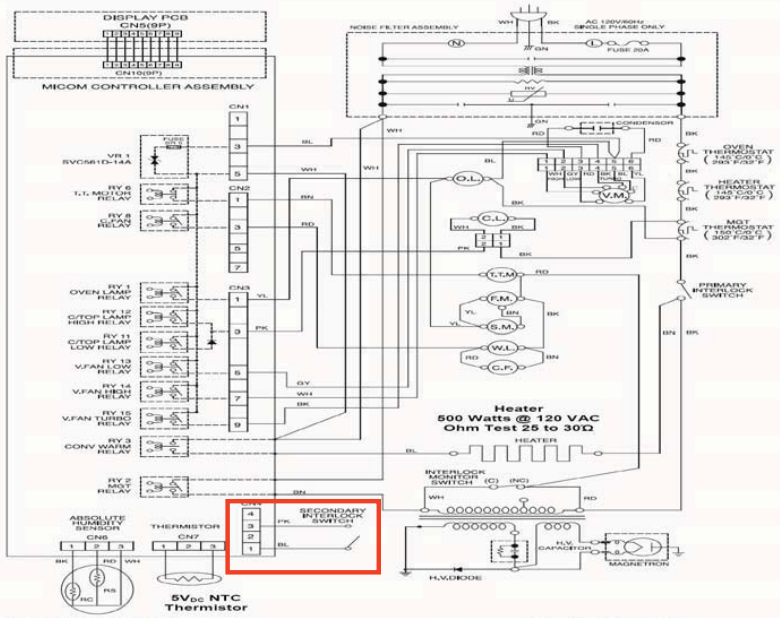





**Must Close to create Main Bd Circuit**
**Low Voltage**




# LMHM2017ST Wiring Diagram

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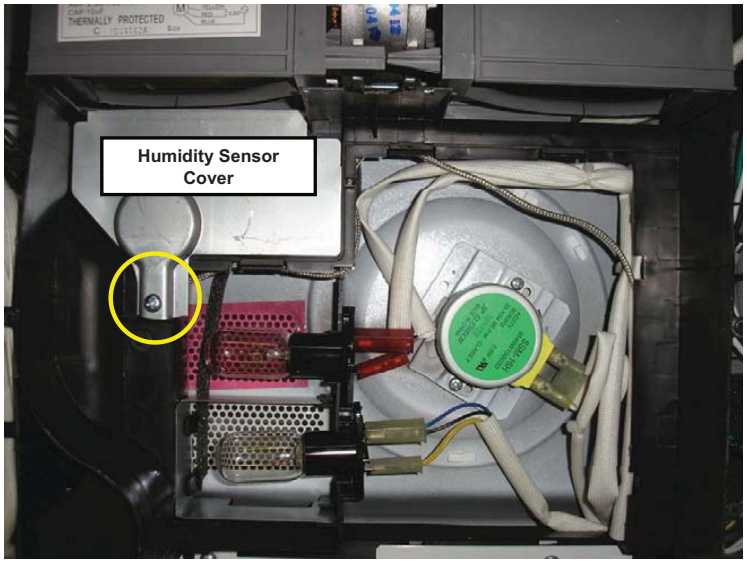
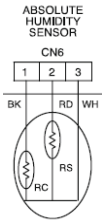
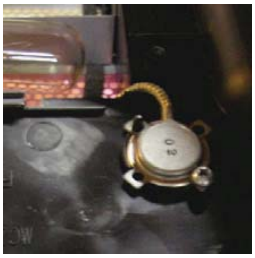
AHS – Absolute Humidity Sensor

**Humidity Sensor**



**Humidity Sensor**

**Used Primarily for Pop Corn. To Remove: Remove cover screw, cover and remove 2 screws on sensor.**

## Humidity Sensor

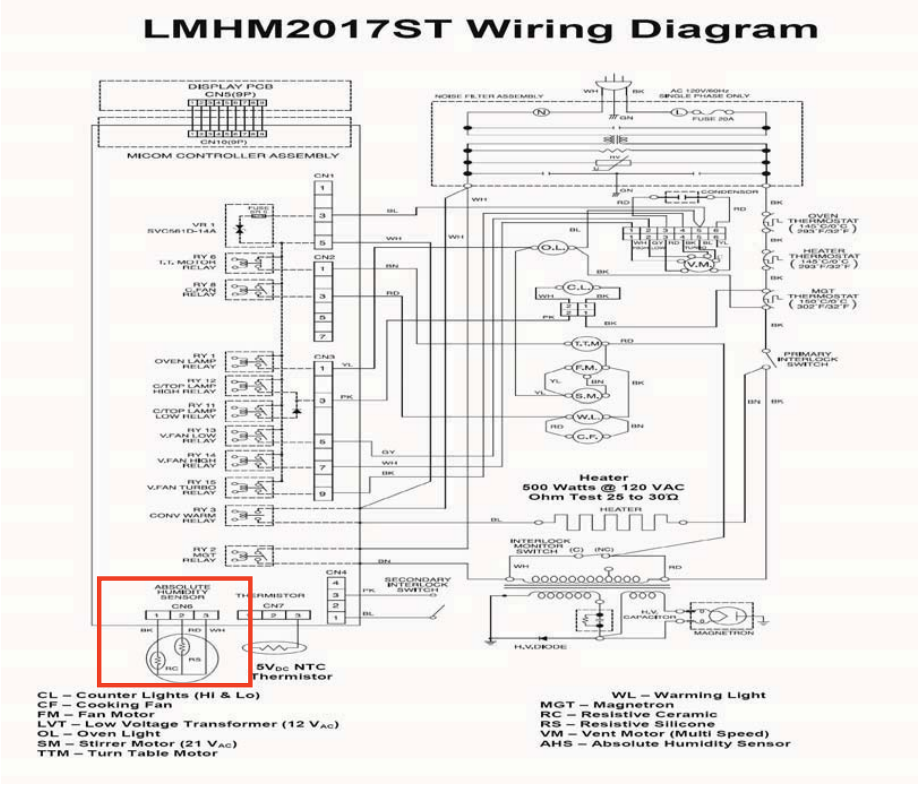
The humidity sensor can be tested.

Unplug the three-wire CN6 connector to the sensor at the circuit board end. Set your ohm meter to Rx1000. The resistance should be as indicated on the table, within 10%.

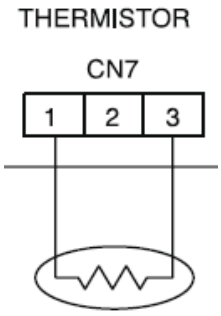
Infinite resistance or a dead short indicates a sensor failure.

| | |
|---|---|
| 1 and 3 (WH & BK) | 4 kΩ |
| 1 and 2 (WH & RD) | 4 kΩ |
| 2 and 3 (RD & BK) | 8 kΩ |

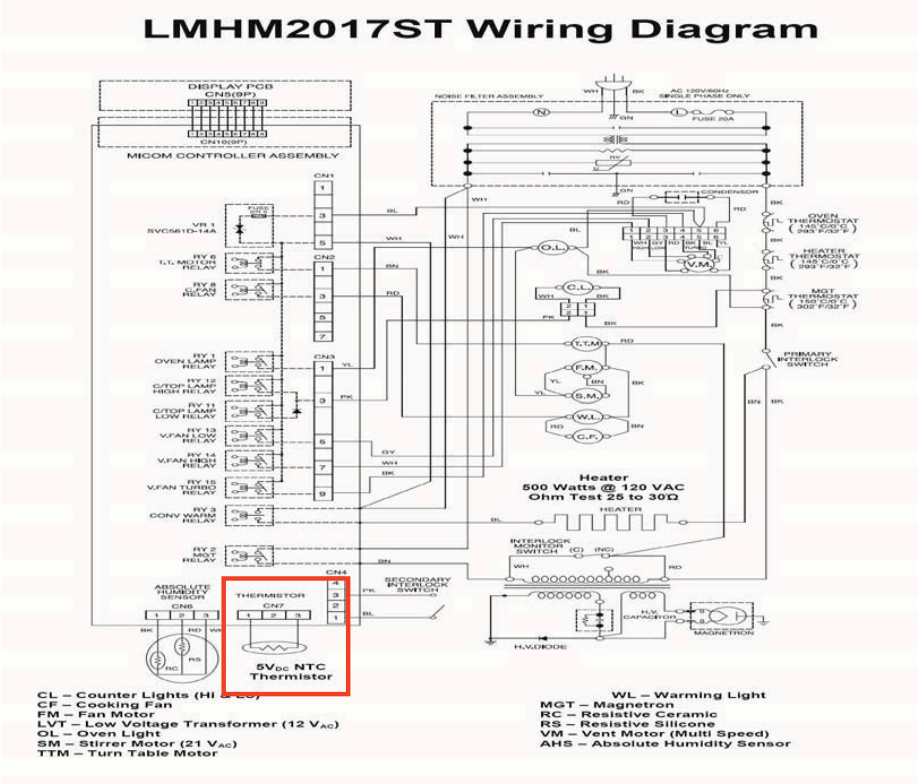
## LMHM2017ST Wiring Diagram




## THERMISTOR

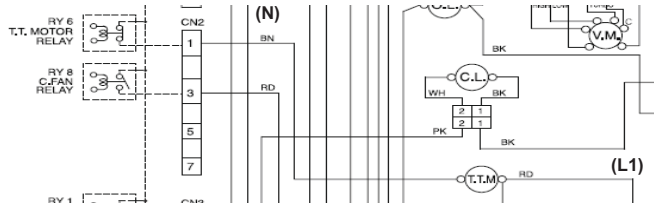


# LMHM2017ST Wiring Diagram

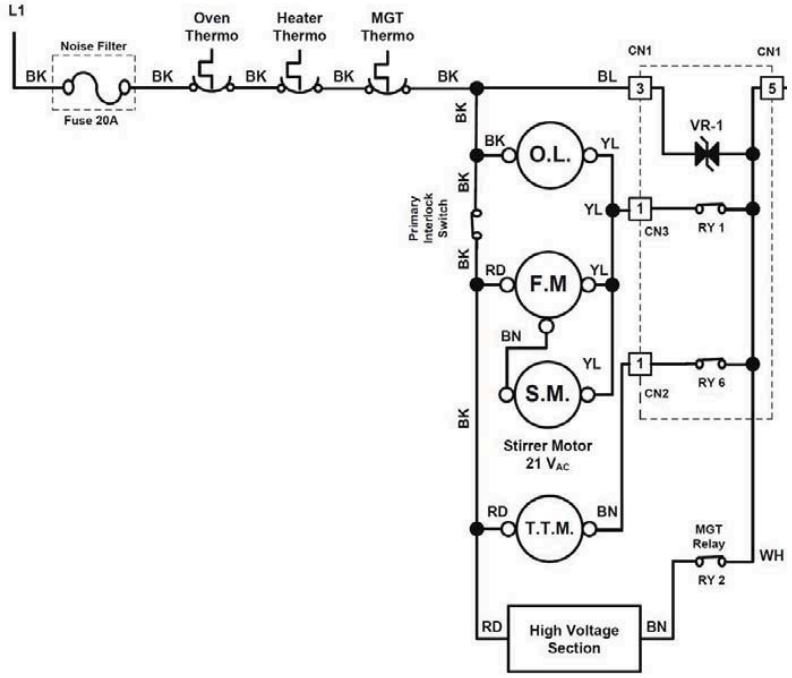


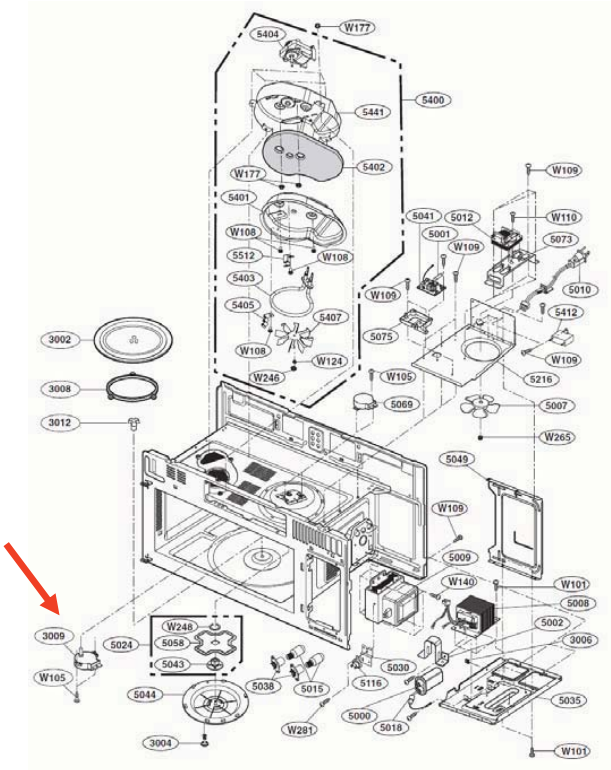

## TURNTABLE MOTOR

120 VAC

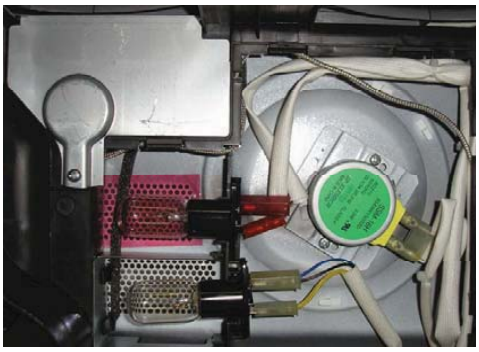


Microwave Cooking is ON

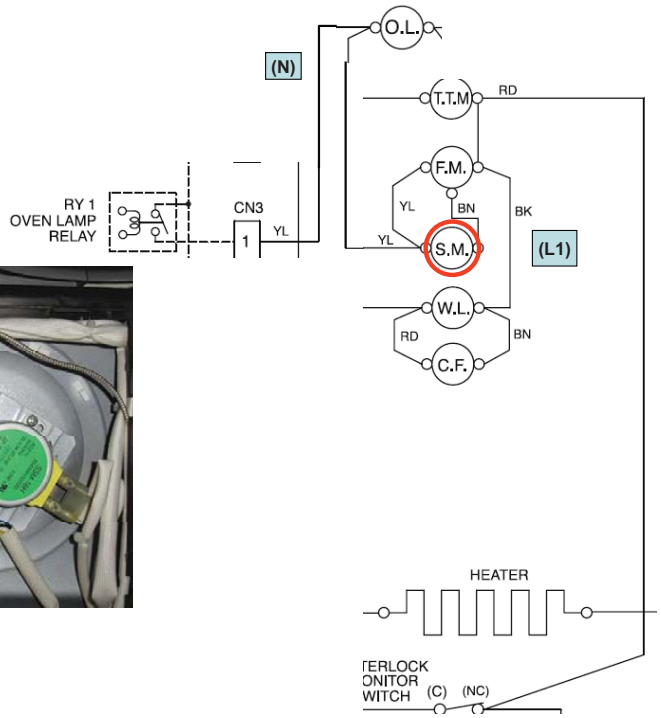


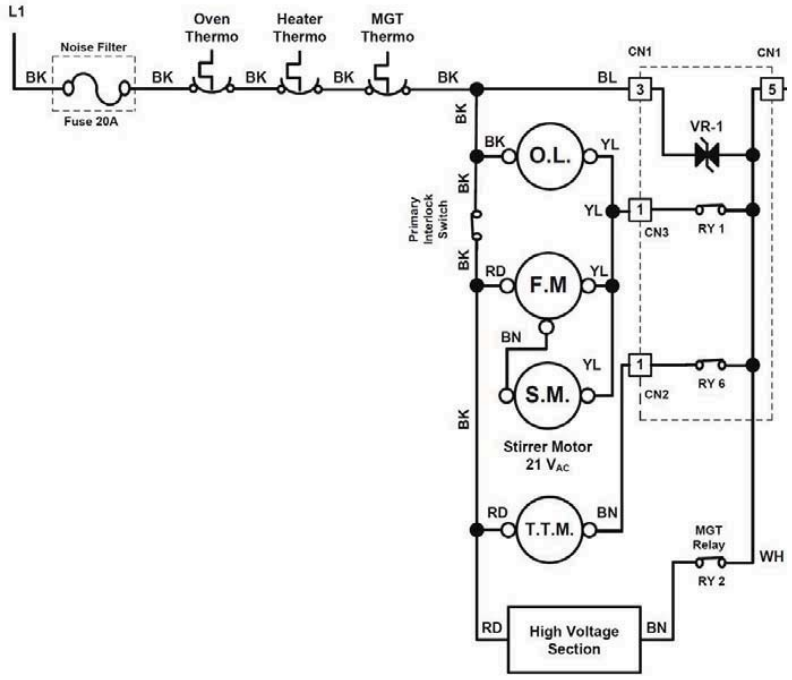
## STIRER MOTOR



21 VAC – In Series with
Magnetron Fan Motor




Microwave Cooking is ON

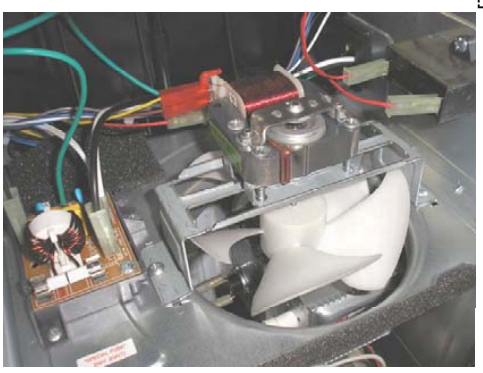


## STIRER MOTOR COVER

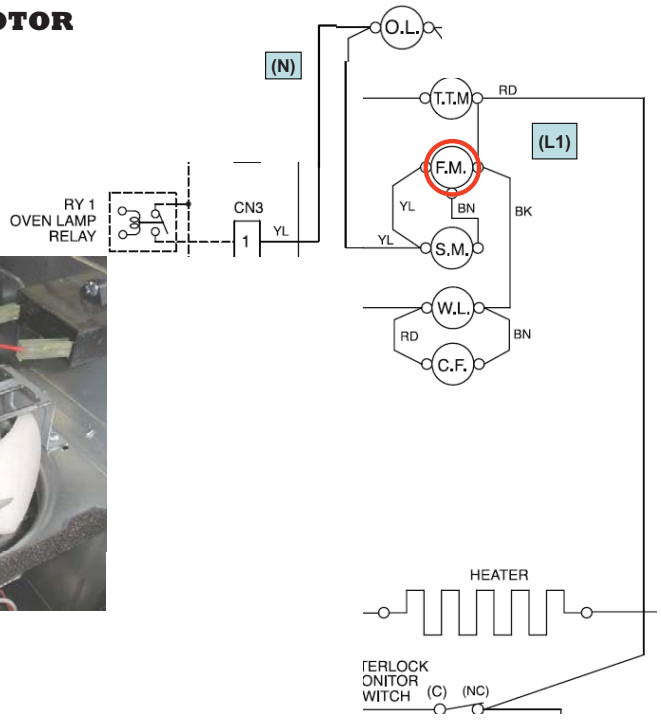
Rivet


**If cover requires removal, carefully remove the plastic rivet; then rotate the cover in the direction of the arrow.**

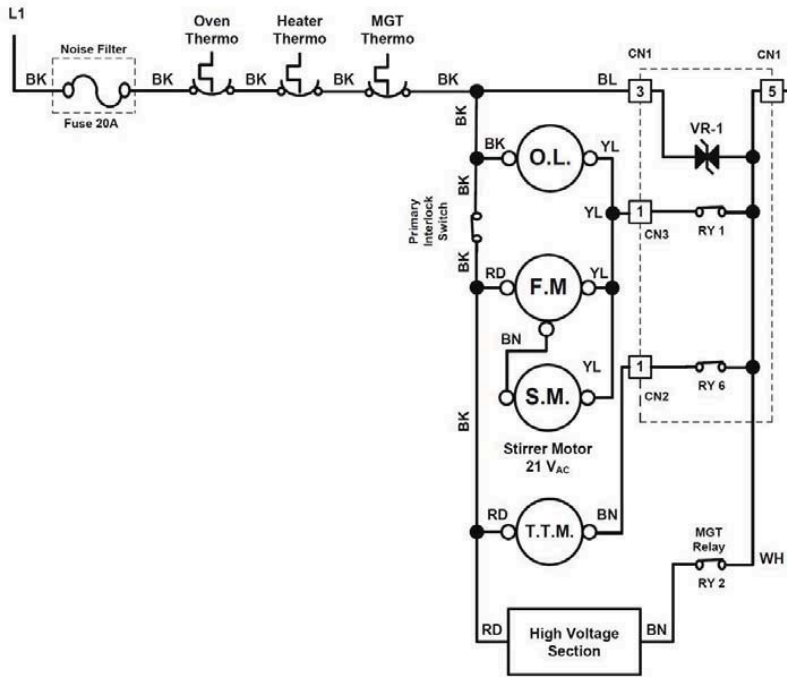
## MAGNETRON FAN MOTOR



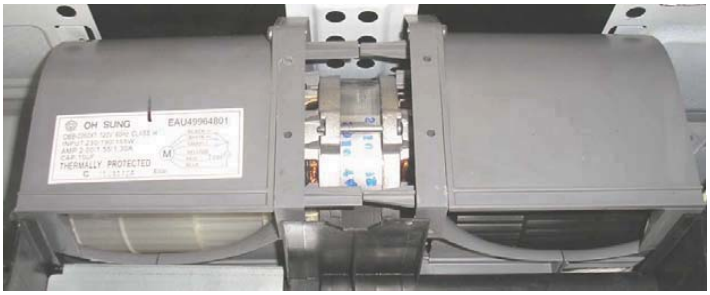
**120 VAC**

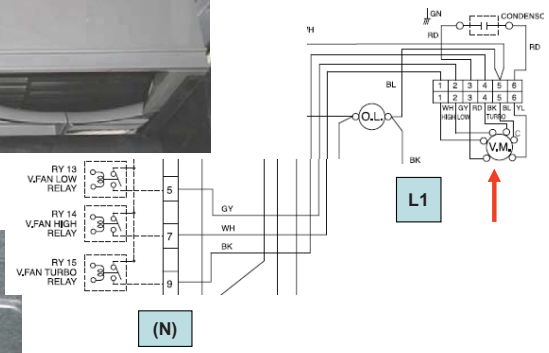


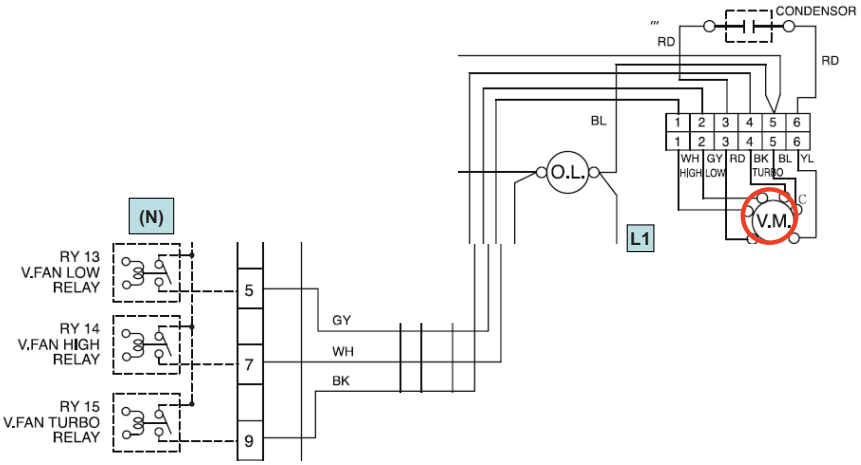
Microwave Cooking is ON



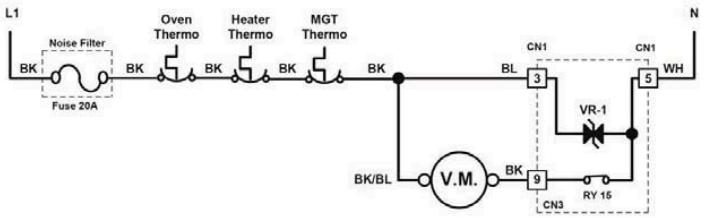

## VENT MOTOR & CAPACITOR



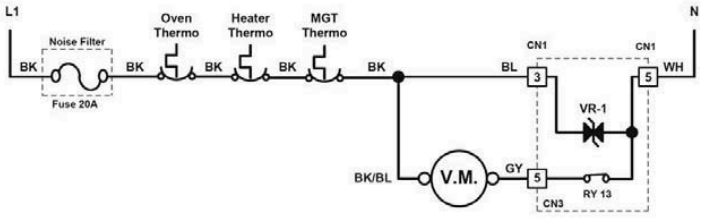





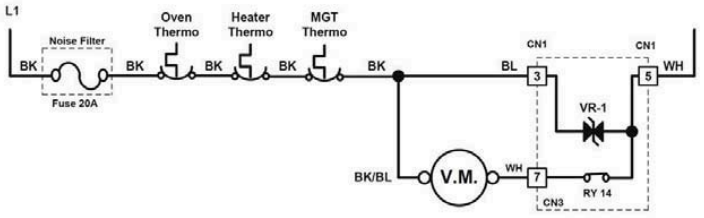

**Vent Motor ON "TURBO"**



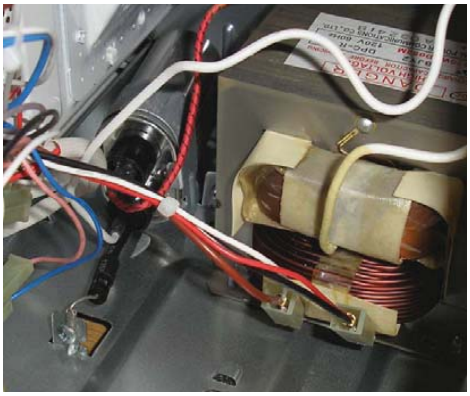

**Vent Motor ON "LOW"**

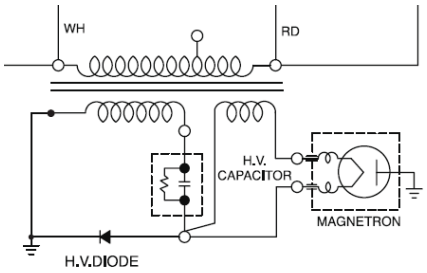



**Vent Motor ON "HIGH"**



## HV TRANSFORMER, DIODE, CAPACITOR






## TRANSFORMER TEST

**To test the transformer, remove all leads to take it out of the circuit.**

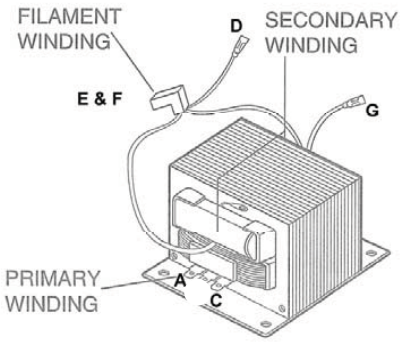
**Measure the resistance between the following points:**

**Meter scale Rx1**

| | |
|---|---|
| **Primary (A & C) – High** | **0.2 ~ 1.0 Ω** |
| **HV Secondary (G & GND)** | **50 ~ 120 Ω** |
| **Filament (E & F)** | **0.5 ~ 2.0 Ω** |

**Meter scale Rx1000**

| | |
|---|---|
| **Primary to ground** | **Normal = infinity** |
| **Filament to ground** | **Normal = infinity** |

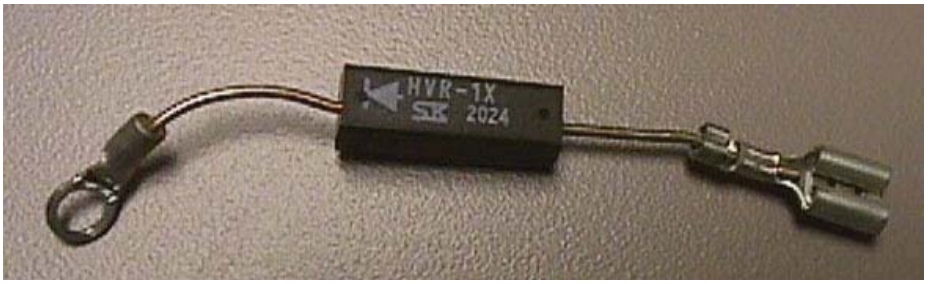


## DIODE

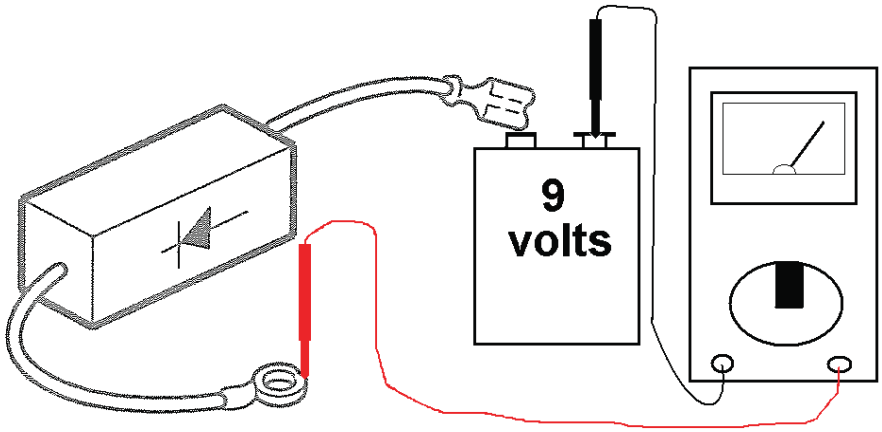
**Measure the continuity in both directions using meter scale Rx1000.**

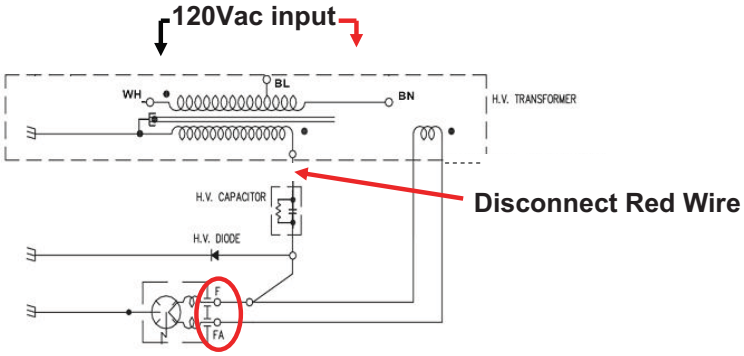
**Forward: Normal = continuity**
**Defective = infinity**

**Reverse: Normal = infinite**
**Defective = continuity**




## High Voltage Diode






**3 – 5 Vac / 12 Amps F to FA**

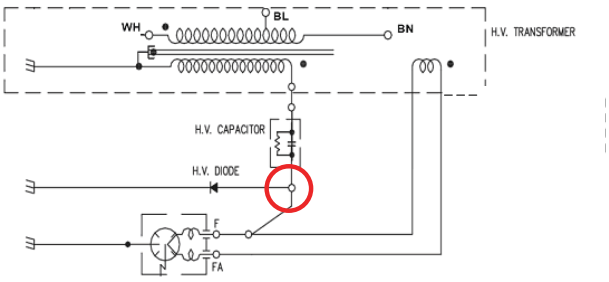
**Checking The Filament Winding:**

**Disconnect Red wire from HV Trans Secondary**

**120Vac to Primary**

**3-5 Vac at Magnetron**

☺




**With a 120Vac power supply to the Primary -**

**There is -2KVDC (-2000VDC) at this point!!**

**DO NOT Attempt to measure this Voltage without a HIGH VOLTAGE PROBE**

☺

## CAPACITOR TEST

**Remove the wire leads. They may be equipped with press-tab releases.**

**Measure the resistance between the following points:**

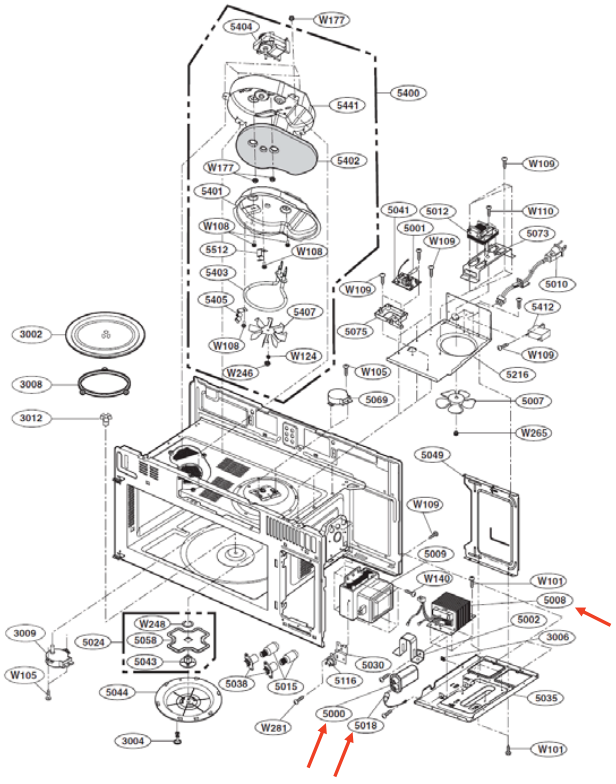
**Meter scale Rx1000**

**Terminal to terminal**

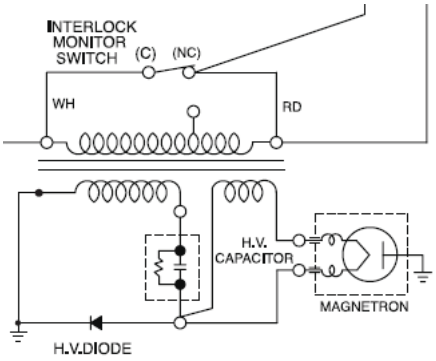
**Normally indicates several ohms, then gradually drifts toward infinity.**

**Terminal to case**

**Normal = infinity**

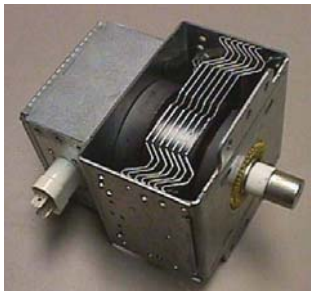


## MAGNETRON

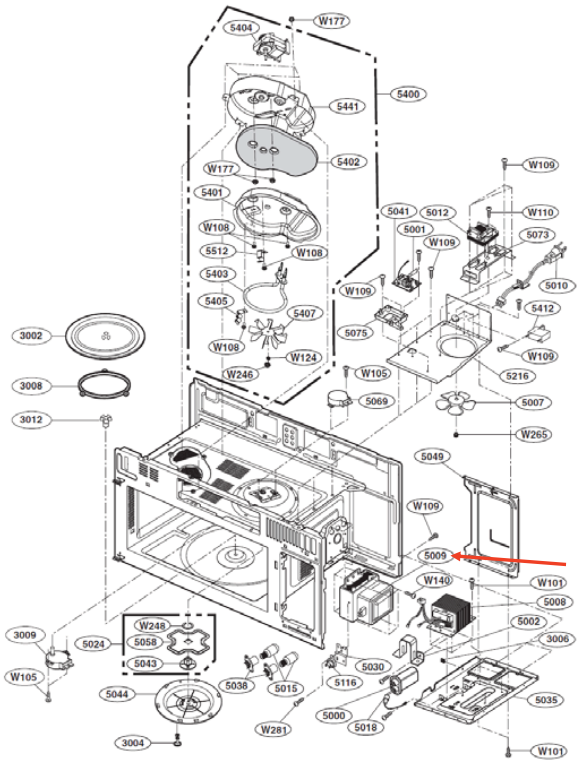



**NOTE: Full Power ONLY**
**NO Center Tap**

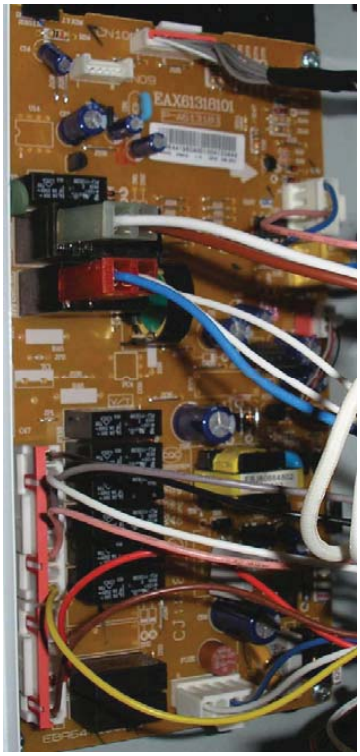
## Magnetron Test

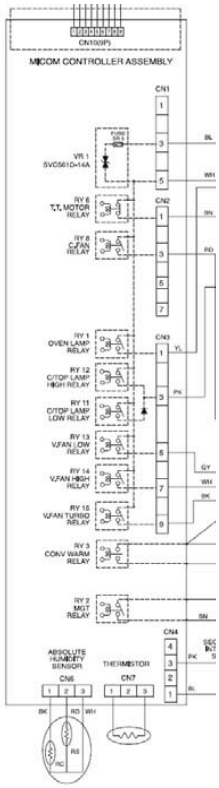


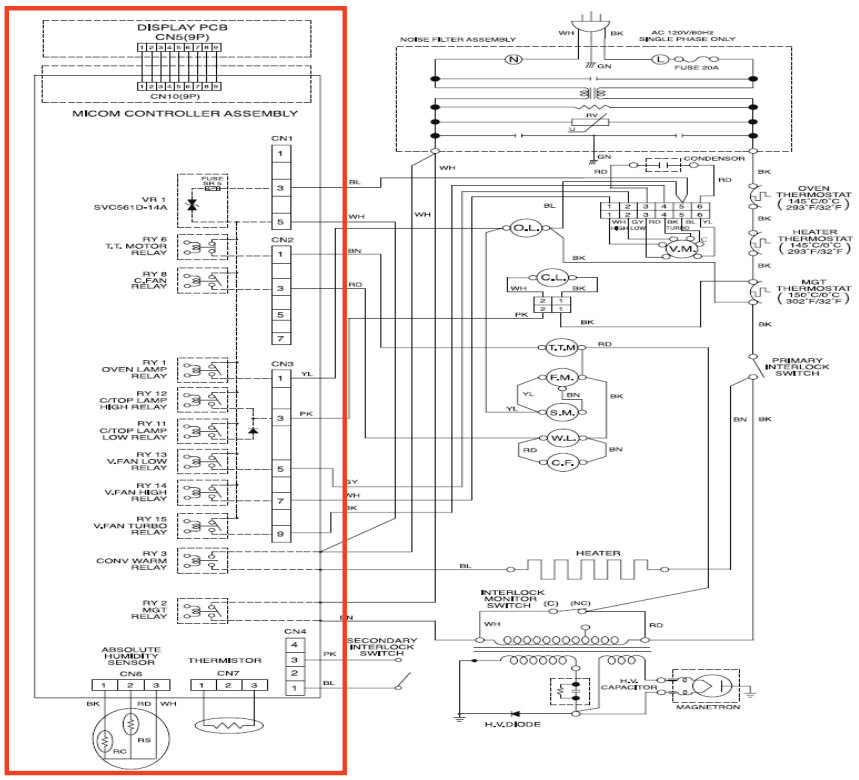
To test the magnetron, remove the connector to take it out of the circuit.
Measure the resistance between the following points:
Meter scale Rx1
Filament terminals > 1 Ω
Meter scale Rx1000
Filament to chassis Normal = infinity

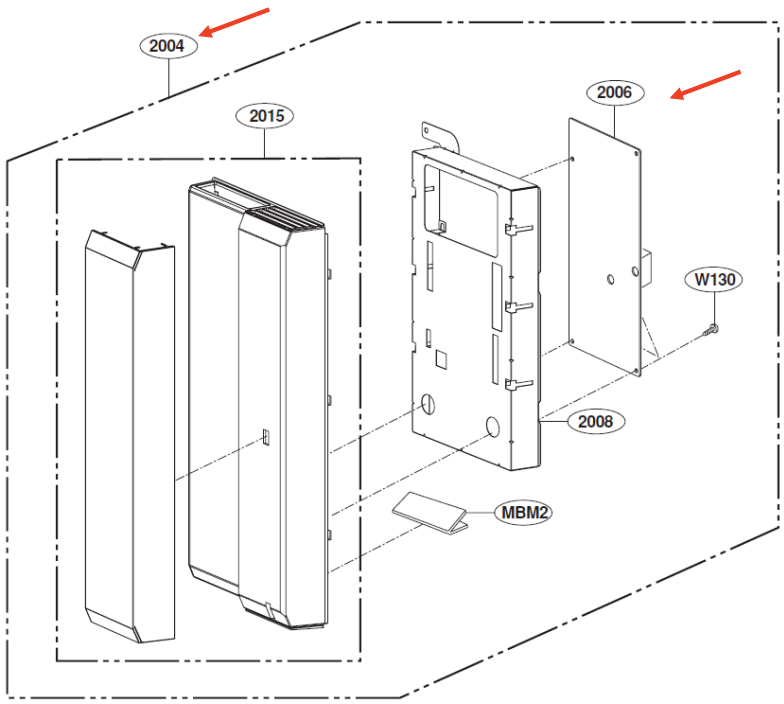

W177
5404
5400
5441
5402
W177
5401
W108
5512
W108
5403
5405
5407
W108
W124
W246
3002
3008
3012
W109
5041
5012
W110
5001
W109
5073
5010
5412
W109
5075
5216
W105
5069
5007
W265
5049
W109
5009
W140
W101
5008
5002
3006
5030
5116
5035
5000
5018
W101
3009
W105
5024
W248
5058
5043
5044
5038
5015
W281
3004

**Main PCB**


EAX61318101

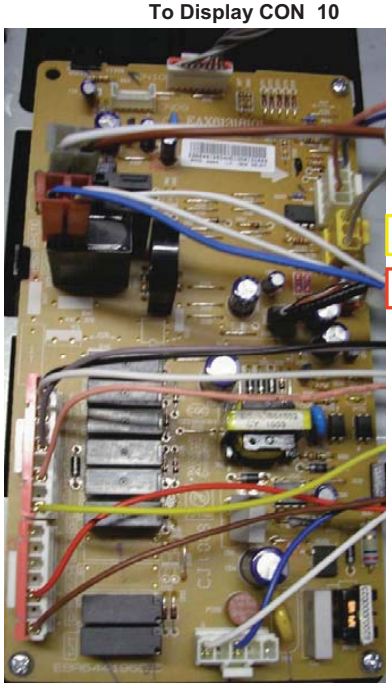

MICOM CONTROLLER ASSEMBLY
CN1
CN2
CN3
CN4
CN6
CN7
ABSOLUTE HUMIDITY SENSOR
THERMISTOR


DISPLAY PCB
CN5(9P)
CN10(9P)
MICOM CONTROLLER ASSEMBLY
NOISE FILTER ASSEMBLY
AC 120V/60Hz
SINGLE PHASE ONLY
FUSE 20A
CONDENSOR
OVEN THERMOSTAT ( 145°C/0°C ) 293°F/32°F
HEATER THERMOSTAT ( 145°C/0°C ) 293°F/32°F
MGT THERMOSTAT ( 150°C/0°C ) 302°F/32°F
PRIMARY INTERLOCK SWITCH
SECONDARY INTERLOCK SWITCH
INTERLOCK MONITOR SWITCH
HEATER
H.V.CAPACITOR
MAGNETRON
H.V.DIODE
ABSOLUTE HUMIDITY SENSOR
THERMISTOR
VR 1 SVC561D-14A
RY 6 T.T. MOTOR RELAY
RY 8 C.FAN RELAY
RY 1 OVEN LAMP RELAY
RY 12 C/TOP LAMP HIGH RELAY
RY 11 C/TOP LAMP LOW RELAY
RY 13 V.FAN LOW RELAY
RY 14 V.FAN HIGH RELAY
RY 15 V.FAN TURBO RELAY
RY 3 CONV WARM RELAY
RY 2 MGT RELAY
O.L.
V.M.
C.L.
T.T.M
F.M.
S.M.
W.L.
C.F.


2004
2015
2006
W130
2008
MBM2

## Main PCB

To Display CON 10



CON 4

CON 7

CON 6

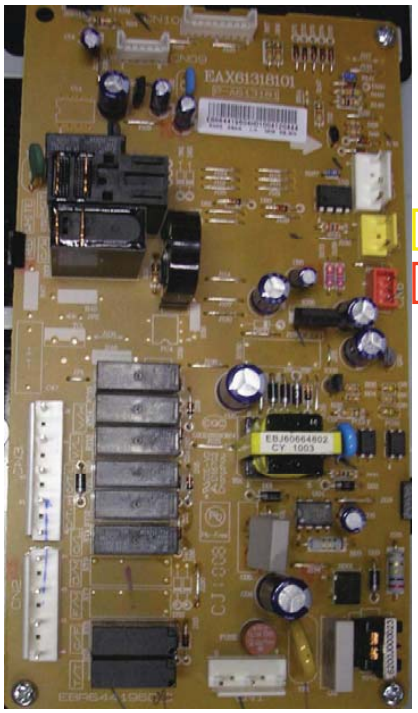
CON 3

CON 2

CON 1

## Main PCB

To Display CON 10




CON 4

CON 7

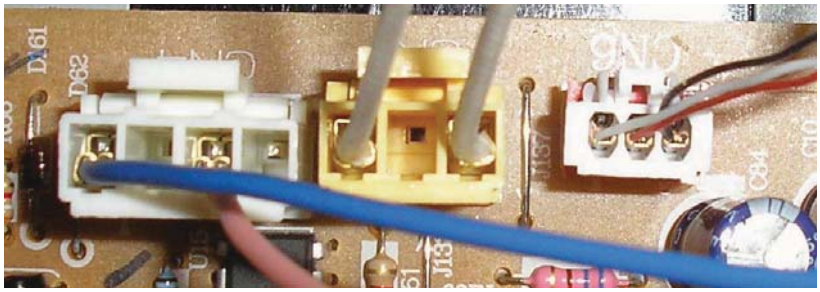
CON 6

CON 3

CON 2

CON 1

## Main PCB



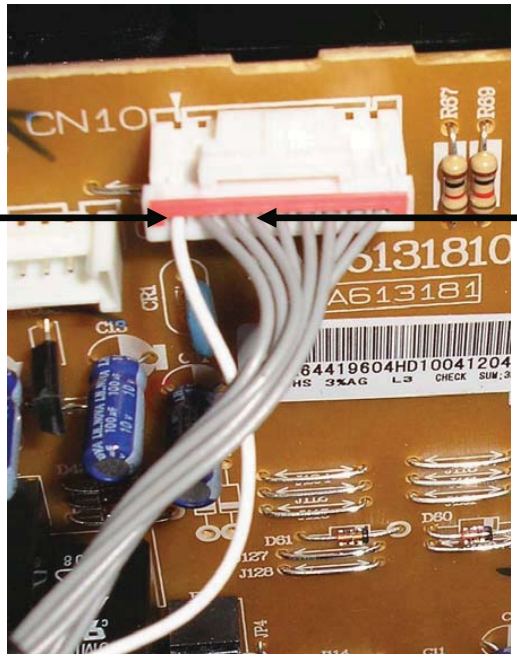
| CON 4 | CON 7 | CON 6 |
|---|---|---|
| Secondary Interlock SW | Thermistor | Humidity Sensor |

## Main PCB

### CN10 Main PWB Display to Door Connector

**20VDC Pin 1(WH) to Pin 4**

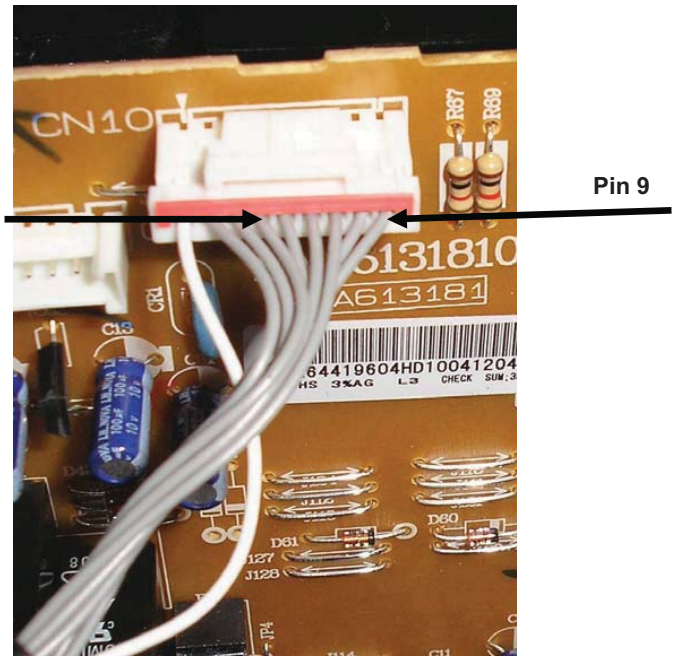
Pin 1 → Pin 4



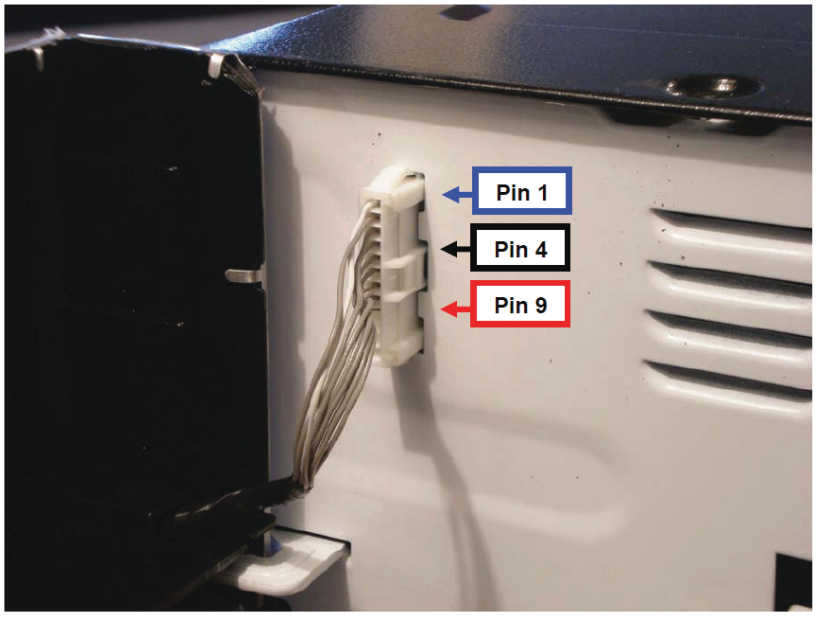
**Main PCB**

## CN10 Main PWB Display to Door Connector

5 VDC Pin 4 to Pin 9




## Power Supply Test




Door Hinge Connector

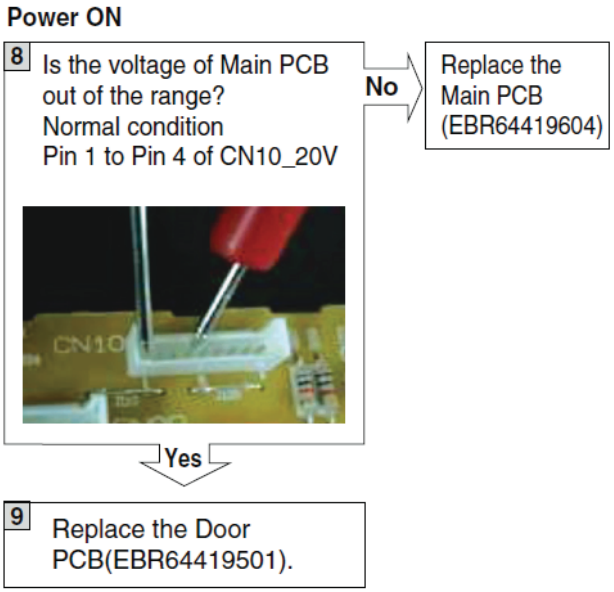
From the upper hinge connector we can test for 2 voltages that power the Display PCB. These 2 voltages originate on the Main Power Board (Micom Controller Assembly) on the right front side of the oven.

TESTING:

1) From Pins 4 to 1 we should measure **>20$V_{DC}$**.
2) From Pins 4 to 9 we should measure **5$V_{DC}$**.

Pin 1 is the white wire; the others are gray. Count down from the top to identify pins 4 & 9. Note: Reference wiring diagram connector. There are only 9 wires in this connector.

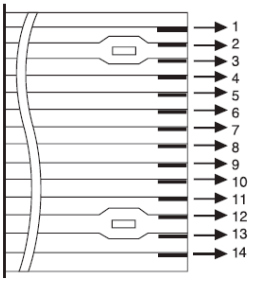
If the tech has these 2 voltages and the Display Board does not illuminate, look for loose connection, if none found, replace the door assembly. Furthermore, if any function button on the display fails to work, look for loose connection and then either replace the door assembly or remove the door, disassemble and diagnose per the service manual. Diagnosis would be to test the touch pad using the touch pad matrix.




**From the Service Manual - Page 16**

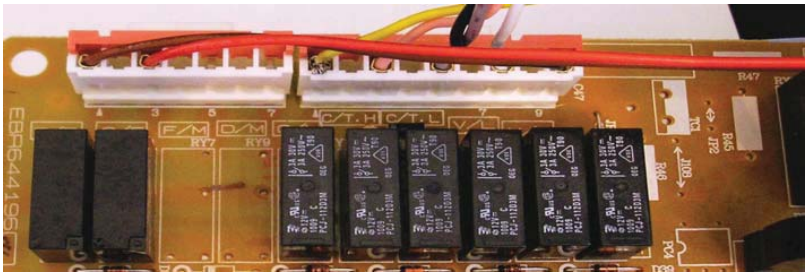
# Key Matrix

| | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |
| 2 | CUSTOM SET | TIME COOK | POWER LEVEL | WARMING (Hold Warm) | T/T ABLE ON/OFF | Timer | ENTER / START | CLOCK | AUTO Time Set | NA |
| 3 | VENT Hi / Low / OFF (Vent On / Off) | TURBO (Vent Speed) | LIGHT | MAC & CHEESE | STOP / CLEAR | SOFTEN | MELT | MORE | NA | NA |
| 4 | SENSOR POPCORN | SENSOR COOK | SENSOR REHEAT | DEFROST (Auto Defrost) | EZ-ON (ADD30SEC) | HOT DOG | CHICKEN NUGGETS | LESS | NA | NA |

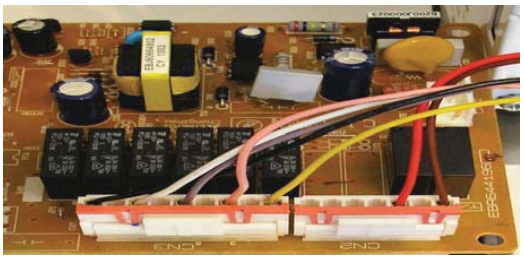
| COMPONENTS | TEST | RESULTS |
|---|---|---|
| **TOUCH KEY BOARD** | Measure the resistance between terminal pins of connector KEY CONNECTOR.<br>**NOTE:**<br>When reconnecting the FPC connector, make sure that the holes on the FPC connector are properly engaged with hooks on the plastic fastener.<br><br>MATRIX CIRCUIT FOR TOUCH KEY BOARD<br><br>CONNECTOR(KEY CON) | Resistance value: When touched — Less than 400 ohms; When not touched — More than 1 megohm<br><br>FPC CONNECTOR Top<br><br>  |

## Main PCB

CON 2 CON 3



BR – Turntable Motor | RD – Cooling Fan | YL – (N) | PK – CookTop Lamp | GY – Vent Motor Low | WH – Vent Motor High | BK – Vent Motor Turbo

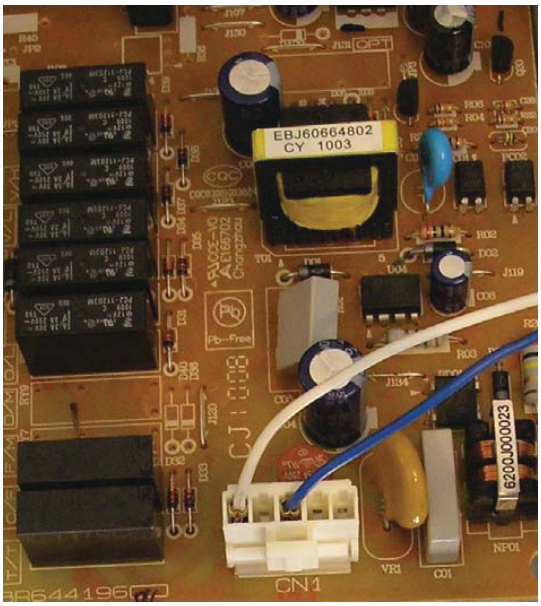


**ALL THESE ARE NEUTRAL**

To Check: Place Rd meter lead on L1 –
Place BK meter lead on Relay output terminal

## Main PCB

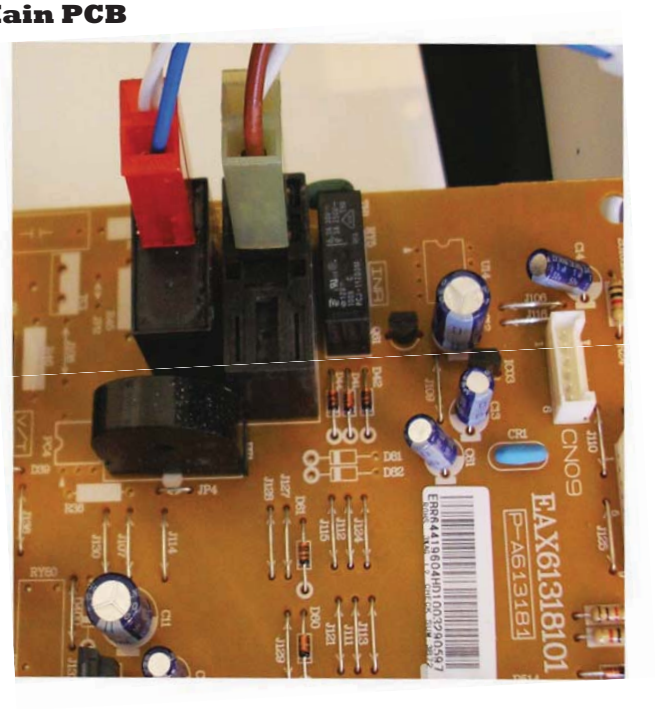
CON 1




WH -(N) BL - (L1)

120VAC Input to the Power Supply

**Main PCB**




**MAGNETRON RELAY**
**(N)**
**WH – BR= 0 VAC Closed**

**HEATER RELAY**
**(N)**
**BL – WH = 0 VAC Closed**


Spring 2011 Appliance Training