Appliance Diagnostic Modes Microwave

imagination at work
GE Consumer & Industrial Technical Training
# Range

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- **General Microwave**
- JVM230/240/250B Series (#31-20100)
- JVM2070 Series (#31-9111)
- ZMC3000B Series (#31-1461)
- SCA1000 Series (#31-9076)
- SCA2000 Series (#31-9038)
- SCB2000 Series (#31-9057)
- JS998/JT930/JT980/ZET3038/ZET3058 Series (#31-9115)
Microwave “F” Codes

Counter top & OTR microwave ovens produced since the Fall of 1995 have fault codes. However, mini manuals do not list these codes. You can see a listing of these “F” codes on Service Bulletins RA7-95 & RA7-97.

F0 = Open or shorted humidity sensor at the start of cooking program
F1 = Open thermal sensor, due to excessive heat in the m/w cavity
F2 = Shorted thermal sensor
F3 = Shorted key panel
F4 = Open Humidity sensor during cooking process
F5 = Shorted Humidity sensor during cooking process
F6 = Shorted temperature probe
PROBE = Open temp probe or the probe is not plugged in during a temp cook function

Temp probe is 50,000Ω at room temp.
Microwave Performance Test

• Measure line voltage (loaded). This test is based on normal voltage variations of 105VAC to 130VAC. Low voltage will effect power & temperature rise.
• Place beaker (WB64X73) containing exactly 1 liter of water between 59° & 75° in the center of the shelf. Record the starting water temperature with an accurate thermometer.
• Set on HIGH power.
• Turn unit on for exactly 2 minutes 3 seconds.
• Remove carefully the beaker after the time has run out & record the water temperature – normal temperature rise should be 28° at 120VAC & 25° at 105VAC.

MICROWAVE LEAKAGE TEST
A microwave leakage test MUST BE PERFORMED an time a door is removed, replaced, disassembled, or adjusted for any reason. THE MAXIMUM LEAKAGE IS 4MW/CM²
# Microwave Keypanel Test

<table>
<thead>
<tr>
<th>RIBBON PAD</th>
<th>CONN</th>
<th>PAD</th>
<th>CONN</th>
<th>RIBBON PAD</th>
<th>CONN</th>
<th>PAD</th>
<th>CONN</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEEPER VOLUME</td>
<td>9-12</td>
<td>DEFROST</td>
<td>4-15</td>
<td>SOUND LEVEL</td>
<td>9-12</td>
<td>DEFROST</td>
<td>4-15</td>
</tr>
<tr>
<td>ADD 30 SEC.</td>
<td>4-11</td>
<td>AM/PM</td>
<td>9-13</td>
<td>ADD 30 SEC.</td>
<td>4-11</td>
<td>AM/PM</td>
<td>9-13</td>
</tr>
<tr>
<td>POWER LEVEL</td>
<td>3-14</td>
<td>TIMER</td>
<td>4-13</td>
<td>POWER LEVEL</td>
<td>3-14</td>
<td>TIMER</td>
<td>4-13</td>
</tr>
<tr>
<td>SURFACE LIGHT</td>
<td>7-12</td>
<td>VENT FAN</td>
<td>8-12</td>
<td>SURFACE LIGHT</td>
<td>7-12</td>
<td>VENT FAN</td>
<td>8-12</td>
</tr>
<tr>
<td>CLOCK</td>
<td>7-13</td>
<td>1</td>
<td>9-16</td>
<td>CLOCK</td>
<td>7-13</td>
<td>1</td>
<td>9-16</td>
</tr>
<tr>
<td>POPCORN</td>
<td>7-11</td>
<td>2</td>
<td>8-16</td>
<td>POPCORN</td>
<td>7-11</td>
<td>2</td>
<td>8-16</td>
</tr>
<tr>
<td>AUTO NITE LIGHT</td>
<td>6-12</td>
<td>3</td>
<td>7-16</td>
<td>AUTO NITE LIGHT</td>
<td>6-12</td>
<td>3</td>
<td>7-16</td>
</tr>
<tr>
<td>DELAY START</td>
<td>6-13</td>
<td>4</td>
<td>6-16</td>
<td>DELAY START</td>
<td>6-13</td>
<td>4</td>
<td>6-16</td>
</tr>
<tr>
<td>TURN TABLE</td>
<td>5-12</td>
<td>5</td>
<td>5-16</td>
<td>TURN TABLE</td>
<td>5-12</td>
<td>5</td>
<td>5-16</td>
</tr>
<tr>
<td>REMINDER</td>
<td>5-13</td>
<td>6</td>
<td>4-16</td>
<td>REMINDER</td>
<td>5-13</td>
<td>6</td>
<td>4-16</td>
</tr>
<tr>
<td>TIME COOK</td>
<td>5-15</td>
<td>7</td>
<td>9-15</td>
<td>TIME COOK</td>
<td>5-15</td>
<td>7</td>
<td>9-15</td>
</tr>
<tr>
<td>START</td>
<td>3-11</td>
<td>8</td>
<td>8-15</td>
<td>START</td>
<td>3-11</td>
<td>8</td>
<td>8-15</td>
</tr>
<tr>
<td>REHEAT</td>
<td>8-11</td>
<td>9</td>
<td>7-15</td>
<td>REHEAT</td>
<td>8-11</td>
<td>9</td>
<td>7-15</td>
</tr>
<tr>
<td>VEGETABLE</td>
<td>9-10</td>
<td>0</td>
<td>6-15</td>
<td>VEGETABLE</td>
<td>6-11</td>
<td>BEVERAGE</td>
<td>8-11</td>
</tr>
<tr>
<td>BEVERAGE</td>
<td>6-11</td>
<td>BEVERAGE</td>
<td>8-11</td>
<td>BEVERAGE</td>
<td>6-11</td>
<td>COOK</td>
<td>8-14</td>
</tr>
<tr>
<td>JVM1660 ONLY</td>
<td></td>
<td></td>
<td></td>
<td>JVM1660 ONLY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEMPCOOK/ROST</td>
<td>3-15</td>
<td>CUSTOM 1</td>
<td>8-10</td>
<td>TEMPCOOK/ROST</td>
<td>3-15</td>
<td>CUSTOM 1</td>
<td>8-10</td>
</tr>
<tr>
<td>GROUND MEAT</td>
<td>3-10</td>
<td>CUSTOM 2</td>
<td>7-10</td>
<td>GROUND MEAT</td>
<td>3-10</td>
<td>CUSTOM 2</td>
<td>7-10</td>
</tr>
<tr>
<td>CHICKEN PIECES</td>
<td>4-10</td>
<td>MESSAGE</td>
<td>8-13</td>
<td>CHICKEN PIECES</td>
<td>4-10</td>
<td>MESSAGE</td>
<td>8-13</td>
</tr>
<tr>
<td>FISH FILLETS</td>
<td>5-10</td>
<td>BEVERAGE</td>
<td>9-11</td>
<td>FISH FILLETS</td>
<td>5-10</td>
<td>BEVERAGE</td>
<td>9-11</td>
</tr>
<tr>
<td>JVM 1650 ONLY</td>
<td></td>
<td></td>
<td></td>
<td>JVM 1650 ONLY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNACKS</td>
<td>7-14</td>
<td>COOK</td>
<td>8-14</td>
<td>SNACKS</td>
<td>7-14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

![Diagram](image.png)
Microwave Door Switches

DOOR SENSING AND PRIMARY INTERLOCK SWITCHES
The primary interlock switch is mounted to the plastic switch bracket on the bottom, the monitor is in the middle and the door sensing switch is mounted to the upper portion of the plastic switch bracket. The power relay is mounted on the smart board. They are activated by the latch heads on the door. When the door is opened, the switches interrupt the circuit to all components, except the oven lamp. A cook cycle cannot take place until the door is firmly closed thereby activating both interlock switches. The primary interlock system consists of the door sensing switch, primary interlock switch and power relay.

MONITOR SWITCH
The monitor switch is operated (the contacts opened) indirectly by the bottom latch pawl. The pawl operates a cam switch, which in turn, actuates the monitor switch. The switch is intended to render the oven inoperative by means of blowing the monitor fuse when the contacts of the primary interlock switch and power relay fail to open when the door is opened.

Functions:
1. When the door is opened, the monitor switch contact closes (to the ON condition). At this time the primary interlock switch and power relay are in the OFF condition (contacts open).
2. As the door goes to a closed position, the monitor switch contacts are first opened and then the door sensing switch and the primary interlock switch contacts close. (On opening the door, each of these switches operate inversely.)
3. If the door is opened, and the primary interlock switch and power relay contacts fail to open, the monitor fuse blows simultaneously with closing of the monitor switch contacts. CAUTION: Before replacing a blown monitor fuse, test the primary interlock switch, door sensing switch, monitor switch and power relay contacts for proper operation.
Microwave Door Switch Assembly

DOOR SENSING SWITCH
*DOOR CLOSED  0 Ω
*DOOR OPEN   ∞ Ω

MONITOR SENSING SWITCH
*DOOR CLOSED ∞ Ω
*DOOR OPEN   0 Ω

PRIMARY SWITCH
*DOOR CLOSED  0 Ω
*DOOR OPEN   ∞ Ω

NOTE: REMOVE WIRES TO CHECK CONTINUITY
MONITOR SWITCH TEST

Disconnect the oven from power supply. Before performing this test, make sure that the primary interlock switch and the power relay are operating properly. The monitor switch is located between the top and bottom interlocks. The monitor switch is operated indirectly by the bottom latch pawl.

HOW TO TEST MONITOR:
1. Disconnect power, open control panel, and discharge capacitor.
2. Disconnect monitor switch leads, and test at terminals:
   - Door closed—some Ohms (infinity)
   - Door open—0 Ohms
3. Reconnect switch wiring.
4. Test Circuit Operation:
   A) Connect temporary jumper across relay contacts and primary switch to simulate shorted switch contacts. Locate convienent connections in circuit to be certain COM and N.O. terminals are used.
   B) Connect OHM meter (LOW scale) across the two line terminals of appliance power cord.
      - Continuity must show:
        - Door Closed—some Ohms
        - Door open—0 Ohms
   C) Remove 20 Amp. Fuse—Circuit must open (Ohms). If not, check wiring of monitor and interlock circuits.
5. WARNING: After test, remove temporary jumpers and reconnect monitor switch leads.
PRIMARY INTERLOCK SYSTEM TEST
Disconnect the oven from power supply.

Door Sensing Switch
Isolate the switch and connect the ohmmeter to the common (COM.) and normally open (NO) terminal of the switch, the meter should indicate an open circuit with the door open and a closed circuit with the door closed. If improper operation is indicated, replace the door sensing switch.

Power Relay
Disconnect two (2) wire leads (plastic - squeeze) from the male tab terminals on the printed wiring circuit board provided in the control panel assembly. The tab terminals are located in the area of the circuit board on the component side, and are connected to the contacts of the power relay. Check the state of the relay contacts using an ohmmeter. The relay contacts should be open. If the relay contacts are closed, replace the circuit board entirely.

Primary Interlock Switch Test
Isolate the switch and connect the ohmmeter to the common (COM.) and normally open (NO) terminal of the switch. The meter should indicate an open circuit with the door open and a closed circuit with the door closed. If improper operation is indicated, replace the primary interlock switch.
GAS SENSOR TEST

Microwave sensor cooking uses a special gas sensor which detects both humidity (steam) and hydrocarbons (food odors) during the cooking process.

Checking the initial sensor cooking condition:
1. The oven should be plugged in at least five minutes before sensor cooking.
2. Room temperature should not exceed 95°F (350°C).
3. The unit should not be installed in any area where heat and steam are generated, for example, next to a conventional surface unit.
4. Exhaust vents are provided on the back of the unit for proper cooling and air flow in the cavity. To permit adequate ventilation, be sure to install so as not to block these vents. There should be some space for air circulation.
5. Be sure the exterior of the cooking container and the interior of the oven are dry. Wipe off any moisture with a dry cloth or paper towel.
6. The Sensor works with food at normal storage temperature. For example, chicken pieces would be at refrigerator temperature and canned soup at room temperature.
7. Avoid using aerosol sprays or cleaning solvents near the oven while using Sensor settings. The sensor will detect the vapor given off by the spray and turn off before food is properly cooked.
8. After about 2 to 9 minutes if the sensor has not detected the vapor of the food, ERROR will appear and the oven will shut off.

SENSOR TEST (QUICK TEST)
1. With 2 fingers touch and hold the following pads at the same time:
   - 7 and 8
2. Observe diagnostic number in display (numbers approximate)
   * 15-185 (Normal - verify with "detection test")
   * 213 or higher (Sensor failed open, sensor unplugged, wiring, or smart board)
   * Less than 6 (shorted sensor, or smart board)

NOTE: Only heater terminals (H) can be checked with ohmmeter (30 Ohms).

CAUTION- DO NOT ATTEMPT TO CHECK SENSOR TERMINALS (CAN DAMAGE SENSOR).

SENSOR DETECTION TEST
1. Place 1/3 cup tap water in oven.
2. Touch [VEGETABLE (jvm1660)], oven starts immediately.
3. Control beeps and shuts off.
4. Touch [CLEAR/OFF]
   A) Test OK--Normal
   B) Test Fails--Check Sensor. (see quick test previous page)
Thermal Cutouts

• Oven TCO (flame sensor) - if OTR will not operate - **DO NOT** replace without checking for cause.

• Bottom TCO - if fire on cooktop this prevents vent from turning on.

• MagTube TCO - opens if air flow blocked to prevent failure of Mag.

• Hood TCI - will keep smart board from overheating when surface units are on for long periods.
HV Power Supply

- The mag tube requires a high DC voltage source (4000VDC).
- This voltage is supplied by a half-wave voltage doubler circuit.
- The 2000V secondary winding is connected to the capacitor & diode.
- The capacitor increases the voltage to 3600V, due to its peak voltage charging capabilities.
- The diode voltage, & the resultant half-wave DC voltage is applied to the mag tube.
- The negative output from the DC circuit is connected to the filament of the mag tube.
- The positive output is connected to the plate of the mag tube, which is grounded to chassis.
**HV Power Supply**

- The diode is therefore connected with opposite polarity from the mag tube in order that the capacitor will charge through the diode during one-half cycle & will discharge through the mag tube on the alternate half-cycle.
- On the discharge cycle, the capacitor aids the transformer voltage, thereby providing the voltage doubling action.
HV Power Supply Test

• To check for HV circuit operation, put control board in test position.
• Place a load inside microwave & set time for 1 minute.
• Once microwave shuts off after the minute, place 2 screwdrivers across HV capacitor terminals to see if you get a spark.
• If the is a spark, the HV circuit is working.
• If there is no spark, the HV circuit is not working & you will need to check the diode, capacitor, and HV transformer.
Diode Operation
Diode Bias

FORWARD BIAS

ANODE
ON

CATHODE
OFF

NEGATIVE CHARGE

REVERSE BIAS

POSITIVE CHARGE
Microwave Diode Test

#1 SHORT TEST
RANGE =

SHOULD READ “+OL” OR “INFINITY” ANY OTHER READING = SHORTED REPLACE DIODE

#2 FORWARD BIAS
RANGE = 2K

READ APPROX. “1.400”

REVERSE BIAS
RANGE = 2K

READ “OL”

NOTE: READING MAY VARY WITH OTHER BRAND METERS.
| CONDITION          | TEST PROCEDURE                                           | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|-------------------|----------------------------------------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|    |
| **POSSIBLE CAUSE**| **AND**                                                  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **DEFECTIVE PARTS**| **Short in Power Cord**                                 |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **OFF CONDITION** | **Short or Open Wiring**                                 |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                   | **Power Transformer**                                   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                   | **Rectifier Assembly**                                  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                   | **H.C. Capacitor**                                      |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                   | **Primary Relay Switch**                                |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                   | **2nd Interlock Switch**                                |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                   | **Monitor Switch**                                      |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                   | **Temp., Fuse or Thermal Control**                      |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                   | **Control Unit**                                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                   | **Oven Lamp or Socket**                                 |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                   | **Oven Fan Motor**                                       |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                   | **Shower Fan**                                           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                   | **Wrong Voltage**                                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                   | **Drying Oven Cycle**                                    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                   | **Sensor Assembly**                                     |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                   | **Turntable Motor**                                      |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
## Microwave Diagnosis Chart

**A – Is the Display lit?**

<table>
<thead>
<tr>
<th>YES – THESE ITEMS ARE OK</th>
<th>NO – CHECK THESE ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>Voltage</td>
</tr>
<tr>
<td>Fuse</td>
<td>Fuse</td>
</tr>
<tr>
<td>Thermal cutouts – magnetron, cavity, flame, etc.</td>
<td>Thermal cutouts – magnetron, cavity, flame, etc.</td>
</tr>
<tr>
<td>Low voltage transformer</td>
<td>Low voltage transformer</td>
</tr>
<tr>
<td>Control</td>
<td>Control</td>
</tr>
</tbody>
</table>

**B – Can you program the microwave? (Do keypads respond?)**

<table>
<thead>
<tr>
<th>YES – THESE ITEMS ARE OK</th>
<th>NO – CHECK THESE ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key panel/ Control</td>
<td>Key panel/ Control</td>
</tr>
</tbody>
</table>

**C – Is the light on when you press START?**

<table>
<thead>
<tr>
<th>YES – THESE ITEMS ARE OK</th>
<th>NO – CHECK THESE ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key panel/ Control</td>
<td>Key panel/ Control</td>
</tr>
<tr>
<td>Door switches</td>
<td>Door switches</td>
</tr>
<tr>
<td>Power control module</td>
<td>Power control module</td>
</tr>
</tbody>
</table>

**D – Is the fan on when you press START?**

<table>
<thead>
<tr>
<th>YES – THESE ITEMS ARE OK</th>
<th>NO – CHECK THESE ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key panel/Control</td>
<td>Key panel/Control</td>
</tr>
<tr>
<td>Door switches</td>
<td>Door switches</td>
</tr>
<tr>
<td>Power control module</td>
<td>Power control module</td>
</tr>
</tbody>
</table>
**Microwave Diagnosis Chart**

### E – Is there 120VAC at high voltage transformer?

<table>
<thead>
<tr>
<th>YES – THESE ITEMS ARE OK</th>
<th>NO – CHECK THESE ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input amps at CMO fuse or line cord more than 1A.</td>
<td>Input amps at CMO fuse or line cord less than 1A. Refer to schematic – likely causes are door switch, relay, or high voltage transformer.</td>
</tr>
</tbody>
</table>

### F – Transformer primary

<table>
<thead>
<tr>
<th>YES – THESE ITEMS ARE OK</th>
<th>NO – CHECK THESE ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>If there is more than 1A at CMO fuse or line cord, the low voltage circuit is functional &amp; providing voltage to the high voltage transformer.</td>
<td>Less than 1 (or 0)A at CMO fuse or line cord. Check for 120VAC to transformer primary &amp; continuity of high voltage transformer primary.</td>
</tr>
</tbody>
</table>

### G – Transformer secondary/filament

<table>
<thead>
<tr>
<th>YES – THESE ITEMS ARE OK</th>
<th>NO – CHECK THESE ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 to 14A at CMO fuse or line cord.</td>
<td>1 to 5A at CMO fuse or line cord.</td>
</tr>
<tr>
<td>1 to 5A at CMO fuse or line cord &amp; 9 to 14A at magnetron leads.</td>
<td>1 to 5A at CMO fuse or line cord &amp; 0A at magnetron leads. Open in high voltage circuit. Check magnetron, capacitor, &amp; transformer for continuity.</td>
</tr>
</tbody>
</table>
# Microwave Diagnosis Chart

## H - Capacitor

<table>
<thead>
<tr>
<th>YES – THESE ITEMS ARE OK</th>
<th>NO – CHECK THESE ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 to 14A at CMO fuse or line cord.</td>
<td>More than 14A, blows fuse &amp; makes loud hum – capacitor shorted.</td>
</tr>
<tr>
<td>1 to 5A at CMO fuse or line cord and 9 to 14A at magnetron leads.</td>
<td>1 to 5A at CMO fuse or line cord &amp; 0A at magnetron leads. Open in high voltage circuit. Check magnetron, capacitor, &amp; transformer for continuity.</td>
</tr>
</tbody>
</table>

## I – Rectifier/Diode

<table>
<thead>
<tr>
<th>YES – THESE ITEMS ARE OK</th>
<th>NO – CHECK THESE ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 5A at CMO fuse or line cord &amp; 9 to 14A at magnetron leads.</td>
<td>1 to 5A at CMO fuse or line cord &amp; 9 to 14A at magnetron leads – check for open diode.</td>
</tr>
<tr>
<td>1 to 5A at CMO fuse or line cord &amp; 9 to 14A at magnetron leads.</td>
<td>Low amps at CMO fuse, high amps at magnetron leads – noisy operation. Check for shorted diode.</td>
</tr>
</tbody>
</table>

## J - Magnetron

<table>
<thead>
<tr>
<th>YES – THESE ITEMS ARE OK</th>
<th>NO – CHECK THESE ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 5A at CMO fuse or line cord &amp; 9 to 14A at magnetron leads.</td>
<td>More than 14A, blows fuse &amp; makes loud hum – magnetron shorted or grounded.</td>
</tr>
<tr>
<td>1 to 5A at CMO fuse or line cord &amp; 9 to 14A at magnetron leads.</td>
<td>1 to 5A at CMO fuse or line cord &amp; 0A at magnetron leads. Open in high voltage circuit. Check magnetron, capacitor, &amp; transformer for continuity.</td>
</tr>
</tbody>
</table>
## Microwave Diagnosis Chart

### Other items of importance

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal amps, no cook.</td>
<td>Check stirrer motor. Listen for change in sound 1 to 2 seconds after start.</td>
</tr>
<tr>
<td>Slow cooking.</td>
<td>Use performance test, failure indicates magnetron. Always check voltage as part of test.</td>
</tr>
<tr>
<td>Door adjustment.</td>
<td>Perform microwave leak test.</td>
</tr>
<tr>
<td>Erratic operation.</td>
<td>Look for overheating – verify overload is shutting system down.</td>
</tr>
<tr>
<td>Blows fuse intermittently.</td>
<td>Check primary transformer amps – more than 5A could indicate transformer failure.</td>
</tr>
<tr>
<td></td>
<td>Check door switches for proper operation – is there foreign matter present that could cause them to stick?</td>
</tr>
</tbody>
</table>
Microwave Diagnostic Flowchart

START

Is the Display Lit?

- Yes: Operate Oven
  - Yes: Load
    - Cold: Light/Fan On?
      - Yes: Check HV Circuit
      - No: Replace Stirrer
    - Warm: Stirrer OK?
      - Yes: Replace Magnetron
      - No: Replace Stirrer
    - Hot: Run Performance Test
- No: Check Voltage, Fuse, TCOs, LV Xfmr, & Control
Magnetron Flowchart

TURN "ON" & "OFF" UNPLUG OVEN

NORMAL DISCHARGE
RECTIFIER OR MAGNETRON

*DISCHARGE CAPACITOR
NO DISCHARGE

UNPLUG. VERIFY. & REPAIR

OPEN MAGN. FIL. OR OPEN XFMR. FIL. WDG

UNUSUAL LARGE "FIRECRACKER" DISCHARGE

PLUG IN OVEN TURN ON CHECK PRIM. VOLTS TO PWR. TRANSFORMER 120V?

YES NO

TURN OFF-UNPLUG CHECK PWR. XFMR. PRIM. & H.V. WDG. CORRECT?

CHECK SUPPLY CIRCUIT TO TRANSFORMER

YES NO

CHECK CAP. & RECTIFIER GOOD?

REPLACE PWR. TRANSFORMER

*IF CAP. HAS INTERNAL "BLEED" RESISTOR VISUAL DISCHARGE VERY SLIGHT & ONLY IF DONE QUICKLY

REPLACE MAGNETRON

REPLACE FAILED COMPONENT
JVM230/240/250B Series
GAS SENSOR TEST  JVM230/240/250B Series

Microwave sensor cooking uses a special gas sensor which detects both humidity (steam) and hydrocarbons (food odors) during the cooking process.

Checking the initial sensor cooking condition:
1. The oven should be plugged in at least five minutes before sensor cooking.
2. Room temperature should not exceed 95°F (35°C).
3. The unit should not be installed in any area where heat and steam are generated, for example, next to a conventional surface unit.
4. Exhaust vents are provided on the back of the unit for proper cooling and air flow in the cavity. To permit adequate ventilation, be sure to install so as not to block these vents. There should be some space for air circulation.
5. Be sure the exterior of the cooking container and the interior of the oven are dry. Wipe off any moisture with a dry cloth or paper towel.
6. The Sensor works with food at normal storage temperature. For example, chicken pieces would be at refrigerator temperature and canned soup at room temperature.
7. Avoid using aerosol sprays or cleaning solvents near the oven while using Sensor settings. The sensor will detect the vapor given off by the spray and turn off before food is properly cooked.
8. After about 2 to 9 minutes if the sensor has not detected the vapor of the food, ERROR will appear and the oven will shut off.
JVM230/240/250B Series

AUTO COOK DIAGNOSTIC TEST (QUICK TEST)
1. With 3 fingers touch and hold the following pads at the same time:
   6  7  8
2. Observe diagnostic number in display (numbers approximate)
   • 10-210 (Normal – verify with “sensor detection test”)
   • 213 or higher (Sensor failed open, sensor unplugged, wiring, or smart board)
   • Less then 8 (shorted sensor, or smart board)

NOTE: Only heater terminals (H) can be checked with ohmmeter (30 Ohms).

CAUTION: DO NOT ATTEMPT TO CHECK SENSOR TERMINALS (CAN DAMAGE SENSOR).

SENSOR DETECTION TEST
1. Place small amount of water (about 1/4 cup) in right front corner of oven.
2. Program AUTO COOK 2 START
3. Simultaneously touch 6 7 8 and observe diagnostic numbers in the display.
4. Record initial number (Ex. 70)
5. Record the number at humidity detection (control beeps – unit shuts off).
6. The number of “detection” should be approximately 75% of the HIGHEST NUMBER.
   Ex.: If high no. = 70, then low number should be approximately 52 (70 x .75 = 52).

NOTE: As long as detection DOES OCCUR and is approximately 75% of high number, (plus or minus a few numbers) the sensor system is working normally.
POWER PERFORMANCE TEST

1. Measure line voltage (loaded). This test is based on normal voltage variations of 105V to 130V. Low voltage will affect power and temperature rise.

2. Place WB64X0073 Beaker containing exactly one liter (1,000m1) 59°F-75°F water in center of shelf. Record the starting water temperature with an accurate glass thermometer.

3. Set at high (power level 10) and set time for 2 minutes and 3 seconds. Touch START.

4. At the end of test period, record the water temperature. The difference between the starting and end temperature is the temperature rise. Depending on loaded line voltage, the normal minimum temperature rise should be:

<table>
<thead>
<tr>
<th>Line Volts</th>
<th>Minimum Temperature Rise</th>
</tr>
</thead>
<tbody>
<tr>
<td>105V</td>
<td>30°F</td>
</tr>
<tr>
<td>120V</td>
<td>32°F</td>
</tr>
</tbody>
</table>
# JVM230/240/250B Series

## Possible Cause and Defective Parts

| Condition | Problem | Start in Power Cord | Short or Open Wiring | Neutral | Transformer | Resistor Assembly | H.V. Capacitor | Primary Interlock Switch | 2nd Interlock Switch | Monitor Switch | Monitor Fuses | Temperature Fuse or Thermal Cut-out | Control | Door Lamp or Socket | Cooking Fan Motor | Sensor | Door Sensor | Drop Down Cover | Sensor Assembly | Turntable Motor |
|-----------|---------|---------------------|---------------------|---------|-------------|-------------------|---------------|------------------------|-------------------|----------------|-------------|---------------------------------|---------|----------------|----------------|-------|----------------|----------------|----------------|---------------|------------------|
| OFF       | Home fuse blows when power cord is plugged into wall receptacle. | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |
| COOKING   | Door closer, oven lamp and cooking fan motor on, or not clear. | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |
|           | Oven lamp does not light in cool cycle or when door is opened. | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |
|           | Oven lamp does not light at all. | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |
|           | Oven lamp lights, but fan motor or turntable motor do not operate. | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |
|           | Oven does not go into cool cycle when START pad is touched. | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |
|           | Oven seems to be operating but little or no heat is produced in oven. (Food is incompletely cooked or not cooked at all at end of cool cycle.) | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |
|           | Oven produces extremely uneven heating in cool cycle. | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |
|           | Oven does not cool properly when programmed for cooking Power 5 mode. (Operable properly on cooking Power 10 mode.) | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |
| SENSOR    | Oven is in the sensor cooking condition but sensor does not end, or sensor turns off about max. 30 min. after start. When a cup of water is heated by sensor, the oven does not shut off when water is boiling. | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |

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JVM230/240/250B Series

NOTE: Door is opened.
Diagnostics Test

Simultaneously press the LIGHT and OFF keys for 3 seconds. The diagnostics screen will appear in the LCD display.

Sample Diagnostics Screen

Displayed Information

- MODEL - Identified at power-up by the keytail ID option.
- CODE VERSION - The date the code file was sent to GEA for testing (MM-DD-YY).
- HUMIDITY SENSOR - The CUR (current), DET (detection point), MIN (minimum), MAX (maximum) humidity sensor data will update continuously.

The CUR value is the present A/D value of the sensor. DET is the value at the moment the humidity detection point was reached. MIN is the lowest humidity point measured during entire feature’s run. MAX is the highest humidity value measured during the feature’s run. These data points are the dynamic measurements of the sensor, not the calculated values.

Pressing the DONE key terminates the diagnostic screen. The screen returns to the previous or HOME screen. The diagnostic screen will timeout and return to the previous screen after receiving no input for 5 minutes.
Error Message

F1 Convection - Open thermal sensor
F2 Convection - Shorted thermal sensor
F3 - Keypanel shorted for more than 60 seconds
F4 - Open humidity sensor
F5 - Shorted humidity sensor
F10 - Shorted touch panel

Note: Any “F” code will cause an error sound to beep for 3 cycles. One cycle will sound 2 seconds on, 1 second off.
Performance Test

1. Measure the line voltage (loaded). This test is based on normal voltage variations of 108V to 132V. Low voltage will lower output power and temperature rise.

2. Place a beaker (WB64X0073) containing 1 liter of water (1000ml, 59°F - 75°F) on the turntable and record the starting water temperature with a thermometer. (Do not use any other load or dish as results will vary from standard).

3. Set the microwave oven at HIGH power for 2 minutes and 3 seconds.

4. Turn on the oven.

5. Record the water temperature.

The minimum difference between the initial and ending temperature should be 40°F at 120V.

Microwave Leakage Test

1. Place 275 ml. of water in a 600 ml beaker (WB64X5010).

2. Place the beaker in the center of the oven shelf.

3. Set the meter to the 2450 MHz scale.

4. Turn the oven on for 5 minutes.

5. Hold the probe perpendicular to the surface being tested and scan the surfaces at a rate of 1 inch/sec.

Test the following areas:

- The entire perimeter of the door and control panel.
- The viewing surface of the door window.
- The exhaust vents.

6. The maximum leakage is 4 MW/CM².

7. Record data on the service invoice and microwave leakage report.

Note: The maximum allowable leakage is 5 MW/CM². 4 MW/CM² is used to allow for measurement and meter accuracy.
The smart board contains the power relay, LVT, vent blower triac, surface light relays, and other components to perform the proper switching circuits. Several disconnect plugs are also located on the smart board.

**CN01 - Ribbon connector.**

Interfaces the smart board and the touch pad.

**CN02 - Primary LTV, Main Relay, Inrush Relay, and Turntable.**

Interfaces the smart board and the key module.

**CN03 - Vent Blower Connector**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AZU-1 Hood TCO</td>
</tr>
<tr>
<td>3</td>
<td>VIL-1 Hood TCO</td>
</tr>
<tr>
<td>5</td>
<td>GRA-1 Main Fuse</td>
</tr>
<tr>
<td>7</td>
<td>BRN-1 Louver Motor</td>
</tr>
</tbody>
</table>

**CN04 - Cooktop Lamp Relay Connector**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>ORG-1 Turntable Motor</td>
</tr>
<tr>
<td>5</td>
<td>PIN-1 Fan Motor</td>
</tr>
<tr>
<td>7</td>
<td>WHT-9 Fan Motor</td>
</tr>
<tr>
<td>9</td>
<td>BLK-7 Oven Lamp</td>
</tr>
</tbody>
</table>

**CN05**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BLU-2 Cooktop Lamps</td>
</tr>
<tr>
<td>3</td>
<td>YEL-1 Cooktop Lamps</td>
</tr>
</tbody>
</table>
JVM2070

Smart Board

**CN06 - Door Sensing Connector**
- Pin 1 ORG: Door Sense Switch
- Pin 2 ORG: Door Sense Switch

**CN07 - Louver Motor Switches Connector**
- Pin 1 YEL: Louver Switch
- Pin 2 BLU: Louver Switch
- Pin 3 RED: Louver Switch

**CN08 - Gas Sensing Connector**
- Pin 1 ORG: Gas Sensor
- Pin 2 WHT: Gas Sensor
- Pin 3 BLK: Gas Sensor
- Pin 4 RED: Gas Sensor

**Low-Power Secondary Interlock**
- WHT/WHT: To High Power Interlock
- WHT/WHT: Cooktop Lamps
- WHT: HV Transformer

**High-Power Secondary Interlock**
- WHT/WHT: To Low Power Interlock
- WHT/WHT: Power Cord N
- WHT: HV Transformer Fuse
Top Stirrer, Side Stirrer, or Drive Motor Does Not Work
Dead Unit - Bottom TCO Does Not Work

Note: The Bottom TCO is not resetable. It must be replaced.
Dead Unit - Cavity or Magnetron TCO Does Not Work

Note: The Magnetron Tube TCO automatically resets when the conditions return to normal. The Cavity TCO is not resettable. It must be replaced.
Magnetron Does Not Work

Does continuity exist between the HV transformer black wire and power cord with primary interlock closed (door closed)?

- Yes
  - Does continuity exist between the HV transformer blue wire and secondary interlock-2 blue wire thru HV transformer fuse?
    - Yes
      - Does continuity exist between the secondary interlock-2 blue wire and power cord?
        - Yes
          - Does continuity exist between the HV transformer white wire to power cord thru secondary interlock-1 (door closed) and primary interlock switch open (door ajar)?
            - Yes
              - Replace the main control board. Does the magnetron work?
            - No
              - Replace the HV capacitor. Does the magnetron work?
        - No
          - Replace the HV transformer. Does the magnetron work?
    - No
      - Replace the primary interlock switch or repair faulty wiring between the HV transformer and the primary interlock switch.
  - No
    - Replace the HV transformer fuse or repair faulty wiring.

- No
  - Repair faulty wiring.

1 - Red
2 - White
3 - Blue
4 - Black

Replace the magnetron.
Convection Microwave
ZMC3000B
**ZMC3000B**

- Use Ohmmeter set on a high scale
- Read continuity between connections per chart

<table>
<thead>
<tr>
<th>Ribbon Pad</th>
<th>Connectors</th>
<th>Pad</th>
<th>Connectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME COOK</td>
<td>2-8</td>
<td>1</td>
<td>5-7</td>
</tr>
<tr>
<td>TIME DEFROST</td>
<td>6-9</td>
<td>2</td>
<td>4-7</td>
</tr>
<tr>
<td>TEMP. COOK HOLD</td>
<td>3-9</td>
<td>3</td>
<td>3-7</td>
</tr>
<tr>
<td>MIN/SEC. TIMER</td>
<td>6-11</td>
<td>4</td>
<td>2-7</td>
</tr>
<tr>
<td>POWER LEVEL</td>
<td>4-10</td>
<td>5</td>
<td>1-7</td>
</tr>
<tr>
<td>ADD 30 SECONDS</td>
<td>1-8</td>
<td>6</td>
<td>6-8</td>
</tr>
<tr>
<td>AUTO COOK</td>
<td>5-10</td>
<td>7</td>
<td>5-8</td>
</tr>
<tr>
<td>AUTO ROAST</td>
<td>2-9</td>
<td>8</td>
<td>4-8</td>
</tr>
<tr>
<td>AUTO DEFROST</td>
<td>5-9</td>
<td>9</td>
<td>3-8</td>
</tr>
<tr>
<td>AUTO REHEAT</td>
<td>5-11</td>
<td>0</td>
<td>6-7</td>
</tr>
<tr>
<td>AUTO START</td>
<td>2-10</td>
<td>CLOCK</td>
<td>4-11</td>
</tr>
<tr>
<td>START</td>
<td>1-10</td>
<td>COMB. COOK</td>
<td>6-10</td>
</tr>
<tr>
<td>CLEAR OFF</td>
<td>3-11</td>
<td>CONV. COOK</td>
<td>1-9</td>
</tr>
<tr>
<td>POPCORN</td>
<td>3-10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ZMC3000B

SMART BOARD

The smart board is held in place by 6 plastic stand-offs. When stand-offs are squeezed together the board can be pulled over them for board removal. Many diagnostic circuit tests can be made at the disconnect plugs.

CON 1 – 6 pin LVT secondary connector
CON 2 – 4 pin damper & heater motor relay
CON 3 – 4 pin door sense & thermistor
CON 4 – 2 pin probe connector
CON 5 – 5 pin gas sensor connector
CON 6 – 11 pin key panel connector
CON 7 – 13 pin sub smart board connector
CON 8 – 9 pin sub smart board connector
CON 9 – 2 pin fusible link connector
CON 10 – 2 pin LVT primary connector
ZMC3000B

GAS SENSOR TEST

Microwave sensor cooking uses a special gas sensor which detects both humidity (steam) and hydrocarbons (food odors) during the cooking process. The sensor is located on the exhaust duct at the top left corner of the cavity, behind the grille.

Checking the initial sensor cooking condition

1. The oven should be plugged in at least five minutes before sensor cooking.
2. Room temperature should not exceed 95°F (35°C).
3. The unit should not be installed in any area where heat and steam are generated, for example, next to a conventional surface unit.
4. Exhaust vents are provided on the back of the unit for proper cooling and air flow in the cavity. To permit adequate ventilation, be sure to install
so as not to block these vents. There should be some space for air circulation.
5. Be sure the exterior of the cooking container and the interior of the oven are dry. Wipe off any moisture with a dry cloth or paper towel.
6. The Sensor works with food at normal storage temperature. For example, chicken pieces would be at refrigerator temperature and canned soup at room temperature.
7. Avoid using aerosol sprays or cleaning solvents near the oven while using Sensor settings. The sensor will detect the vapor given off by the spray and turn off before food is properly cooked.
8. After about 2 to 9 minutes if the sensor has not detected the vapor of the food, ERROR will appear and the oven will shut off.
ZMC3000B

Quick Test Sensor:
With 3 fingers touch and hold the following pads at the same time.
6 7 8
Observe diagnostic numbers in display (numbers are approximate).
- 40-210 normal, can verify with Detection Test.
- 255 or higher (sensor failed open, unplugged, wiring problem, or smart board problem).

NOTE: Only heater terminals can be checked with ohmmeter (30Ω).

CAUTION! Checking sensor terminals with ohmmeter can damage sensor.

To Perform Sensor Detection Test:
1. Place 1/3 cup of tap water in oven. Do not use styrofoam cup.
2. Touch – Auto Cook – 1 – Start
3. After 1-1/2 – 2-1/2 minutes control should beep and display END.
4. Touch clear/off.
   - Test OK – Normal
   - Test fails – Check sensor
Performance Test

• Measure line voltage (loaded). This test is based on normal voltage variations of 105VAC to 130VAC. Low voltage will effect power & temperature rise.
• Place beaker (WB64X73) containing exactly 1 liter of water between 59° & 75° in the center of the shelf. Record the starting water temperature with an accurate thermometer.
• Set on HIGH power.
• Turn unit on for exactly 2 minutes 3 seconds.
• Remove carefully the beaker after the time has run out & record the water temperature – normal temperature rise should be 28° at 120VAC & 25° at 105VAC.
ZMC3000B

- DISPLAY LIT
- TIME OF DAY
  (IF NOT-SET?)

Y

- RUN CONTROL
  PERFORMANCE
  TEST (SEE TEST)
- DOES IT PASS?

N

- CONNECT ADAPTER CORD
  (ROBINAIR #14223)
- USE CLAMP-ON AMMETER
- NEON LIGHT IN OVEN
- WATER LOAD

CUSTOMER COMPLAINT

N

- CANNOT SET CLOCK
- NO OR ONLY SOME PADS WORK
- DISPLAY NOT WHAT ENTERED
- ERRATIC DISPLAY
- NO BEEP
- DISPLAY GOES BLANK
- DOES NOT GO TO T.O.D.

VERIFY XFMR VOLTS OK?

Y

- SMART BOARD
  OR
- KEY PANEL

REPLACE XFMR

N

PERFORM KEY PANEL TEST

Y

BLANK DISPLAY

CHECK:
- 12V SUPPLY
- 15A FUSE (SEE NOTE)
- CONTROL XFMR VOLTS
  ALL OK?

N

- CONTROL XFMR
  SEC VOLTS
- SHORTED
  PROBE RECP.
- SMART BOARD

REPAIR

Y

- GAS SENSOR
- TEMP PROBE RECP
  OPEN/SHORT
- SMARTBOARD
  REPAIR

NOTE:
15 AMP FUSE BLOWN
CHECK:
- INTLKS. (LAT. SWITCHES)
- MONITOR SWITCH
- VARISTOR
- PWR. XFMR
- HV CAPACITOR
### ZMC3000B

#### TEST PROCEDURE

| CONDITION | PROBLEM | Short in Power Cord | Short or Open Wiring | Magnetic Field | Rectifier Assembly | H.V. Capacitor | Primary Inductor Switch | 2nd Inductor Switch | Monitor Switch | Temperature Fuse or Thermal Cutout | Control Unit | Oven Lamp or Socket | Cooling Fan Motor | Stirrer Fan | Wrong Operation | Low Voltage | Dirty Oven Vents | Sensor Assembly | Turntable Motor |
|-----------|---------|---------------------|----------------------|---------------|---------------------|----------------|------------------------|---------------------|---------------|-----------------------------------|-------------|---------------------|----------------|------------|----------------|------------|----------------|----------------|---------------|----------------|----------------|
| OFF       | Door closed, oven lamp and cooling fan motor do not light | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
|           | Oven lamp does not light in cool cycle or when door is opened | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
|           | Door closed, oven lamp does not light when door is opened | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
|           | Oven lamp does not light at all | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
|           | Oven lamp lights but fan motor or turntable motor do not operate | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
|           | Oven does not go into cool cycle when START pad is touched | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
|           | Oven seems to be operating but little or no heat is produced in oven (food is incompletely cooked or not cooked at all at end of cook cycle) | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
|           | Oven produces extremely unseasonable in cool cycle | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
|           | Oven does not cook properly when programmed for Broiling Power 1 mode (operates properly on Broiling Power 2 mode) | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| SENSOR    | Oven is in the sensor cooking condition but sensor does not end, or sensor turns off about 30 min. after start. When a cup of water is heated by sensor, the oven does not shut off when water is boiling. | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
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Microwave Leak Test

Warning: Maximum allowable leakage is 4 MW/cm².
Inform the manufacturer of any oven found to have emission in excess of 4 MW/cm². Make repairs to bring the unit into compliance at no cost to the owner and determine the cause. Instruct the owner not to use the oven until it has been brought into compliance.

To perform a microwave leak test:
1. Place 275 ml of water in a 600-ml beaker (WB64X5010).
2. Place the beaker in the center of the oven on the turntable.
3. Set the leakage meter to the 2450 MHz scale.
4. Turn microwave on for 5 minutes.
5. Hold the probe perpendicular to the surface being tested and scan surfaces at a rate of 1 inch per second. Scan the following areas:
   • Entire perimeter of door and control panel
   • Viewing surface of door window
   • Exhaust vents

Warning: Maximum allowable leakage is 4 MW/cm².
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Microwave Performance Test

This test will verify that the microwave oven high voltage and magnetron circuits are operating to performance specifications.

The standard load is 1 liter (1000 ml) of water with a starting temperature of 59°F to 75°F in a 1000-ml beaker. (Do not use any other load or dish, as results will vary from the standard.)

1. Use glass tray and WB64X0073 beaker. Record the initial water temperature prior to making the test.

2. Place the beaker in the center of the oven on the glass tray and run the microwave on high power setting for 2 minutes, 3 seconds.

3. At the end of the cooking cycle, record the water temperature. The minimum difference between the initial and ending temperatures should be 28°F @120 volts.

<table>
<thead>
<tr>
<th>Display</th>
<th>Failure Detected</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>Oven cavity thermistor open</td>
</tr>
<tr>
<td>F2</td>
<td>Oven cavity thermistor shorted</td>
</tr>
<tr>
<td>F3</td>
<td>Key panel shorted (&gt; 60 seconds)</td>
</tr>
<tr>
<td>F4</td>
<td>Humidity sensor open or shorted</td>
</tr>
<tr>
<td>F6</td>
<td>High cavity temperature detected during microwave oven cooking</td>
</tr>
</tbody>
</table>
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Unit Dead (Blank Display)

Check for continuity between line and neutral on power cord.

Is there continuity?

YES

NO

Perform Low Voltage Transformer Test.

Does low voltage transformer pass test?

YES

Replace main PCB.

NO

Replace low voltage transformer.

Check the following for an open:
- Fuse
- Cavity TCO
- Magnetron TCO

All OK?

YES

Check wiring and connectors for an open condition.

NO

Repair or replace.
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Control and/or Display Does Not Operate Properly

Note: Use this diagnostic procedure if unit has one of the following malfunctions:
- No beep (check control program for beeper MUTE)
- Some or all keys do not operate (check for CONTROL PANEL LOCKED)
- Display does not show what was entered
- Display erratic
- Display blank (check control for display tu
- Cannot clear display

Flowchart:

1. Perform Low Voltage Transformer Test.
   - Does transformer pass test?
     - YES
       - Perform Control Panel Test.
         - Does control panel pass test?
           - YES
             - Replace main PCB. If not fixed, replace control panel.
           - NO
             - Replace control panel.
     - NO
       - Replace low voltage transformer.
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Note: Oven must be at room temperature at the start of Speedcook load test.
NO
Replace
thermistor.

NO
Check heaters.
Heaters OK?

YES
Check relays RY3 and RY8 on sub
PCB.

YES
Relays OK?

YES
Replace main
PCB.

NO
Replace sub PCB.

NO
Replace heater.

NO
Does microwave
stay on continually?

YES
See microwave
flow chart.
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Oven/Bake Under Temperature

1. Set Oven/Bake for 250° F.
   Does preheat display?
   - NO: See Display Does Not Operate Correctly chart.
   - YES:

2. Perform Damper Door Test.
   Pass test?
   - YES:
   - NO: Replace main PCB.

3. Check Thermistor.
   Thermistor OK?
   - NO: Replace Thermistor.
   - YES: Perform Damper Door Test.

4. Do sheath and lower heaters come on?
   - NO: Replace heater.
   - YES:

5. Does lower heater come on?
   - NO: Replace heater.
   - YES:

6. Check resistance of lower heater.
   Heater OK?
   - NO: Replace heater.
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Oven/Bake Over Temperature

1. Normal.
   - YES: Does lower heater cycle off at 250°F?
     - NO: Grounded heater circuit on main PCB side of heater.
     - YES: Set Oven/Bake for 250°F. Press start.
       - NO: Does upper heater cycle off at 250°F?
         - NO: Check relay RY9 on main PCB. Is relay stuck closed?
           - NO: Replace main PCB.
           - YES: Replace main PCB.
         - YES: Check relay RY7 on sub PCB. Is relay stuck closed?
           - NO: Replace main PCB.
           - YES: Check thermistor resistance. Thermistor OK?
             - NO: Replace thermistor.
             - YES: Grounded heater circuit on sub PCB side of heater.
Control Panel Test
The control panel circuits from the keys to the main PCB can be verified by a continuity test.
1. Remove the control panel.
2. Disconnect connectors CN3 and CN4 from the main PCB.
3. Using the chart, perform continuity tests for the keys that are suspect. With the ohmmeter leads connected to the appropriate terminals on connector CN3 or CN4, press the key and note the ohmmeter reading.
   • key not pressed - infinite resistance should be measured
   • key pressed - continuity should be measured
Note: Ohmmeter must be set at high scale.
Low Voltage Transformer Test

To perform a low voltage transformer test:

Verify 120 VAC is present at CN1 on main PCB across the white and black wires. If 120 VAC is not present, suspect a faulty main PCB. If 120 VAC is present, use the following chart to check the voltage output of the low-voltage transformer.

If the voltage output or resistance is not correct, replace the low voltage transformer.

<table>
<thead>
<tr>
<th>Measure Across</th>
<th>Line Voltage = 108 VAC</th>
<th>Line Voltage = 120 VAC</th>
<th>Line Voltage = 132 VAC</th>
<th>Ohms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow to Black</td>
<td>10.1 VAC</td>
<td>11.4 VAC</td>
<td>12.7 VAC</td>
<td>1.4</td>
</tr>
<tr>
<td>White to Black</td>
<td>15.9 VAC</td>
<td>18.1 VAC</td>
<td>20.0 VAC</td>
<td>4.9</td>
</tr>
<tr>
<td>Red to Red</td>
<td>11.9 VAC</td>
<td>13.5 VAC</td>
<td>14.9 VAC</td>
<td>8.1</td>
</tr>
<tr>
<td>Brown to Brown</td>
<td>3.64 VAC</td>
<td>4.13 VAC</td>
<td>4.58 VAC</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Humidity Sensor Test

Note:
- An open or shorted humidity sensor will cause fault code F4.
- Oven should be plugged in at least 5 minutes before the test.
- Room temperature should not exceed 95°F.
- Be sure the exterior of the cooking container and the interior of the oven are dry.
- No sensor cooking is available during the 5 minutes immediately after speedcook.

The humidity sensor can be tested from the control panel area using the following diagnostic procedure:

1. Remove control panel enough to gain access to connector CN5 on main PCB.
2. Disconnect the humidity sensor connector (CN5) from the main PCB.
3. Using an ohmmeter, set the scale to Rx1000 and confirm the following approximate resistance readings:
   a. BLK - RED = 6.2K ohms
   b. RED - WHT = 3.1K ohms
   c. BLK - WHT = 3.1K ohms
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Voltage Compensation Test

A voltage compensation test should be conducted any time the main PCB is changed. To perform a voltage compensation test, do the following:

1. Measure and record the line voltage.

**Note:** No load is required during this test.

2. Select Speedcook, Biscuits, Refr, Large.

3. Press the Start key. Normal cook time for this selection is 12 minutes. After 7 seconds, voltage compensated time should be displayed.

4. Compare your recorded line voltage and cook time with the line voltage and cook time on the chart. Your recorded time should be within 20 seconds of the times listed in the Voltage Compensation Chart.

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Time Change (Seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>108</td>
<td>+ 180</td>
</tr>
<tr>
<td>110</td>
<td>+ 150</td>
</tr>
<tr>
<td>112</td>
<td>+ 120</td>
</tr>
<tr>
<td>114</td>
<td>+ 90</td>
</tr>
<tr>
<td>116</td>
<td>+ 60</td>
</tr>
<tr>
<td>118</td>
<td>+ 30</td>
</tr>
<tr>
<td>120</td>
<td>0</td>
</tr>
<tr>
<td>122</td>
<td>- 21</td>
</tr>
<tr>
<td>124</td>
<td>- 42</td>
</tr>
<tr>
<td>126</td>
<td>- 63</td>
</tr>
<tr>
<td>128</td>
<td>- 84</td>
</tr>
<tr>
<td>130</td>
<td>- 105</td>
</tr>
<tr>
<td>132</td>
<td>- 126</td>
</tr>
</tbody>
</table>
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Damper Door Test

To test damper doors:

1. Select Warm/Reheat mode.
2. Select Keepwarm Lo program.
3. Select Moist setting.
4. Press start and run for 5 seconds. Open the door and visually check to see if both damper doors are closed.
6. Select Warm/Reheat mode.
7. Select Warm/Reheat Lo program.
8. Select Crisp setting.
9. Press start and run for 5 seconds. Open the door and visually check to see if both damper doors are open.

Heater Resistance Values

Resistance can be checked across a heater using the line-in side of the power cord and the heater connector at the main PCB or sub PCB. The oven door must be closed when checking through the power cord.

The following chart lists the wattage and resistance values for each of the four heaters.

<table>
<thead>
<tr>
<th>Heater Resistance Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halogen Heater</td>
</tr>
<tr>
<td>Sheath Heater</td>
</tr>
<tr>
<td>Upper Ceramic</td>
</tr>
<tr>
<td>Lower Ceramic</td>
</tr>
</tbody>
</table>
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Thermal Cut-Outs (TCOs)
The following chart lists each TCO, the temperature it will open at, and the temperature it will close at. Use an ohmmeter to check for an open TCO.

<table>
<thead>
<tr>
<th>Description</th>
<th>Open</th>
<th>Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cavity TCO</td>
<td>302°F 150°C</td>
<td>32°F 0°C</td>
</tr>
<tr>
<td>Hood TCO</td>
<td>104°F 40°C</td>
<td>133°F 56°C</td>
</tr>
<tr>
<td>Magnetron TCO</td>
<td>302°F 150°C</td>
<td>140°F 60°C</td>
</tr>
</tbody>
</table>

Oven Door Switches

Primary Interlock Test
1. Remove the grille and discharge the capacitor.
2. Check continuity between switch terminals. Normal readings are as follows:
   - Door closed: 0 ohms.
   - Door open: infinite ohms.

Door Sensing Switch Test
1. Remove the grille and discharge the capacitor.
2. Check continuity between switch terminals. Normal readings are as follows:
   - Door closed: 0 ohms.
   - Door open: infinite ohms.

Monitor Switch Test
The bottom latch pawl pushes horizontally and actuates the lever of the monitor interlock opening the switch.
1. Remove the monitor switch leads to isolate the switch.
2. Check continuity between switch terminals. Normal readings are as follows:
   - Door closed: infinite ohms.
   - Door open: 0 ohms.
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Interlock System Test

1. Remove the grille and discharge the capacitor.
2. Check 20-amp fuse for continuity and proper size. Do not use any fuse other than 20 amp.
3. Remove the monitor switch leads to isolate the switch. Check continuity of switch with door open and door closed.
   - Door closed: infinite ohms.
   - Door open: 0 ohms.
4. Reconnect the switch leads.
5. Test the circuit operation:
   A) Connect a temporary jumper across relay (RY2) contacts, primary interlock, and door sensing switch to simulate shorted switch contacts.
   B) Connect the ohmmeter (Rx1) across the line terminals of the appliance cord.
6. After testing is complete, remove temporary jumper leads from interlocks and relay and reconnect monitor switch leads.

Interlock Adjustment

Warning: A microwave leakage test must be performed any time a door is removed, replaced, disassembled, or adjusted for any reason. The maximum allowable leakage is 4 MW/cm².

The latch board is adjusted for door fit and switch operation.

1. Remove the key panel.
2. Loosen the latch-board mounting screws at the vertical flange.
3. Adjust the latch-board for proper switch operation and door fit. Retighten screws.
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Thermistor Resistance Values
Thermistor resistance can be checked at the main control board, connector CN6. Check between the white and red wire for the high-thermistor side of the thermistor. Check between the white and the blue wire for the low-thermistor side of the thermistor. The thermistor must be at room temperature when testing.

<table>
<thead>
<tr>
<th>Temperature</th>
<th>High Thermistor Acceptable Range (K-ohms)</th>
<th>Low Thermistor Acceptable Range (K-ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50°F</td>
<td>370-522</td>
<td>186-192</td>
</tr>
<tr>
<td>70°F</td>
<td>224-310</td>
<td>112-115</td>
</tr>
<tr>
<td>90°F</td>
<td>139-189</td>
<td>69.0-71.2</td>
</tr>
</tbody>
</table>
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MICROWAVE PERFORMANCE TEST

This test will verify that the microwave oven high voltage and magnetron circuits are operating to performance specifications.

1. Using only a WB64X0073 beaker, place a standard test load of 1 liter (1000 ml) of water in the beaker. Measure and record the water temperature prior to making the test. The water temperature should be between 59° F and 75° F.

2. Place the beaker in the center of the oven on the white ceramic microwave cooking tray.

3. Close the oven door. At the front control panel, select: Microwave - Time Cook - 2:03 Minutes - Power Level 10. Press START to begin microwave cooking.

4. At the end of the cooking cycle, remove the beaker of water and measure and record the temperature.

5. The minimum difference between the initial and ending temperatures should be 32° F at 120 VAC.

If the water temperature rose, but did not reach the 32° F minimum, suspect a problem with the line voltage (test under full load) or magnetron tube/high voltage circuit.

If the water temperature did not rise at all, suspect a problem in the high voltage circuit.
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MICROWAVE LEAKAGE TEST

Caution: this test should not be performed during a speedcook operation. This test should only be performed during microwave only operation. To perform a microwave leakage test, follow the below steps:

1. Place 275 ml. of water in a 600 ml. beaker (WB64X5010 - 600 ml beaker).
2. Place the beaker on the white ceramic tray.
3. Set the leakage meter to the 2450 MHz scale.
4. Program the microwave for 5 minutes (power level 10).
5. Hold the probe perpendicular to the surface being tested and scan surfaces at a rate of one inch/sec. Scan the following areas:
   - Entire door and control panel area
   - Viewing surface of door window
   - Exhaust vents

6. The maximum allowable leakage should not exceed 4 MW/CM². 4 MW/CM² is used to allow for measurement and meter accuracy.
7. Inform the manufacturer of any oven found to have emissions in excess of 5 MW/CM². Instruct the owner not to use the oven until it has been brought into compliance.
8. Record the data on your service invoice and/or microwave leakage report.
HUMIDITY SENSOR TEST

This test should only be conducted at room temperature (room temperature should not exceed 95° F.). Be sure that the oven cavity is dry and free of moisture. The humidity sensor can be tested from the front control panel area using the following diagnostic procedure:

1. Disconnect the humidity sensor connector from the smart board (CN4, 3 pin - red connector plug located at the top of the smart board).

2. Using an ohm meter, set the scale to RX1000, and confirm the following approximate resistance readings.
   a. BLK - RED = 6.2K ohms
   b. RED - WHT = 3.1K ohms
   c. BLK - WHT = 3.1K ohms
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FAULT CODES

The smart board monitors various operations and can detect certain failure modes. In the event of specific failures, cooking will be terminated, a four beep signal will be heard, and a fault code will be displayed.

Pressing the CLEAR pad will remove the fault code display, unless the failure is a shorted keypanel switch. Detection of a failed sensor will have no effect on features that do not use that sensor.

F4 (open or shorted humidity sensor) and F6 (high cavity temperature during microwave cooking) codes apply only to microwave cooking. The chart below indicates failure modes which can be detected and displayed:

<table>
<thead>
<tr>
<th>DISPLAY</th>
<th>FAILURE DETECTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>Oven cavity thermistor open</td>
</tr>
<tr>
<td>F2</td>
<td>Oven cavity thermistor shorted</td>
</tr>
<tr>
<td>F3</td>
<td>Keypanel shorted (&gt; 60 seconds)</td>
</tr>
<tr>
<td>F4</td>
<td>Humidity sensor open or shorted</td>
</tr>
<tr>
<td>F6</td>
<td>High cavity temperature detected during microwave oven cooking</td>
</tr>
</tbody>
</table>
Advantium SCA2000

KEY PANEL TEST

If necessary, the keypanel pad/switches can be verified by a continuity test. For ease of handling, the key panel should be removed and placed on a flat protected surface. Check continuity between the connections at the CN3 connector plug.

<table>
<thead>
<tr>
<th>PAD</th>
<th>PINS</th>
<th>PAD</th>
<th>PINS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIAL - ENTER</td>
<td>1-10</td>
<td>SURFACE LIGHT</td>
<td>3-9</td>
</tr>
<tr>
<td>POWER LEVEL</td>
<td>1-9</td>
<td>MICRO EXPRESS</td>
<td>4-10</td>
</tr>
<tr>
<td>DELAY START</td>
<td>1-8</td>
<td>MICROWAVE</td>
<td>4-9</td>
</tr>
<tr>
<td>SPEEDCOOK</td>
<td>2-10</td>
<td>OPTIONS</td>
<td>4-8</td>
</tr>
<tr>
<td>TIMER</td>
<td>2-9</td>
<td>MANUAL COOK</td>
<td>5-10</td>
</tr>
<tr>
<td>CLEAR/OFF</td>
<td>2-8</td>
<td>VENT FAN</td>
<td>5-9</td>
</tr>
<tr>
<td>START/PAUSE</td>
<td>3-10</td>
<td>REMINDER</td>
<td>5-8</td>
</tr>
<tr>
<td>HELP</td>
<td>3-9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To perform the test, press the appropriate pad on the front panel. While pressing the pad, check for continuity between the appropriate pins. For example, while pressing the selector DIAL you should read continuity between pins 1 & 10.
## Advantium SCA2000

<table>
<thead>
<tr>
<th>CONN</th>
<th>COLOR</th>
<th># PINs</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN1</td>
<td>White</td>
<td>3 Pin</td>
<td>LV transformer primary</td>
</tr>
<tr>
<td>CN2</td>
<td>Blue</td>
<td>3 Pin</td>
<td>Drensing sw, damper dr monitor sw &amp; base hood TCO</td>
</tr>
<tr>
<td>CN3</td>
<td>White</td>
<td>11 Pin</td>
<td>User control switch assembly (control panel assy)</td>
</tr>
<tr>
<td>CN4</td>
<td>Red</td>
<td>3 Pin</td>
<td>Humidity sensor</td>
</tr>
<tr>
<td>CN5</td>
<td>Blue</td>
<td>5 Pin</td>
<td>From volt. comp. transformer primary (on smart board)</td>
</tr>
<tr>
<td>CN6</td>
<td>Yellow</td>
<td>3 Pin</td>
<td>Oven cavity thermistor</td>
</tr>
<tr>
<td>CN11</td>
<td>White</td>
<td>4 Pin</td>
<td>LV transformer secondary</td>
</tr>
<tr>
<td>CN12</td>
<td>White</td>
<td>5 Pin</td>
<td>(see schematic / legend)</td>
</tr>
<tr>
<td>CN13</td>
<td>White</td>
<td>6 Pin</td>
<td>(see schematic / legend)</td>
</tr>
<tr>
<td>CN14</td>
<td>Black</td>
<td>20 Pin</td>
<td>Vacuum fluorescent display</td>
</tr>
<tr>
<td>CN17</td>
<td>White</td>
<td>8 Pin</td>
<td>Relay board</td>
</tr>
<tr>
<td>CN20</td>
<td>White</td>
<td>9 Pin</td>
<td>LED board</td>
</tr>
<tr>
<td>RY2</td>
<td>Clear</td>
<td>2 Pin</td>
<td>To HV transformer and Nuetral</td>
</tr>
</tbody>
</table>
## Advantium SCA2000

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CLOSED</th>
<th>OPEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAVITY TCO</td>
<td>302°F</td>
<td>1 Shot</td>
</tr>
<tr>
<td></td>
<td>150°C</td>
<td>1 Shot</td>
</tr>
<tr>
<td>HALOGEN TCOs (3)</td>
<td>293°F</td>
<td>140°F</td>
</tr>
<tr>
<td></td>
<td>145°C</td>
<td>60°C</td>
</tr>
<tr>
<td>MAGNETRON (M.G.T.) TCO</td>
<td>302°F</td>
<td>140°F</td>
</tr>
<tr>
<td></td>
<td>150°C</td>
<td>60°C</td>
</tr>
<tr>
<td>BASE HOOD TCO</td>
<td>104°F</td>
<td>133°F</td>
</tr>
<tr>
<td></td>
<td>40°C</td>
<td>56°F</td>
</tr>
</tbody>
</table>

![Diagram of Advantium SCA2000](image-url)
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**DAMPER DOOR OPERATING MODES**

<table>
<thead>
<tr>
<th>COOKING MODE</th>
<th>DAMPER POSITION</th>
<th>SW. PLUNGER POSITION</th>
<th>SWITCH CONTACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MICROWAVE SPEEDCOOK</td>
<td>OPEN</td>
<td>NOT DEPRESSED</td>
<td>CLOSED</td>
</tr>
<tr>
<td></td>
<td>CLOSED</td>
<td>DEPRESSED</td>
<td>OPEN</td>
</tr>
</tbody>
</table>

* Damper door sensing switch contacts are closed when oven door is open

**OVEN DOOR OPEN POSITION**

<table>
<thead>
<tr>
<th>SWITCH DESCRIPTION</th>
<th>SWITCH CONTACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIMARY</td>
<td>OPEN</td>
</tr>
<tr>
<td>DOOR MONITOR</td>
<td>CLOSED</td>
</tr>
<tr>
<td>DOOR SENSING</td>
<td>OPEN</td>
</tr>
</tbody>
</table>
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MICROWAVE PERFORMANCE TEST

This test will verify that the microwave oven high voltage and magnetron circuits are operating to performance specifications.

1. Using only a WB64X0073 beaker, place a standard test load of 1 liter (1000 ml) of water in the beaker. Measure and record the water temperature prior to making the test. The water temperature should be between 59° F and 75° F.

2. Place the beaker in the center of the oven on the white ceramic microwave cooking tray.

3. Close the oven door. At the front control panel, select: Microwave - Time Cook - 2:03 Minutes - Power Level 10. Press START to begin microwave cooking.

4. At the end of the cooking cycle, remove the beaker of water and measure and record the temperature.

5. The minimum difference between the initial and ending temperatures should be 32° F at 120 VAC.

If the water temperature rose, but did not reach the 32° F minimum, suspect a problem with the line voltage (test under full load) or magnetron tube/high voltage circuit.

If the water temperature did not rise at all, suspect a problem in the high voltage circuit.
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HUMIDITY SENSOR TEST

This test should only be conducted at room temperature (room temperature should not exceed 95°F). Be sure that the oven cavity is dry and free of moisture. The humidity sensor can be tested from the front control panel area using the following diagnostic procedure:

1. Disconnect the humidity sensor connector from the smart board (CN4, 3 pin - red connector plug located at the top of the smart board).

2. Using an ohm meter, set the scale to RX1000, and confirm the following approximate resistance readings.
   a. BLK - RED = 6.2K ohms
   b. RED - WHT = 3.1K ohms
   c. BLK - WHT = 3.1K ohms
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Microwave Leakage Test

Caution: This test should not be performed during a speedcook operation. This test should only be performed during microwave-only operation.

To perform a microwave leakage test:

1. Place 275 ml of water in a 600 ml beaker (WB64X5010).

2. Place the beaker in the center of the white ceramic tray.

3. Set the leakage meter to the 2450 MHz scale.

4. Program the microwave for 5 minutes (power level 10) and press START.

5. Hold the probe perpendicular to the surface being tested and scan surfaces at a rate of one inch/sec. Scan the following areas:
   - Entire perimeter of door and control panel
   - Viewing surface of door window
   - Exhaust vents

Note: Maximum allowable leakage should not exceed 4 MW/CM², which is used to allow for measurement and meter accuracy.

6. Leakage should not exceed 4 MW/CM².

7. Inform the manufacturer of any oven found to have emissions in excess of 5 MW/CM². Try to determine the cause of excessive leakage and make repairs to bring the unit into compliance at no cost to owner. Instruct the owner not to use the oven until it has been brought into compliance.

8. Record the data on your service invoice and/or microwave leakage report.
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Performance Test for Halogen Lamps

Caution: When performing this test, use only a glass beaker. Plastic beakers will melt.

Note: This test should be run when the oven is cool.

1. Place 1000 ml of water in a 1000 ml glass beaker.
2. Record the initial water temperature.
3. Place the beaker in the center of the black metal tray.
4. Program oven at U=10, L=10, and M=0 for 2.5 minutes and press START.
5. Record the ending water temperature.

The minimum difference between the initial and ending temperature should be 15°F at 240 volts.

Also, a continuity test can be taken on the upper halogen lamps by disconnecting the blue and white connectors located near the upper blower motor. Check the resistance with an ohmmeter.

Key Panel Test

If necessary, the key panel pads can be verified by a continuity test. For ease of handling, the key panel should be removed and placed on a flat protected surface. Check continuity between the connections at the end of the ribbon (use high ohm scale).

To perform the test, press the appropriate pad on the front panel. While pressing the pad, check for continuity between the appropriate pins. For example, while pressing the SELECTOR DIAL, you should read continuity between pins 1 and 8.

<table>
<thead>
<tr>
<th>PAD</th>
<th>CONN.</th>
<th>PAD</th>
<th>CONN.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIAL ENTER</td>
<td>1-8</td>
<td>MICRO EXPRESS</td>
<td>4-8</td>
</tr>
<tr>
<td>POWER LEVEL</td>
<td>1-7</td>
<td>MICROWAVE / OVEN LIGHT</td>
<td>4-7</td>
</tr>
<tr>
<td>SPEED COOK / REPEAT LAST TIMER</td>
<td>2-8</td>
<td>OPTIONS</td>
<td>3-8</td>
</tr>
<tr>
<td>TIMER</td>
<td>3-7</td>
<td>MANUAL COOK / RECIPE</td>
<td>5-8</td>
</tr>
<tr>
<td>CLEAR / OFF</td>
<td>2-6</td>
<td>BACK</td>
<td>4-6</td>
</tr>
<tr>
<td>START / PAUSE</td>
<td>2-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HELP</td>
<td>2-7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Advantium SCB2000

Fault Codes

The smart board monitors various operations and can detect certain failure modes. In the event of specific failures, cooking will be terminated, a 4-beep signal will be heard, and a fault code will be displayed.

Pressing the CLEAR pad will remove the fault code display unless the failure is a shorted key panel switch. Detection of a failed sensor will have no effect on features that do not use that sensor.

**F4 (open or shorted humidity sensor) and F6 (high cavity temperature during microwave cooking) codes apply only to microwave cooking.**

Sometimes fault codes will appear with no apparent cause. These codes and their symptoms include:

- **F1** - If the food is a large cold load that must cook over 5 minutes, the temperature of the cavity may not rise fast enough to change the thermistor resistance very much. The control believes that the thermistor is not responding because it is open, and thus displays the F1 code. This can be cleared at the end of the cycle and cooking will continue.

- **F4** - If there is an electrical surge or excessive line “noise” within the home, it could cause F4 to display on the control. The sensor will remain inoperable until the control is reset. This can be done by removing power (turning off the circuit) to the unit for 1 minute.

**NOTE:** Replacing the humidity sensor will **not** cure this situation if it was due to electrical “noise.”

- **Interior oven lights stay on or off and do not respond to key commands** - This is also caused by electrical surge or excessive line “noise.” Remove power (turn off the circuit) to the unit for 1 minute. Replacing parts will **not** solve the problem.

<table>
<thead>
<tr>
<th>DISPLAY</th>
<th>FAILURE DETECTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>Oven cavity thermistor open</td>
</tr>
<tr>
<td>F2</td>
<td>Oven cavity thermistor shorted</td>
</tr>
<tr>
<td>F3</td>
<td>Key panel shorted (&gt; 60 seconds)</td>
</tr>
<tr>
<td>F4</td>
<td>Humidity sensor open or shorted</td>
</tr>
<tr>
<td>F6</td>
<td>High cavity temperature detected during microwave oven cooking</td>
</tr>
</tbody>
</table>
Advantium SCB2000

<table>
<thead>
<tr>
<th>CONN</th>
<th>COLOR</th>
<th># PINS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN1</td>
<td>White</td>
<td>3 Pin</td>
<td>To LV transformer (primary)</td>
</tr>
<tr>
<td>CN2</td>
<td>Blue</td>
<td>3 Pin</td>
<td>Door sensing switches (left and right and damper motor)</td>
</tr>
<tr>
<td>CN3</td>
<td>White</td>
<td>11 Pin</td>
<td>To control display (key panel control assembly)</td>
</tr>
<tr>
<td>CN4</td>
<td>Red</td>
<td>3 Pin</td>
<td>Humidity sensor</td>
</tr>
<tr>
<td>CN5</td>
<td>Blue</td>
<td>5 Pin</td>
<td>To control display (key panel control assembly)</td>
</tr>
<tr>
<td>CN6</td>
<td>Yellow</td>
<td>3 Pin</td>
<td>Thermistor</td>
</tr>
<tr>
<td>CN11</td>
<td>White</td>
<td>4 Pin</td>
<td>From LV transformer (secondary)</td>
</tr>
<tr>
<td>CN12</td>
<td>White</td>
<td>5 Pin</td>
<td>Vent motor, blower motor, thermal fuse, upper halogen T.C.O.</td>
</tr>
<tr>
<td>CN13</td>
<td>White</td>
<td>6 Pin</td>
<td>Damper motor, oven lamps, upper blower motor, lower blower motor</td>
</tr>
<tr>
<td>CN17</td>
<td>White</td>
<td>8 Pin</td>
<td>To control display (key panel control assembly)</td>
</tr>
</tbody>
</table>
Advantium SCB2000

<table>
<thead>
<tr>
<th>THERMAL CUT-OUTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>CAVITY T.C.O.</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>HALOGEN T.C.O.s</td>
</tr>
<tr>
<td>Upper Halogen T.C.O.s (2)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Lower Halogen T.C.O. (1)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>MAGNETRON (M.G.T.) T.C.O.</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

T.C.O. LOCATIONS

- T.C.O. Oven Cavity
- T.C.O. Upper Rear Halogen
- T.C.O. Upper Front Halogen
- T.C.O. Magnetron
- T.C.O. Lower Halogen
Advantium SCB2000

<table>
<thead>
<tr>
<th>OVEN DOOR OPEN POSITION</th>
<th>SWITCH DESCRIPTION</th>
<th>SWITCH CONTACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIMARY</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>DOOR MONITOR</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>DOOR SENSING</td>
<td>OPEN</td>
<td></td>
</tr>
</tbody>
</table>

Left Latch Assembly

Right Latch Assembly

GEA00541

GEA00540
Advantium SCB2000

<table>
<thead>
<tr>
<th>COOKING MODE</th>
<th>DAMPER POSITION</th>
<th>SW. PLUNGER POSITION</th>
<th>SWITCH CONTACTS*</th>
</tr>
</thead>
<tbody>
<tr>
<td>MICROWAVE</td>
<td>OPEN</td>
<td>NOT DEPRESSED</td>
<td>CLOSED</td>
</tr>
<tr>
<td>SPEEDCOOK</td>
<td>CLOSED</td>
<td>DEPRESSED</td>
<td>OPEN</td>
</tr>
</tbody>
</table>

* Damper door sensing switch contacts are closed when oven door is open.
2004
Trivection Technology
Cooking

JS998
JT930
JT980
ZET3038
ZET3058
Microwave Leakage Test

1. Place 275 mL of water in a 600-mL beaker.
2. Place beaker in center of oven shelf.
3. Set meter to 2450-Hz scale.
4. Enter the service mode (see Service Mode), press the keypad next to COOKING LOADS, then press the keypad next to MW (microwave).
5. Time for 5 minute test.
6. Hold probe perpendicular to surface being tested and scan surface at rate of one inch/sec.
7. Test the following areas:
   - Entire perimeter of door and control panel.
   - Viewing surface of door window.
   - Exhaust vents.

Note: Maximum leakage is not to exceed 4 mW/cm².
Trivection

Performance Testing

Standard test load will be 1 liter (1000-mL) of water with an initial temperature 59° ~ 75°F in a 1000-mL beaker (PN WB64X73).

1. Record initial water temperature.
2. Place beaker in center of middle oven shelf.
3. Enter the service mode (see Service Mode), press COOKING LOADS, then press the keypad next to MW.
4. Time for 2 minutes, then open door.
5. Record end water temperature.
6. The minimum difference between the initial and ending temperatures should be 12°F at 240 VAC.

Note: Standard Microlite™ test blocks (sometimes called sparkle blocks) are not applicable.
Trivection Voltage Checks

- To turn off all loads that are energized in “Cooking Loads”, press CLEAR/OFF key or exit the “Cooking Loads” menu
- If load is not turned off, additional loads can be turned on at the same time
- If ACV measures OK, then check the load (element, fan, lock, motor, HVT, etc.) &/or wiring to the load & repair/replace as required
- If there is no ACV supplied to the load through the power relays per wiring schematic, then check the DC power supply voltages from the MPB (J3 connector) to the MLB (J5 connector) according to the following table.
# Trivection DC Power Supply Voltage Chart

<table>
<thead>
<tr>
<th>MPB</th>
<th>MLB</th>
<th>Signal Name</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>J3-1</td>
<td>J5-1</td>
<td>+12Vdc</td>
<td>11.00Vdc</td>
<td>12.75Vdc</td>
</tr>
<tr>
<td>J3-2</td>
<td>J5-2</td>
<td>12Vdc, 5Vdc Ground</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>J3-3</td>
<td>J5-3</td>
<td>+5Vdc</td>
<td>4.7Vdc</td>
<td>5.3Vdc</td>
</tr>
<tr>
<td>J3-4</td>
<td>J5-4</td>
<td>12Vdc, 5Vdc Ground</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>J3-5</td>
<td>J5-5</td>
<td>-14Vdc</td>
<td>-14.75Vdc</td>
<td>-12.75Vdc</td>
</tr>
<tr>
<td>J3-6</td>
<td>J5-6</td>
<td>Not Connected</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>J3-7</td>
<td>J5-7</td>
<td>L1 thru 2M ohm/.47 uF cap on MPB</td>
<td>240VAC line monitor</td>
<td></td>
</tr>
<tr>
<td>J3-8</td>
<td>J5-8</td>
<td>L1 thru 2M ohm/.47 uF cap on MPB</td>
<td>120VAC line monitor</td>
<td></td>
</tr>
<tr>
<td>J3-9</td>
<td>J5-9</td>
<td>Not Connected</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>J3-10</td>
<td>J5-10</td>
<td>NT thru 2M ohm/.47 uF cap on MPB</td>
<td>120VAC line monitor</td>
<td></td>
</tr>
<tr>
<td>J3-11</td>
<td>J5-11</td>
<td>Not Connected</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>J3-12</td>
<td>J5-12</td>
<td>L2 thru 2M ohm/.47 uF cap on MPB</td>
<td>240VAC line monitor</td>
<td></td>
</tr>
</tbody>
</table>
Trivection Voltage Checks

• If voltages do not measure according the the table above, replace MPB. If voltages measure OK, then measure DCV according to the relay control table (see pages 35, 36, & 37).
• If the MLB J3 pins do not provide correct DCV, then replace MLB.
• If the display is blank, the oven light does not operate when the door is opened, & the keypanel does not respond, first check DC power supply voltages. Next, check DCV at MLB J2 (pins 2, 4, 6, & 8). They should be +12VDC. If not, replace text display &/or time/temp display.
• If DC power supply voltages are OK, the display is blank, & the keyboard is not responding, replace MLB. If just the display is blank, replace the display. If only the keyboard is not responding, check glass touch display. If OK, replace MLB.
• If oven light does not turn on when door is opened, check oven light relay per relay troubleshooting table. If relay voltages are OK, check door sense switch (page 24).
Service Mode

• Disconnect main power to the oven for at least 15 seconds.
• Reconnect power & enter 0803 on the keypanel within 5 minutes after the control initializes.
• The SPECIAL MODES screen is displayed.
• Press the SERVICE pad on the screen.
• The SERVICE MODE screen is displayed.
• Press the NEXT & BACK pads to scroll through the test list, choose a test by pressing the appropriate pad.
Service Mode Test Screen 1

• COOKING LOADS: verifies proper operation of cooking elements & convection fan (NOTE: there is a 5 second delay).
• DOOR LATCH: verifies proper operation of door lock motor & switches – press the LOCK pad, a red lock icon flashes during lock process, then becomes solid when door is locked - press UNLOCK pad, the red lock icon flashes during unlock process, then turns off when door is unlocked.
• DOOR POSITION: verifies proper operation of door sense switch – open & close door, the Time/Temp display indicates the door is open or closed.
• RTD: displays oven sensor temp in red on Time/Temp display.
• VENT FAN: verifies proper operation of vent fan – press ON & OFF pads to cycle the fan, the Time/Temp display indicates the fan is on or off.
Service Mode Next Screen

SELECT

*SERVICE MODE*  EXIT
MAGTAP  OVENLIGHT
R.COOLINGFANS  BACK
L.COOLINGFANS  NEXT
Service Mode Test Screen 2

• MAG TAP: forces the control to use either 208 or 240ACV tap on the HVT – **DO NOT** use this service feature at this time, allow the control to select the transformer voltage.

• R COOLING FAN: verifies proper operation of the right cooling fan – press ON & OFF pads to cycle the fan, the Time/Temp display indicates the fan is on or off.

• L COOLING FAN: verifies proper operation of the mag cooling fan, HVT fan, & mag stirrer fan (WO) or the left cooling fan (SI) - press ON & OFF pads to cycle the fan/s, the Time/Temp display indicates the fan/s are on or off.

• OVEN LIGHT: verifies proper operation of oven light – press ON & OFF pads to cycle the light, the Time/Temp display indicates the light is on or off.
Service Mode Test Screen 3

- OFFSET: to adjust the oven calibration offset in bake – press INCREASE or DECREASE pads to change cook temp in 1° increments up to +/- 35° – press CONFIRM pad to set.
- DISPLAY: verifies operation of display segments – press ON & OFF pads to cycle the display test – press CLEAR/OFF pad to return display to normal.
- KEYS: verifies proper operation of keypanel – press the number pads on the keypanel to test, each number appears in the Time/Temp display as the corresponding pad is pressed.
- LINE VOLTAGE: displays line voltage L1-L2 in the upper temp display.
- F CODES: displays up to the last 7 ERC failure code (NOTE: always check failure codes, then clear them).
Service Mode Test Screen 4

- COOKTOP STAT (SI): indicates the on/off status of radiant surface elements, the ON indicator will occur when respective infinite switch “hot light” is lit.
- CO SENSOR (Kenmore only): turns the CO sensor & heater on & off.
- Press EXIT pad to return to the HOME screen.
<table>
<thead>
<tr>
<th>Failure Code</th>
<th>Meaning</th>
<th>Corrections</th>
</tr>
</thead>
<tbody>
<tr>
<td>F0</td>
<td>Keyboard error</td>
<td>Perform a key panel test, making sure to test EVERY pin combination for possible shorts. If there are no shorts or signs of delamination, the problem is probably with the control. Enter SERVICE MODE, then NEXT, then NEXT then DISPLAY (ON/OFF), Press Clear/Off key to reset. If working properly, enter BACK, then KEYS and test key functions.</td>
</tr>
</tbody>
</table>
| F2          | Temperature Runaway—oven temperature is above 630 F unlocked or 930 F locked | • Check for welded element relay contacts,  
• Check airflow to rear of unit. |
| F3          | Open sensor/RTD               | • Disconnect power to unit and then disconnect oven sensor harness from control. Make sure sensor resistance (white leads) are $-1080$ at room temperature with 2 / change. (Pins 1 and 2 of the 12 position connector for upper wall oven, and pins 11 and 12 for lower wall oven found on the MLB J7 harness). |
| F4          | Shorted sensor/RTD            | • Verify resistance. See F3 diagnosis,  
• Measure each sensor lead from connector block to ground. If shorted, look for pinched or cut wire in sensor circuit,  
• Check connector terminals. Look for deformity or corrosion on terminals. Repair or replace if necessary,  
• If all above is OK, then replace the main logic board. |
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>F5</td>
<td>Control Sensor Circuit—Supervisor</td>
<td>• Check sensor circuit for intermittent high resistance. See F3 diagnosis.</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>• Press Clear/Off and reprogram control. If code reappears, replace control.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>DO NOT REPLACE LOCK MOTOR.</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>This tests:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a) Redundant measurement circuits on Main board do not match closely enough.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) Door latch motor (and microwave and convection fan) is not disabled by temperature measurement circuits at the proper temperature,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Replace the main logic board</td>
</tr>
<tr>
<td>F8</td>
<td>EEPROM data error</td>
<td>If repeated, replace the main logic board.</td>
</tr>
<tr>
<td>F9</td>
<td>Lower oven Bake or Clean FAD detected</td>
<td>• Suspect stalled cooling fan or restricted/blocked airflow to lower oven cooling fan.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Check lower door latch lock and unlock switches.</td>
</tr>
<tr>
<td>FC</td>
<td>Door Latch Error</td>
<td>• Problem with door lock circuit such as pinched wires between control and door</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lock switches on motorized lock circuits.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Check wiring and test operation of switches.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Error occurs when both lock and unlock switches are closed at the same time.</td>
</tr>
<tr>
<td>Fd</td>
<td>Display Error</td>
<td>• Check main reconfigurable display connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Replace main reconfigurable display.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Replace main logic board if error does not clear.</td>
</tr>
</tbody>
</table>

**Note:** When trying to enter temperatures lower than 170 F or greater than 550 F in any mode, or lower than 90 F or greater than 120 F in DEHYDRATE mode (some models only), display will momentarily show “Err” and then the default minimum or maximum temperature will be entered.
# Trivection

## POWER MONITOR ERROR CODES

### During Power-Up (occurs only during power-up)

<table>
<thead>
<tr>
<th>Condition</th>
<th>L1-L2</th>
<th>L1-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Power–</td>
<td>&gt;150VAC</td>
<td>&gt;90VAC AND &lt;150VAC</td>
</tr>
<tr>
<td>No message</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUPPLY OPEN</td>
<td>L1-L2</td>
<td>L1-N</td>
</tr>
<tr>
<td>NEUTRAL</td>
<td>NA</td>
<td>&lt;90VAC</td>
</tr>
<tr>
<td>SUPPLY MISWIRED</td>
<td>L1-L2</td>
<td>L1-N</td>
</tr>
<tr>
<td></td>
<td>&lt;90VAC</td>
<td>&gt;90VAC AND &lt;150VAC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SENSE 120V</td>
<td>L1-L2</td>
<td>L1-N</td>
</tr>
<tr>
<td>ENTERING SALES MODE</td>
<td>NA</td>
<td>&gt;150VAC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;90VAC AND &lt;150VAC</td>
</tr>
</tbody>
</table>

### After Power-Up (can occur anytime during operation)

<table>
<thead>
<tr>
<th>Condition</th>
<th>L1-L2</th>
<th>L1-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Power–</td>
<td>L1-L2</td>
<td>L1-N</td>
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<td>No message</td>
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<td>&gt;90VAC AND &lt;150VAC</td>
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<td>SUPPLY OPEN</td>
<td>L1-L2</td>
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<td>LOW POWER</td>
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<td></td>
<td>&lt;150VAC</td>
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*Note: Low Power supersedes Supply Open Neutral*
## Trivection Troubleshooting Chart

### Trivection Oven

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Trivection Troubleshooting Chart

Lower Oven
DWO

Cooktop
Slide-in

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<thead>
<tr>
<th>Component</th>
<th>Lower Oven Logic Board</th>
<th>Lower Broil Element</th>
<th>Lower Bake Element</th>
<th>Lower Convection Element</th>
<th>Lower Halogen Lamps</th>
<th>Plunger Switch</th>
<th>Lower Motor Latch</th>
<th>Lower Convection Fan</th>
<th>Lower Cooling Fan</th>
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<th>RF Inner Surface Element</th>
<th>RF Outer Surface Element</th>
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</table>
Disconnect J101, J102, and J103 from the MPB. Is 120 VAC present from the MPB connectors J101 to J103?

No

Is 120 VAC present on the EMI filter board connector from OUT1 to the MPB J103?

Yes

Connect J101, J102, and J103 to the MPB. Are the following DC voltages present?
+12VDC from MPB J3, pin 1 to pin 2
+5VDC from MPB J3, pin 3 to pin 2
-14VDC from MPB J3, pin 5 to pin 2

No

Repair faulty wiring from the EMI filter board contacts OUT3 to the MPB J102.

Yes

Are the following DC voltages present?
+12VDC from MLB J5, pin 1 to pin 2
+5VDC from MLB J5, pin 3 to pin 2
-14VDC from MLB J5, pin 5 to pin 2

No

Replace the MPB

Yes

Replace the EMI filter board

Touch the glass touch signal board. Does the board light come on and beep?

No

Repair faulty wiring from the MPB to the MLB.

Yes

Replace the MLB

Replace the 34 pin cable. Does the glass touch signal board work?

No

Replace the 10 pin cable. Does the glass touch signal board work?

No

Replace the glass touch signal board

Replace the EMI filter board.

Is 120 VAC present on the EMI filter board connector from IN1 to IN2?

Yes

Replace the EMI filter board.

No

Repair faulty wiring from the EMI filter board OUT2 connector to the MPB connector J103.

Replace one-shot TCO or repair faulty wiring from the house connection to the EMI filter board contacts IN1 or IN2.

Is 120 VAC present on the EMI filter board connector from IN1 to IN2?

Yes

Replace the 34 pin cable. Does the glass touch signal board work?

No

Replace the 10 pin cable. Does the glass touch signal board work?

No

Replace the glass touch signal board

Oven Dead - Keyboard and Displays Do Not Work
Oven Dead - Keyboard and Displays Do Not Work

Single Wall Oven and Double Wall Oven Models

Slide-In Models
Oven Dead - Keyboard Works - Displays Do Not Work

Are the following DC voltages present?
+12VDC from MPB J3, pin 1 to pin 2
+5VDC from MPB J3, pin 3 to pin 2
-14VDC from MPB J3, pin 5 to pin 2

Yes → Replace the MPB.

No → Repair faulty wiring from the MPB to the MLB.

Are the following DC voltages present?
+12VDC from MLB J5, pin 1 to pin 2
+5VDC from MLB J5, pin 3 to pin 2
-14VDC from MLB J5, pin 5 to pin 2

Yes → Replace the 10 pin cable from the glass touch signal board to the MLB. Does the oven work?

No → Replace the glass touch signal board. Does the oven work?

No → Replace the glass touch assembly.

Yes → Replace the 10 pin cable from the glass touch board to the MLB. Does the oven work?

No → Replace the 34 pin ribbon cable from the glass touch board to the glass touch display. Does the oven work?

No → Replace the MLB. Does the oven work?

No → Replace the glass touch signal board.
Oven Dead - Displays Work - Keyboard Does Not Work

Does the LED on the glass touch signal board light up and beep when a key is pressed?

Yes → Replace the 10 pin cable from the glass touch signal board to the MLB. Does the oven work?

No → Replace the MLB. Does the oven work?

No → Replace the glass touch signal board. Does the oven work?

No → Replace the glass touch assembly.

No → Replace the 10 pin cable from the glass touch signal board to the MLB. Does the oven work?

No → Replace the glass touch signal board. Does the oven work?

No → Replace the MLB.

---

Main Logic Board

Glass Touch Signal Board

Glass Touch Assembly

Text Display Board

Time/Temp Display
Bake Element Does Not Work

Enter the service mode and turn the bake element on. Is the bake element on?

No

Is 240 VAC present from the MPB relay K11 COM to K8 NO contacts?

Yes

Replace the bake element.

No

Is 240 VAC present at the bake element connectors?

Yes

Repair the faulty wiring from the MPB to the bake element.

No

Replace the bake element.

No

Is 240 VAC present from the MPB relay K11 COM contact to K8 COM?

Yes

Is 240 VAC present from the MPB relay K11 COM contact to K7 NC?

Yes

Repair the faulty wiring from the MPB relay K3 COM to K7 NC.

No

Replace the MLB.

Is 4.6 VDC present from the MLB connectors J3, pin 7 to J5, pin 2?

Yes

Replace the MLB.

No

Replace the MLB.

Is 4.6 VDC present from the MPB connectors J1, pin 7 to J3, pin 2?

Yes

Replace the MLB.

No

Repair the faulty wiring from the MLB to MPB.

Is 4.2 VDC present from the MLB connectors J3, pin 1 to J5, pin 2?

Yes

Replace the MLB.

No

Repair the faulty wiring from the MLB to MPB.

Is 4.2 VDC present from the MPB connectors J1, pin 1 to J3, pin 2?

Yes

Repair the faulty wiring from the MLB and MPB.

No

Replace the MLB.

Is -14.0 VDC present from the MLB connectors J3, pin 6 to J5, pin 2?

Yes

Replace the MLB.

No

Replace the MLB.

Is -14.0 VDC present from the MPB connectors J1, pin 6 to J3, pin 2?

Yes

Replace the MLB.

No

Repair the faulty wiring from the MLB and MPB.

Is 4.6 VDC present from the MPB connectors J1, pin 11 to J3, pin 2?

Yes

Repair the faulty wiring from the MLB and MPB.

No

Replace the MLB.

Is 4.6 VDC present from the MPB relay K11 NO contact to K7 COM?

Yes

Replace R1 or repair the faulty wiring from the L1 or L2 input.

No

Replace the MLB.
Bake Element Does Not Work
Bake 2 Element Does Not Work

Enter the service mode and turn the bake 2 element on. Is the bake 2 element on?

No

Is 240 VAC present from the MPB relay K11 COM TO K103 NO contacts?

Yes

Is 240 VAC present at the bake 2 element connectors?

Yes → Replace the bake 2 element.

No → Repair the faulty wiring from the MPB to the bake 2 element.

No

Is 240 VAC present from the MPB relay K11 COM contact to K103 COM?

Yes

Is 240 VAC present from the MPB relay K11 COM contact to K7 NC?

Yes → Repair the faulty wiring from the MPB relay K103 COM to K7 NC.

No → Repair the faulty wiring from the L1 or L2 input.

No

Is 0 VDC present from the MLB connectors J3, pin 18 to J5, pin 2?

Yes → Replace the MLB.

No

Is 4.2 VDC present from the MLB connectors J3, pin 1 to J5, pin 2?

Yes → Replace the MLB.

No

Is 4.2 VDC present from the MPB connectors J1, pin 1 to J3, pin 2?

Yes → Replace the MLB.

No

Is -14.0 VDC present from the MPB connectors J1, pin 6 to J3, pin 2?

Yes → Replace the MPB.

No

Is -14.0 VDC present from the MPB connectors J3, pin 6 to J3, pin 2?

Yes → Replace the MPB.

No

Is 4.6 VDC present from the MLB connectors J3, pin 11 to J5, pin 2?

Yes → Replace the MLB.

No

Is 4.6 VDC present from the MPB connectors J1, pin 11 to J3, pin 2?

Yes → Replace the MPB.

No

Repair the faulty wiring from the MLB and MPB.
Bake 2 Element Does Not Work
Convection Element Does Not Work

Enter the service mode and turn the convection element on. Is the convection element on?

No

Disconnect the convection element. Is 240 VAC present from the MPB relay K10 NO to K102 COM contacts?

Yes

Is 240 VAC present at the convection element connectors?

No

Replace the faulty wiring from the MPB to the convection element.

Yes

Repair the faulty wiring from the convection element connectors.

Is 240 VAC present from the MPB relay K10 COM to K102 NO contacts?

No

Replace the convection element.

Yes

Is 4.6 VDC present from the MLB connectors J3, pin 8 to J5, pin 2?

No

Replace the MLB.

Yes

Repair the faulty wiring from the input of L1 or L2.

Is 4.6 VDC present from the MPB connectors J3, pin 12 to J5, pin 2?

No

Replace the MLB.

Yes

Is 4.2 VDC present from the MLB connectors J3, pin 1 to J5, pin 2?

No

Replace the MLB.

Yes

Is 4.6 VDC present from the MPB connectors J1, pin 8 to J3, pin 2?

No

Replace the MLB.

Yes

Is 4.2 VDC present from the MPB connectors J1, pin 1 to J3, pin 2?

No

Repair the faulty wiring from the MLB and MPB.

Yes

Replace the MPB.
Enter the service mode and turn the convection fan on. Is the convection fan on?

- No

  - Disconnect the convection fan. Is 120 VAC present from the MPB relay K105 NC or NO contact to AC IN (NT)?
    - Yes
      - Is 120 VAC present from the convection fan positive and negative connectors to AC IN (NT)?
        - Yes
          - Replace the convection fan
        - No
          - Repair the faulty wire from MPB relay K105 NO or NC contact to the convection fan.
    - No
      - Repair the faulty wire from MPB relay K105 COM contact to AC IN (NT)?
        - Yes
          - Replace the Convection Fan
        - No
          - Replace the MLB.

  - No
    - Is 120 VAC present from the MLB connectors J3, pin 16 to J5, pin 2?
      - Yes
        - Repair the Convection Fan
      - No
        - Replace the MLB.
    - No
      - Is 0 VDC present from the MLB connectors J1, pin 16 to J3, pin 2?
        - Yes
          - Repair the Convection Fan
        - No
          - Replace the MLB.
    - No
      - Is 0 VDC present from the MLB connectors J1, pin 15 to J3, pin 2?
        - Yes
          - Repair the Convection Fan
        - No
          - Replace the MLB.

  - No
    - Repair the faulty wiring from MPB relay K4 to K105.

- Yes
  - Repair the faulty wiring from MPB relay K4 to K105.

---

**Main Logic Board**

- J3 1-640456-8
- Fan_Conv_UP 1-640456-8
- Fan_Conv_Dir_U 1-640456-2
- 12V-GND 2-12Y-GND

**LO POWER RELAY**

- CONNECTION FAN RELAY
- Fan_Conv_U
- Fan_Conv_Dir_U

**CONV FAN UP**

- DIR RELAY
- J4
- R_FanConvRev_U
- R_FanConv_Fnd_U

**EMI FILTER BOARD**

- OUT1
- OUT2
- IN1
- IN3

---

**Connection Diagram**

- AC IN [L1]
- AC IN [NT]
- JUMPER
- GROUND

---

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(SG52)
Enter the service mode. Does the left cooling fan come on?

Discontinue the connector on the left cooling fan. Is 120 VAC present from the MPB relay K5 NO contact to AC IN (NT)?

Yes

Is 120 VAC present from the MPB relay K5 NO contact to the EMI filter board IN2 contact?

Yes

Repair the faulty wiring from NT input to the EMI filter board.

No

Is 120 VAC present from the MPB relay K5 NO contact to the EMI filter board OUT2 contact?

Yes

Replace the EMI filter board.

No

Is 120 VAC present from the MPB relay K5 NO contact to the left cooling fan?

Yes

Repair the faulty wiring from the EMI filter board to the left cooling fan.

No

Replace the left cooling fan.

Is 120 VAC present from the positive contact to the negative contact of the left cooling fan?

Yes

Repair the faulty wiring from the MLB relay K5 NO contact to the left cooling fan.

No

Replace the left cooling fan.

Is 0 VDC present from the MLB connectors J3, pin 9 to J5, pin 2?

Yes

Replace the MPB.

No

Replace the MLB.

Is 120 VAC present from the EMI filter board OUT3 contact to AC IN (NT)?

Yes

Repairs the faulty wiring from the MPB relay K5 COM contact to the EMI filter board.

No

Is 120 VAC present from the EMI filter board IN3 contact to AC IN (NT)?

Yes

Replace the EMI filter board.

No

Replace the one shot TCO or repair the faulty wiring from L2 input to the EMI filter board.

NOTE:
The left, rear fan on the Slide-in model is identified as left cooling fan. The single and double wall oven identify this fan as the HVT fan.
Right Cooling Fan Does Not Work

Enter the service mode. Does the right cooling fan come on?

Disconnect the connector on the right cooling fan. Is 120 VAC present from the MPB relay K1 NO contact to AC IN (NT)?

Yes

Is 120 VAC present from the MPB relay K1 NO contact to the EMI filter board IN2 contact?

Yes

Repair the faulty wiring from NT input to the EMI filter board.

Yes

Is 120 VAC present from the MPB relay K1 NO contact to the EMI filter board OUT2 contact?

No

Replace the EMI filter board.

No

Is 120 VAC present from the MPB relay K1 NO contact to the right cooling fan?

Yes

Repair the faulty wiring from the EMI filter board to the right cooling fan.

No

Replace the right cooling fan.

No

Is 120 VAC present from the positive contact to the negative contact of the right cooling fan?

Yes

Replace the right cooling fan.

No

Repair the faulty wiring from the MLB relay K1 NO contact to the right cooling fan.

Is 0 VDC present from the MLB connectors J3 pin 10 to J5 pin 27?

Yes

Replace the MPB.

No

Repair the faulty wiring from the MPB relay K1 COM contact to the EMI filter board.

Is 120 VAC present from the EMI filter board OUT3 contact to AC IN (NT)?

Yes

Replace the EMI filter board.

No

Is 120 VAC present from the EMI filter board IN3 contact to AC IN (NT)?

Yes

Replace the EMI filter board.

No

Replace the one shot TCO or repair the faulty wiring from L2 input to the EMI filter board.
No Microwave Power

Check for 240V at transformer. Disconnect transformer 3-pin connector. Power up microwave in service mode. Check voltage between pins 1 and 3 (black and purple) on harness side. Note: If voltage is less than 210, voltage will be between pins 1 and 2 (black and yellow). Is there 240V at the transformer?

Yes

Check mag connector. Check grounds. Verify ground from magnetron to transformer mounting screw.

Check capacitor and wiring.

Measure diode resistance in both directions (must read open in at least one direction).

Measure transformer primary resistance (1.1 +/- 0.2 ohms between pins 1 and 3 of the connector).

Measure transformer secondary resistance (90 +/- 4 ohms between ground and single wire capacitor). Note if HVT warm resistance will be higher.

Replace the magnetron and retest (see note).

No

Check microwave fuse.

Check door sense switch (see page 24).

Ohm out right interlock, left interlock, and monitor switches (see page 24).

Check relay board (SWO board). Disconnect right interlock connector. Check voltage from pin 1 of harness side of connector (black wire) to J105 on board (yellow wire).

Check harness for bad connection. Correct and retest.

Note: Insure magnetron fan and stirrer motor are operating properly. Failure of either of these can lead to failure of high-voltage component(s).
Stirr Does Not Work

Enter the Service mode. Does the stirrer motor come on?

No

Disconnect the connector on the stirrer. Is 120 VAC present from the MPB relay K5 NO contact to AC IN (NT)?

No

Is 120 VAC present from the MPB relay K5 NO contact to the EMI filter board IN2 contact?

Yes

Replace the faulty wiring from NT input to the EMI filter board.

No

Repair the faulty wiring from NT input to the EMI filter board.

Yes

Is 120 VAC present from the MPB relay K5 NO contact to the EMI filter board OUT2 contact?

No

Replace the EMI filter board.

Yes

Is 120 VAC present from the MPB relay K5 NO contact to the EMI filter board?

No

Repair the faulty wiring from EMI filter board to the stirrer.

Yes

Is 120 VAC present from the positive contact to the negative contact of the stirrer?

No

Replace the stirrer.

Yes

Repair the faulty wiring from MLB relay K5 NO contact to the stirrer.

Is 120 VAC present from the MLB connectors J3, pin 0 to J5, pin 2?

Yes

Replace the MPB.

No

Replace the MLB.

Is 0 VDC present from the MLB connectors J3, pin 0 to J5, pin 2?

No

Repair the faulty wiring from the MPB relay K5 COM contact to the EMI filter board.

Yes

Replace the EMI filter board.

Is 120 VAC present from the EMI filter board OUT3 contact to AC IN (NT)?

No

Is 120 VAC present from the EMI filter board IN3 contact to AC IN (NT)?

No

Replace the one-shot TCO or repair the faulty wiring from L2 input to the EMI filter board.
Enter the service mode and turn on the lower bake element. Is the lower bake element on?

No

Is 240 VAC present from the LORB relay K121 COM contact to K14 COM?

No

Replace the LORB

Yes

Is 4.6 VDC present from the MLB connectors J4, pin 4 to J5, pin 2?

No

Replace the MLB

Yes

Is 4.6 VDC present from the LORB connectors J9, pin 4 to MLB J5, pin 2?

No

Repair the faulty wiring from the MLB to LORB

Yes

Replace the LORB

Is 240 VAC present from the MLB connectors J4, pin 7 to J5, pin 2?

No

Replace the MLB

Yes

Is -14.0 VDC present from the MLB connectors J9, pin 7 to MLB J3, pin 2?

No

Repair the faulty wiring from the MLB and LORB.

Yes

Replace the LORB

Is 240 VAC present from the LORB relay K121 COM contact to K14 COM?

No

Replace R2 or repair the faulty wiring from the L1 or L2 input.

Yes

Replace the lower bake element.

Is 240 VAC present at the lower bake element connectors?

Yes

Replace the lower bake element.

No

Repair the faulty wiring from the LORB to the lower bake element.
Enter the service mode and turn on the lower bake element. Is the lower bake element on?

- **No**
  - Disconnect the lower bake element. Is 240 VAC present from the LORB relay K121 COM to K17 NO contacts?
    - **No**
      - Replace the lower bake element.
    - **Yes**
      - Is 240 VAC present at the lower bake element connectors?
        - **Yes**
          - Replace the lower bake element.
        - **No**
          - Repair the faulty wiring from the LORB to the lower bake element.
    - **No**
      - Repair the faulty wiring from the LORB relay K20 Com to K17 NC contacts.

- **Yes**
  - Is 240 VAC present from the LORB relay K121 COM contact to K14 COM?
    - **No**
      - Repair the faulty wiring from the LORB relay K121 COM contact to K14 NC.
    - **Yes**
      - Is 4.6 VDC present from the MLB connectors J4, pin 5 to J5, pin 2?
        - **Yes**
          - Replace the MLB.
        - **No**
          - Replace the MLB.

- **No**
  - Repair the faulty wiring from the MLB to LORB.

**Lower Bake Element Does Not Work**

![Diagram of oven components and connections](image-url)
Lower Convection Element Does Not Work
Enter the service mode and set the lower latch to lock. Is the lower latch locked?

Yes →

Disconnected the latch motor connectors.

Is 120 VAC present from the LORB relay K15 NO contact to AC IN (NT)?

Yes →

Is 120 VAC present from the LORB relay K15 NO contact to the EMI filter board IN2 contact?

Yes →

Is 120 VAC present from the LORB relay K15 NO contact to the EMI filter board OUT2 contact?

Yes →

Is 120 VAC present from the positive to negative latch motor contacts?

Yes →

Replace the latch motor.

No →

Replace the plunger switch or repair the faulty wire from the EMI filter board OUT2 contact to the motor latch.

---

No →

Repair the faulty NT input wire to the EMI filter board IN2 contact.

---

Is 120 VAC present from the LORB relay K15 COM contact to AC IN (NT)?

Yes →

Is 0 VDC present from the LORB connectors J4, pin 13 to MPB JS, pin 2?

No →

Replace the MLB.

Yes →

Replace the LORB.

No →

Repair the faulty wire between LORB K15 and the EMI filter board OUT1 contact.

---

Is 120 VAC present from the EMI filter board OUT1 contact to AC IN (NT)?

Yes →

Replace the MLB.

No →

Replace the LORB.

---

No →

Repair the faulty L1 input wire to the EMI filter board IN1 contact.

---

Is 120 VAC present from the EMI filter board IN1 contact to AC IN (NT)?

Yes →

Replace the EMI filter board.

No →

Replace the EMI filter board.

---

Main Logic Board 1-640445-2

12V-GND J5

1-640456-3

EMI Filter Board

LOWER OVEN 1-640456-3

RELAY BOARD J9 DrLock_L 13

LO POWER RELAY COM K15 R DrLock_L 13 J4

DOORLOCK LOW RELAY DrLock_L

MOTOR LATCH PLUGER

SWITCH OUT1 IN1

AC IN L1

AC IN (NT)

JUMPER

GROUND
Lower Convection Fan Does Not Work

1. Enter the service mode and turn the convection fan on.
   Is the convection fan on?
   No => Replace the plunger switch or repair the faulty wiring to the EMI filter board OUT2 contact.
   Yes => Is 120 VAC present from the LORB relay K122 NO or NC contact to AC IN (NT)?
   No => Repair the faulty wiring from the MLB to the LORB.
   Yes => Is 120 VAC present from the LORB relay K122 NO or NC contact to the EMI filter board IN2 contact?
   No => Replace the EMI filter board.
   Yes => Is 120 VAC present from the LORB relay K122 NO or NC contact to contacts of the convection fan?
   No => Replace the EMI filter board.
   Yes => Is 120 VAC present from the LORB relay K122 COM contact to AC IN (NT)?
   No => Repair the faulty wiring from LORB relay K18 NO to K122 COM contacts.
   Yes => Is 0 or 12 VDC present from the MLB connectors J4, pin 12 to J5, pin 2?
   No => Replace the MLB.
   Yes => Repair the faulty wiring from LORB relay K18 NO or NC contact to AC IN (NT)?
   No => Replace the MLB.
   Yes => Repair the faulty wiring from LORB relay K18 COM to EMI filter board OUT1 contacts.
   No => Replace the MLB.
   Yes => Is 0 VDC present from the MLB connectors J6, pin 11 to J5, pin 2?
   No => Replace the LORB.
   Yes => Repair the faulty wiring from the MLB to AC IN (NT)?
   No => Replace the MLB.
   Yes => Replace the EMI filter board.
   No => Repair the faulty wiring from the L1 input to the EMI filter board IN1 contact.
Enter the service mode.
Does the lower cooling fan come on?

- No
  - Disconnect the connector on the lower cooling fan.
    - Is 120 VAC present from the MPB relay K1 NO contact to AC IN (NT)?
      - Yes
        - Is 120 VAC present from the MPB relay K1 COM contact to AC IN (NT)?
          - Yes
            - Is 120 VAC present from the EMI filter board OUT3 contact to AC IN (NT)?
              - Yes
                - Repair the faulty wiring from the MPB relay K1 COM contact to the EMI filter board.
              - No
                - Repair the faulty wiring from the MLA relay K1 NO contact to the lower cooling fan.
          - No
            - Replace the MLA.
      - No
        - Repair the faulty wiring from NT input to the EMI filter board.
    - No
      - Replace the MLA.
  - Yes
    - Repair the faulty wiring from the MLA relay K1 NO contact to the lower cooling fan.

- Yes
  - Is 120 VAC present from the MLA relay K1 NO contact to the EMI filter board OUT2 contact?
    - Yes
      - Replace the EMI filter board.
    - No
      - Replace the EMI filter board.

- No
  - Is 120 VAC present from the MLA relay K1 NO contact to the lower cooling fan?
    - Yes
      - Repair the faulty wiring from the MLA relay K1 NO contact to the lower cooling fan.
    - No
      - Replace the lower cooling fan.

Is 0 VDC present from the MLA connectors J3, pin 10 to J5, pin 2?

- Yes
  - Repair the faulty wiring from the MLA relay K1 COM contact to the EMI filter board.
- No
  - Replace the MLA.

Is 120 VAC present from the MLA relay K1 COM contact to AC IN (NT)?

- Yes
  - Replace the one shot TCO or repair the faulty wiring from L2 input to the EMI filter board.
- No
  - Replace the MLA.
To Enter Service Mode

1. Disconnect Power to product for at least 15 seconds.
2. Wait for system to initialize.
3. Then enter access CODE 0803 within 5 min.