

**⚠ WARNING****Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

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

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

# Microwave Oven Power Output Test

The power output of the magnetron can be measured by the following tap water temperature rise test.

**NOTES:**

- Be sure oven cavity is clean and cool (not used recently).
  - The magnetron output will be lower with lower line voltages.
1. Fill a glass beaker with 32 oz (946 mL) of tap water. Stir the water with a thermometer (digital recommended) and record the temperature. This starting temperature of the water should be between 50°F and 75°F (10°C and 24°C).
  2. Place the beaker and water in the center of the microwave oven. Operate on HIGH power level for 60 seconds.

3. When the microwave oven is finished, stir the thermometer through the water and record the temperature.
4. Subtract the cold water temperature from the warm water temperature to get the temperature rise. Normal range is as shown in the following table.

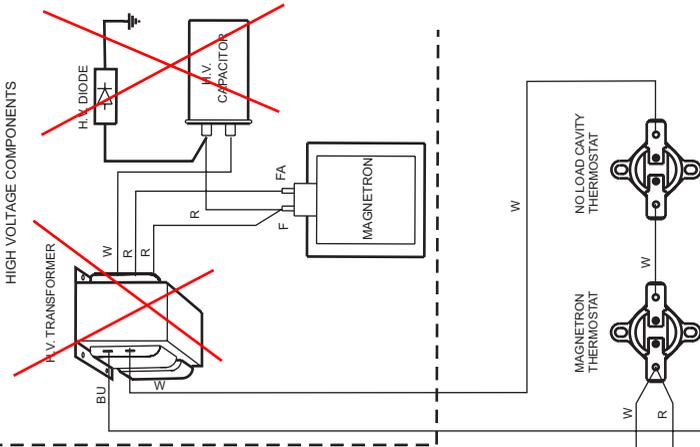
Voltage (VAC under load)	Temperature Rise	
	°F	°C
120V	18.9 - 24.3	10.5 - 13.5
108V	16.2 - 21.6	9 - 12

## Failure Codes Indications

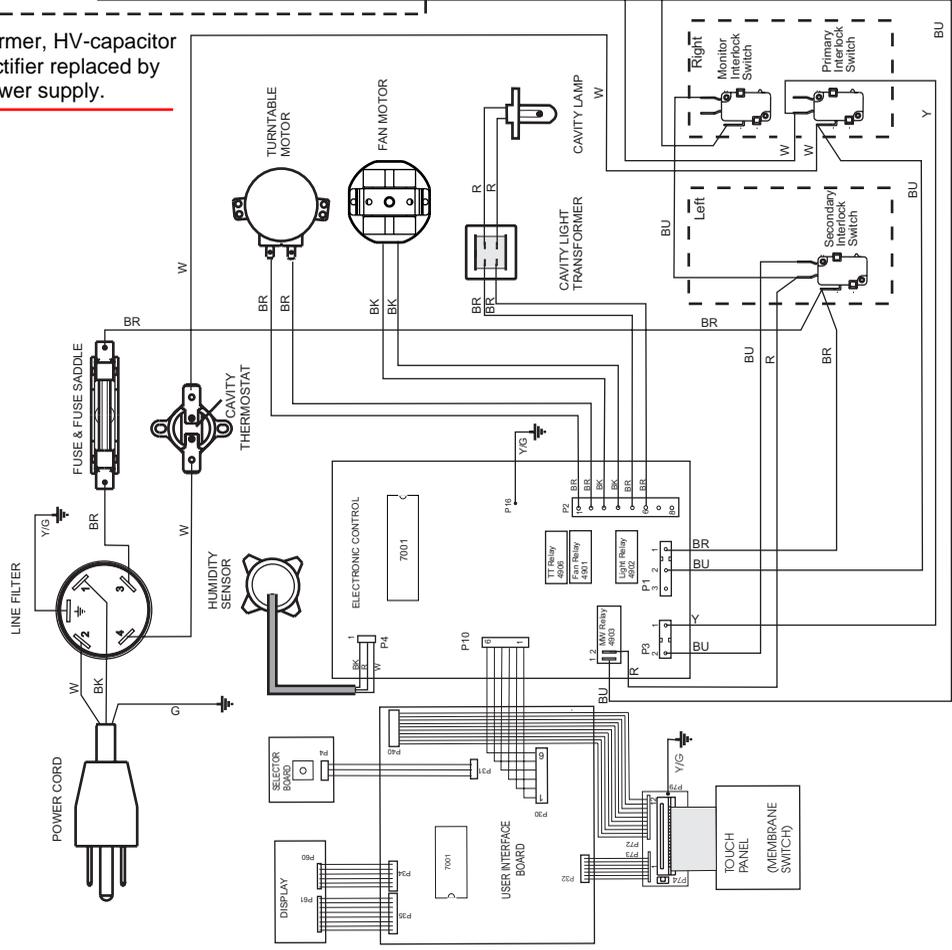
Display	Likely Failure Condition	Recommended Repair Procedure
Flashing colon ":"	Power failure	After a power failure, the colon ":" will be flashing. Press any key to end this indication. The colon will then be steady when in standby.
F2	Keyboard failure	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Replace membrane switch.</li> <li>3. If problem persists, replace electronic control.</li> <li>4. Plug in microwave oven or reconnect power.</li> </ol>
F3H	Humidity sensor failure	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Connect a new sensor to the electronic control (at P2).</li> <li>3. Plug in microwave oven or reconnect power.</li> <li>4. If no failure code appears when starting sensor function: <ul style="list-style-type: none"> <li>■ Unplug microwave oven or disconnect power.</li> <li>■ Replace old sensor.</li> </ul> </li> <li>5. If failure code appears when starting sensor function: <ul style="list-style-type: none"> <li>■ Unplug microwave oven or disconnect power.</li> <li>■ Replace electronic control.</li> </ul> </li> <li>6. Plug in microwave oven or reconnect power.</li> </ol>
F6	Microwave relay failure	<ol style="list-style-type: none"> <li>1. Check wiring to Relay 4903 for short circuits.</li> <li>2. If wiring is OK: <ul style="list-style-type: none"> <li>■ Unplug microwave oven or disconnect power.</li> <li>■ Replace electronic control.</li> <li>■ Plug in microwave oven or reconnect power.</li> </ul> </li> </ol>



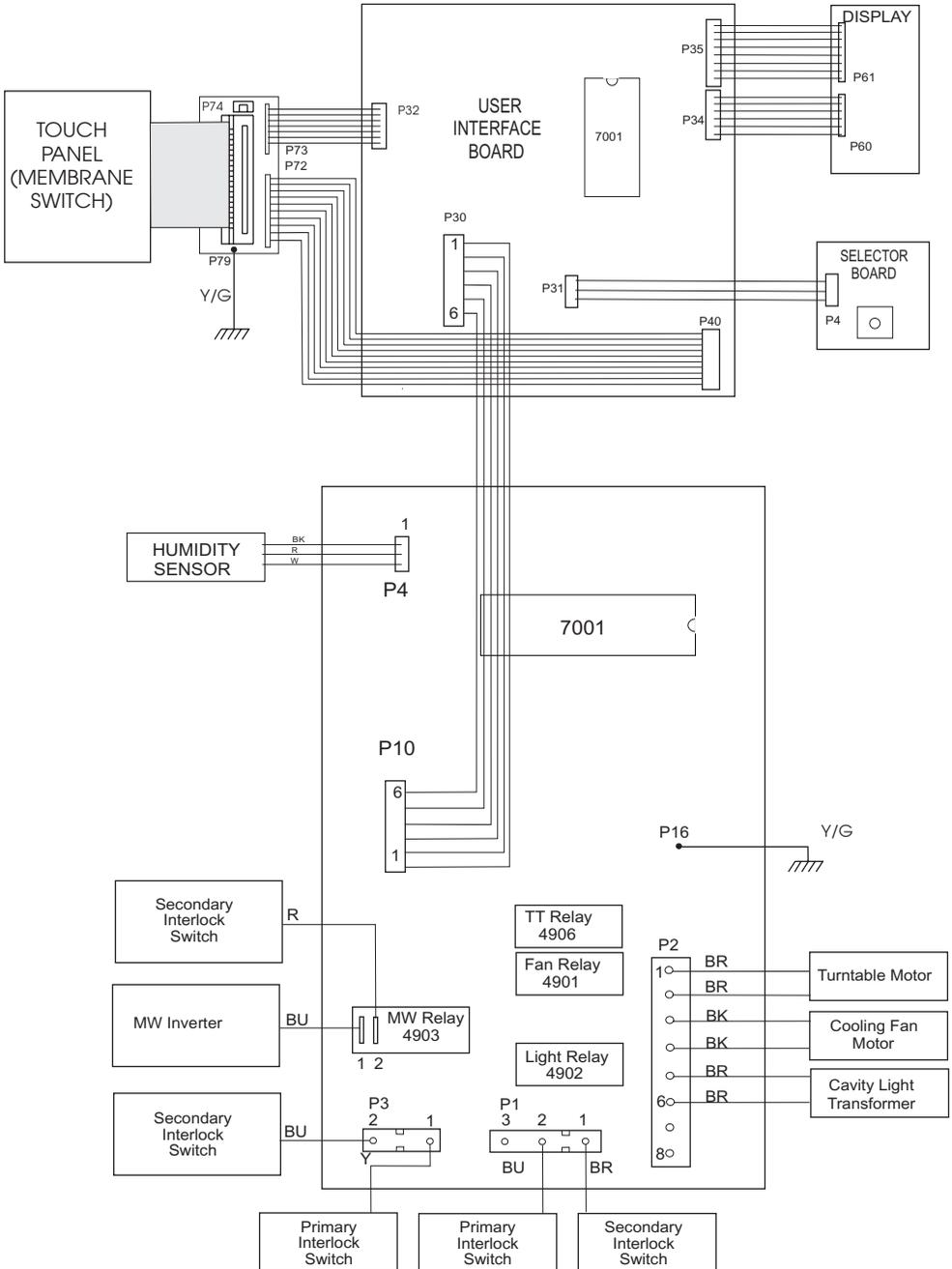
# Pictorial Diagram



HV-transformer, HV-capacitor and HV-rectifier replaced by Inverter power supply.



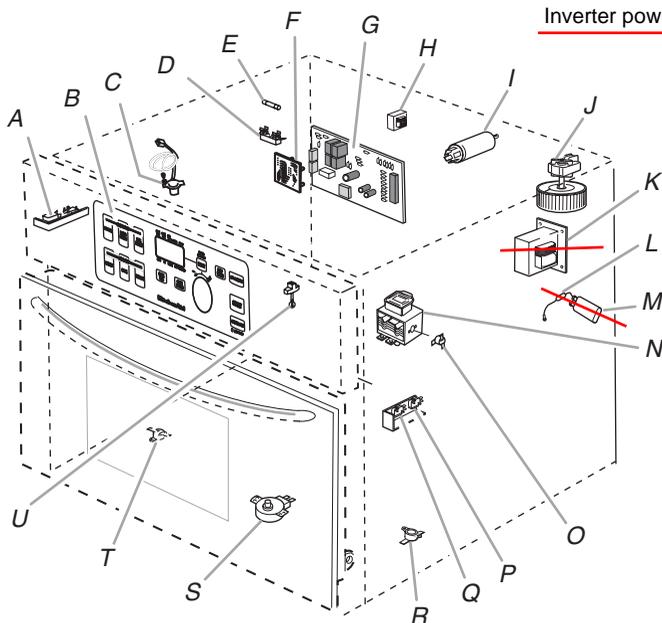
# Pictorial Diagram



# Parts Layout

(not to scale)

HV-transformer, HV-capacitor and HV-rectifier replaced by Inverter power supply.



- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>A. Secondary interlock switch</li> <li>B. Touch panel (membrane switch)</li> <li>C. Humidity sensor</li> <li>D. Fuse holder</li> <li>E. Line fuse (20 amp)</li> <li>F. User interface board</li> <li>G. Electronic control</li> <li>H. L.V. light transformer</li> <li>I. Line filter</li> <li>J. Cooling fan motor</li> <li>K. H.V. transformer</li> <li>L. H.V. diode</li> </ul> | <ul style="list-style-type: none"> <li>M. H.V. capacitor</li> <li>N. Magnetron</li> <li>O. Magnetron thermostat—opens at 293°F (145°C), closes at 250°F (121°C)</li> <li>P. Monitor interlock switch</li> <li>Q. Primary interlock switch</li> <li>R. No load cavity thermostat assembly—opens at 257°F (125°C), closes at 185°F (85°C)</li> <li>S. Turntable motor</li> <li>T. Cavity thermostat assembly—opens at 239°F (115°C), closes at -31°F (-35°C)</li> <li>U. Cavity lamp</li> </ul> |
|---|---|

## Primary, Secondary, and Monitor Interlock Switch Checkout Procedure

Switch	Check By	Door Open	Door Closed
Primary Interlock	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Disconnect the wires at the Primary Interlock Switch.</li> <li>3. Check from the common terminal (white/brown wires) to the normally open terminal (white wire).</li> </ol>	-	+
Secondary Interlock	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Disconnect the wires at the Secondary Interlock Switch.</li> <li>3. Check from the common terminal (black wires) to the normally open terminal (white/red wires).</li> </ol>	-	+
	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Disconnect the wires at the Secondary Interlock Switch.</li> <li>3. Check from the common terminal (black wires) to the normally closed terminal (orange wire).</li> </ol>	+	-

(+) Continuity (-) No Continuity

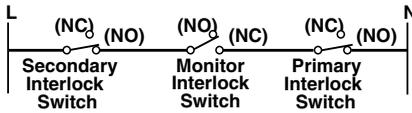
## Primary, Secondary, and Monitor Interlock Switch Checkout Procedure

Switch	Check By	Door Open	Door Closed
Monitor Interlock	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Disconnect the wires at the Monitor Interlock Switch.</li> <li>3. Check from the common terminal (white wire) to the normally open terminal (blue wires).</li> </ol>	-	+
	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Disconnect the wires at the Monitor Interlock Switch.</li> <li>3. Check from the common terminal (white wire) to the normally closed terminal (red/brown wires).</li> </ol>	+	-

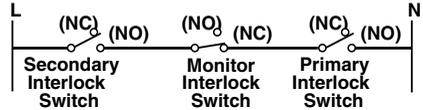
(+) Continuity (-) No Continuity

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

### Door Closed

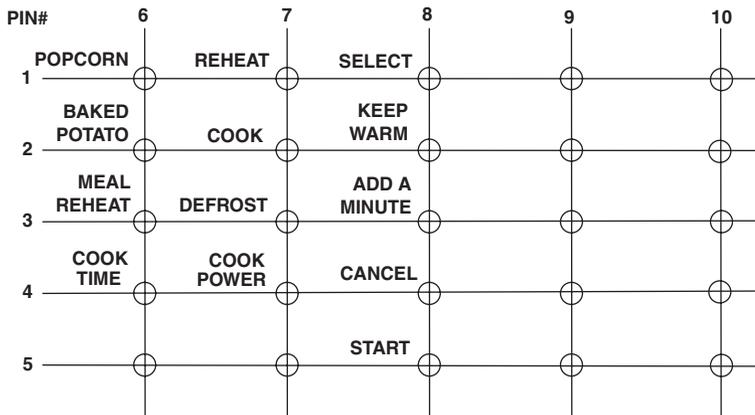


### Door Open



## Touch Panel

### Touch Panel Continuity Test



11.12

GROUND PLANE/PATTERN



**NOTE:** The distance between the ground plane and the membrane switch should be at least  $\frac{7}{32}$ " (7 mm). The electrical top layer of the membrane switch must contain a ground plane/pattern.

## Touch Panel and Electronic Control Test

The microwave hood combination is provided with a self-diagnostic routine that can be accessed through the touch keypad.

### To initiate this routine:

1. Press and hold CANCEL/OFF while opening the door. While still holding the CANCEL/OFF button, unplug the microwave oven for 2 seconds, then plug it back in.
2. Release the CANCEL/OFF button and close the door.
3. After pressing each button on the control panel, "8" will appear in the display to indicate that the circuits are complete and all relays are working. Refer to Key Table for Test Mode.

**NOTE:** If the CANCEL/OFF button is pressed during this diagnostic routine, you will exit the test mode.

## Key Table for Test Mode

**NOTE:** Display position 1 is farthest to the left. Display position 5 is farthest to the right.

Key Name	In Circuit Relay	Display Position*
Popcorn	-	5
Baked Potato	-	4
Meal Reheat	-	5
Select	Humidity Sensor	**5
Reheat	-	4
Defrost	-	2
Auto Cook	-	1
Cook Time	-	5
Cook Power	-	4

\*"8" will appear in the display position indicated in the table.

\*\*After 8 seconds, Hmxxx will be displayed (xxx represents humidity reading).

Key Name	In Circuit Relay	Display Position*
Keep Warm	-	2
Add A Minute	-	1
1	4901/4902 (Cavity light)	5
2	4911 (Hood light)	4
3	-	3
4	-	2
5	-	1
6	4906 (Turntable motor)	5
7	-	4
8	4912 (Night light)	3
9	Triac (Hood fan)	2
0	-	1
Clock Set/Start	Buzzer	5
Start	-	5
Turntable On/Off	-	3
Light On/Night/Off	-	5
Vent Fan On/Off	-	4
Vent Fan Higher Speed	-	4
Vent Fan Lower Speed	-	1
Timer	-	1
Cancel/Off	Exit Test Mode	-

\*"8" will appear in the display position indicated in the table.

\*\*After 8 seconds, Hmxxx will be displayed (xxx represents humidity reading).

# TROUBLESHOOTING

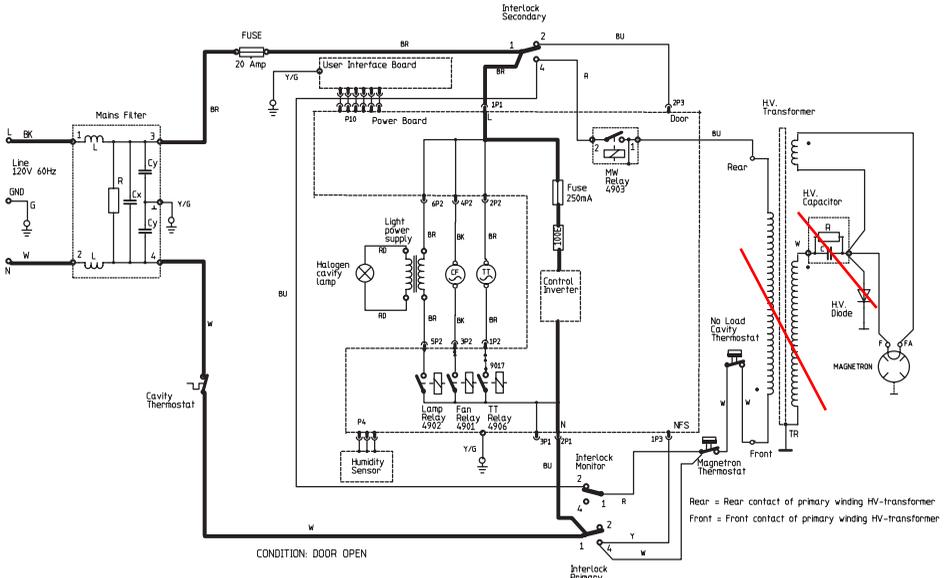
Do not continue with the diagnostics of appliance if the fuse is blown, a circuit breaker is tripped or if there is less than 120 volts power supply at the wall outlet.

Complete the following steps before checking microwave oven circuitry:

1. Unplug microwave oven or disconnect power.
2. Check for loose wiring or incorrect wiring within microwave oven.

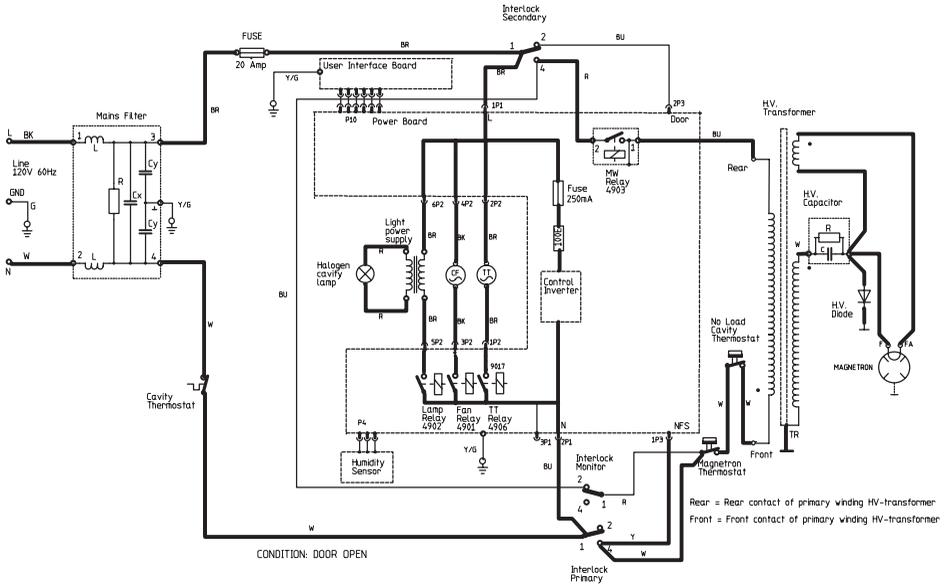
3. Disconnect white wire from power transformer and discharge high-voltage capacitor.
4. All testing must be done with an ohmmeter having a sensitivity of 20,000 ohms per volt DC or greater, and powered by at least a 9-volt battery.
5. All operational checks using microwave energy must be done with the microwave oven loaded with a minimum of 10 oz (300 mL) of water in a microwave safe container.

## Microwave oven cooking

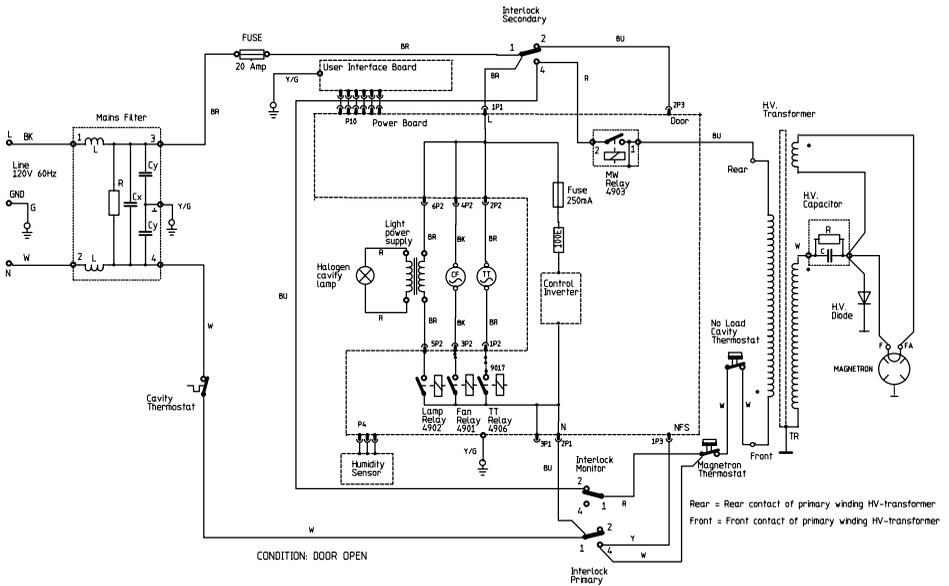


HV-transformer, HV-capacitor and HV-rectifier replaced by Inverter power supply.

# Microwave oven plugged in—time of day displayed



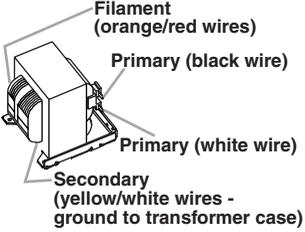
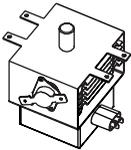
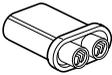
# Door open—oven cavity light is on

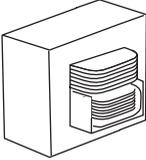
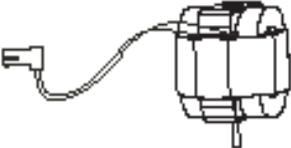
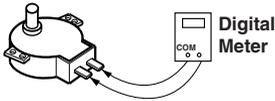
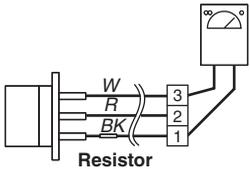


# Component Tests

## IMPORTANT:

- Unplug microwave oven or disconnect power.
- Remove the lead wires from the related component before conducting any of the following tests.
- All operational checks using microwave energy must be done with the microwave oven loaded with a minimum of 10 oz (300 mL) of water in a microwave safe container.
- Conduct a microwave energy test after performing any tests or repairs to the microwave oven.
- Check that all wire leads are in the correct positions before operating the microwave oven.
- Grasp wire connectors when removing the wire leads from microwave oven parts.

Components	Test	Results
<b>H.V. Transformer</b> 	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Remove wire leads.</li> <li>3. Measure resistance (ohmmeter scale: Rx1):</li> <li>4. Measure resistance (ohmmeter scale: Rx1000):</li> </ol>	Primary winding ■ Less than 0.5 ohm (approximate) Secondary winding ■ 100 ohms (approximate) Filament winding ■ 0 ohm  Primary winding to grounding ■ Normal: Infinite Filament winding to grounding ■ Normal: Infinite
<b>Magnetron</b> 	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Remove wire leads. Check that the seal is in good condition.</li> <li>3. Measure resistance (ohmmeter scale: Rx1):</li> <li>4. Measure resistance (ohmmeter scale: Rx1k):</li> </ol>	Filament terminal ■ Normal: Less than 1 ohm  Filament to chassis ■ Normal: Infinite
<b>H.V. Capacitor</b> 	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Discharge capacitor.</li> <li>3. Remove wire leads.</li> <li>4. Measure resistance (ohmmeter scale: Rx1k):</li> </ol>	Terminal to terminal ■ Normal: Momentarily indicates several ohms, gradually returns to Infinite Terminal to case ■ Normal: Infinite
<b>H.V. Diode</b> Some inexpensive meters may indicate infinite resistance in both directions. 	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Measure continuity (ohmmeter scale: RX1k):</li> <li>3. Measure continuity (ohmmeter scale: Rx1k):</li> </ol>	Forward ■ Normal: Continuity Abnormal: Infinite  Reverse ■ Normal: Infinite Abnormal: Continuity

Components	Test	Results
<b>L.V. Transformer</b> 	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Remove the 6-pole connector.</li> <li>3. Measure resistance (ohmmeter scale: Rx1):</li> </ol>	Primary winding ■ 17 ohms (approximate) Secondary winding ■ 1 ohm (approximate)
<b>Cooling Fan Motor</b> 	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Remove wire leads.</li> <li>3. Measure resistance (ohmmeter scale: Rx1):</li> </ol>	Normal: 42 ohms (approximate) Abnormal: Infinite
<b>Turntable Motor/Stirrer Motor</b> 	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Remove wire leads.</li> <li>3. Measure resistance (ohmmeter scale: Rx1k):</li> </ol>	Turntable Motor ■ Normal: 2,450 ohms (approximate) ■ Abnormal: Infinite  Stirrer Motor ■ Normal: 3.3k-4.2k ohms (approximate) ■ Abnormal: Infinite
<b>Humidity Sensor</b> 	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Remove the 3-pin connector from electronic control (P2).  <b>NOTE:</b> Do not remove the attached resistor which is used for internal resistance calibration.</li> <li>3. Measure resistance across pins 1 &amp; 3 (ohmmeter scale: Rx1k):</li> <li>4. Measure resistance across pins 2 &amp; 3 (ohmmeter scale: Rx1k):</li> </ol>	Normal: 2.8k ohms (approximate) at 77°F (25°C) +/- 18°F (10°C) Abnormal: Infinite  Normal: 2.8k ohms (approximate) at 77°F (25°C) +/- 18°F (10°C) Abnormal: Infinite
<b>Thermostats</b> <b>NOTE:</b> Refer to "Parts Layout" for opening and closing temperatures.	<ol style="list-style-type: none"> <li>1. Unplug microwave oven or disconnect power.</li> <li>2. Remove wire leads.</li> </ol>	
<b>Cavity Thermostat</b> 		
<b>Magnetron Thermostat</b> 	<ol style="list-style-type: none"> <li>3. Cavity and Magnetron Thermostats: Measure continuity (ohmmeter scale: Rx1):</li> </ol>	Normal: Continuity Abnormal: Infinite
<b>No-Load Cavity Thermostat</b> 	<ol style="list-style-type: none"> <li>4. No-Load Cavity Thermostat: Measure continuity (ohmmeter scale: Rx1):</li> </ol>	Normal: Continuity Abnormal: Infinite