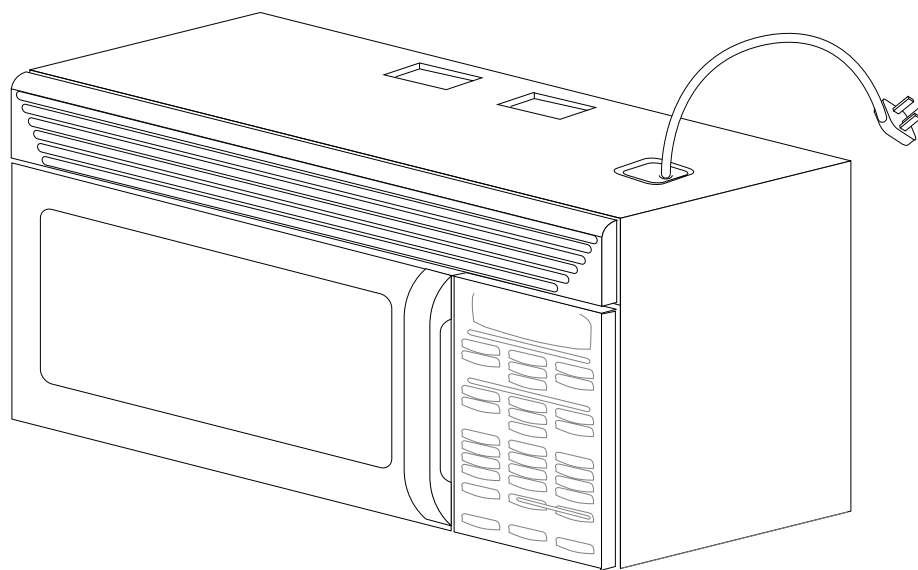


# SERVICE MANUAL

*for the*

# **KitchenAid®**



## **MICROWAVE OVEN HOOD COMBINATION ( E Model Line)**

THIS MANUAL CONTAINS INFORMATION NECESSARY FOR SERVICING THE KITCHENAID MICROWAVE OVEN HOOD COMBINATION , MODELS:

**KHMS105E**

**KHMC107E**

THE MANUAL IS DESIGNED TO BE USED ONLY BY QUALIFIED SERVICE PERSONNEL. THE SERVICE INFORMATION IS ORGANIZED TO HELP YOU EASILY FIND WHAT YOU NEED.

CHECK YOUR LOCAL BUILDING CODE FOR THE PROPER MODE OF INSTALLATION. IN THE ABSENCE OF LOCAL CODES, THIS UNIT SHOULD BE INSTALLED IN ACCORDANCE WITH THE *NATIONAL ELECTRICAL CODE, ANSI/NFPA NO. 70 - 1990, OR LATEST EDITION, OR C22.1 CANADIAN ELECTRICAL CODE, PART 1.*

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## IMPORTANT SAFETY INFORMATION

This service manual is intended for factory-service technicians only. We recommend that customers DO NOT service their own units, because of the complexity and risk of high-voltage electrical shock.

The following information is used throughout this manual, and should be read carefully.

### NOTE

Helpful information that explains a more complicated step, prior to carrying it out.

### CAUTION

Information that will help you avoid actions that could cause product damage (scratches, dents, etc.) and damage to personal property.

### WARNING

Information that alerts you to potentially dangerous conditions. These conditions can cause serious personal injury (burns, fire and electrical shock, etc.) if the suggested procedures are not observed.

### WARNING

#### Fire Hazard

Do not obstruct the flow of ventilation air.

#### Electrical Shock Hazard

It is the customer's responsibility to:

- Contact a qualified electrical installer.
- Assure that electrical installation is adequate and in conformance with the National Electrical Code, ANSI/NFPA 70—latest edition\*, and all local codes and ordinances.

Failure to do so could result in fire, electrical shock, or other personal injury.

Take special care when drilling holes into the wall for venting or electrical wiring. Electrical wires may be concealed behind the wall covering.

Failure to do so could result in fire, electrical shock, or other personal injury.

- National Fire Protection Association  
Batterymarch Park  
Quincy, Massachusetts 02269

KITCHENAID ASSUMES NO RESPONSIBILITY FOR ANY REPAIRS MADE ON OUR PRODUCTS BY ANYONE OTHER THAN AUTHORIZED KITCHENAID SERVICE TECHNICIANS.

# CAUTION

## WARNING TO SERVICE TECHNICIANS

To avoid possible exposure to microwave radiation or energy, visually check the oven for damage to the door and door seal before operating the oven. Use your microwave survey meter to check the amount of leakage before servicing. In the event that the R.F. leakage exceeds 4 mw/cm<sup>2</sup> at 5 cm, appropriate repair must be made before continuing to service the unit. Check interlock function by operating the door latch. The oven cook cycle should cut off before the door can be opened.

The door and latching assembly contains the radio frequency energy within the oven. The door is protected by three safety interlock switches. Do not attempt to defeat them. Under no circumstances should you try to operate the oven with the door open.

- Proper operation of the microwave ovens requires that the magnetron be properly assembled to the waveguide and cavity. Never operate the magnetron unless it is properly installed.
- Be sure the “RF” seal is not damaged, and assembled around the magnetron dome properly when installing the magnetron.
- Routine service safety procedures should be exercised at all times.
- Untrained personnel should not attempt service without a thorough review of the test procedures and safety information contained in this manual.

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

1. Do not operate or allow the oven to be operated with the door open.
2. Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
  - a) Interlock Operation.
  - b) Proper Door Closing.
  - c) Seal and Sealing Surfaces (Arcing, Wear, and Other Damage).
  - d) Damage to or Loosening of Hinges and Latches.
  - e) Evidence of Dropping or Abuse.
3. Before turning on microwave power for any service test or inspection within the microwave generating compartments,
  - check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
4. 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 this manual before the oven is released to the owner.
5. A microwave leakage check to verify compliance with the Federal performance standard should be performed on each oven prior to release to the owner.
6. Do not attempt to operate the oven if the door glass is broken.

## CAUTION

KitchenAid microwave ovens have a monitoring system designed to assure proper operation of the safety interlock systems.

The interlock monitor switch will immediately cause the oven fuse to blow if the door is opened while the following combined failure exists:

Primary door interlock switch and/or secondary interlock switch contacts failed in a closed position.



**CAUTION: REPLACE BLOWN FUSE WITH 15 AMPERE CLASS H FUSE ONLY.**

Before replacing the blown oven fuse, test the upper and lower door interlock switches, cook relay or latch relay, and interlock monitor switch (middle switch) for proper operation as described in the component test procedures.

**DO NOT ATTEMPT TO REPAIR STICKING CONTACTS OF ANY INTERLOCK SWITCH, SAFETY SWITCH, OR COOK (LATCH) RELAY (REPLACE SWITCHES).**

Any indication of sticking contacts during component test requires replacement of that component to assure reliability of the safety interlock system.

**IF THE FUSE IS BLOWN, THE MONITOR, PRIMARY INTERLOCK AND SECONDARY INTERLOCK SWITCHES MUST ALSO BE REPLACED. BE SURE THEY ARE PROPERLY CONNECTED.**

### NOTES:

- For proper repair and assembly of the oven door, refer to page 2-4.
- Interlock switches are not adjustable individually.
- For proper repair and adjustment of the interlock switches, refer to page 2-8.

## WARNING

**DISCONNECT FROM POWER SUPPLY BEFORE SERVICING.**



**CAUTION: HIGH VOLTAGES ARE PRESENT DURING THE COOK CYCLE. EXTREME CAUTION SHOULD BE OBSERVED AT ALL TIMES.**



**CAUTION: DO NOT TOUCH OVEN COMPONENTS OR WIRING DURING OVEN OPERATION. ATTACH METER LEADS WITH ALLIGATOR CLIPS WHEN MAKING OPERATIONAL TESTS.**



**CAUTION: IT IS NEITHER NECESSARY NOR ADVISABLE TO ATTEMPT MEASUREMENT OF HIGH VOLTAGES.**



**CAUTION: BEFORE TOUCHING ANY OVEN COMPONENTS OR WIRING, ALWAYS UNPLUG THE OVEN FROM ITS POWER SOURCE AND DISCHARGE THE CAPACITOR BY USING A 20,000-OHM DISCHARGE RESISTOR.**

**OR**

**USE AN INSULATED PLASTIC-HANDLE SCREWDRIVER AND SHORT ACROSS THE CAPACITOR TERMINALS.**

## R.F. LEAKAGE TEST

# ⚠ CAUTION

### EQUIPMENT

- Electromagnetic energy leakage monitor (NARDA 8100B, HOLADAY H1501).
- 600 ml glass beaker.
- Glass thermometer 100°C or 212°F.

### TEST

On every service call, checks for microwave energy emission must be made according to the following manner.

1. Remove the cooking rack from the oven cavity, if the microwave oven is so equipped.
2. Place a 250 ML (8.0 oz.) glass of water in the center of the oven bottom.
3. Select "HIGH" cook power, turn the microwave oven on, and test for R.F. leakage at the following locations using the pattern shown below:
  - a) Around the cabinet at the front.
  - b) Around the door.
  - c) Across the console panel.
  - d) Horizontally across the door.
  - e) Vertically across the door.
  - f) Diagonally across the door.
  - g) Across the air vents.
  - h) Across the rear air vent.
  - i) All lockseams.
  - j) Weld at bottom.
  - k) Bottom plate.
  - l) Oven feet.
4. The scan speed is one inch per second.

When checking for R.F. leakage, use an approved R.F. measuring device to assure less than 4 mw/cm<sup>2</sup> emission at 5 cm distance with a maximum scan rate of 2.5 cm/second, in compliance with U.S. Government Department of Health, Education and Welfare 21 CFR1030, performance Standard for Microwave Ovens.

A properly operating door and seal assembly will normally register small emissions, but they must be no greater than 4 mw/cm<sup>2</sup> to allow for measurement uncertainty.

NOTE: Enter leakage readings in space BEFORE and AFTER on the service document.

All microwave ovens exceeding the emission level of 4 mw/cm<sup>2</sup> must be reported to Dept. of Service for microwave ovens immediately and the owner should be told not to use the microwave oven until it has been repaired completely.

If a microwave oven is found to operate with the door open, report to Dept. of Service, the manufacturer and CDRH\* immediately. Also tell the owner not to use the oven.

\* CDRH: Center for Device and Radiological Health, Food and Drug Administration.

The interlock monitor switch acts as the final safety switch protecting the customer from microwave radiation. If the interlock monitor switch operated to blow the fuse when the interlocks failed you must replace all interlock switches—primary and secondary interlock switches and the monitor switch with new ones because the contacts of those interlock switches may be melted and welded together.

All repairs must be performed in such a manner that microwave energy emissions are minimal.

Address for CDRH is:

*Office of Compliance (HFZ-312) Center for  
Devices and Radiological Health  
1390 Piccard Drive  
Rockville, Maryland 20850*

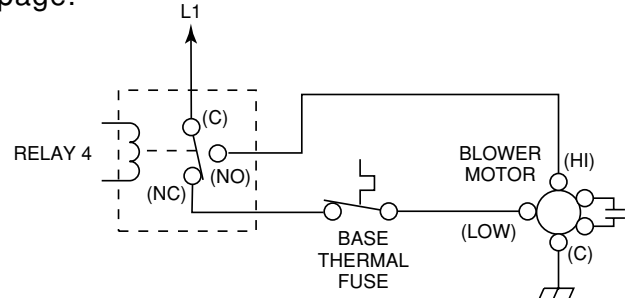


# THEORY OF OPERATION

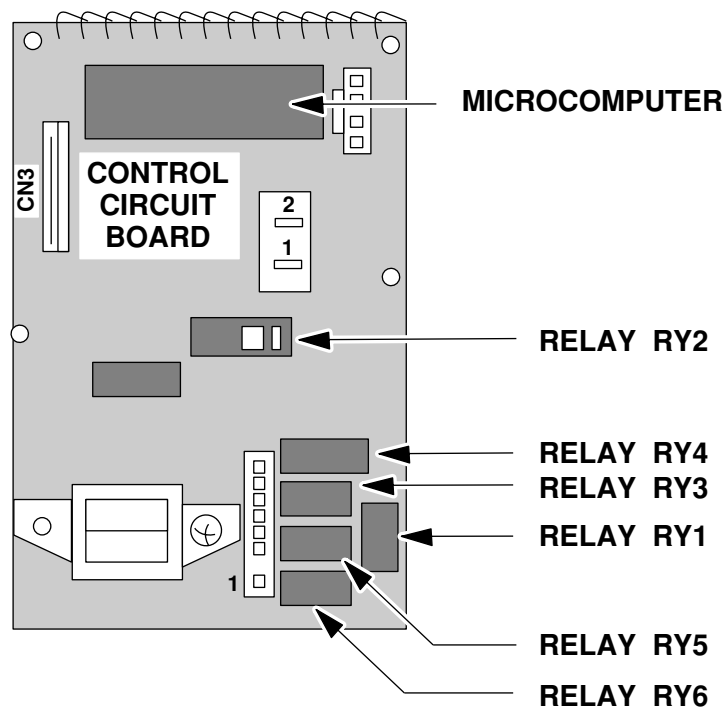
The microwave oven is powered by the 120-volt line. Whenever the door is closed and a cooking function is programmed through the control panel's keypad, relay contacts on the control board close, and complete a circuit from the L1 side to the neutral side of the line.

The control board uses six relays to operate the various functions of the microwave oven (shown below). The relays are controlled by the microcomputer on the control board, and perform the functions shown below.

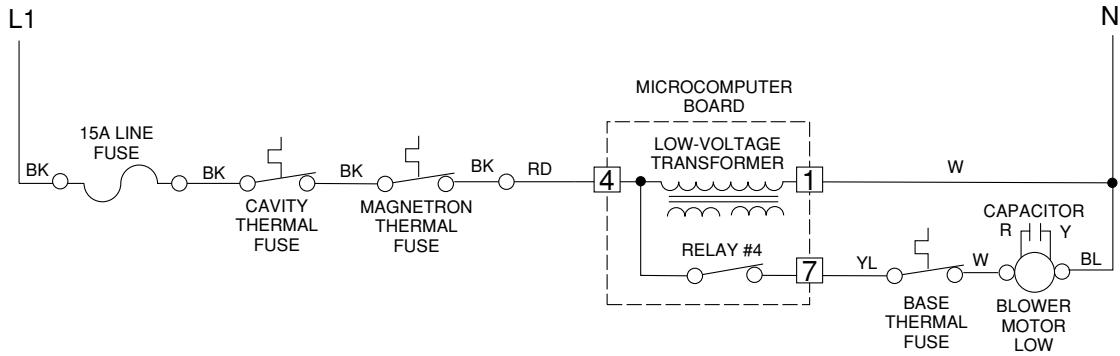
Relay 4 controls the speed of the blower motor through the control panel. The base thermal fuse will also turn the blower motor on to its low speed if the temperature reaches 133°F. The schematic configuration for relay 4 is shown in the following diagram. The relay is explained in further detail on the following page.



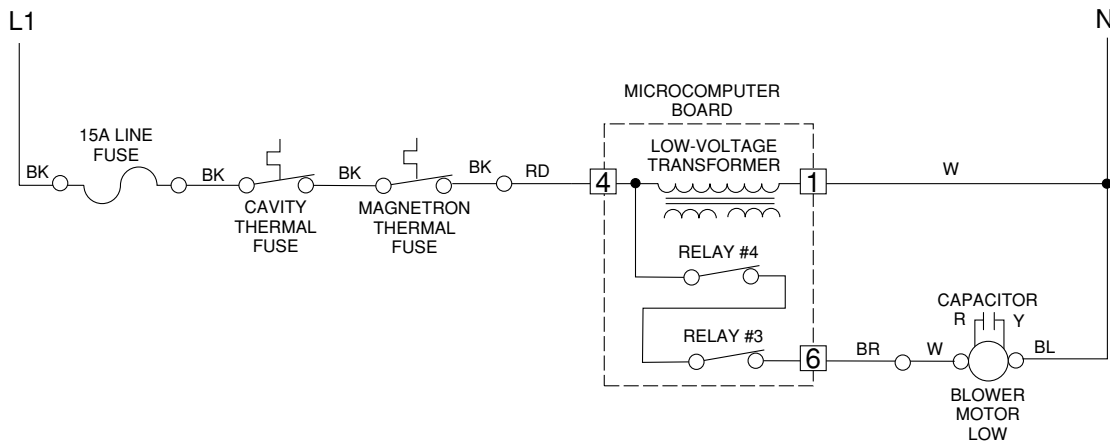
- Relay 1 ..... Oven Light/Fan & Turntable Motors
- Relay 2 ..... High Voltage Section
- Relay 3 ..... Low-Speed Blower Motor
- Relay 4 (N.C. Contacts) ..... Auto Low-Speed Blower Motor
- Relay 4 (N.O. Contacts) ..... High-Speed Blower Motor
- Relay 5 ..... Cooktop Lights
- Relay 6 ..... Night Lights



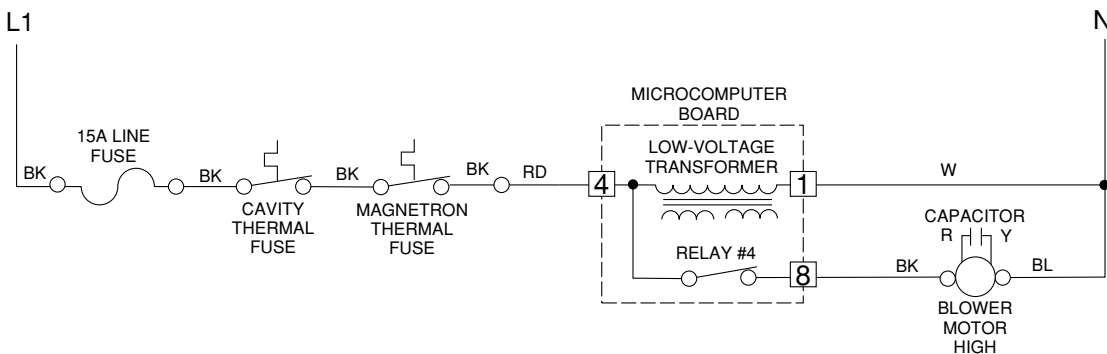
The normally-closed (N.C.) contacts of relay 4 provide a potential circuit for the Base Thermal Fuse (see the following strip circuit). If the base of the oven exceeds 133°F, the thermal fuse contacts close, and a circuit for the low-speed side of the blower motor is completed, which turns the motor on. The low-speed blower will operate until the base temperature drops below 104°F and opens the thermal fuse contacts, and turns off.



When the low-speed fan is selected by the user at the control panel, relay 3 and the normally-closed (N.C.) contacts of relay 4, complete the circuit to the low-speed windings of the blower motor and turn it on.



When the high-speed fan is selected by the user at the control panel, the normally-open (N.O.) contacts of relay 4 complete the circuit to the high-speed windings of the blower motor and turn it on.



# COMPONENT ACCESS

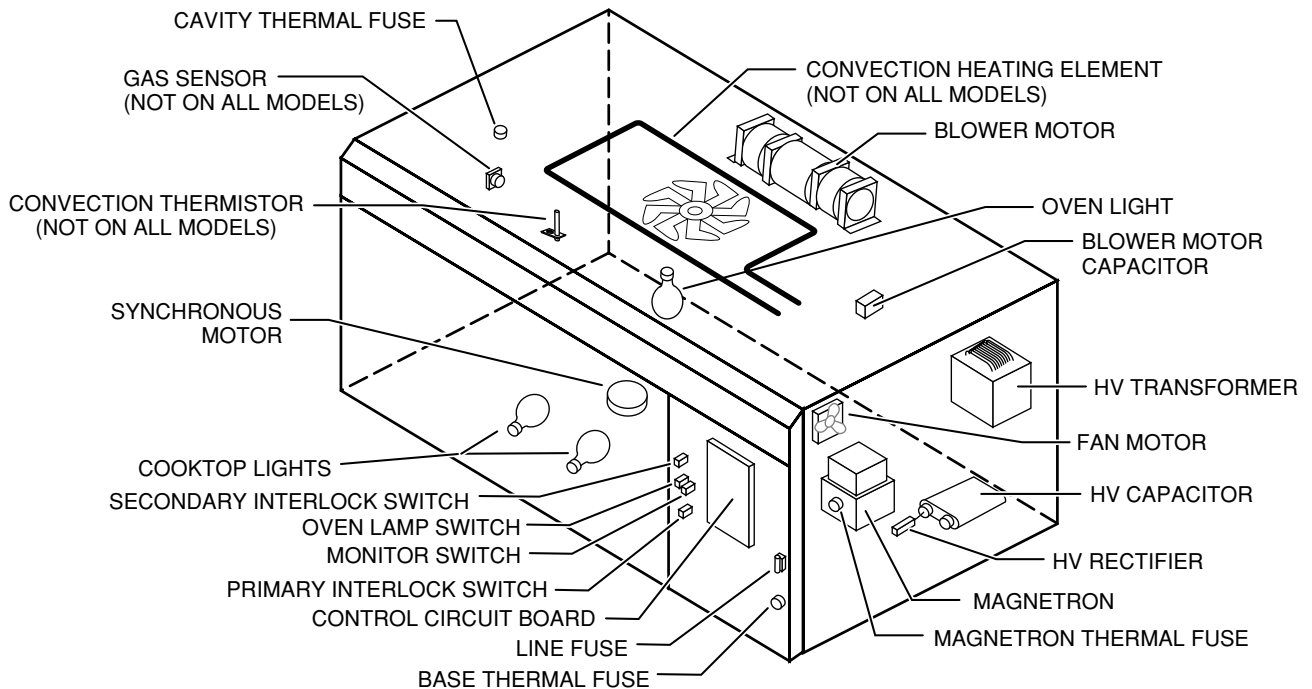
## COMPONENT SECTIONS

This section instructs you on how to service the individual components in the Microwave Oven Hood Combination. These components (shown below) and their sections are as follows:

- General
  - Cabinet
- The Protection Control System
  - Oven Door
  - Door Choke
  - Control Panel
  - Line Fuse
  - Interlock Switches
  - Base Thermal Fuse
  - Magnetron Thermal Fuse
  - Cavity Thermal Fuse
  - Convection Thermistor

- The Operating Control System
  - Oven Light Socket
  - Control Circuit Board
  - Temperature Probe Socket
  - Fan Motor
  - Power Cord
  - Blower Motor Capacitor
  - Convection Heating Element
  - Gas Sensor
  - Synchronous Motor
  - Cooktop Light Socket
- The High Voltage Components
  - Magnetron
  - Rectifier
  - Capacitor
  - Transformer

Refer to the section on the following pages for the component you wish to service.



Magnetron Thermal Fuse ..... Opens @ 302°F/150°C, resets @ 140°F/60°C.  
 Cavity Thermal Fuse ..... Opens @ 230°F/110°C, resets @ 140°F/60°C.  
 Base Thermal Fuse ..... Closes @ 133°F/56°C, resets @ 104°F/40°C.

# GENERAL

## REMOVING THE MICROWAVE OVEN & CABINET

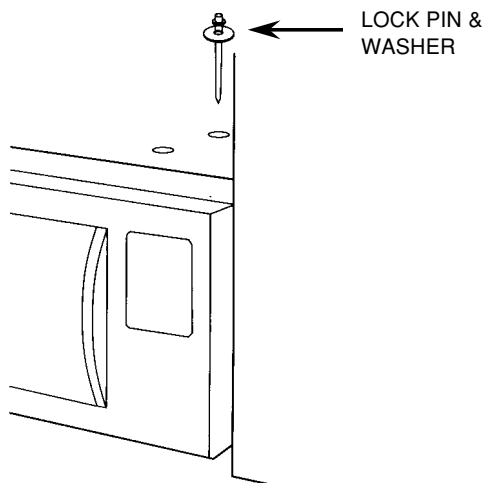
### **! WARNING**

#### **Personal Injury Hazard**

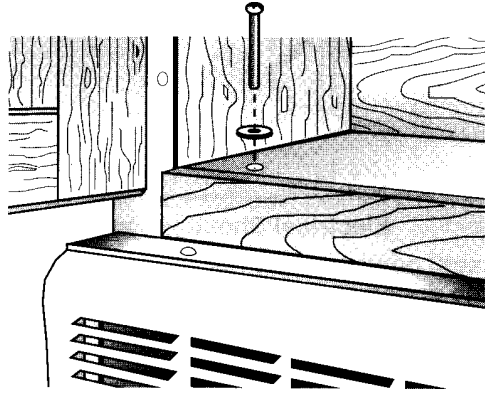
Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

**CAUTION:** Because of the weight and size of the microwave oven, two people are required to safely move and install it. Failure to do so could result in personal injury.

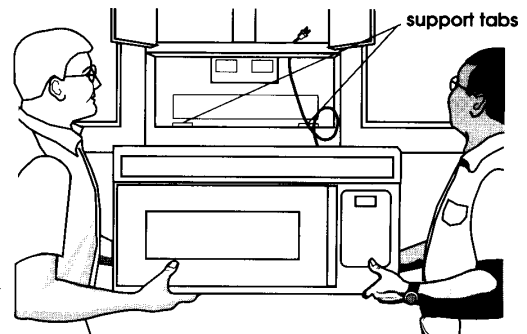
1. Disconnect the electrical supply to the microwave oven.
2. Remove the six screws from the base plate and remove it.
3. Pull the connectors off the cooktop light socket terminals and set the base plate aside (see the illustration on the next page).
4. Remove the lock pin and washer from the top of the microwave oven.



5. Support the front of the microwave oven and remove the two bolts and washers from the top of the oven.

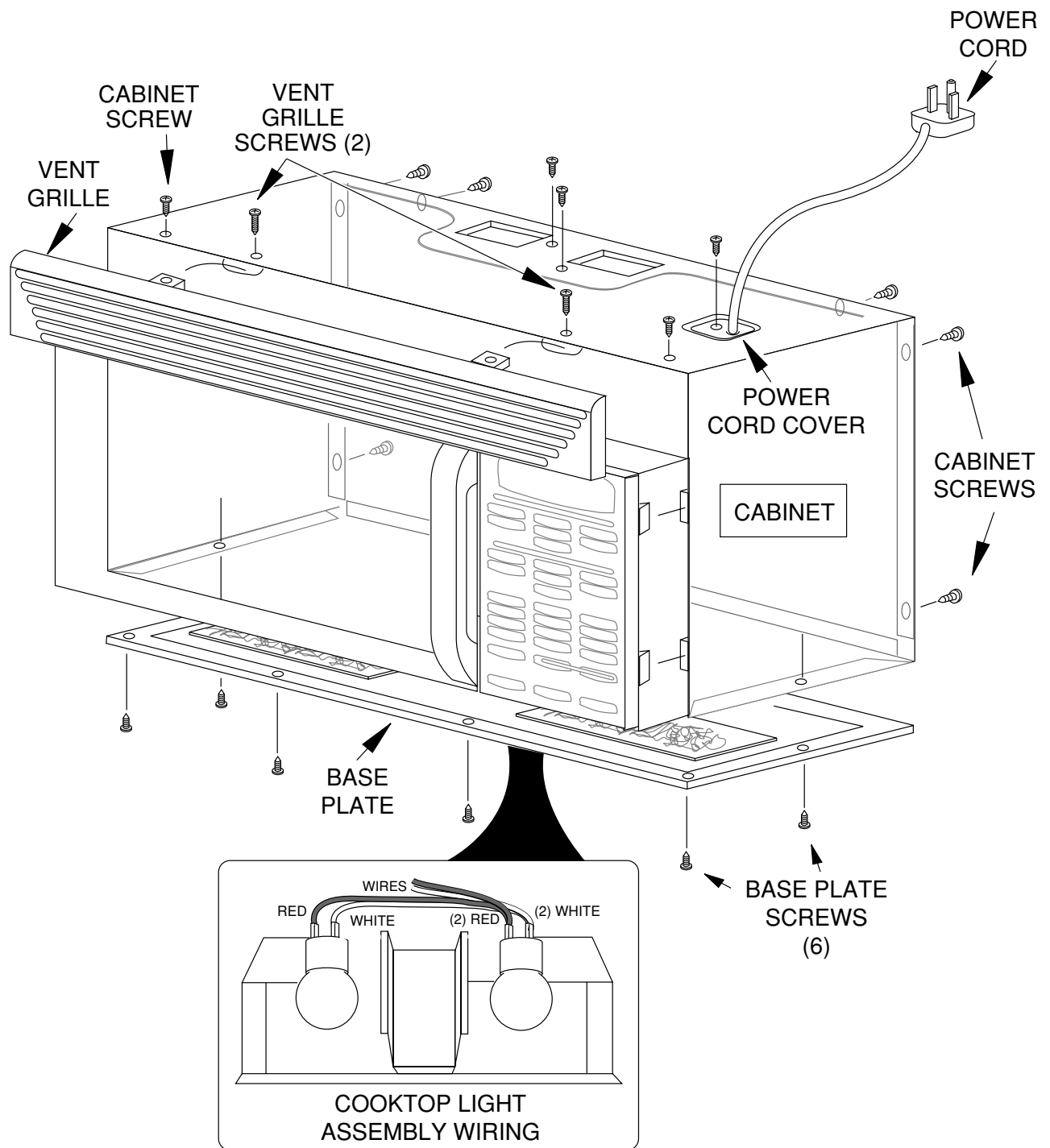


6. Using two people, remove the microwave oven from its mounting location and set it on a protected (padded) work surface.



7. To remove the cabinet from the microwave oven, remove the two inside screws from the top of the cabinet that secure the vent grille to the oven. Pull the top of the vent grille out so the tabs are free of their slots, and lift the bottom to unhook the locking tabs from their slots.
8. Remove the screw from the power cord cover and remove the cover.
9. Remove the remaining screws from the top and rear of the cabinet.
10. Slide the cabinet back and unhook the sides from the tabs, then slide the power cord out of the cabinet, and remove the cabinet.

Proceed to the section for the component you wish to service.



*Removing The Cabinet*

# THE PROTECTION CONTROL SYSTEM

## REMOVING THE OVEN DOOR

### **! WARNING**

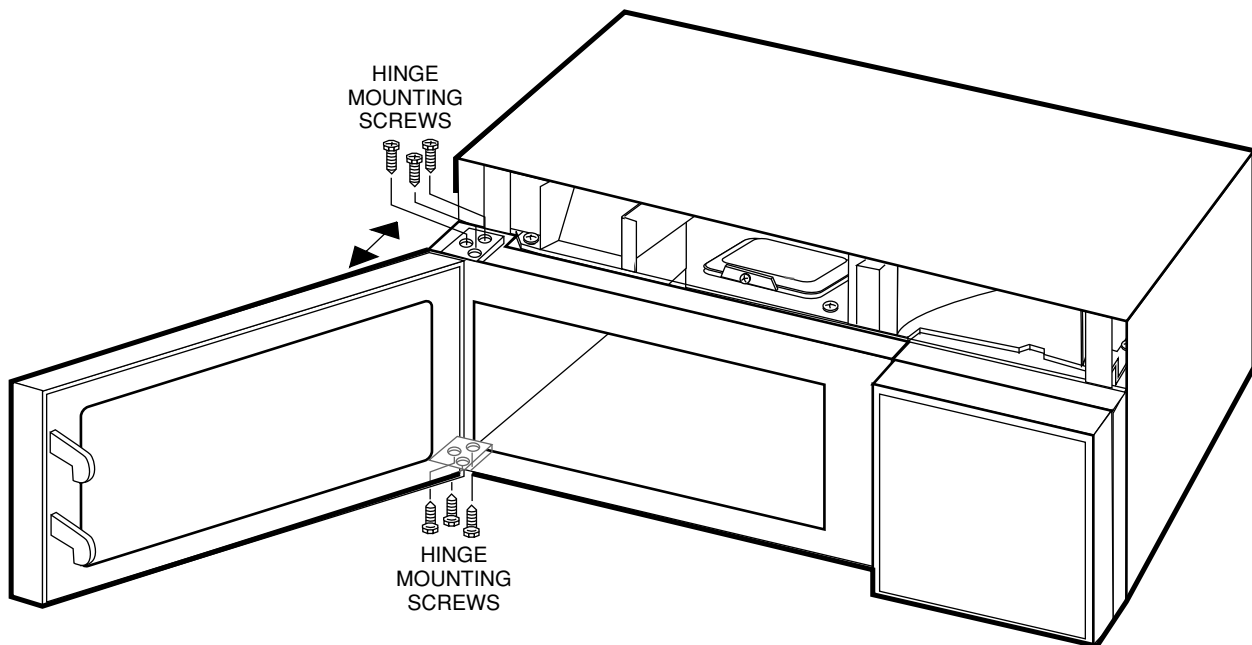
#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

**CAUTION:** Because of the weight and size of the microwave oven, two people are required to safely move and install it. Failure to do so could result in personal injury.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the vent grille and the base plate from the microwave oven (see the illustration on page 2-3).
3. Remove the six oven door hinge screws and remove the door.
4. Install the new oven door and then reassemble the microwave oven.

**REASSEMBLY NOTE:** Make sure that you open and close the door several times to make sure that it operates properly before you reassemble the oven.



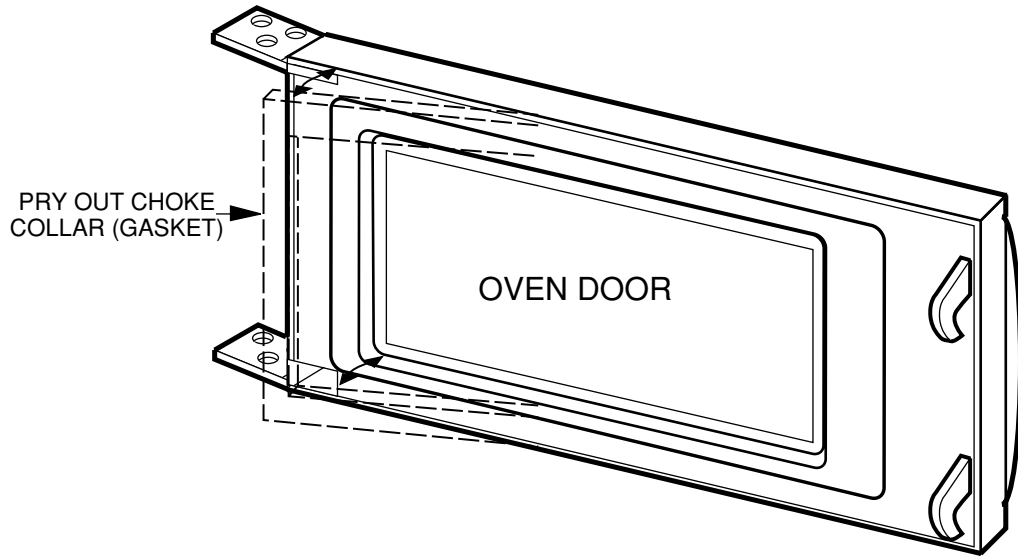
## REMOVING THE DOOR CHOKE

### **! WARNING**

#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

1. Disconnect the electrical supply to the microwave oven.
2. Open the oven door.
3. Pry out the choke (gasket) along the edges of the door with a putty knife and remove the choke.
4. Install the new choke so that it fits tightly into place inside the door.



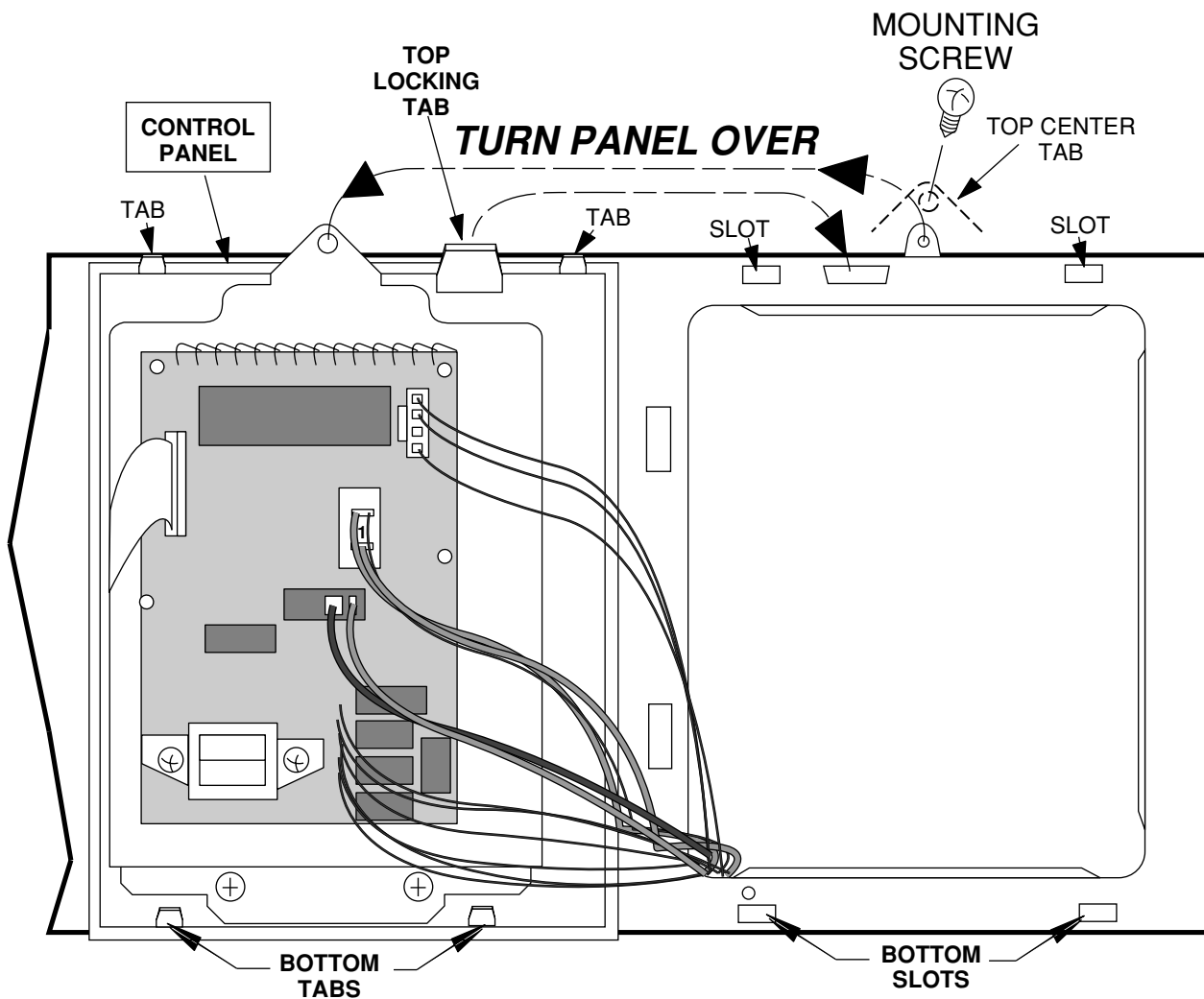
## REMOVING THE CONTROL PANEL

### **! WARNING**

#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the two screws from the top of the cabinet for the vent grille and remove the grille (see the illustration on page 2-3).
3. Remove the screw from the top center tab of the control panel.
4. From the top and back of the control panel, **lift the top locking tab** and pull the top of the panel out slightly, then lift the bottom tabs of the panel out of the slots and pull it forward. Turn the panel over out of the way.





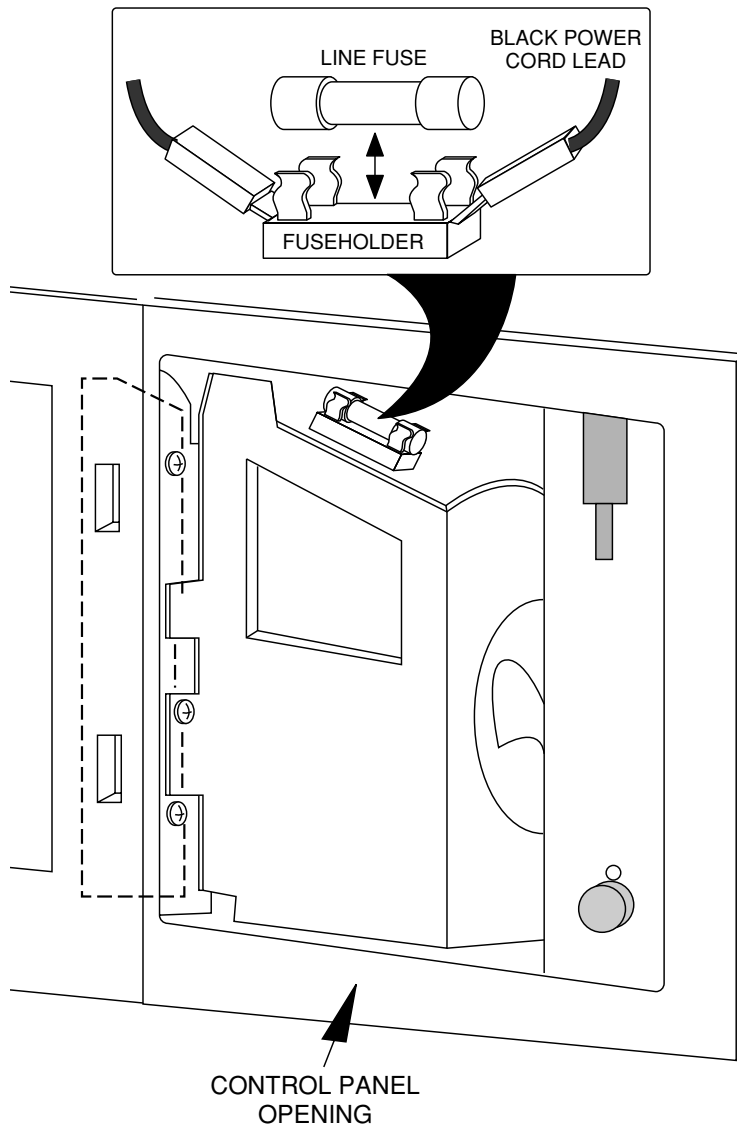
## REMOVING THE LINE FUSE

### **! WARNING**

#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the two screws from the top of the cabinet for the vent grille and remove the grille (see the illustration on page 2-3).
3. Remove the control panel from the microwave oven (see page 2-6).
4. Without touching the metal ends, unsnap the line fuse from its holder.
5. Install the new line fuse in the fuseholder and then reassemble the microwave oven.



# REMOVING/ADJUSTING THE INTERLOCK SWITCHES

## ! WARNING

### Personal Injury Hazard

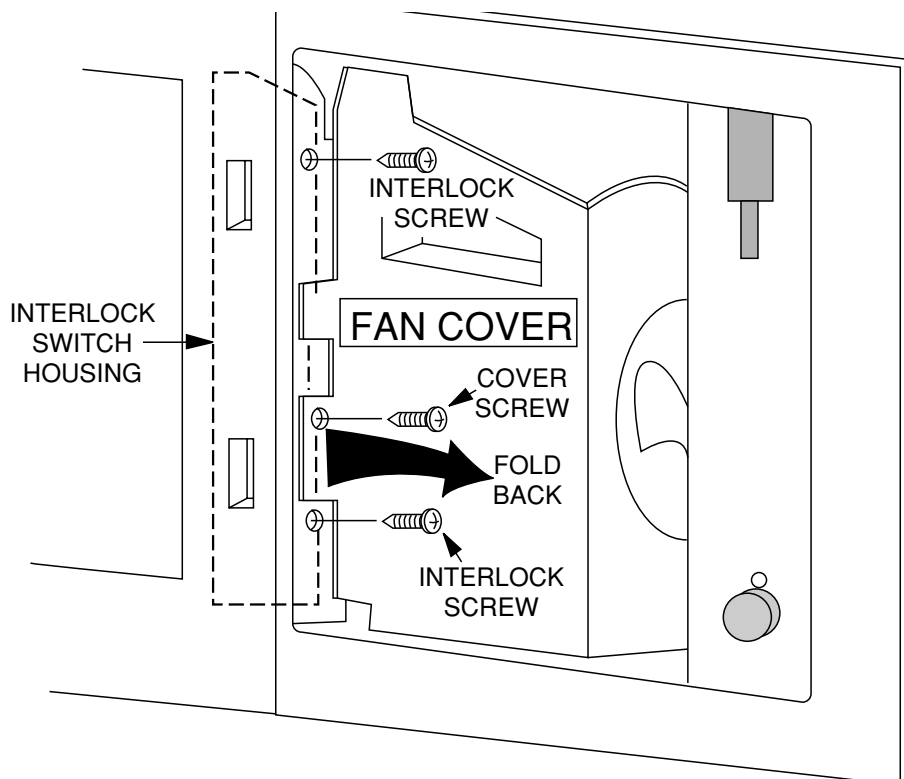
Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

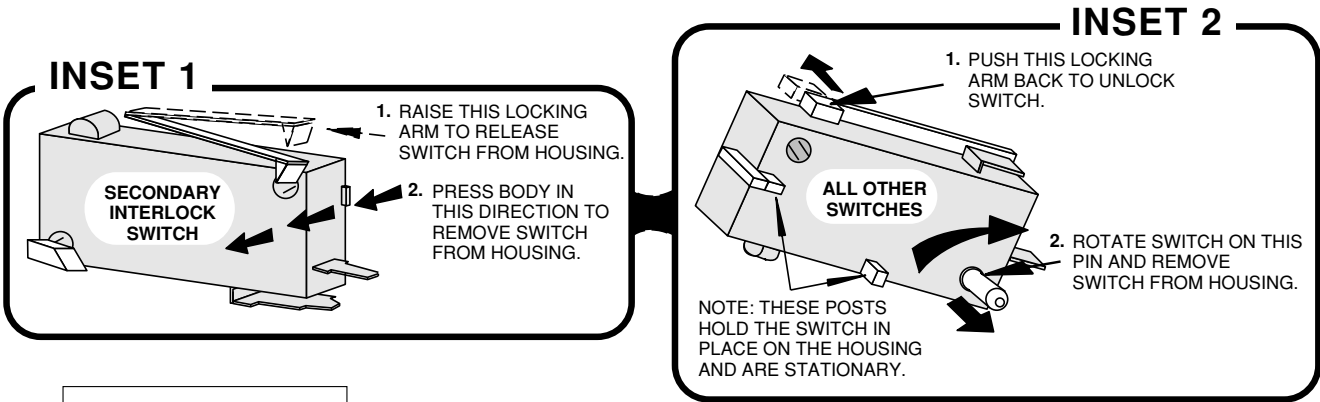
## REMOVING A SWITCH

1. Disconnect the electrical supply to the microwave oven.
2. Remove the two screws from the top of the cabinet for the vent grille and remove the grille (see the illustration on page 2-3).
3. Remove the screw from the top center tab of the control panel (see page 2-6).
4. From the top and back of the control panel, **lift the top locking tab** and pull the top of the panel out slightly, then lift the bottom tabs of the panel out of the slots and pull it forward. Set the panel inside the oven cavity while you work.

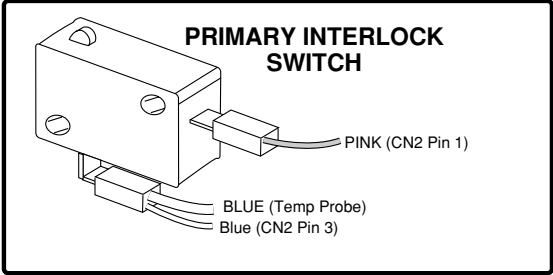
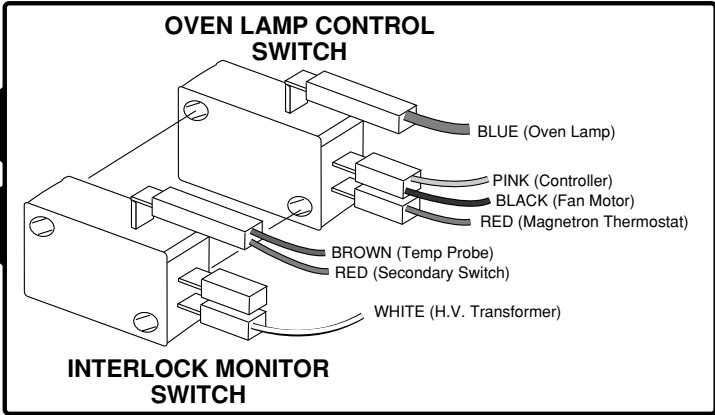
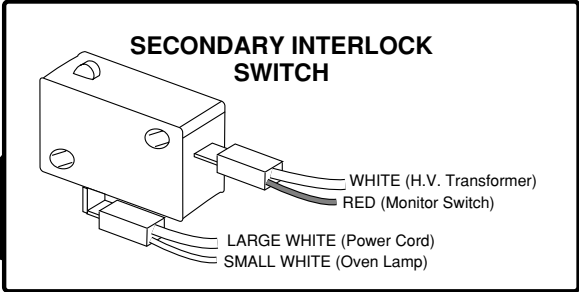
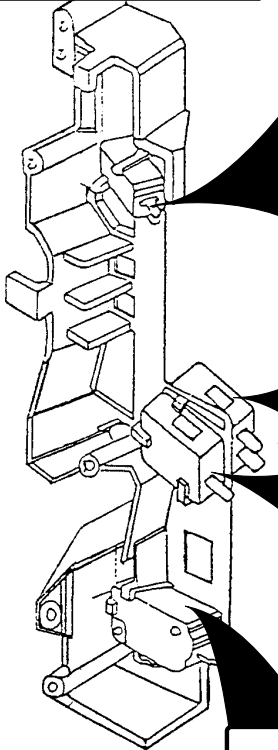
5. Remove the center screw from the fan cover and fold the cover back so you can access the switches (see the illustration below).
6. Remove the two mounting screws from the interlock switch assembly, and position the assembly so you can easily access the switches and wiring.
7. Refer to inset 1 in the illustration on the next page for the secondary interlock switch, or inset 2 for any of the other switches mounted on the interlock switch housing assembly, and remove the switch from the housing as shown.
8. One at a time, pull the wire connectors off the defective switch, and reconnect them to the same terminals on the replacement switch.
9. Snap the new switch into place on the switch housing.
10. Mount the interlock switch assembly and then reassemble the microwave oven.

NOTE: If any adjustments are necessary, refer to page 2-10.





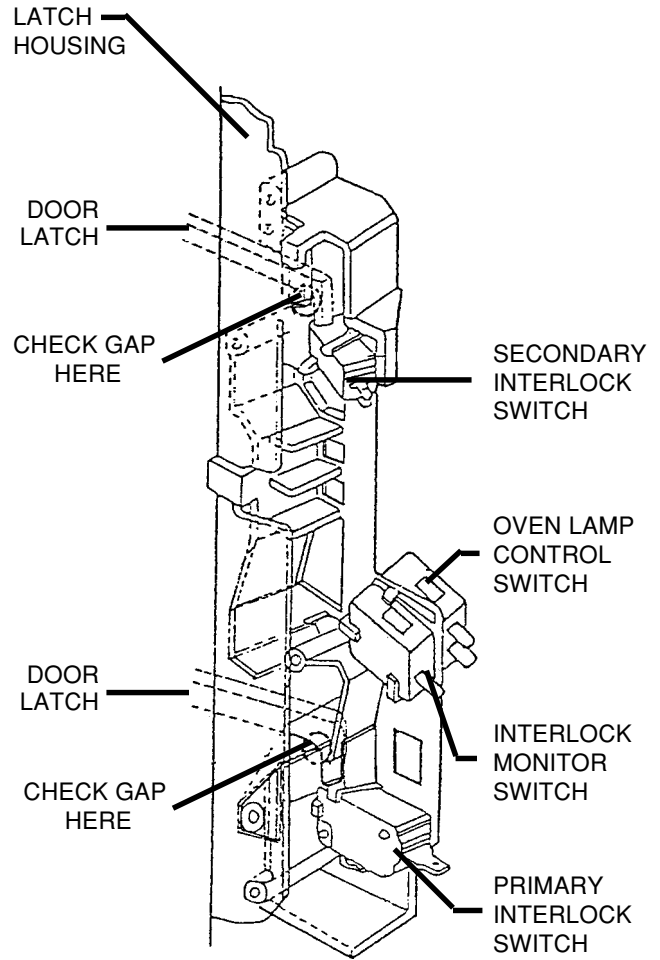
**INTERLOCK SWITCH HOUSING ASSEMBLY**



*Interlock Switch Wiring*

## MAKING ADJUSTMENTS

1. If necessary, adjust the interlock switch housing so that the switches operate properly. NOTE: The Interlock Monitor Switch provides an added safety check on the Primary and Secondary Interlock Switches. If the Primary and Secondary Interlock Switches allow the oven to operate with the door open, the Interlock Monitor Switch will blow the line fuse.
2. Close and secure the fan cover with its mounting screw.
3. Mount the control panel to the oven with the screw you removed earlier.
4. Mount the vent grille to the microwave oven and check out the operation of the switches.



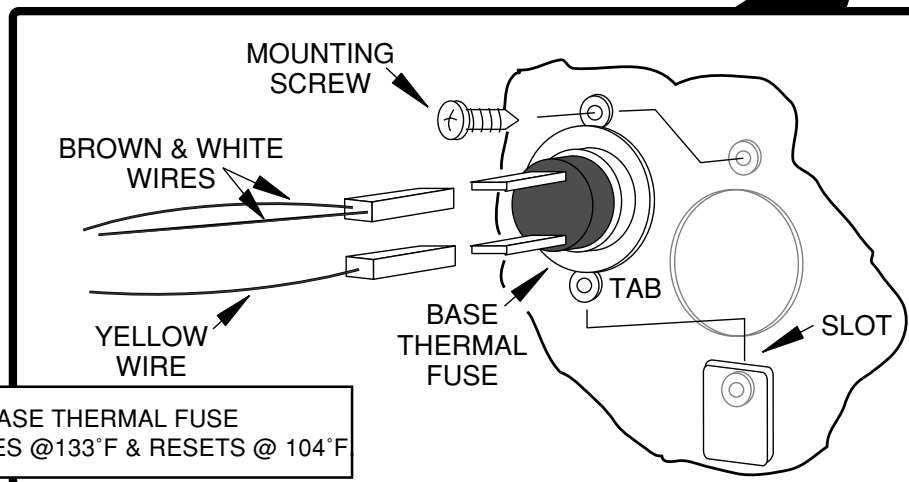
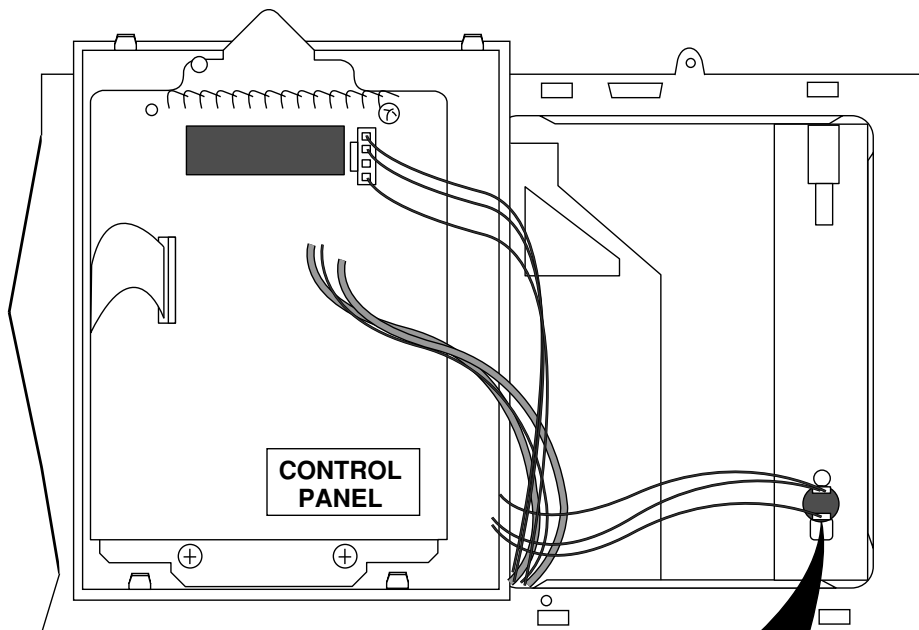
## REMOVING THE BASE THERMAL FUSE

### **! WARNING**

#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the two screws from the top of the cabinet for the vent grille and remove the grille (see the illustration on page 2-3).
3. Remove the control panel from the microwave oven (see page 2-6 for the procedure).
4. Remove the mounting screw from the base thermal fuse and remove it.
5. Unplug the wire connectors from the base thermal fuse terminals.
6. Install the new base thermal fuse and then reassemble the microwave oven.



THE BASE THERMAL FUSE  
CLOSES @133°F & RESETS @ 104°F

## REMOVING THE MAGNETRON THERMAL FUSE

### **! WARNING**

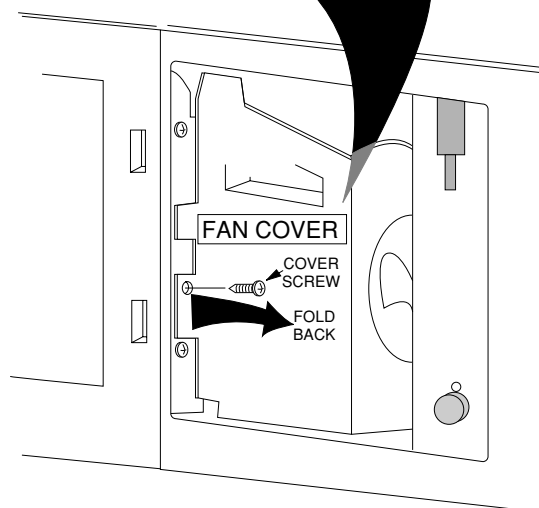
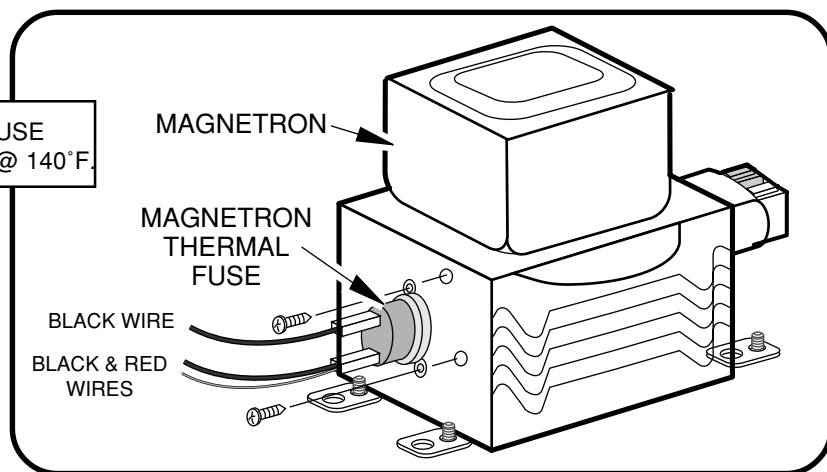
#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

Discharge the high voltage capacitor before working inside the oven. Failure to do so could result in death or electrical shock.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the two screws from the top of the cabinet for the vent grille and remove the grille (see the illustration on page 2-3).
3. Remove the control panel from the microwave oven (see page 2-6).
4. Remove the center screw from the fan cover and fold the cover back so you can access the magnetron thermal fuse.
5. Unplug the wire connectors from the magnetron thermal fuse on the side of the magnetron.
6. Remove the two screws from the magnetron thermal fuse and remove it.
7. Mount the new magnetron thermal fuse to the magnetron and then reassemble the microwave oven.

THE MAGNETRON THERMAL FUSE  
OPENS @ 302°F AND RESETS @ 140°F.



## REMOVING THE CAVITY THERMAL FUSE

### **! WARNING**

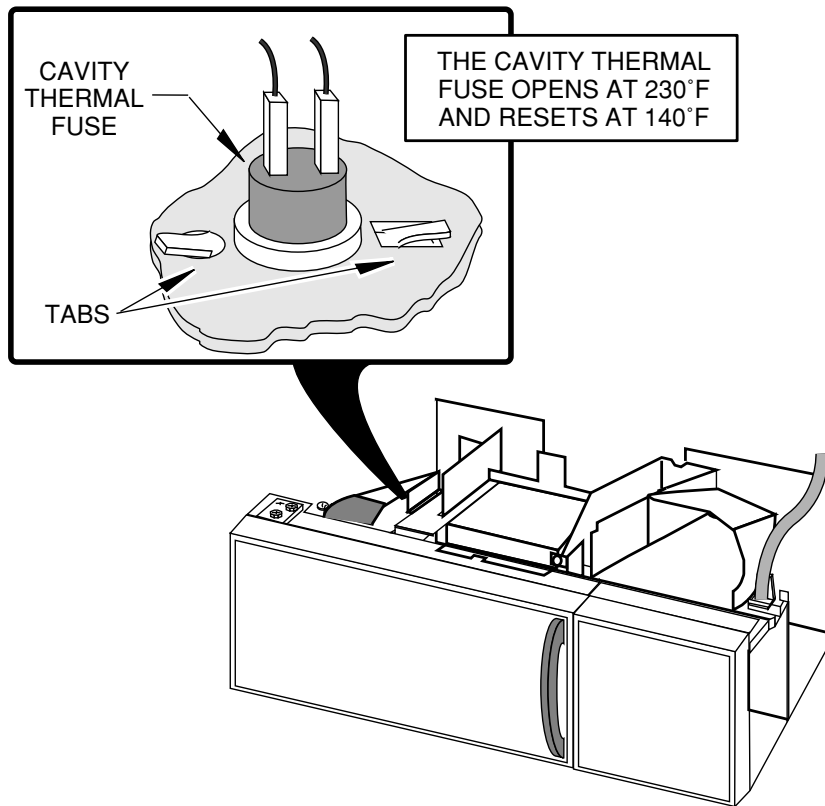
#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

Discharge the high voltage capacitor before working inside the oven. Failure to do so could result in death or electrical shock.

**CAUTION:** Because of the weight and size of the microwave oven, two people are required to safely move and install it. Failure to do so could result in personal injury.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the microwave oven from its mounting location (refer to page 2-2 for the procedure).
3. Remove the vent grille and the cabinet from the microwave oven (refer to page 2-2 for the procedure).
4. Unplug the wire connectors from the terminals of the cavity thermal fuse, then straighten the tabs, and remove the thermal fuse.
5. Install the new cavity thermal fuse and then reassemble the microwave oven.



## REMOVING THE CONVECTION THERMISTOR

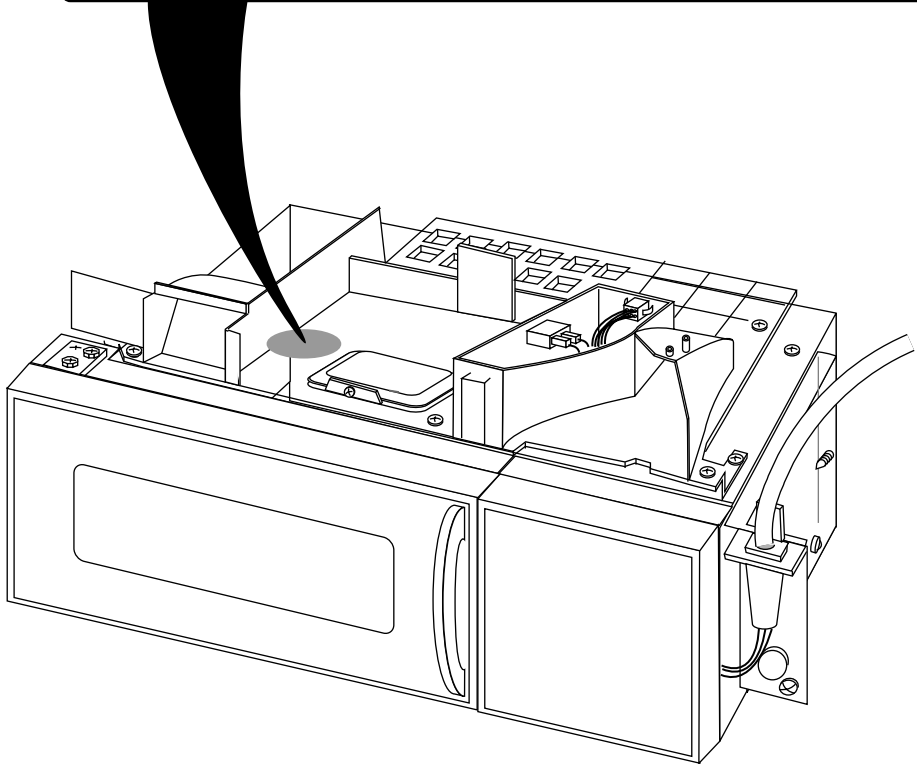
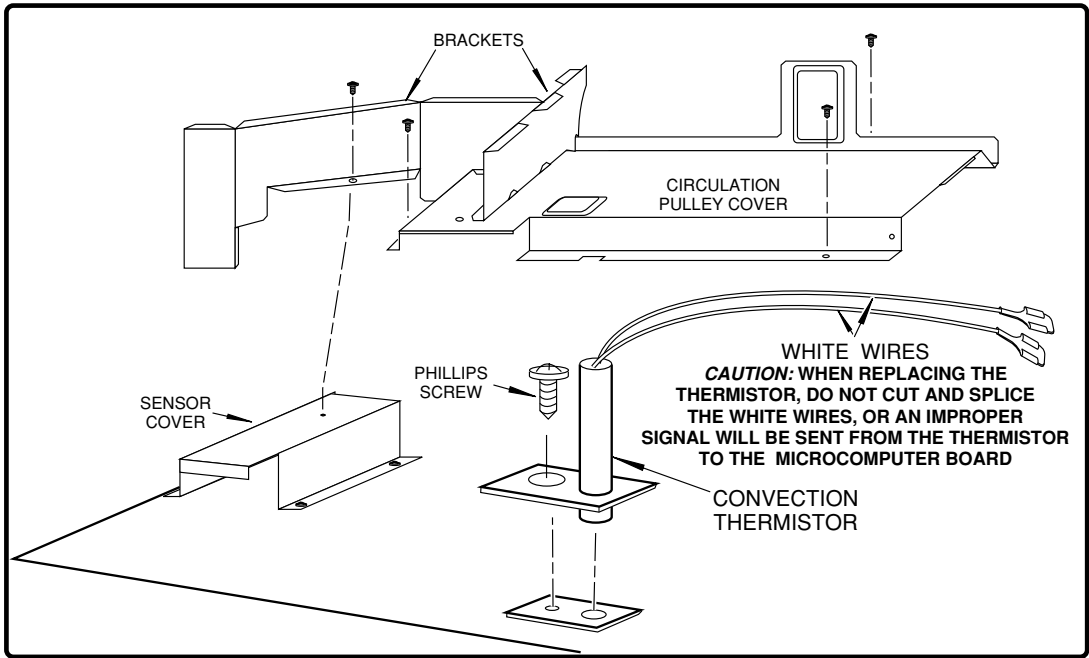
### **WARNING**

#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the microwave oven from its mounting location (see page 2-2).
3. Remove the vent grille and cabinet from the microwave oven (see the illustration on page 2-3).
4. Remove the five screws from the air duct and position it so that you can access the pulley cover underneath.
5. Remove the screws from the circulation pulley cover and the bracket, then remove the cover and the attached brackets from the top of the oven. Do not remove the brackets from the cover.
6. Remove the screw from the convection thermistor and remove the thermistor.
7. Cut the two white wires (not the thermistor wires) coming from the control board next to the splice.
8. Splice the white wires onto the ends of the new convection thermistor wires. Cover the spliced wire ends with electrical tape so that they cannot short to the oven.
9. Mount the new convection thermistor to the oven and reassemble the microwave oven.





# THE OPERATING CONTROL SYSTEM

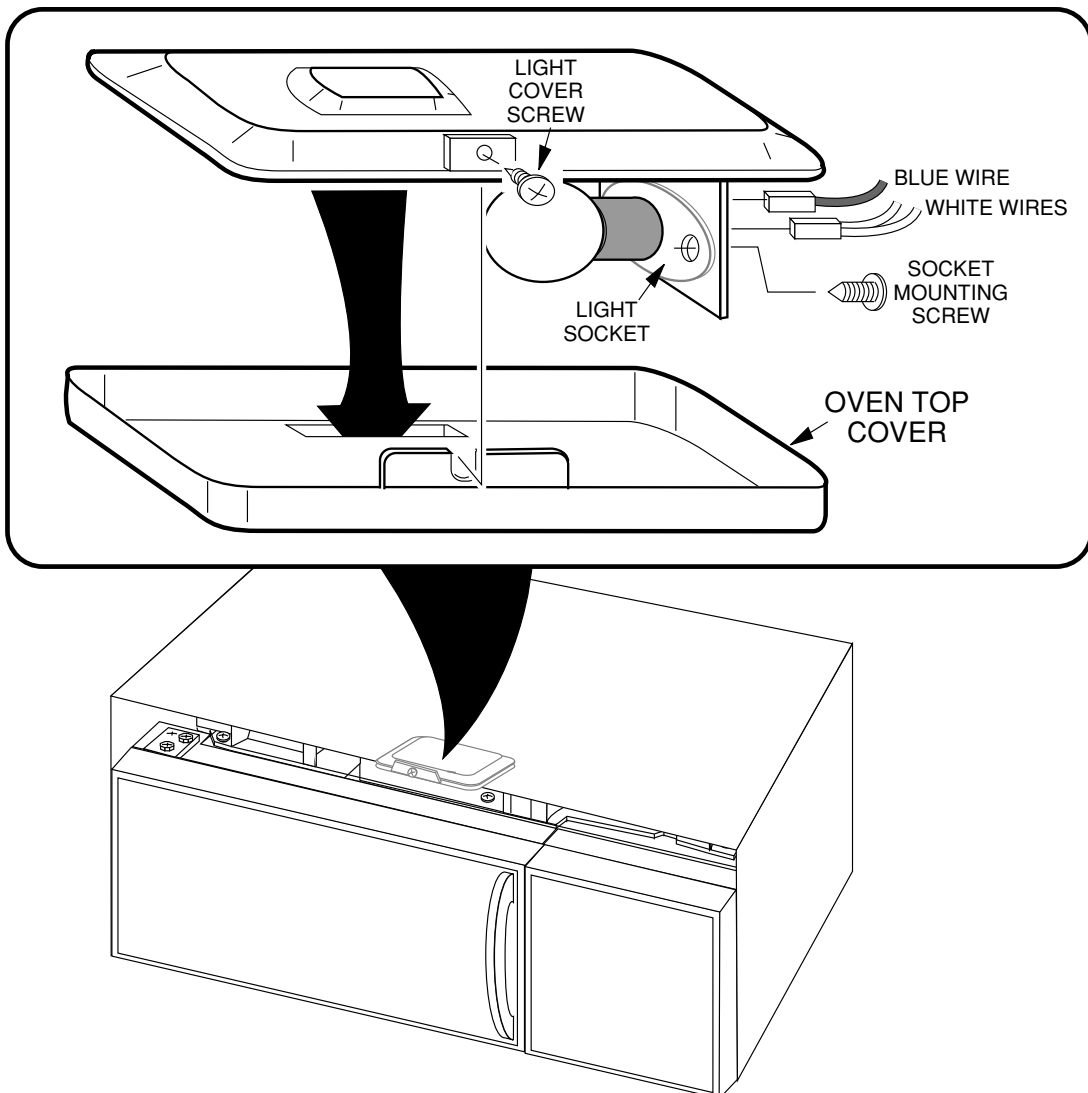
## REMOVING THE OVEN LIGHT SOCKET

### **! WARNING**

#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the two screws from the top of the cabinet for the vent grille and remove the grille (see page 2-3 for the illustration).
3. Remove the mounting screw from the light cover and remove the cover.
4. Remove the bulb from the oven light socket.
5. Unplug the wire connectors from the oven light socket terminals and remove the socket mounting screw and light socket from the microwave oven.
6. Mount the new oven light socket and then reassemble the microwave oven.



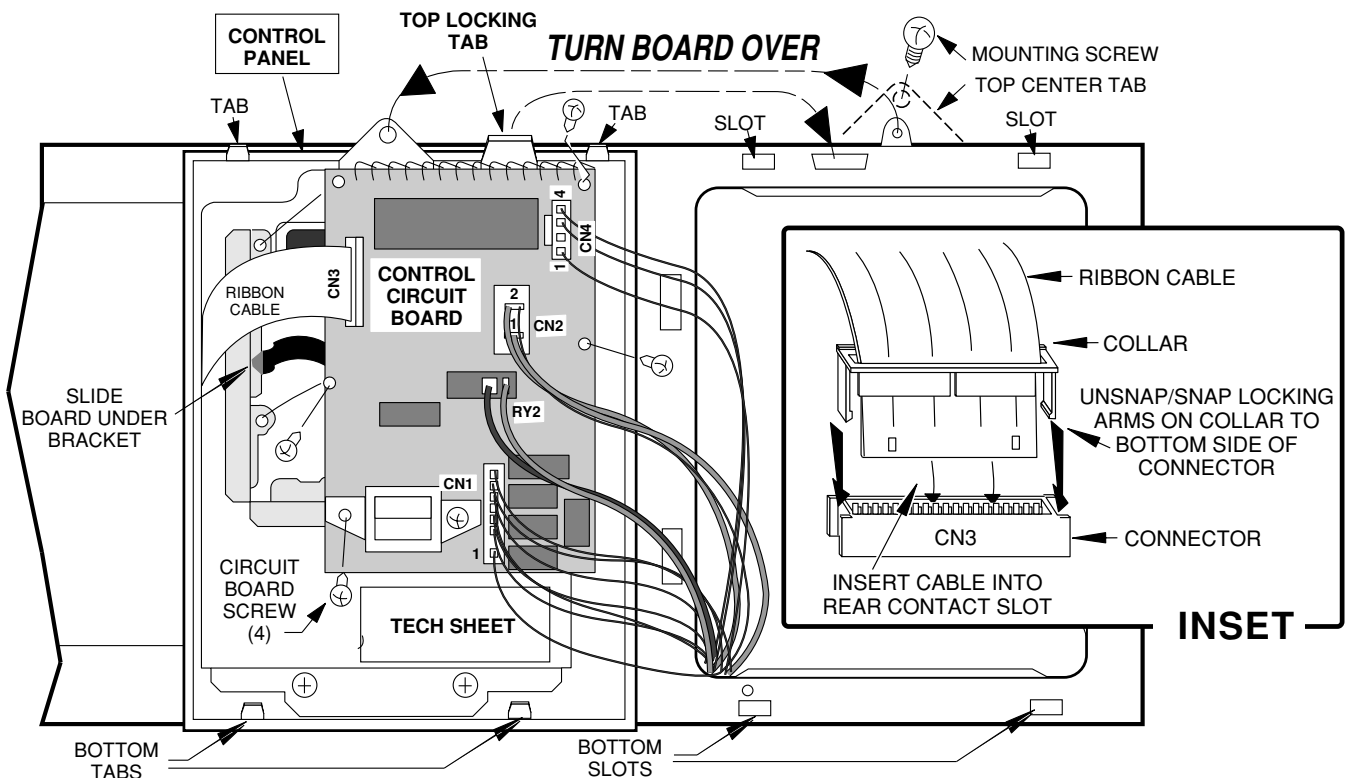
## REMOVING THE CONTROL CIRCUIT BOARD

### **! WARNING**

#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the two screws from the top of the cabinet for the vent grille and remove the grille (see the illustration on page 2-3).
3. Remove the screw from the top center tab of the control panel.
4. From the top and back of the control panel, **lift the top locking tab** and pull the top of the panel out slightly, then lift the bottom tabs of the panel out of the slots, pull it forward, and turn it over.
5. Unplug the following connectors from the control circuit board:
  - a) 3-wire connector at CN4.
  - b) 2-wire connector at CN2.
  - c) 2 connectors on relay RY2.
  - d) 8-wire connector at CN1.
  - e) Lift the ribbon cable collar at CN3 as far as it will go, (see the inset), then unsnap the locking arms on the collar from the sides of the connector, and lift the ribbon cable out of the socket.
6. Remove the four screws from the control circuit board and lift the board off the mounting bracket.
7. Clean the surface of the new display and the inside of the control panel window with a soft, damp cloth to remove any dirt, smudges, or lint.
8. Mount the new control circuit board to the mounting bracket with four screws and then reassemble the microwave oven.



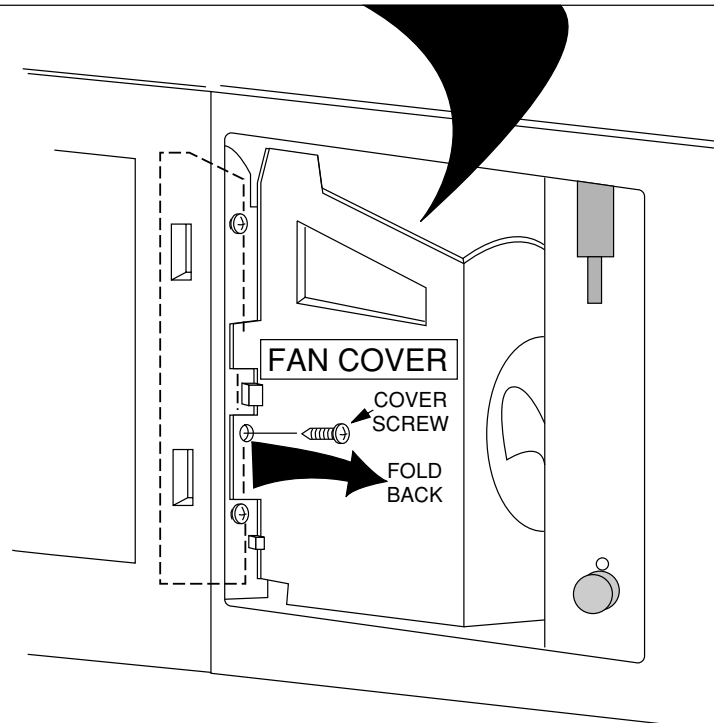
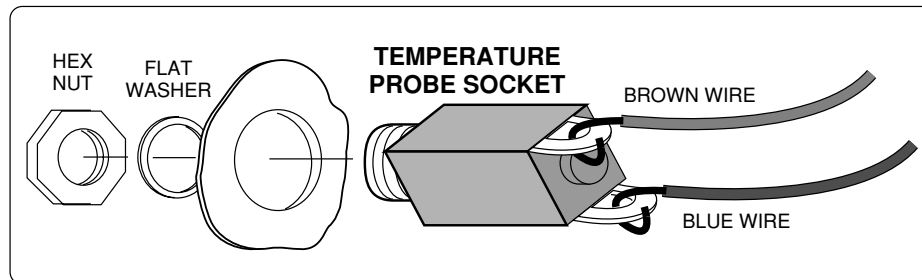
## REMOVING THE TEMPERATURE PROBE SOCKET

### **! WARNING**

#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the two screws from the top of the cabinet for the vent grille and remove the grille (see the illustration on page 2-3).
3. Remove the screw from the top center tab of the control panel (see the illustration on page 2-17).
4. From the top and back of the control panel, **lift the top locking tab** and pull the top of the panel out slightly, then lift the bottom tabs of the panel out of the slots and pull it forward. Set the panel inside the oven cavity while you work.
5. Remove the center screw from the fan cover and fold the cover back (unhook the three tabs) so you can access the temperature probe socket.
6. Remove the hex nut and flat washer from the temperature probe socket, and remove the socket from its mounting hole in the oven.
7. Unsolder the two wires from the temperature probe socket.
8. Mount the new temperature probe socket and reassemble the microwave oven.



## REMOVING THE FAN MOTOR

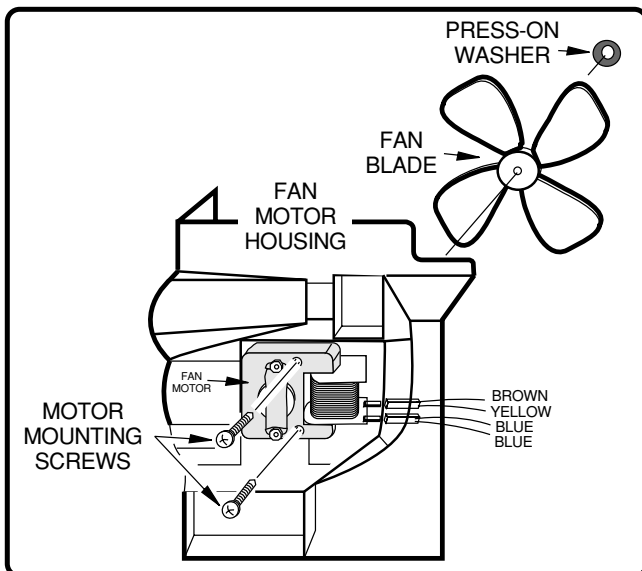
### **! WARNING**

#### Personal Injury Hazard

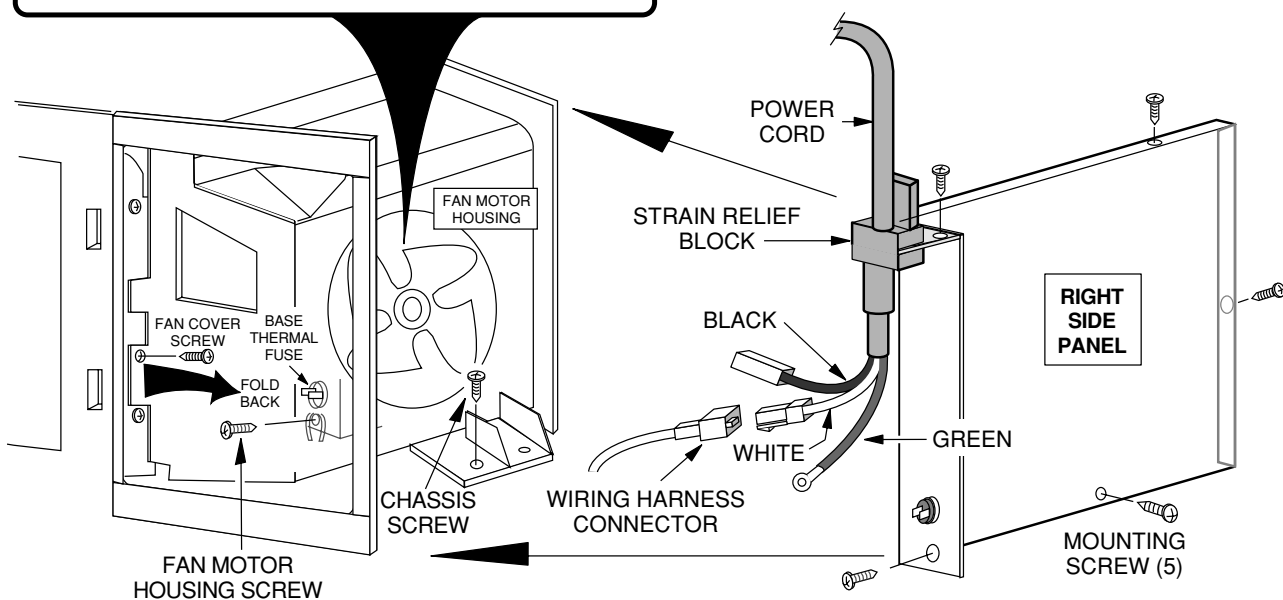
Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

**CAUTION:** Because of the weight and size of the microwave oven, two people are required to safely move and install it. Failure to do so could result in personal injury.

1. Disconnect the electrical supply to the microwave oven.



2. Remove the microwave oven from its mounting location.
3. Remove the vent grille and the cabinet from the microwave oven (refer to page 2-2 for the procedure).
4. Unplug the wire connectors going to the line fuse.
5. Disconnect the wires from the terminals of the base thermal fuse.
6. Remove the five screws from the right side panel and remove the panel.
7. Remove the screw from the fan cover and fold it back.
8. Remove the fan motor housing screw from the magnetron and the chassis screw.
9. Unplug the fan motor wire connectors from the motor terminals.
10. Pull the fan motor housing assembly out the right side of the microwave oven and remove it.
11. Pull the fan blade and compression washer off the shaft of the fan motor.
12. Remove the two motor mounting screws from the fan motor and remove it.
13. Mount the new fan motor to the fan motor housing and then reassemble the microwave oven.



## REMOVING THE POWER CORD

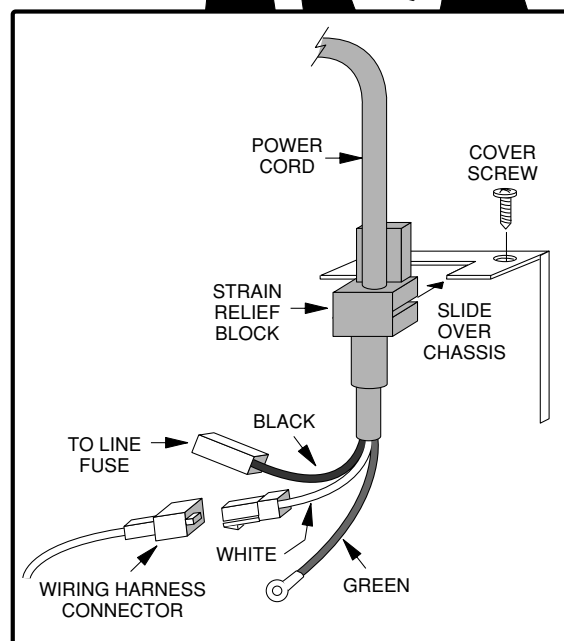
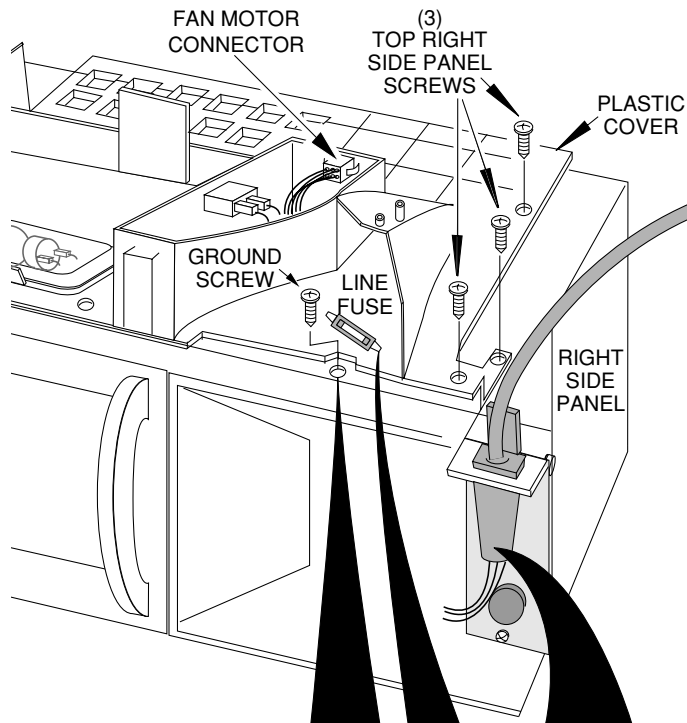
### **! WARNING**

#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

**CAUTION:** Because of the weight and size of the microwave oven, two people are required to safely move and install it. Failure to do so could result in personal injury.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the microwave oven from its mounting location (refer to page 2-2 for the procedure).
3. Remove the vent grille and the cabinet from the microwave oven (see page 2-2).
4. Remove the three mounting screws holding the top of the right side panel to the plastic cover.
5. Raise the plastic cover just enough to slide the power cord strain relief block out of the chassis slot.
6. Unplug the black and white power cord leads. **NOTE:** Disconnect the black lead by pressing in on the locking arm of the connector and pulling it loose.
7. Remove the ground screw from the green power cord lead.
8. Remove the old power cord.
9. Raise the cover just enough to slide the new power cord strain relief block into the chassis slot, then reconnect the leads and reassemble the microwave oven.



## REMOVING THE BLOWER MOTOR CAPACITOR

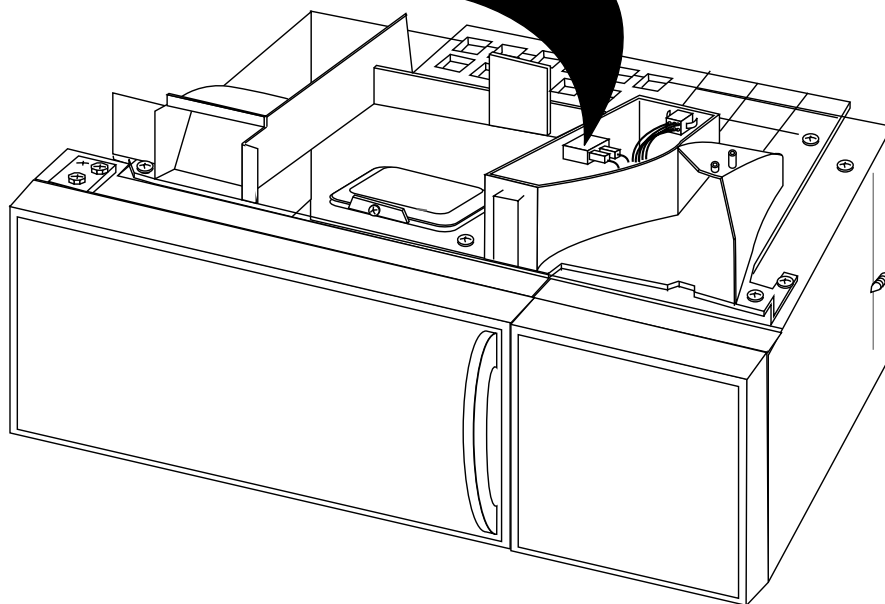
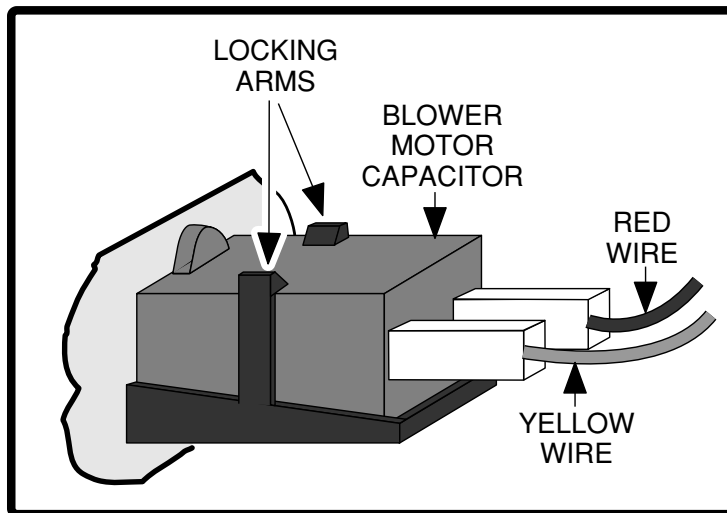
### **! WARNING**

#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

**CAUTION:** Because of the weight and size of the microwave oven, two people are required to safely move and install it. Failure to do so could result in personal injury.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the microwave oven from its mounting location (refer to page 2-2 for the procedure).
3. Remove the vent grille and the cabinet from the microwave oven (refer to page 2-2 for the procedure).
4. Disconnect the two wire connectors from the blower motor capacitor terminals.
5. Unsnap the locking arms from over the defective blower motor capacitor and remove it.
6. Install the new blower motor capacitor and then reassemble the microwave oven.



## REMOVING THE CONVECTION HEATING ELEMENT

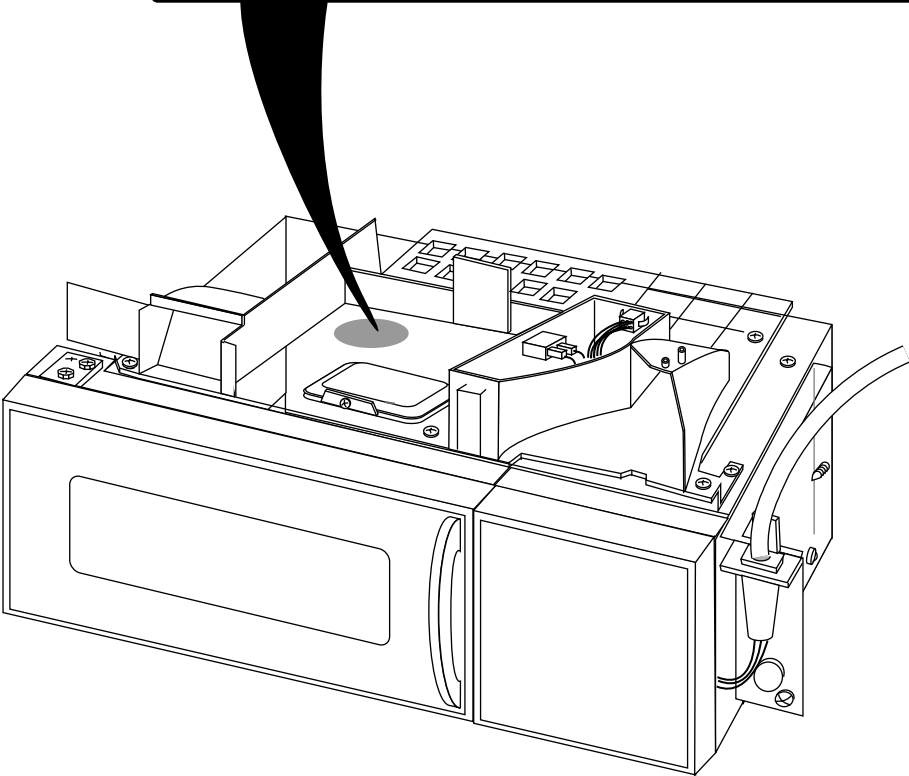
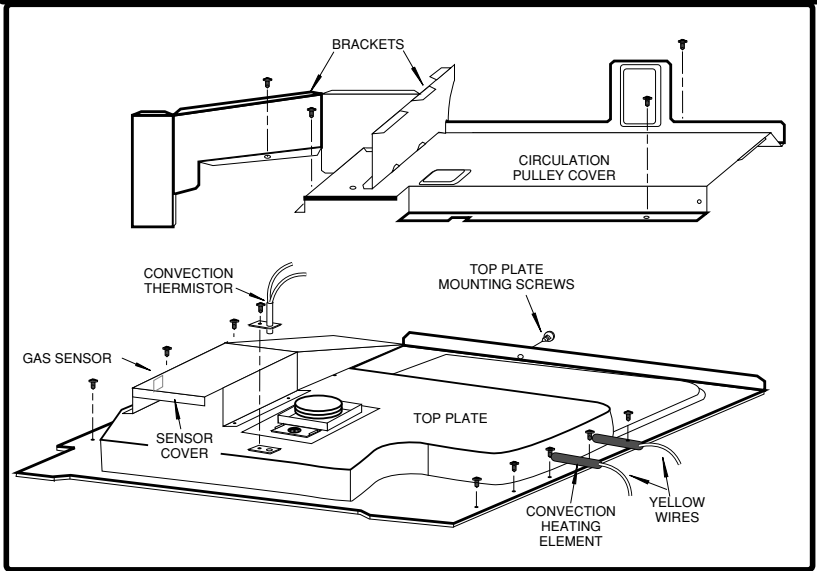
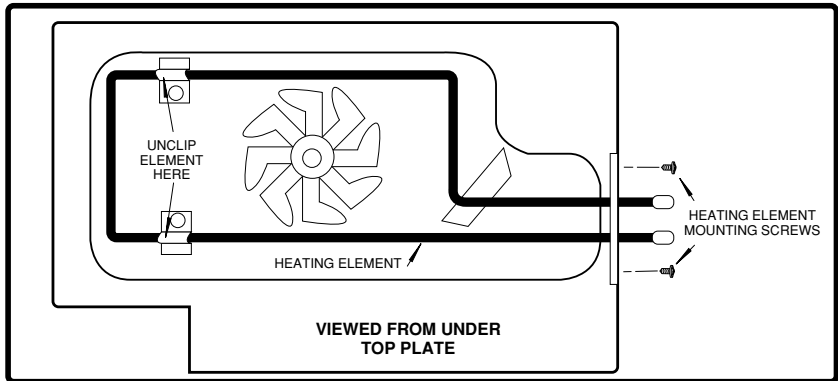
### **WARNING**

#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the microwave oven from its mounting location (see page 2-2).
3. Remove the vent grille and cabinet from the microwave oven (see the illustration on page 2-3).
4. Remove the five screws from the air duct, then lift the duct and position it so you can access the convection heating element.
5. Remove the three phillips screws from the circulation pulley cover and the one from the bracket, and remove the cover and attached brackets from the top of the oven. Do not remove the brackets from the cover.
6. Remove the screw from the gas sensor and position the sensor out of the way.
7. Unhook the drive belt from the circulation fan pulleys and set it aside.
8. Remove the phillips screw from the convection thermistor that is located on the top plate. Remove the thermistor and position it out of the way.
9. Disconnect the wires from the convection heating element terminals.
10. Remove the phillips screws from the top cover, remove it from the oven, and turn it over.
11. Remove the two phillips screws from the convection heating element bracket. Unclip the element from the cover and remove it.
12. Install the new heating element into the mounting clips in the top cover, and secure the mounting bracket with two phillips screws.
13. Reassemble the microwave oven.





## REMOVING THE GAS SENSOR

### **! WARNING**

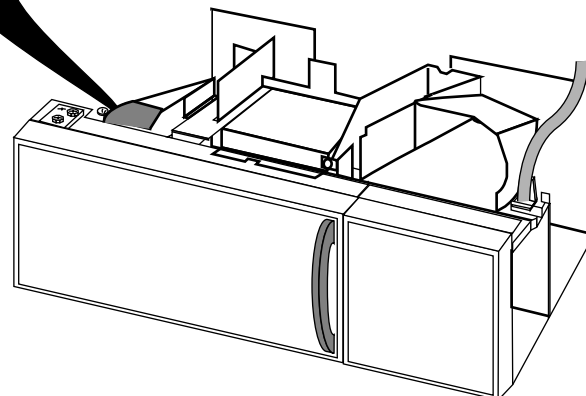
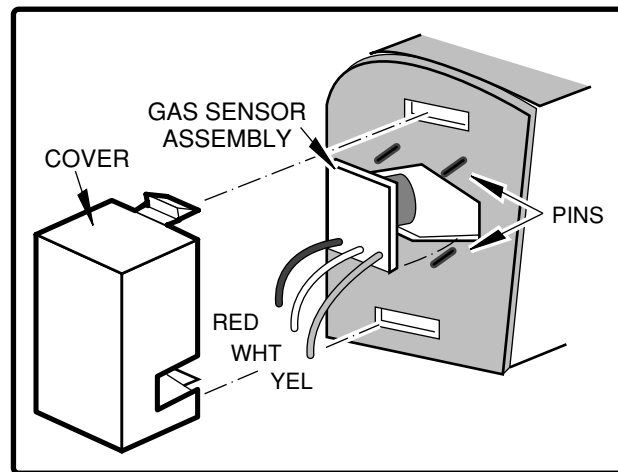
#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

Discharge the high voltage capacitor before working inside the oven. Failure to do so could result in death or electrical shock.

**CAUTION:** Because of the weight and size of the microwave oven, two people are required to safely move and install it. Failure to do so could result in personal injury.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the microwave oven from its mounting location (refer to page 2-2 for the procedure).
3. Remove the vent grille and the cabinet from the microwave oven (refer to page 2-2 for the procedure).
4. Unclip the gas sensor cover and remove it.
5. Remove the screw from the top center tab of the control panel (see the illustration on page 2-17).
6. From the top and back of the control panel, **lift the top locking tab** and pull the top of the panel out slightly, then lift the bottom tabs of the panel out of the slots and pull it forward (see page 2-17).
7. Unplug 3-wire gas sensor connector CN4 from the control circuit board and remove the gas sensor from the microwave oven.
8. Install the new gas sensor and then reassemble the microwave oven.



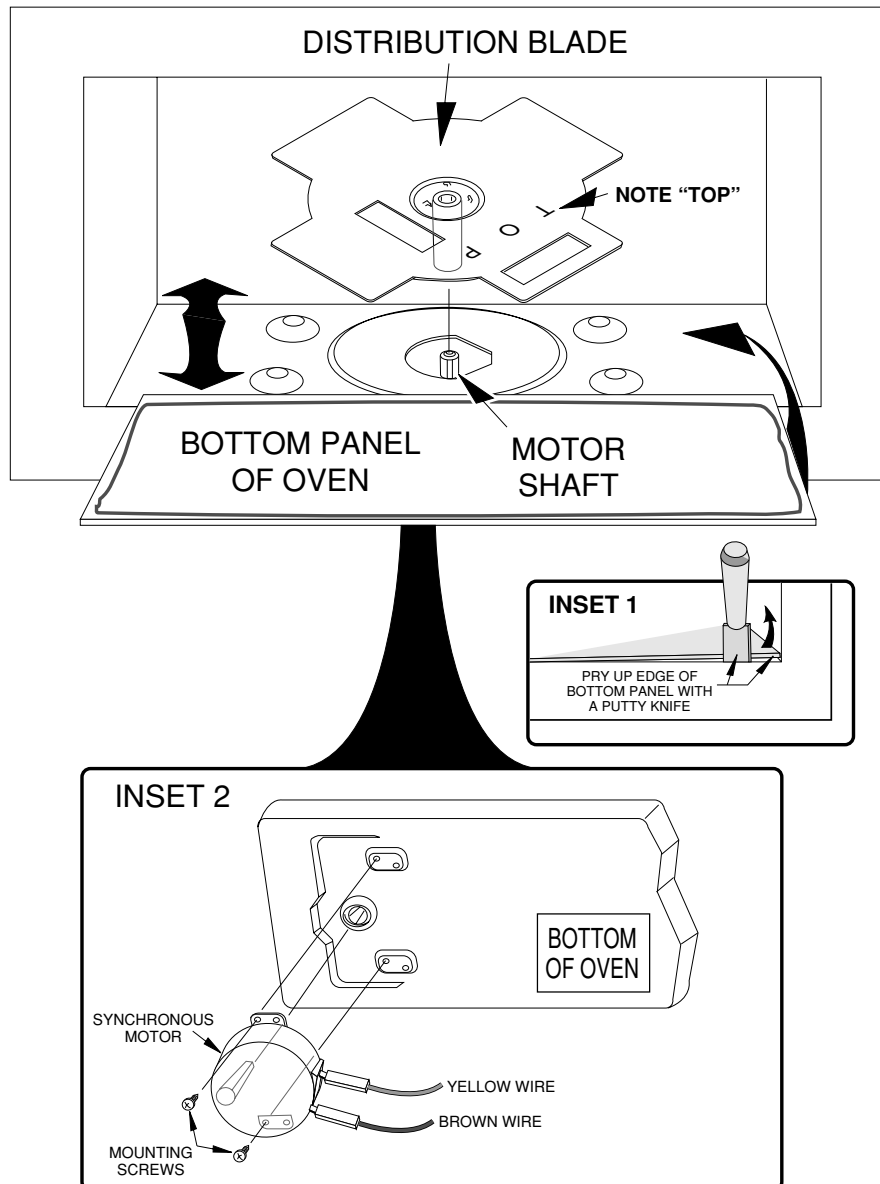
## REMOVING THE SYNCHRONOUS MOTOR

### **! WARNING**

#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the vent grille and the base plate from the microwave oven (see the illustration on page 2-3).
3. Open the oven door and pry up the bottom panel and remove it from the oven (see inset 1).
4. Lift the turntable off the motor shaft and remove it.
5. From the bottom of the oven, pull the connectors off the synchronous motor terminals.
6. Remove the two motor mounting screws from the synchronous motor and remove the motor (see inset 2).
7. Install the new motor and then reassemble the microwave oven.



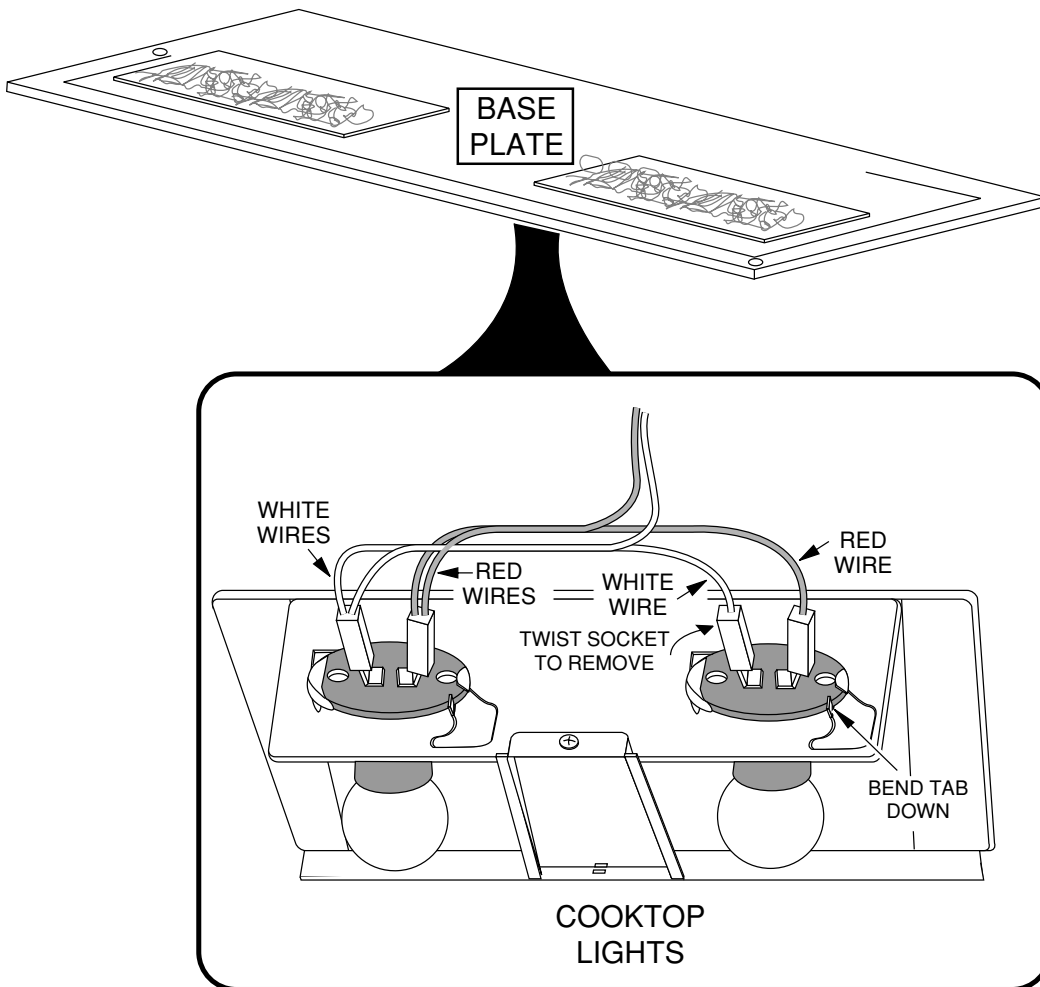
## REMOVING A COOKTOP LIGHT SOCKET

### **! WARNING**

#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the base plate from the microwave oven (refer to page 2-2 for the procedure).
3. Pull the connectors off the cooktop light socket terminals and set the base plate aside.
4. Bend the light socket holder tab down, and then twist the socket clockwise to remove it from the holder.
5. Mount the new light socket into the holder and then reassemble the microwave oven.



## THE HIGH VOLTAGE COMPONENTS

The components for service in this section include the:

- Magnetron
- High Voltage Rectifier
- High Voltage Capacitor
- High Voltage Transformer

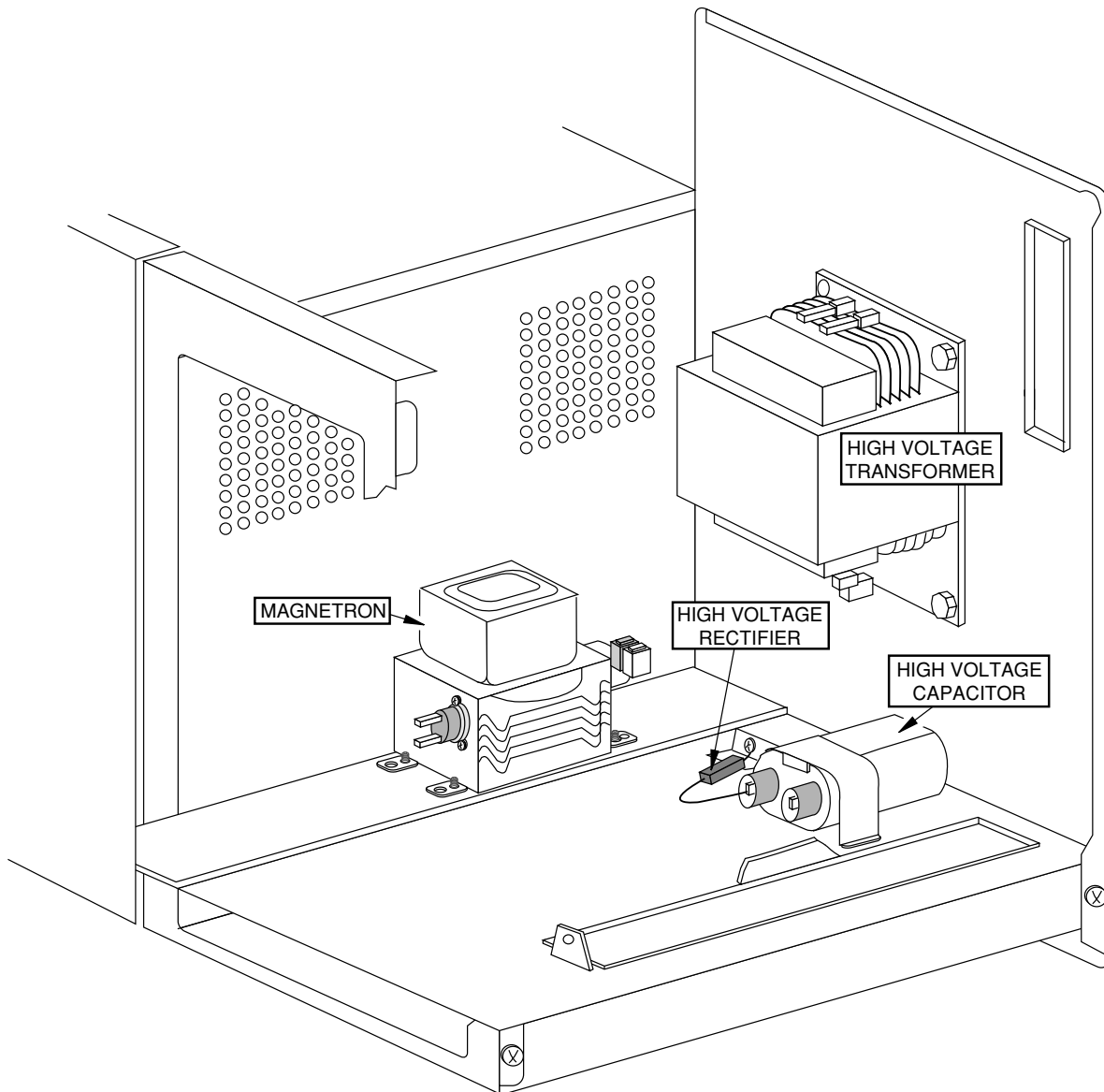
The locations of the high voltage components are shown in the illustration below. To access the high voltage components, perform the steps on the next page.

# ! WARNING

### Personal Injury Hazard

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

Discharge the high voltage capacitor before working inside the oven. Failure to do so could result in electrical shock or other personal injury.



# ACCESSING THE HIGH VOLTAGE COMPONENTS

## **! WARNING**

### **Personal Injury Hazard**

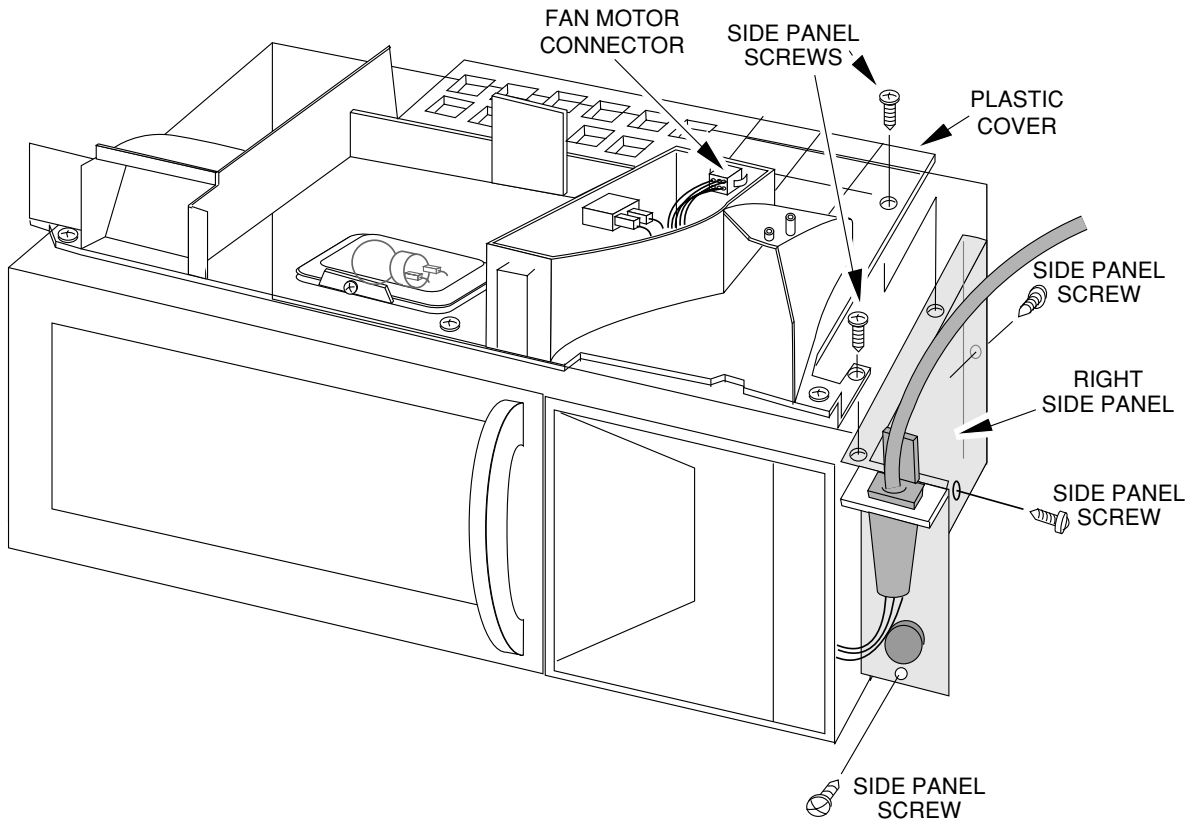
Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

**CAUTION:** Because of the weight and size of the microwave oven, two people are required to safely move and install it. Failure to do so could result in personal injury.

To gain access to the high voltage components, perform the following steps.

1. Disconnect the electrical supply to the microwave oven.
2. Remove the microwave oven from its mounting location.
3. Remove the vent grille, the cabinet, and base plate from the microwave oven (refer to page 2-2 for the procedure).
4. Remove the control panel from the microwave oven, unplug the wire connectors from the control board, and set the control panel aside (see page 2-17 for the procedure).
5. Unplug the blower motor cable from its connector and remove the motor from the oven.
6. Remove the five screws holding the right side panel to the oven and pull it away from the oven.
7. Disconnect the power cord leads and the base thermal fuse wires (see the illustration on page 2-19) and set the side panel aside.

Proceed to the section on the following pages for the high voltage component you wish to service.



## REMOVING THE MAGNETRON

### **! WARNING**

#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

**CAUTION:** Because of the weight and size of the microwave oven, two people are required to safely move and install it. Failure to do so could result in personal injury.

1. Disconnect the electrical supply to the microwave oven.
2. Refer to page 2-28 for accessing the high voltage components.

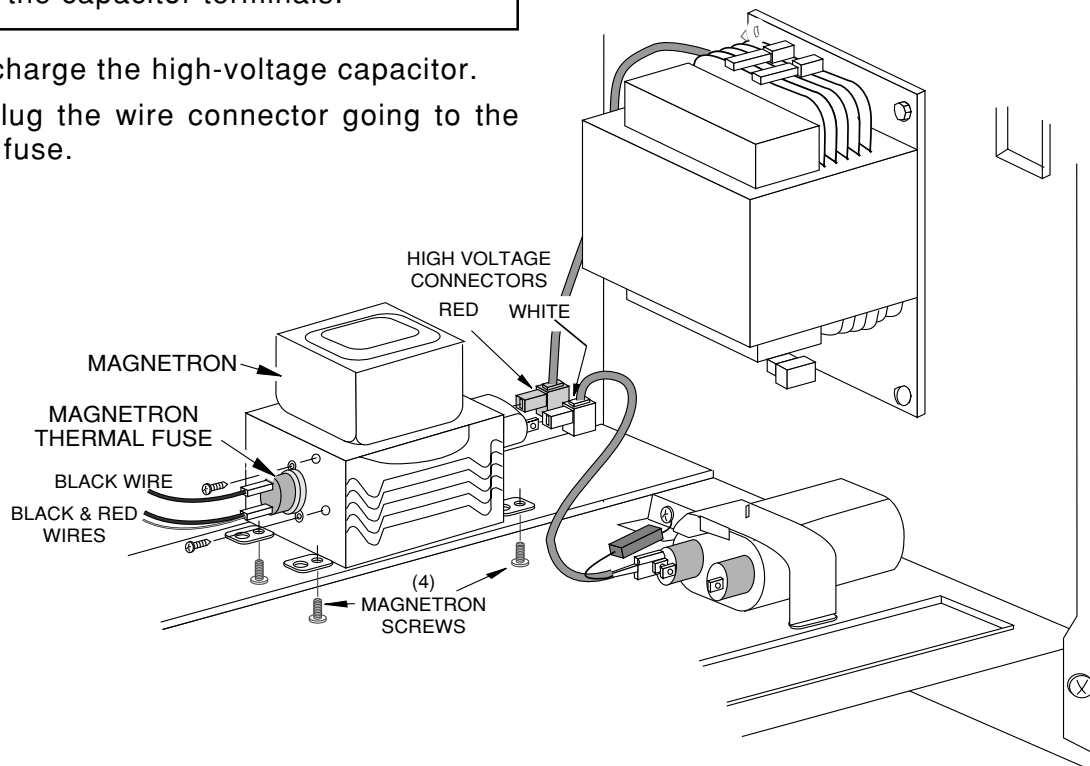
### **! WARNING**

#### **Personal Injury Hazard**

Disconnect from power supply before servicing. Discharge the capacitor using a 20,000-ohm discharge resistor, or an insulated plastic-handle screwdriver to short across the capacitor terminals.

3. Discharge the high-voltage capacitor.
4. Unplug the wire connector going to the line fuse.

5. Remove the fan motor assembly from the unit (see the illustration on page 2-19 for the procedure).
6. Unplug the wire connectors from the magnetron thermal fuse.
7. Remove the two screws from the magnetron thermal fuse and remove it.
8. Unplug the red and white connectors from the high-voltage terminals of the magnetron.
9. Remove the four mounting screws from the magnetron. **NOTE:** Support the magnetron with one hand while you remove the screws with the other so that the magnetron does not fall as you remove it.
10. Mount the magnetron thermal fuse to the new magnetron with its two mounting screws.
11. Position the new magnetron so that the magnetron thermal fuse faces the front of the oven, and mount the magnetron to the base of the chassis with its four mounting screws. Make sure that you tighten the screws securely.
12. Reassemble the microwave oven.



# REMOVING THE HIGH VOLTAGE RECTIFIER AND THE HIGH VOLTAGE CAPACITOR

## **WARNING**

### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

**CAUTION:** Because of the weight and size of the microwave oven, two people are required to safely move and install it. Failure to do so could result in personal injury.

1. Disconnect the electrical supply to the microwave oven.
2. Refer to page 2-28 for accessing the high voltage components.

## **WARNING**

### **Personal Injury Hazard**

Disconnect from power supply before servicing. Discharge the capacitor using a 20,000-ohm discharge resistor, or an insulated plastic-handle screwdriver to short across the capacitor terminals.

3. Discharge the high-voltage capacitor.
4. Unplug the wire connector going to the line fuse.
5. Remove the fan motor assembly from the unit (see the illustration on page 2-19 for the procedure).

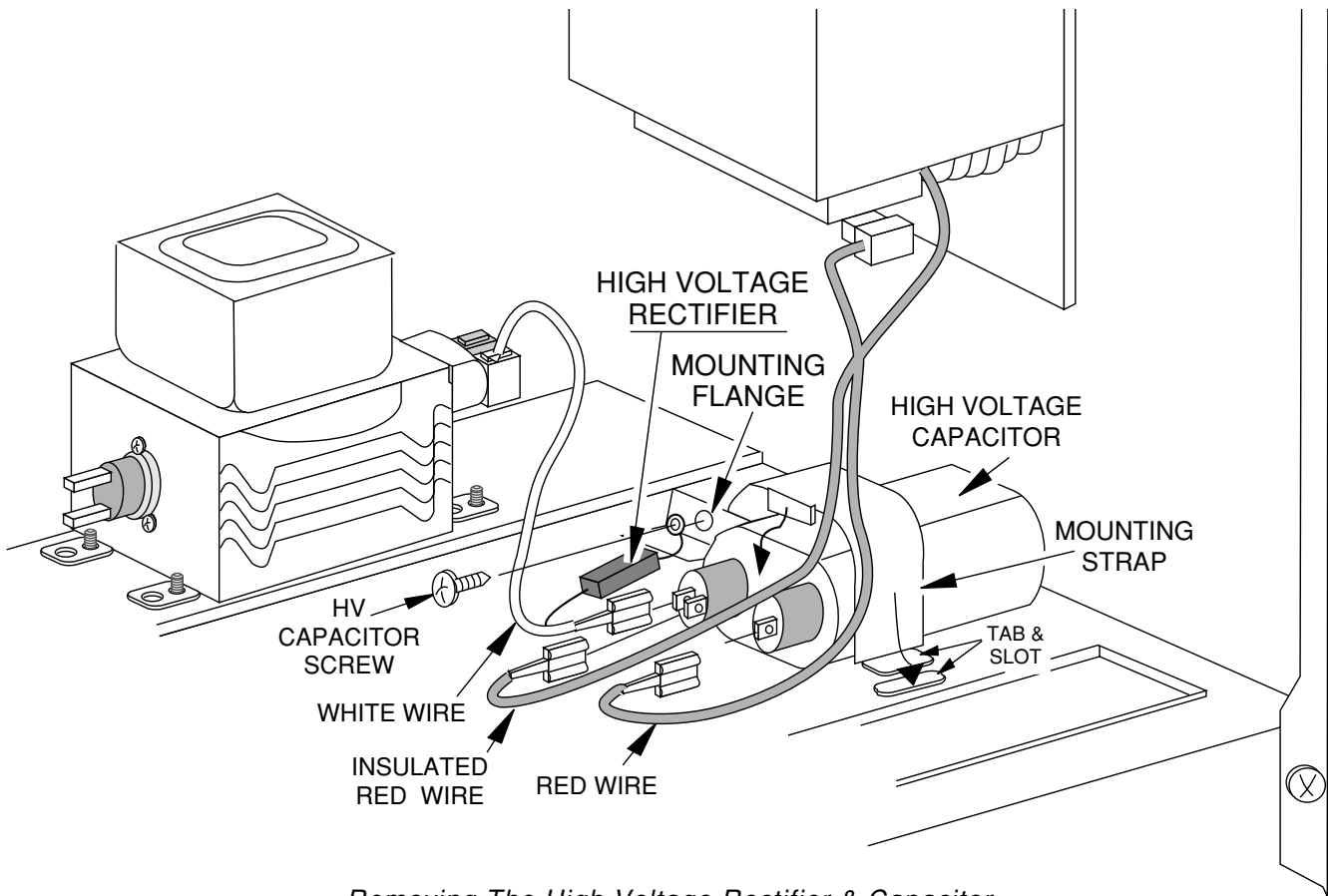
### **Replacing The High Voltage Rectifier**

1. Unplug one end of the high voltage rectifier from the high voltage capacitor terminal.
2. Remove the mounting screw from the capacitor strap flange at the other end of the high voltage rectifier, and remove the rectifier.
3. Mount the eyelet on the end of the high voltage rectifier lead to the capacitor strap flange with its mounting screw.
4. Reassemble the microwave oven.

### **Replacing The High Voltage Capacitor**

1. Unplug the leads going to the high voltage capacitor terminals.
2. Remove the capacitor mounting strap screw, then remove the old capacitor.
3. Position the new high voltage capacitor with the round blister (between the leads), at the top, and loosely mount it to the chassis with the capacitor mounting strap and the mounting screw you removed in the previous step. Make sure that the flange on the strap is against the front edge of the capacitor, and tighten the screw just enough to hold the capacitor in place.
4. Reassemble the microwave oven.





*Removing The High Voltage Rectifier & Capacitor*

## REMOVING THE HIGH VOLTAGE TRANSFORMER

### **! WARNING**

#### **Personal Injury Hazard**

Disconnect from the electrical supply before servicing the unit. Failure to do so could result in death or electrical shock.

**CAUTION:** Because of the weight and size of the microwave oven, two people are required to safely move and install it. Failure to do so could result in personal injury.

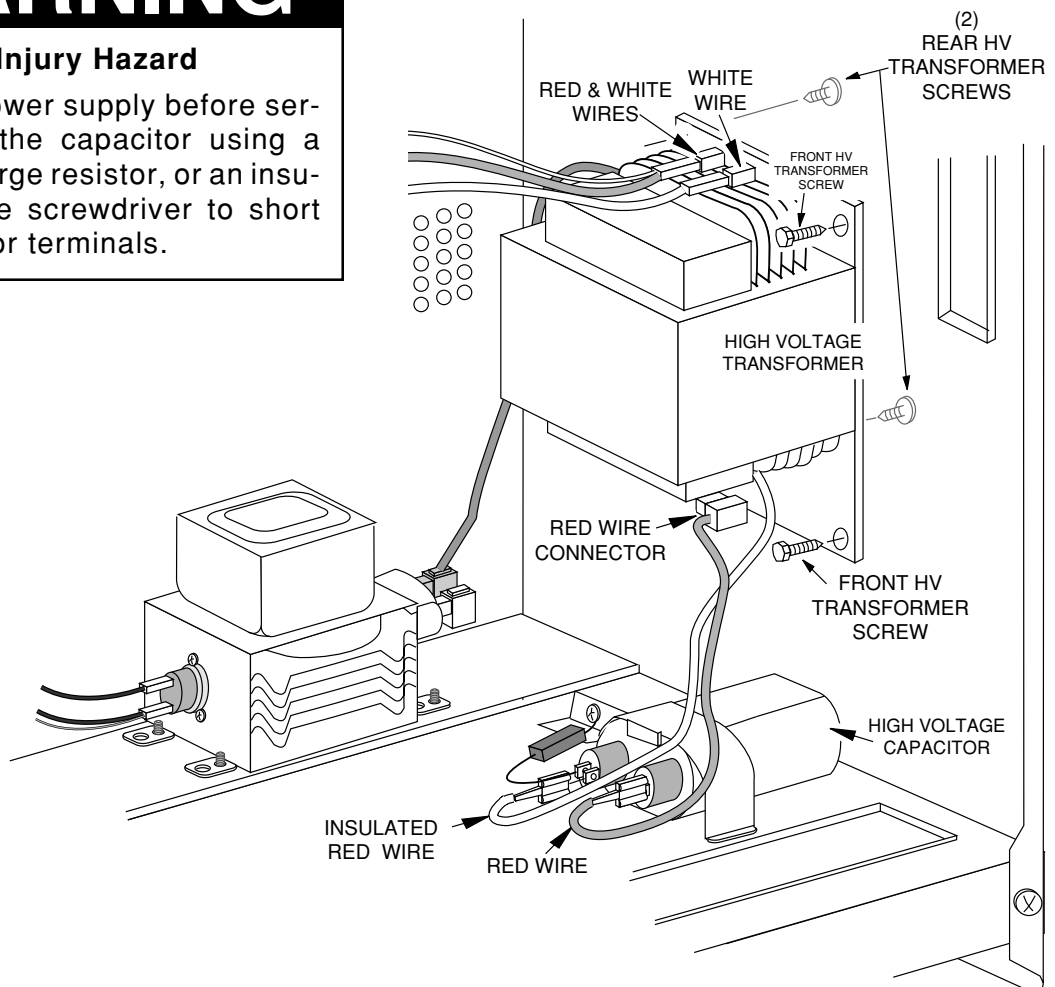
1. Disconnect the electrical supply to the microwave oven.
2. Refer to page 2-28 for accessing the high voltage components.

### **! WARNING**

#### **Personal Injury Hazard**

Disconnect from power supply before servicing. Discharge the capacitor using a 20,000-ohm discharge resistor, or an insulated plastic-handle screwdriver to short across the capacitor terminals.

3. Discharge the high voltage capacitor.
4. Unplug the wire connector going to the line fuse.
5. Remove the fan motor assembly from the unit (see the illustration on page 2-19 for the procedure).
6. Unplug the five high-voltage transformer wire connectors.
7. Remove the four mounting screws from the transformer. **NOTE:** Support the transformer with one hand while you remove the screws with the other so that the transformer does not fall, as you remove it.
8. Mount the new high voltage transformer to the rear panel and then reassemble the microwave oven.



# COMPONENT DESCRIPTION & TESTING

## IMPORTANT SAFETY INSTRUCTIONS

### CAUTION

#### Warning To Service Technicians!

To avoid possible exposure to microwave radiation or energy, visually check the oven for damage to the door and door seal before operating any oven. Use a microwave survey meter to check the amount of leakage before servicing. In the event the R.F. leakage exceeds 4 mW/cm at 5 cm, appropriate repair must be made before continuing to service the unit. Check interlock function by operating the door latch. The oven cook cycle should cut off before the door can be opened.

The door and latching assembly contains the radio frequency energy within the oven. The door is protected by three safety interlock switches. Do not attempt to defeat them.

#### **UNDER NO CIRCUMSTANCES SHOULD YOU TRY TO OPERATE THE OVEN WITH THE DOOR OPEN.**

- Proper operation of microwave ovens requires that the magnetron be properly assembled to the waveguide and cavity. Never operate the magnetron unless it is properly installed.
- Be sure the “RF” seal is not damaged and is assembled around the magnetron dome properly when installing the magnetron.
- Routine service safety procedures should be exercised at all times.
- Untrained personnel should not attempt service without a thorough review of test procedures and safety information contained in this manual.

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

- A. Do not operate or allow the oven to be operated with the door open.
- B. Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source and make repairs as necessary.
  1. Interlock Operation
  2. Proper Door Closing
  3. Seal and Sealing Surfaces (Arcing, Wear and Other Damage)
  4. Damage to or Loosening of Hinges and Latches
  5. Evidence of Dropping or Abuse
- C. Before turning on the microwave power for any service test or inspection within the microwave generating components, check the magnetron, wave guide or transmission line and cavity for proper alignment.
- D. Any defective or misadjusted components in the interlock, monitor, door seal and microwave generation and transmission system shall be repaired or adjusted by procedures described in the Basic Service Manuals for the specific microwave oven being serviced before the oven is released to the owner.
- E. A microwave leakage check to verify compliance with Federal Performance Standards 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.

KitchenAid microwave ovens have a monitoring system designed to assure proper operation of the safety interlock systems.

The interlock monitor switch will immediately cause the oven fuse to blow if the door is opened and the primary door interlock switch and/or the secondary interlock switch contacts fail in a closed position.

**CAUTION: REPLACE BLOWN FUSE WITH 15 AMPERE CLASS H FUSE ONLY.**

Test the upper and lower door interlock switches, cook relay and interlock monitor switch (middle switch) for proper operation as described in the component test procedures, before replacing the blown oven fuse.

**DO NOT ATTEMPT TO REPAIR STICKING CONTACTS OF ANY INTERLOCK SWITCH, SAFETY SWITCH OR COOK (LATCH) RELAY. REPLACE THE SWITCHES AND RELAY.**

Any indication of sticking contacts during component tests requires replacement of that component to assure reliability of the safety interlock system.

**IF THE FUSE IS BLOWN, THE MONITOR, PRIMARY AND SECONDARY INTERLOCK SWITCHES MUST BE REPLACED. BE SURE THEY ARE PROPERLY CONNECTED.**

**Precautions to Avoid Possible Exposure to Excessive Microwave Energy**

**DO NOT** attempt to operate the oven with the door open since open-door operation can result in harmful exposure to microwave energy. It is important not to defeat or tamper with the safety interlocks.

**DO NOT** place any object between the oven front face and the door or allow soil or cleaner residue to accumulate on sealing surfaces.

**DO NOT** operate the oven if it is damaged. It is particularly important that the oven door close properly and that there is no damage to the:

1. Door (bent).
2. Hinges and Latches (broken or loosened).
3. Door Seals and Sealing Surfaces.

**DO NOT** operate the microwave oven if the door window is broken.

The microwave oven should be checked for microwave leakage by qualified service personnel after a repair is made.

The oven should not be adjusted or repaired by anyone except properly qualified service personnel.

**DO NOT** operate the microwave oven with the outer cabinet removed.

## ⚠ CAUTION

- High voltages are present during the cook cycle. Extreme caution should be observed at all times.
- Abrasive cleansers, steel-wool pads, gritty wash cloths, etc. can damage the control panel and the interior and exterior oven surfaces. Use a sponge with mild detergent or paper towels with spray glass cleaner. Apply spray glass cleaner to paper towel. Do not spray directly on oven.
- Before touching any oven component or wiring, always unplug the oven from its power source and discharge the capacitor by using a 20,000 ohm discharge resistor or use an insulated plastic handle screwdriver to short across the capacitor terminals.
- Check that the unit is grounded before troubleshooting. Be careful of the high voltage circuits. Discharge any static charge from your body by touching ground before handling any part of the circuitry on the control board. Electrostatic discharge may damage the control circuit.
- Do not touch oven components or wiring during operation. Attach meter leads with alligator clips when making operational tests.
- For continued protection against radiation emission, replace only with these types of switches:  
Primary (Interlock) Switch: SZM-V16-FA-63 or VP-533A-OF; Secondary (Interlock) Switch: SZM-V01-FA-32; Interlock (Monitor) Switch: SZM-VI6-FA-62 or VP-532A-OF; Oven Lamp Switch: SZM-V6-FA-31 or VP-331A-OD.
- It is neither necessary nor advisable to attempt measurement of high voltage.
- Attaching the adaptor ground terminal to the wall receptacle cover screw does not ground the appliance unless the cover screw is metal and not insulated and the wall receptacle is grounded through the house wiring.

## ⚠ WARNING

- Disconnect the oven from electrical supply before servicing. Failure to do so could result in electrical shock or death.
- Improper use of the grounding plug can result in a risk of electrical shock. Do not, under any circumstance, cut or remove the third ground prong from the power cord plug.

### **Fire, Electrical Shock, Excessive Exposure to Microwave Energy, Personal Injury & Product Damage Hazard**

- Do not block the rear air intake openings or exhaust vents. Allow a few inches of space at the back of the oven where intake openings and exhaust vents are located. Blocking the air intake openings and exhaust vents can cause damage to the oven and poor cooking results. Make sure the microwave oven legs are in place to ensure proper airflow.
- Do not install the oven next to or over a heat source (a cooktop or range).
- Do not install oven in any area where excessive heat and steam are generated. This could cause fire, electrical shock, excessive exposure to microwave energy, other personal injury or damage to the outside of the cabinet.

# THE THERMAL FUSES

There are three thermal fuses in the OTR Microwave Oven. They are: the magnetron thermal fuse, the cavity thermal fuse, and the base thermal fuse. The magnetron and cavity thermal fuses are located inside the high-voltage section of the oven. These two thermal fuses are normally-closed, and will open at a set temperature to disable the oven. Both of these fuses are resettable.

The base thermal fuse is located directly behind the control panel. It is a normally-open fuse that, when closed, activates the blower motor at a low speed.

**POSSIBLE CUSTOMER COMPLAINT:**

The unit turns on by itself.

Magnetron Thermal Fuse

Opens @ 302°F/150°C

Resets @ 140°F/60°C

Cavity Thermal Fuse

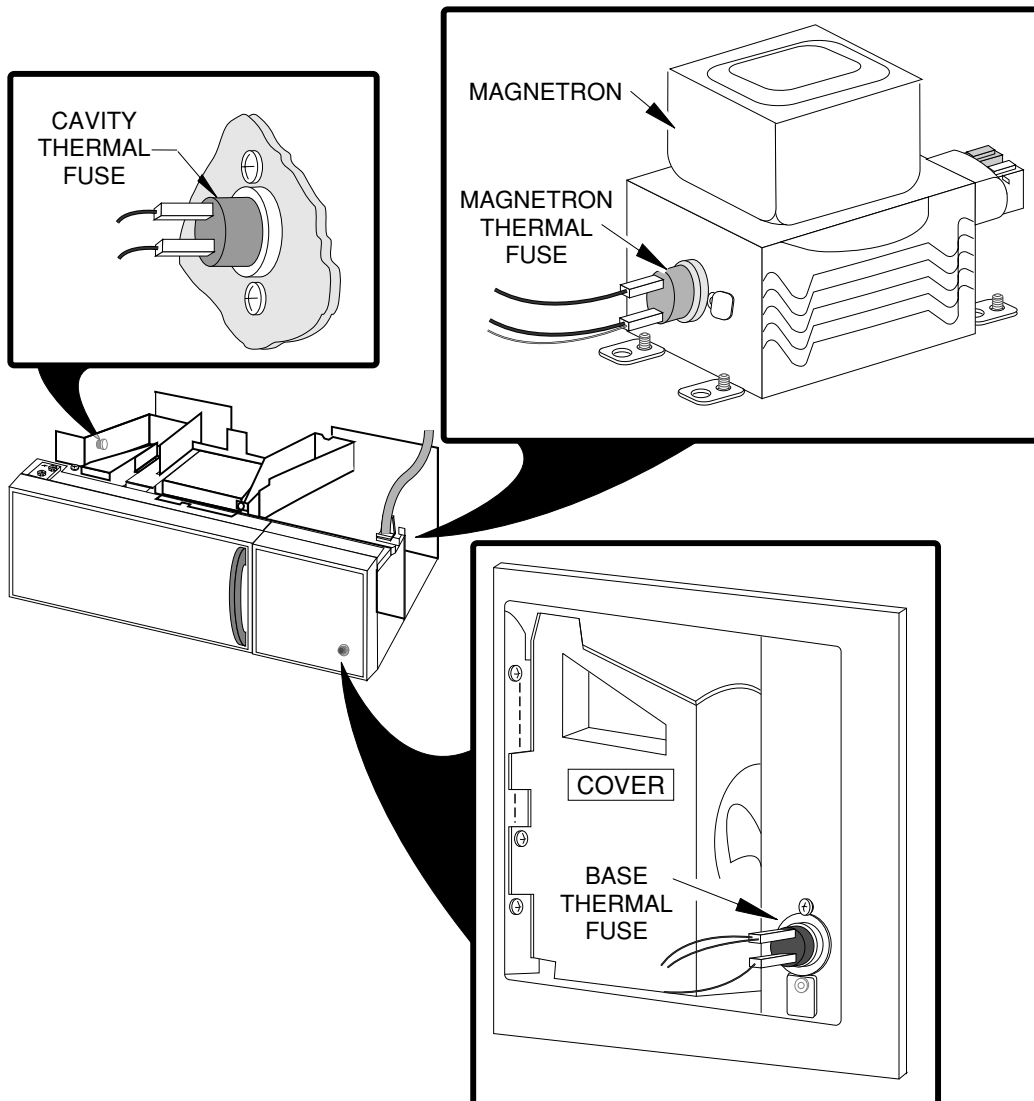
Opens @ 230°F/110°C

Resets @ 140°F/60°C

Base Thermal Fuse

Closes @ 133°F/56°C

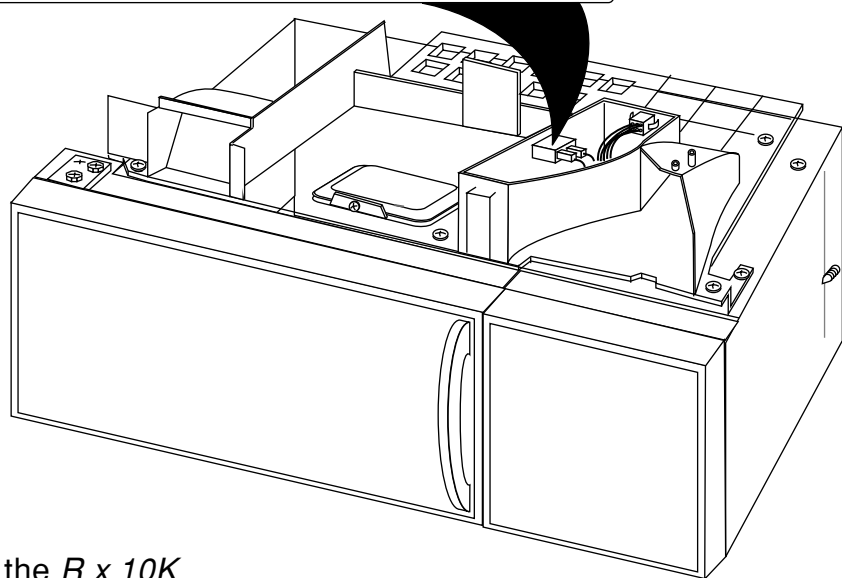
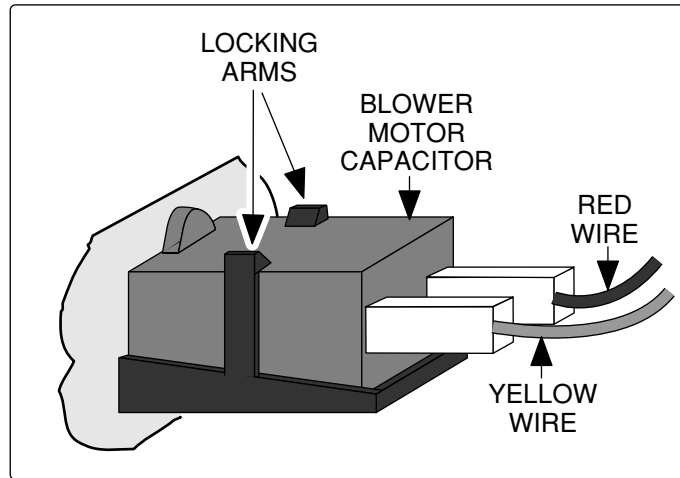
Resets @ 104°F/40°C



## THE BLOWER MOTOR CAPACITOR

The blower motor capacitor is located directly behind the control panel. It is in use any time the blower (vent) motor is operating. The ca-

pacitor helps to maintain a constant voltage to the blower motor so that it runs more efficiently.



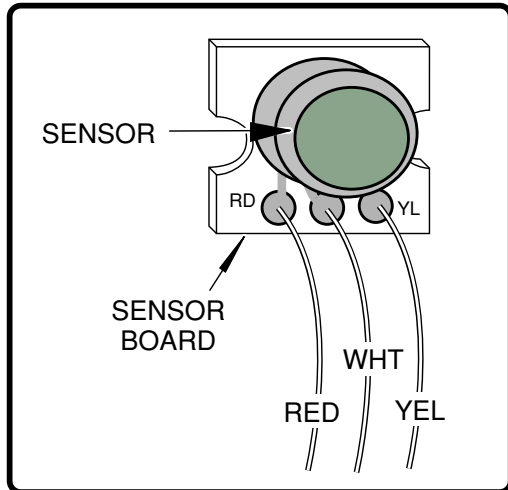
### TESTING

1. Set the ohmmeter to the  $R \times 10K$  scale.
2. Measure across the capacitor terminals.

The ohmmeter should indicate several ohms, then gradually return to infinity.

## THE GAS SENSOR

The gas sensor is used during the “Sensor Cook” operation of the oven. It is located above the oven and is mounted on the left side of the sensor cover. The sensor consists of two circuits housed on a small microcomputer board that is supplied with a current to keep it heated. The sensor heat conductivity will vary,



depending upon the humidity of the oven. Changing humidity conditions, due to the cooking process within the oven cavity, causes a difference in potential between these two circuits. This difference is monitored by the microcomputer during cooking, allowing the microcomputer to determine the proper cook time.

**NOTE:** Always verify that the sensor cover is not obstructed (proper air flow is passing over the sensor), and that the fan motor is working properly, before replacing the gas sensor.

### TESTING

1. Set the ohmmeter to the  $R \times 1$  scale.
2. Remove the 3-pin connector from the control circuit board and measure the resistance between the:
  - a) Red & white wire terminals.  
You should measure  $20 \Omega$  @  $68^\circ\text{F}$ .
  - b) White & yellow wire terminals.  
You should measure infinity.

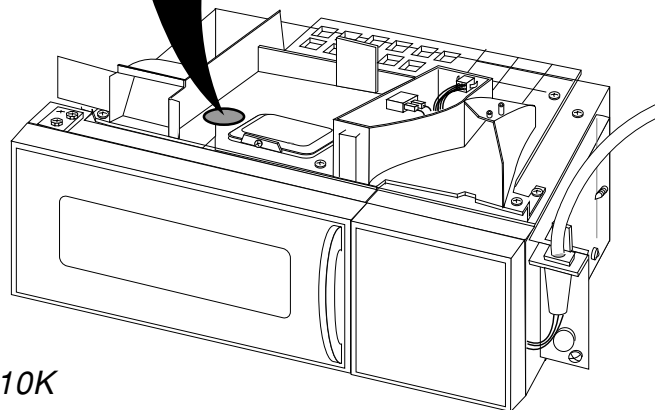
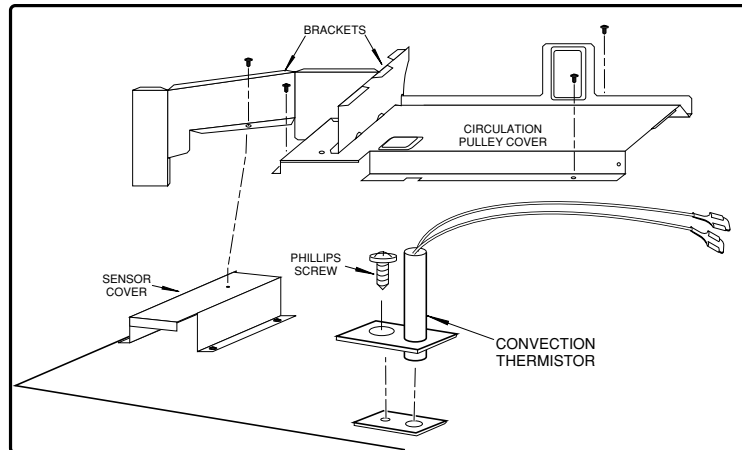


## THE CONVECTION THERMISTOR

The convection thermistor is located under the circulation pulley cover and is used during the convection operation of the oven. When the temperature increases, the resistance of the thermistor decreases. The thermistor resistance is monitored by the microcomputer. As the oven temperature rises and falls, the

thermistor signal going back to the microcomputer causes the heater relay to open and close, and cycles the heating element on and off.

**NOTE:** Verify that the heating element is working correctly before replacing a thermistor.



### TESTING

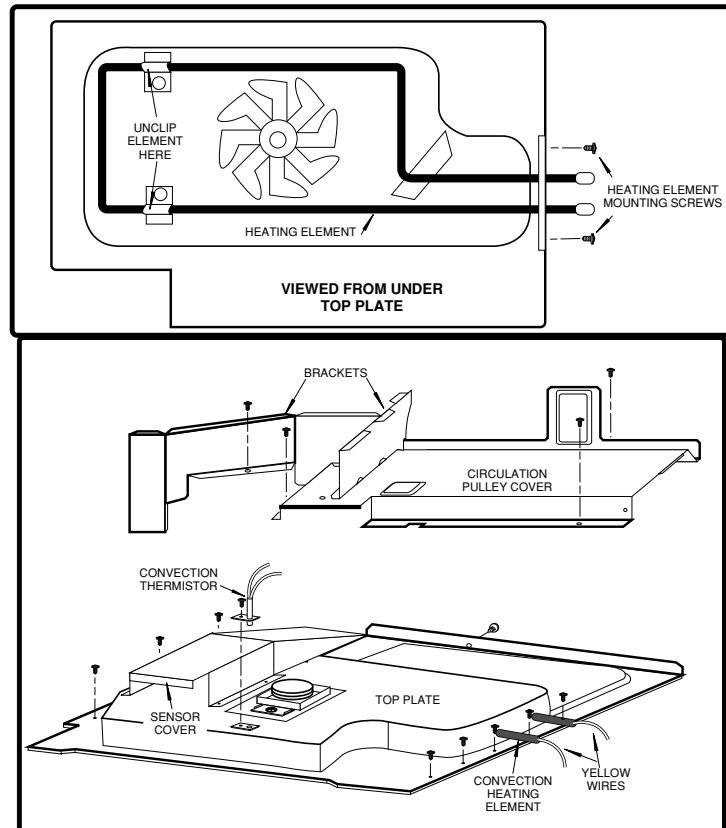
1. Set the ohmmeter to the  $R \times 10K$  scale.
2. Remove the 6-pin connector from the control circuit board and measure across terminals 5 & 6.

You should measure  $155 \text{ k}\Omega$  to  $350 \text{ k}\Omega$  @  $68^\circ\text{F}$ .

# THE CONVECTION HEATING ELEMENT

The 1400-watt convection heating element is located under the circulation pulley cover and the top plate. The heating element heats the air that is distributed into the oven cavity by the convection fan. It operates on 120 VAC and is controlled by the convection thermistor,

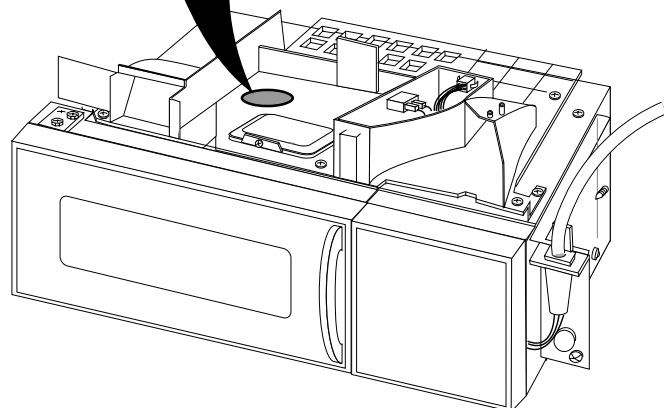
and the heater relay on the microcomputer board. During a convection, or combination cooking cycle, the heater cycles on and off to maintain the programmed cavity temperature. The heating element surrounds the convection fan blade and is not visible through the oven cavity.



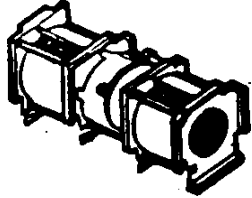
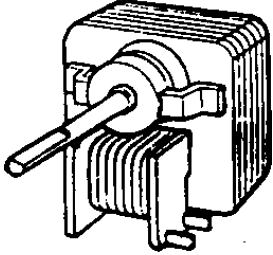
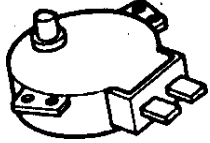
## TESTING

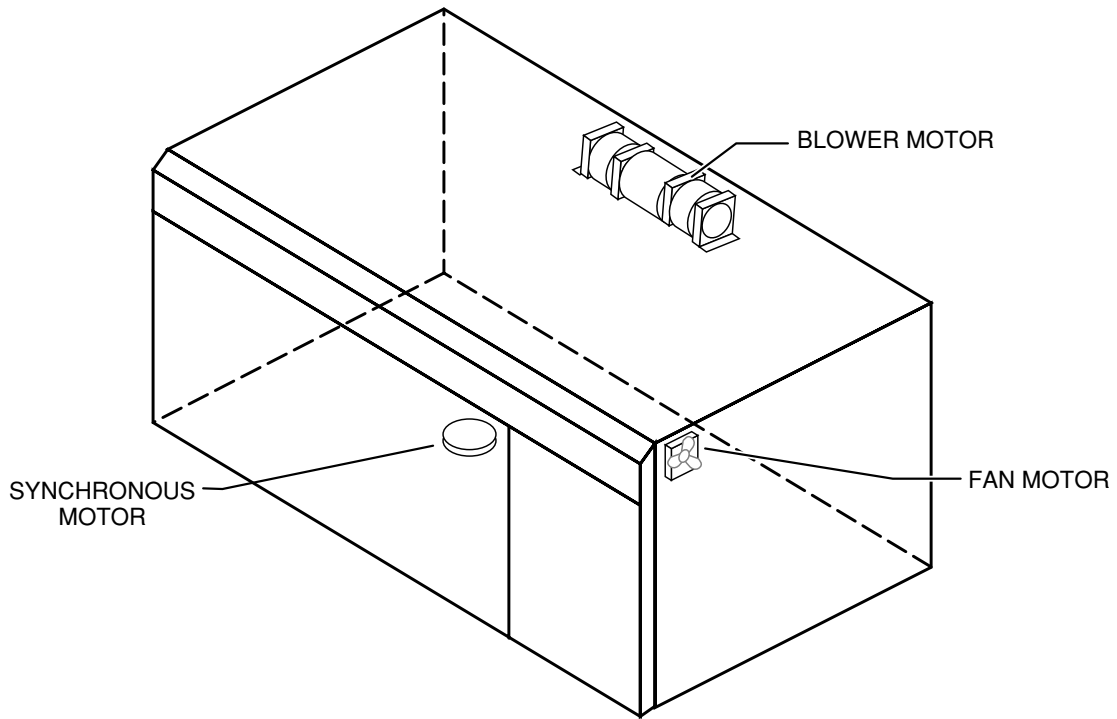
1. Set the ohmmeter to the  $R \times 1$  scale.
2. Measure across the heating element terminals.

You should measure between  $40 \Omega$  and  $90 \Omega @ 68^\circ\text{F}$ .



## MOTORS

	<p><b>Blower Motor</b>—Removes smoke and odors from the kitchen cooking area through outside venting or recirculation.</p>
	<p><b>Fan Motor</b>—Cools the magnetron and circulates air through the oven during microwave cooking.</p>
	<p><b>Synchronous Motor</b>—Distributes microwave energy into the oven during microwave cooking.</p>



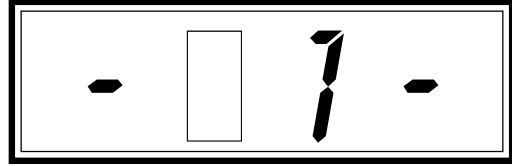
## PROGRAMMING CHECKS

### TOUCH PANEL CONTINUITY TEST

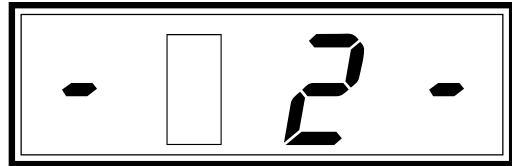
1. Unplug the microwave oven's power supply cord.
2. Open the oven door.
3. Plug the power cord back into the AC receptical. You should see the following display if all of the interlock switches are open:



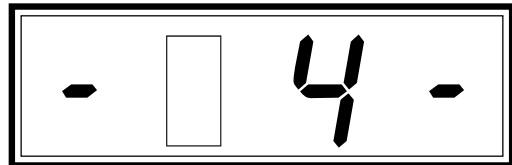
If the sensor is defective, or if the wires are not properly connected, you will see the following display:



If any of the switches are closed, you will see the following display:



If the temperature probe is not plugged into the jack, or if the wires are not properly connected, you will see the following display:



## THINGS TO KNOW

### COMBINATION BAKE

The combination bake temperature range is 150°F to 450°F. The combination bake time will be limited to a maximum of 199-minutes, 99-seconds.

#### Access To The Preheat Feature

After the cook time is entered, the **COMBINATION BAKE** keypad must be pressed again within 2-seconds if a preheat is desired.

#### Preheat

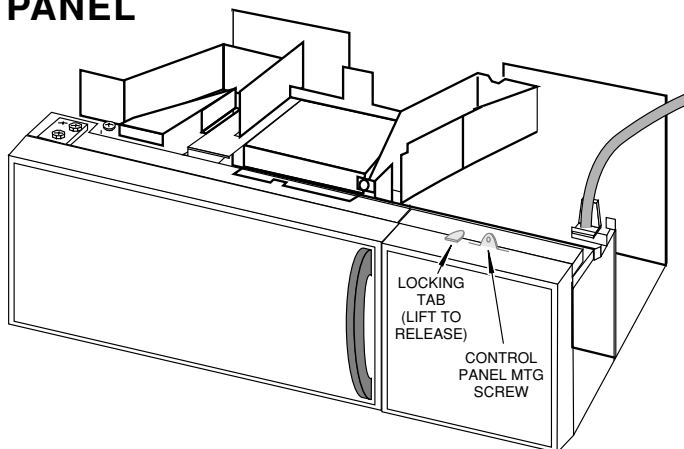
When the **START/enter** keypad is pressed, the *PREHEAT* and *TEMP* display will light, and *LO F* will be displayed until the oven temperature reaches 100°F. After this point is reached, the display will actively show the oven temperature in 5° increments until the “preheat set” temperature is reached.

At that time, the “end of preheat” signal will sound, and the oven temperature will be maintained for 30-minutes, or until the food is placed in the oven and the **START/enter** keypad is pressed.

If the **START/enter** keypad is not pressed within 30-minutes of the “end of preheat” signal, the feature will be terminated.

The “combination bake” cycle will utilize **10% microwave power**, but will not be added until the preheat temperature is reached, if programmed.

### REMOVING THE CONTROL PANEL



### COMBINATION ROAST

The combination roast temperature range is 150°F to 450°F. The combination roast time will be limited to a maximum of 199-minutes and 99-seconds.

#### Access To The Preheat Feature

After the cook time is entered, the **COMBINATION ROAST** keypad must be pressed again within 2-seconds if a preheat is desired.

#### Preheat

When the **START/enter** keypad is pressed, the *PREHEAT* and *TEMP* display will light, and *LO F* will be displayed until the oven temperature reaches 150°F. After this point is reached, the display will actively show the oven temperature in 5° increments until the “preheat set” temperature is reached.

At that time, the “end of preheat” signal will sound, and the oven temperature will be maintained for 30-minutes, or until the food is placed in the oven and the **START/enter** keypad is pressed.

If the **START/enter** keypad is not pressed within 30-minutes of the “end of preheat” signal, the feature will be terminated.

The “combination roast” cycle will utilize **20% microwave power**, but will not be added until the preheat temperature is reached, if programmed.

### THE TEMPERATURE PROBE

The temperature probe will be inoperative during the “broil” operation, but may be programmed for all other “combination” features.

## CHARTS

PROBLEM	POSSIBLE CAUSE	TEST PROCEDURE OR CORRECTION
Line fuse blows when power cord is plugged into a wall receptacle.	Shorted wire in power cord, wiring harness, or overload circuit.	<ol style="list-style-type: none"> <li>1. Check wiring with ohmmeter for continuity.</li> <li>2. Use separate 15- to 20-ampere circuit.</li> </ol>
Oven will not operate.	<ol style="list-style-type: none"> <li>1. No power at wall plug.</li> <li>2. Open wire in power cord or wiring harness.</li> <li>3. Control board.</li> <li>4. Line fuse.</li> <li>5. Thermal fuses.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check fuse or breaker box.</li> <li>2. Check wiring with ohmmeter for continuity.</li> <li>3. Check board.</li> <li>4. Check fuse.</li> <li>5. Check fuse.</li> </ol>
Oven cavity light will not turn on.	<ol style="list-style-type: none"> <li>1. Bulb is burned out.</li> <li>2. Lamp socket.</li> <li>3. Oven lamp switch.</li> <li>4. Open wiring between the above components.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace bulb.</li> <li>2. Check lamp socket.</li> <li>3. Check control board.</li> <li>4. Repair open wire.</li> </ol>
Oven will not go into "Cook" cycle when the door is closed.	<ol style="list-style-type: none"> <li>1. Control board.</li> <li>2. Line fuse and/or thermal fuses.</li> <li>3. Interlock switches.</li> <li>4. Open wiring between the above components.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check control board.</li> <li>2. Check line fuse and/or thermal fuses.</li> <li>3. Check interlock switches.</li> <li>4. Repair open wire.</li> </ol>
Oven goes into "Cook" cycle, but does not complete the cycle. Heat is produced in the oven load.	<ol style="list-style-type: none"> <li>1. Control board.</li> <li>2. Low line voltage (should be at least 108-volts AC).</li> <li>3. Thermal fuse.</li> <li>4. Thermal fuse on magnetron.</li> <li>5. Circuit is overloaded.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check control board.</li> <li>2. Use separate 15- to 20-ampere circuit.</li> <li>3. Check thermal fuse.</li> <li>4. Check thermal fuse on magnetron.</li> <li>5. Use separate 15- to 20-ampere circuit.</li> </ol>

PROBLEM	POSSIBLE CAUSE	TEST PROCEDURE OR CORRECTION
Little or no heat is produced in the oven load.	<ol style="list-style-type: none"> <li>1. High voltage transformer.</li> <li>2. Rectifier diode.</li> <li>3. High voltage capacitor.</li> <li>4. Magnetron.</li> <li>5. Power selector.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the high voltage transformer.</li> <li>2. Check the high voltage rectifier diode.</li> <li>3. Check the high voltage capacitor.</li> <li>4. Check the magnetron.</li> <li>5. Check the power selector.</li> </ol>
Oven fuse blows when the door is opened.	<ol style="list-style-type: none"> <li>1. Primary interlock switch.</li> <li>2. Shorted wire harness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check primary interlock switch.</li> <li>2. Repair wiring.</li> </ol>
Oven lamp goes on with the door open, but the light goes out when the door is closed with the control on.	<ol style="list-style-type: none"> <li>1. Secondary interlock.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check secondary interlock.</li> </ol>
The power source fuse blows when the door starts to open.	<ol style="list-style-type: none"> <li>1. High voltage transformer.</li> <li>2. Secondary circuit of the high voltage transformer is shorted.</li> <li>3. High voltage capacitor is shorted.</li> <li>4. Shorted wiring between the above components.</li> <li>5. Blower motor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the high voltage transformer.</li> <li>2. Check the high voltage transformer.</li> <li>3. Check the high voltage capacitor.</li> <li>4. Use an ohmmeter to check continuity, and repair wiring.</li> <li>5. Check blower motor.</li> </ol>
Fan motor will not operate.	<ol style="list-style-type: none"> <li>1. Fan motor.</li> <li>2. Open or loose wiring in circuit to fan motor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check fan motor.</li> <li>2. Use ohmmeter to check continuity, and repair wiring.</li> </ol>

<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>TEST PROCEDURE OR CORRECTION</b>
Blower motor will not operate.	<ol style="list-style-type: none"> <li>1. Blower motor.</li> <li>2. Control board.</li> <li>3. Open or loose wiring in circuit to blower motor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check blower motor.</li> <li>2. Check control board.</li> <li>3. Use ohmmeter to check continuity, and repair wiring.</li> </ol>
Cooktop lamps do not come on.	<ol style="list-style-type: none"> <li>1. Bulb burned out.</li> <li>2. Control board.</li> <li>3. Lamp sockets.</li> <li>4. Open wiring between the above components.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check bulb.</li> <li>2. Check control board.</li> <li>3. Check lamp sockets.</li> <li>4. Use ohmmeter to check continuity, and repair wiring.</li> </ol>
Oven heats too fast.	<ol style="list-style-type: none"> <li>1. Line voltage is too high (should be between 108- and 132-volts AC).</li> <li>2. Control board.</li> </ol>	<ol style="list-style-type: none"> <li>1. Use separate 15- to 20-ampere circuit.</li> <li>2. Check control board.</li> </ol>
Oven cooks too slowly.	<ol style="list-style-type: none"> <li>1. Line voltage is too low (should be between 108- and 132-volts AC).</li> <li>2. User error.</li> <li>3. Magnetron.</li> </ol>	<ol style="list-style-type: none"> <li>1. Use separate 15- to 20-ampere circuit.</li> <li>2. Instruct user regarding proper cooking times.</li> <li>3. Check magnetron.</li> </ol>
Speaker does not sound at conclusion of cooking sequences, or after elapsed time in Minute Timer.	<ol style="list-style-type: none"> <li>1. Open connection or failed speaker.</li> <li>2. Tones are programmed out.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check speaker.</li> <li>2. Program tones back in.</li> </ol>
Oven cooks on "HIGH" when a lower cook power is selected.	<ol style="list-style-type: none"> <li>1. Shorted relay.</li> <li>2. Control board.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the control board.</li> <li>2. Check control board.</li> </ol>
Oven runs but will not cook.	<ol style="list-style-type: none"> <li>1. Secondary interlock switch.</li> <li>2. Relay 2 is open.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check secondary interlock switch.</li> <li>2. Check control board.</li> </ol>



PROBLEM	POSSIBLE CAUSE	TEST PROCEDURE OR CORRECTION
Console will not display data, or has incorrect data.	<ol style="list-style-type: none"> <li>1. No power at wall plug.</li> <li>2. Open line fuse.</li> <li>3. Thermal fuse.</li> <li>4. Thermal fuse on magnetron.</li> <li>5. Interlock safety switches.</li> <li>6. Control board.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check fuse or breaker box.</li> <li>2. Replace line fuse.</li> <li>3. Check thermal fuse.</li> <li>4. Check magnetron thermal fuse.</li> <li>5. Check interlock safety switches. Replace, if defective.</li> <li>6. Check control board.</li> </ol>
Erratic console display during operation.	<ol style="list-style-type: none"> <li>1. Magnetron.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check magnetron.</li> </ol>
Display continues to count down when door is open during a "Cook" cycle.	<ol style="list-style-type: none"> <li>1. Secondary interlock switch.</li> <li>2. Control board.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check secondary interlock switch. Replace, if defective.</li> <li>2. Check control board.</li> </ol>
Oven operates without a "Start" command.	<ol style="list-style-type: none"> <li>1. Defective control board.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace control board.</li> </ol>

## CHECKING THE MICROWAVE POWER OUTPUT

Use the following procedure to checkout the operation of the microwave oven.

1. Fill a 1-cup (260 ml) glass measuring cup with warm water (between 90°F/32°C and 100°F/38°C).
2. Open the oven door, place the container of water into the oven, and close the door.
3. Press the COOK keypad, and set the cooking time for 4-minutes.
4. Press the START/ENTER keypad. The oven cavity light should come on, the cooking cycle should begin, and the timer should count down in "seconds" from 4:00.
5. After approximately 2-1/2 to 3-minutes, the water should start to boil. If more than 3-minutes is required, it could mean that the operating voltage is low, (below 110-volts), or it is not functioning properly and may need to be checked by a qualified technician.

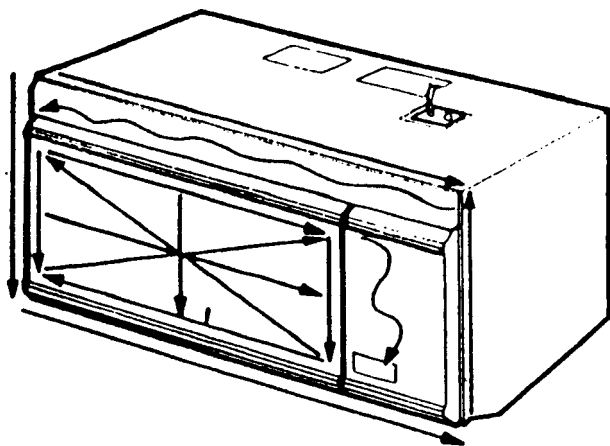
# CHECKING FOR MICROWAVE ENERGY LEAKAGE

## CAUTION

On every service call, checks for microwave energy emission must be made according to the following manner.

1. Remove the cooking rack from the oven cavity, if the microwave oven is so equipped.
2. Place a 275 ML (9. oz.) glass of water in the center of the oven bottom.
3. Select "HIGH" cook power, turn the microwave oven on, and test for R.F. leakage using the following pattern:
  - a) Check around the cabinet at the front.
  - b) Check around the door.
  - c) Check across the console panel.
  - d) Check horizontally across the door
  - e) Check vertically across the door.
  - f) Check diagonally across the door.
  - g) Check across the air vents.
  - h) Check across the rear air vent.

NOTE: The scan speed is one-inch-per-second.



## EQUIPMENT

- Electromagnetic energy leakage monitor (NARDA 8100B, HOLADAY H1501).
- 6100 cc glass beaker.
- Glass thermometer 100°C or 212°F.

When checking for R.F. leakage, use an approved R.F. measuring device to assure less than 4 mw/cm<sup>2</sup> emission at 5 cm distance with a maximum scan rate of 2.5 cm/second, in compliance with U.S. Government Department of Health, Education and Welfare 21 CFR1030, performance Standard for Microwave Ovens.

A properly operating door and seal assembly will normally register small emissions, but they must be no greater than 4 mw/cm<sup>2</sup> to allow for measurement uncertainty.

NOTE: Enter leakage readings in the space BEFORE and AFTER on the service document.

All microwave ovens exceeding the emission level of 4 mw/cm<sup>2</sup> must be reported to Dept. of Service for microwave ovens immediately and the owner should be told not to use the microwave oven until it has been repaired completely.

If a microwave oven is found to operate with the door open, report to Dept. of Service, the manufacturer, and CDRH\* immediately. Also tell the owner not to use the oven.

The interlock monitor switch acts as the final safety switch protecting the customer from microwave radiation. If the interlock monitor switch operates and opens the line fuse, the interlock switches have failed, and you must replace all of them (primary and secondary interlock switches, and the monitor switch), because their contacts may be melted and welded together.

All repairs must be performed so that microwave energy emissions are minimal.

\* CDRH: Center for Device and Radiological health, food, and drug administration.

## MAKING THE MEASUREMENTS

### Measuring The Oven With The Cabinet Installed

#### MEASUREMENT NOTES:

- When measuring for leakage, use the 2" (5 cm ) spacer that is provided with the probe.
- Leakage with the outer panels removed should be less than 5 mW/cm.sq.
- Leakage for a fully assembled oven (before the lamp switch primary is interrupted) with the door opened slightly, should be less than 2 mW/cm.sq.
- Do not exceed the meter's full-scale deflection.
- Do not move the test probe along the measuring surfaces faster than 1-inch-per-second (2.5 cm/sec), otherwise a false reading will occur.
- When testing near a corner of the door, keep the probe perpendicular to the surface, and move it horizontally without touching the surfaces, otherwise a false reading will occur.
- Hold the test probe by its gripping surface only, otherwise a false reading will occur.

To measure for oven leakage:

1. Pour 275 ( $\pm 25$ cc) of water into a 600 cc graduated beaker.
2. Place the beaker into the center of the microwave oven.
3. Set the energy leakage monitor to 2,450 MHz, and use it according to the manufacturer's recommended test procedure to obtain the correct results.
4. Measure the microwave radiation with an electromagnetic radiation monitor. Hold the probe perpendicular to the surface being measured, and measure around the door viewing window, the exhaust opening, and air inlet openings.
5. Operate the oven at its maximum energy output, and take the measurements.

### Measuring The Oven With The Cabinet Removed

When the magnetron has been replaced, use the previous procedure, and measure for microwave energy leakage after all of the necessary components are replaced or adjusted, and before the cabinet is installed. Take special care to measure around the magnetron and the waveguide. **WARNING: Be careful not to contact any of the high voltage components when making measurements with the cabinet removed.**

## MEASURING MICROWAVE POWER OUTPUT USING THE IEC-705 RATING STANDARD

When determining the microwave oven's power output using the IEC-705 rating standard, the following conditions must be met:

- When making microwave power output measurements, the oven is supplied with its rated line voltage, and operated at its maximum power output setting with a load of 1000 ( $\pm 5$ ) cc of potable water.
- The water is contained in a cylindrical borosilicate glass vessel having a maximum material thickness of  $\frac{1}{8}$ " and an outside diameter of approximately 7.6".
- The oven and the empty vessel are at ambient temperature prior to the start of the test.
- The initial temperature of the water is  $10^{\circ}\text{C} \pm 2^{\circ}$  ( $50^{\circ}\text{F}$ ). It is measured immediately before the water is added to the vessel. After addition of the water to the vessel, the load is immediately placed on the center of the shelf, which is in the lowest position, and the microwave power switched on.

- The time (in seconds) for the temperature of the water to rise by a value of  $10^{\circ}\text{C} \pm 2^{\circ}$  is measured. The initial and final water temperatures are selected so that the maximum difference between the final water temperature, and the ambient temperature, is  $5^{\circ}\text{C}$ .
- The microwave power output (in watts) is calculated, using the following formula:

$$P = \frac{(L) 4187 (\Delta T)}{T1}$$

L = time (in seconds).

P = microwave output power.

( $\Delta T$ ) = temperature rise.

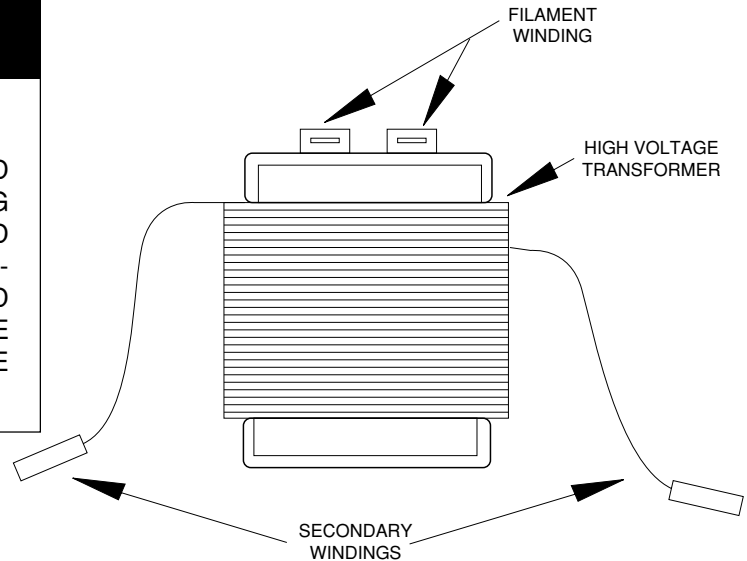
- Microwave power output is measured with the oven operating at full power. The magnetron filament heat-up time (approximately 2-seconds) is not included.
- The water is stirred to equalize the temperature throughout the vessel, prior to measuring the final water temperature.
- Stirring devices and measuring instruments are selected to minimize the addition or removal of heat.

## COMPONENT TESTING

# ! WARNING

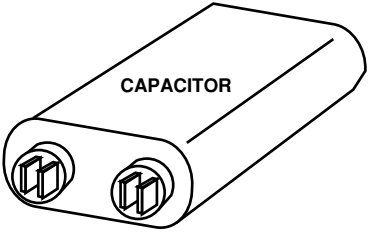
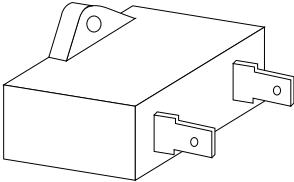
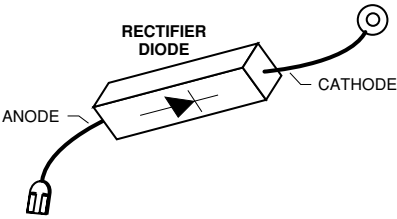
### ELECTRICAL SHOCK HAZARD

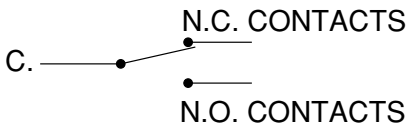
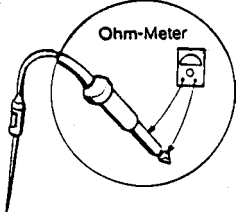
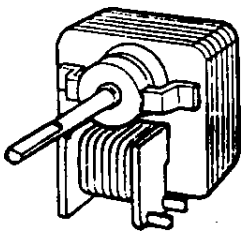
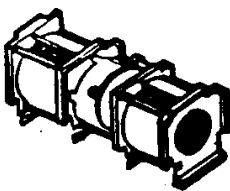
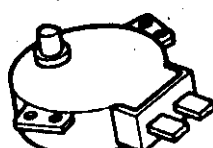
DISCONNECT THE POWER SUPPLY CORD FROM THE WALL OUTLET WHEN REMOVING THE CABINET FROM THE OVEN. PROCEED WITH THE TESTS ONLY AFTER DISCHARGING THE HIGH VOLTAGE CAPACITOR, AND REMOVING THE WIRE LEADS FROM THE PRIMARY WINDING OF THE HIGH VOLTAGE TRANSFORMER.



### TEST CHARTS

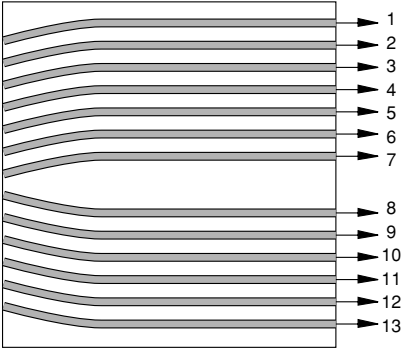
COMPONENT	TEST PROCEDURE	RESULT
High-Voltage Transformer (with wire leads unplugged).	<ol style="list-style-type: none"> <li>Set the ohmmeter to the <math>R \times 1</math> scale, and measure the:                             <ol style="list-style-type: none"> <li>Primary winding.</li> <li>Secondary winding.</li> <li>Filament winding</li> </ol> </li> <li>Set the ohmmeter to its <math>R \times 1000</math> scale, and measure the:                             <ol style="list-style-type: none"> <li>Primary to ground.</li> <li>Filament to ground.</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>0.3 to 0.5 ohms.</li> <li>65 to 120 ohms.</li> <li>0 ohms</li> </ol> <ol style="list-style-type: none"> <li>Normal = infinity.</li> <li>Normal = infinity.</li> </ol>
Magnetron (with wire leads unplugged). NOTE: A microwave energy leakage test must always be performed when the oven is serviced for any reason.  NOTE: Replace the magnetron if the checks and all of the high voltage component tests are good, but the unit still does not heat a load.	<ol style="list-style-type: none"> <li>Set the ohmmeter to the <math>R \times 1</math> scale, and measure the:                             <ol style="list-style-type: none"> <li>Filament terminal.</li> </ol> </li> <li>Set the ohmmeter to the <math>R \times 1000</math> scale and measure the:                             <ol style="list-style-type: none"> <li>Filament winding to chassis.</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>Normal readings - Less than <math>1 \Omega</math>.</li> </ol> <ol style="list-style-type: none"> <li>Normal = infinity.</li> </ol>

COMPONENT	TEST PROCEDURE	RESULT
<p>High-Voltage Capacitor</p> 	<p><b>Terminal-To-Terminal</b> Set the ohmmeter to the <math>R \times 10 k</math> scale, and measure the resistance across the capacitor terminals.</p>	<p>a) Normal - The meter indicates several ohms, then gradually returns to infinity. b) Abnormal - The meter indicates infinity, or zero ohms (a short) immediately.</p>
	<p><b>Terminal-To-Case</b> Set the ohmmeter to the <math>R \times 1</math> scale, and measure the resistance between each terminal and the case.</p>	<p>a) Normal - The meter indicates infinity. b) Abnormal - The meter indicates zero ohms, or a short.</p>
<p>Blower Motor Capacitor</p> 	<p><b>Terminal-To-Terminal</b> Set the ohmmeter to the <math>R \times 10 k</math> scale, and measure the resistance across the capacitor terminals.</p>	<p>a) Normal - The meter indicates several ohms, then gradually returns to infinity. b) Abnormal - The meter indicates infinity, or zero ohms (a short) immediately.</p>
<p>High-Voltage Rectifier</p> 	<p><b>Forward Continuity</b> Set the ohmmeter to the <math>R \times 1</math> scale, and measure the forward resistance across the rectifier terminals with the (+) lead touching the anode and the (-) lead touching the cathode.</p>	<p>a) Normal - The meter indicates several ohms. b) Abnormal - The meter indicates infinity, or zero ohms (a short).</p>
	<p><b>Reverse Continuity</b> Set the ohmmeter to its highest scale, and measure the reverse resistance across the rectifier terminals with the (+) lead touching the cathode and the (-) lead touching the anode.</p>	<p>a) Normal - The meter indicates infinity. b) Abnormal - The meter indicates infinity, or zero ohms (a short).</p>

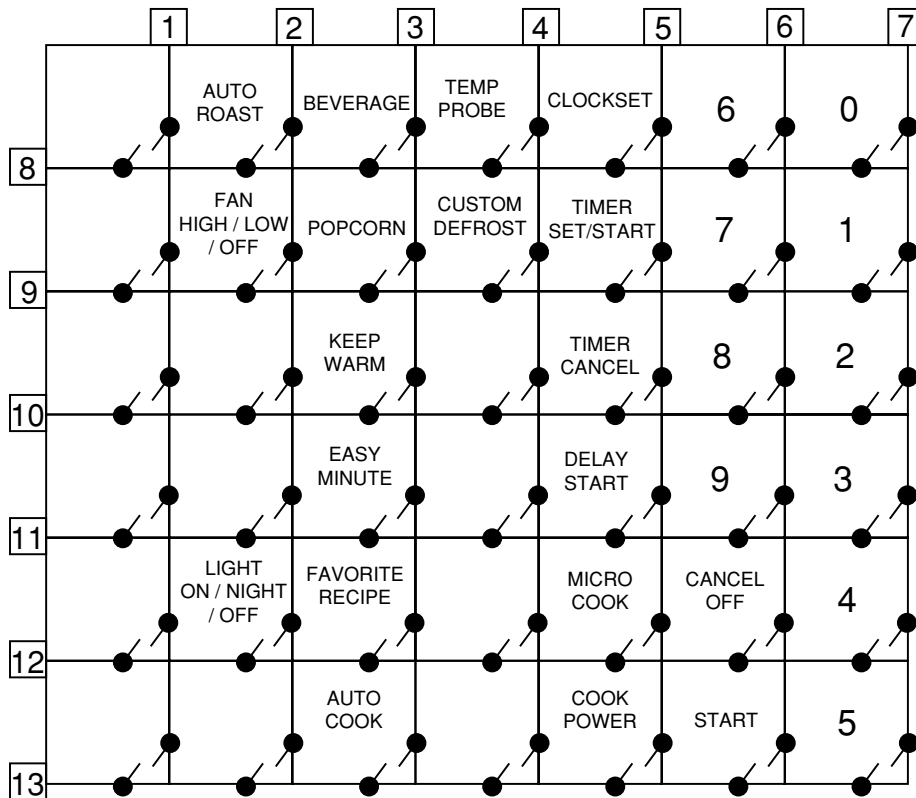
COMPONENT	TEST PROCEDURE	RESULT												
<p>Switches (with wire leads removed). All of the switches are measured in the same manner.</p> 	<p><b>N.O. and C Terminals</b> Set the ohmmeter to the <math>R \times 1</math> scale, and measure the resistance between the normally-open (N.O.) and the common (C) terminals of the switch.</p>	<p>a) Normal - The meter indicates infinity. b) Abnormal - The meter indicates zero ohms (a short).</p>												
	<p><b>N.C. and C Terminals</b> Set the ohmmeter to the <math>R \times 1</math> scale, and measure the resistance between the normally-closed (N.C.) and the common (C) terminals of the switch.</p>	<p>a) Normal - The meter indicates continuity, or zero ohms. b) Abnormal - The meter indicates infinity.</p>												
<p>Temperature Probe</p> 	<p>Set the ohmmeter to the <math>R \times 10 k</math> scale, and measure the temperature probe with the leads positioned at either terminal.</p>	<table border="1"> <thead> <tr> <th>Ambient Temp. (°F)</th> <th>Resistance Value</th> </tr> </thead> <tbody> <tr> <td>60</td> <td>75.24 kΩ (±11 kΩ)</td> </tr> <tr> <td>68</td> <td>62.57 kΩ (±8 kΩ)</td> </tr> <tr> <td>70</td> <td>59.79 kΩ (±8 kΩ)</td> </tr> <tr> <td>80</td> <td>45.80 kΩ (±7 kΩ)</td> </tr> <tr> <td>90</td> <td>36.94 kΩ (±6 kΩ)</td> </tr> </tbody> </table>	Ambient Temp. (°F)	Resistance Value	60	75.24 kΩ (±11 kΩ)	68	62.57 kΩ (±8 kΩ)	70	59.79 kΩ (±8 kΩ)	80	45.80 kΩ (±7 kΩ)	90	36.94 kΩ (±6 kΩ)
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<p>Fan Motor (with leads disconnected).</p> 	<p>Set the ohmmeter to the <math>R \times 1</math> scale, and measure across the terminals.</p>	<p>a) Fan Motor - Normal = 30 to 45 ohms.</p>												
<p>Blower Motor (with leads disconnected)</p> 	<p>Set the ohmmeter to the <math>R \times 1</math> scale, and measure the:</p> <ul style="list-style-type: none"> <li>a) High speed windings (blue and black wires).</li> <li>b) Low speed windings (blue and white wires).</li> </ul>	<ul style="list-style-type: none"> <li>a) Normal - High speed: 25 to 45 ohms.</li> <li>b) Normal - Low speed: 45 to 65 ohms.</li> </ul>												
<p>Synchronous Motor (with leads disconnected)</p> 	<p>Set the ohmmeter to the <math>R \times 1000</math> scale, and measure the resistance between the motor terminals.</p>	<ul style="list-style-type: none"> <li>a) Normal - 3 k to 4 k ohms.</li> <li>b) Abnormal - Infinite or zero ohms.</li> </ul>												

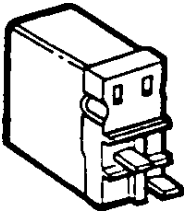
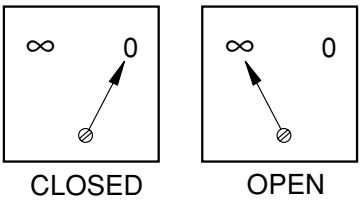
COMPONENT	TEST PROCEDURE	RESULT
Convection Thermistor	Set the ohmmeter to the $R \times 10 K$ scale. Remove the 6-pin connector from the circuit board and measure across terminals 5 & 6.	a) Normal = 155 K to 350 K ohms @ 68°F. b) Abnormal = Infinity, or zero ohms (a short).
Convection Heating Element (with leads disconnected)	Set the ohmmeter to the $R \times 1$ scale, and measure across the terminals.	a) Normal = 9 to 40 ohms @ 68°F $\pm 2^\circ$ . b) Abnormal = Infinity, or zero ohms (a short).
Gas Sensor	Set the ohmmeter to the $R \times 1$ scale. Remove the 3-pin connector from the circuit board and measure the resistance between: a) Red & white wire terminals. b) White & yellow wire terminals.	a) 20 ohms @ 68°F $\pm 2^\circ$ . b) Infinite.



COMPONENT	TEST PROCEDURE	RESULT
<p>Touch Keyboard (see below).</p> <p style="text-align: center;"><b>FPC CONNECTOR (TOP)</b></p> 	<p>Measure the resistance between the terminal pins of the keypad (shown below) that you wish to check.</p> <p>For example: To measure the “TEMP PROBE” keypad, refer to the illustration, and:</p> <ol style="list-style-type: none"> <li>1. Find the first terminal number along the top bar (pin 4).</li> <li>2. Find the second terminal number in the side bar (pin 8).</li> <li>3. Set the ohmmeter to the <i>R x 1</i> scale.</li> </ol> <p>a) With the keypad not depressed, touch the ohmmeter leads between pins 4 and 8 on the ends of the FPC connector.</p> <p>b) Press the TEMP PROBE keypad.</p>	<p><b>Normal Readings:</b> KEYPAD NOT PRESSED - Indicates more than 1 MΩ resistance.</p> <p><b>Normal Readings:</b> KEYPAD PRESSED - Indicates less than 400 Ω resistance.</p> <p><b>Abnormal Readings:</b> KEYPAD NOT PRESSED - Indicates continuity (zero resistance).</p> <p><b>Abnormal Readings:</b> KEYPAD PRESSED - Indicates infinite resistance.</p>

### KEYBOARD MATRIX



COMPONENT	TEST PROCEDURE	RESULT
<p>Relay 2</p> <p><b><u>WARNING: When you apply power to the unit, be careful not to touch any of the high voltage circuits.</u></b></p> 	<p>Set the ohmmeter to the <math>R \times 1</math> scale, and check for continuity between the two relay terminal pins. Use the following steps.</p> <ol style="list-style-type: none"> <li>1. Remove the wire connectors from the relay terminals.</li> <li>2. Use a pair of alligator clips, and clip the ohmmeter leads to the two terminals of the relay. Make sure that you do not allow the clips to short to anything.</li> <li>3. Plug the microwave oven into an AC receptical.</li> <li>4. Set the power level, as shown in the chart in the right column, and check the relay operation for the ten power levels. NOTE: During the operating time set for each level, the relay will close (short) for the time specified in the chart, and then open for another specified amount of time. When the open time elapses, the cycle begins again until the cooking time elapses and the oven turns off.</li> </ol>	

## CONTROL CIRCUIT BOARD CHECK LIST

The following problems indicate a defective control circuit board:

1. The START function fails to operate, but the high voltage systems, the interlock switches, the door sensing, and the relay checks are good.
2. The oven operates okay with a replacement relay installed.
3. Proper temperature measurements cannot be obtained.
4. The buzzer does not sound, or continues to sound.
5. Some segments of one or more digits do not light up, or they continue to light up, or segments light when they should not.
6. Wrong figures appear on the display.
7. The digits on the display flicker.
8. Some of the indicators do not light.
9. The clock does not keep the proper time.

# PRIMARY, MONITOR, & SECONDARY SWITCH CHECKOUT PROCEDURE

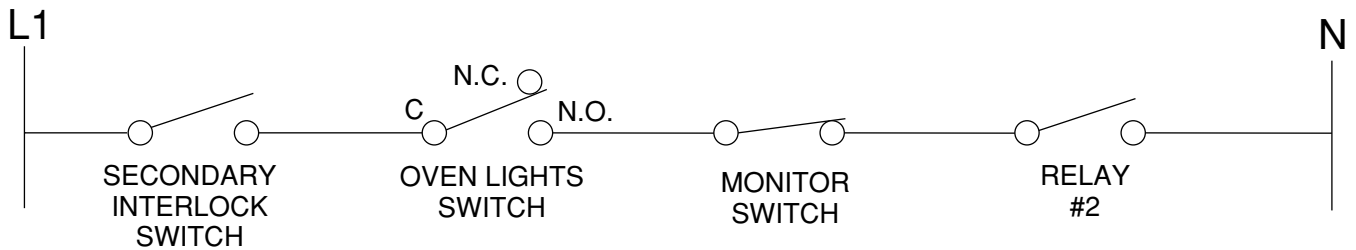
NOTE: The following chart and strip circuits show the continuity and position of the door switches when the microwave oven door is open and closed.

## CONTINUITY TEST CHART

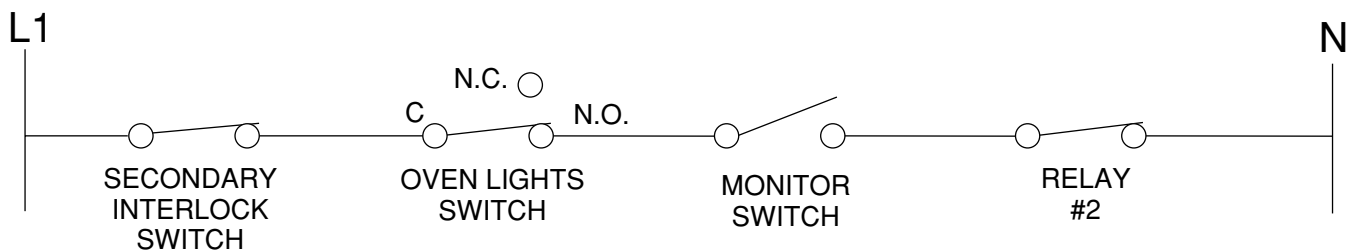
SWITCH	TESTING	DOOR OPEN	DOOR CLOSED
Primary Interlock	Disconnect the 4-pin connector from the control module. Check from the pink wire (pin 1) to the blue wire (pin 3).	-	+
Secondary Interlock	Disconnect the wires at the Secondary Interlock Switch. Check from the common terminal (white wires) to the normally-open terminal (red/white wires).	-	+
Monitor	Disconnect the wires from the Monitor Switch. Check from the common terminal (red/brown wires) to the normally-closed terminal (white wire).	+	-
Oven Lamp	Disconnect the wires from the Oven Lamp Switch. Check from the common terminal (blue wire) to the normally-closed terminal (red wire).	+	-
	Disconnect the wires from the Oven Lamp Switch. Check from the common terminal (blue wire) to the normally-open terminal (pink/black wire).	-	+

(+) = CONTINUITY  
(-) = NO CONTINUITY

### DOOR OPEN



### DOOR CLOSED



— NOTES —