

KitchenAid

TECHNICAL EDUCATION

OVER-THE-COUNTER MICROWAVE OVEN



Model KOMS155MBL

FORWARD

This KitchenAid Job Aid, “Over-The-Counter Microwave Oven,” (Part No. 4317340), provides the technician with information on the installation, operation, and service of the Over-The-Counter Microwave Oven. It is to be used as a training Job Aid and Service Manual. For specific information on the model being serviced, refer to the “Use and Care Guide,” or “Wiring Diagram” provided with the microwave oven.

The Wiring Diagrams used in this Job Aid are typical and should be used for training purposes only. Always use the Wiring Diagram supplied with the product when servicing the unit.

GOALS AND OBJECTIVES

The goal of this Job Aid is to provide detailed information that will enable the service technician to properly diagnose malfunctions and repair the KitchenAid Over-The-Counter Microwave Oven.

The objectives of this Job Aid are to:

- Understand and follow proper safety precautions.
- Successfully troubleshoot and diagnose malfunctions.
- Successfully perform necessary repairs.
- Successfully return the microwave to its proper operational status.

WHIRLPOOL CORPORATION assumes no responsibility for any repairs made on our products by anyone other than Authorized Service Technicians.

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GENERAL SAFETY FIRST

Your safety and the safety of others is very important.

We have provided many important safety messages in this Job Aid and on the appliance. Always read and obey all safety messages.



This is the safety alert symbol.

This symbol alerts you to hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and either the word "DANGER" or "WARNING." These words mean:

! DANGER

You can be killed or seriously injured if you don't immediately follow instructions.

! WARNING

You can be killed or seriously injured if you don't follow instructions.

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

ELECTRICAL POWER SUPPLY & GROUNDING REQUIREMENTS

! WARNING



Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

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

! WARNING



Electrical Shock Hazard

Plug into a grounded 3-prong outlet.


Do not remove ground prong.

Do not use an adapter.

Do not use an extension cord.

Failure to follow these instructions can result in death, fire, or electrical shock.

! WARNING



Electrical Shock Hazard
Connect green ground wire to ground screw.
Failure to do so can result in death or electrical shock.

! WARNING



Electrical Shock Hazard
Improper use of the grounding plug can result in a risk of electrical shock.

Before touching any oven component or wiring, always unplug the oven from its power source and discharge the high voltage capacitor (see page 4-12).

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-331 A-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.

The microwave oven must be grounded. In the event of an electrical short circuit, grounding reduces the risk of electrical shock by providing an escape wire for the electrical current. The microwave oven is equipped with a cord having a grounding wire with a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded.

Consult a qualified electrician or serviceman if the grounding instructions are not completely understood, or if doubt exists as to whether the microwave oven is properly grounded. Do not use an extension cord. If the power supply cord is too short, have a qualified electrician or serviceman install an outlet near the microwave oven.

ELECTROSTATIC DISCHARGE (ESD) SENSITIVE ELECTRONICS

ESD problems are present everywhere. ESD may damage or weaken the electronic control assembly. The new control assembly may appear to work well after repair is finished, but failure may occur at a later date due to ESD stress.

- Use an antistatic wrist strap. Connect the wrist strap to a green ground connection point or unpainted metal in the appliance; or touch your finger repeatedly to a green ground connection point or unpainted metal in the appliance.
- Before removing the part from its package, touch the antistatic bag to a green ground connection point or unpainted metal in the appliance.
- Avoid touching electronic parts or terminal contacts. Handle the electronic control assembly by the edges only.
- When repackaging the failed electronic control assembly in an antistatic bag, observe the above instructions.

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^2 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 Job Aid.

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

The 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 a blown fuse with a 20 ampere class H fuse only.

Test the upper and lower door interlock switches, cook relay, and 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. The components must be replaced.

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 switch, and the Primary, and Secondary interlock switches must be replaced. Be sure they are properly connected.

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, integrity, and connections.
- D. Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted, using procedures described in this Job Aid, before the oven is released to the owner.
- E. A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.
- F. Do not attempt to operate the oven if the door glass is broken.

R.F. LEAKAGE TEST

EQUIPMENT

- Electromagnetic energy leakage monitor (NARDA 8100B, HOLADAY H 1501).
- 275 ±15 ML glass beaker.

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 275 ±15 ML (9.3 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:
 - 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/cm² emission at 5 cm distance with a maximum scan rate of 2.54 cm/second, in compliance with U.S. Government Department of Health, Education and Welfare 21CFR1030, 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/cm² 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/cm² 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 monitor switch acts as the final safety switch protecting the customer from microwave radiation. If the monitor switch operated to blow the fuse when the interlocks failed, you must replace all interlock switches with new ones, because the contacts of those interlock switches may be melted and welded together.

If safety interlock/monitor switch replacement, or adjustment, is required, you must reconnect the circuit, and perform a continuity check on the monitor circuit.

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, MD 20850**

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

PRECAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

The microwave oven is a high voltage, high current appliance. It is free from danger during ordinary use, but extreme care should be taken during repair.

CAUTION

Service technicians should remove their watches whenever working close to or replacing the magnetron.

WARNING DISCHARGING HIGH VOLTAGE CAPACITORS

For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitor.

When replacing or checking parts, remove the power plug from the outlet. Use a 20,000 Ω , 2 watt resistor, and short the capacitor terminal to chassis ground to discharge it. Be sure to touch the chassis ground first, and then touch the capacitor terminal.

WARNING

Never touch any circuit wiring with your hand, or with an insulated tool during operation.

WARNING

Never insert a wire, nail, or any other metal object through the lamp holes on the cavity, or any other holes or gaps. Doing so may act as an antenna, and cause microwave leakage.

WARNING

Before touching any oven components or wiring, always unplug the oven from its power source, and discharge the capacitors in the high voltage section of the microwave oven.

KITCHENAID MODEL & SERIAL NUMBER DESIGNATIONS

MODEL NUMBER

MODEL NUMBER		K	OM	S	15	5	M	BL	0
INTERNATIONAL SALES IND. OR MARKETING CHANNEL IF PRESENT									
PRODUCT GROUP K = KITCHENAID BRAND									
PRODUCT IDENTIFICATION BH = BUILT-IN HIGH-SPEED OVEN BM = BUILT-IN MICROWAVE CM = COUNTERTOP MICROWAVE OM = OVER THE COUNTER MICROWAVE									
MERCHANDISING SCHEME S = STANDARD C = MICRO-CONVECTION									
CAPACITY / SIZE / SERIES / CONFIGURATION 05 = 0.5 CU FT 08 = 0.8 CU FT 10 = 1.0 CU FT 13 = 1.3 CU FT 15 = 1.5 CU FT									
FEATURES 2 = PLUS FEATURES 5 = DELUXE FEATURES 6 = MICRO-CONVECTION 7 = MICRO-CONVECTION WITH SENSOR S = CARRY-IN WARRANTY (EFFECTIVE 02/96) X = IN-HOME WARRANTY (EFFECTIVE 02/96)									
YEAR OF INTRODUCTION M = 2003									
COLOR CODE WH = WHITE, BL = BLACK, BT = BISCUIT, SS = STAINLESS STEEL									
ENGINEERING CHANGE (0, 1, 2, ETC.)									

SERIAL NUMBER

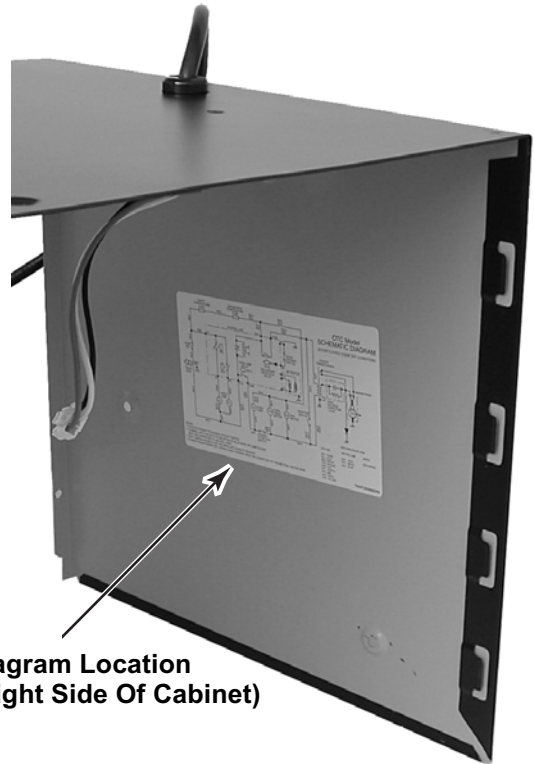
SERIAL NUMBER	XS	P	38	10006
DIVISION RESPONSIBILITY XS = OXFORD				
YEAR OF PRODUCTION P = 2003				
WEEK OF PRODUCTION 38TH WEEK				
PRODUCT SEQUENCE NUMBER				

MODEL & SERIAL NUMBER LABEL AND WIRING DIAGRAM LOCATIONS

The Model/Serial Number label and Wiring Diagram locations are shown below.



**Model & Serial
Number Label Location**



**Wiring Diagram Location
(Inside Right Side Of Cabinet)**

SPECIFICATIONS

MODEL	KOMS155MBL / WH/BT/SS
Dimensions/Specifications	
Colors	WH = White, BL = Black , BT = Biscuit, SS = Stainless
Outside Dimensions	23 7/8" W X 14 1/16" H X 15 9/16"D
Interior Cavity Dimension	17 1/2" W X 9 7/8" H X 14 5/16"D
CONTROL SYSTEM	
Power Levels	Yes-2
Timer	Yes
Type	Electronic
Limits	99 Min. 99 Sec.
Scale	Linear (Digital)
Operation	Touch Control, 35 Pads
Display	7 digit
	2 color lighted LCD
	with interactive word prompts
Microwave Cooking Cycles	
Cook Time	Yes
Auto Reheat (Sensor)	Yes - 4 Categories
Auto Defrost (Non-Sensored)	Yes - 4 Categories By Weight
Auto Cook (Sensor)	Yes - 6 Categories
Sensor One Touch	
Popcorn (Sensor One Touch)	Yes
Baked Potato (Sensor One Touch)	Yes - 1-6 (Similar in Size)
Fresh Vegetable (Sensor One Touch)	Yes
Sensor Reheat	Yes
Warm Hold	Up to 30 Minutes
Add a Minute	Yes
Convection Cooking Cycles	
Combination Cooking Cycles	No
Custom Help Features	
Child Lock	Yes
Audible Signal Elimination	Yes
Auto Start	Yes
Language/Weight Selection	Yes
Pause	Door Open
Clock	Yes
Independent Minute Timer:	Yes
Stage Cooking	Yes (4)
Demo Mode	Yes
More/Less Function	Yes
Sales Demonstration Mode	Yes - Hidden
Off/Cancel	Yes
Cook Power	
Type	Electronic
Range	0% - 100%
Scale	Digital
Levels	Eleven
Operation	Direct Entry
Exhaust Fan	No
Cooktop Light	Yes
Settings	1 level (High)
High	Yes
Accent Light	Yes
Low	Yes
Wattage	2 x 30 Watt
Light Cover	Glass
Size	7" W x 2 3/4" D
Display Indicators	
Power Failure Indication	Yes - ':' Displayed Flashing
w/On-Off Function	No
Independent Minute Timer	Yes - 1 Long Beep

MODEL	KOMS155MBL / WH/BT/SS
OVEN INTERIOR FEATURES	
Capacity	1.5 Cubic Feet
Finish	Painted Acrylic
Cooking Power	1100 Watts (IEC-705 Rating)
Turntable	Yes
Glass turntable diameter	14"
Cooling Fan	Automatic - On if oven is operating, Off if door open
Rack	No
Light	Automatic - Turns on when oven door is open or oven is operating. 30 Watt
Turntable Roller	Yes
Temp Probe	No
DOOR FEATURES	
Stamped Steel	Yes - With Tempered Cover
Window	Glass
Window Size	10 1/4" x 6"
MICROWAVE SYSTEM	
Distribution	Top Feed w/ Stirrer
Magnetron	One standard
SAFETY FEATURES	
Interlock	Three Door/Latch Operated Primary, secondary and monitor
Thermal Protectors	Three - 1 Magnetron, 1 Oven Cavity, 1 Hood
EXTERIOR FEATURES	
Outside Dimensions	23 7/8" W X 14 1/16" H X 15 9/16"D
Cabinet Finish	Painted Smooth
Construction	Unitized Chassis with Wrapper & Mounting Plate
Bottom Finish	Painted Steel - Smooth
Control, Door and Grille Construction	One Piece Molded
Cooktop Light w/Touch Control	2 Lamps - 30 Watt Easy Access
Power Cord Length	3 Feet
OTHER SPECIFICATIONS	
Electrical	120V, Single Phase, 60 Hz 1530 Watts, For Use With 15 - 20 Amp Circuit
Domestic Use Only	Yes
Agency Approvals	FCC, DHHS, U.L. Listed, CSA
Approx. Shipping Weight - Lb	50
Approx. Net Weight - Lb	46
APPROVED ACCESSORIES	
Exhaust Damper Assembly	N/A
Hardware for Installation	Yes (1 Set)
LITERATURE	
Use & Care Guide	Yes
Cooking Guide	Yes
Installation Instructions	Yes
Wall Mounting Template	Yes
Cabinet Mounting Template	Yes
Warranty	In Use & Care Guide
Tech Sheet	Yes
Job Aid	4317340

KITCHENAID MICROWAVE OVEN WARRANTY

LENGTH OF WARRANTY:	KITCHENAID WILL PAY FOR:	KITCHENAID WILL NOT PAY FOR:
<p>ONE-YEAR FULL WARRANTY From Date of Purchase.</p>	<p>Replacement parts and repair labor costs to correct defects in materials or workmanship. Service must be provided by a KitchenAid-designated servicing company.</p>	<p>A. Service calls to:</p> <ol style="list-style-type: none"> 1. Correct the installation of the microwave oven. 2. Instruct you how to use the microwave oven. 3. Replace house fuses or correct house wiring. 4. Replace owner-accessible light bulbs. <p>B. Repairs when microwave oven is used in other than normal single-family household use.</p>
<p>LIMITED FOUR-YEAR WARRANTY Second through fifth year from Date of Purchase.</p>	<p>Replacement magnetron tube on microwave ovens if defective in materials or workmanship.</p>	<p>C. Pickup and delivery. The microwave is designed to be repaired in the home.</p> <p>D. Damage to the microwave oven resulting from accident, alteration, misuse, abuse, fire, flood, acts of God, or use of products not approved by KitchenAid.</p> <p>E. Any labor costs during the limited warranty.</p> <p>F. Repairs to parts or systems resulting from unauthorized modifications made to the appliance.</p> <p>G. Replacement parts or repair labor costs for units operated outside the United States.</p>

KITCHENAID OR KITCHENAID CANADA DO NOT ASSUME ANY RESPONSIBILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion or limitation may not apply to you. This warranty gives you special legal rights, and you may also have other rights which vary from state-to-state or province-to-province.

Outside the United States and Canada, a different warranty may apply. For details, please contact your authorized KitchenAid dealer.

If you need service first see the “Troubleshooting” section of the Use and Care Guide. After checking “Troubleshooting,” additional help can be found by checking the “Assistance or Service” section, or by calling our Customer Interaction Center telephone numbers, listed below, from anywhere in the U.S.A. or Canada.

KitchenAid: **1-800-422-1230**

Canadian Residents call: **1-800-807-6777**

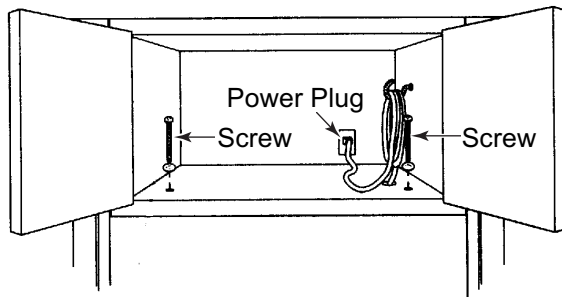
INSTALLATION INFORMATION

REMOVING THE MICROWAVE OVEN

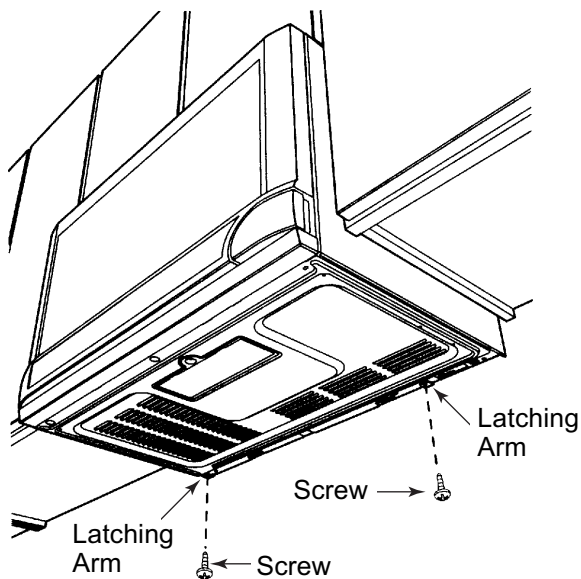
! WARNING

Excessive Weight Hazard
Use two or more people to move and install microwave oven.
Failure to do so can result in back or other injury.

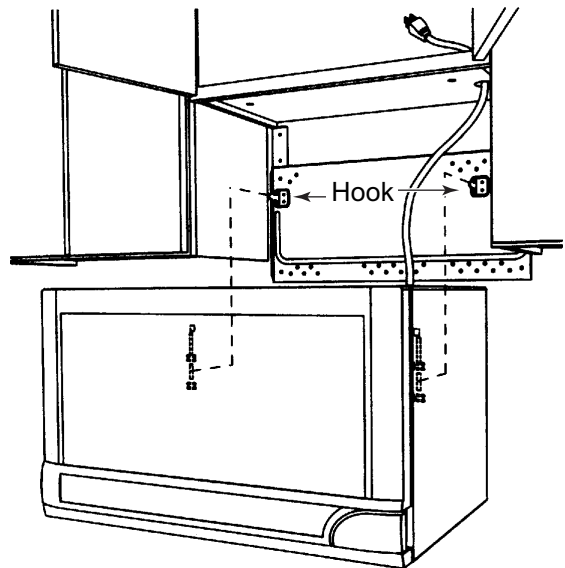
1. Open the cabinet doors and unplug the power cord from the wall outlet.
2. Remove the two cabinet mounting screws.



3. Remove the two screws from the latching arms.



4. While supporting the microwave oven, pull down on the two latching arms at the bottom of the oven to release them from the mounting panel hooks, and remove the oven from the wall.



— NOTES —

THEORY OF OPERATION

MICROWAVE OPERATING SEQUENCE

OFF CONDITION

Closing the door activates the secondary (door sensing) interlock switch, and the primary interlock switch. The monitor switch contacts are opened.

When the oven is plugged in, 120 VAC is supplied to the control unit (see the illustration below).

- The display will show "WELCOME." To set any program or set the clock, you must first touch the STOP/CLEAR keypad. The display will clear, and a colon (:) will appear.

POWER LEVEL (P-0 TO P-90) COOKING

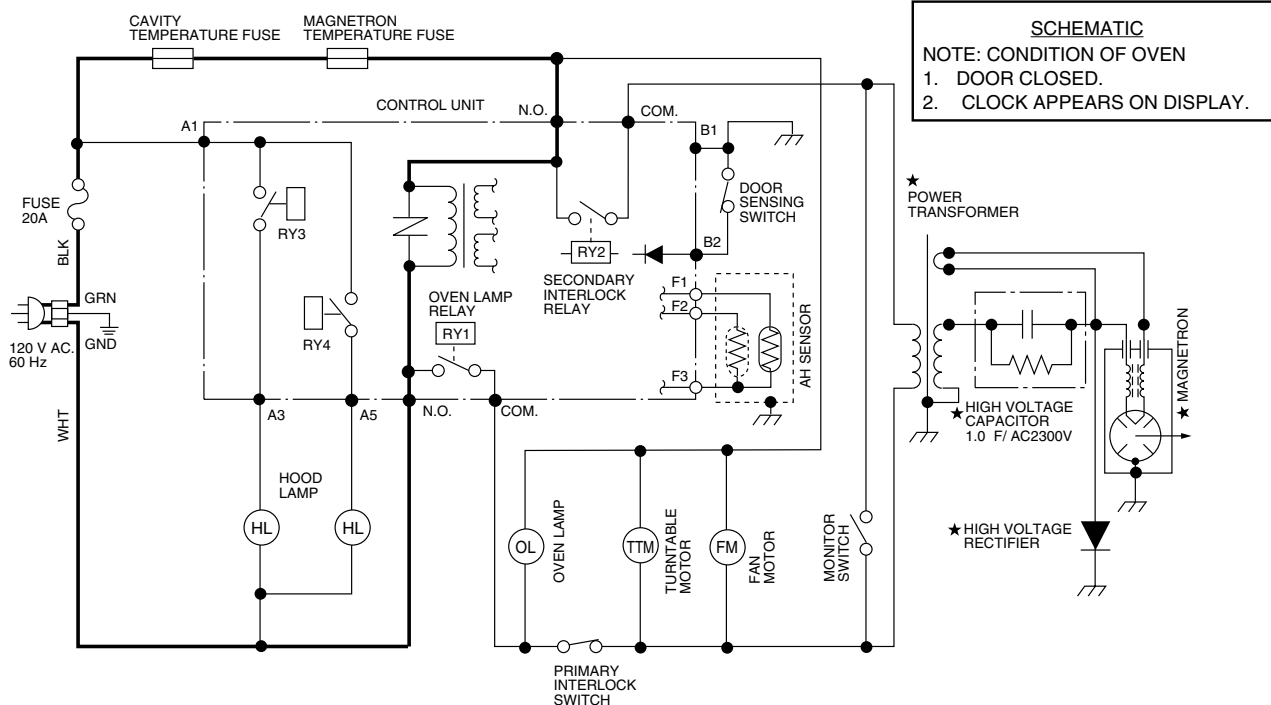
When "Variable Cooking Power" is programmed, 120 VAC is supplied to the power transformer intermittently through the contacts of relay RY2, which is operated by the control unit within an interval second time base.

Microwave power operation is as follows (the indicated power is approximate):

VARI-MODE	ON TIME	OFF TIME
HIGH (100% power)	32 sec.	0 sec.
P-90 (90% power)	30 sec.	2 sec.
P-80 (80% power)	26 sec.	6 sec.
P-70 (70% power)	24 sec.	8 sec.
P-60 (60% power)	22 sec.	10 sec.
P-50 (50% power)	18 sec.	14 sec.
P-40 (40% power)	16 sec.	16 sec.
P-30 (30% power)	12sec.	20 sec.
P-20 (20% power)	8 sec.	24 sec.
P-10 (10% power)	6 sec.	26 sec.
P-0 (0% power)	0 sec.	32 sec.

NOTE: The ON/OFF time ratio does not correspond with the percentage of microwave power, because approximately 3 seconds are needed for heating of the magnetron filament.

NOTE: "★" indicates components with potential above 250V.



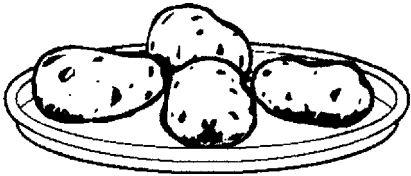
Oven Schematic-Off Condition

SENSOR COOKING CONDITION

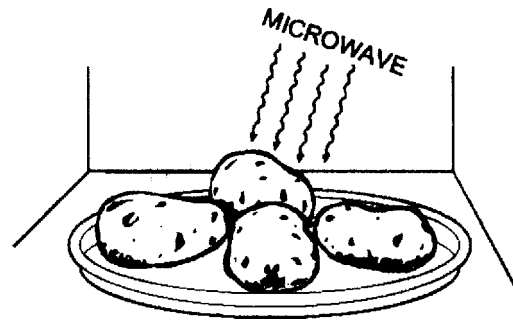
Using the Sensor Cooking function, the foods are cooked without figuring time, power level, or quantity. When the oven senses enough steam from the food, it relays the information to its microprocessor, which calculates the remaining cooking time and power level needed for best results.

When the food is cooked, water vapor is developed. The sensor "senses" the vapor, and its resistance gradually increases. When the resistance reaches the value set according to the menu, supplementary cooking is started. The time of supplementary cooking is determined by experimenting with each food category, and then sent to the microcomputer for processing.

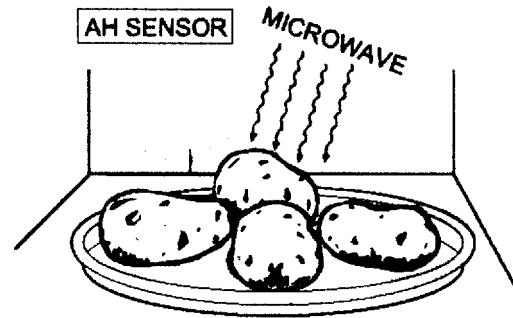
The following example shows how the sensor works (baked potatoes):



1. When baked potatoes are at room temperature, and begin cooking, vapor is emitted very slowly. As the potatoes are heated, moisture and humidity are more rapidly emitted.



2. The sensor detects the moisture and humidity, and calculates the cooking time, and the variable power.



Cooking Sequence

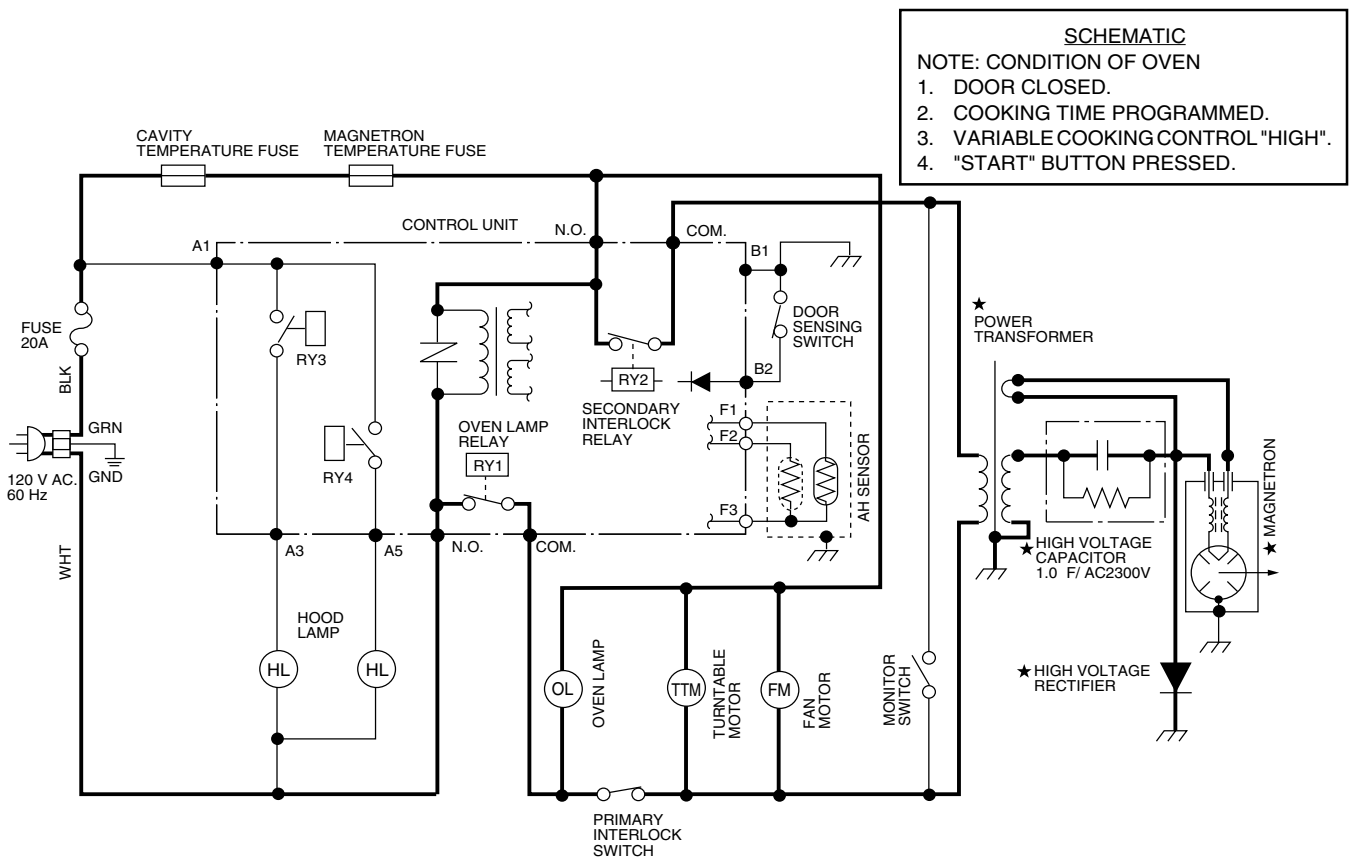
1. Operate the oven in the Sensor Cooking mode by referring to the Use and Care Guide that was supplied with the unit.

NOTE: The oven should not be operated on Sensor Cooking immediately after connecting power. Wait at least 2 minutes before using the Sensor Cooking.

2. The coil of shut-off relay RY1 is energized, (see the illustration below), the oven lamp, turntable and cooling fan motors are turned on, but the power transformer is not turned on.
3. After approximately 16 seconds, cook relay RY2 is energized. The power transformer is turned on, microwave energy is produced, and the first stage is started.

NOTE: The 16 seconds is the cooling time required to remove any vapor from the oven cavity and sensor. During this first stage, do not open the door, or touch the STOP/CLEAR keypad.

4. When the sensor detects the vapor emitted from the food, the display switches over to the remaining cooking time, and the timer counts down to zero. At this time, the door may be opened to access the food.
5. When the timer reaches zero, an audible signal sounds. The shutoff and cook relays are de-energized, and the power transformer, oven lamp, etc., are turned off.
6. After opening the door, or touching the STOP/CLEAR keypad, the time of day will reappear on the display, and the oven will revert to an OFF condition.

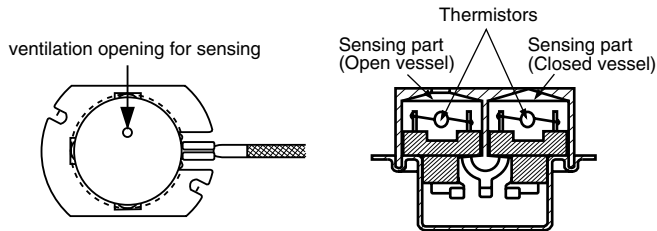


SCHMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED.
2. COOKING TIME PROGRAMMED.
3. VARIABLE COOKING CONTROL "HIGH".
4. "START" BUTTON PRESSED.

Oven Schematic-Cooking Condition

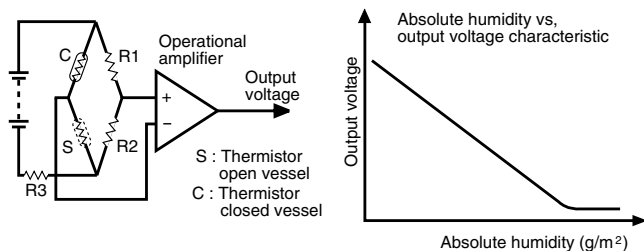
THE ABSOLUTE HUMIDITY (AH) SENSOR CIRCUIT

The Absolute Humidity Sensor includes two thermistors, as shown in the illustration below. One thermistor is housed in the closed vessel filled with dry air, while another in the open vessel. Each sensor is provided with the protective cover made of metal mesh to protect it from the external airflow.



The illustration below shows the basic structure of an absolute humidity sensor. A bridge circuit is formed by two thermistors and two resistors (R1 and R2).

The output of the bridge circuit is amplified by the operational amplifier. Each thermistor is supplied with a current to keep it heated at about 150°C (302°F). The resultant heat is dissipated in the air. If the two thermistors are placed in different humidity conditions, they show different degrees of heat conductivity leading to a potential difference between them, causing an output voltage from the bridge circuit. The intensity of the output voltage increases as the absolute humidity of the air increases. Since the output is very minute, it is amplified by the operational amplifier.

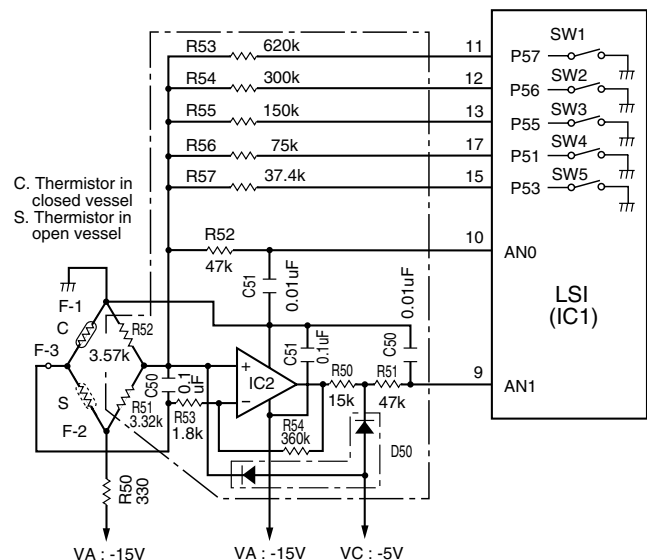


The detector circuit of the AH sensor is shown at the bottom of the next column. It is used to detect the output voltage of the absolute humidity circuit to allow the LSI to control the sensor cooking of the unit. When the unit is set in the Sensor Cooking mode, a 16-second clearing cycle occurs, the detector circuit starts to function, and the LSI observes the initial voltage available at its AN1 terminal.

With this voltage given, switches SW1 to SW5 in the LSI are turned on in such a way as to change the resistance values in parallel with resistors R53 - R57. Changing the resistance values results in that there is the same potential at both the F-3 terminal of the absolute humidity sensor, and the AN0 terminal of the LSI. The voltage of AN1 terminal will indicate about -2.5V. This initial balancing is set up about 16 seconds after the unit is put in the Sensor Cooking mode. As the sensor cooking proceeds, the food is heated to generate moisture. This unbalances the bridge circuit, and increases the voltage available at the AN1 terminal of the LSI.

The LSI observes the voltage at the AN1 terminal, and compares it with its initial value. When the comparison rate reaches the preset value, (fixed for each menu to be cooked), the LSI causes the unit to stop sensor cooking. Thereafter, the unit goes to the next operation automatically.

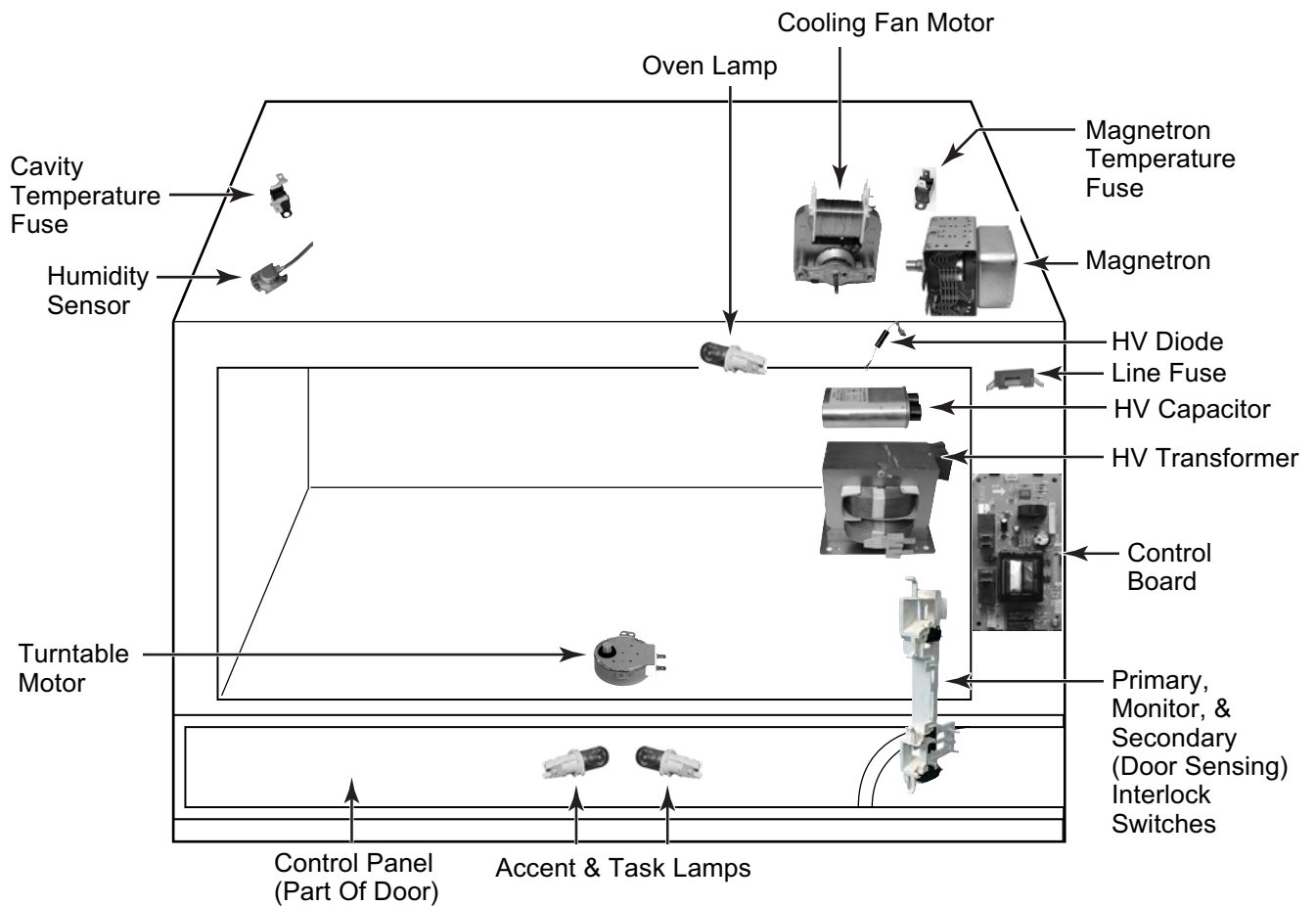
The LSI starts to detect the initial voltage at the AN1 terminal 16 seconds after the unit has been put in the Sensor Cooking mode. If it is not possible to balance the bridge circuit, due to disconnection of the absolute humidity sensor, "ERROR" will appear on the display, and the cooking will be stopped.



COMPONENT ACCESS

This section instructs you on how to service each component inside the Over-The-Counter Microwave Oven. The components and their locations are shown below.

COMPONENT LOCATIONS



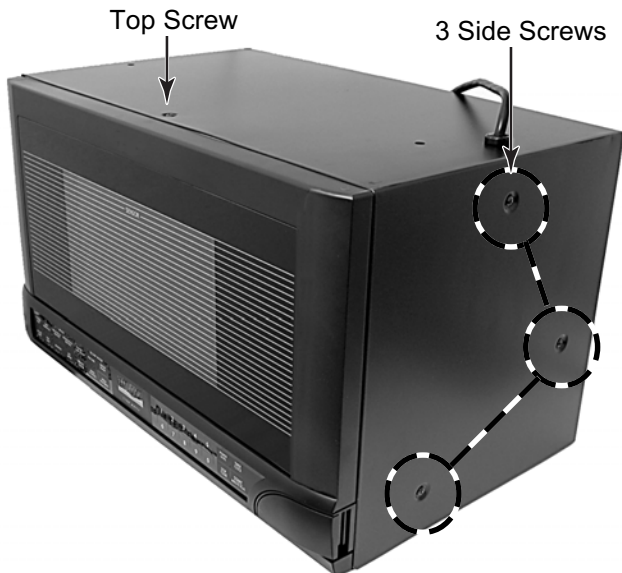
REMOVING THE CABINET

⚠ WARNING

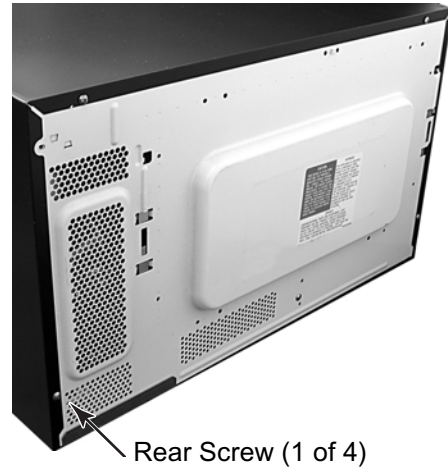


Electrical Shock Hazard
Disconnect power before servicing.
Replace all parts and panels before operating.
Failure to do so can result in death or electrical shock.

1. Unplug microwave oven or disconnect power.
2. Remove the microwave oven from its mounting location (see page 2-1 for the procedure).
3. Facing the front of the unit, remove the top screw and three right side screws from the cabinet.



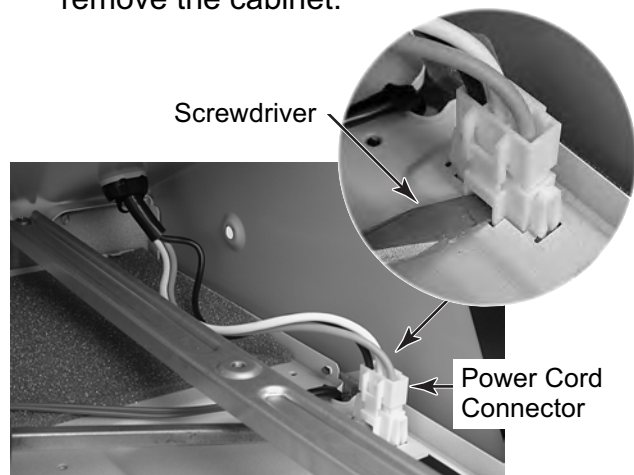
4. Facing the rear of the unit, remove the four rear cabinet screws.



5. Pull the cabinet back and unhook the slots from the chassis tabs at the top and sides. Pull the cabinet back far enough to access the power cord connector.



6. Unlock the power cord connector with a screwdriver blade and disconnect it, then remove the cabinet.



REMOVING THE CONTROL BOARD

⚠ WARNING



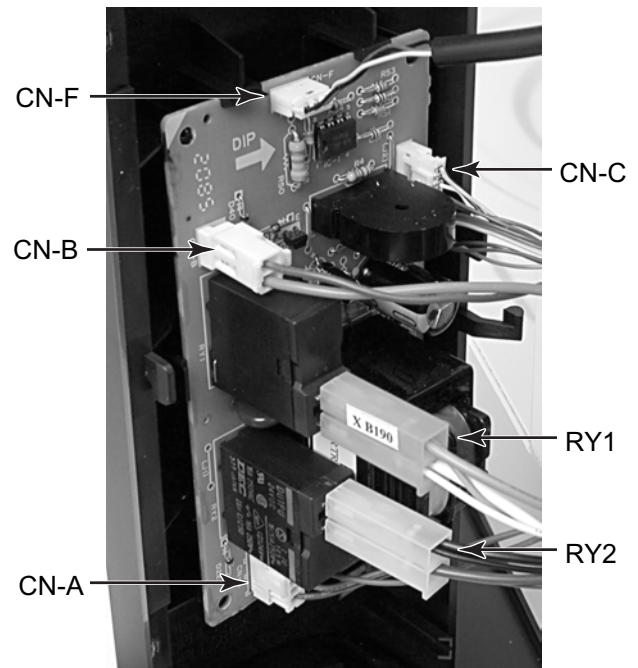
Electrical Shock Hazard
Disconnect power before servicing.
Replace all parts and panels before operating.
Failure to do so can result in death or electrical shock.

1. Unplug microwave oven or disconnect power.
2. Open the microwave oven door.
3. Remove the screw from the decorative panel.

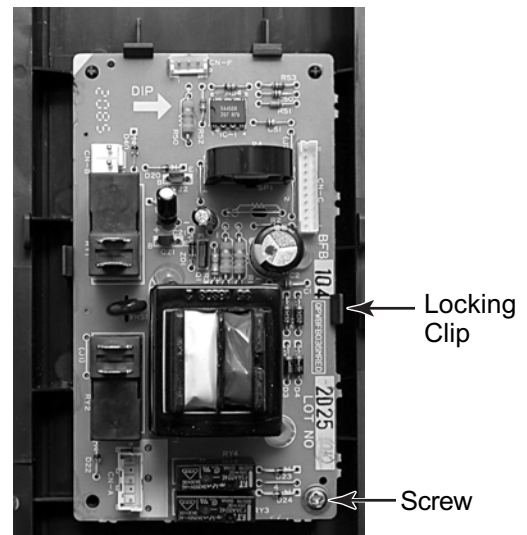


4. Lift the panel and unhook the side tabs, then pull the panel forward as far as the wires will allow.

5. Disconnect the following connectors from the control board:
 - a) 3-wire connector from CN-F.
 - b) 2-wire connector from CN-B.
 - c) 11-wire connector from CN-C.
 - d) 5-wire connector (with red & red-brown wires) from CN-A.
 - e) Connector with 2 gry & 2 wht wires at relay RY1.
 - f) Connector with 2 blk & 2 red wires at relay RY2.



6. Remove the screw from the control board and unclip it from the decorative panel.



REMOVING THE DOOR INTERLOCK SWITCH ASSEMBLY

⚠ WARNING



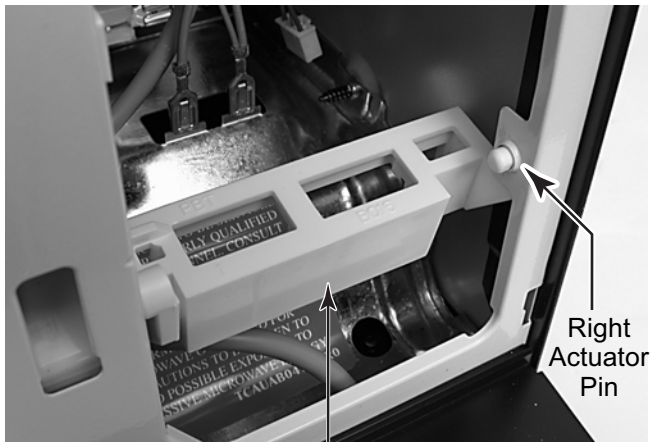
Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

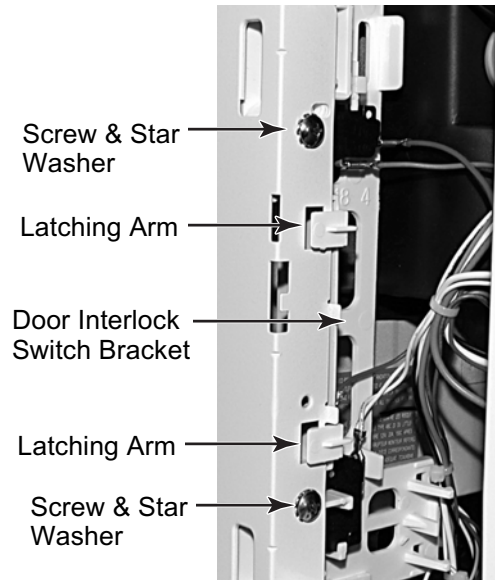
Failure to do so can result in death or electrical shock.

1. Unplug microwave oven or disconnect power.
2. Open the microwave oven door.
3. Remove the decorative panel and control board from the unit (see page 4-3 for the procedure).
4. Push the secondary interlock actuator toward the right and remove the pin from the chassis hole, then carefully remove the other pin from its chassis hole, and remove the actuator.

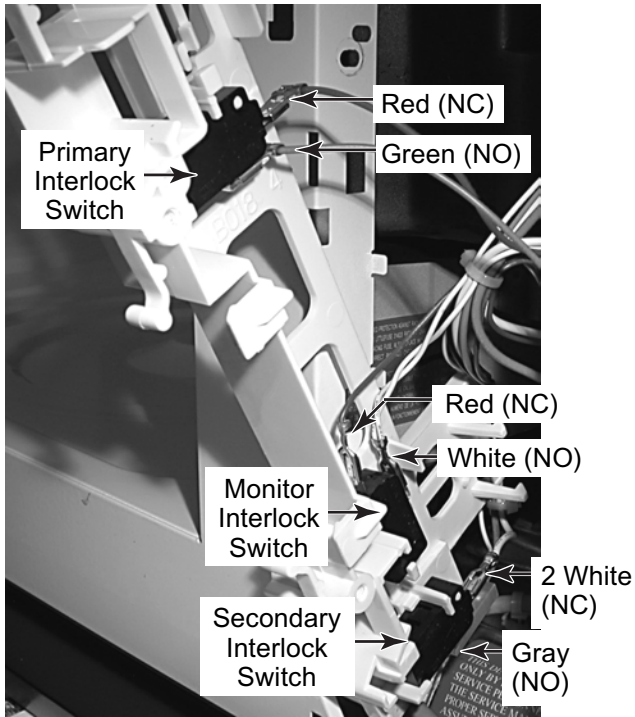


Secondary Interlock Actuator

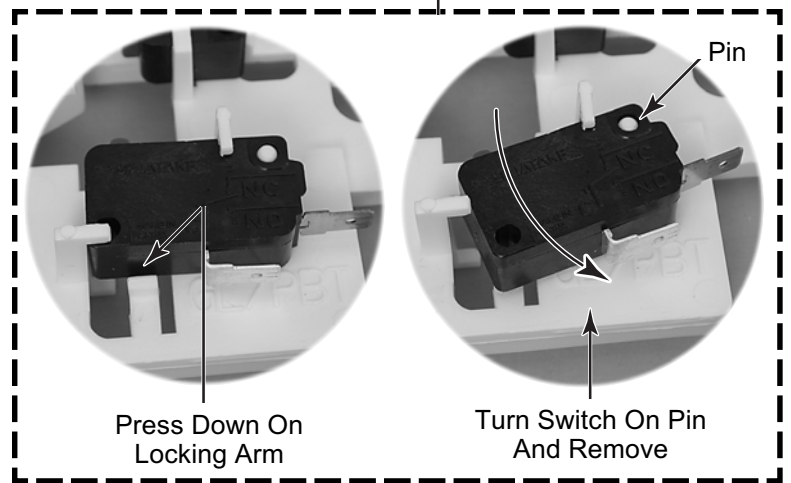
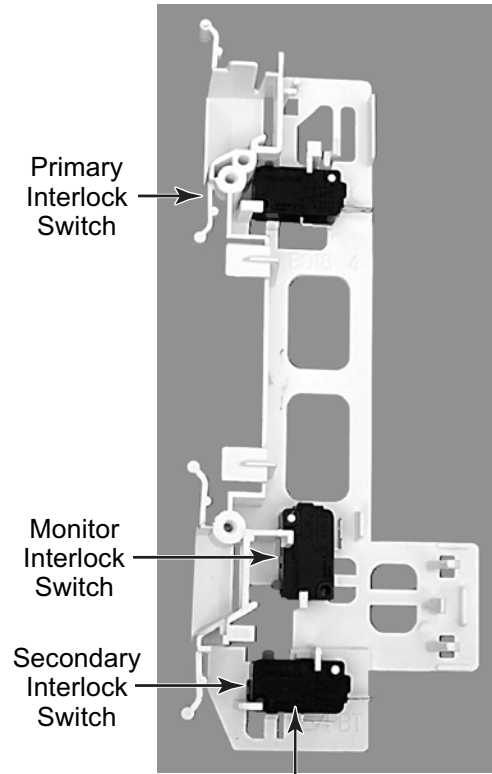
5. Remove the two mounting screws and star washers from the door interlock switch bracket.



6. Unlatch the door interlock switch bracket and remove the switch assembly just far enough to disconnect the following wires from the interlock switch terminals (see the photo at the top of the next page):
 - a) *Primary Interlock Switch*: Red wire from the normally-closed (NC) terminal, and green wire from the normally-open (NO) terminal.
 - b) *Monitor Interlock Switch*: Red wire from the normally-closed (NC) terminal, and white wire from the normally-open (NO) terminal.
 - c) *Secondary (Door Sensing) Interlock Switch*: Two white wires from the normally-closed (NC) terminal, and gray wire from the normally-open (NO) terminal.



- Unlatch the interlock switch you are removing from the bracket and slide it off the alignment pin. Be careful not to break the locking arm or the pin on the bracket.



REASSEMBLY NOTE: Reinstall the switch assembly bracket and then connect the wires to the switch terminals. Use the photo to make sure of your connections.

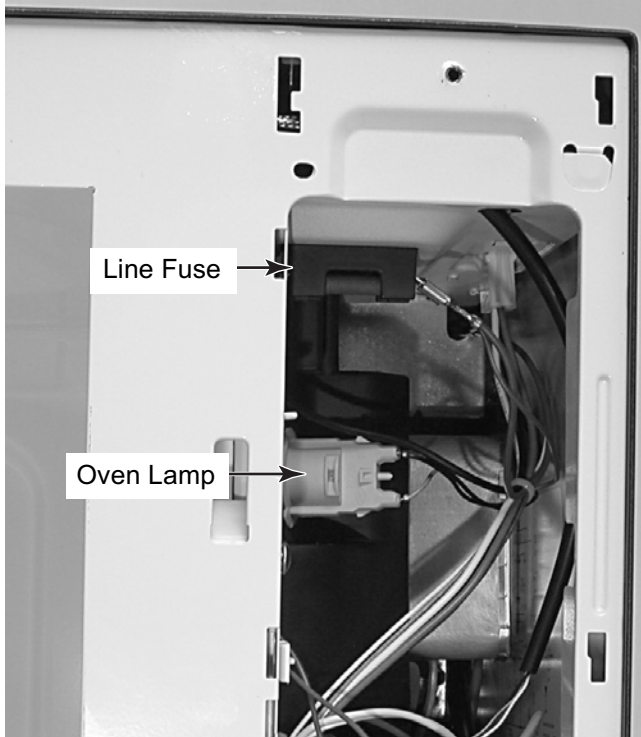
REMOVING THE LINE FUSE AND OVEN LAMP

⚠ WARNING

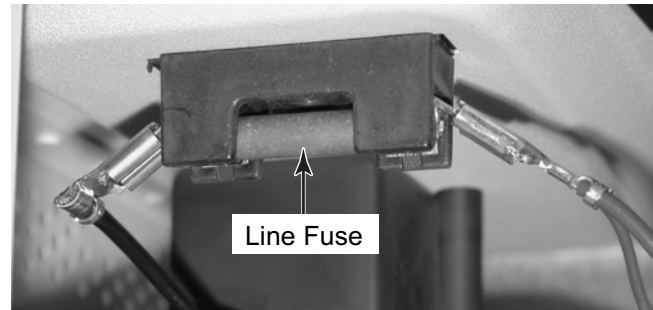


Electrical Shock Hazard
Disconnect power before servicing.
Replace all parts and panels before operating.
Failure to do so can result in death or electrical shock.

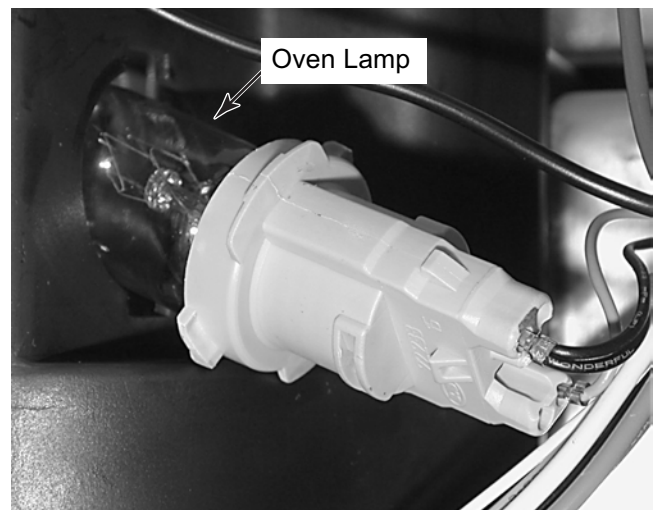
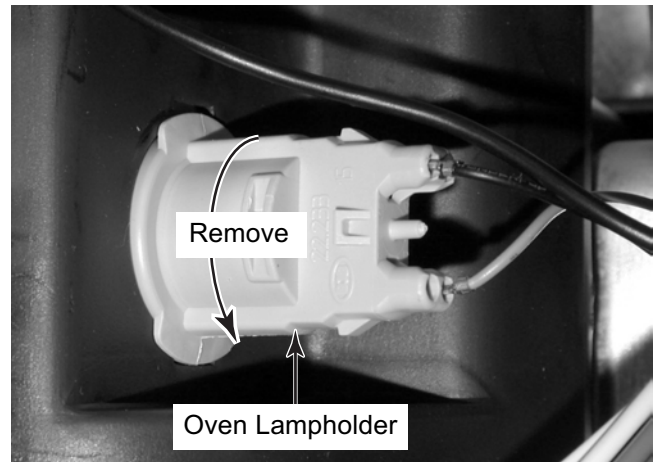
1. Unplug microwave oven or disconnect power.
2. Open the microwave oven door.
3. Remove the decorative panel and control board from the unit (see page 4-3 for the procedure).



4. To remove the line fuse, unsnap it from its holder.



5. To remove the oven lamp:
 - a) Turn the lampholder counterclockwise and remove it from the chassis.
 - b) Unscrew the lamp from the lampholder.



REMOVING AN ACCENT OR TASK LAMPHOLDER AND THE TURNTABLE MOTOR

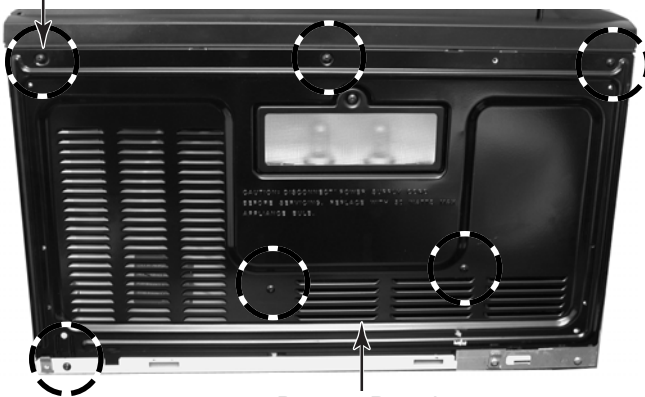
⚠ WARNING



Electrical Shock Hazard
Disconnect power before servicing.
Replace all parts and panels before operating.
Failure to do so can result in death or electrical shock.

1. Unplug microwave oven or disconnect power.
2. Remove the six screws from the bottom panel and lower the panel as far as the wiring will allow.

Screw (1 of 6)

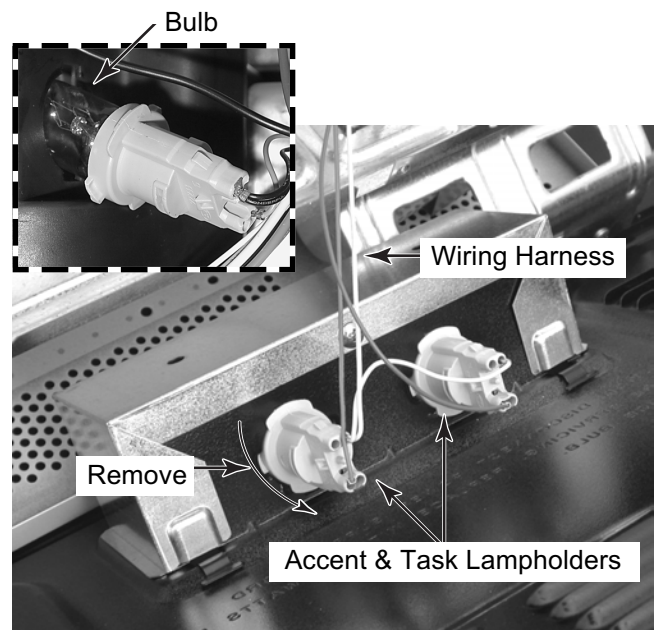


Bottom Panel

(Viewed From Bottom Of Unit)

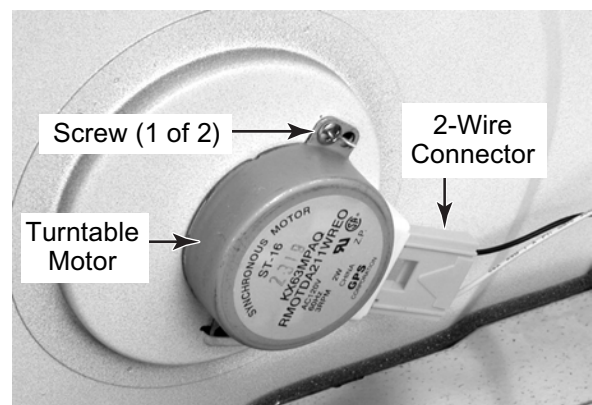
3. To remove an accent or a task lampholder:

- a) Turn the lampholder counterclockwise and unhook it from the mounting bracket.
- b) Remove the bulb from the lampholder.
- c) Cut the wires near the lampholder.
- d) Splice the wires from the new lampholder to the wiring harness with two twist-on connectors.



4. To remove the turntable motor:

- a) Disconnect the 2-wire connector from the motor terminals.
- b) Remove the two screws and remove the motor from the bottom of the unit.



REMOVING THE HUMIDITY SENSOR & CAVITY TEMPERATURE FUSE

⚠ WARNING



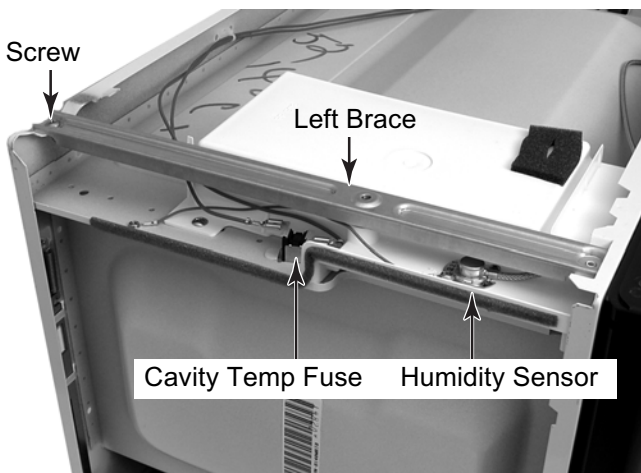
Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

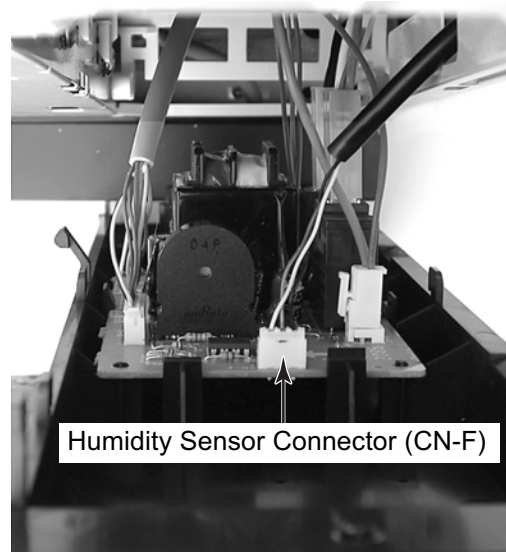
Failure to do so can result in death or electrical shock.

1. Unplug microwave oven or disconnect power.
2. Remove the cabinet from the microwave oven (see page 4-2 for the procedure).
3. Remove the screw from the left top brace and remove the brace from the unit.

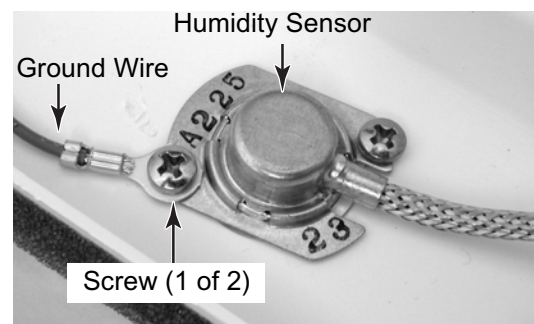


4. **To remove the humidity sensor:**
 - a) Remove the decorative panel and tilt it forward (see page 4-3 for the procedure).

- b) Disconnect the 3-wire sensor connector (red, black, & white wires) from the control board at CN-F.



- c) Remove the two screws and the green ground wire from the humidity sensor and remove the sensor.



⚠ WARNING



Electrical Shock Hazard

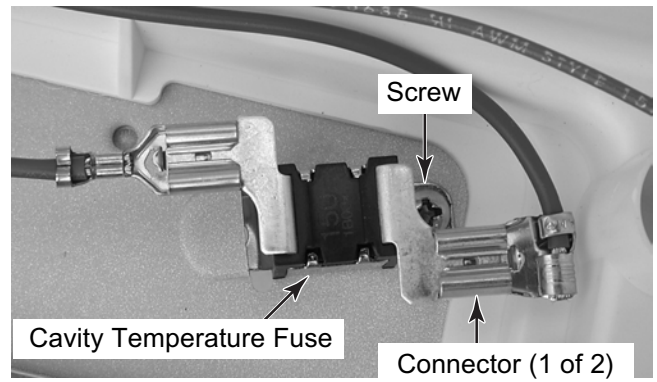
Connect green ground wire to ground screw.

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

5. **To remove the cavity temperature fuse:**

- a) Remove the screw and unhook the fuse from the unit.
- b) Disconnect the two wire connectors from the fuse terminals.

REASSEMBLY NOTE: Reconnect the wires to the cavity temperature fuse terminals before mounting it to the unit.



REMOVING THE MAGNETRON TEMPERATURE FUSE AND THE MAGNETRON

⚠ WARNING



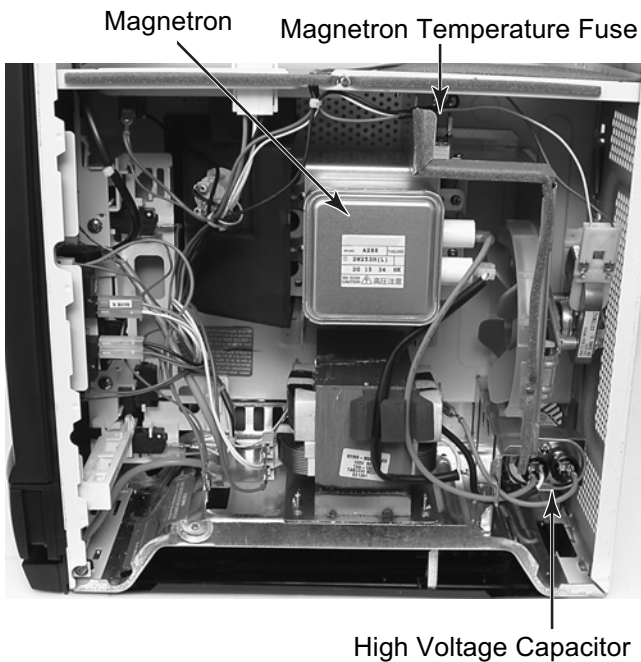
Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

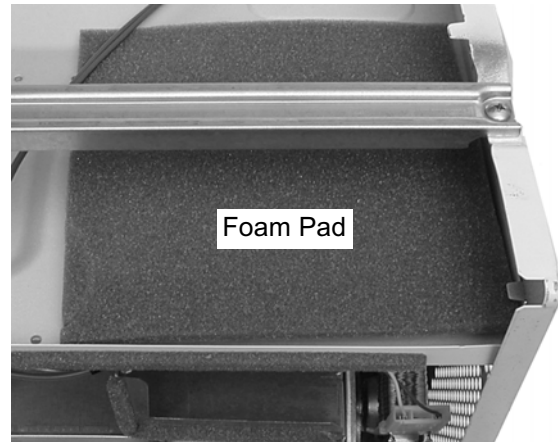
Failure to do so can result in death or electrical shock.

1. Unplug microwave oven or disconnect power.
2. Remove the cabinet from the microwave oven (see page 4-2 for the procedure).



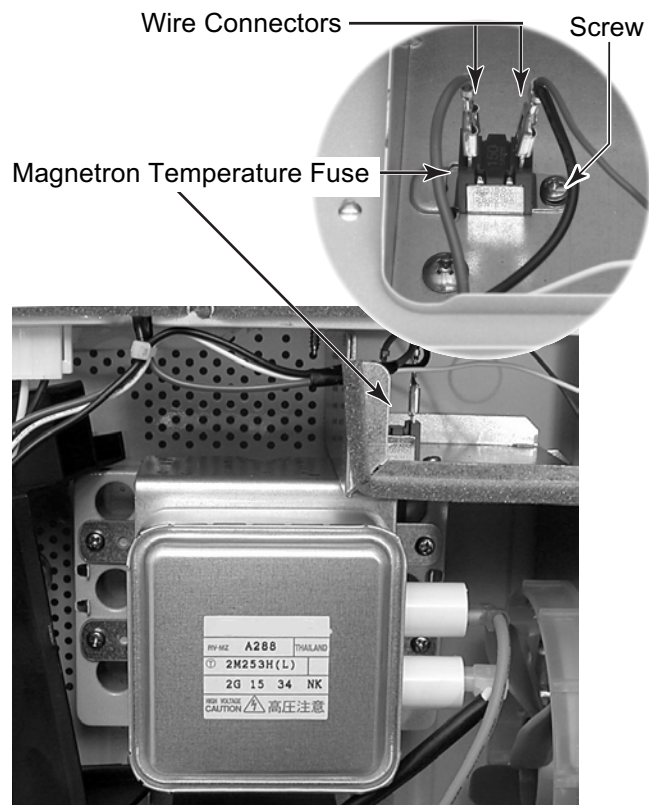
3. **Discharge the high voltage capacitor terminals with a 20,000 Ω resistor to chassis ground.**

4. Carefully lift the adhesive side of the foam pad off the top of the chassis and remove the pad from the opening.



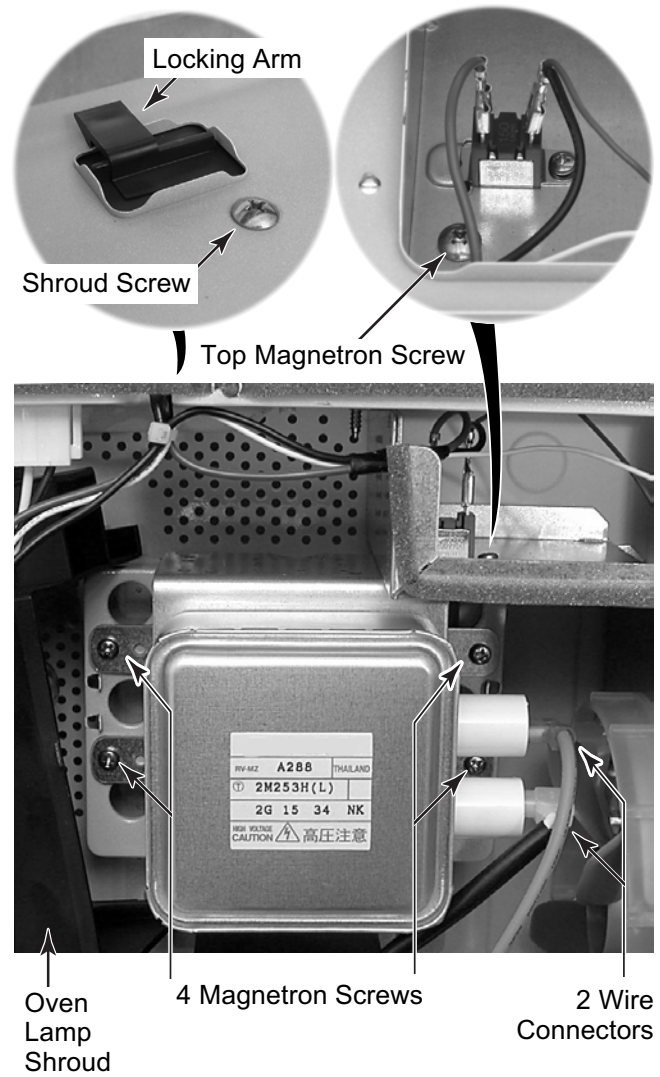
5. **To remove the magnetron temperature fuse:**

- a) Disconnect the wire connectors from the fuse terminals.
- b) Remove the screw from the fuse, unhook it from the chassis, and remove it.



6. **To remove the magnetron:**

- a) Remove the screw from the oven lamp shroud, unhook the locking arm, and position the shroud so you can access the left magnetron screws.
- b) Disconnect the two wire connectors from the magnetron terminals.
- c) Remove the one top and four side screws from the magnetron and remove the magnetron from the unit.



REMOVING THE HIGH VOLTAGE CAPACITOR & DIODE, AND THE COOLING FAN MOTOR

⚠ WARNING



Electrical Shock Hazard

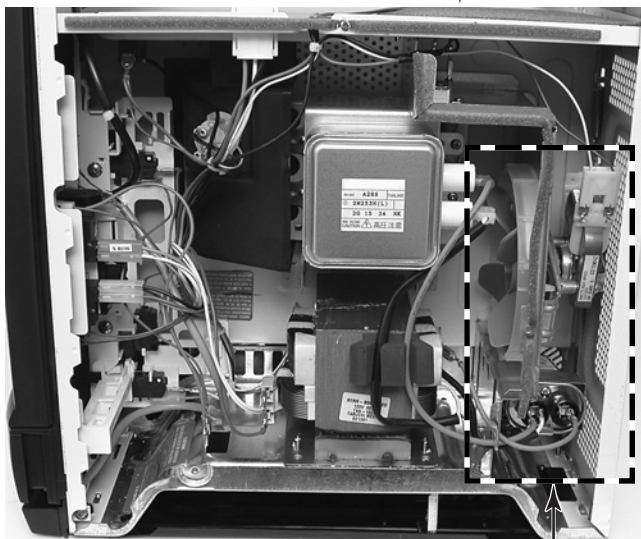
Disconnect power before servicing.

Replace all parts and panels before operating.

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

1. Unplug microwave oven or disconnect power.
2. Remove the cabinet from the microwave oven (see page 4-2 for the procedure).

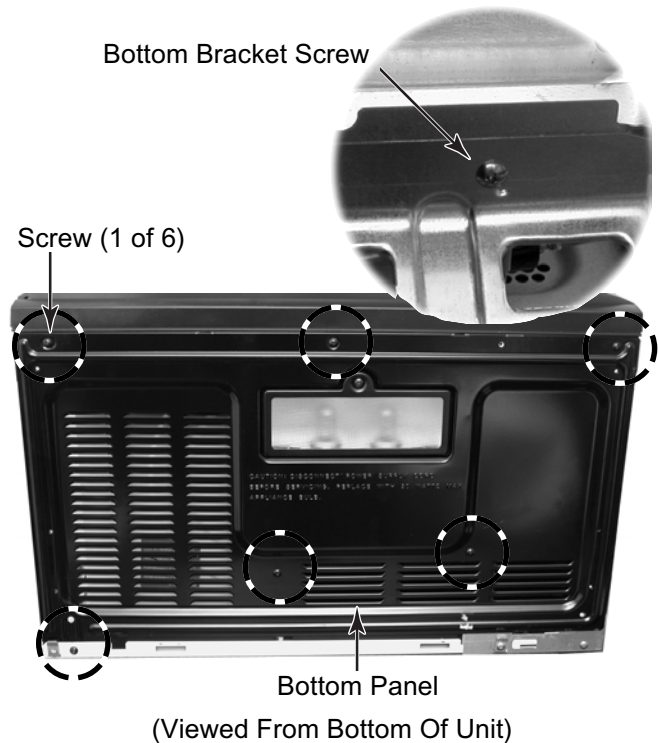
Foam Pad



High Voltage Capacitor & Diode
& Cooling Fan Motor

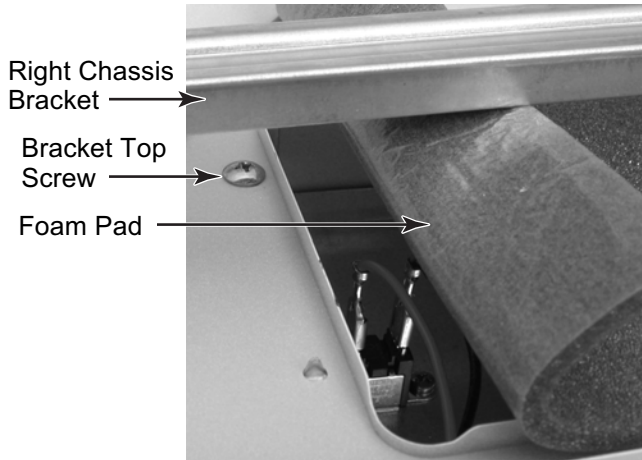
3. **Discharge the high voltage capacitor terminals with a 20,000 Ω resistor to chassis ground.**

4. Position the unit on its back panel.
5. Remove the six screws from the bottom panel and tilt the panel down as far as the wiring will allow.
6. Remove the bottom screw from the mounting bracket for the high voltage capacitor and diode, and the cooling fan motor.

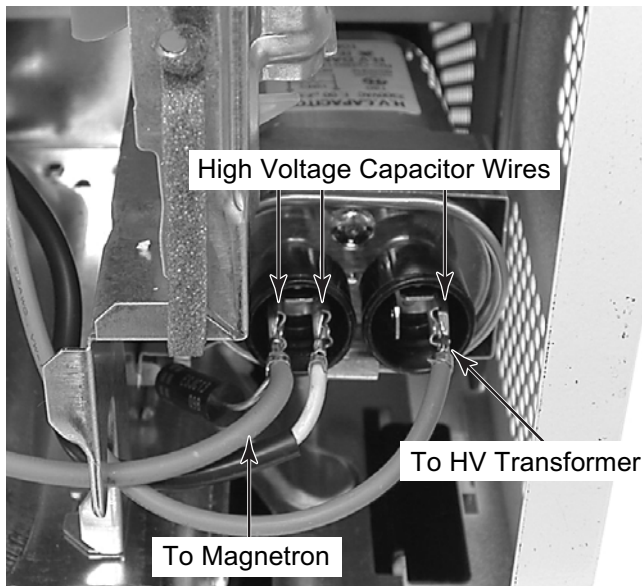


7. Close the bottom panel and hold it closed, then position the unit to its upright position so the right side faces you, as shown in the photo to the left.

8. Carefully lift the left side of the foam pad at the top of the chassis, and fold it back under the right chassis bracket.
9. Remove the screw from the top of the high voltage capacitor and cooling fan motor mounting bracket.

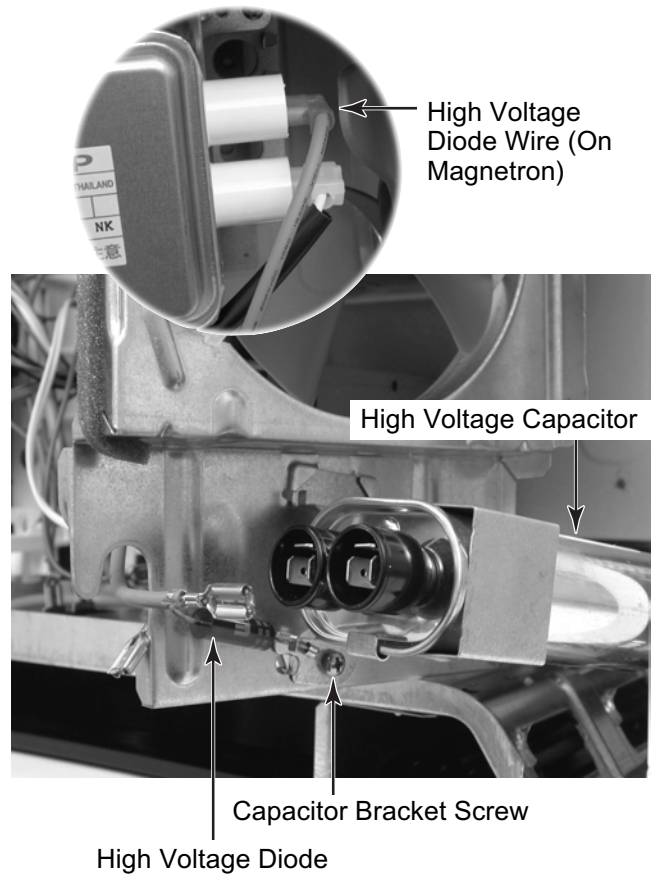


10. Disconnect the three wire connectors from the high voltage capacitor terminals.



12. To remove the high voltage capacitor, remove the mounting screw from the capacitor bracket, and remove the capacitor.

13. To remove the high voltage diode:
 - a) Remove the mounting screw from the capacitor bracket.
 - b) Disconnect the diode wire from the magnetron terminal and remove the diode.



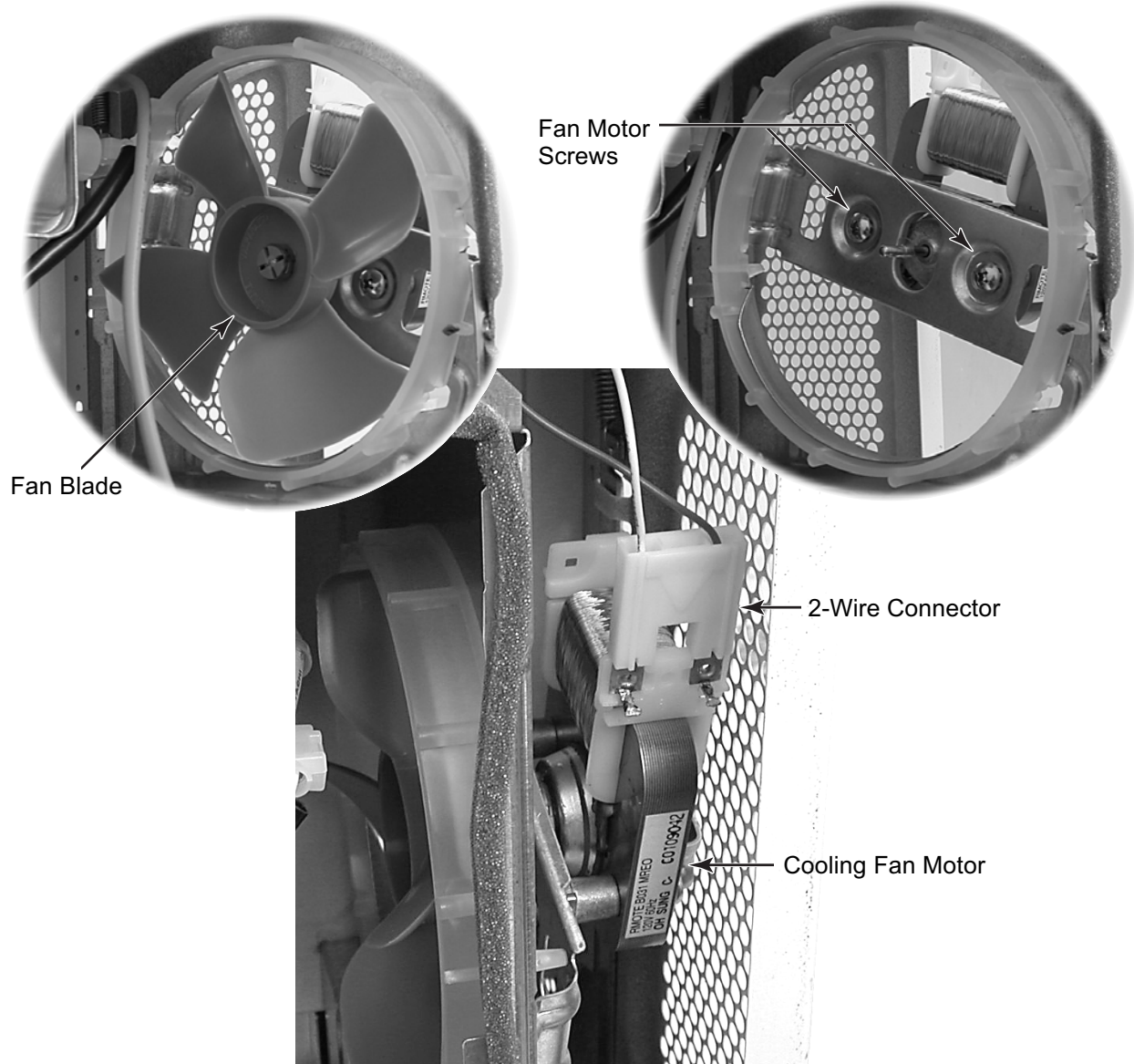
Continued on the next page.

11. Unhook the top and bottom of the mounting bracket for the high voltage capacitor & diode, and the cooling fan motor from the unit, and pull it out just far enough to access the capacitor bracket mounting screw.

14. To remove the cooling fan motor:

a) Disconnect the 2-wire connector from the motor terminals.

b) Pull the fan blade off the motor shaft.
c) Remove the two screws from the motor and remove it from the bracket.



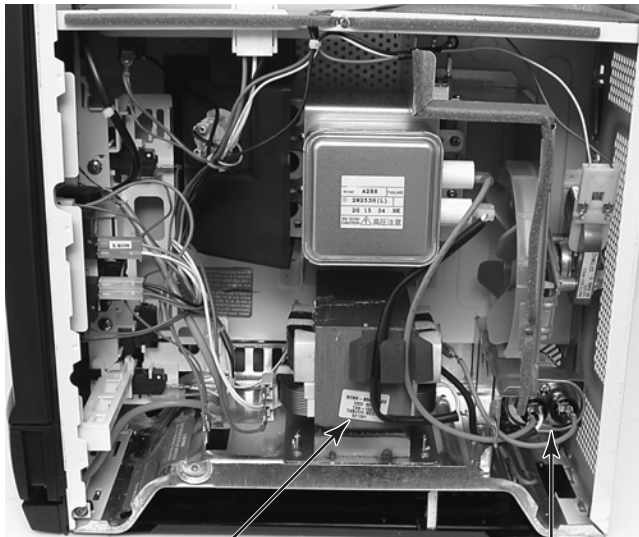
REMOVING THE HIGH VOLTAGE TRANSFORMER

⚠ WARNING



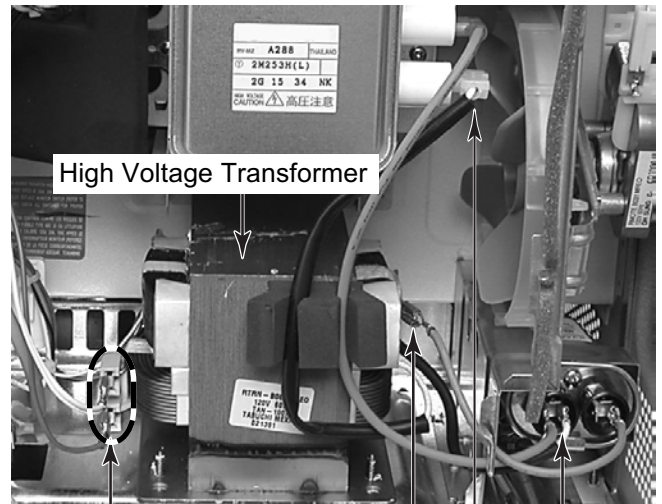
Electrical Shock Hazard
Disconnect power before servicing.
Replace all parts and panels before operating.
Failure to do so can result in death or electrical shock.

1. Unplug microwave oven or disconnect power.
2. Remove the cabinet from the microwave oven (see page 4-2 for the procedure).



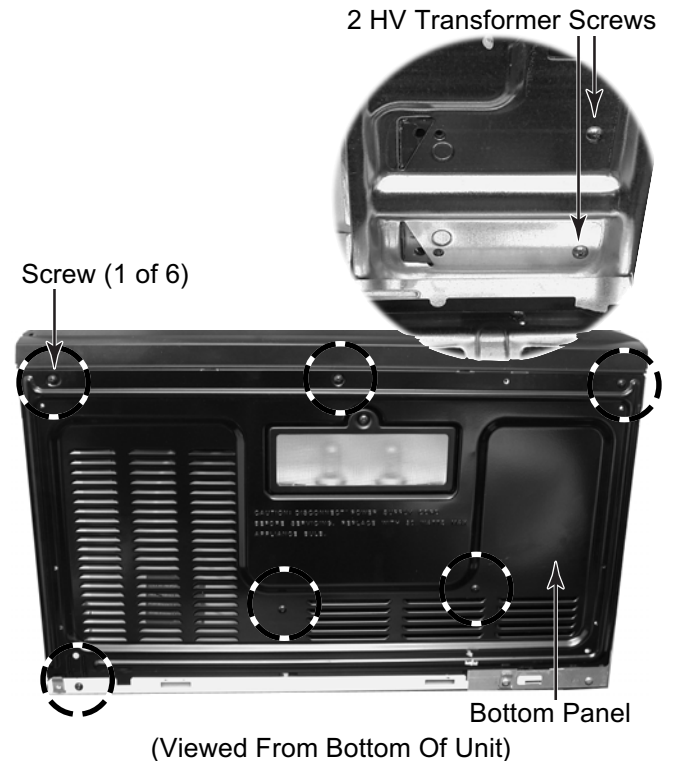
High Voltage Transformer High Voltage Capacitor

3. **Discharge the high voltage capacitor terminals with a 20,000 Ω resistor to chassis ground.**
4. Disconnect the three wires from the high voltage transformer terminals (see the photo at the top of the right column).
5. Disconnect the high voltage transformer wires from the magnetron and the high voltage capacitor terminals.



High Voltage Transformer
 High Voltage Transformer Connections

6. Position the unit on its back panel.
7. Remove the six screws from the bottom panel and tilt the panel down as far as the wiring will allow.
8. Hold the high voltage transformer in place, and remove the two screws from the bottom of the transformer.



9. Position the unit to its upright position and slide the transformer out of the unit.

REMOVING THE OVEN DOOR ASSEMBLY

⚠ WARNING



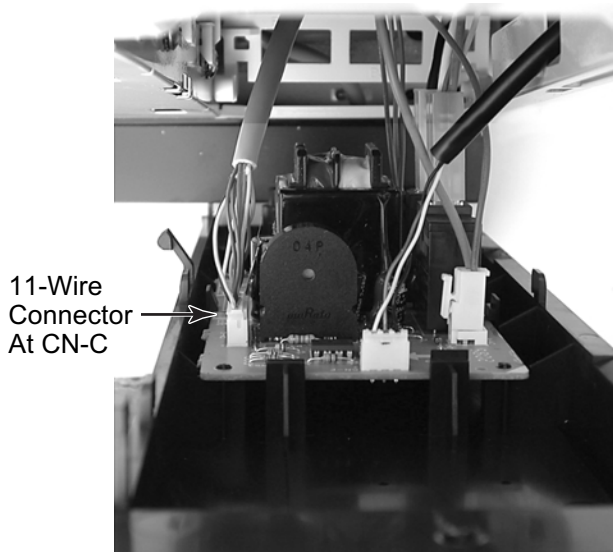
Electrical Shock Hazard

Disconnect power before servicing.

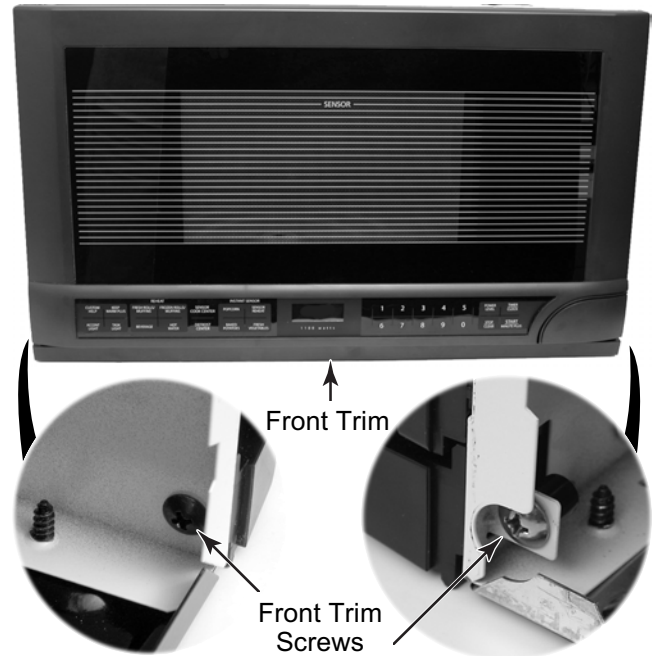
Replace all parts and panels before operating.

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

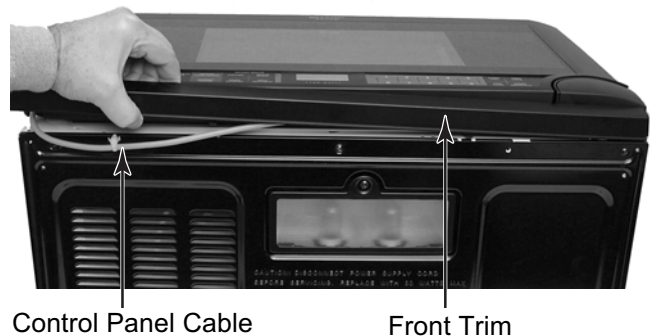
1. Unplug microwave oven or disconnect power.
2. Remove the cabinet from the microwave oven (see page 4-2 for the procedure).
3. Remove the decorative panel and tilt it forward (see page 4-3 for the procedure).
4. Disconnect the control panel's 11-wire connector from the control board at connector CN-C.



5. Remove the screw from each end of the front trim.



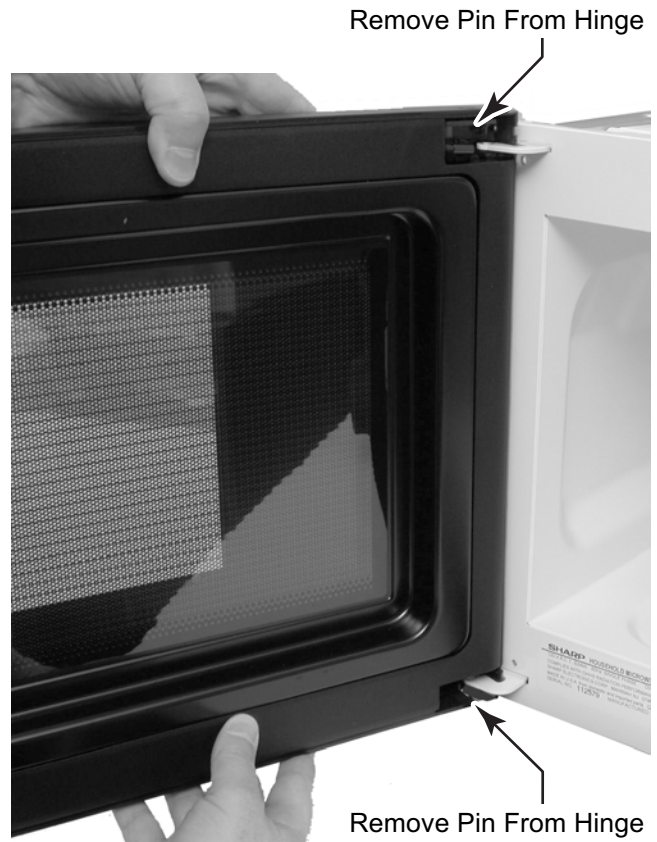
6. Lay the unit on its back panel.
7. Slide the front trim to the left and unhook it from the chassis, then lift the trim off the unit, and unhook the control panel cable from its clips.
8. Cut the cable ties from the control panel cable, and pull the connector end of the cable out of the unit.



9. Position the unit in its upright position.
10. Open the oven door.
11. Use a small-bladed screwdriver and pry the hinge covers out of the door.



12. Lift the door so that the top and bottom pins are out of the hinge holes, and remove the door and control panel.



REMOVING THE OVEN DOOR & CONTROL PANEL AND THE DISPLAY ASSEMBLY

⚠ WARNING



Electrical Shock Hazard

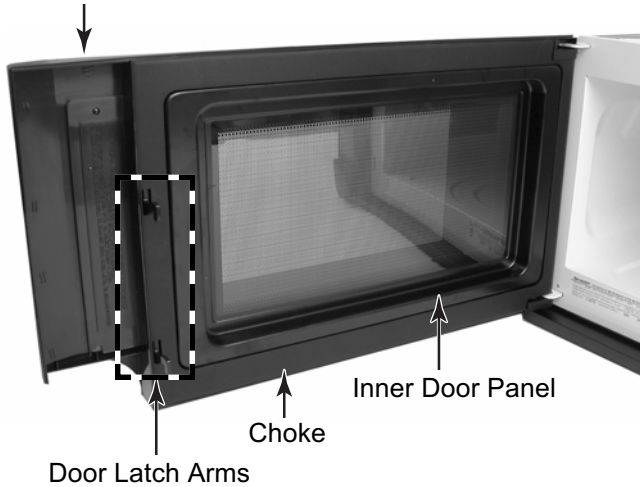
Disconnect power before servicing.

Replace all parts and panels before operating.

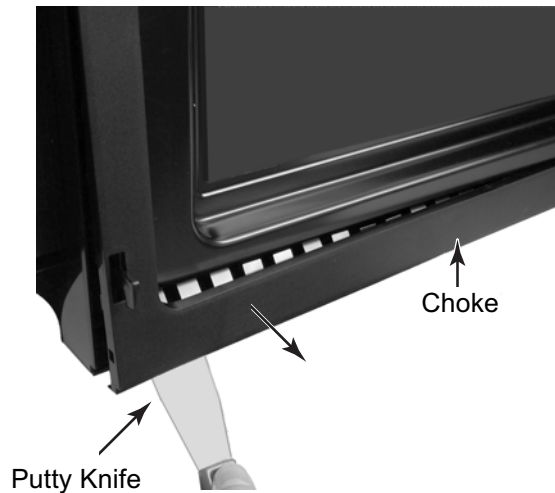
Failure to do so can result in death or electrical shock.

1. Unplug microwave oven or disconnect power.
2. Remove the cabinet from the microwave oven (see page 4-2 for the procedure).
3. Open the microwave oven door as far as it will go.

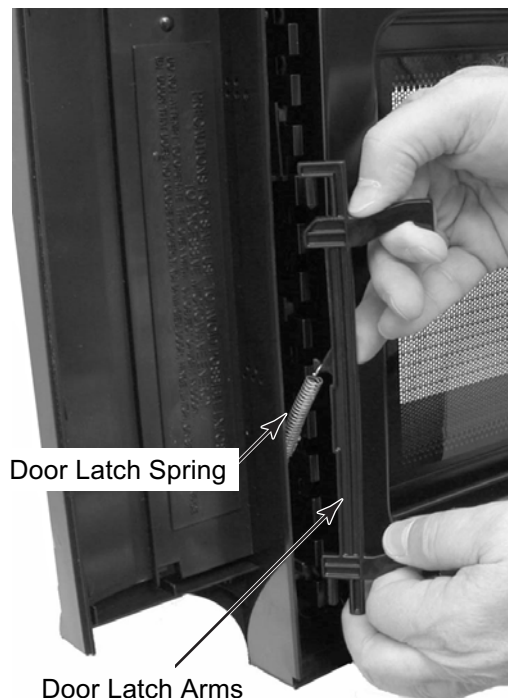
Outer Door Panel



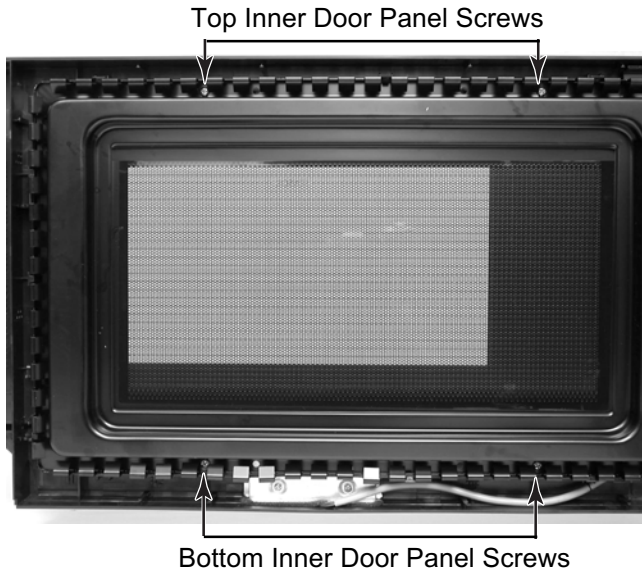
4. Use a putty knife and pry along the bottom outer edge of the door choke to release the clips from the tabs. Carefully pull out on the choke as you release the tabs. Work counterclockwise around the choke until you are able to remove it.



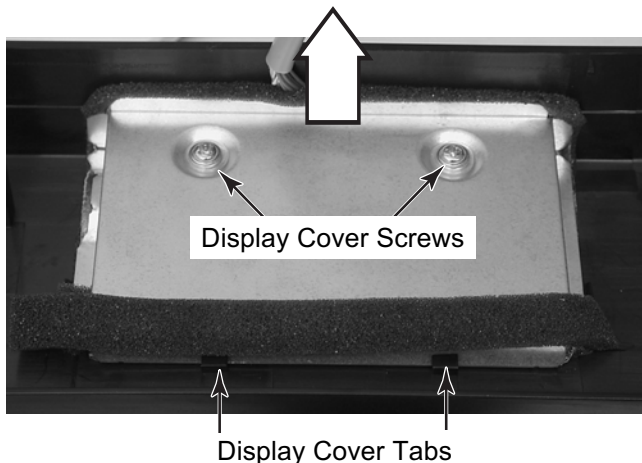
5. Lift the door latch arms and unhook them from the door panel, then pull out and remove the ends of the spring from the latch arms and the panel.



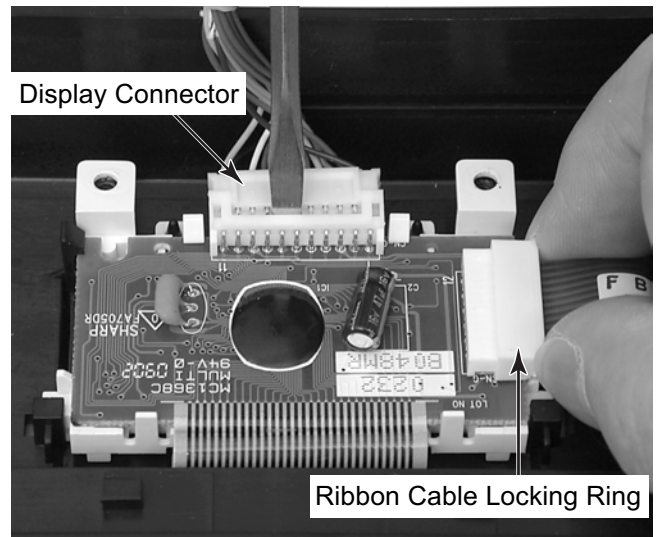
6. Remove the four screws (2 at the top, and 2 at the bottom) from the inner door panel.
7. Start at the bottom, and press to release the locking tabs along the inner door panel while you pull out on the panel. Continue around the door in a counterclockwise direction until you are able to remove the panel from the outer door panel.
8. Lift the inner door panel off the hinges and remove it.



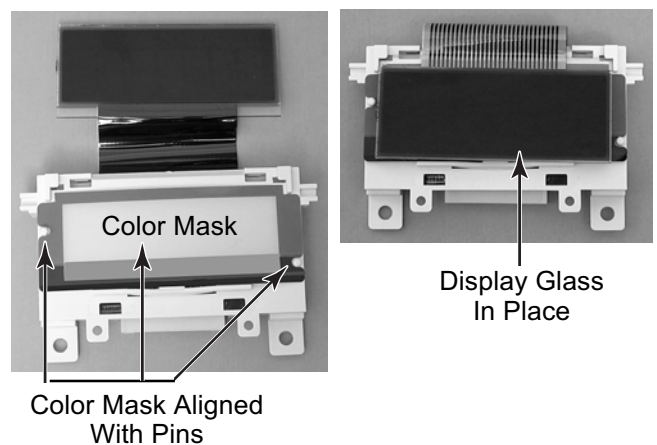
9. Lay the outer door panel on a padded surface.
10. Remove the two screws from the display assembly cover, then lift the cover at the screw hole side, slide the opposite edge out from under the tabs, and remove the cover.



11. Use a small-bladed screwdriver and pry the 11-wire display connector away from the board connector.
12. Pull out on the locking ring and release the ribbon cable, then pull the cable out of the connector.
13. Remove the display assembly from the outer door panel.



REASSEMBLY NOTE: When mounting the assembly to the outer door panel, make sure that the notches in the color mask remain aligned with the board holder pins, (left photo). When you install the new display assembly, be sure to keep the display glass and color insert together (right photo), so the mask does not become misaligned.




— NOTES —

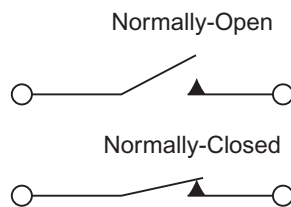
COMPONENT TESTING

Before testing a component, be sure to observe the following conditions:

- Discharge the high voltage capacitor before conducting any of the following tests.
- All operational checks using microwave energy must be done with the microwave oven loaded with a minimum of 275 ml (9.3 oz.) of water in a microwave safe container.
- Conduct a microwave energy test after performing any tests or repairs to the microwave.
- Check that all wire leads are in the correct position before operating the microwave oven.
- Grasp wire connectors when removing the wire leads from microwave parts.

	! WARNING
	Electrical Shock Hazard
	Disconnect power before servicing. Replace all parts and panels before operating. Failure to do so can result in death or electrical shock.

DOOR SWITCHES



Refer to page 4-4 for the procedure for servicing the door switches.

1. Unplug microwave oven or disconnect power.
2. Disconnect the wires from the switch terminals.

3. Set the ohmmeter to the R x 1 scale.
4. Touch the ohmmeter test leads to the terminals of the **primary** or **secondary** interlock switch (normally-open). The meter should indicate an open circuit (infinite).
5. Touch the ohmmeter test leads to the terminals of the **monitor** switch (normally-closed). The meter should indicate a closed circuit (0 Ω).

NOTE: Pressing the actuator button should result in opposite readings (normally-open should read closed, and normally-closed should read open).



⚠ WARNING

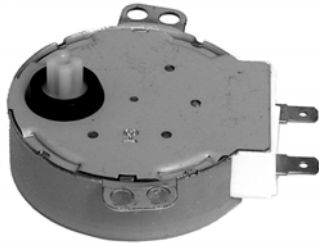
Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

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

TURNTABLE MOTOR



Refer to page 4-7 for the procedure for servicing the turntable motor.

1. Unplug microwave oven or disconnect power.
2. Disconnect the wire connector from the turntable motor.
3. Set the ohmmeter to the R x 1K scale.
4. Touch the ohmmeter test leads to the turntable motor terminals. The meter should indicate between 2700 and 3800 Ω .

HV CAPACITOR



Refer to page 4-12 for the procedure for servicing the high voltage capacitor.

1. Unplug microwave oven or disconnect power.
2. **Discharge the high voltage capacitor terminals with a 20,000 Ω resistor to chassis ground.**
3. Disconnect the wires from the capacitor terminals.
4. Set the ohmmeter to the R x 1K scale.
5. Touch one of the ohmmeter test leads to the chassis, and the other test lead to each of the capacitor terminals. The meter should briefly indicate a low resistance, and then gradually return towards infinity.



⚠ WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

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

HUMIDITY SENSOR



Refer to page 4-8 for the procedure for servicing the humidity sensor.

1. Unplug microwave oven or disconnect power.
2. Disconnect the 3-wire connector from the control board.
3. Set the ohmmeter to the R x 1K scale.
4. Touch the ohmmeter test leads to the indicated wire terminals of the 3-wire connector. The meter should indicate as follows:

Black to white = approximately 2800 Ω
@ 77°F/25°C.

White to red = approximately 2800 Ω
@ 77°F/25°C.

CAVITY & MAGNETRON TEMPERATURE FUSES



Cavity
Temperature Fuse



Magnetron
Temperature Fuse

Refer to pages 4-8 and 4-10 for the procedures for servicing the cavity and magnetron temperature fuses.

1. Unplug microwave oven or disconnect power.
2. **Discharge the high voltage capacitor terminals with a 20,000 Ω resistor to chassis ground.**
3. Disconnect the wires from the terminals.
4. Set the ohmmeter to the R x 1 scale.
5. Touch the ohmmeter test leads to the terminals. The meter should indicate a closed circuit (0 Ω).

NOTE: The cavity temperature fuse opens @ 329°F / 165°C. The magnetron temperature fuse opens @ 257°F / 125°C. If the fuse is defective, the ohmmeter will indicate an infinite circuit.



⚠️ WARNING

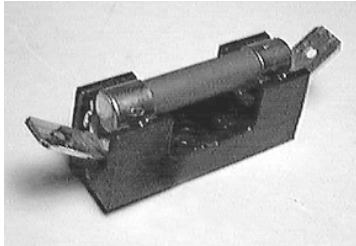
Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

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

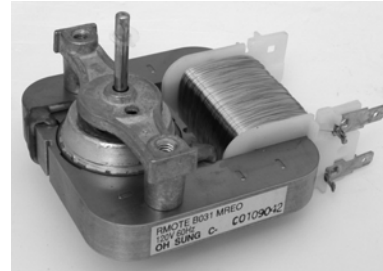
LINE FUSE



Refer to page 4-6 for the procedure for servicing the line fuse.

1. Unplug microwave oven or disconnect power.
2. Set the ohmmeter to the R x 1 scale.
3. Touch the ohmmeter test leads to the ends of the fuse. The meter should indicate a closed circuit (0Ω).

COOLING FAN MOTOR



Refer to page 4-12 for the procedure for servicing the cooling fan motor.

1. Unplug microwave oven or disconnect power.
2. Set the ohmmeter to the R x 1 scale.
3. Touch the ohmmeter test leads to the cooling fan motor terminals. The meter should indicate between 60 and 80 Ω .



⚠ WARNING

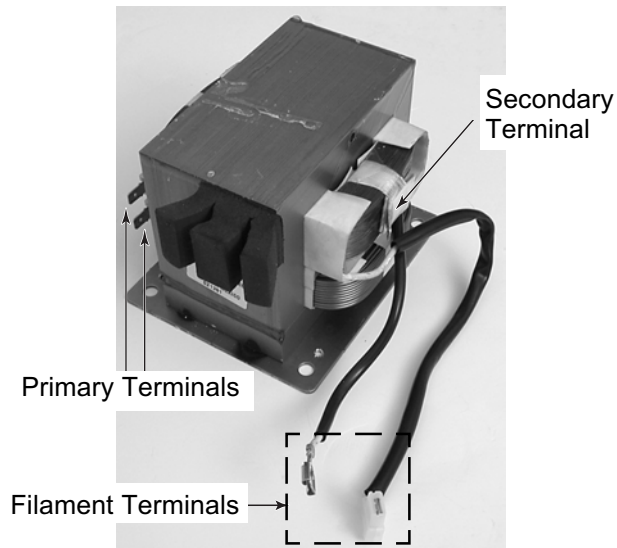
Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

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

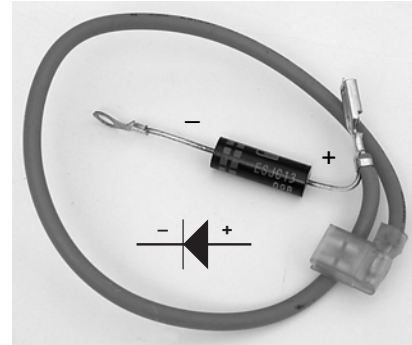
HIGH VOLTAGE TRANSFORMER



Refer to page 4-15 for the procedure for servicing the high voltage transformer.

1. Unplug microwave oven or disconnect power.
2. **Discharge the high voltage capacitor terminals with a 20,000 Ω resistor to chassis ground.**
3. Disconnect the filament wires, and the wires from the primary and secondary terminals.
4. Set the ohmmeter to the R x 1 scale.
5. Touch the ohmmeter test leads to the primary terminals. The meter should indicate less than 1 Ω .
6. Touch the ohmmeter test leads to the filament terminals. The meter should indicate less than 1 Ω .
7. Touch one ohmmeter test lead to the secondary terminal and the other test lead to the chassis. The meter should indicate between 60 and 80 Ω .

HIGH VOLTAGE DIODE



Refer to page 4-12 for the procedure for servicing the high voltage diode.

1. Unplug microwave oven or disconnect power.
2. **Discharge the high voltage capacitor terminals with a 20,000 Ω resistor to chassis ground.**
3. Disconnect the diode wire connector from the filament terminal on the magnetron.
4. Set the ohmmeter to the R x 10K scale.
5. Touch the black (-) ohmmeter test lead to the ground screw and the red (+) test lead to the lead end of the diode. The meter should indicate approximately 40 K Ω .
6. Reverse the ohmmeter test leads, and the meter should indicate infinity (∞).



⚠ WARNING

Electrical Shock Hazard

Disconnect power before servicing.

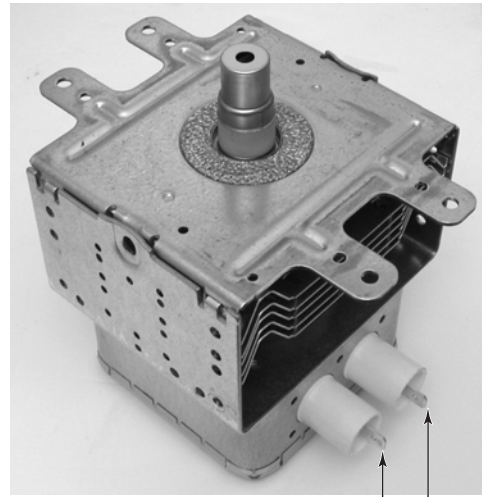
Replace all parts and panels before operating.

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

MAGNETRON

Refer to page 4-10 for the procedure for servicing the magnetron.

1. Unplug microwave oven or disconnect power.
2. **Discharge the high voltage capacitor terminals with a 20,000 Ω resistor to chassis ground.**
3. Disconnect the wire connectors from the filament terminals.
4. Set the ohmmeter to the R x 1 scale.
5. Touch the ohmmeter test leads to the filament terminals. The meter should indicate less than 1 Ω .
6. Touch one ohmmeter test lead to the chassis, and the other test lead to each of the filament terminals. The meter should indicate infinity (∞).



Filament Terminals

DIAGNOSIS & TROUBLESHOOTING

TROUBLESHOOTING

IMPORTANT: If the oven becomes inoperative because of a blown monitor fuse, check the monitor switch, relay RY1, secondary interlock relay RY2, secondary (door sensing) interlock switch, and primary interlock switch before replacing the monitor fuse. If monitor fuse is replaced, the monitor switch must also be replaced. Use part **#FFS-BA016/Kit** as an assembly.

Whenever troubleshooting is performed with the power supply cord disconnected, it may in some cases be necessary to connect the power supply cord after the cabinet has been removed:

1. Disconnect the power supply cord, and then remove the cabinet (see page 4-2).
2. Open the oven door and block it open.
3. Use a 20,000 Ω , 2-Watt resistor to ground, and discharge the high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Ensure that the leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, reconnect the power supply cord.

When the testing is completed:

1. Disconnect the power supply cord, and then remove the cabinet (see page 4-2).
2. Open the door.
3. Use a 20,000 Ω , 2-Watt resistor to ground, and discharge the high voltage capacitor.
4. Reconnect the leads to the primary of the power transformer.
5. Reinstall the cabinet.
6. Reconnect the power supply cord.
7. Run the oven and check all of the functions.

TOUCH CONTROL PANEL ASSEMBLY TEST

The touch control panel consists of semiconductor circuits. Unlike conventional microwave ovens, proper maintenance cannot be performed with only a voltmeter and ohmmeter. The touch control panel assembly is divided into the "Control Unit" and the "Key Unit."

BEFORE TESTING

1. Disconnect the power supply cord.
2. Remove the cabinet (see page 4-2).
3. Open the door and block it open.
4. To discharge the high voltage capacitor, wait for 60 seconds.
5. Disconnect the leads to the primary of the high voltage transformer. Ensure that these leads remain isolated from other components and oven chassis by taping them using insulation tape.

Key Unit

1. Check key unit ribbon connection before replacement.
2. Reinstall the cabinet.
3. Reconnect the power supply cord after the cabinet is installed.
4. Run the oven and check all functions. The following symptoms indicate a defective key unit.
 - a) When touching the pads, a certain pad produces no signal at all.
 - b) When touching a number pad, two figures or more are displayed.
 - c) When touching the pads, sometimes a pad produces no signal. If the key unit is defective, replace the key unit.

Control Unit

The following symptoms indicate a defective control unit. Before replacing the control unit, perform the "Key Unit" test to determine if the control unit is faulty.

1. In connection with pads:
 - a) When touching the pads, a certain group of pads do not produce a signal.
 - b) When touching the pads, no pads produce a signal.
2. In connection with indicators:
 - a) At a certain digit, all or some segments do not light up.
 - b) At a certain digit, brightness is low.
 - c) Only one indicator does not light.
 - d) The corresponding segments of all digits do not light up; or they continue to light up.
 - e) A wrong figure appears.
 - f) A certain group of indicators do not light up.
 - g) The figure of all digits flicker.
3. Other possible problems caused by defective control unit:
 - a) Buzzer does not sound or continues to sound.
 - b) Clock does not operate properly.
 - c) Cooking is not possible.

WHEN TESTING IS COMPLETED

1. Disconnect the power supply cord.
2. Open the door and block it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Reconnect all leads removed from components during testing.
5. Reinstall the cabinet.
6. Reconnect the power supply cord after the cabinet is installed.
7. Run the oven and check all functions.

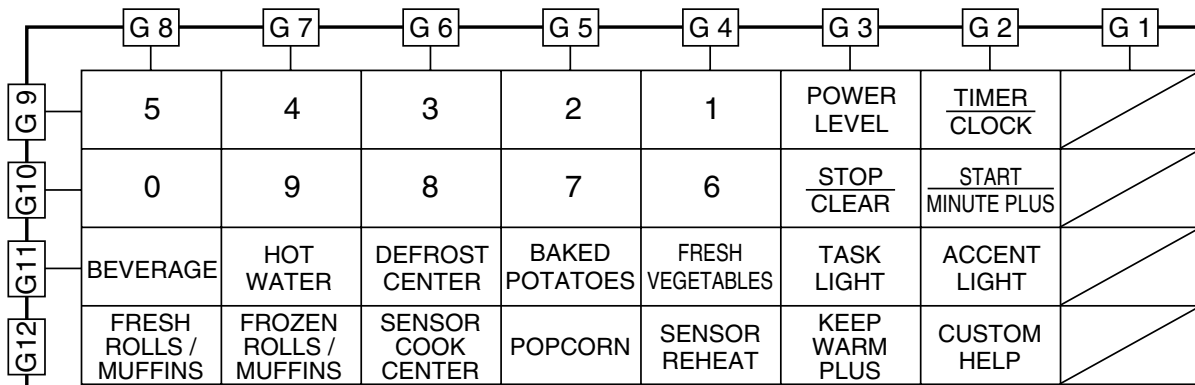
KEY UNIT TEST

1. Disconnect the power supply cord.
2. Open the door and block it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. If the display fails to clear when the STOP/CLEAR keypad is depressed, first verify the flat ribbon cable is making good contact, and that the secondary (door sensing) interlock switch operates properly. The contacts should be closed when the door is closed, and open when the door is open.
5. If the door sensing switch is good, disconnect the flat ribbon cable that connects the key unit to the control unit, and make sure the secondary (door sensing) interlock switch is closed (either close the door or short the door sensing switch connector).

Use the Key Unit matrix, shown below, and place a jumper wire between the pins that correspond to the STOP/CLEAR keypad making momentary contact.

If the control unit responds by clearing with a beep, the key unit is faulty, and must be replaced. If the control unit does not respond, it is faulty, and must be replaced. If a specific pad does not respond, the above method may be used, after clearing the control unit to determine if the control unit, or a keypad is at fault.

6. Reconnect all leads removed from components during testing.
7. Reinstall the cabinet.
8. Reconnect the power supply cord.
9. Run the oven and check all the functions.



RELAY TEST

1. Disconnect the power supply cord.
2. Remove the unit from the wall (see page 2-1).
3. Remove the cabinet (see page 4-2).
4. Open the door and block it open.
5. To discharge the high voltage capacitor, wait for 60 seconds.
6. Disconnect the leads to the primary of the power transformer. Ensure that these leads remain isolated from other components and oven chassis by taping them using insulation tape.
7. Reconnect the power supply cord.
8. Check the voltage between the normally-open terminal of relay RY2, and the normally-open terminal of relay RY1 on the control unit with an AC voltmeter. The meter should indicate 120 volts. If not, check the oven circuit.

RY1, RY2, RY3 & RY4 RELAYS

These relays are operated by DC voltage.

Check the voltage at the relay coil with a DC voltmeter during the microwave cooking operation.

If a DC voltage is indicated, the relay is defective. If a DC voltage is not indicated, check the diode that is connected to the relay coil. If the diode is good, the control unit is defective.

1. Disconnect the power supply cord.
2. Open the oven door and block it.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Reconnect all of the leads that were removed from components during testing.
5. Reinstall the cabinet.
6. Reconnect the power supply cord.
7. Run the oven and check all the functions.

RELAY SYMBOL	OPERATIONAL VOLTAGE	CONNECTED COMPONENTS
RY1	Approx. -26.3V D.C.	Oven lamp / Fan motor / Turntable motor
RY2(COOK)	Approx. -25.3V D.C.	Power transformer
RY3	Approx. -26.3V D.C.	Hood lamp
RY4	Approx. -26.3V D.C.	Hood lamp

DEFROST CENTER TEST

1. Open the oven door.
2. Place one cup of water in the center of the turntable tray in the oven cavity.
3. Close the oven door.
4. Touch the "DEFROST CENTER" keypad.
5. Touch the number **2** keypad and the number **5** keypad.

6. Touch the START keypad. The oven is now in the Defrost Center cooking mode.
7. The oven will operate as follows:

Menu	1ST STAGE		2ND STAGE	
	LEVEL	TIME	LEVEL	TIME
Steaks/Chops 0.5lbs	60%	57sec.	40%	17sec.

8. If the operation is not correct, the control unit is probably defective.

ABSOLUTE HUMIDITY (AH) SENSOR

CHECKING THE INITIAL SENSOR COOKING CONDITION

IMPORTANT: The oven should be fully assembled before performing the test procedure.

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

WATER LOAD COOKING TEST

IMPORTANT: The oven should be fully assembled before performing the test procedure.

1. Make sure the oven has been plugged in at least two minutes before checking sensor cook operation.
2. The cabinet should be installed and screws tightened.
3. Fill approximately 200 milliliters (7.2 oz) of tap water in a 1000 milliliter measuring cup.
4. Place the container on the center of tray in the oven cavity.
5. Close the oven door.
6. Touch the TIMER/CLOCK keypad once, the POWER LEVEL keypad twice, the START keypad once, the number keypad **1** once, and the number keypad **4** once. The oven is now in the "Sensor Cooking" mode, and "AH20," "SENSOR," and "COOK" will appear in the display.
7. The oven will operate for the first 16 seconds without generating microwave energy.

NOTE: "ERROR" will appear if the door is opened, or if the STOP/CLEAR keypad is touched during the first stage of sensor cooking.

8. After approximately 16 seconds, microwave energy is produced. If "ERROR" is displayed, or if the oven does not turn off, replace the AH sensor, or check the control unit (refer to the explanation on the next page).

If the oven stops after 5 minutes, and "ERROR" is displayed, the AH sensor is normal. Check other parts except the AH sensor.

TESTING THE AH SENSOR AND/OR CONTROL UNIT

NOTE: To determine if the sensor is defective, the simplest method is to replace it with a new replacement sensor.

1. Disconnect the power supply cord.
2. Remove the cabinet (see page 4-2).
3. Open the door and block it open.
4. To discharge the high voltage capacitor, wait for 60 seconds.
5. Remove the AH sensor.
6. Install the new AH sensor.
7. Reconnect all leads removed from components during testing.
8. Reinstall the cabinet.
9. Reconnect the power supply cord.
10. Reconnect the oven to the power supply and check the sensor cook operation as follows:
 - a) Fill approximately 200 milliliters (7.2 oz) of tap water in a 1000 milliliter measuring cup.
 - b) Place the container on the center of tray in the oven cavity, and close the door.
 - c) Touch the TIMER/CLOCK keypad once, the POWER LEVEL keypad twice, the START pad once, the number pad **1** once, and the number pad **4** once.
 - d) The control panel is in the "Automatic Sensor" mode.
 - e) The oven should turn off automatically, and the time for detecting moisture should be displayed.

If the new sensor does not operate properly, the problem is with the control unit (refer to the following section).

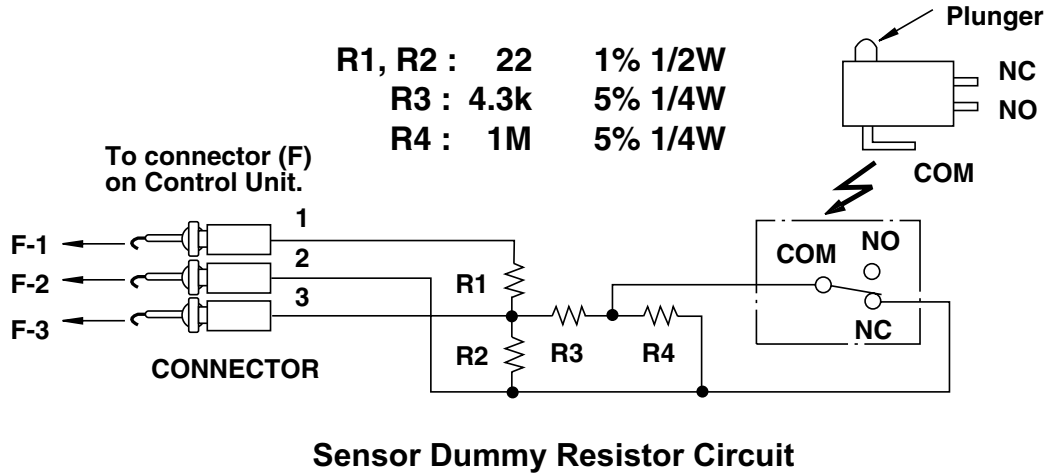
CHECKING THE CONTROL UNIT

1. Disconnect the power supply cord.
2. Remove the cabinet (see page 4-2).
3. Open the door and block it open.
4. To discharge the high voltage capacitor, wait for 60 seconds.
5. Disconnect the sensor connector from the control panel.
6. Connect the dummy resistor circuit (see the illustration on the next page) to the sensor connector of the control panel.
7. Disconnect the leads to the primary of the power transformer. Ensure that these leads remain isolated from other components and oven chassis by taping them using insulation tape.
8. Reinstall the cabinet and reconnect the power supply cord.
9. Check the sensor cook operation as follows:
 - a) Touch the TIMER/CLOCK keypad once, the POWER LEVEL keypad twice, the START keypad once, the number **1** keypad once, and the number **4** keypad once.
 - b) The control panel is in the "Sensor Cooking" mode.
 - c) After approximately 19 seconds, push the plunger of the select switch for more than 3 seconds. This condition is same as for the AH sensor.
 - d) After approximately 3 seconds, the display shows "**XX.XX**" (the time for detecting moisture). If the display is incorrect, the control unit is probably defective. If the display is correct, the AH sensor is probably defective.

Continued on the next page.

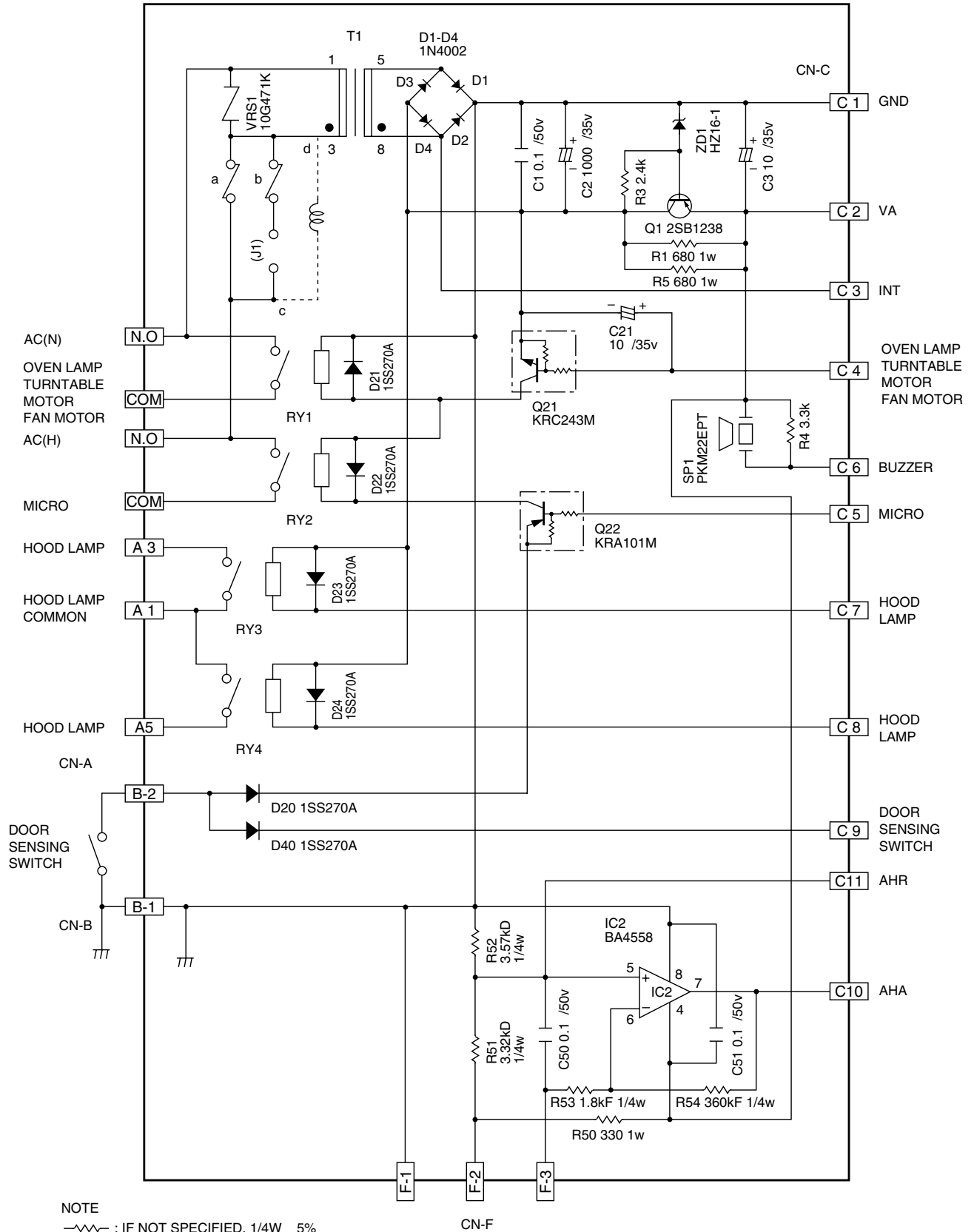
10. Disconnect the power supply cord.
11. Remove the cabinet.
12. Open the door and block it open.
13. To discharge high voltage capacitor, wait for 60 seconds.
14. Disconnect the dummy resistor circuit from the sensor connector of control panel.
15. Perform the necessary repairs.

16. Reconnect all of the leads that were removed from components during testing and repairing.
17. Reinstall the cabinet.
18. Reconnect the power supply cord.
19. Run the oven and check all of the functions.
20. Repeat the "Water Load Cooking Test" on page 6-6, and make sure that the unit operates properly.

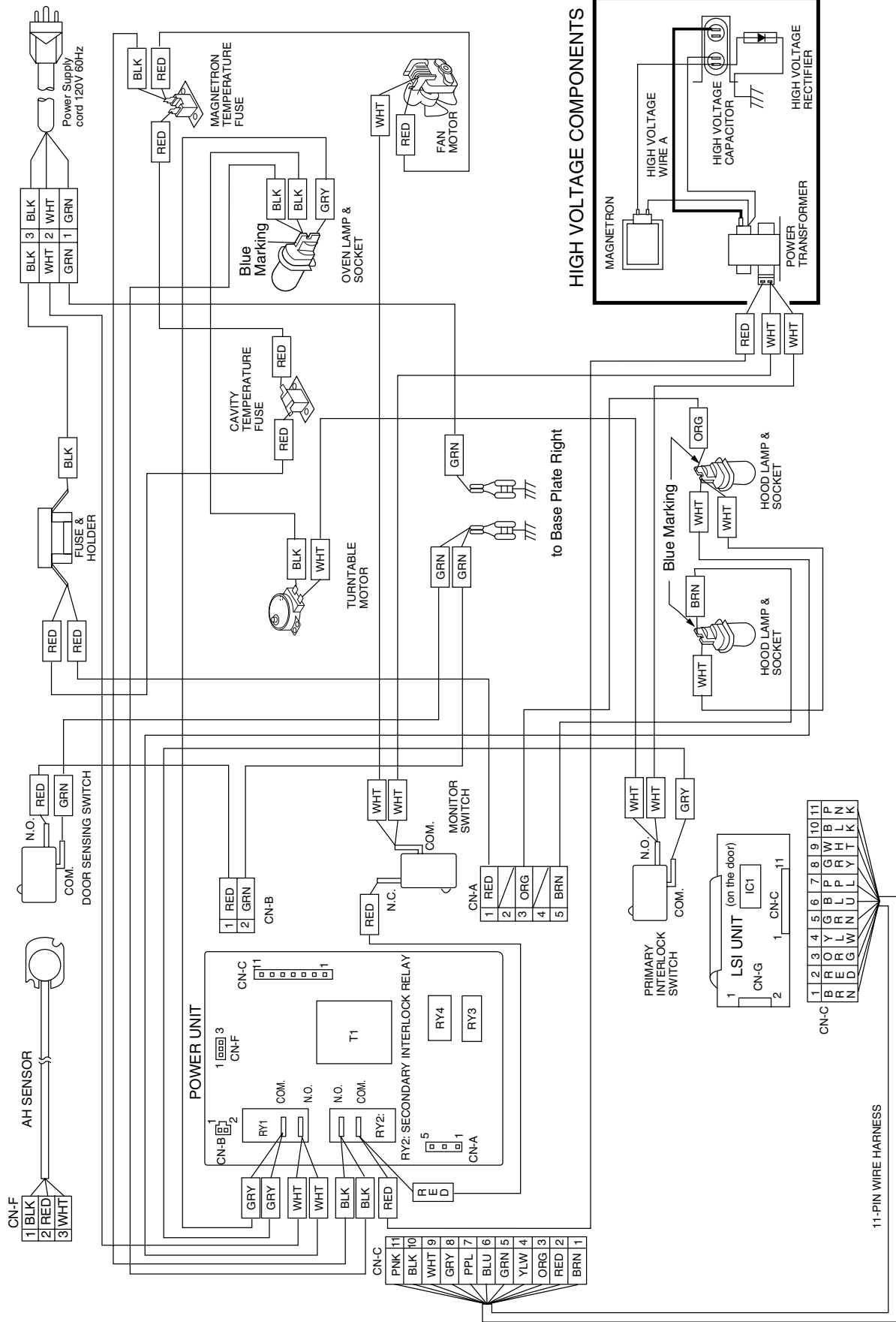


WIRING DIAGRAMS

SCHEMATIC DIAGRAM



WIRING DIAGRAM



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