

Models and manufacturing numbers in this manual. 2002 models are listed in bold.

# Service

## Over The Range 2001 and 2002 Domestic Microwave Ovens

This manual replaces RS2100011 Revision 0.

Service Manual for:

Amana®

Jenn-Air®

Maytag®

ACO1520AB  
**ACO1520AC**  
ACO1520AW  
ACO1530AB  
ACO1530AW  
**ACO1560AB**  
**ACO1560AC**  
**ACO1560AS**  
**ACO1560AW**  
ACO1840AB  
ACO1840AC  
ACO1840AW  
ACO1860AB  
ACO1860AC  
ACO1860AS  
ACO1860AW  
**JMV8196AAB**  
**JMV8196AAQ**  
**JMV8196AAS**  
**JMV8196AAW**  
**MMV4184AAB**  
**MMV4184AAQ**  
**MMV4184AAW**  
**MMV5156AAB**  
**MMV5156AAQ**  
**MMV5156AAS**  
**MMV5156AAW**  
**MMV5186AAB**  
**MMV5186AAQ**  
**MMV5186AAS**  
**MMV5186AAW**  
MVHRK3  
MVHRK4

This manual is to be used by qualified appliance technicians only. Maytag does not assume any responsibility for property damage or personal injury for improper service procedures done by an unqualified person.

# **MAYTAG**®

16021668  
Revision 0  
September 2002

# Important Information

Pride and workmanship go into every product to provide our customers with quality products. It is possible, however, that during its lifetime a product may require service. Products should be serviced only by a qualified service technician who is familiar with the safety procedures required in the repair and who is equipped with the proper tools, parts, testing instruments and the appropriate service manual. **REVIEW ALL SERVICE INFORMATION IN THE APPROPRIATE SERVICE MANUAL BEFORE BEGINNING REPAIRS.**

## Important Notices for Consumers and Servicers



### **WARNING**

To avoid risk of serious injury or death, repairs should not be attempted by an unauthorized personal, dangerous conditions (such as exposure to electrical shock) may result.



### **CAUTION**

Maytag will not be responsible for any injury or property damage from improper service procedures. If performing service on your own product, assume responsibility for any personal injury or property damage which may result.

To locate an authorized servicer, please consult your telephone book or the dealer from whom you purchased this product. For further assistance, please contact:

### Customer Service Support Center

CAIR Center

<u>Web Site</u>	<u>Telephone Number</u>
WWW.AMANA.COM .....	1-800-843-0304
WWW.JENNAIR.COM .....	1-800-536-6247
WWW.MAYTAG.COM .....	1-800-688-9900
CAIR Center in Canada .....	1-800-688-2002
Amana Canada Product .....	1-866-587-2002

### Recognize Safety Symbols, Words, and Labels



### **DANGER**

**DANGER**—Immediate hazards which **WILL** result in severe personal injury or death.



### **WARNING**

**WARNING**—Hazards or unsafe practices which **COULD** result in severe personal injury or death.



### **CAUTION**

**CAUTION**—Hazards or unsafe practices which **COULD** result in minor personal injury or product or property damage.

# Table of Contents

Important Information .....	2	Disassembly Procedures	
Important Product Information .....	4	Grille .....	18
Important Safety Information .....	5	Door Assembly .....	18
Microwave Leakage Testing .....	6	Door Disassembly .....	18
General Information		Control Panel .....	19
Location of Model Number .....	7	P.C. Board .....	19
Model Identification .....	7	Control Key Panel .....	20
Parts and Accessories .....	7	Outer Case .....	20
Service .....	7	Stirrer Assembly (some models) .....	21
Asure™ Extended Service Plan .....	7	Interlock Door Latch Switches .....	21
Oven Specifications ACO15* Models .....	7	High Voltage Capacitor .....	22
Oven Specifications ACO18* Models .....	7	Diode .....	22
Electrical Rating .....	7	Transformer .....	23
Electrical Requirements .....	7	Fuse .....	23
Grounding Instructions .....	8	Magnetron .....	23
Microwave Oven Description .....	8	Magnetron Fan Assembly .....	23
Testing Procedures		Magnetron Thermal Fuse .....	24
Primary Interlock Switch Test .....	9	Humidity Sensor .....	24
Secondary Interlock Switch Test .....	9	Oven Thermostat .....	24
Interlock Monitor Switch Test .....	9	Base Thermostat .....	25
Magnetron .....	9	Light Socket .....	25
High Voltage Transformer .....	9	Turntable Motor .....	25
High Voltage Capacitor .....	10	Vent Blower .....	25
High Voltage Diode .....	10	Wiring Diagrams And Schematics	
Humidity Sensor .....	10	ACO1520* and ACO1530* Models .....	26
Relay .....	10	ACO1560* and MMV5156* Models .....	27
Control Key Panel .....	10	ACO18*, JMV8196*, MMV4184*, and	
Circuit Board .....	12	MMV5186* Models .....	28
Fuse .....	12	Appendix A	
Fan Motor .....	12	Installation Instructions	
Oven Thermostat .....	12	Parts, Tools, and Materials .....	A-4
Base Thermostat - ACO18*, JMV8196*,		Preparing Electrical Connection .....	A-5
MMV4184*, and MMV5186* only .....	12	Preparing Venting System .....	A-5
Magnetron Thermal Fuse - ACO18*, JMV8196*,		Preparing Venting Blower .....	A-7
MMV4184*, and MMV5186* only .....	12	Preparing Wall and Upper Cabinet .....	A-8
Surge Resistor .....	12	Attaching Oven to the Wall .....	A-10
Troubleshooting Procedures .....	13	Appendix B	
		Care and Cleaning .....	B-2

# Important Product Information

## **WARNING**

Precautions to be observed before and during servicing to avoid possible exposure to excessive microwave energy or electrical shock, disconnect power to oven.

- (A) Do not operate or allow oven to be operated with 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:
  - Interlock operation
  - Proper door closing
  - Seal and sealing surfaces (arcing, wear, and other damage)
  - Damage to or loosening of hinges and latches
  - Evidence of dropping or abuse
- (C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, waveguide or transmission line, and cavity for proper alignment, integrity, and connections.
- (D) Any failed 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 oven is released to the consumer.
- (E) Check microwave leakage to verify compliance with the federal performance standard should be performed on each oven prior to release to the consumer.

## Wiring

Good service practice is to never route wiring over terminals and/or sharp edges. This applies to any wiring without regard to the circuit voltage. Wire insulation material and thickness is designed and regulated for electrical spacing purpose only, but cannot always be relied upon because of possible cuts and/or abrasions, which can occur during servicing.

## **WARNING**

To avoid risk of electrical shock, injury or death, make sure these grounding instructions are followed.

## Grounding Instructions

### **WARNING**

Do not remove grounding prong when installing grounded appliance in a home or business that does not have three wire grounding receptacle. Under no condition is grounding prong to be cut off or removed. It is the personal responsibility of the consumer to contact a qualified electrician and have a properly grounded three prong wall receptacle installed in accordance with appropriate electrical codes

## Servicing of Grounded Products

The standard accepted color coding for grounding wires is GREEN or GREEN WITH YELLOW STRIPE. These ground leads are NOT to be used as current carrying conductors. It is extremely important that the technician replace any and all grounds prior to completion of the service call. Under no condition should ground wire be left off causing a potential hazard to technicians and consumer.

# Important Safety Information



## CAUTION

Read the following information to avoid possible exposure to microwave radiation:

The basic design of the Maytag microwave oven makes it an inherently safe device to both use and service. However, there are some precautions which should be followed when servicing the microwave oven to maintain this safety. These are as follows:

1. Always operate the unit from an adequately grounded outlet. Do not operate on a two-wire extension cord.
2. Before servicing the unit (if unit is operable) perform the microwave leakage test.
3. The oven should never be operated if the door does not fit properly against the seal; the hinges or hinge bearings are damaged or broken; the choke is damaged, (pieces missing, etc.); or any other visible damage can be noted. Check the choke area to ensure that this area is clean and free of all foreign matter.
4. If the oven operates with the door open and produces microwave energy, take the following steps.
  - A. Tell the user not to operate the oven.
  - B. Contact Maytag immediately.
5. Always have the oven disconnected when the outer case is removed except when making the "live" tests called for in the Service Manual. Do not reach into the equipment area while the unit is energized. Make all connections for the test and check them for tightness before plugging the cord into the outlet.
6. Always ground the capacitors on the magnetron filter box and H. V. Capacitor with an insulated-handle screwdriver before working in the high voltage area of the equipment compartment. Some types of failures will leave a charge in these capacitors and the discharge could cause a reflex action which could make you injure yourself.
7. In the area of the transformer, capacitor, diode, and magnetron there is HIGH VOLTAGE. When the unit is operating - keep this area clean and free of anything which could possibly cause an arc or ground, etc.
8. Do not for any reason defeat the interlock switches, there is no valid reason for this action at any time; nor will it be condoned by Maytag.
9. IMPORTANT: Before returning a microwave to a customer, check for proper switch interlock action. The primary and secondary switches MUST open when the door is actuated. The monitor switch MUST close at a 1/4 inch when the door is opened.
10. Before returning a microwave to a customer, verify the door spacing is reasonably uniform along the top, bottom, and sides and that it measures 1/8 inch or less.
11. The Maytag microwave oven should never be operated with:
  - Any components removed and/or bypassed.
  - Any of the safety interlocks are found to be failed.
  - Any of the seal surfaces are defective, missing, or damaged.
12. To ensure that the unit does not emit excessive microwave leakage and to meet the Department of Health Human Service guidelines, check the oven for microwave leakage using Narda Model 8110B, Holaday HI-1501, HI-1510, and HI-1710 leakage monitor as outlined in the instructions. The maximum leakage level allowed is 4mW/cm<sup>2</sup>.
13. If servicer encounters an emission reading over 4mw/cm<sup>2</sup> the servicer is to cease repair and contact the Maytag Service Department immediately for further direction. Maytag will contact the proper Government Agency upon verification of the test results.

# Microwave Leakage Testing

## **WARNING**

Check for radiation leakage after servicing. Should the leakage be more than 4mW/cm<sup>2</sup> inform Maytag immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by DHHS and HEW regulations. This requirement must be strictly observed. In addition, the leakage reading must be recorded on the service repair ticket while in the customer's home.

## Equipment

- Electromagnetic radiation monitor
- 600 cc glass beaker

## Procedure For Measuring Radiation Leakage

Note before measuring -

- Do not exceed meter full scale deflection. Leak monitor should initially be set to the highest scale.
  - To prevent false readings, the test probe should be held by the grip portion of the handle only.
  - The scan speed is equal to one inch per antenna revolution or one inch per second if antenna speed is unknown.
  - Areas to be checked are all door seal areas and any venting parts.
  - Leakage with the outer panel removed...4mW/cm<sup>2</sup> or less.
  - Leakage for fully assembled oven with door normally closed ...4mW/cm<sup>2</sup> or less.
  - Leakage for a fully assembled oven (before the latch switch (primary) is interrupted) while pulling the door ... 4mW/cm<sup>2</sup> or less.
1. Pour 275 ±15 cc (9 oz ±1/2 oz) of 20 ±5°C (68 ±9°F) water in a beaker which is graduated to 600 cc and place the beaker in the center of oven.
  2. Set the radiation monitor to 2450 MHz and use it following the manufacturer's recommended test procedure to assure correct results.
  3. While measuring the leakage, always use the 2-inch (5 cm) spacer supplied with the probe.
  4. Press the start pad or turn on the timer and with the magnetron oscillating, measure the leakage by holding the probe perpendicular to the surface being measured.

## Measurement With the Outer Panel Removed

## **DANGER**

Avoid contacting any high voltage components.

Whenever you replace the magnetron, measure for radiation leakage before the outer panel is installed and after all necessary components are replaced or adjusted. Special care should be taken in measuring around the magnetron.

## Measurement With a Fully Assembled Oven

After all components, including the outer panel are fully assembled, measure for radiation leakage around the door periphery, the door viewing window, the exhaust opening, and air inlet openings.

## Record Keeping and Notification After Measurement

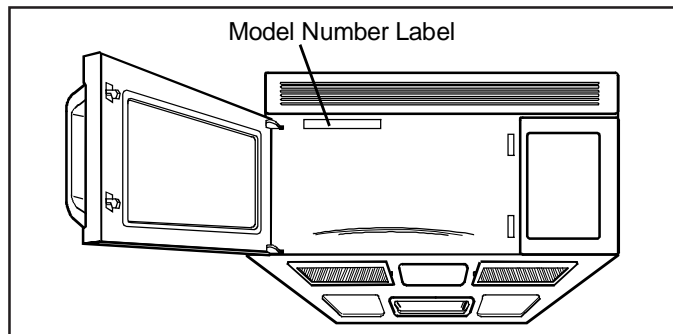
1. After any adjustment or repair to a microwave oven, a leakage reading must be taken. Record this leakage reading on the repair ticket even if it is zero.
2. A copy of the repair ticket and the microwave leakage reading should be kept by the repair facility.

# General Information

Please read the owner's manual information. It will tell how to use all the features of this microwave oven.

## Location of Model Number

To request service information or replacement parts, the service center will require the complete model number of your microwave oven. The number is located on the oven front as shown in the illustration below.



## Model Identification

Complete enclosed registration card and promptly return. If registration card is missing:

- For Amana product call 1-800-843-0304 or visit the Web Site at [www.amana.com](http://www.amana.com)
- For Maytag product call 1-800-688-9900 or visit the Web Site at [www.maytag.com](http://www.maytag.com)
- For Jenn-Air product call 1-800-536-6247 or visit the Web Site at [www.jennair.com](http://www.jennair.com)
- For product in Canada call 1-866-587-2002 or visit the Web Sites at [www.amana.com](http://www.amana.com) or [www.maytag.com](http://www.maytag.com) or [www.jennair.com](http://www.jennair.com)

When contacting provide product information located on rating plate. Record the following:

Model Number: \_\_\_\_\_  
Manufacturing Number: \_\_\_\_\_  
Serial or S/N Number: \_\_\_\_\_  
Date of purchase: \_\_\_\_\_  
Dealer's name and address: \_\_\_\_\_

## Service

Keep a copy of sales receipt for future reference or in case warranty service is required. To locate an authorized servicer:

- For Amana product call 1-800-628-5782 or visit the Web Site at [www.amana.com](http://www.amana.com)
- For Maytag/Jenn-Air product call 1-800-462-9824 or visit the Web Site at [www.maytag.com](http://www.maytag.com) or [www.jennair.com](http://www.jennair.com)
- For product in Canada call 1-866-587-2002 or visit the Web Sites at [www.amana.com](http://www.amana.com) or [www.maytag.com](http://www.maytag.com) or [www.jennair.com](http://www.jennair.com)

Warranty service must be performed by an authorized servicer. We also recommend contacting an authorized servicer, if service is required after warranty expires.

## Parts and Accessories

Purchase replacement parts and accessories over the phone. To order accessories for your product call:

- For Amana product call 1-877-232-6771 or visit the Web Site at [www.amana.com](http://www.amana.com)
- For Maytag/Jenn-Air product call 1-800-462-9824 or visit the Web Site at [www.maytag.com](http://www.maytag.com) or [www.jennair.com](http://www.jennair.com)
- For product in Canada call 1-866-587-2002 or visit the Web Sites at [www.amana.com](http://www.amana.com) or [www.maytag.com](http://www.maytag.com) or [www.jennair.com](http://www.jennair.com)

## Extended Service Plan

We offer long-term service protection for this new oven.

- Asure™ Extended Service Plan is specially designed to supplement Amana's strong warranty. This plan covers parts, labor, and travel charges. Call 1-866-232-6244 for information.
- Dependability Plus<sup>SM</sup> Extended Service Plan is specially designed to supplement Maytag's and Jenn-Air's strong warranty. This plan covers parts, labor, and travel charges. Call 1-800-925-2020 for information.

## Oven Specifications ACO15\* and MMV5156\* Models

Output Power	1000 W (IEC 705)
Outer Dimensions	29- <sup>15</sup> / <sub>16</sub> " x 16- <sup>7</sup> / <sub>16</sub> " x 15- <sup>5</sup> / <sub>8</sub> "
Oven Cavity Dimensions	19- <sup>7</sup> / <sub>8</sub> " x 14- <sup>3</sup> / <sub>16</sub> " x 15- <sup>3</sup> / <sub>8</sub> "
Cavity Volume	1.5 cu. ft.
Net Weight	65 lbs.

## Oven Specifications ACO18\*, MMV4184\* and MMV5186\* Models

Output Power	1000 W (IEC 705)
Outer Dimensions	29- <sup>15</sup> / <sub>16</sub> " x 16- <sup>7</sup> / <sub>16</sub> " x 15- <sup>3</sup> / <sub>8</sub> "
Oven Cavity Dimensions	22- <sup>3</sup> / <sub>8</sub> " x 10" x 14- <sup>19</sup> / <sub>32</sub> "
Cavity Volume	1.8 cu. ft.
Net Weight	65 lbs.

## Oven Specifications JMV8196\* Models

Output Power	850 W (IEC 705)
Outer Dimensions	29- <sup>15</sup> / <sub>16</sub> " x 16- <sup>7</sup> / <sub>16</sub> " x 15- <sup>3</sup> / <sub>8</sub> "
Oven Cavity Dimensions	22- <sup>3</sup> / <sub>8</sub> " x 10" x 14- <sup>19</sup> / <sub>32</sub> "
Cavity Volume	1.9 cu. ft.
Net Weight	65 lbs.

## Electrical Requirements

The oven is designed to operate on a Standard 120V / 60Hz household outlet. Be sure the circuit is at least 20 Amps and the microwave oven is the only appliance on the circuit.

**NOTE:** It is not designed for 50Hz or any circuit other than a 120V / 60Hz circuit.



# General Information

## Grounding Instructions

This appliance must be grounded. If an electrical short circuit occurs, grounding reduces the risk of electric shock by providing an escape wire for the electric current. The cord for this appliance has a grounding wire with a grounding plug. Put the plug into an outlet that is properly installed and grounded.

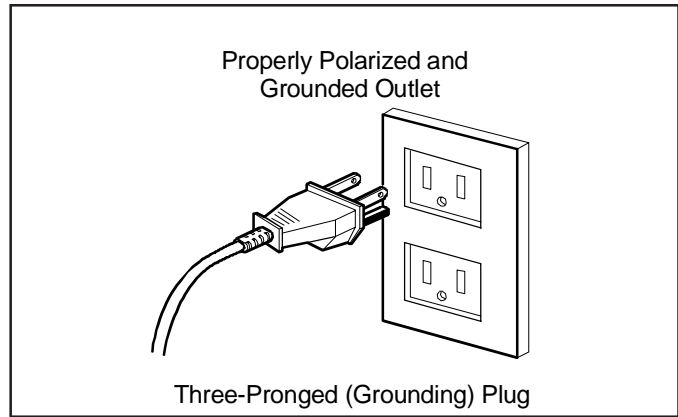


### WARNING

To avoid risk of electric shock, personal injury or death, use grounding plug properly.

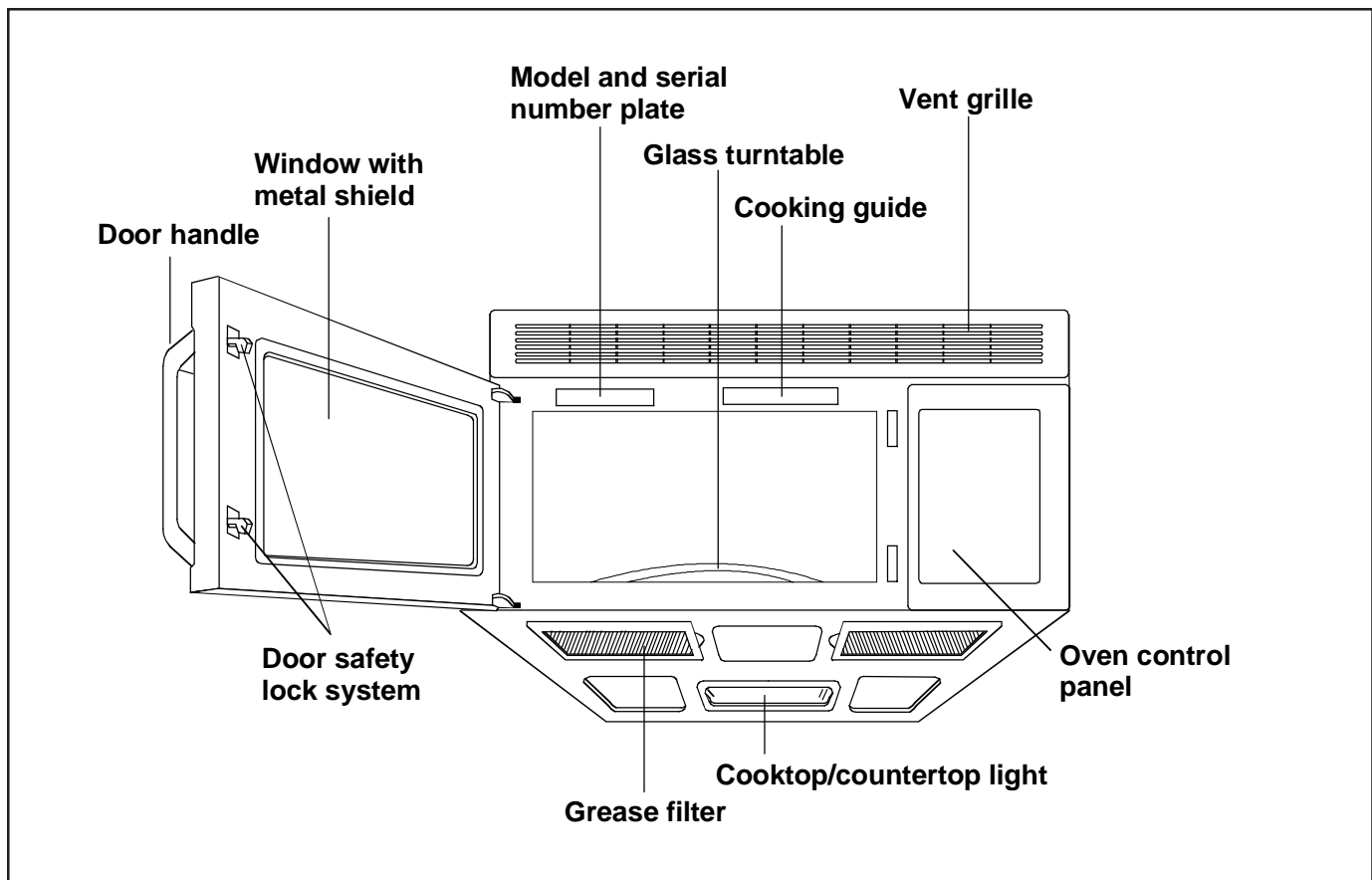
Ask a qualified electrician if you do not understand the grounding instructions or if you wonder whether the appliance is properly grounded.

Because this appliance fits under the cabinet, it has a short power-supply cord. See the Installation Instructions for directions on placing the cord properly. Keep the electrical power cord dry and do not pinch or crush it in any way.



For a permanently connected appliance: This appliance must be connected to a grounded, metallic, permanent wiring system, or an equipment grounding conductor should be run with the circuit conductors and connected to the equipment grounding terminal or lead on the appliance.

## Microwave Oven Description





# Testing Procedures



## WARNING

Disconnect power before performing the following procedures unless testing requires it.

### NOTES:

- Perform microwave energy leakage test if unit is serviced for any reason.
- Verify wire leads are connected to correct positions.
- When removing wire terminal plugs from connectors, grasp the connector, not the wires.

### Primary Interlock Switch Test

When the door is opened slowly, an audible click should be heard. If the latch does not activate the switch when the door is closed, the switch should be adjusted in accordance with the adjustment procedure.

1. Disconnect power to oven and remove control panel, (see "Control Panel" section in Disassembly Procedure).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" section in Disassembly Procedure).
3. Disconnect wire leads from switch.
4. Perform a continuity test by connecting one meter lead on COM terminal and the other meter lead on NO terminal.

#### Readings should be as follows:

Door closed ..... 0 ohms  
Door opened ..... Infinite ohms

**NOTE:** When replacing component use identical replacement part.

**NOTE:** After repairing the door or the interlock system, it is necessary to do a continuity test before operating the oven.

### Secondary Interlock Switch Test

When the door is opened slowly, an audible click should be heard. If the latch does not activate the switch when the door is closed, the switch should be adjusted in accordance with the adjustment procedure.

1. Disconnect power to oven and remove control panel, (see "Control Panel" section in Disassembly Procedure).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" section in Disassembly Procedure).
3. Disconnect wire leads from switch.
4. Perform a continuity test by connecting one meter lead on COM terminal and the other meter lead on NO terminal.

#### Readings should be as follows:

Door closed ..... 0 ohms  
Door opened ..... Infinite ohms

**NOTE:** When replacing component use identical replacement part.

**NOTE:** After repairing the door or the interlock system, it is necessary to do a continuity test before operating the oven.

### Interlock Monitor Switch Test

When the door is opened slowly, an audible click should be heard. If the latch does not activate the switch when the door is closed, the switch should be adjusted in accordance with the adjustment procedure.

1. Disconnect power to oven and remove control panel, (see "Control Panel" section in Disassembly Procedure).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" section in Disassembly Procedure).
3. Disconnect wire leads from switch.
4. Perform a continuity test by connecting one meter lead on COM terminal and the other meter lead on NC terminal.

#### Readings should be as follows:

Door closed ..... Infinite ohms  
Door opened ..... 0 ohms

**NOTE:** When replacing component use identical replacement part.

**NOTE:** After repairing the door or the interlock system, it is necessary to do a continuity test before operating the oven.

### Magnetron

1. Disconnect power to oven and remove control panel, (see "Control Panel" section in Disassembly Procedure).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" section in Disassembly Procedure).
3. Disconnect wire leads to magnetron.
4. Measure the resistance across filament terminals of the magnetron.  
Reading should be less than 1 ohm.
5. Measure the resistance from each filament terminal to ground. Reading should indicate infinite ohms.

**NOTE:** Any other readings than what should be indicated, magnetron needs to be replaced.

**NOTE:** Replace the magnetron, if magnetron indications are good and all other high voltage components test good, but the unit still does not heat a load.

### High Voltage Transformer

1. Disconnect power to oven and remove control panel, (see "Control Panel" section in Disassembly Procedure).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" section in Disassembly Procedure).
3. Disconnect wire leads to high voltage transformer.

# Testing Procedures



## WARNING

Disconnect power before performing the following procedures unless testing requires it.

- Measure resistance of the terminals on the high voltage transformer with meter on R x 1 scale.  
**Reading should be indicated as follows:**  
 Primary winding ..... less than 1.0 ohms  
 Filament winding .... less than 1.0 ohms  
 Secondary winding . approximately 50 to 120 ohms
- Measure resistance of the terminals on the high voltage transformer with meter on high scale.  
**Reading should be indicated as follows:**  
 Primary winding to ground ..... Infinite ohms  
 Filament winding to ground ..... Infinite ohms

### High Voltage Capacitor

- Disconnect power to oven and remove control panel, (see "Control Panel" section in Disassembly Procedure).
- Discharge high voltage capacitor, (see "High Voltage Capacitor" section in Disassembly Procedure).
- Disconnect wire leads to high voltage capacitor.
- Measure resistance of capacitor from terminal to terminal.
  - Normal reading**—momentarily indicates several ohms and then gradually returns to infinite ohms.
  - Abnormal reading**—Indicates continuity or infinite ohms.
- Measure resistance of capacitor from terminal to case.
  - Normal reading**—Indicates infinite ohms
  - Abnormal reading**—Indicates continuity

### High Voltage Diode

- Disconnect power to oven and remove control panel, (see "Control Panel" section in Disassembly Procedure).
- Discharge high voltage capacitor, (see "High Voltage Capacitor" section in Disassembly Procedure).
- Disconnect wire leads to high voltage diode.
- Measure resistance of diode in forward bias.
  - Normal reading**—Indicates continuity
  - Abnormal reading**—Indicates infinite ohms
- Measure resistance of diode in reverse bias.
  - Normal reading**—Indicates infinite ohms
  - Abnormal reading**—Indicates continuity

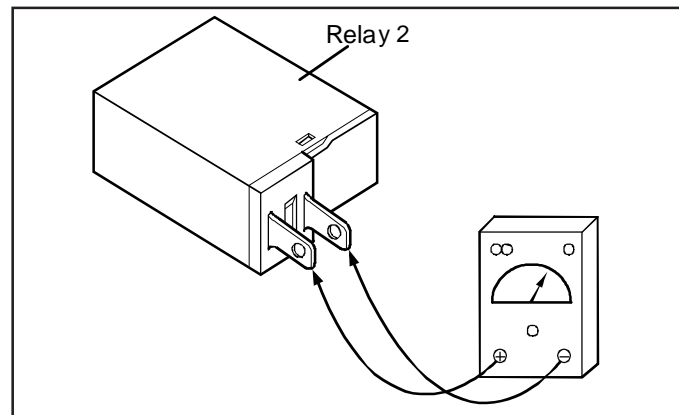
### Humidity Sensor

- Disconnect power to oven and remove control panel, (see "Control Panel" section in Disassembly Procedure).
- Discharge high voltage capacitor, (see "High Voltage Capacitor" section in Disassembly Procedure).
- Disconnect wire terminal plug from control board (CN5).

- Measure the following terminals with meter on R x 1000 scale.  
**Normal indication:**  
 Terminal 1 to terminal 2 ..... 4.5K to 6.2K ohms  
 Terminal 2 to terminal 3 ..... 2.0K to 3.5K ohms  
 Terminal 1 to terminal 3 ..... 2.0K to 3.5K ohms  
**Abnormal indication:**  
 Infinite or several ohms

### Relay

- Disconnect power to oven and remove control panel, (see "Control Panel" section in Disassembly Procedure).
- Discharge high voltage capacitor, (see "High Voltage Capacitor" section in Disassembly Procedure).
- Disconnect wire terminal plug from control board (ACO18\*, RY2) (ACO15\*, RY7), and operate the unit.



Power Level	Cycles On for:	Cycles Off for:
1	4 seconds	18 seconds
2	6 seconds	16 seconds
3	8 seconds	14 seconds
4	10 seconds	12 seconds
5	12 seconds	10 seconds
6	14 seconds	8 seconds
7	16 seconds	6 seconds
8	18 seconds	4 seconds
9	20 seconds	2 seconds
10	22 seconds	0 seconds

### Control Key Panel

- Disconnect power to oven and remove control panel, (see "Control Panel" section in Disassembly Procedure).
- Discharge high voltage capacitor, (see "High Voltage Capacitor" section in Disassembly Procedure).

# Testing Procedures



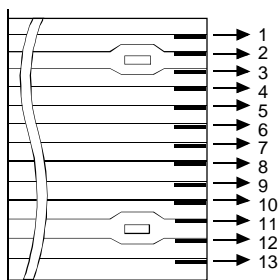
**WARNING**

Disconnect power before performing the following procedures unless testing requires it.

3. Disconnect ribbon connector by sliding top part of connector upward. Once in released position remove ribbon from connector by sliding ribbon side-to-side.

**NOTE:** Caution should be used when removing cable from connector. Ribbon cable has two holes which holds the lock ribbon in place.

**NOTE:** Circuit board has numbers 1 and 13 on it for identification.



## ACO1520/ACO1530 models

Pad	Conn.	Pad	Conn.
Vent HI/LOW/OFF	1 - 8	Auto Defrost	5 - 9
Light HI/LOW/OFF	1 - 9	Kitchen Timer	5 - 10
Control Setup	2 - 9	Power Level	5 - 11
Clock	2 - 10	Hold Warm	5 - 12
Stop Clear	2 - 12	5	6 - 8
Auto Cook	3 - 8	6	6 - 9
Auto Reheat	3 - 9	7	6 - 10
Easy Cook	3 - 10	8	6 - 11
Start	3 - 12	9	6 - 12
Frozen Entree	3 - 13	0	7 - 8
Popcorn	4 - 8	1	7 - 9
Potato	4 - 9	2	7 - 10
Beverage	4 - 10	3	7 - 11
Pizza	4 - 11	4	7 - 12
Program	5 - 8		

## ACO1560/MMV5156 models

Pad	Conn.	Pad	Conn.
Vent HI/LOW/OFF	1 - 8	Auto Defrost	5 - 9
Light HI/LOW/OFF	1 - 9	Kitchen Timer	5 - 10
Less	1 - 10	Power Level	5 - 11
Favorite Recipe	1 - 11	Hold Warm	5 - 12
T/Table ON/OFF	1 - 12	Sensor Veg.	5 - 13
More	1 - 13	5	6 - 8
Help	2 - 8	6	6 - 9
Control Set-Up	2 - 9	7	6 - 10
Clock	2 - 10	8	6 - 11
Light Timer	2 - 11	9	6 - 12
Stop Clear	2 - 12	Sensor Reheat	6 - 13
Sensor Pizza	2 - 13	0	7 - 8

## ACO1560/MMV5156 models continued

Easy Cook	3 - 10	1	7 - 9
Time Defrost	3 - 11	2	7 - 10
Start	3 - 12	3	7 - 11
Sensor Potato	3 - 13	4	7 - 12
Sensor Popcorn	4 - 13	Sensor Cook	7 - 13
Program	5 - 8		

## ACO1840/MMV4184 models

Pad	Conn.	Pad	Conn.
Vent HI/LOW/OFF	1 - 8	Beverage	4 - 10
Light HI/LOW/OFF	1 - 9	Pizza	4 - 11
Less	1 - 10	Rapid Defr. 1lb.	4 - 12
Favorite Recipe	1 - 11	Program	5 - 8
Turn Table ON/OFF	1 - 12	Auto Defrost	5 - 9
More	1 - 13	Kitchen Timer	5 - 10
Help	2 - 8	Power Level	5 - 11
Control Setup	2 - 9	Hold Warm	5 - 12
Clock	2 - 10	5	6 - 8
Light Timer	2 - 11	6	6 - 9
Stop Clear	2 - 12	7	6 - 10
Cook	3 - 8	8	6 - 11
Reheat	3 - 9	9	6 - 12
Easy Cook	3 - 10	0	7 - 8
Time Defrost	3 - 11	1	7 - 9
Start	3 - 12	2	7 - 10
Popcorn	4 - 8	3	7 - 11
Potato	4 - 9	4	7 - 12

## ACO1860/MMV5186/JMV8196 models

Pad	Conn.	Pad	Conn.
Vent HI/LOW/OFF	1 - 8	Program	5 - 8
Light HI/LOW/OFF	1 - 9	Auto Defrost	5 - 9
Less	1 - 10	Kitchen Timer	5 - 10
Favorite Recipe	1 - 11	Power Level	5 - 11
Turn Table ON/OFF	1 - 12	Hold Warm	5 - 12
More	1 - 13	Sensor Veg.	5 - 13
Help	2 - 8	5	6 - 8
Control Setup	2 - 9	6	6 - 9
Clock	2 - 10	7	6 - 10
Light Timer	2 - 11	8	6 - 11
Stop Clear	2 - 12	9	6 - 12
Sensor Pizza	2 - 13	Sensor Reheat	6 - 13
Easy Cook	3 - 10	0	7 - 8
Time Defrost	3 - 11	1	7 - 9
Start	3 - 12	2	7 - 10
Sensor Potato	3 - 13	3	7 - 11
Rapid Defrost 1 lb.	4 - 12	4	7 - 12
Sensor Popcorn	4 - 13	Sensor Cook	7 - 13

# Testing Procedures



## WARNING

Disconnect power before performing the following procedures unless testing requires it.

### Circuit Board

Following symptoms indicate a failed circuit board.

- High voltage systems, interlock switches, door sensing and relay indicate good, but start function fails to operate.
- Continuously operating with a normal relay.
- Proper temperature measurement is not obtained.
- Buzzer does not sound or sounds continuous.
- Segments of one or more digits do not light, or continue to light or segments light when they should not.
- Wrong figures appear in the display.
- All segments light up.
- Some of the indicators light up or flicker.
- Clock does not keep time properly.

### Fuse



## CAUTION

Before replacing a blown monitor fuse, test the primary interlock switch, secondary interlock switch, monitor switch, and power relay contacts for proper operation. If the monitor fuse is blown by a failed switch operation, all switches and printed circuit board must be replaced.

### Problem:

- Fuse blows immediately after oven door is opened or closed.
  - Improper operation of primary, secondary and/or monitor switches.
- Fuse blows when oven door is closed and START pad is pressed.
  - Malfunction of the high voltage transformer, high voltage capacitor including the diode, magnetron, blower motor or circuit board.

### Fan Motor

1. Disconnect power to oven and remove control panel, (see "Control Panel" section in Disassembly Procedure).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" section in Disassembly Procedure).
3. Disconnect wire leads to fan motor.
4. Measure resistance of the terminals on the fan motor with meter on R x 1 scale.

#### Normal indication:

Terminal A to terminal C ..... 140 to 150 ohms  
Terminal A to terminal B ..... 25 to 40 ohms

### Oven Thermostat

1. Disconnect power to oven and remove control panel, (see "Control Panel" section).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" section).
3. Remove outer case, (see "Outer Case" section).
4. Lift air duct securing thermostat to oven cavity.
5. Disconnect wires from oven thermostat.
6. Following is temperature setting for the thermostat.

Model	Fahrenheit	Centigrade	Cycle
ACO15*	194°F	90°C	OFF
MMV5156*	32°F	0°C	ON
ACO18*			
MMV4184*	230°F	110°C	OFF
MMV5186*	32°F	0°C	ON
JMV8196*			

### Base Thermostat – ACO18\*/MMV4184\*/ MMV5186\*/JMV8196\* only

1. Disconnect power to oven and remove control panel, (see "Control Panel" section).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" section).
3. Remove screws securing thermostat to base plate and disconnect wires from thermostat.
4. Following is temperature setting for the thermostat.

### Magnetron Thermal Fuse – ACO18\*/ MMV4184\*/MMV5186\*/JMV8196\* only

1. Disconnect power to oven and remove control panel, (see "Control Panel" section).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" section).
3. Remove outer case, (see "Outer Case" section).
4. Remove screws securing thermal fuse to fan motor.
5. Disconnect wires from magnetron thermal fuse.
6. Following is temperature setting for the thermostat.

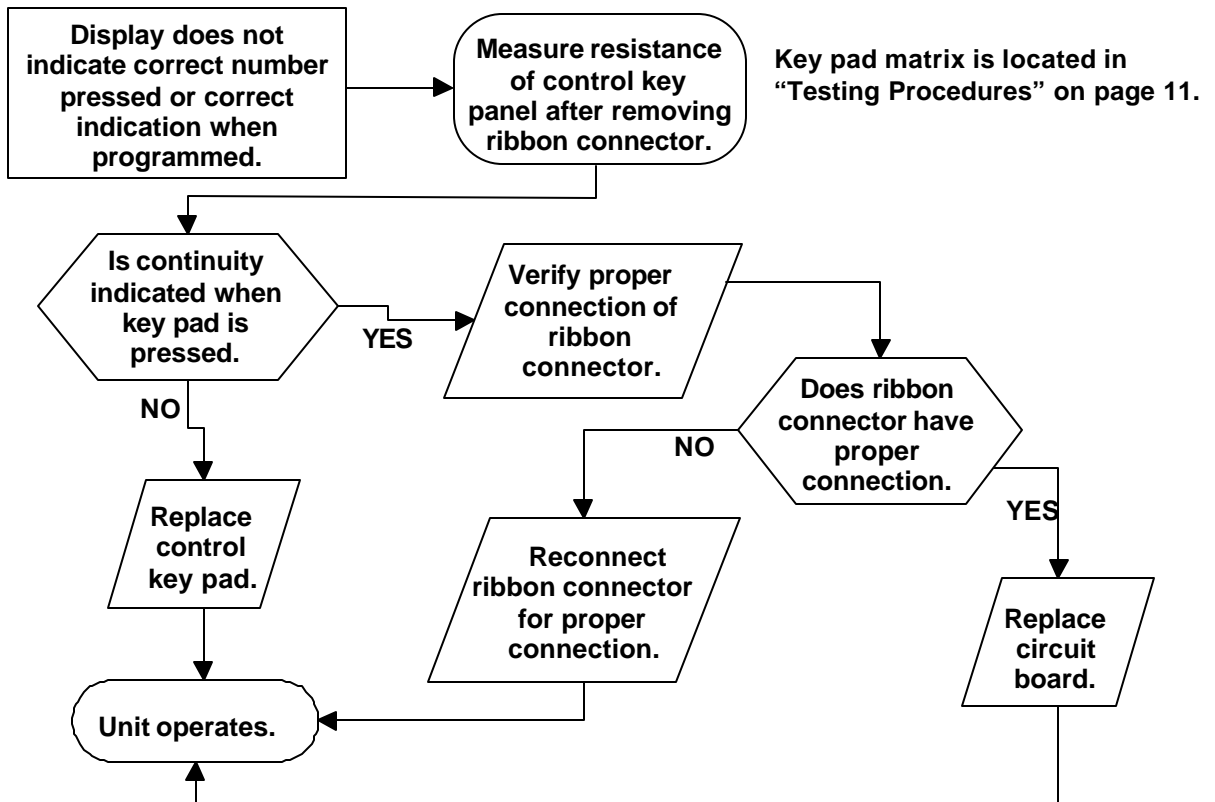
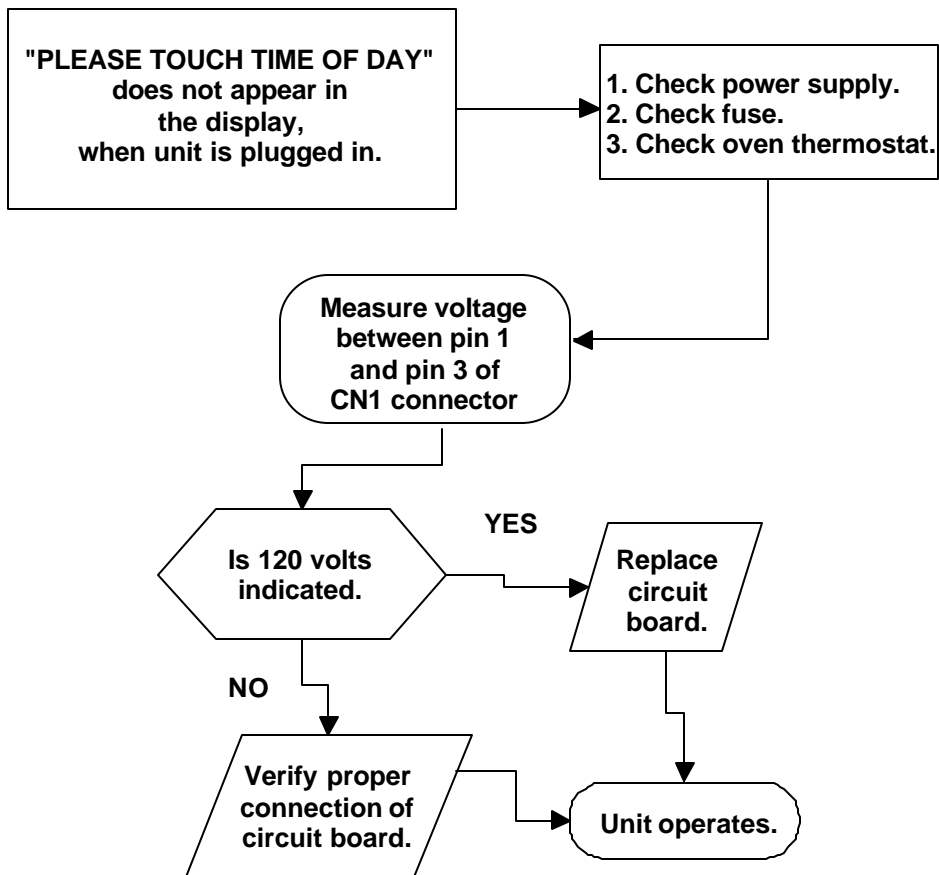
Fahrenheit	Centigrade
228°F	109°C

### Surge Resistor

This resistor prevents the oven from tripping circuit breakers and blowing fuses during start up.

1. Disconnect power to oven and remove control panel, (see "Control Panel" section).
2. Disconnect wire terminals to the resistor and measure resistance of the resistor.
  - **Normal reading**—approximately 15 ohms.
  - **Abnormal reading**—Indicates infinite ohms.

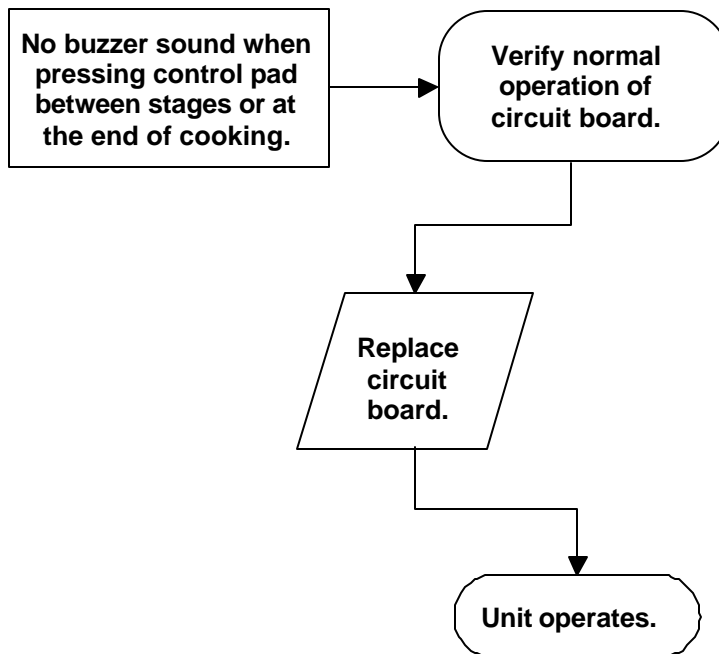
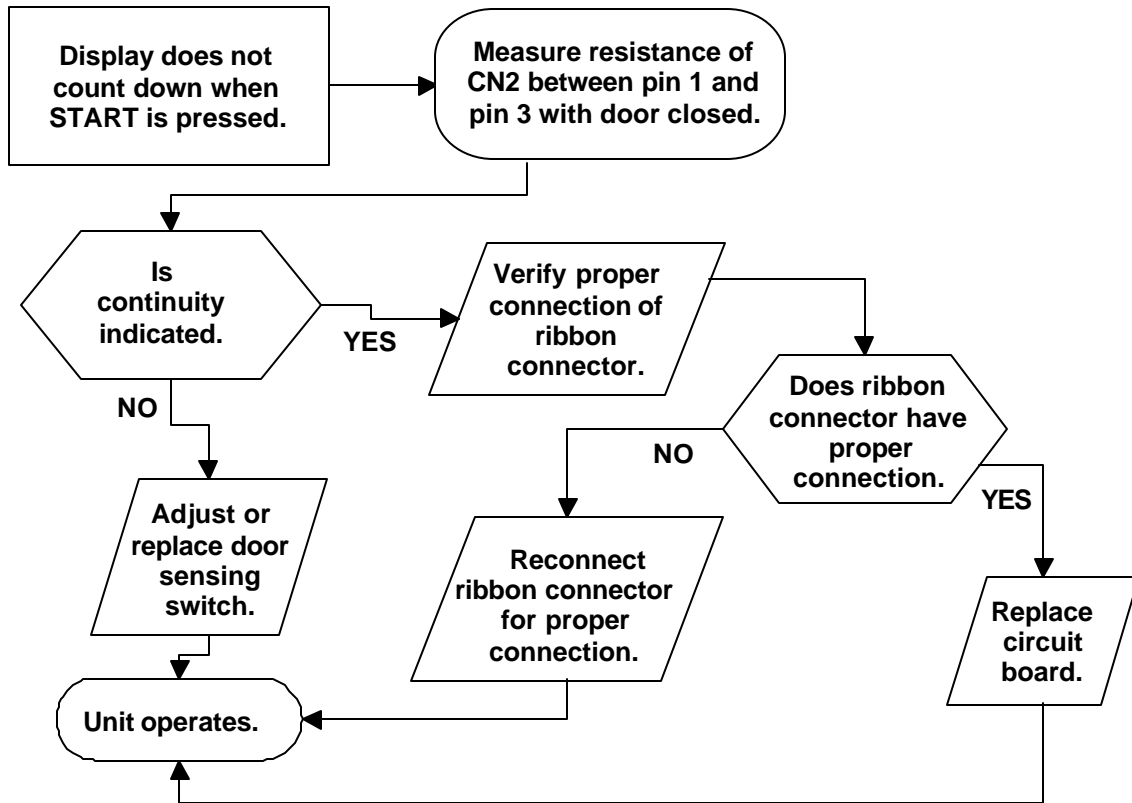
# Troubleshooting Procedures



# Troubleshooting Procedures

Check:

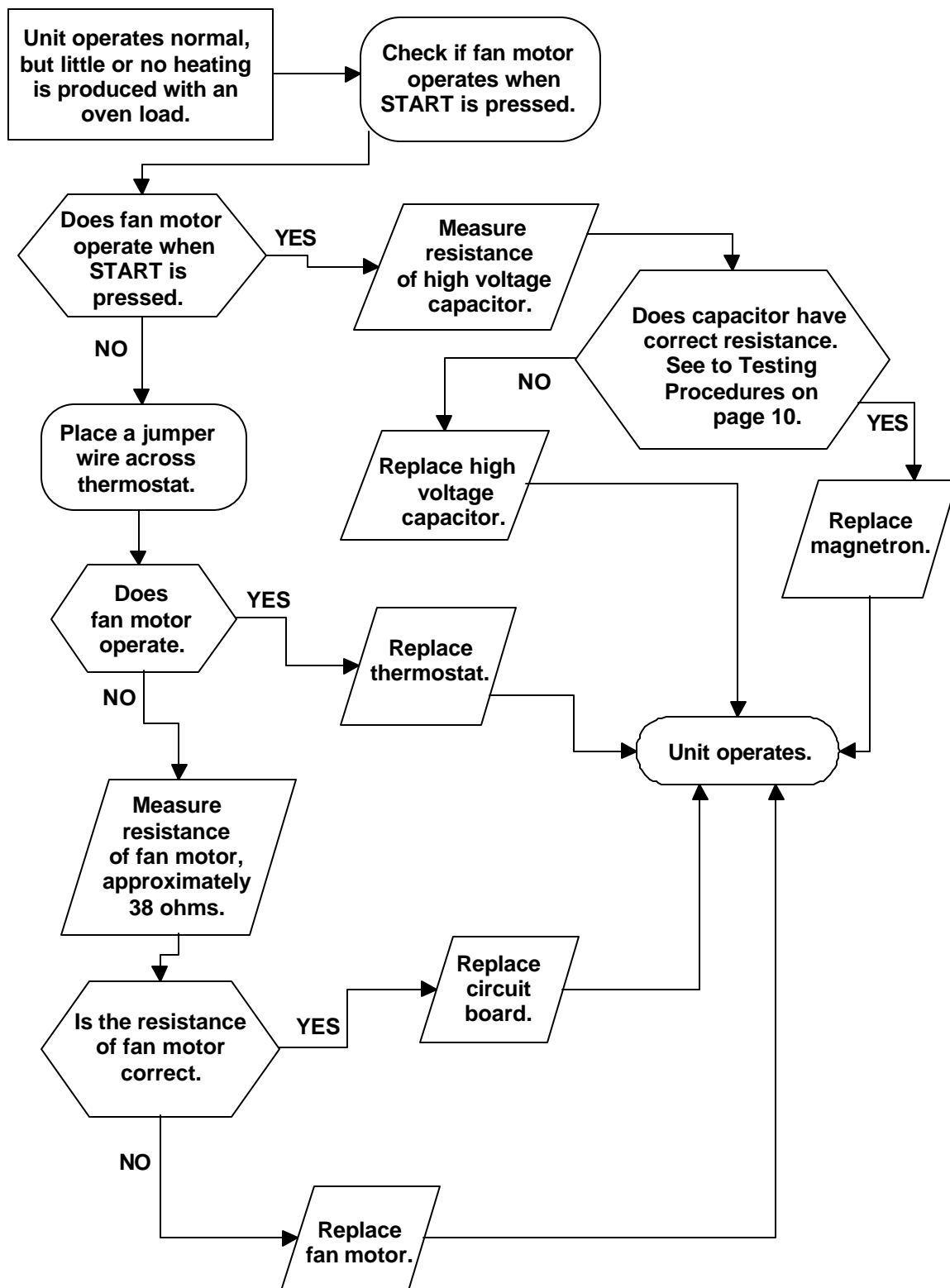
## 1. Touch Keypad.



# Troubleshooting Procedures

Check:

## 1. Air Vents.

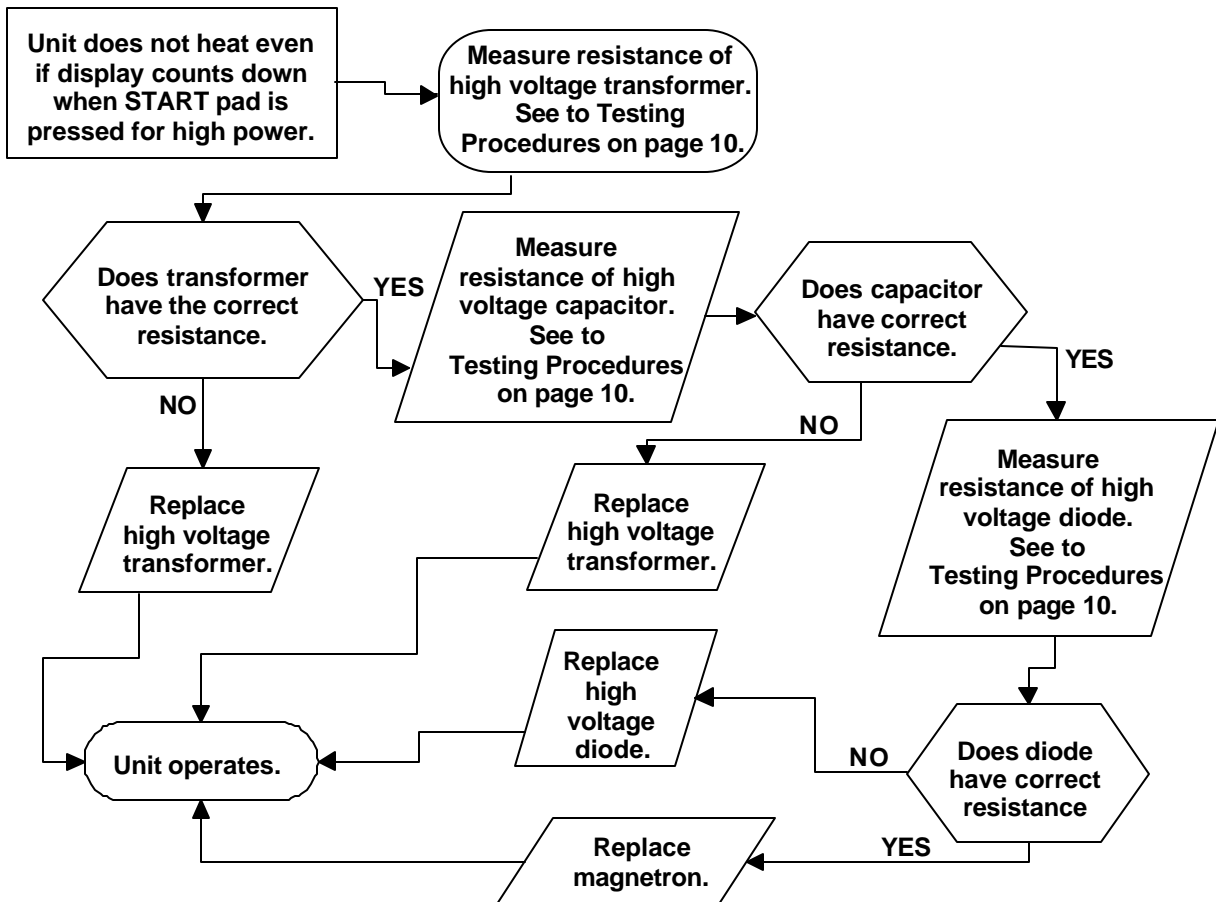
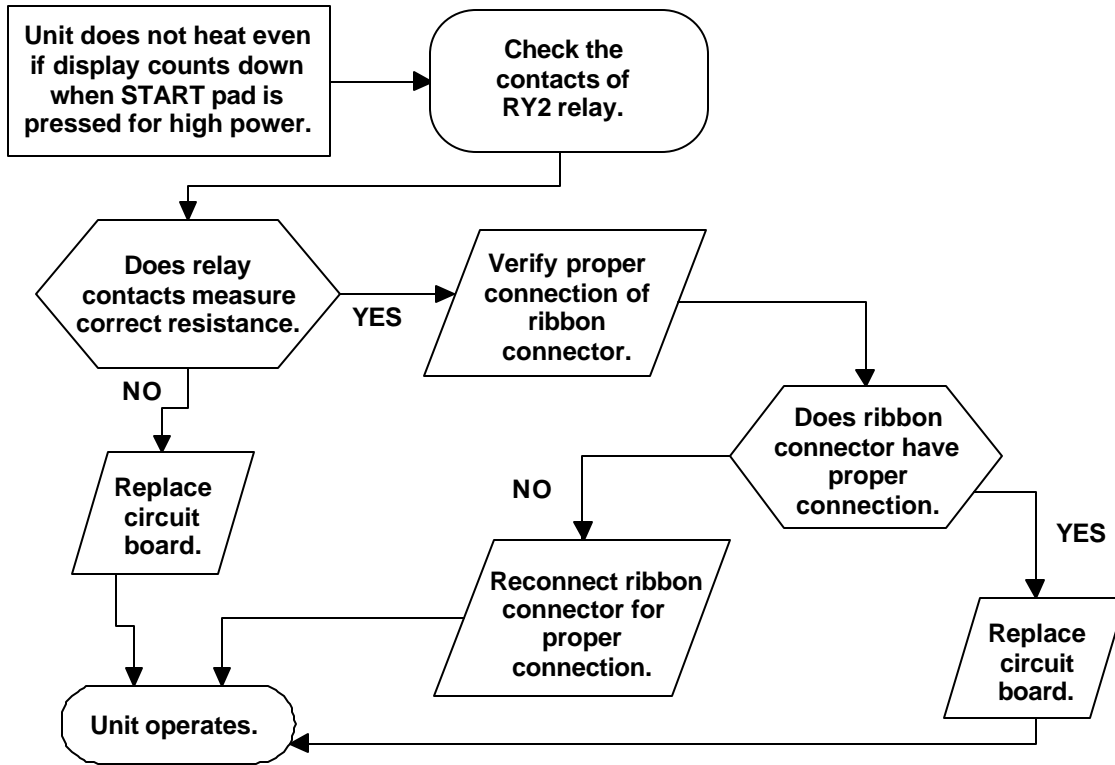




# Troubleshooting Procedures

Check:

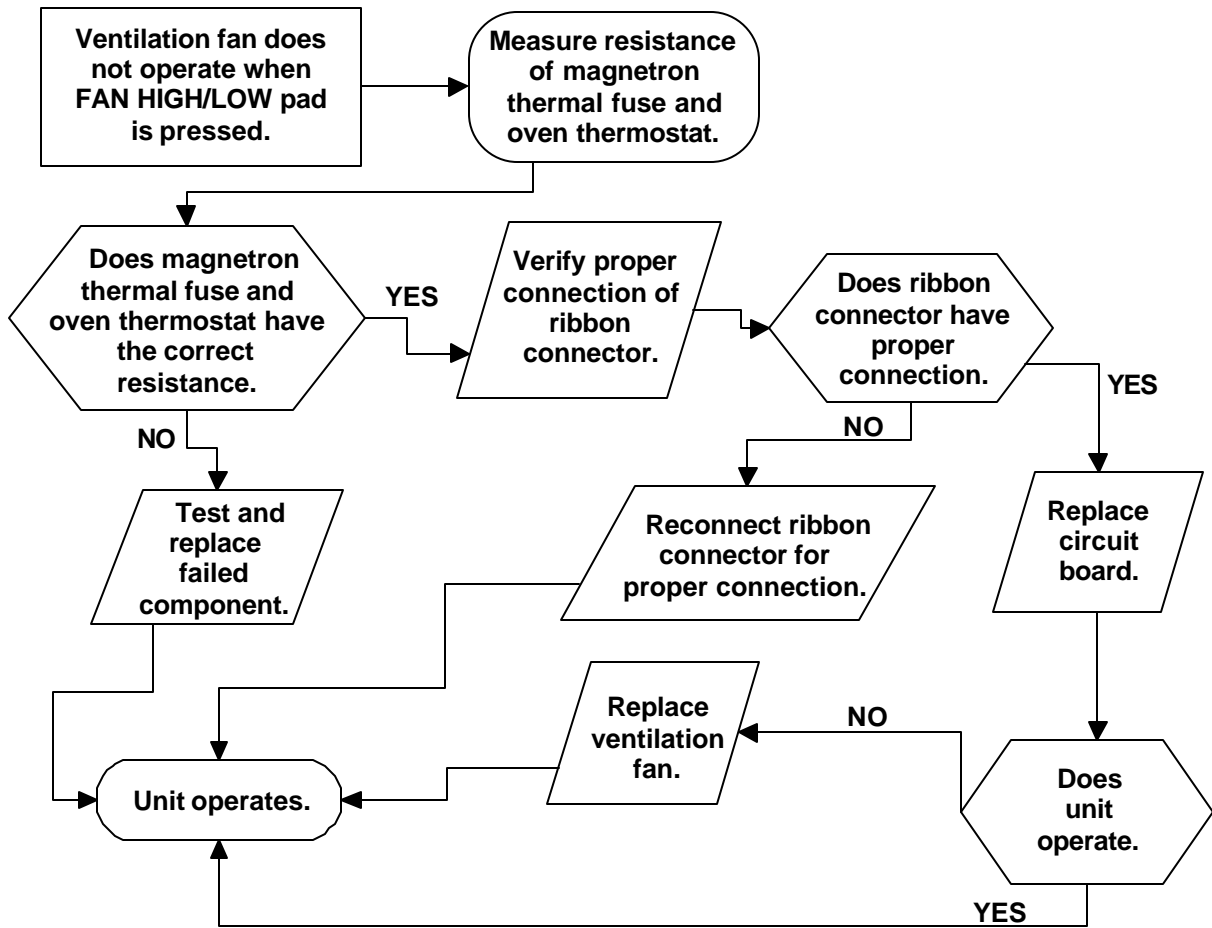
1. Primary and Secondary Interlock Switches.
2. Thermostat.



# Troubleshooting Procedures

Check:

1. Power Supply.
2. Fuse.



# Disassembly Procedures



**WARNING**

To avoid the risk of electrical shock, personal injury or death; disconnect power to oven and discharge capacitors before following any disassembly procedure.

**NOTE:** All procedures are written for the ACO18\*, JMV8196\*, MMV4184, and MMV5186\* models. Specific instruction for the ACO15\*, MMV5156\* models are as described in the procedures.

High voltage is present at the high voltage terminal of the high voltage transformer during any cooking cycle. It is neither necessary or advisable to attempt measurement of the high voltage.

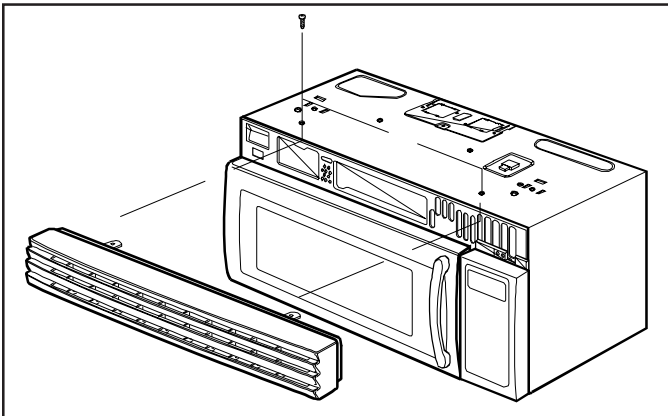
Before touching any oven components or wiring, always unplug the oven from its power source and discharge capacitor.

## Grille

The top full-width grille is removable for service to some components, such as: humidity sensor, oven light, door removal, flame sensor, vent motor capacitor, fuse, control panel, and stirrer motor (some models).

### Grille Removal

1. Disconnect power to oven.
2. Remove screws located in front on top of microwave securing grille.



3. Pull outward on the top portion of the grille releasing the tabs.
4. Reassemble in reverse order.

## Door Assembly



**CAUTION**

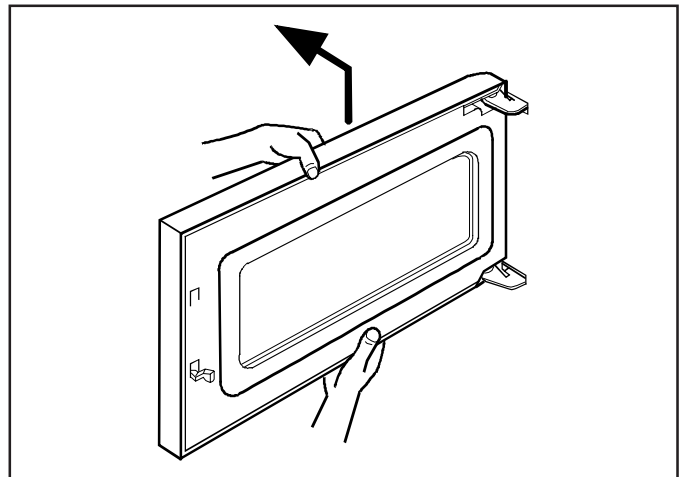
A microwave leakage test must be performed anytime a door assembly is removed, replaced, disassembled or adjusted for any reason.

## Door Removal

1. Disconnect power to oven and remove grille, (see "Grille" procedure).
2. Open the oven door, slowly raise the door evenly, disengaging the pins at the top and bottom.

**NOTE:** When aligning the door for assembly, the door must be opened as much as possible.

3. To place door back on unit, place bottom pin into hole first and then align the top pin. Once pins are aligned push door downward to lock into place.
4. Replace front grille to complete assembly.



## Door Disassembly

1. Disconnect power to oven and remove oven door, (see "Door Removal" procedure).
2. Pry away choke cover, by placing a tool in the upper right corner of the door and gently prying outward on the choke cover. Continue to work around the door casing until choke cover is completely loose.



**CAUTION**

To avoid property damage, care must be taken when prying choke cover from oven door.

3. Slide latch assembly upward and to the left to release plastic tabs from door frame. Once latch assembly is loose the spring may be disconnected from the door frame.
4. Remove screws securing door handle and door frame to door panel.
5. Remove door frame by releasing tabs around entire door panel.

# Disassembly Procedures

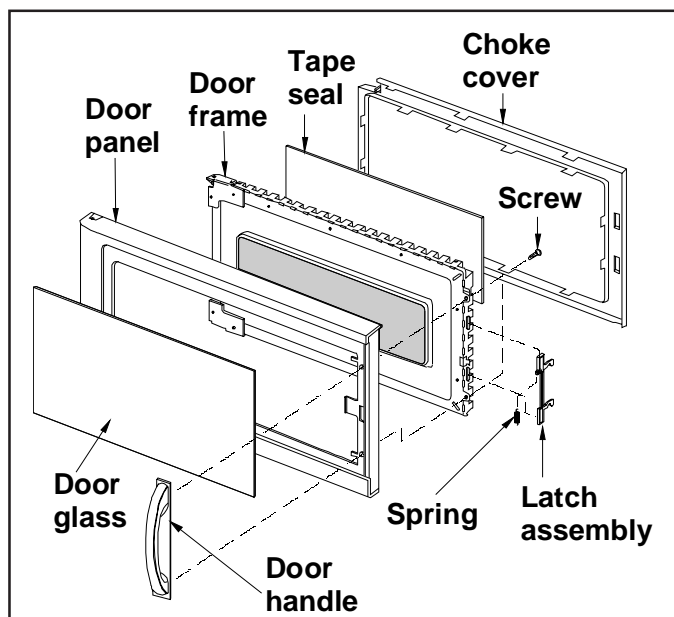
**WARNING**

To avoid the risk of electrical shock, personal injury or death; disconnect power to oven and discharge capacitors before following any disassembly procedure.

- Remove door handle by placing a hand on door panel next to the top of the door handle. Twist door panel towards the inside of door and pulling on the top portion of the door handle in a quick jerking motion.

**NOTE:** When replacing door handle, the bottom portion of the door handle must be inserted first.

- Slide door glass to the right slightly, then push the door glass upward to release the glass from the track.
- Reassemble in reverse order.

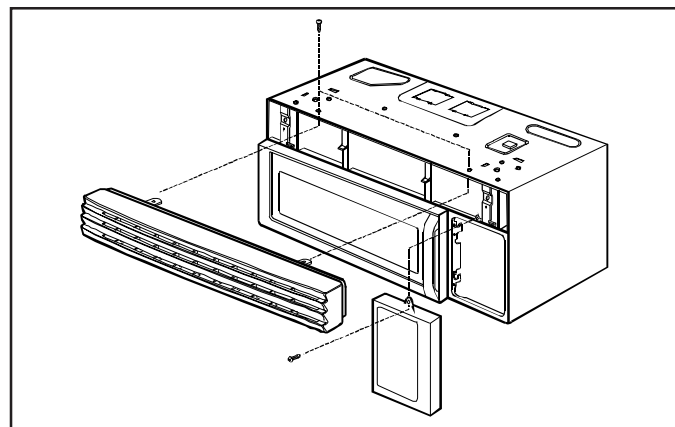


## Control Panel

The control panel is made up of several components, such as p.c. board and touch panel.

### Control Panel Removal

- Disconnect oven power and remove grille, (see "Grille" section).
- Remove screw located at the top of touch panel. Lift control panel up and out to release bottom tab connections.
- Place control panel on a flat surface.
- Reassemble in reverse order.



## P.C. Board

The p.c. board is located at the top on back of control panel. Some boards has up to five connection plugs which control the following:

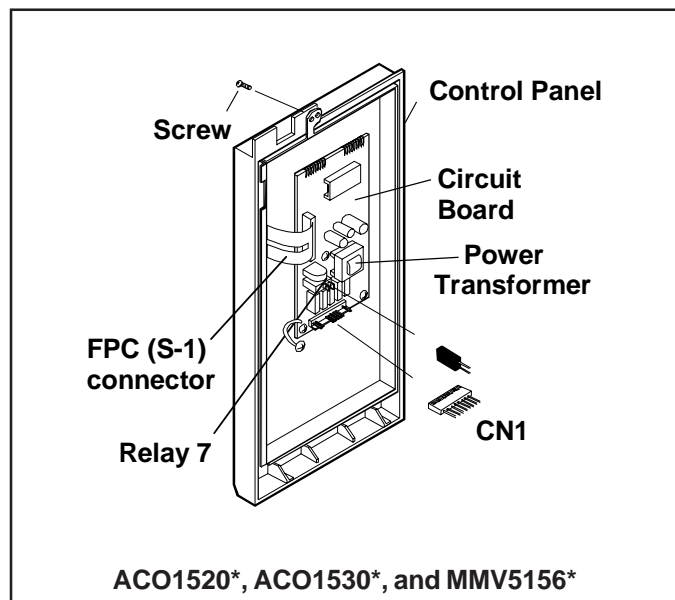
CN1	Main power connector
FPC (S1)	Ribbon connector for key panel
Relay 7	Relay connector

**CAUTION**

Once outer door trim panel is removed the glass panel is loose.

**CAUTION**

A microwave leakage test must be performed anytime a door assembly is removed, replaced, disassembly, or adjusted for any reason.

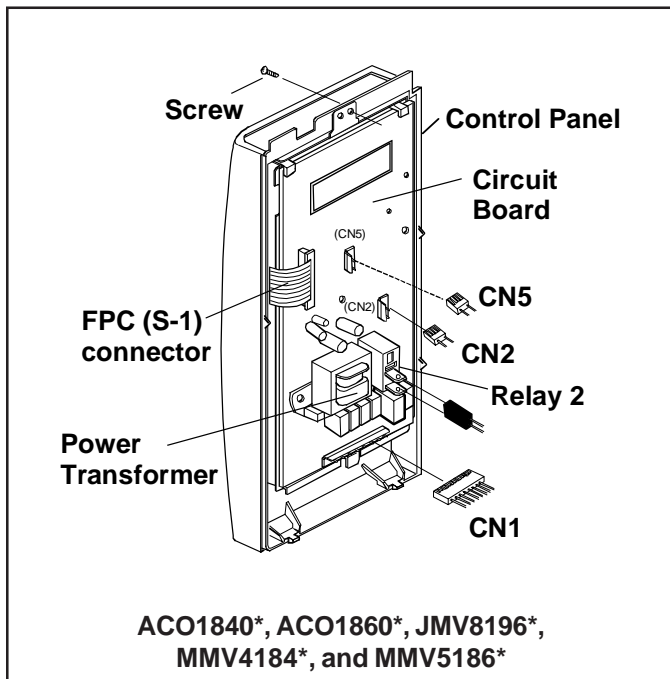


# Disassembly Procedures



To avoid the risk of electrical shock, personal injury or death; disconnect power to oven and discharge capacitors before following any disassembly procedure.

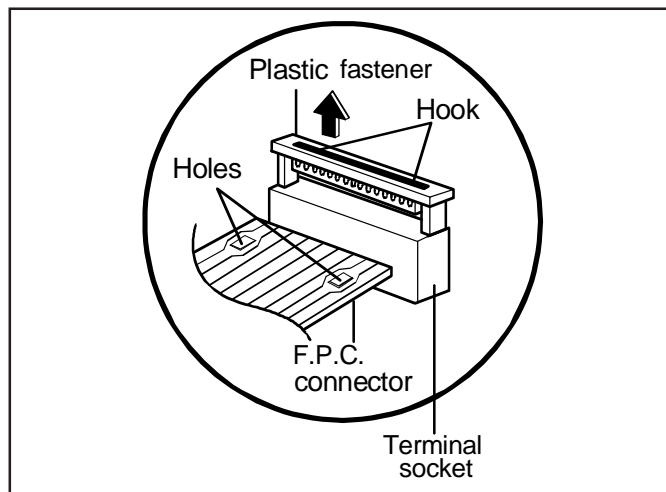
CN1	Main power connector
CN2	Primary switch
CN5	Humidity sensor (some models)
FPC (S1)	Ribbon connector for key panel
Relay 2	Relay connector



## Control Key Panel

The key panel has one ribbon connection on the p.c. board.

The key panel pads can be checked through a continuity test. Operations of key pad can be checked by measuring connections at end of ribbon, (using high ohms scale).



## P.C. Board Removal

1. Disconnect oven power and remove grille, (see "Grille" procedure).
2. Remove control panel, (see "Control Panel" procedure).
3. Discharge high voltage capacitor, (see "High Voltage Capacitor" procedure).
4. Disconnect ribbon connector by sliding top part of connector upward. Once in released position remove ribbon from connector by sliding ribbon side-to-side.

**NOTE:** Caution should be used when removing cable from connector. Ribbon cable has two holes which connector locks ribbon in place.

5. Disconnect and mark the wire connectors from p.c. board.
6. Remove screws securing p.c. board to control panel assembly.
7. Reassemble in reverse order.

**NOTE:** Do not flex p.c. board.

## Control Key Panel Removal

1. Disconnect power to oven.
2. Remove control panel, (see "Control Panel" section).
3. Discharge high voltage capacitor, (see "High Voltage capacitor section").
4. Disconnect ribbon connector by sliding top part of connector upward. Once in released position remove ribbon from connector by sliding ribbon side-to-side.

**NOTE:** Caution should be used when removing cable from connector. Ribbon cable has two holes which connector locks ribbon in place.

5. Peel failed key pad off and replace with new key pad.
6. Reassemble in reverse order.

## Outer Case

**NOTE:** This procedure requires removal of unit.

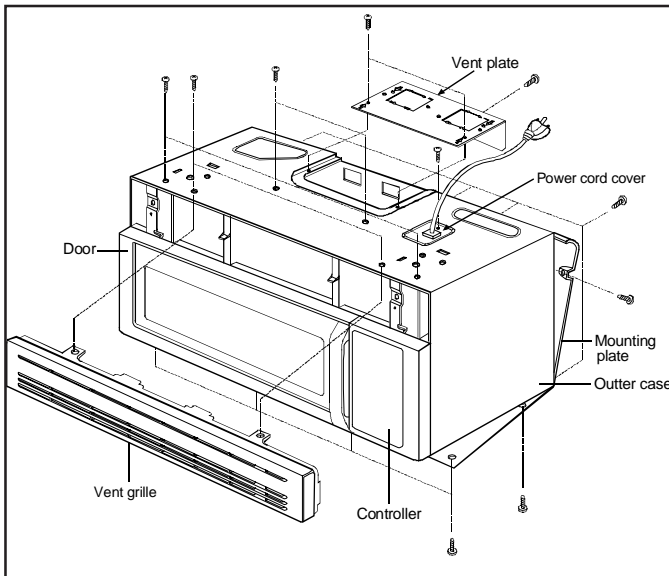
1. Disconnect power to oven and remove grille, (see "Grille" procedure).
2. Remove oven door, (see "Door Removal" procedure).
3. Remove screws securing air duct to outer case.
4. Remove screws securing outer case to the chassis.
5. Remove screws securing vent plate to outer case.
6. Remove screw securing power cord cover to outer case and remove power cord cover (if equipped).
7. Slide outer case towards the rear of the unit, guide power cord through outer case power cord hole.
8. Place outer case to the side, so no damage will occur to the case.

# Disassembly Procedures



To avoid the risk of electrical shock, personal injury or death; disconnect power to oven and discharge capacitors before following any disassembly procedure.

9. Reassemble in reverse order.

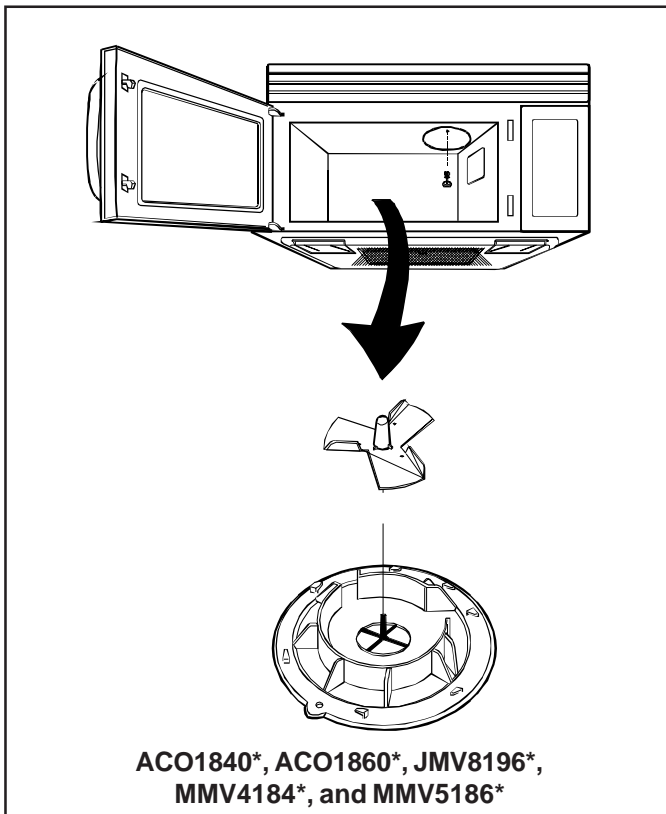


## Stirrer Assembly (some models)

Motor driven antenna assembly is located at the top of the cavity, using a top feed wave guide.

### Stirrer Blade Removal

1. Disconnect power to oven and open the oven door.
2. Carefully pry downward on the plastic rivets securing the stirrer cover.
3. Rotate slightly and pull down on stirrer fan cover .
4. Reassemble in reverse order.

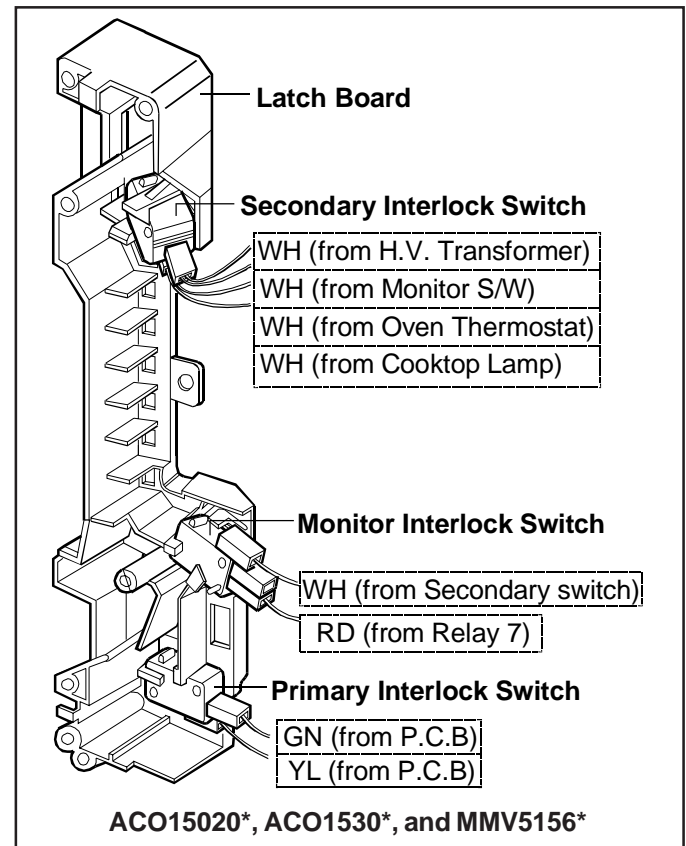


## Interlock Door Latch Switches

Primary switch is operated by bottom latch pawl.

### Interlock Switch Removal

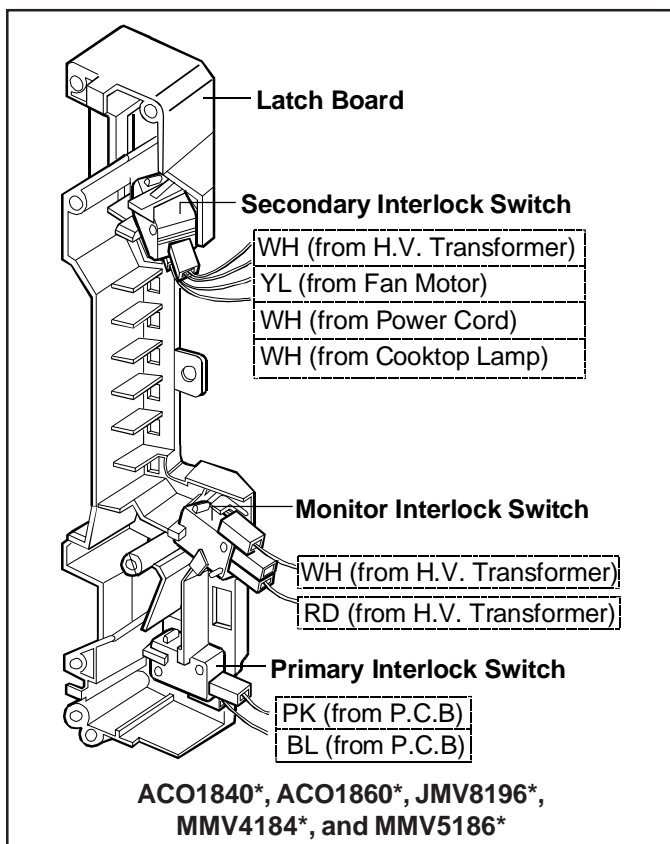
1. Disconnect power to oven and remove control panel, (see "Control Panel" procedure).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" procedure).
3. Test interlock switches before removing, (see Testing Procedures).
4. Disconnect and label wire connections.
5. Remove interlock switch.



# Disassembly Procedures

## **WARNING**

To avoid the risk of electrical shock, personal injury or death; disconnect power to oven and discharge capacitors before following any disassembly procedure.



## **CAUTION**

Before replacing a blown monitor fuse, test the primary interlock switch, secondary interlock switch, monitor switch, and power relay contacts for proper operation. If the monitor fuse is blown by a failed switch operation, all switches and printed circuit board must be replaced.

### Adjusting Interlocks

The interlock monitor and primary switches act as a final safety switch, protecting the operator from microwave energy. After adjusting the interlock switches, verify connections are correctly connected.

**For door fit and switch operation, switch housing is adjustable.**

1. Disconnect power to oven and remove control panel, (see "Control Panel" procedure).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" procedure).
3. Loosen switch housing mounting screws on vertical flange.
4. Close oven door, move latch board upward toward the top of the oven and/or away from the door latch until gaps are less than 1/64-inch (0.5 mm).

5. Hold latch board securely for proper switch operation and door fit, retighten screws.
6. Open the oven door slowly, watching the switches. Verify switches release in the following order.
  - Primary interlock switch
  - Secondary interlock switch
  - Monitor interlock switch

**NOTE:** Adjust the latch board until all switches operate in proper sequence.

7. Close the oven door slowly, watching the switches. Verify switches active in the following order.
  - Monitor interlock switch
  - Secondary interlock switch
  - Primary interlock switch
8. When proper sequence of switch has been achieved, tighten the latch board securely.

## **CAUTION**

A microwave leakage test must be performed anytime a door assembly is removed, replaced, disassembled or adjustment of latch board is made.

### High Voltage Capacitor

High voltage capacitor should always be discharged by shorting a terminal to a chassis ground. The capacitor has an internal "shunt" resistor, but the mechanical discharge should always be performed to avoid personal injury.

#### High Voltage Capacitor Removal

1. Disconnect power to oven and remove control panel, (see "Control Panel" procedure).
2. Discharge high voltage capacitor by connecting a jumper wire to the terminal of high voltage capacitor with the diode connected to it. Connect the other end of the jumper wire to a well insulated screwdriver and touch a nearby chassis ground screw.
3. Remove screws that secure capacitor and diode.
4. Slide capacitor mounting bracket out of the slots and pull outward on capacitor, diode and bracket.
5. Reassemble in reverse order.

### Diode

The diode is located next to the high voltage capacitor.

1. Disconnect power to oven and remove control panel, (see "Control Panel" procedure).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" procedure).
3. Disconnect diode terminal from high voltage capacitor and remove screw securing diode to ground.
4. Reassemble in reverse order.



# Disassembly Procedures



## WARNING

To avoid the risk of electrical shock, personal injury or death; disconnect power to oven and discharge capacitors before following any disassembly procedure.

### Transformer

High voltage transformer can be serviced through the front of the unit.

#### Power Transformer Removal

1. Disconnect power to oven and remove control panel, (see "Control Panel" procedure).

**NOTE:** On the ACO15\* and MMV5156\* models, remove the metal protector located above control panel.

2. Discharge high voltage capacitor, (see "High Voltage Capacitor" procedure).
3. Disconnect and label wire leads from transformer.
4. Remove screws securing transformer and remove out through the front.
5. Reassemble in reverse order.

### Fuse

On the ACO15\* and MMV5156\* models the fuse is located behind the grille in line with the power cord on the right side of the unit.

On the ACO18\*, JMV8196\*, MMV4184\*, and MMV5186\* models the fuse is located behind the grille on the right side attached to the air duct.

#### Fuse Removal

1. Disconnect power and remove grille, (see "Grille" procedure).
2. Remove and replace fuse and reassemble in reverse order.



## CAUTION

Before replacing a blown monitor fuse, test the primary interlock switch, secondary interlock switch, monitor switch, and power relay contacts for proper operation. If the monitor fuse is blown by a failed switch operation, all switches and printed circuit board must be replaced.

### Magnetron

Magnetron is mounted on the side of the cavity to provide a top feed single waveguide.

1. Disconnect power to oven and remove grille, (see "Grille" procedure).
2. Remove control panel, (see "Control Panel" procedure).

**NOTE:** On the ACO15\* and MMV5156\* models, remove the metal protector located above control panel.

3. Remove outer case, (see "Outer Case" procedure).
4. Discharge high voltage capacitor, (see "High Voltage Capacitor" procedure).
5. Remove screws securing magnetron to the wave guide.
6. Carefully remove the magnetron.
7. Reassemble in reverse order.

**NOTE:** When replacing the magnetron, make sure the gasket is in the correct position and in good condition.



## CAUTION

During replacement of magnetron, be certain the R.F. anode gasket is in place around anode stud.



## WARNING

A microwave leakage test must be performed anytime a magnetron assembly is removed, replaced, disassembled or adjusted for any reason.

### Magnetron Fan Assembly

Magnetron fan motor provides cool air circulation from an external air source, which provides direct cool air through air vanes surrounding the magnetron. This assembly is located above the magnetron.

#### Magnetron Fan Removal

1. Follow steps 1 through 4 of "Magnetron" procedure.
2. Remove fan blade from fan motor.
3. Remove screws securing fan motor to air duct.
4. Disconnect wires from fan motor, and lift fan motor assembly out.
5. Reassemble in reverse order.

# Disassembly Procedures

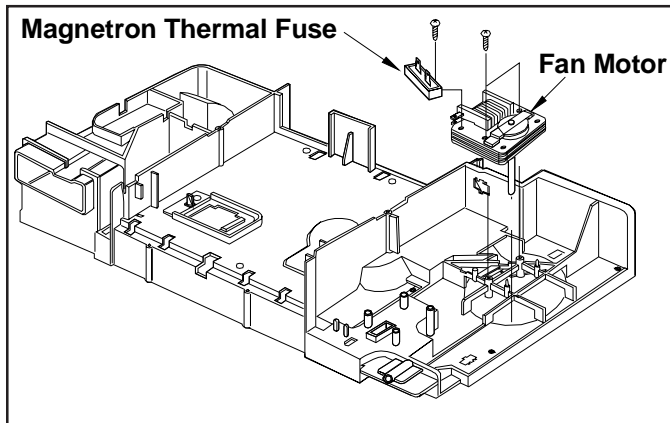


To avoid the risk of electrical shock, personal injury or death; disconnect power to oven and discharge capacitors before following any disassembly procedure.

## Magnetron Thermal Fuse

**NOTE:** Thermal fuse is not resettable.

1. Disconnect power to oven and remove control panel, (see "Control Panel" procedure).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" procedure).
3. Remove outer case, (see "Outer Case" procedure).
4. Disconnect and label wire terminals.
5. Remove screw securing thermal fuse to cooling fan.
6. Replace and reassemble in reverse order.

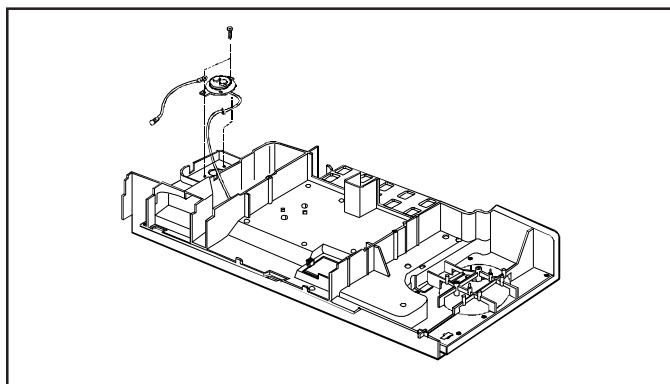


## Humidity Sensor

The sensor is a plug-in device located in the air exhaust duct.

### Humidity Sensor Removal

1. Disconnect power to oven and remove control panel, (see "Control Panel" procedure).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" procedure).
3. Remove outer case, (see "Outer Case" procedure).
4. Remove screws securing sensor to air duct.
5. Disconnect wire terminal plug and replace with new sensor.
6. Reassemble in reverse order.



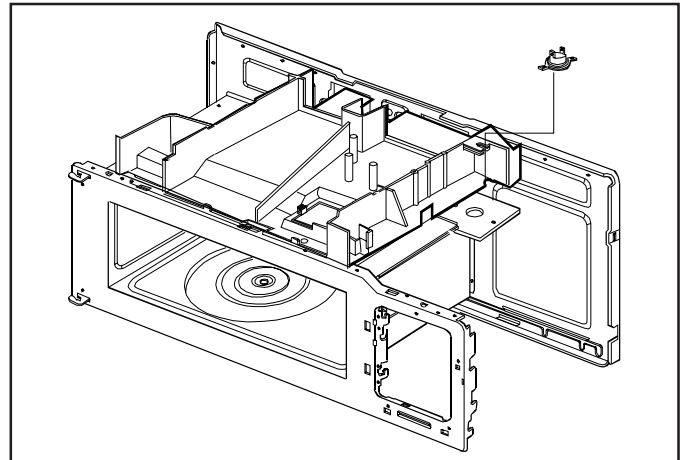
## Oven Thermostat

The oven thermostat is on the air duct assembly.

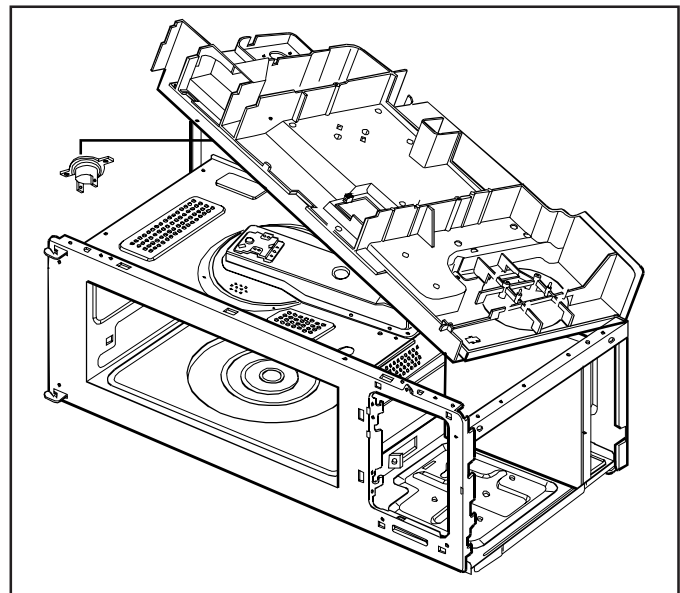
Thermostat is a resettable thermostat.

1. Disconnect power to oven and remove control panel, (see "Control Panel" procedure).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" procedure).
3. Remove outer case, (see "Outer Case" procedure).
4. Disconnect wire terminals from oven thermostat.

**NOTE:** On ACO15\* and MMV5156\* oven thermostat is used as magnetron thermal fuse as well.



**NOTE:** On ACO18\*, JMV8196\*, MMV4184\*, and MMV5186\* lift upward on left rear corner of air duct to release oven thermostat.



5. Replace and reassemble in reverse order.

# Disassembly Procedures



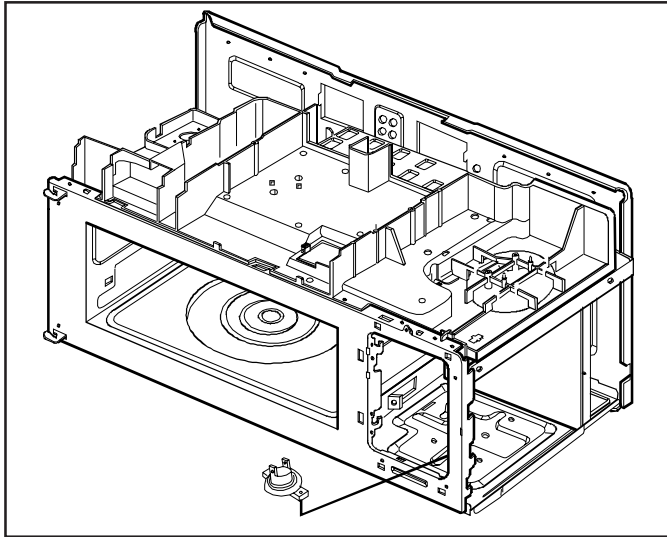
To avoid the risk of electrical shock, personal injury or death; disconnect power to oven and discharge capacitors before following any disassembly procedure.

## Base Thermostat

The base thermostat is located behind the control panel assembly.

**NOTE:** Thermostat is a resettable thermostat.

1. Disconnect power to oven and remove control panel, (see "Control Panel" procedure).
2. Discharge high voltage capacitor, (see "High Voltage Capacitor" procedure).
3. Remove screws securing thermostat to base plate and disconnect wires from thermostat.
4. Reassemble in reverse order.

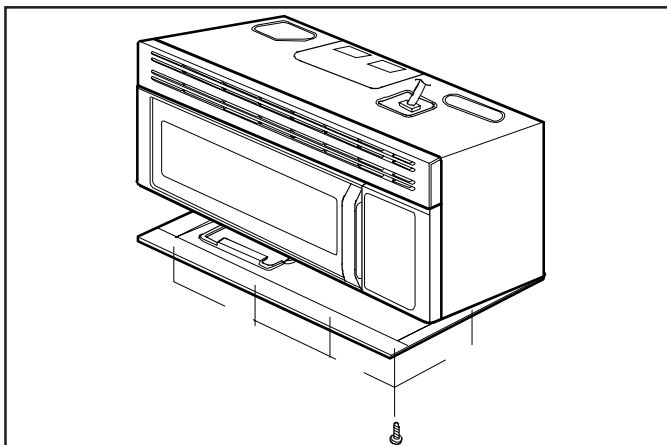


## Light Socket

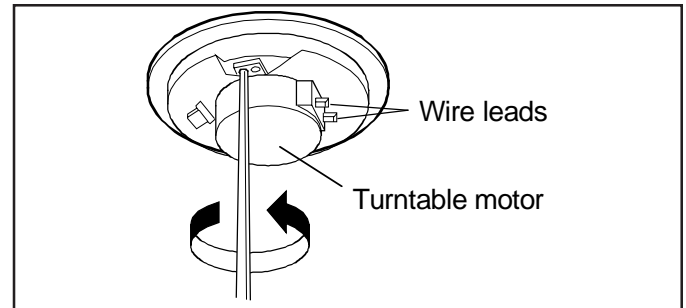
1. Disconnect power to oven and remove grille, (see "Grille" procedure).
2. Remove screws securing bulb holder.
3. Remove light bulb. Remove light socket.
4. Disconnect wire terminal plug.
5. Replace and reassemble in reverse order.

## Turntable Motor

1. Disconnect power to oven.
2. Remove screws securing bottom plate cover.



3. Open the oven door, remove turntable, and gently pry upward on turntable shaft.
4. Disconnect wire leads from turntable motor.



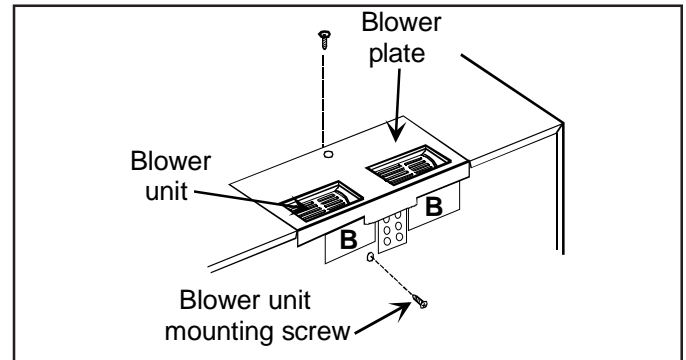
5. Remove screws securing turntable to the oven cavity.
6. Replace and reassemble in reverse order.

## Vent Blower

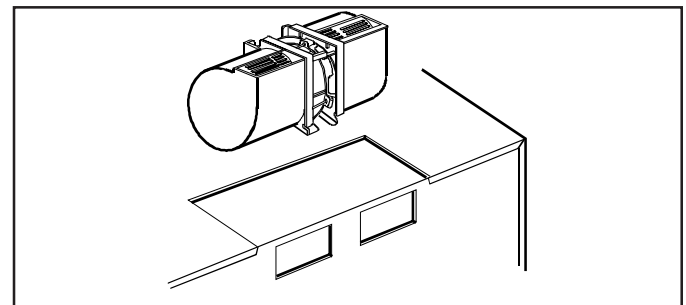
Vent blower is a two speed (HI-LOW) capacitor run blower assembly located on top of the oven. The blower is operated by voltage relays located on the p.c. board.

### Vent Exhaust Blower Removal

1. Disconnect power to unit and remove unit from its installation.
2. Remove screws securing damper and motor assembly to top and back of unit.



3. Remove damper.
4. Lift blower assembly out and disconnect wire connection wire terminal.



5. Reassemble in reverse order.

**NOTE:** Place blower assembly wires in slotted area to avoid pinching of wires.

# Wiring Diagram and Schematic

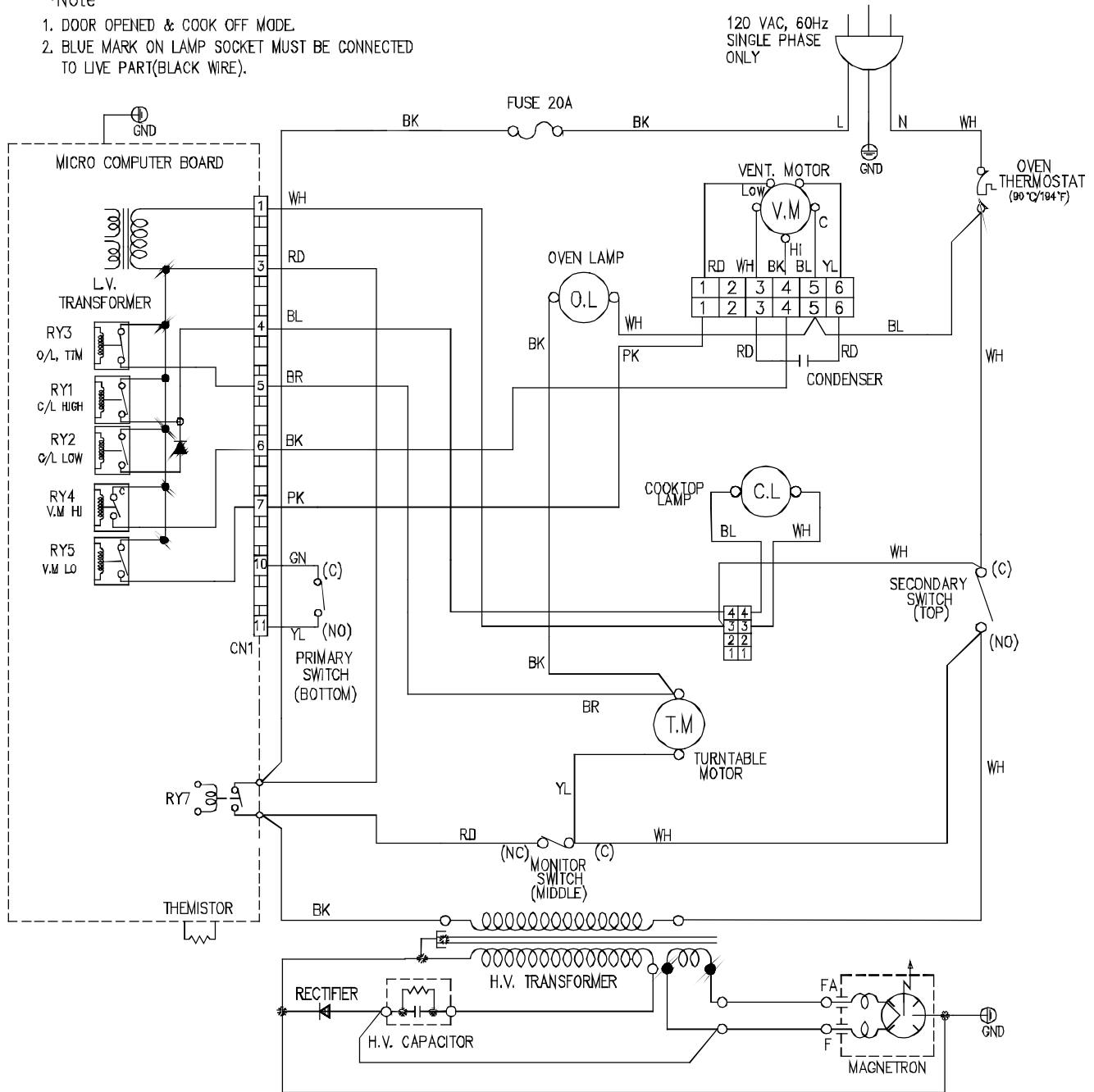


**WARNING**

To avoid the risk of electrical shock, personal injury or death; disconnect power to oven and discharge capacitors before following any disassembly procedure.

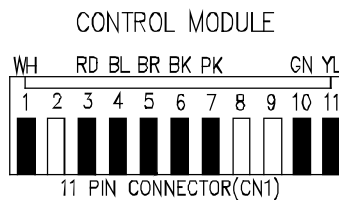
\*Note

1. DOOR OPENED & COOK OFF MODE.
2. BLUE MARK ON LAMP SOCKET MUST BE CONNECTED TO LIVE PART(BLACK WIRE).



\*Note

1. DOOR OPENED & COOK OFF MODE.
2. BLUE MARK ON LAMP SOCKET MUST BE CONNECTED TO LIVE PART(BLACK WIRE).
3. ONLY CERTAIN MODELS USE THE ABSOLUTE HUMIDITY SENSOR.



WIRE COLORS

SYMBOL	COLOR
WH	WHITE
BK	BLACK
RD	RED
YL	YELLOW
PK	PINK
BL	BLUE
BR	BROWN
GN	GREEN
GY	GREY

ACO1520\* and ACO1530\* Models

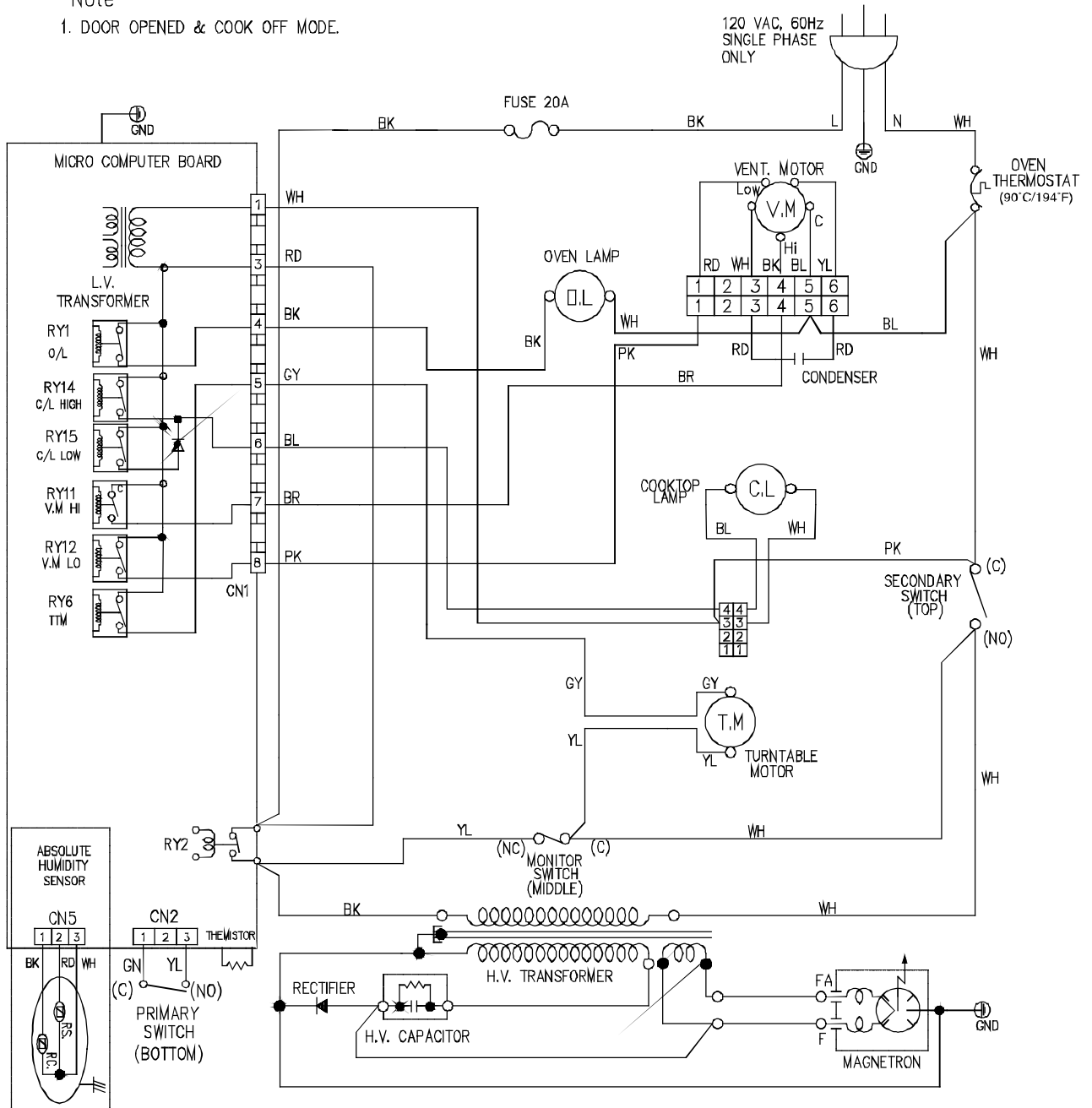
# Wiring Diagram and Schematic

**WARNING**

To avoid the risk of electrical shock, personal injury or death; disconnect power to oven and discharge capacitors before following any disassembly procedure.

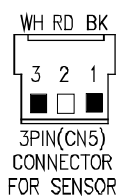
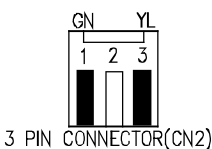
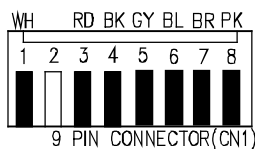
**Note**

1. DOOR OPENED & COOK OFF MODE.



\* OPTIONAL FNCTION;  
(FOR SENSOR MODEL ONLY)

**CONTROL MODULE**



**WIRE COLORS**

SYMBOL	COLOR
WH	WHITE
BK	BLACK
RD	RED
YL	YELLOW
PK	PINK
BL	BLUE
BR	BROWN
GN	GREEN
GY	GREY

**ACO1560\* and MMV5156\* Models**

# Wiring Diagram and Schematic

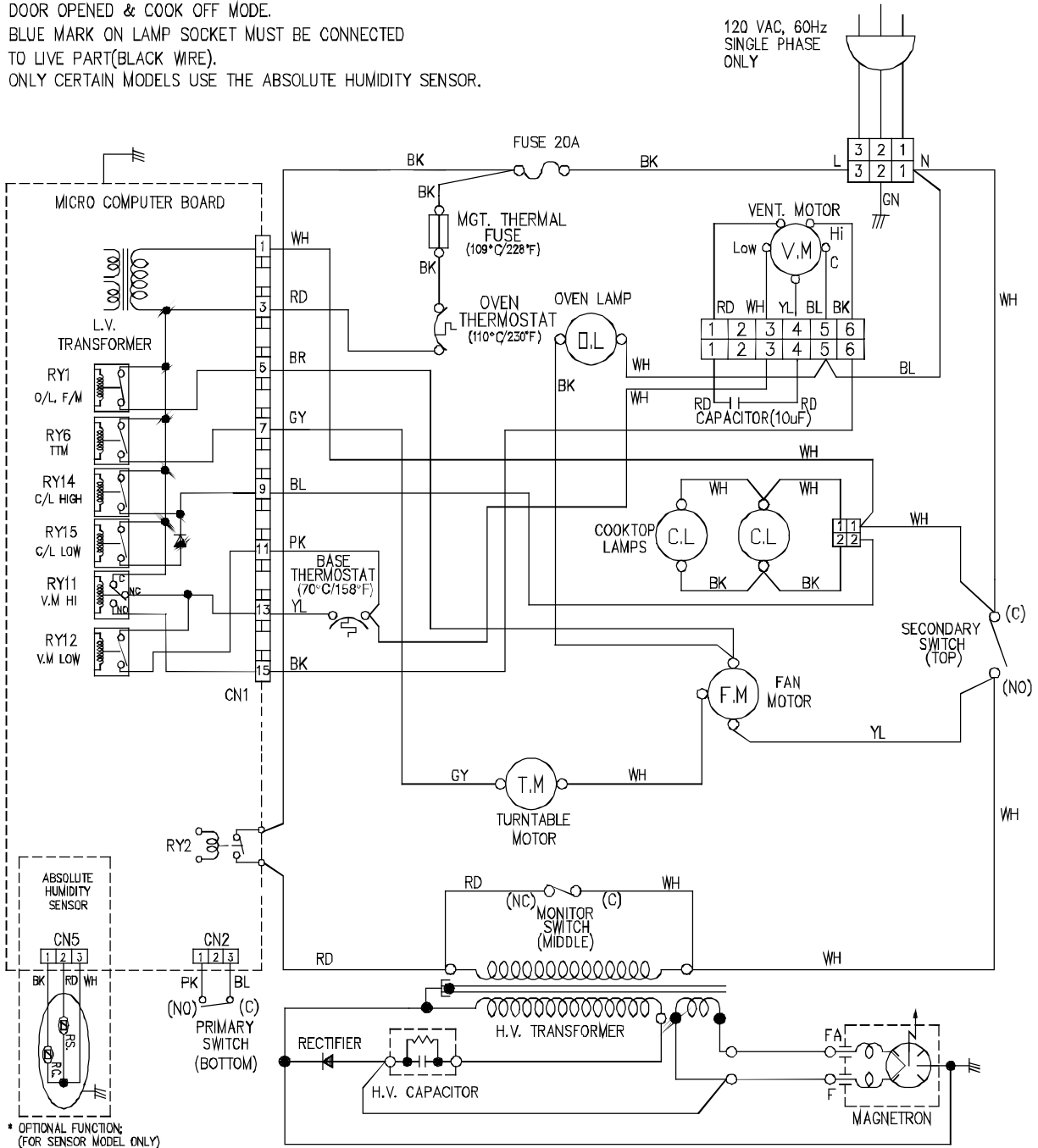


**WARNING**

To avoid the risk of electrical shock, personal injury or death; disconnect power to oven and discharge capacitors before following any disassembly procedure.

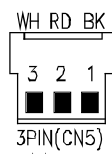
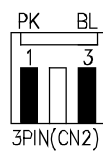
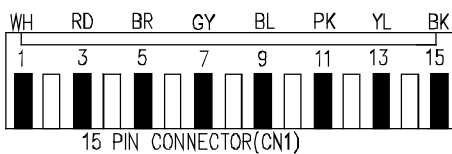
\*Note

1. DOOR OPENED & COOK OFF MODE.
2. BLUE MARK ON LAMP SOCKET MUST BE CONNECTED TO LIVE PART(BLACK WIRE).
3. ONLY CERTAIN MODELS USE THE ABSOLUTE HUMIDITY SENSOR.



\* OPTIONAL FUNCTION;  
(FOR SENSOR MODEL ONLY)

## CONTROL MODULE



(FOR SENSOR MODEL)

## WIRE COLORS

SYMBOL	COLOR
WH	WHITE
BK	BLACK
RD	RED
YL	YELLOW
PK	PINK
BL	BLUE
BR	BROWN
GN	GREEN
GY	GREY

ACO18\*, JMV8196\*, MMV4184, and MMV5186\* Models

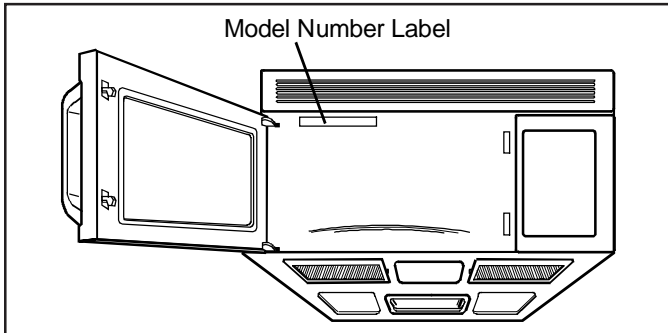
# Appendix A



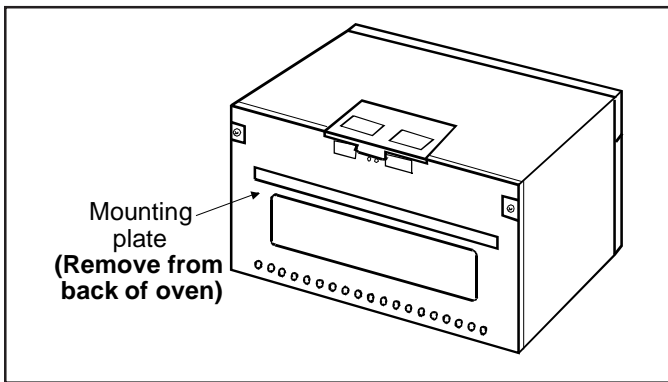
# Installation Instruction

## Proper installation is the installer's responsibility!

Write the model & serial numbers on the owner's manual. The model number label is located on the oven front.



The mounting plate is located on the back side of the microwave oven.



## The dimensions of the oven are as follows:

### ACO15\* Models

- Height : 16  $\frac{7}{16}$  in.
- Width : 29  $\frac{15}{16}$  in.
- Depth : 15  $\frac{3}{8}$  in.
- Weight : 52 lbs.

### ACO18\* Models

- Height : 16  $\frac{7}{16}$  in.
- Width : 29  $\frac{15}{16}$  in.
- Depth : 15  $\frac{1}{2}$  in.
- Weight : 60 lbs.



## CAUTION

To avoid risk of personal injury two people are required to install this oven.

## Avoid Electrical Shock!

- Before you drill into the wall, note where electrical outlets are and where electrical wires might be concealed behind the wall. **YOU COULD GET AN ELECTRIC SHOCK** if you contact electrical wires with your drill bit.
- Locate and disconnect the power to any electrical circuits that could be affected by installing this oven. **IF YOU DO NOT DISCONNECT THE POWER, YOU COULD GET AN ELECTRIC SHOCK.**

## Electrical rating of this oven: 120V AC 60Hz.

- 13 A / 1500 W (Microwave oven, Cooktop Lamps, Ventilation Fan)
- You need a DEDICATED 120VAC / 60Hz / 20A, fused electrical supply (located in the cabinet above the microwave as close as possible to the microwave) serving only the microwave.

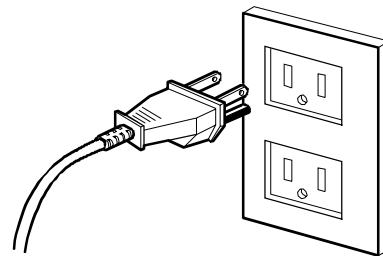


## WARNING

To avoid risk of electrical shock, personal injury or death; do not use the grounding plug improperly.

- Check with a qualified electrician if you are not sure whether the oven is properly grounded or if you do not completely understand the grounding instructions.
- Do not use a fuse in the neutral or grounding circuit.
- Save these instructions for the local electrical inspector's use.
- This appliance **MUST** be grounded!
  - If there is an electrical short circuit, grounding reduces the risk of electrical shock by providing an escape wire for the electric current. This appliance is equipped with a cord having a grounding wire with a grounding plug.
  - Place the plug into a properly installed and grounded outlet.
  - Do not use an extension cord.
  - Keep the power cord dry and do not pinch or crush.
  - Do not, under any circumstances, remove the power supply cord grounding prong.

Properly Polarized and Grounded Outlet



Three-Pronged (Grounding) Plug

# Installation Instruction



## WARNING

If you do not use the microwave oven as instructed, you could be exposed to excessive microwave energy.

### Do not expose yourself to excessive microwave energy!

- DO NOT try to operate the microwave oven with the door open.
- DO NOT tamper with or defeat the safety interlocks.
- DO NOT place objects between the microwave oven front face and the door.
- DO NOT allow soil or cleaner residue to build up on the flat surfaces around the microwave oven door.
- DO NOT operate the microwave oven if it is damaged.
- The microwave oven door must close properly to operate safely.
- DO NOT USE THE MICROWAVE OVEN:
  - If the door is bent.
  - If the hinges or latches are broken or loose.
  - If the door seals, sealing surfaces or glass is broken.
- DO NOT ATTEMPT TO ADJUST OR REPAIR THE OVEN YOURSELF!
  - It should be adjusted and repaired by a qualified technician who can check for microwave leakage after repairing the oven.



## WARNING

If you do not mount the oven as instructed, you risk personal injury and/or property damage.

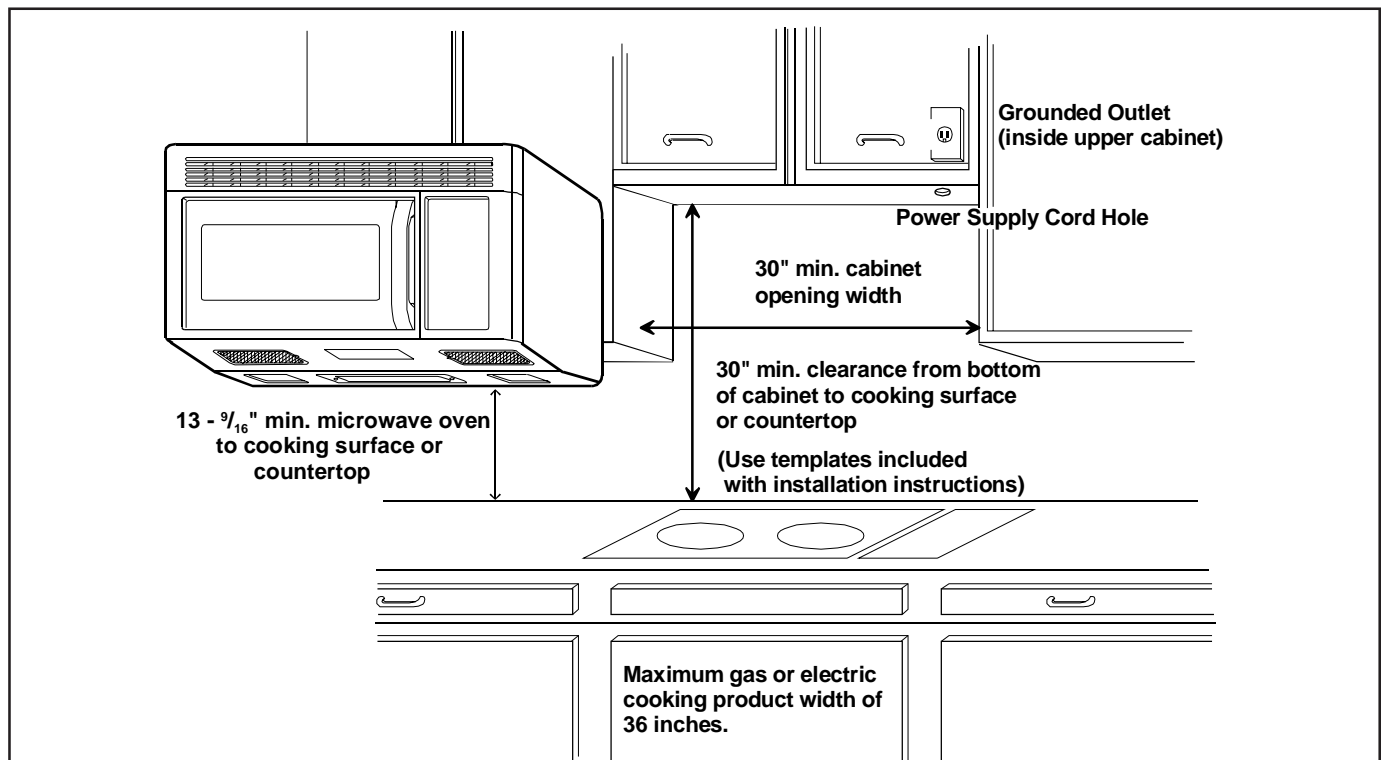


## CAUTION

Before you begin installing the oven, PLACE A PIECE OF THE CARTON OR OTHER HEAVY MATERIAL (a blanket) over the countertop or cooktop to protect it. **Do not use a plastic cover.** Failure to protect these surfaces could result in property damage.

### Make sure you have enough space and support.

- Mount the oven against a flat, vertical wall, so it is supported by the wall. The wall should be constructed of minimum 2" x 4" wood studding and 3/8" thick drywall or plaster/lath.
- ATTACH AT LEAST ONE of the two lag screws supporting the oven to a vertical, 2" x 4" wall stud.
- DO NOT mount the microwave oven to an island or peninsula cabinet.
- BE SURE the upper cabinet and rear wall structures are able to support 150 lbs., plus the weight of any items you place inside the oven or upper cabinet.
- Locate the oven away from strong draft areas, such as windows, doors, and strong heating vents.
- BE SURE you have enough space. See illustration below for minimum vertical and horizontal clearance.
- This microwave oven can be installed over gas or electric cooking products no more than 36 inches wide.



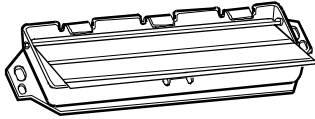
# Installation Instruction

## Parts, Tools, and Materials

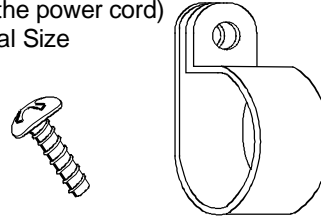
The following parts are supplied with the oven:

**NOTE:** Depending on ventilation requirements, not all parts will be used.

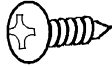
**Backdraft damper / duct connector**  
(for roof-venting or wall-venting installation)  
Not Actual Size ( 2 pieces must be assembled as shown )



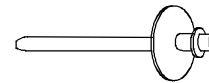
**One power cord clamp and  
One dark-colored mounting screw**  
(to hold the power cord)  
Actual Size



**Two self-tapping screws**  
(for attaching the damper duct connector)



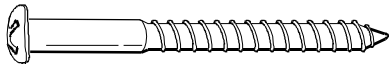
**One lock pin and one washer-**



**One power cord clamp bushing -**  
(for the cord hole in a metal upper cabinet)



**Four 1/4" x 2" lag screws -**  
(for wall stud holes)



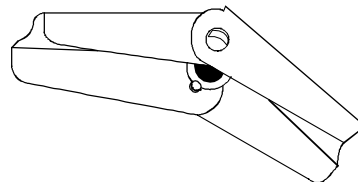
**Four 1/4" x 3" toggle bolts -**  
(for drywall holes)



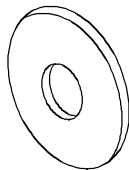
**Two 1/4" x 2" bolts -**  
(for securing to the upper cabinet)



**Four spring toggle heads -**  
(for the toggle bolts)



**Two washers -**  
(for the two upper cabinet bolts)



**NOTE:** Install at least two lag screws into one 2" X 4" stud and four anchor bolts into the wall.  
The mounting area must meet the 150 lbs. weight requirement.

### Tools and materials required for installation:

**List of tools include:** Stud finder or thin nail, Saber saw, Keyhole saw, Electric drill, Phillips and Flat blade screwdriver, Pencil, Tape measure (metal), Plumb line, Tin snips, Caulking gun, Duct tape, Clear tape, Wood and Metal drill bits.

**NOTE:** Use the carton or heavy material for covering the counter top.

**NOTE:** Ductwork required for installation is not included. All wall and roof caps must have a back-draft damper.

# Installation Instruction

## Preparing Electrical Connection

### **WARNING**

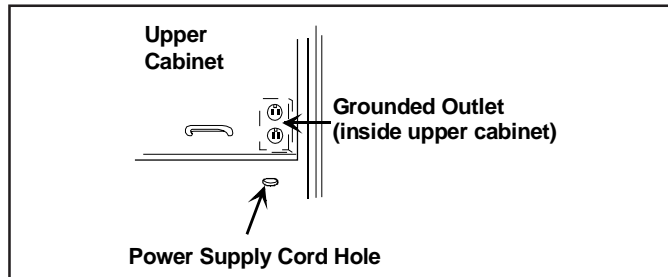
To avoid risk of electrical shock, this appliance must be grounded.

1. Locate grounded electrical outlet for oven in the cabinet above the oven.

**NOTE:** Outlet should be on a circuit dedicated to the microwave oven (120 VAC, 60 Hz) with a 20 Amp fused electrical supply.

**NOTE:** If proper wall outlet is not present, one must be installed by a qualified electrician.

2. Power supply cord hole will be cut later when preparing the wall and upper cabinet.



**NOTE:** Do not use extension cord. Keep power cord dry and do not pinch or crush.

## Preparing Venting System

Oven may be vented in one of three ways.

**NOTE:** Do not vent oven into a wall cavity, an attic or an unused area.

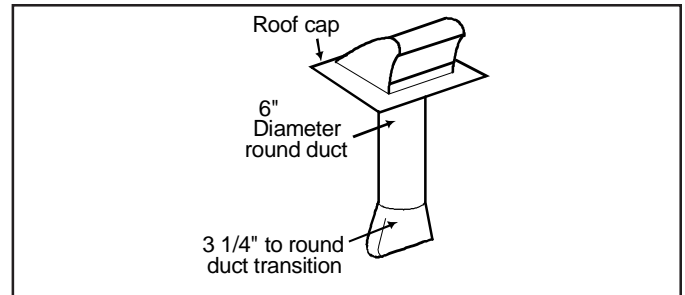
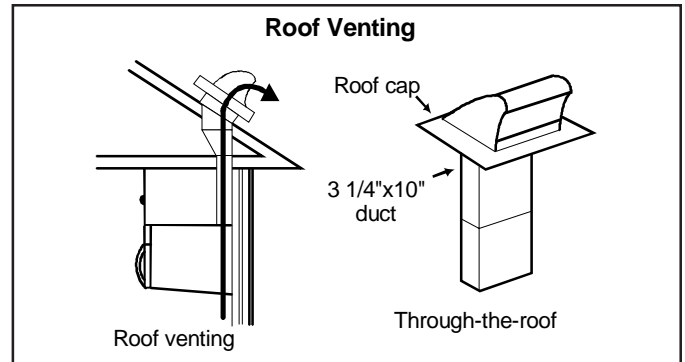
### **WARNING**

To avoid risk of fire, personal injury or property damage, oven must be properly vented.

**NOTE:** Duckwork needed for outside ventilation is not included with oven.

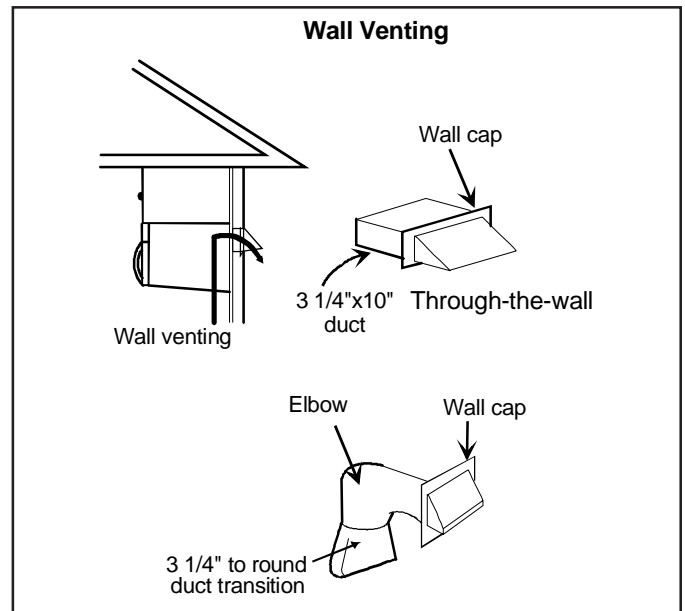
## Roof-Venting

Oven is located on an outside wall near roof.



## Wall Venting

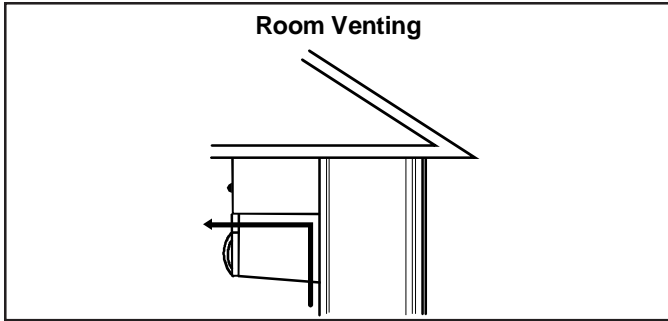
Oven is located on an outside wall of house.



# Installation Instruction

## Room Venting

Oven is located on an inside wall of house.



**NOTE:** Remember the following when installing venting.

- Keep length of ductwork and the number of elbows to a minimum to ventilate oven efficiently.
- Keep the size of the ductwork the same.
- Do not install two elbows together.
- Use duct tape to seal all joints in the ductwork system.
- Use caulking to seal exterior wall or roof opening around the cap.

## Standard Fittings





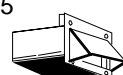

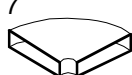
**NOTE:** If existing ductwork is round, a rectangular-to-round adapter must be used with a rectangular 3" extension duct installed between the damper assembly and adapter to prevent the exhaust damper from sticking.

## Ductwork Length

The total length of the ductwork system, including straight duct, elbows, transitions, and wall or roof cap must not exceed the equivalent of 140 feet.

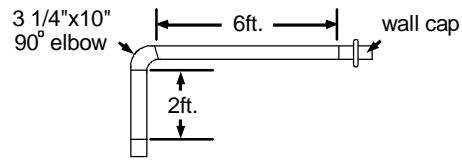
For best performance, do not use more than three 90° elbows and keep the length as short as possible.

Following are standard fittings and their equivalent length in feet.

1  3 1/4"x10" to 6"=5ft.	2  3 1/4"x10" roof cap=24ft.	3  3 1/4"x10" 90° elbow=25ft.	
4  90° elbow =10ft.	5  3 1/4"x10" wall cap =40ft.	6  45° elbow =5ft.	7  3 1/4"x10" flat elbow =10ft.

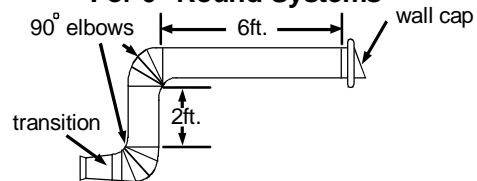
To calculate the equivalent length of each duct piece used, see examples below.

### For 3 1/4"x10" Systems



1-3 1/4" x 10" 90° elbow	=	25 ft.
1-Wall Cap	=	40 ft.
8 feet straight duct	=	8 ft.
<b>Total Length</b>	<b>=</b>	<b>73 ft.</b>

### For 6" Round Systems



1-transition	=	5 ft.
2-90° elbows	=	20 ft.
1-Wall Cap	=	40 ft.
8 feet straight	=	8 ft.
<b>Total Length</b>	<b>=</b>	<b>73 ft.</b>

# Installation Instruction

## Preparing Venting Blower

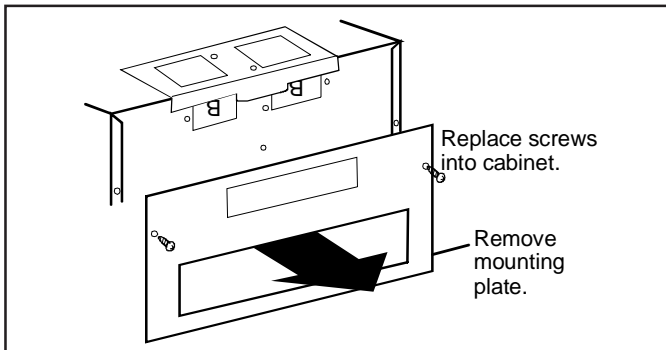
### **WARNING**

To avoid risk of electrical shock or personal injury, disconnect power to unit before working on vent blower.

**NOTE:** Do not pull or stretch blower wiring. Pulling or stretching blower wiring could result in electrical wiring damage.

Microwave oven is shipped with blower assembly for roof venting. If wall or room venting installation is desired, blower assembly must be changed.

1. Remove screws securing mounting plate to oven cabinet and set side.
2. Replace screws back into oven cabinet.

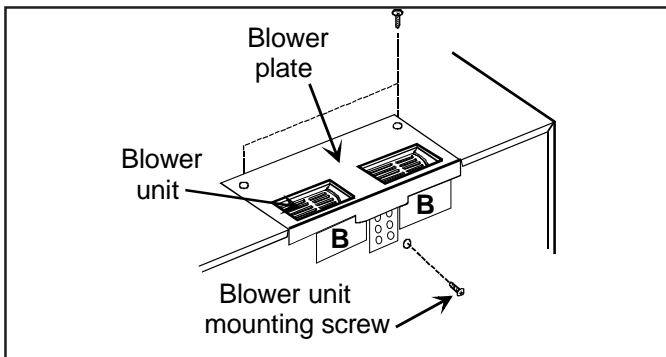


## Roof Venting Installation

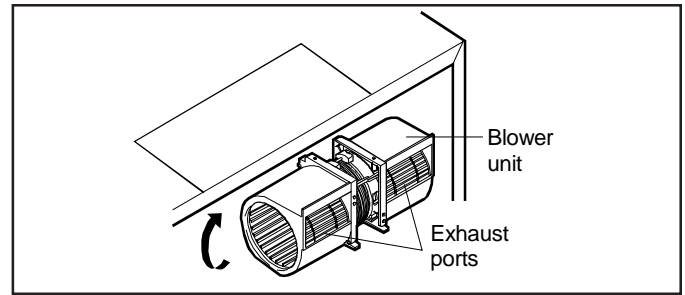
Blower venting is assembled at the factory for roof venting. Proceed to "Wall and Upper Cabinet Installation" section.

## Wall Venting Installation

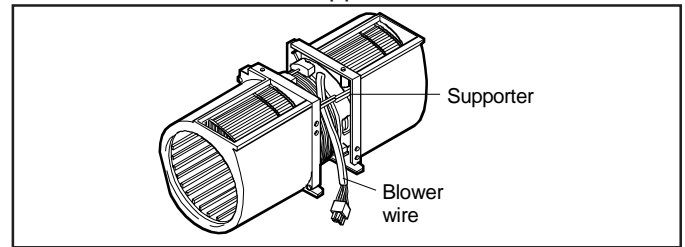
1. Remove blower unit mounting screw and blower plate screws (save screws for step 8). Remove blower plate from cabinet.



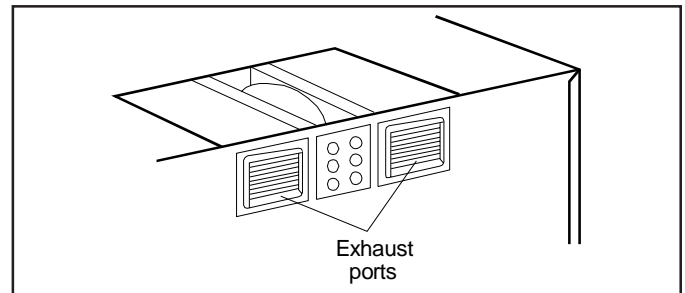
2. Carefully lift blower unit out of oven cabinet.
3. Disconnect blower motor terminal plug from wire harness.
4. Rotate blower unit so exhaust ports face the rear of the cabinet.



5. Reconnect blower motor terminal plug, making sure the wire is under the supporter.



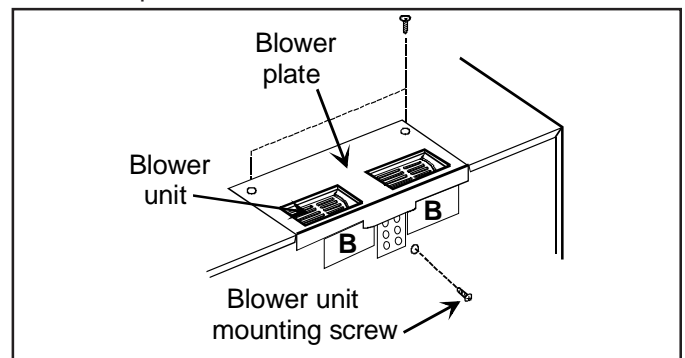
6. Place blower unit back into cabinet. Verify exhaust ports face towards the rear and are aligned with the holes in the back of the unit.



7. Remove knockouts marked **B** (see step 1 for illustration) from back plate and discard. Be careful not to distort back plate.
8. Attach blower plate to cabinet with exhaust ports and blower plate opening aligned. Secure blower unit with screws that were removed in step 1.

## Room Venting Installation (Recirculating)

1. Remove blower unit mounting screw and blower plate screws (save screws for step 5). Remove blower plate from cabinet.



2. Carefully lift blower unit out of oven cabinet.
3. Rotate blower unit 90° so that exhaust ports face the front of the cabinet.

# Installation Instruction

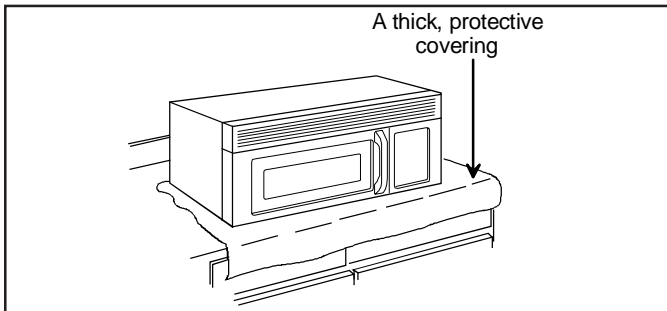
- Place blower unit back into cabinet. Verify exhaust ports face towards the front of the unit.
- Attach blower plate to cabinet. Secure blower unit with screws that were removed in step 1.

## Preparing Wall and Upper Cabinet

### CAUTION

To avoid property damage cover countertop or cooktop by placing a piece of cardboard from the carton or a heavy piece of material. Do not use plastic.

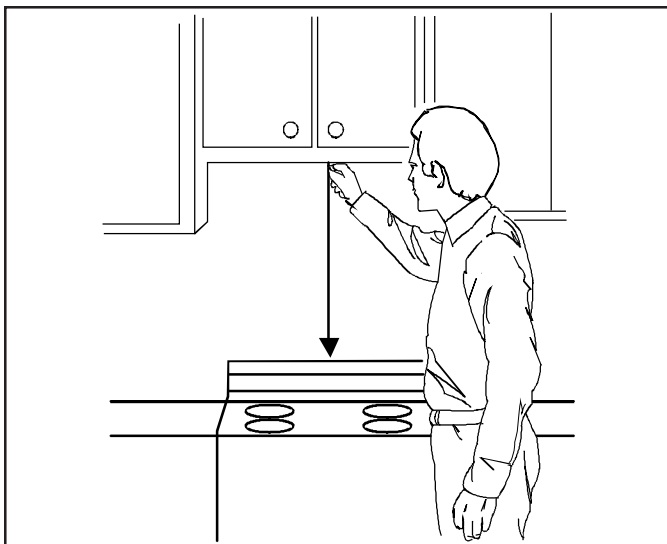
- Remove shipping material and parts from inside the microwave oven.
- Cover countertop or cooktop with a thick protective covering, to protect it from damage and dirt.



**NOTE:** For easy access to wall and upper cabinet, remove range from wall to allow easier measuring and drilling.

## Preparing Template Placement

- Find and mark the vertical center line on the back wall, using a tape measure and plumb line.

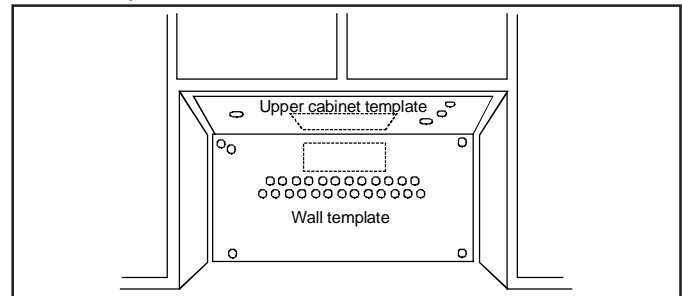


- Find and mark placement of one or two points indicating stud location on the wall.
  - Measure and mark stud location within the area marked **H** on the wall template.
  - If wall studs cannot be located, consult a local building contractor.

### WARNING

To avoid risk of property damage or personal injury, do not attempt to install microwave oven if wall studs cannot be located.

- Align plumb line on wall with center line on the wall template.
  - Verify minimum width is 30" and the distance from the top of wall template to the range or countertop is at least 30".
- Secure wall template to the wall.
  - If cabinets are not level, adjust the wall template to align with cabinet.
  - Oven must hang level. If the front edge of the cabinet is lower than the back edge, adjust wall template to be level with the cabinet front.



- Measure the bottom of the upper cabinet frame. Trim the edges **A**, **B**, and **C** on the upper cabinet template, so template will fit on the bottom of the upper cabinet. If upper cabinet has a recessed frame, trim the template to fit inside the recessed area. Align the centerline of the upper cabinet template with the centerline on the wall template. Secure upper cabinet template in place.



# Installation Instruction

## Drilling Holes in the Wall and Upper Cabinet

### WARNING

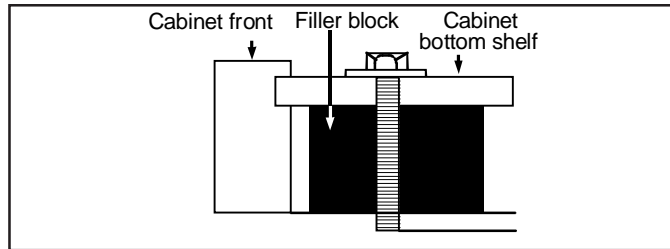
To avoid electrical shock or personal injury, be very careful when drilling holes into the wall. Electrical wires may be concealed behind the wall covering.

1. Find the points on the wall template labeled **D**, **E**, **F**, and **G**. Drill a  $\frac{3}{16}$ " diameter hole at any points located over a wall stud. Drill  $\frac{3}{4}$ " diameter hole at any point over the wall without studding.
2. Drill holes into studded areas marked **H** and **I** on the wall template using a  $\frac{3}{16}$ " drill bit. If wall studs are not located within these areas, drill  $\frac{3}{4}$ " holes nearest to the center of the areas as possible.

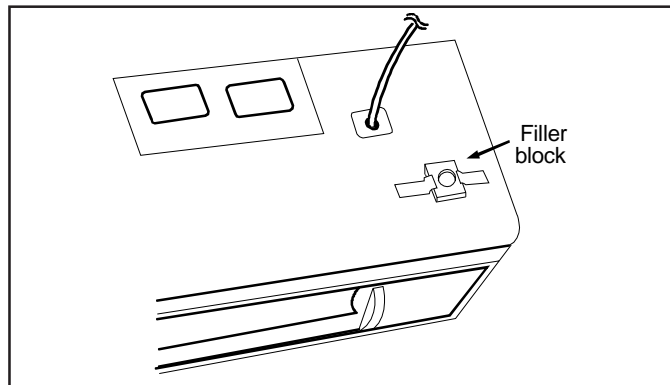
**NOTE:** If there are no wall studs within the areas marked **H** and **I**, or behind points marked **D**, **E**, **F**, and **G**, do not install microwave oven. (Consult a building inspector.) There must be at least one wall stud in the marked areas.

3. Drill a  $\frac{3}{8}$ " hole at points **J**, **K**, and **N** on upper cabinet template.

**NOTE:** If the bottom of the cabinet is recessed  $\frac{3}{4}$ " or more, filler block (not included) will be required to provide additional support for the bolts.



- Mark the center of each filler block needed and drill a  $\frac{3}{8}$ " hole through the block.
- Align the filler blocks with openings in the top of the microwave oven cabinet and attach to the cabinet with tape.



4. Cut or drill a 2" hole at the area marked **M**, for power cord access into upper cabinet.

**NOTE:** If upper cabinet is metal, cover the edges of the hole to prevent damage to the power cord.

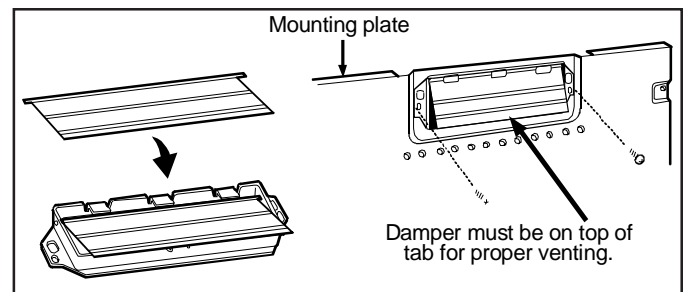
### WARNING

To avoid electrical shock or personal injury, cover edges on metal cabinet to prevent damage to power cord.

5. Cut out the venting area required for installation.
  - Roof vented: Cut out shaded area marked **L** on the upper cabinet template.
  - Wall vented: Cut out shaded area marked **O** on the wall template.
  - Room vented: Proceed to "Installing Mounting Plate" section.
6. Use caulking compound to seal the exterior wall or roof opening around the wall or roof cap.

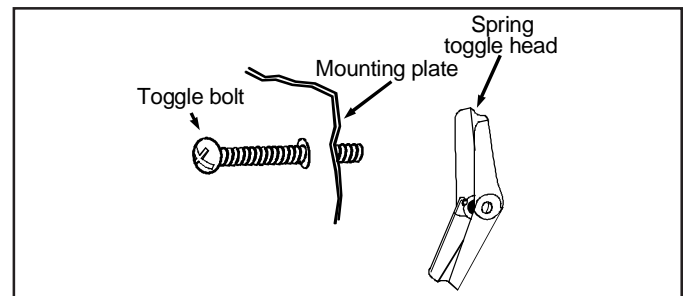
## Installing Mounting Plate

1. Remove templates from wall and upper cabinet.

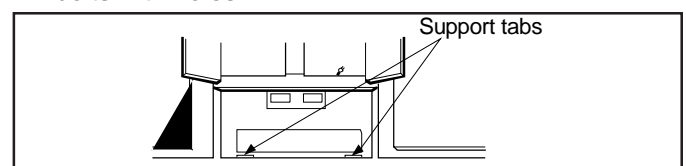


**NOTE:** If venting through the wall, verify alignment of damper on the rear of the mounting plate moves freely.

2. Place toggle bolts through mounting plate holes where  $\frac{3}{4}$ " holes were drilled. Attach spring toggle head on each toggle bolt.

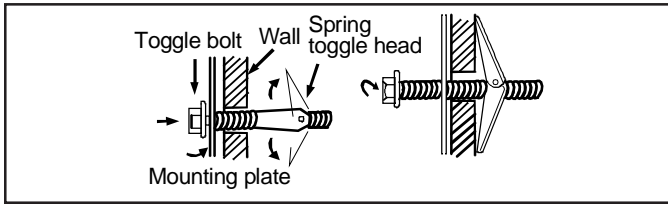


3. Place mounting plate against the wall aligning toggle bolts with holes.

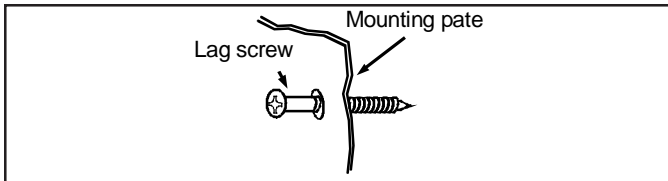


# Installation Instruction

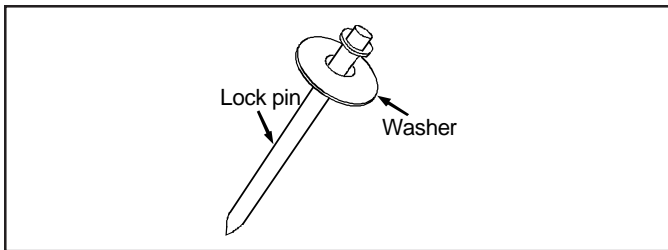
**NOTE:** Leave at least the wall thickness of space to allow spring toggle head to open once placed into the wall.



4. Locate wall stud holes and insert lag screws through mounting plate and into  $\frac{3}{16}$ " holes, do not tighten .



5. Insert toggle bolts through wall surface and tighten. Tighten lag screws at this point also.
6. Slide washer onto the lock pin and place inside the upper cabinet for further use.



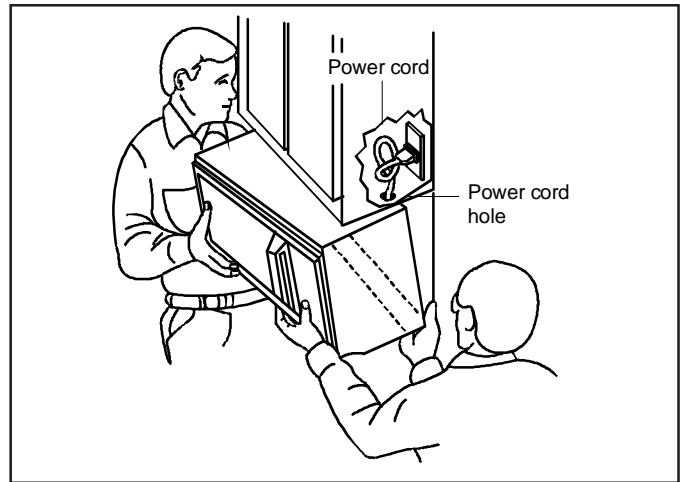
## Attaching Oven to the Wall



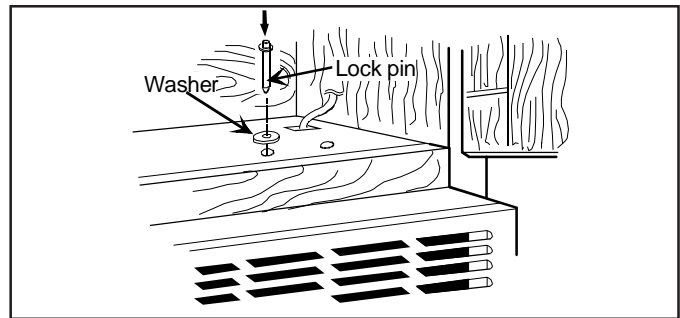
### WARNING

This unit is an excessive weight hazard, which can cause personal injury or property damage. Two or more people are required to lift unit. To prevent injury or property damage, use proper lifting and carrying techniques when moving unit.

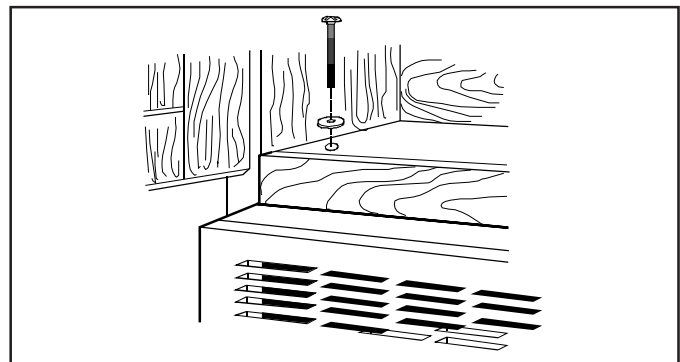
1. Carefully lift microwave oven and hang it on support tabs at the bottom of the mounting plate. Reaching through upper cabinet, thread power supply cord through cutout in the bottom of the upper cabinet.



2. Rotate the microwave upward until oven is against the bottom of the upper cabinet or cabinet frame.
3. Drop the lock pin and washer assembly into hole N, and push the pin downward as far as it will go.



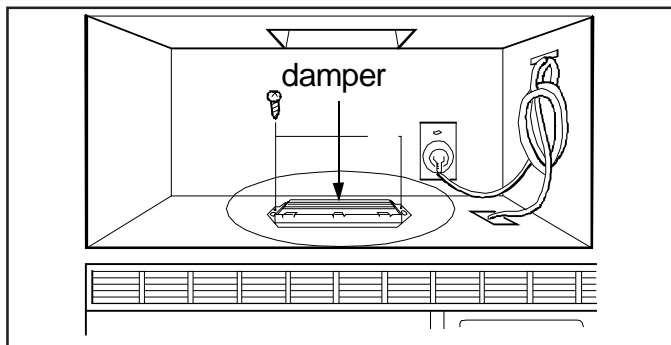
4. Insert 3" X  $\frac{1}{4}$ " bolts and washers down into holes J and K. Tighten the bolts until the gap between the microwave and cabinet has closed.



5. Remove the lock pin and washer. If wall or roof venting installation is used, skip to step 8.

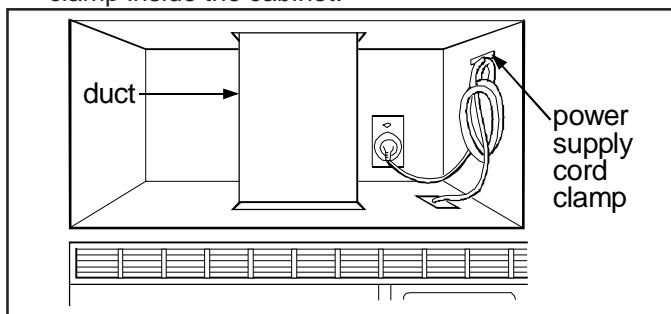
# Installation Instruction

6. Roof-vented installation: Align the damper/duct connector with the vent on top of the microwave oven. Damper should be on top of tab. Use two tapping screws (bright-colored) to attach damper/duct connector to the microwave oven.

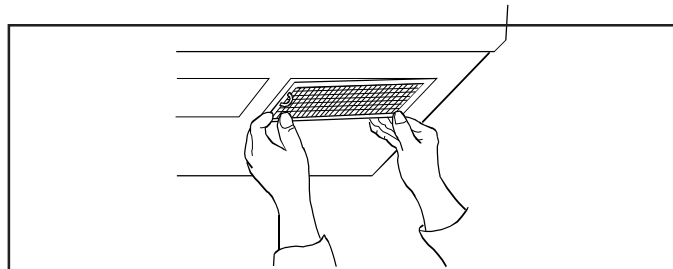


**NOTE:** Damper/duct connector must be attached to microwave oven **after** microwave oven is installed.

7. Roof venting installation: Install ductwork through the vent opening in the upper cabinet. Complete the venting system through the roof according to the method needed. See, Preparing Venting System section. Use caulking to seal the exterior roof opening around the exhaust cap.
8. Use the power supply cord clamp to bundle the power supply cord. Install the power supply cord clamp inside the cabinet.



9. Grasp filter screen with one hand holding the ring and the other hand holding the opposite end. Insert the end of the filter screen without ring into the opening and slide towards the side of the microwave oven. Insert ring end of filter screen into the opening and slide entire screen towards the center of the microwave until screen is securely in position. Repeat for other filter screen.



10. Plug in the power supply cord.

This page intentionally left blank.

# Appendix B

# Care and Cleaning

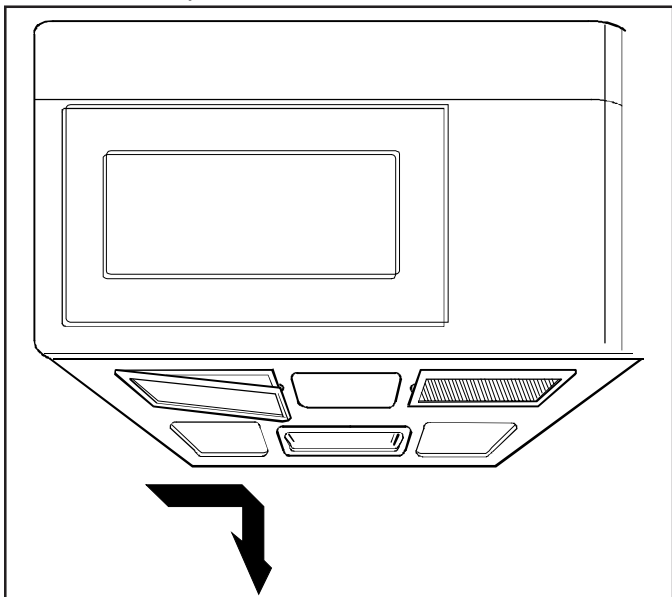
For best performance and safety, keep the oven clean inside and outside. Take special care to keep the inner door panel and the oven front frame free of food or grease build-up.

**Never use abrasive cleaners or pads.** Wipe the microwave oven inside and out, including the hood bottom cover, with a soft cloth and a warm (not hot) mild detergent solution. Then rinse and wipe dry. Use a chrome cleaner and polish on chrome, metal, and aluminum surfaces. Wipe spatters immediately with a wet paper towel, especially after cooking chicken or bacon. Clean your oven weekly or more often, if needed.

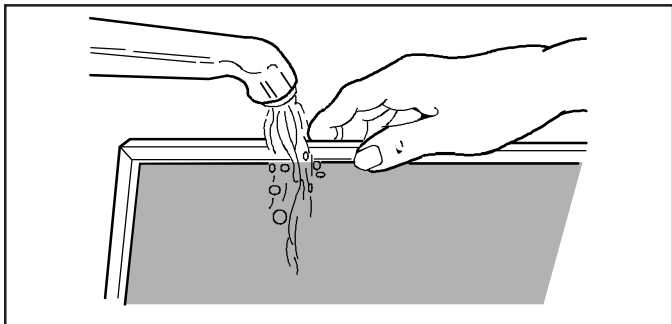
## Cleaning the Grease Filters

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

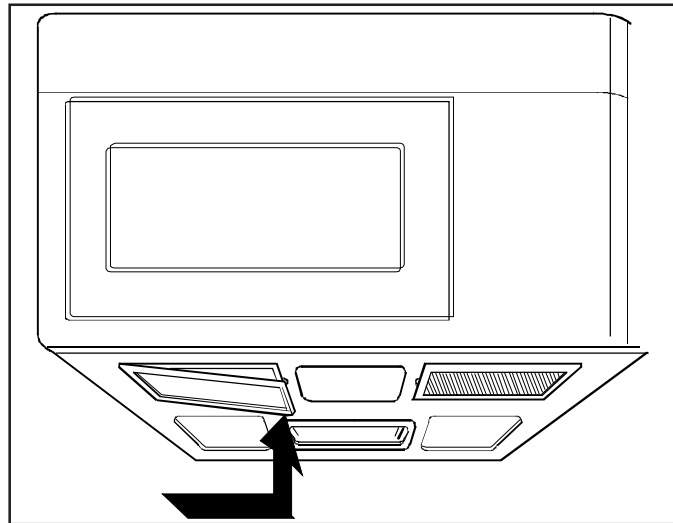
1. To remove grease filters, slide each filter to the side. Pull filters downward and push to the other side. The filter will drop out.



2. Wash in dishwasher or soak grease filters in hot water and a mild detergent. Rinse well and shake to dry. Do not use ammonia. The ammonia will darken the filter.



3. To reinstall the filters, slide it into the side slot, then push up and toward oven center to lock.



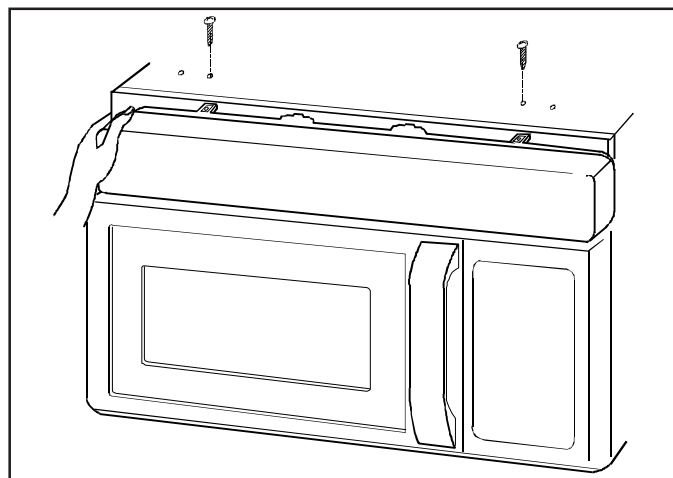
## CAUTION

To avoid risk of property damage, do not operate the hood vent system without the filters in place.

## Charcoal Filter Replacement

If the oven is vented inside the room, the charcoal filter should be replaced every 6 to 12 months, and more often if necessary. The charcoal filter cannot be cleaned. To order a new charcoal filter, contact the Parts Department at your nearest Authorized Service Center. Order Charcoal Filter Kit #: MVHRK3.

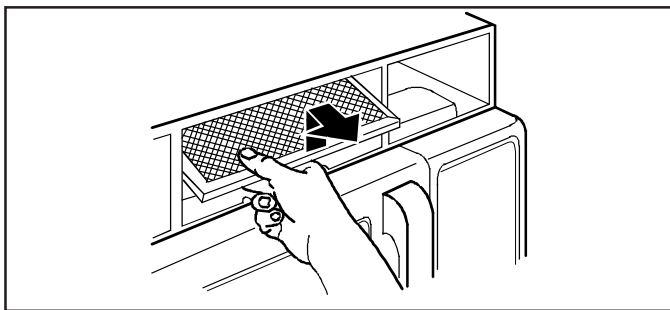
1. Disconnect power to oven.
2. Remove the two vent grille mounting screws. (2 middle screws)



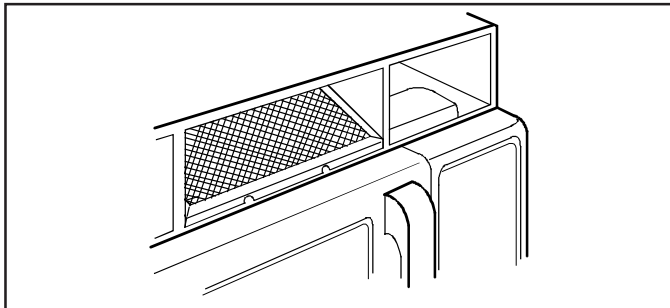
3. Tip the grille forward, then lift out.

# Care and Cleaning

4. Remove old filter.



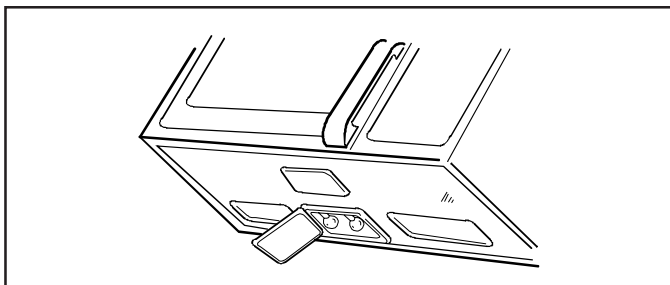
5. Slide new charcoal filter into place. The filter should rest at the angle shown.



6. Slide the bottom of the vent cover into place. Push the top until it snaps into place. Replace the mounting screws. Turn the power back on and set the clock.

## Cooktop/Night Light Replacement

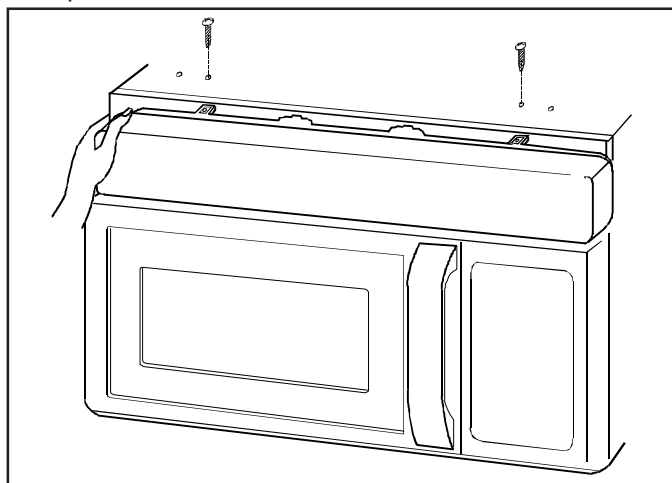
1. Unplug the oven or turn off power at the main power supply.



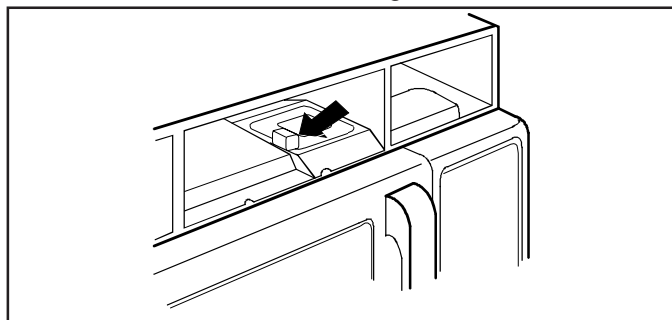
2. Remove the bulb cover mounting screws.
3. Replace bulb(s) with 30 or 40 watt appliance bulb(s).
4. Replace bulb cover.
5. Turn the power back on at the main power supply.

## Oven Light Replacement

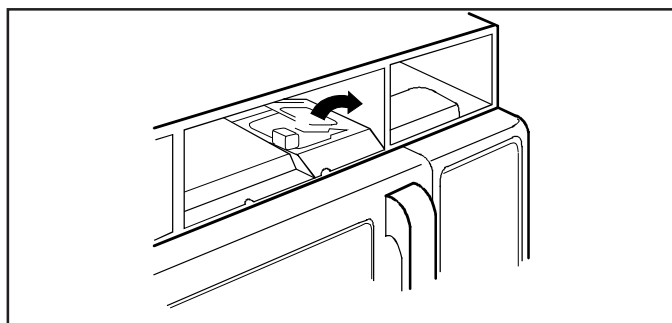
1. Unplug oven or turn off power at the main power supply.
2. Remove the vent cover mounting screws. (2 middle screws)
3. Tip the cover forward, then lift out to remove.



4. Remove bulb holder mounting screw.



5. Lift up the bulb holder.



6. Replace bulb with a 30 or 40 watt appliance bulb.
7. Replace the bulb holder and mounting screw.
8. Slide the bottom of the vent cover into place. Push the top until it snaps into place. Replace the mounting screws. Turn the power back on at the main power supply.