

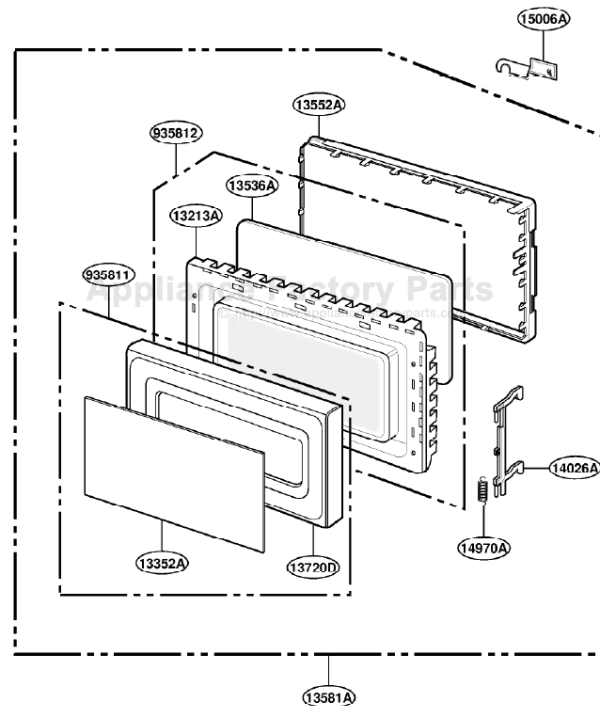
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# AMANA MD10SS Owner's Manual

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***Amana***<sup>®</sup>

**Microwave Oven  
Service Manual**

**LD10**

**CAUTION**

BEFORE SERVICING THE UNIT, READ THE  
SAFETY PRECAUTIONS IN THIS MANUAL.

# **SAFETY PRECAUTIONS**

This device is to be serviced only by properly qualified service personnel.

Consult the service manual for proper service procedures to assure continued safety operation and for precautions to be taken to avoid possible exposure to excessive microwave energy.

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

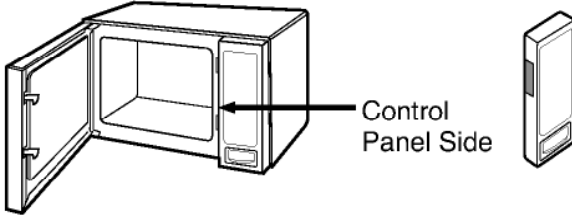
- A) Do not operate or allow the oven to be operated with the door open.
- B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary; (1) interlock operation, (2) proper door closing, (3) seal and sealing surfaces (arcing, wear, and other damage), (4) damage to or loosening of hinges and latches, (5) evidence of dropping or abuse.
- C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
- D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
- E) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

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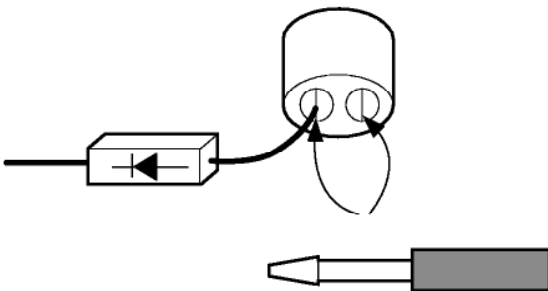
# SPECIFICATIONS

ITEM	DESCRIPTION
<b>MODEL</b>	<b>LD10</b>
Power Requirement	120 Volts AC 60 Hz 1,500 Watts (13.3 A) Single phase, 3 wire grounded
Power Output	1,000 Watts full microwave power (IEC705)
Microwave Frequency	2,450 MHz
Magnetron	2M248J
Timer	0 ~ 60 min.
Outside Dimensions	20 <sup>7</sup> / <sub>8</sub> " (W) x 12 <sup>3</sup> / <sub>8</sub> " (H) x 15 <sup>1</sup> / <sub>2</sub> " (D)
Cavity Dimensions	13 <sup>5</sup> / <sub>8</sub> " (W) x 8 <sup>5</sup> / <sub>8</sub> " (H) x 14 <sup>3</sup> / <sub>8</sub> " (D)
Net Weight	37 lbs (approx.)
Shipping weight	40 lbs (approx.)
Control Complement	Touch Control System Clock : 00:15 ~ 60 Microwave Power for Variable Cooking Power level HIGH -----Full power throughout the cooking time 70% (Med.-High)-----approx. 70% of Full power 50% (Med.-Low) -----approx. 50% of Full power 20% (Low) -----approx. 20% of Full power 10 key for programmable Cook time by Customer
Nameplate Location	
Accessories	Owner's manual & Time chart (LD10 only) Glass turntable Rotating ring
<p>This microwave oven is designed for commercial use only. It is not recommended for built-in Installation.</p>	

# CAUTIONS

Unlike other appliances, the microwave oven is high-voltage and high-current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

- DO NOT operate on a 2-wire extension cord during repair and use.
- NEVER TOUCH any oven components or wiring during operation.
- BEFORE TOUCHING any parts of the oven, always remove the power plug from the outlet.
- For about 30 seconds after the oven stops, an electric charge remains in the high voltage capacitor. When replacing or checking, you must discharge the high voltage capacitor by shorting across the two terminals with an insulated screwdriver.

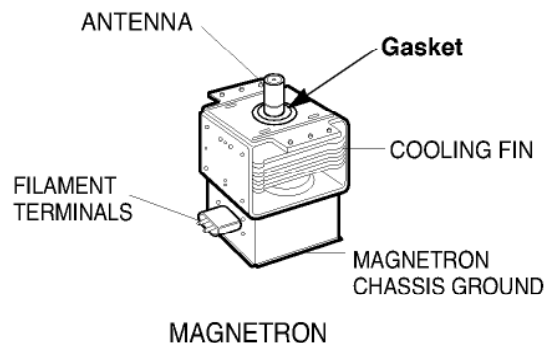


- Remove your watches whenever working close to or replacing the Magnetron.
- DO NOT touch any parts of the control panel circuit. A resulting static electric discharge may damage this P.C.B.
- NEVER operate the oven with no load.
- NEVER injure the door seal and front plate of the oven cavity.
- NEVER put iron tools on the magnetron.
- NEVER put anything into the latch hole and the interlock switches area.

## MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from the magnetron or other microwave generating device if it is improperly used or connection. All input and output microwave connections, waveguide, flange, and gasket must be secure never operate the device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while the device is energized.

- Proper operation of the microwave oven requires that the magnetron be assembled to the waveguide and cavity. Never operate the magnetron unless it is properly installed.
- **Be sure that the magnetron gasket is properly installed around the dome of the tube whenever installing the magnetron.**



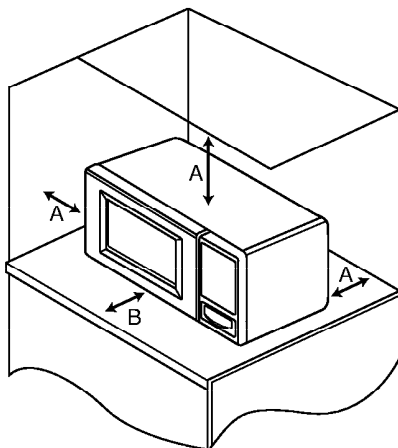
**THE OVEN IS TO BE SERVICED ONLY BY PROPERLY QUALIFIED SERVICE PERSONNEL.**

# INSTALLATIONS

**BEFORE YOU BEGIN, READ THE FOLLOWING INSTRUCTIONS COMPLETELY AND CAREFULLY.**

## INSTALLING

1. Empty the microwave oven and clean inside it with a soft, damp cloth. Check for damage such as misaligned door, damage around the door or dents inside the cavity or on the exterior.
2. Put the oven on a counter, table, or shelf that is strong enough to hold the oven and the food and utensils you put in it. (The control panel side of the oven is the heavy side. Use care when handling.)
3. Do not block the vent and the air intake openings. Blocking vent or air intake openings can cause damage to the oven and poor cooking results. Make sure the microwave oven legs are in place to ensure proper air flow.
4. The oven should not be installed in any area where heat and steam are generated, because they may damage the electronic or mechanical parts of the unit. Do not install the oven next to a conventional surface unit or above a conventional wall oven.
5. Use microwave oven in an ambient temperature less than 104°F(40°C).
6. Place the microwave oven as far away as possible from TV, RADIO, COMPUTER, etc., to prevent interference.
7. Place the microwave oven on a sturdy and flat surface.



- A - Allow at least 11/2 inches (3.81 centimeters) of clearance around top and sides of equipment. Proper air flow around equipment cools electrical components. With restricted air flow, oven may not operate properly and life of electrical parts is reduced.
- B - Allow at least 3 inches from door front to edge of countertop to avoid accidental tipping of oven.

## GROUNDING INSTRUCTIONS

For personal safety, this appliance must be fully grounded at all times.

In the event of an electrical short circuit, grounding reduces the risk of electrical shock.

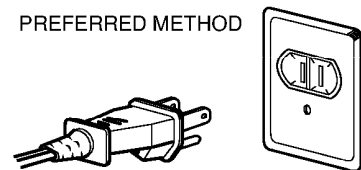
The plug must be plugged into an outlet that is properly installed and grounded.

### WARNING

Improper use of the grounding plug can result in a risk of electric shock.

Do not, under any circumstances, cut or remove the third ground prong from the power cord plug.

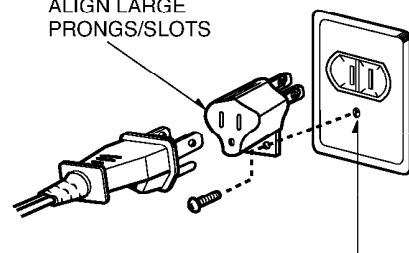
PREFERRED METHOD



ENSURE PROPER GROUND EXISTS BEFORE USE

TEMPORARY METHOD  
(ADAPTER PLUGS NOT PERMITTED IN CANADA)

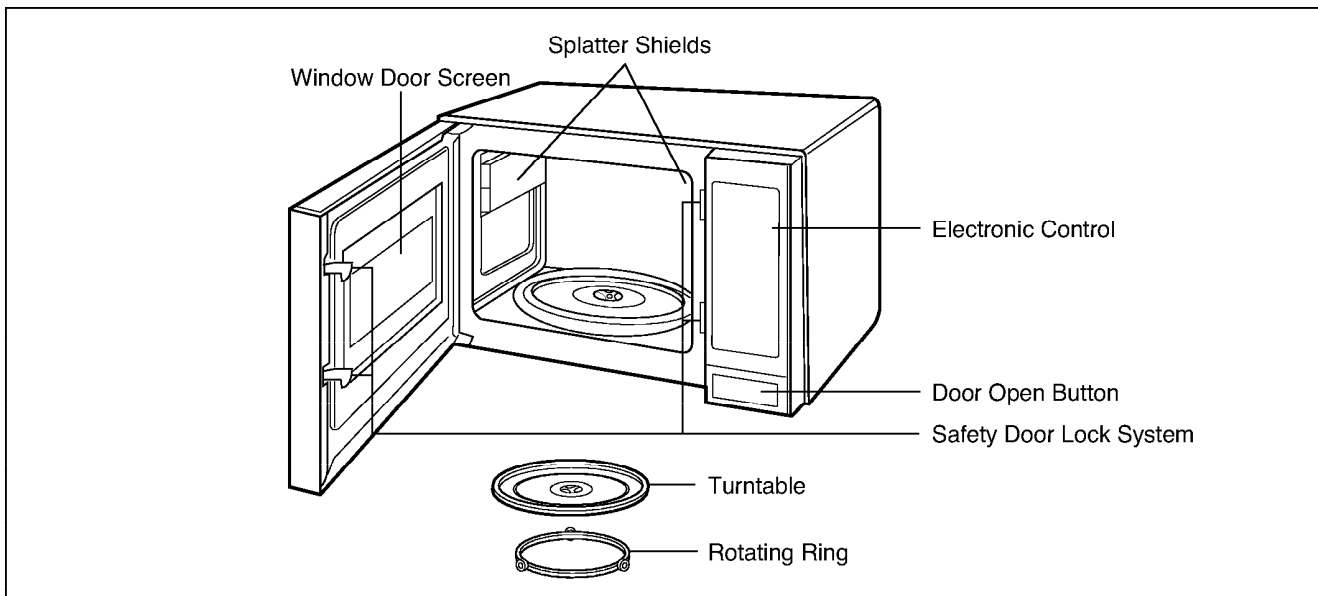
ALIGN LARGE PRONGS/SLOTS



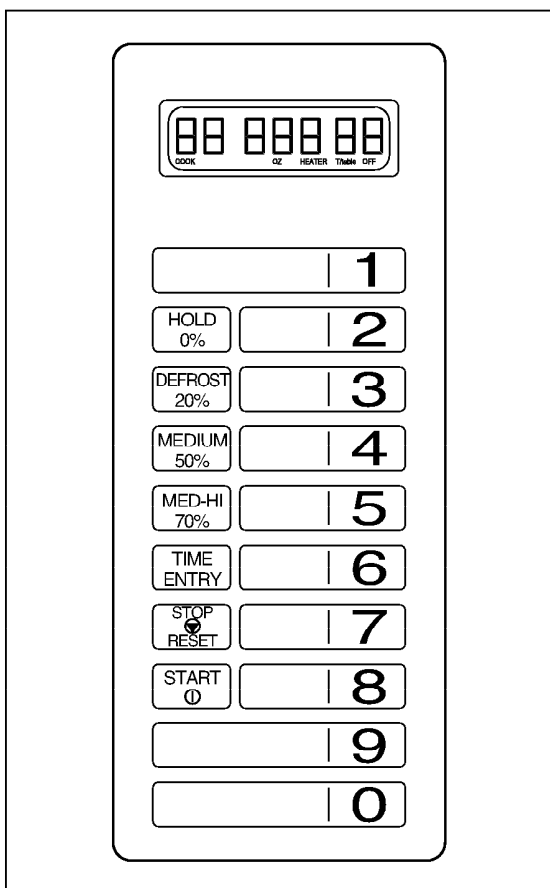
ENSURE PROPER GROUND AND FIRM CONNECTION BEFORE USE

# OPERATING INSTRUCTIONS

## FEATURES

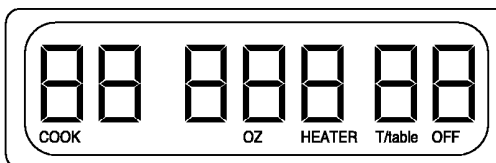


## CONTROL PANEL



### Display

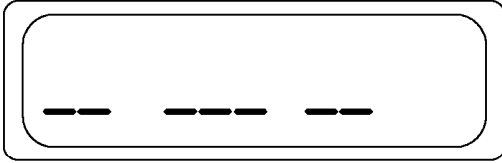
Some items in display can be seen but will not glow.



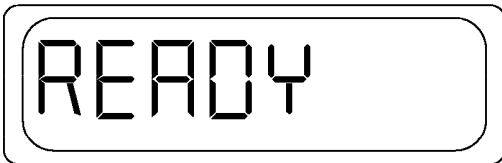
### Pads

TIME ENTRY	Use to enter heating time without changing preprogrammed number pads.
Pads 1-0	Use to begin heating with preprogrammed times and power levels or to enter times for "Manual Time Entry" cooking.
HOLD 0%, DEFROST 20%, MEDIUM 50%, MED-HI 70%	Use to select power level. Oven can heat at full or reduced power. If oven power level is set to 0% oven does not heat for programmed time. If no power level is selected, oven operates at 100% power.
STOP/RESET	Use to exit programming mode and stop cooking during cooking cycle.
START	Use to start "Manual Time Entry" program or restart interrupted cooking cycle. Use to advance to next user option. Use to save times and power levels when programming pads.

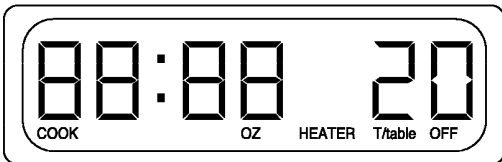
## Cooking Displays



Shows when power is connected to oven. Open and close door to clear.



READY shows when oven control will accept entries. Appears after oven door is opened and closed.

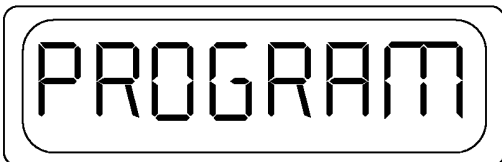


88:88 shows heating time. When more than 1 heating stage is programmed, total time for all stages displays.

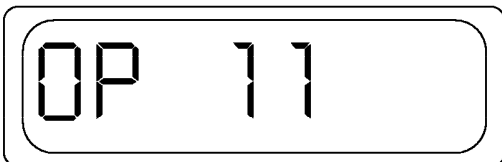
COOK shows when oven is operating.

20 indicates the microwave power level used. If power level does not show, oven is heating at 100% power.

## Programming Displays



Indicates programming mode. See "Programming" section of manual for programming procedure.



Indicates programming user options mode. See "User Options" section of manual for programming procedure.

# OPERATION

## CAUTION

To avoid damaging oven, only heat in microwave oven when turntable is in place.

## CAUTION

To avoid fire, do not dry newspapers or clothes in microwave oven.

### Interrupting Operation

- Open oven door to interrupt operation. Oven fan continues to operate. Close door and press START pad to resume oven operation.
- Press STOP/RESET pad to interrupt operation. Display continues to show countdown time. Press START pad to resume oven operation and countdown timing.

### Canceling Mistakes

- If oven is operating, press STOP/RESET pad once to stop oven, then again to clear display.
- If oven door is open and time shows in display, close oven door and press STOP/RESET pad to clear display.

### Operating Preprogrammed Pads

Oven has 10 preprogrammed number pads. Instructions are written for factory programmed ovens. Ovens that are reprogrammed can respond differently than described below.

1. Open oven door, place food in oven, and close oven door.
  - If pad is not pressed in 30 seconds, open and close oven door again.
2. Press desired number pad.
  - Oven operates and time counts down.
3. Oven stops heating and oven signal sounds when heating timing elapses.

### Preprogrammed Times and Cook Level

All preprogrammed pads arrive set at full power.

Pads	Heating Times
1	10 sec.
2	20 sec.
3	30 sec.
4	45 sec.
5	1 min.
6	1:30 min.
7	2 min.
8	3 min.
9	4 min.
0	5 min.

### Manual Time Entry

Manual Time Entry feature allows the operator to enter time and power levels, and heat without changing the preprogrammed pads.

1. Open oven door, place food in oven, and close door.
  - Display shows "READY".
  - If pad is not pressed in 30 seconds, open and close oven door again.
2. Press TIME ENTRY pad.
  - Display shows "0000".
3. Press number pads to enter desired cooking time.
  - For example, to heat for 2 minutes 30 seconds, press 2, 3, and 0 pads.
4. Press desired power level pad to change power level.
  - If a power level pad is not pressed, oven defaults to 100% power.
  - For example, pressing MEDIUM 50% pad sets oven to 50% power.
  - Display shows current power level if other than 100 percent power.
5. Press START pad.
  - Oven operates and time counts down.
6. Oven stops heating and oven signal sounds when heating timing elapses.

# PROGRAMMING

---

## Preprogrammed Number Pads

Oven has 10 preprogrammed number pads. Follow instructions below to program heating times and power levels for customized cooking.

1. Open oven door.
  - If door is closed or STOP/RESET pad is pressed before finishing programming sequence, oven exits programming mode.
2. Press and hold pad 1 for approximately 5 seconds.
  - After 5 seconds, signal sounds. Display shows "PROGRAM" indicating program mode..
3. Press desired number pad.
  - Display shows heating time, "COOK LEVEL" and power level if other than 100 percent power.
4. Press number pads to enter desired cooking time.
  - For example, to heat for 2 minutes 30 seconds, press 2, 3, and 0 pads.
5. Press desired power level pad to change power level.
  - If a power level pad is not pressed, oven defaults to 100% power.
  - For example, pressing MEDIUM 50% pad sets oven to 50% power.
  - Display shows current power level if other than 100% power.
6. Press START pad to save new heating time and power level in oven memory.
  - Repeat step 3-6 to program additional pads.
7. Press STOP/RESET pad or close oven door to exit programming mode.

## Multiple Heating Stages

Follow instructions below to program oven to perform 3 consecutive heating cycles without interruption.

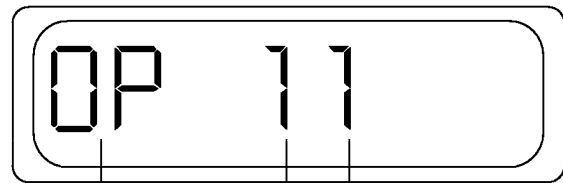
1. Open oven door.
  - If door is closed or STOP/RESET pad is pressed before finishing programming sequence, oven exits programming mode.
2. Press pad 1 for approximately 5 seconds.
  - After 5 seconds, signal sounds.
3. Press desired number pad.
  - Display shows heating time and preprogrammed number.
4. Press number pads to enter desired cooking time.
  - For example, to heat for 2 minutes 30 seconds,
5. Press desired power level pad to change power level.
  - If a power level pad is not pressed, oven defaults to 100% power.
  - For example, pressing MEDIUM 50% pad sets oven to 50% power.
  - Display shows current power level if other than 100 percent power.
6. Press TIME ENTRY pad
  - Display briefly shows "STAGE 2" . Then cook time and power level for stage show in display.
  - Repeat steps 5-6 to create additional stages.
7. Press START pad to save new heating time and power level in oven memory.
8. Press STOP/RESET pad or close oven door to exit programming mode.

## User Options

Follow the instructions below to customized the microwave oven's operation. End-of-cycle signal, maximum heating time and other options can be changed to meeting your cooking needs.

1. Open oven door.
  - If door is closed or STOP/RESET pad is pressed before finishing programming sequence, oven exits programming mode.
2. Press and hold pad 2 for approximately 5 seconds.
  - After 5 seconds, signal sounds. Display shows "OPTION".
3. Press number pad that matches desired option.
  - "OP" represents optional program mode, first number represents option number and second number represents functions currently selected for option.

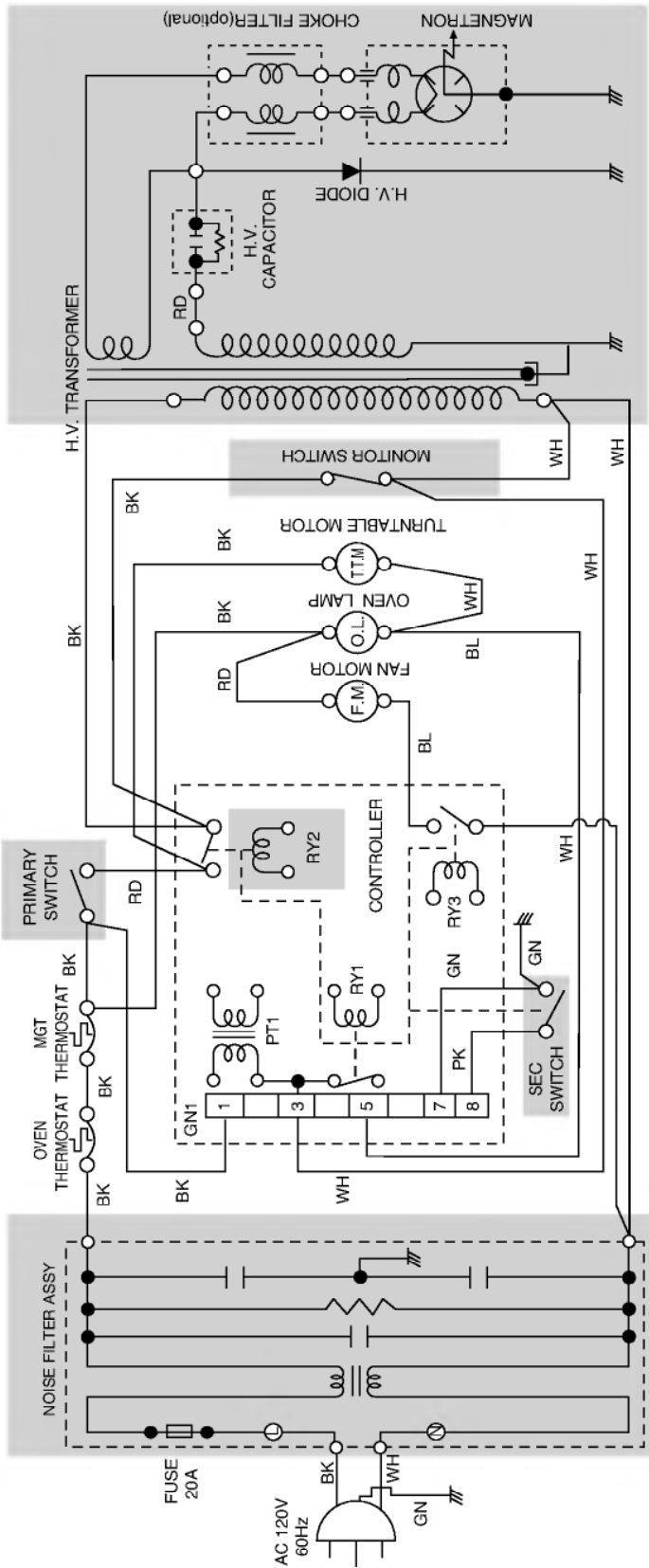
4. Press START pad to advance to next option. See table for options.
5. Press number pad (0,1-3) to change option.
6. Press START pad to save changes.
  - Repeat steps 4-6 to change additional options.
7. Press STOP/RESET pad or close oven door to exit programming mode.



Optional Program Indicator      Pad Number      Option Selected

Numbered Pads	Display	Options ( ) = Factory Setting
1 End of Cycle Beep	OP:10 OP:11 OP:12	3 second continuous beep (Continuous Beep until door is opened) 5 beeps bursts until door is opened
2 Speaker Volume	OP:20 OP:21 OP:22 OP:23	Eliminates beep Sets volume to low; 60-70dB Sets volume to medium; 70-80dB (Sets volume to high; 80-90dB)
3 Key Beep	OP:30 OP:31	Prevents signal when pad is pressed. (Allows signal when pad is pressed.)
4 Keyboard Enable Window	OP:40 OP:41	(30 seconds after oven door is opened, keyboard disabled) 2 minutes after oven door is opened, keyboard disabled
5 Add Time during Heating	OP:50 OP:51	(Prevents adding heating time while oven is heating.) Allows adding heating time while oven is heating.
6 Reset Door Open	OP:60 OP:61	(Cancels heating time count down after door is opened during cycle.) Allows oven to resume heating time countdown after door is opened during cycle.
7 Maximum Heating Time	OP:70 OP:71	Allows 10 minutes of heating time. (Allows 60 minutes of heating time.)
8 Manual Operation	OP:80 OP:81	Allows use of preprogrammed pads only. (Allows use of manual time entry and preprogrammed pads.)

# SCHEMATIC DIAGRAM



\*\* NOTE : DOOR IS OPENED.

BK : BLACK	BL : BLUE	RD : RED
WH : WHITE	PK : PINK	GN : GREEN

IMPORTANT SAFETY NOTE: THE SHADED AREAS ON THIS SCHEMATIC DIAGRAM INCORPORATE SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM MICROWAVE RADIATION, FIRE, ELECTRICAL SHOCK, AND HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURER'S SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREAS OF THE SCHEMATIC DIAGRAM.

NOTICE: SINCE THIS IS BASIC SCHEMATIC DIAGRAM, THE VALUES OF COMPONENTS AND SOME PARTIAL CONNECTIONS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

# CIRCUIT DESCRIPTION

## GENERAL DETAILS

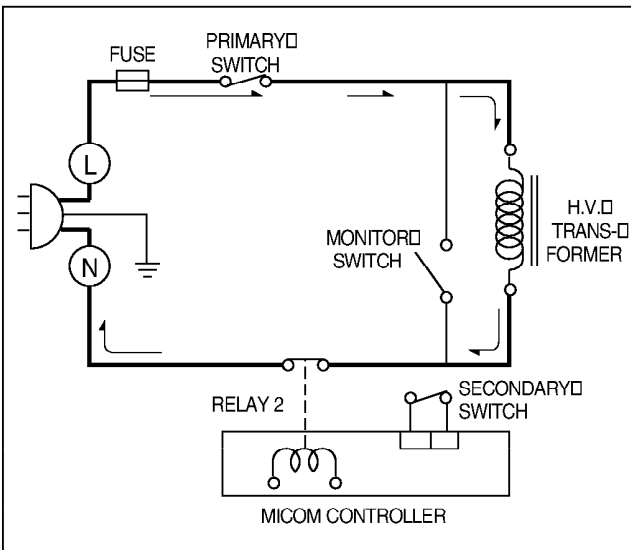
- The low voltage transformer supplies the necessary voltage to the micom controller when power cord is plugged in.
- When the door is closed, the primary switch is ON, the secondary switch is ON, and the monitor switch opens (contact COM and NO).

## WHEN SELECTING COOKING POWER LEVEL AND TIME

- The micom controller memorizes the function you set.
- The time you set appears in the display window.
- Each indicator light turns on to indicate that the stage has been set.

## WHEN TOUCHING THE START PAD

- The coil of the relay is energized by the micom controller.
- Power input is supplied to the high voltage transformer through the fuse to the primary switch and relay 2.
- Turntable rotates.



- The fan motor rotates and cools the magnetron by blowing the air (coming from the intake on the base-plate).
- The air is also directed into the oven to exhaust the vapor in the oven through the upper plate.
- Cooking time starts counting down.
- 3.3 volts AC is generated from the filament winding of the high voltage transformer. This 3.3 volts is applied to the magnetron to heat the magnetron filament through two noise-preventing choke coils.

- A high voltage of approximately 2100 volts AC is generated in the secondary of the high voltage transformer which is increased by the action of the high voltage diode and charging of the high voltage capacitor.
- The negative 4,000 Volts DC is applied to the filament of the magnetron.

## WHEN THE OVEN IS SET AT ANY LEVEL EXCEPT MAXIMUM.

- The micom controller controls the ON-OFF time of relay 2 by the applied signal to vary the average output power of microwave oven as POWER LEVEL. (refer to page 1-1)
- One complete cycle of relay 2 is 22 seconds.

## WHEN THE DOOR IS OPENED DURING COOKING

- Both the primary switch and relay 2 cut off the primary winding voltage of the high voltage transformer.
- ON-OFF of relay 2 is coupled electrically with opening and closing of the secondary switch.
- When the door is opened, the secondary switch is opened and when the door is closed, the secondary switch is closed.
- The cooking time stops counting down.
- Relay stops functioning.
- As the door is opened, if the contact of primary switch and relay2 and/or secondary switch fail to open, the fuse opens due to the large current surge caused by the monitor switch activation, which in turn stops magnetron oscillation.

