Technical Service and Parts Manual

Model MWC24

Convection Microwave Oven

JOB AID 807707 Revision D - 2008

SECTION 1

GENERAL INFORMATION

INTRODUCTION

This Wolf Convection Microwave Oven Technical Service and Parts Manual, Part #807707, has been compiled with information provided by the Sharp Electronics Corporation. This manual provides the most recent technical service information that will enable the service technician to troubleshoot and diagnose malfunctions, perform necessary repairs and return a Wolf Convection Microwave Oven to proper operational condition.

The Service Technician should read the complete instructions contained in this manual before initiating any repairs on a Wolf Appliance.

IMPORTANT SAFETY INFORMATION

Below are the Product Safety Labels used in this manual. The "Signal Words" used are **WARNING** and **CAUTION**.

Please note that these safety labels are placed in areas where awareness of personal safety and product safety should be taken and lists the precautions to be taken when the signal word is observed.

⚠ WARNING

INDICATES THAT HAZARDOUS OR UNSAFE PRACTICES COULD RESULT IN SEVERE PERSONAL INJURY OR DEATH

⚠ CAUTION

Indicates that hazardous or unsafe practices could result in minor personal injury, or product and/or property damage

In addition, please pay attention to the signal word ***"NOTE"***, which highlights especially important information within each section.

TECHNICAL ASSISTANCE

If you should have any questions regarding a Wolf appliance and/or this manual, please contact:

Wolf Appliance, Inc.
ATTN: Service Department
P.O. Box 44988
Madison, WI 53744-4988

Customer Service & Parts / Warranty Claims
Phone #: (800) 332 - 9513

Technical Assistance
Phone #: (800) 919 - 8324

Customer Service & Technical Assistance
Facsimile #: (608) 441 - 5887

Parts / Warranty Claims
Facsimile #: (608) 441 - 5886

Service Department e-mail Address
customerservice@wolfappliance.com

Office Hours:
7:00 AM to 7:00 PM Central Time
Monday through Friday

This manual is designed to be used by Authorized Service Personnel only. Wolf Appliance, Inc. assumes no responsibility for any repairs made to Wolf appliances by anyone other than Authorized Service Technicians.

TABLE OF CONTENTS

WARRANTY INFORMATION

This page contains a summary of the 2 *& 5 Year Warranty* that is supplied with every Wolf product, followed by a *Non Residential Warranty Summary* and then notes about the warranties.

TWO & FIVE YEAR Warranty Summary

- Two year TOTAL PRODUCT warranty, parts and labor.
- Limited Parts Only Warranty for the 3rd through 5th year on the following parts: Transformer, Magnetron, Capacitor, Rectifier, Electronic Control System, etc.

  NOTE: *This warranty only applies to products installed for normal residential use in the United States or Canada.*

NON RESIDENTIAL Warranty Summary

- Two year TOTAL PRODUCT warranty, parts and labor.

  NOTE: *This warranty only applies to products installed in test kitchens, culinary and school kitchens, and other installations which help promote Wolf Appliance products. Restaurant installations and other similar commercial applications carry no warranty.*

Warranty Notes:

- *All warranties begin at the time of the unit's initial installation.*
- *All Warranty and Service information collected by Wolf Appliance, Inc. is arranged and stored under the unit serial number and/or the customer's name. It is requested that you have the model and serial number available whenever contacting the factory or parts distributor.*
- See Figures 1-1 for serial tag layout and location.

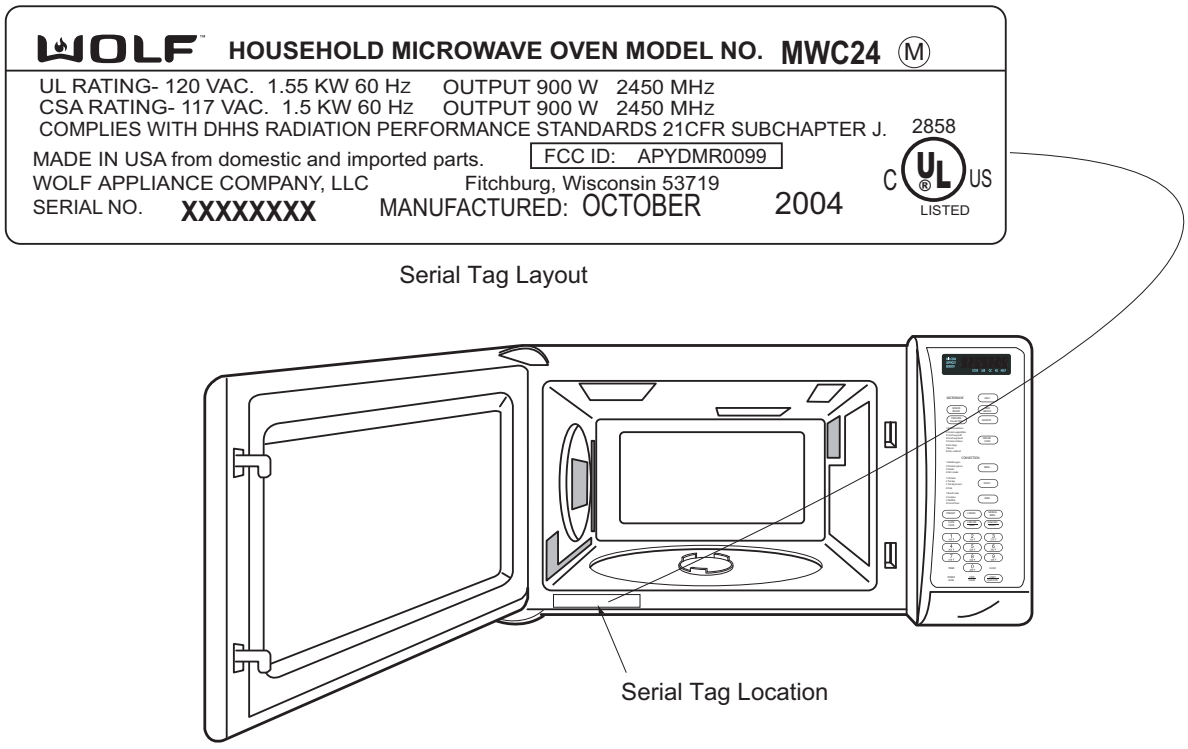


Figure 1-1. Serial Number Tag Layout and Location

MODEL FEATURES

Listed below are some features of the Wolf convection microwave oven. (See Figure 1-2.)

1. Ventilation openings. (Rear side)
2. Oven Door with See-through Window
3. Oven Lamp
   NOTE: *Lamp operates when oven is operating or door is open.*
4. Removable Turntable Support
   NOTE: *Must be placed in center of oven floor.*
5. Removable Turntable
   NOTE: *Turntable will rotate clockwise or counterclockwise. Turntable should only be removed for cleaning.*

NOTE: *8kg (17 1/2lbs) Maximum weight limit for turntable motor.*

6. Safety Door Latches (Two)
   NOTE: *The oven will not operate unless the door is securely closed.*
7. Wave guide cover.
   NOTE: *Do NOT remove.*
8. One Touch Door Open Button
9. Touch Control Panel
   NOTE: *Also see **Control Panel Layout** on this page.*
10. Interactive Digital Display
    NOTE: *Maximum time display is 99 minutes, 99 seconds.*
11. Convection Air Openings
12. Removable Low Rack (Broiling Trivet)
13. Removable Low Rack (Baking Trivet)
14. Power Supply Cord (partial shown)
15. Coupling (a.k.a. Turntable Motor Shaft)

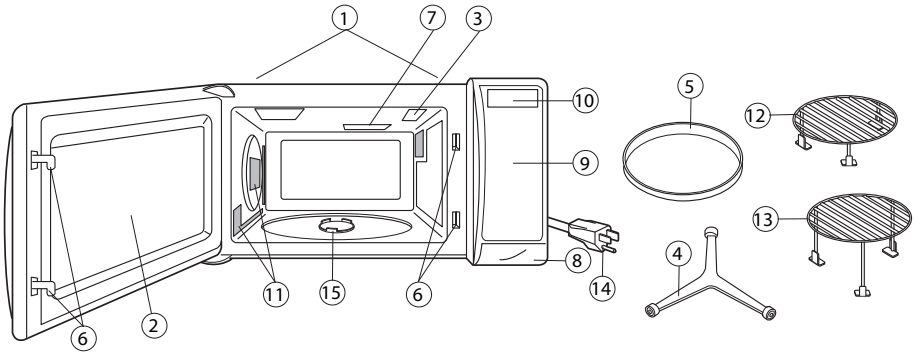


Figure 1-2. Oven Front View

Control Panel Layout

The diagram at right (See Figure 1-3) illustrates the layout of the microwave Touch Control Panel.

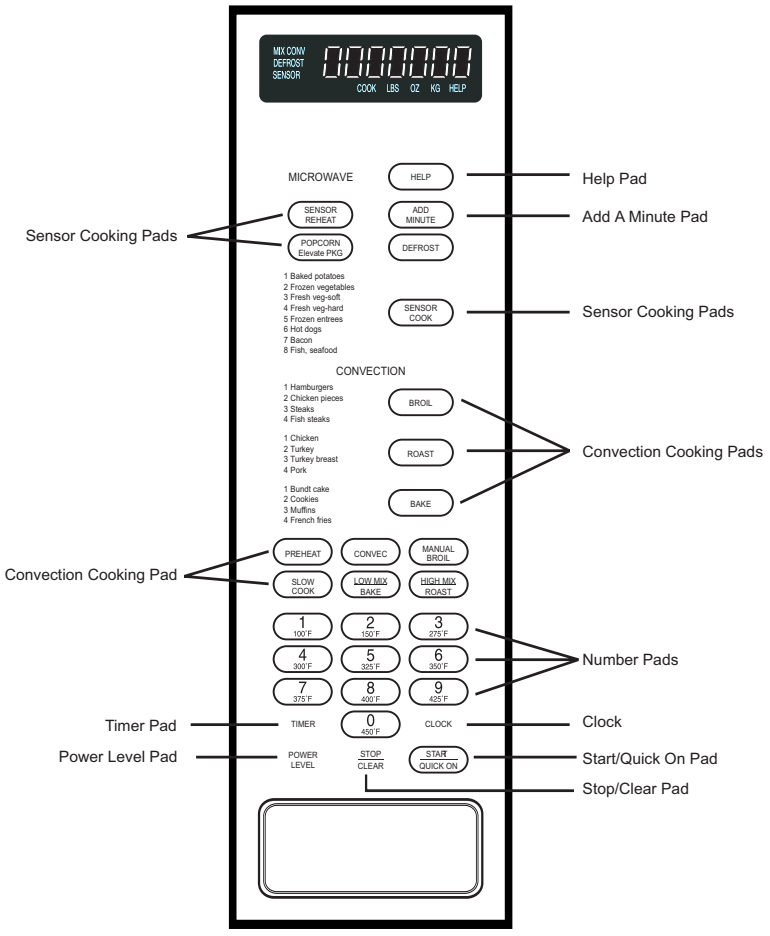


Figure 1-3. Auto-Touch Control Panel

SECTION 2

INSTALLATION INFORMATION

INSTALLATION INFORMATION

The Wolf convection microwave oven can be set up as a free-standing unit or set into a built-in wall installation.

This section of the manual covers some of the installation issues that a service technician may need to know when servicing a Wolf convection microwave oven. If additional installation information is needed after reviewing this section of the manual, please refer to the installation guide or contact the Wolf Appliance Customer Service Department.

Electrical Requirements

- 110 to 120 Volts AC, 60Hz, 15 ampere fused electrical supply
- Separate electrical circuit serving only this appliance
- A properly grounded 3-prong receptacle

⚠ WARNING

THE INSTALLATION SITE MUST BE EQUIPPED WITH A PROPERLY GROUNDED 3-SLOT RECEPTACLE TO MATCH THE 3-PRONG (GROUNDED) POWER SUPPLY CORD PROVIDED ON THE APPLIANCE. IF THE ELECTRIC RECEPTACLE OR POWER CORD ARE NOT PROPERLY GROUNDED, THIS COULD CAUSE A SHOCK HAZARD AND THE APPLIANCE MAY NOT FUNCTION.

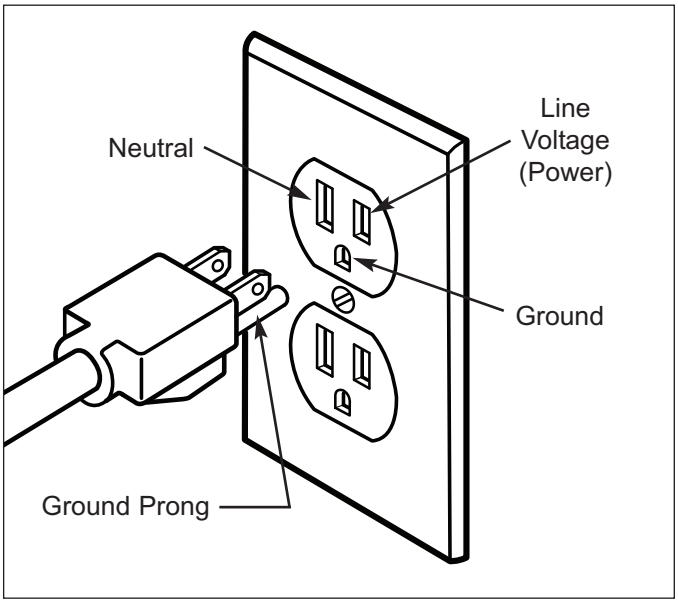


Figure 2-1. Electrical Receptacle & Power Cord

⚠ WARNING

TO AVOID SHOCK HAZARD, NEVER REMOVE THE GROUND PRONG FROM THE PLUG OF THE POWER SUPPLY CORD.

⚠ WARNING

- **EXTENSION CORDS ARE NOT RECOMMENDED.**
- **IF AN EXTENSION CORD IS NECESSARY, USE ONLY A 3-WIRE CORD WITH A 3-PRONG PLUG AND A 3-SLOT RECEPTACLE, RATED FOR 115 - 120VOLTS, 15 AMP OR HIGHER.**
- **DO NOT DRAPE EXTENSION CORD OVER COUNTERTOP OR TABLE WHERE IT CAN BE PULLED ON OR TRIPPED OVER ACCIDENTALLY.**

Free-Standing Installation

With the convection microwave free-standing on the countertop, it is recommended to have counter space on at least one side of the appliance. At least 2 inches of clearance must be allowed on the sides, top and at the rear of the appliance for air circulation. (See Figure 2-2)

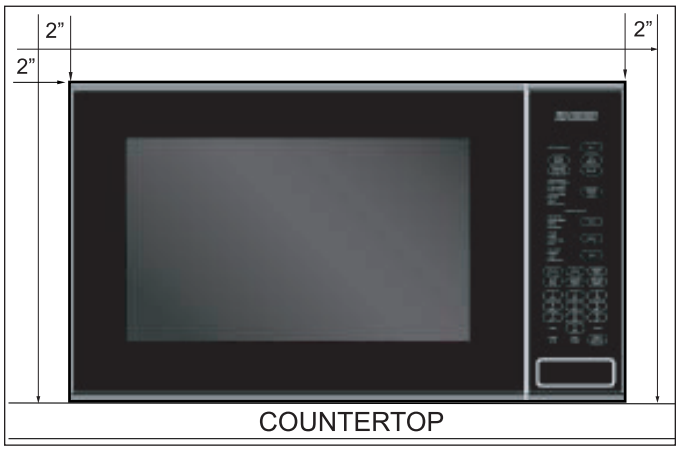


Figure 2-2. 2" Clearance on Sides, Top & at Rear

Built-In Wall Installation

The Wolf 24” convection microwave can be set into a built-in wall installation with the use of a 30”, or 36” trim kit, available from a Wolf dealer or distributor.

The trim kit consists of top and bottom ductwork assemblies, duct mounting screws, a decorative trim assembly and trim mounting screws. (See Figure 2-3)

The top ductwork assembly is attached to the top of the convection microwave. The bottom ductwork assembly is placed on the platform of the rough-in opening and secured with screws. The convection microwave oven is then plugged into the electrical receptacle and set on top of the bottom ductwork assembly with the feet of the oven sitting in detents on the rails. The decorative trim is then attached to the wall or cabinet around the front of the convection microwave oven. (See Figure 2-4)

NOTE: *For complete built-in installation instructions, refer to the installation guide and the instructions that accompany the trim kit.*

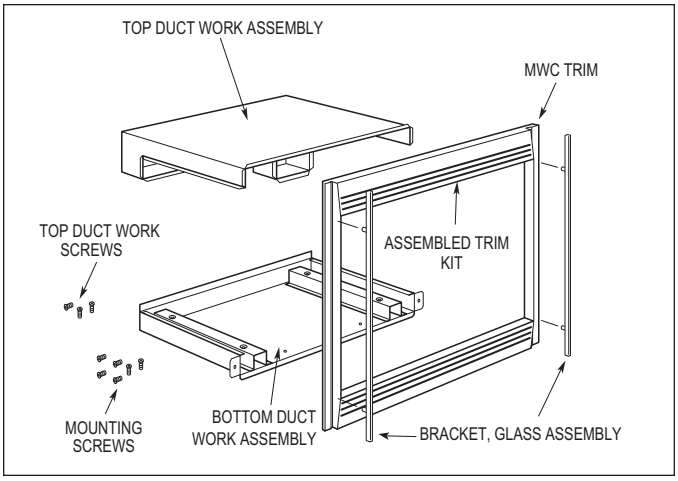


Figure 2-3. Trim Kit Components

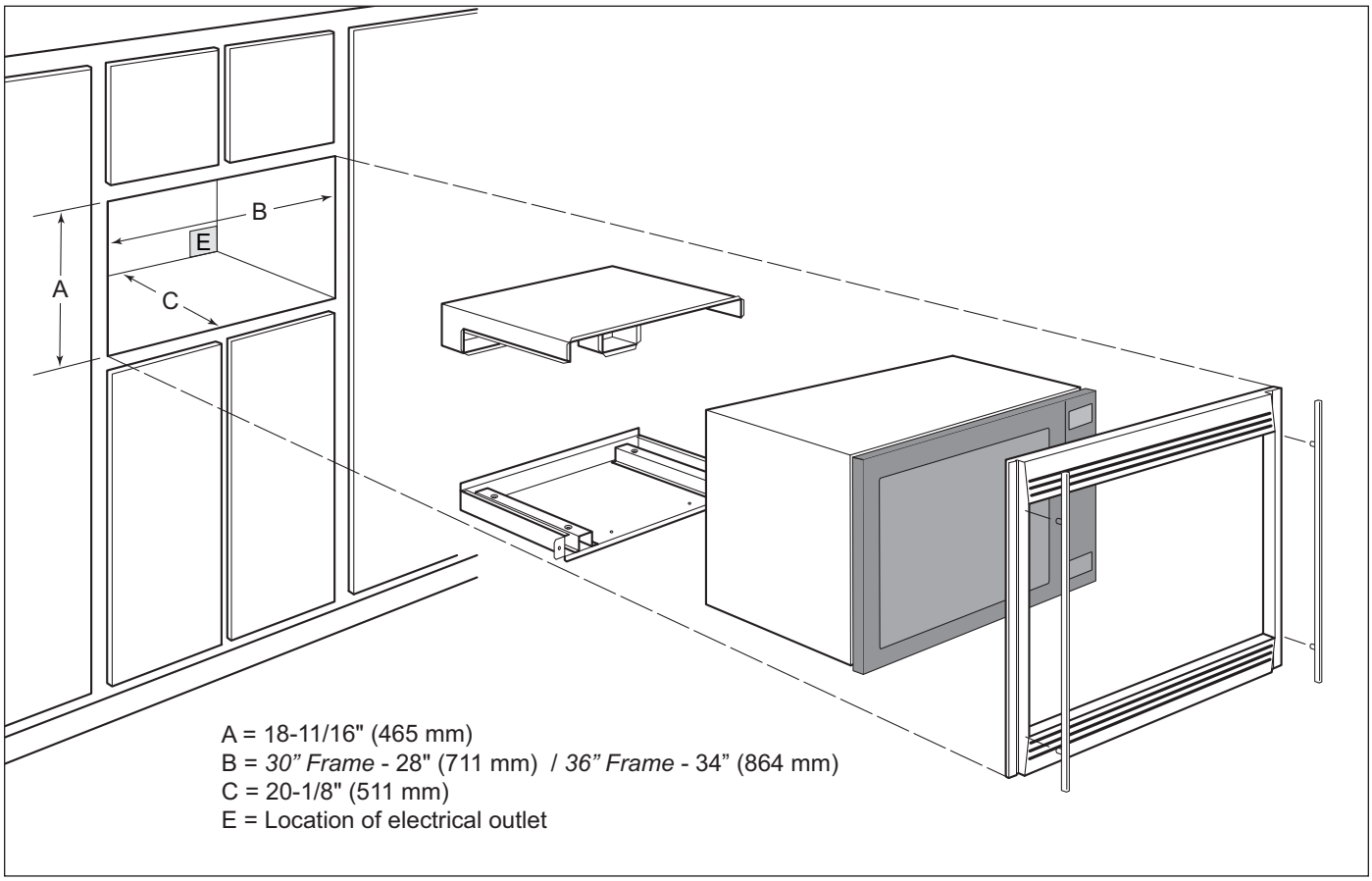


Figure 2-4. Rough-in Opening Dimensions and Trim Kit Installation

SECTION 3

THEORY OF OPERATION

COMPONENT DESCRIPTION & FUNCTION

Door Open Mechanism

The door is opened by pushing the open button on the control panel, which in turn causes the switch lever to lift up the latch heads, releasing them from the latch hook and the door opens. (See Figure 3-1)

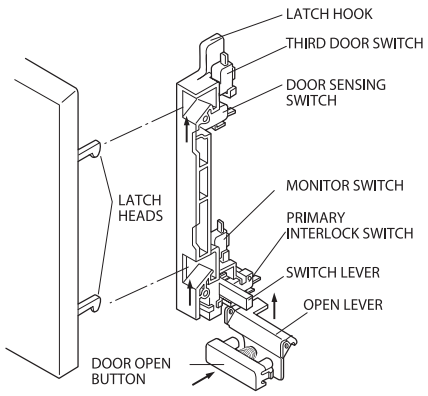


Figure 3-1. Door Open Mechanism

Door Sensing and Primary Interlock Switches

The door sensing switch in the secondary interlock system is mounted in the upper position on the latch hook, the primary interlock switch is mounted in the lower position on the latch hook (See Figure 3-1). They are activated by the latch heads on the door. When the door is opened, the switches interrupt the circuit to all components. A cook cycle cannot take place until the door is firmly closed, activating both interlock switches. The secondary interlock system consists of the door sensing switch and secondary interlock relay located on the control circuit board.

Monitor Switch

The monitor switch is mounted on the middle position of the latch hook (See Figure 3-1). It is activated (the contacts opened) by the lower latch head while the door is closed. The switch is intended to render the oven inoperative by means of blowing the monitor fuse when the contacts of the relay RY1 and primary interlock switch fail to open when the door is opened.

Switches and Relays Interaction:

1. When the door is opened, the monitor switch contact closes (to the ON condition) due to their being normally closed. At this time the door sensing and primary interlock and third door switches are in the OFF condition (contacts open) due to their being normally open contact switches.
2. As the door goes to a closed position, the monitor switch contacts are first opened and then the door sensing switch, third door switch and the primary interlock switch contacts close. (On opening the door, each of these switches operate inversely.)
3. If the door is opened, and the relay RY1 and the primary interlock switch contacts fail to open, the monitor fuse blows simultaneously with closing of the monitor switch contacts.

THIRD DOOR SWITCH

The third door switch is activated by the latch heads when the door is closed, allowing power to the power transformer. When the door is opened, the switch interrupts the circuit to the power transformer.

THERMISTOR

The thermistor is a negative temperature coefficient type. The temperature in the oven cavity is detected through the resistance of the thermistor, and the control unit causes the heater relay to operate, thus the current to the heating element is turned ON/OFF.

MAGNETRON THERMAL CUT-OUT

The thermal cut-out located on the waveguide is designed to prevent damage to the magnetron if an overheated condition develops in the magnetron due to cooling fan failure, obstructed air guide, dirty or blocked air intake, etc. Under normal operation, the thermal cut-out remains closed. However, when abnormally high temperatures are reached within the magnetron, the thermal cut-out will open at 257°F (125°C) causing the oven to shut down. The magnetron thermal cut-out is not reset at room temperature.

OVEN THERMAL CUT-OUT

The thermal cut-out located on the side of the steam duct is designed to prevent damage to the unit if the foods in the oven catch fire due to overheating produced by improper setting of cooking time or failure of control unit. Under normal operation, the thermal cut-out remains closed. However, when abnormally high temperatures are reached within the oven cavity, the thermal cut-out will open at 302°F (150°C) causing the oven to shut down. When the thermal cut-out has cooled, the thermal cut-out closes at 266°F (130°C)

CONVECTION THERMAL CUT-OUT

The thermal cut-out located on the left side of the thermal protection plate (left) is designed to prevent damage to the heater unit if an overheated condition develops in the tube due to cooling fan failure, obstructed air ducts, dirty or blocked air intake, etc. Under normal

operation, the thermal cut-out remains closed. However, when abnormally high temperatures are reached within the heater unit, the thermal cut-out will open at 302°F (150°C) causing the oven to shut down. When the thermal cut-out has cooled, the thermal cut-out closes at 266°F (130°C)

HEATING ELEMENT

The heating element is located at the left side of the oven cavity. It is intended to heat air driven by the convection fan. The heated air is kept in the oven and force-circulated and reheated by the heating element.

CONVECTION COOKING SYSTEM

This oven is designed with a hot air heating system where food is not directly heated by the heating element, but is heated by forced circulation of the hot air produced by the heating element.
The air heated by the heating element is circulated through the convection passage provided on the outer casing of the oven cavity by means of the convection fan, which is driven by the convection motor. It then enters the inside of the oven through the vent holes provided on the left side of the oven. Next, the hot air heats the food on the turntable and leaves the oven cavity through the vent in the center of the oven cavity left side wall.
Without leaving the oven, this hot air is reheated by the heating element, passes through the convection passage and enters the inside of the oven cavity again, in a continuing cycle. In this way, the hot air circulates inside the oven cavity to raise its temperature and comes into contact with the food being cooked.
When the temperature inside the oven cavity reaches the selected temperature, the heating element is de-energized. When the temperature inside the oven cavity drops below the selected temperature, the heating element is energized again. In this way, the inside of the oven cavity is maintained at approximately the selected temperature.
When the convection time reaches 0, the heating element is de-energized and the convection fan stops operating and the oven shuts off.

DAMPER OPEN-CLOSE MECHANISM

Usually, the damper is in the open position except during convection cooking. Damper position is set automatically by damper motor, damper switch, motor cam and damper shaft. These components are operated by a signal that judges if microwave cooking or convection cooking operation is selected by the control unit.

Microwave Cooking: Damper is in open position, because a portion of cooling air is channeled through the cavity to remove steam and vapors from the heating foods. It is then exhausted at the top of the oven cavity into a condensation compartment.
Convection Cooking: Damper is in the closed position, so that no hot air will be allowed to leak out the oven cavity.

NOTE: *If the damper door is not in the proper position, closed during convection or open during microwave, the control unit will stop oven operation after 1 minute.*

Damper Operation:

1. When power supply cord is plugged in:
   a. A signal is sensed in the control unit, and operates shut-off relay (RY4).
   b. Contacts of shut-off relay (RY4) close, damper motor is energized, opening damper door.
   c. When the damper is moved to the open position by the damper cam the damper switch is closed (ON position).
   d. The signal from damper switch is re-sensed in the control unit and shut-off relay (RY4) is turned off.
   e. The 120 volts AC to the damper motor is removed and the motor turns off.
2. When oven is microwave cooking: Damper is in the open position.
3. When oven is convection cooking:
   a. Damper motor is energized by touching the convection, temperature and START pads.
   b. When damper is in the closed position (damper switch is OFF), its signal is sensed by the control unit, and shut-off relay (RY4) is de-energized.
   c. The damper is held in the closed position during the convection cooking operation.
   d. At the end of the convection cooking, shut-off relay (RY4) is energized, and the damper is returned to the open position.

NOTE: *If the damper door is not in the proper position, closed during convection or open during microwave, the control unit will stop oven operation after 1 minute.*

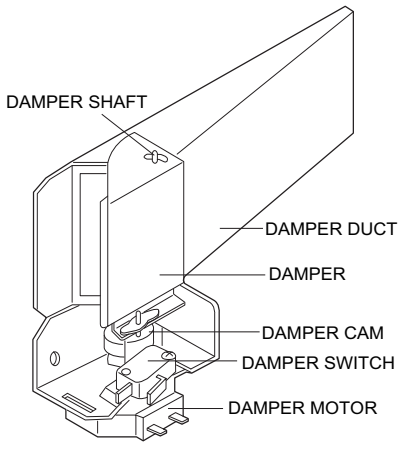


Figure 3-2. Damper Mechanism

Power Transformer

The power transformer converts 115 volts AC to approximately 3.3 volts AC on the filament winding which heats the magnetron filament. The transformer also converts the 115 volts AC input to approximately 2300 volts AC on the high voltage winding, which is sent to the voltage doubler circuit. (See Figure 3-3)

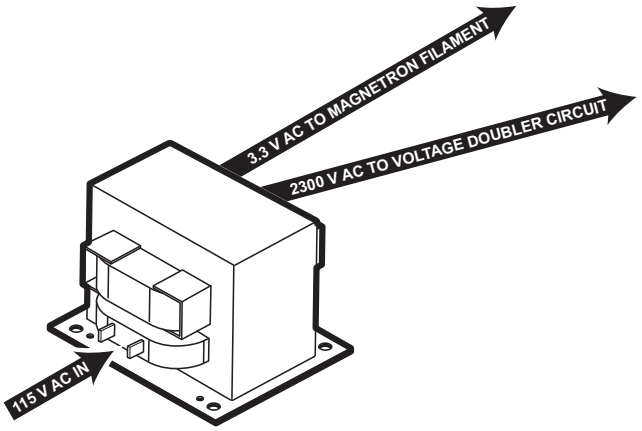


Figure 3-3. Power Transformer

Voltage Doubler Circuit (Capacitor and Rectifier)

Capacitor **-** The capacitor receives approximately 2300 volts AC from the transformer, accumulates the voltage and stores it until approximately 4600 volts (two 2300 volt sine waves) are stored. The capacitor then discharges the 4600 volts in bursts to the magnetron. (See Figure 3-3)

Rectifier **-** Before the capacitor receives the 4600 volts AC, the rectifier shunts the negative side of the two 2300 volt AC sine waves to ground, so the capacitor only receives the positive side of the sine waves. (See Figure 3-4)

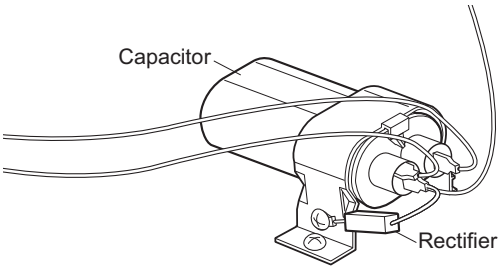


Figure 3-4. Voltage Doubler Circuit

Magnetron

The magnetron converts the high voltage from the voltage doubler circuit to microwave energy, then feeds the microwave energy through the waveguide, into the cavity feedbox and into the oven cavity where the food is cooked. (See Figure 3-5)

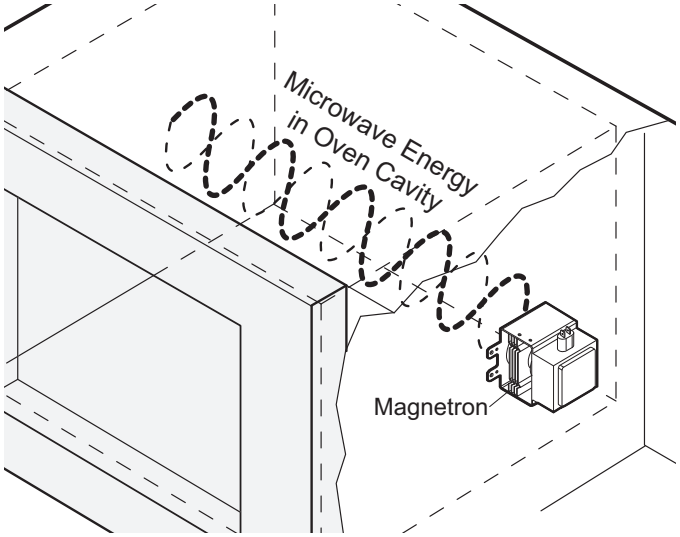


Figure 3-5. Magnetron

Turntable Motor

The turntable motor, located on the bottom of the oven cavity, rotates the turntable support and tray so that food on the tray cooks evenly. The turntable motor will turn in either direction.

AH (Absolute Humidity) Sensor

The AH sensor "senses" the vapor from foods cooking in the cavity. When enough steam from the food is sensed, the sensor relays the information to the microprocessor which then calculates the remaining cooking time and power level needed for best results. In this mode, food is cooked without figuring time, power level or quantity.

Touch Control Panel Assembly

The touch control section consists of the following units as shown in the touch control panel circuit.

1. Key Unit
2. Control Unit

The principal functions of these units and the signals communicated among them are explained below.

Key Unit

The key unit is composed of a matrix. Signals P10 -17 generated in the LSI are sent to the key unit.
When a key pad is touched, a signal is completed through the key unit and passed back to the LSI through R24 - R27 to perform the function that was requested.

Control Unit

Control unit consists of LSI, power source circuit, synchronizing signal circuit, ACL circuit, buzzer circuit, temperature measurement circuit, absolute humidity sensor circuit and indicator circuit.

1. *LSI*

   This LSI controls the temperature measurement signal, AH sensor signal, key strobe signal, relay driving signal for oven function and indicator signal.

2. *Power Source Circuit*

   This circuit generates the voltages necessary for the control unit from the AC line voltage.

3. *Synchronizing Signal Circuit*

   The power source synchronizing signal is available in order to compose a basic standard time in the clock circuit. It incorporates a very small error because it works on commercial frequency.

4. *ACL Circuit*

   A circuit to generate a signal which resets the LSI to the initial state when power is applied.

5. *Buzzer Circuit*

   The buzzer responds to signals from the LSI to emit noticing sounds (key touch sound and completion sound).

6. *Temperature Measurement Circuit : (OVEN THERMISTOR)*

   The temperature in the oven cavity is sensed by the thermistor. The variation of resistance according to sensed temperature is detected by the temperature measurement circuit and the result applied to LSI. The LSI uses this information to control the relay and display units.

7. *Absolute Humidity Sensor Circuit*

   This circuit detects the humidity of a food which is being cooked, to control its automatic cooking.

8. *Door Sensing Switch*

   A switch to inform the LSI if the door is open or closed.

9. *Relay Circuit*

   To drive the magnetron, heating element, fan motor, convection motor, damper motor, turntable motor and light the oven lamp.

10. *Indicator Circuit*

    Indicator element is a Fluorescent Display. Basically, a Fluorescent Display is a triode having a cathode, a grid and an anode. Usually, the cathode of a Fluorescent Display is directly heated and the filament serves as cathode. The fluorescent Display has 8-digits, 16-segments are used for displaying figures.

MICROWAVE SIMPLE THEORY OF OPERATION

The simple definition of microwave energy in a microwave oven is: A high-frequency electromagnetic wave that penetrates food (approximately 1"), causing the food's water and fat molecules to vibrate very rapidly which generates heat within the food to cook it in a very short time. A Wolf microwave oven uses mechanical components and electrical circuits in various combinations to produce and control the output of microwave energy. The electromechanical system of the microwave oven consists of two fundamental sections, the Control Section and the High-Voltage Section.

The Control Section

The control section consists of electrical fuses, interlock switches, an electronic control board, an electronic control panel and a power output control system.

With the microwave oven plugged in and switched on, 115V AC from the house electrical supply travels through the power cord, a series of fuses, the electronic control board circuitry and the interlock switches (if the door is closed). (See Figure 3-6)

If the door is open, power will not flow through the interlock switches, preventing the units operation. If the interlock relay on the control board or one of the interlock switches is bad, the oven will be deactivated. In the event of an electrical short or overheating condition, one or more of the fuses will open and deactivate the oven.

If the door is closed and all components in the control section are operating correctly, the cooling fan will function, the turntable motor will spin the tray *(not shown)* and 115V AC from the control board will be supplied to the primary winding of the power transformer (See Figure 3-7). The voltage to the transformer is applied at an adjustable on/off time ratio (X time on / X time off), governed by the power level input setting at the control panel. *(This means higher power level settings = longer time on / shorter time off, conversely lower power level settings = shorter time on / longer time off.)*

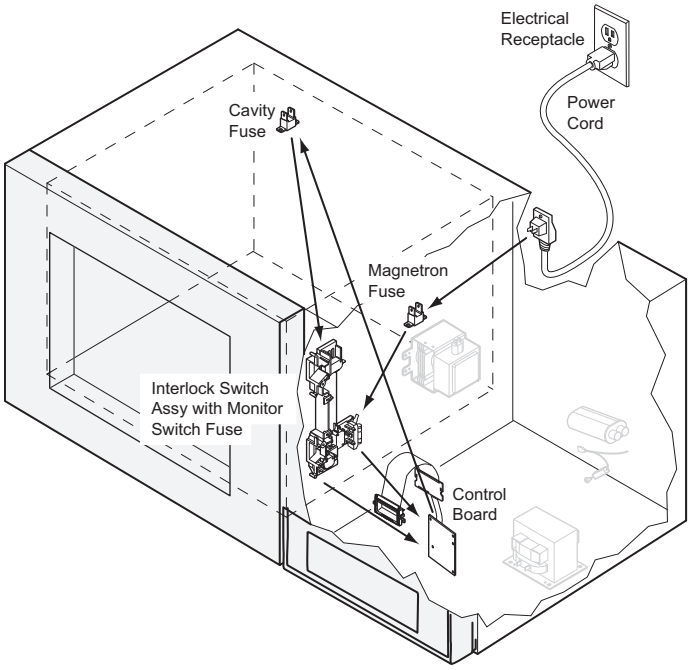


Figure 3-6. Control Section

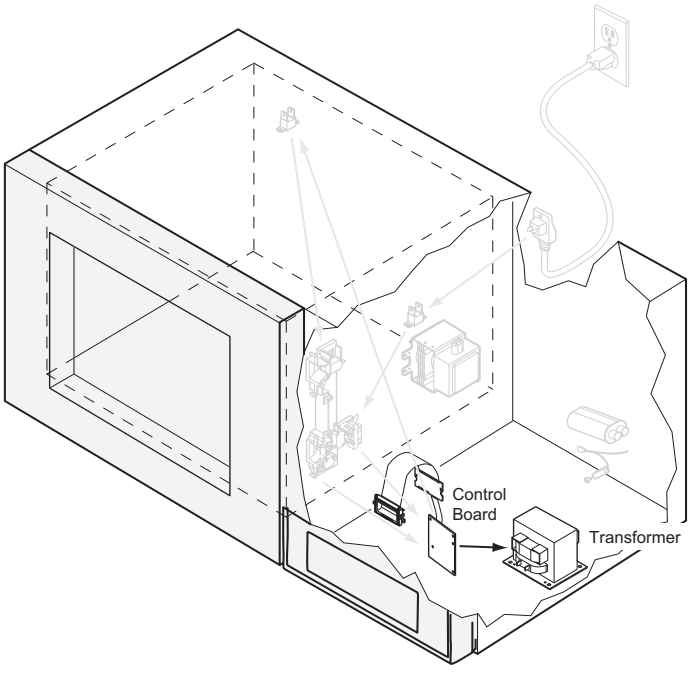


Figure 3-7. Control Section

The High Voltage Section

The high voltage section consists of the power transformer, doubler circuit and the magnetron.

If the control section is operating properly and supplying 115V AC to the power transformer, the transformer will convert the 115V AC to approximately 2300V AC. The 2300V AC is then supplied to the doubler circuit (high voltage capacitor and rectifier) (See Figure 3-8), where the the capacitor effectively doubles the voltage and the rectifier shunts the negative side of the AC voltage to ground. The 4600 Volts are then supplied by the capacitor to the magnetron in bursts (See Figure 3-9). The magnetron converts the high voltage to microwave energy. These microwaves are channeled through the waveguide on the magnetron into the oven cavity where they bounce off of the walls (See Figure 3-10). As stated before, the microwaves travel through the food in the oven causing the food's water and fat molecules to vibrate very rapidly which generates heat within the food to cook it in a very short time.

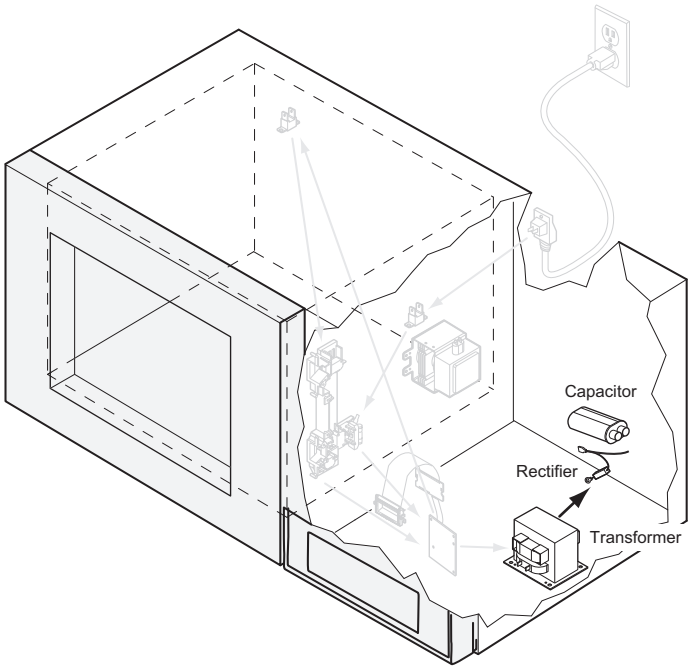


Figure 3-8. High Voltage Section

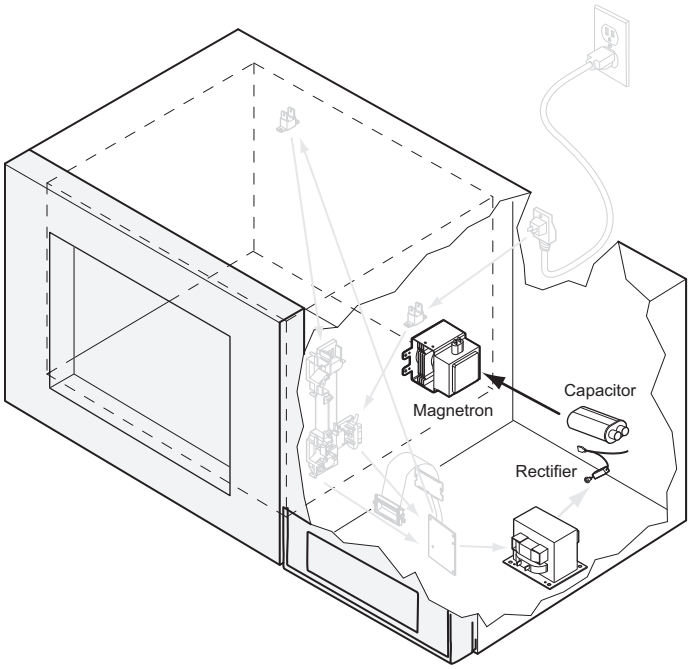


Figure 3-9. High Voltage Section

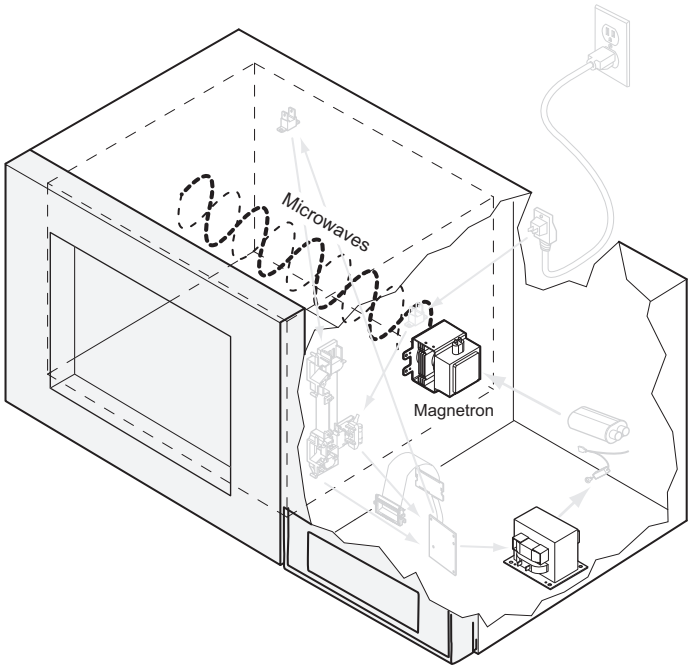


Figure 3-10. Microwaves Enter Cavity

DETAILED OPERATING SEQUENCE

The Simple Theory of Operation on the previous pages explains the basics of how a Wolf microwave oven works. This Detailed Operating Sequence explains the component functions in greater detail during oven operation.

Off Condition

Closing the door activates the door sensing switch and secondary interlock switch. (In this condition, the monitor switch contacts are opened.) When the oven is plugged in, 115 volts AC are supplied to the control unit (See Figure 3-11) and the following occurs:

1. The display will show flashing"WELCOME - PRESS - CLEAR "

   NOTE: *To set any program or set the clock, the STOP/CLEAR key must be pressed first. The display will clear, and " : " will appear.*

   NOTE: *When the door is opened, the oven lamp comes on.*

2. A signal is input to the control unit, energizing the coil of shut-off relay (RY-4). RY4 contacts close, completing a circuit to the damper motor. The damper motor now operates moving the damper to the open position, thereby closing the contacts of the damper switch inputs a signal to the control unit. The coil of relay RY-4 is de-energized, opening its contacts, thereby turning off the damper motor.

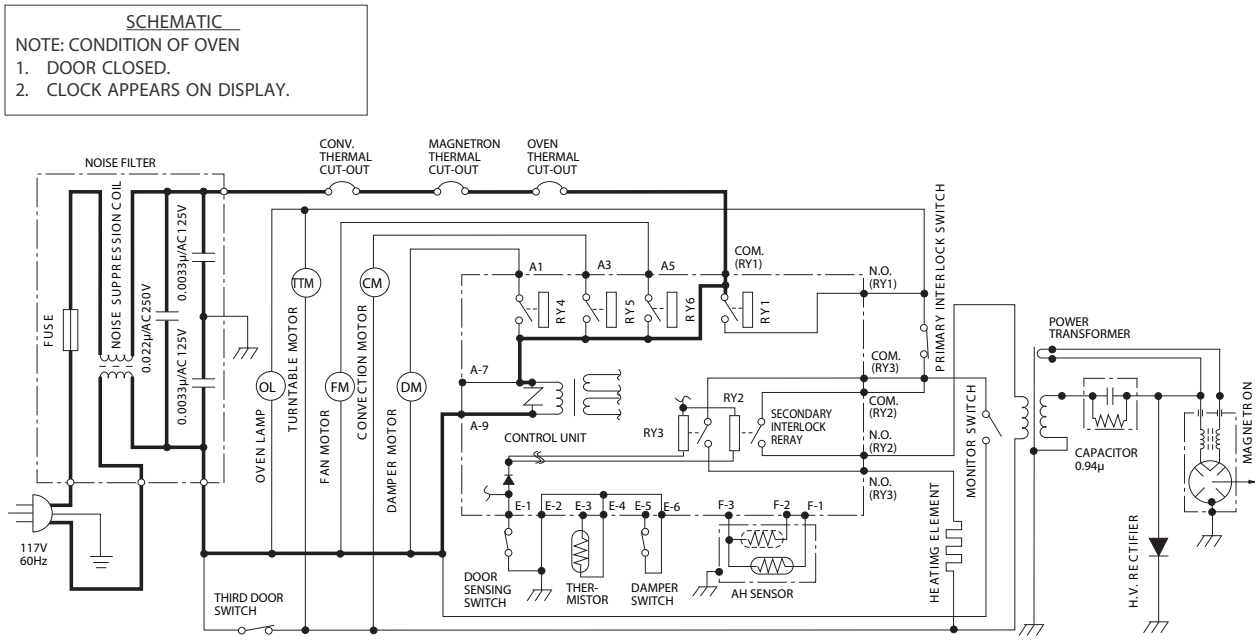


Figure 3-11. Oven Schematic, Off Condition

Cooking Condition

Program desired cooking time by pressing NUMBER keys. Program power level by pressing POWER LEVEL key and then NUMBER keys. When the START key is pressed, the following operations occur:

1. The contacts of relays are closed and components are turned on as follows (For details, see Figure 3-12):

RELAY	CONNECTED COMPONENTS
RY-1	Oven Lamp / Turntable Motor / Fan Motor
RY-2	Power Transformer
RY-3	Heating Element
RY-4	Damper Motor
RY-5	Convection Motor
RY-6	Fan Motor

2. 115 volts AC is supplied to the power transformer primary winding, then converted to approximately 3.3 volts AC output on the filament winding, and approximately 2300 volts AC on the high voltage winding.
3. The filament winding voltage heats the magnetron filament and the voltage from the high voltage winding is sent to a voltage doubler circuit.
4. The microwave energy produced by the magnetron is channeled through the waveguide into the cavity feed-box, then into the cavity where the food is placed to be cooked.
5. Upon completion of the cooking time, the power transformer, oven lamp, etc. are switched off, and the generation of microwave energy is stopped. The oven then reverts to the OFF condition.
6. If the door is opened during a cook cycle, the third door switch, monitor switch, door sensing switch, secondary interlock relay and primary interlock switch are activated with the following results.
   a. The circuits to the turntable motor, cooling fan motor, and high voltage components are de-energized.
   b. The oven lamp remains on.
   c. The digital read-out displays the time still remaining in the cook cycle.
7. The monitor switch is electrically monitoring the operation of the relay (RY1) and the primary interlock switch and the monitor switch is mechanically associated with the door so that it will function in the following sequence.
   a. *Door Opened* - the door sensing switch and primary interlock switch open their contacts, then the monitor switch contacts close and the third door switch contacts open.
   b. *Door Closed* - the monitor switch contacts open, the third door switch contacts close, then the of the primary interlock switch and door sensing switch contacts close.

   If the relay (RY1) and primary interlock switch fail with their contacts closed and the door is opened, the closing of the monitor switch contacts will form a short circuit through the monitor fuse, the relay (RY1) and the primary interlock switch, causing the monitor fuse to blow.

SCHEMATIC

NOTE: CONDITION OF OVEN
1. DOOR CLOSED.
2. COOKING TIME PROGRAMMED.
3. "START" PAD TOUCHED.

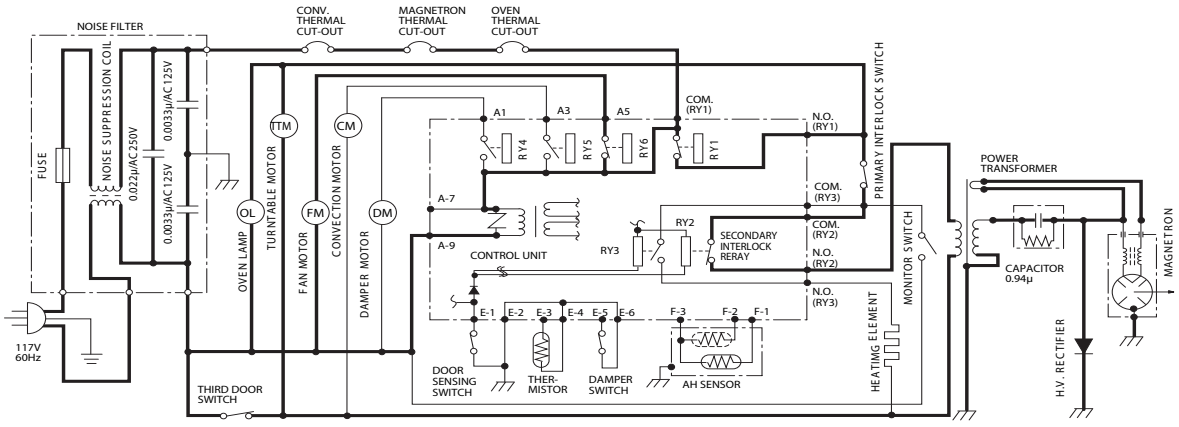


Figure 3-12. Oven Schematic, Cooking Condition

Power Level Cooking, P-0 (0%) to P-HI (100%)

When Variable Cooking Power is programmed, the 115 volts AC is supplied to the power transformer intermittently through the contacts of relay (RY-2) which is operated by the control unit within a 32 second time base. Microwave power operation is as follows:

VARI-MODE	ON TIME	OFF TIME
Power 10 (P-HI) - 100% Power	32 sec.	0 sec.
Power 9 (P-9) - 90% Power	30 sec.	2 sec.
Power 8 (P-8) - 80% Power	26 sec.	6 sec.
Power 7 (P-7) - 70% Power	24 sec.	8 sec.
Power 6 (P-6) - 60% Power	22 sec.	10 sec.
Power 5 (P-5) - 50% Power	18 sec.	14 sec.
Power 4 (P-4) - 40% Power	16 sec.	16 sec.
Power 3 (P-3) - 30% Power	12 sec.	20 sec.
Power 2 (P-2) - 20% Power	8 sec.	24 sec.
Power 1 (P-1) - 10% Power	6 sec.	26 sec.
Power 0 (P-0) - 0% Power	0 sec.	32 sec.

NOTE: *The ON/OFF time ratio does not correspond with the percentage of microwave power, because approximately 2 seconds are needed for heating of the magnetron filament.*

CONVECTION COOKING (PREHEAT CONDITION)

Program desired convection temperature by pressing the CONVECTION key and the Temperature key. When the START key is pressed, the following operations occur:

1. The coil of shut-off relays (RY1, RY3, RY5 and RY6) are energized, the oven lamp, cooling fan motor, turntable motor and convection motor are turned on.
2. The coil of relay (RY4) is energized by the control unit. The damper is moved to the closed position, opening the damper switch contacts. The opening of the damper switch contacts sends a signal to the LSI on the control unit de-energizing the relay (RY4) and opening the circuit to the damper motor.
3. The coil of heater relay (RY3) is energized by the control unit and the main supply voltage is applied to the heating element.
4. When the oven temperature reaches the selected preheat temperature, the following operations occur:
   a. The heater relay is de-energized by the control unit temperature circuit and thermistor, opening the circuit to the heating element.
   b. The oven will continue to function for 30 minutes, turning the heater on and off, as needed to main tain the selected preheat temperature. The oven will shut-down completely after 30 minutes.

CONVECTION COOKING CONDITION

When the preheat temperature is reached, a beep signal will sound indicating that the holding temperature has been reached in the oven cavity. Open the door and place the food to be cooked in the oven.

Press the CONVEC key first and then press the Temperature key. And program desired cooking time by pressing the Number keys.

When the START key is touched, the following operations occur:

1. The numbers on the digital read-out start to count down to zero.
2. The oven lamp, turntable motor, cooling fan motor and convection motor are energized.
3. Heater relay (RY3) is energized (if the cavity temperature is lower than the selected temperature) and the main supply voltage is applied to the heating element to return to the selected cooking temperature.
4. Upon completion of the cooking time, the audible signal will sound, and oven lamp, turntable motor, cooling fan motor and convection motor are de energized. At the end of the convection cycle, if the cavity air temperature is above 275°F, the circuit to RY6 will be maintained (by the thermistor circuit) to continue operation of the cooling fan motor until the temperature drops below 245°F, at which time the relay will be de-energized, turning off the fan motor. Relay RY5 will however, open as soon as the convection cycle has ended, turning off the convection-fan motor.
5. At the end of the convection cook cycle, shut-off relay (RY4) is energized turning on the damper motor. The damper is returned to the open position, closing the damper switch contacts which send a signal to the control unit, de-energizing shut-off relay (RY4).

AUTOMATIC MIX COOKING CONDITION

Touch the HIGH MIX/ROAST, or LOW MIX/BAKE key first. Then, program desired cooking time by touching the Number pads. The LOW MIX/BAKE key is preprogrammed for 350°F with 10% microwave power, while the HIGH MIX/ROAST key is preprogrammed for 300°F with 30% microwave power. When the START key is touched, the following operations occur:

1. Numbers on digital read-out start to count down.
2. Shut-off relays (RY1, RY2, RY3, RY5, & RY6) are energized, switching on the oven lamp, turntable motor, cooling fan motor and convection fan motor.
3. Shut-off relay (RY4) is energized and the damper door closes.
4. Heater relay (RY3) is energized, applying the main supply voltage to the heating element.
5. Oven is now in the convection cooking condition.

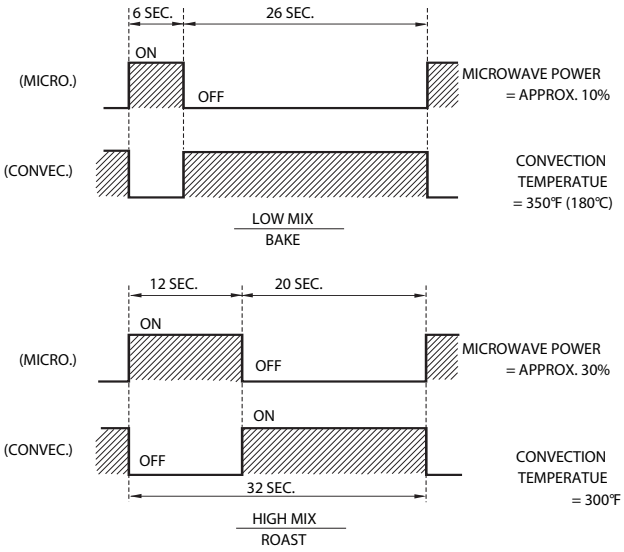


Figure 3-13. Microwave/Convection Relationship

6. When oven temperature reaches the selected temperature, the following operations occur:
   a. The power supply voltage is alternated to the heating element and power transformer.
   b. The heating element operates through the heater relay (RY3) contacts and the power transformer operates through the primary interlock relay (RY2) contacts.
   c. These are operated by the control unit to supply alternately within a 32 second time base, convection heat and microwave energy.

   The relationship between the convection and Microwave power operations are as follows. (See Figure 3-13)

NOTE: *The ON and OFF time ratio does not correspond with the percentage of microwave power, because approx. 2 seconds are needed for heating of the magnetron filament.*

SCHEMATIC

NOTE: CONDITION OF OVEN
1. DOOR CLOSED.
2. MIX COOKING PAD TOUCHED.
3. COOKING TIME PROGRAMMED.
4. "START" PAD TOUCHED.
5. RY2 AND RY3 WILL ALTERNATELY CLOSE. DURING COOK CYCLE.

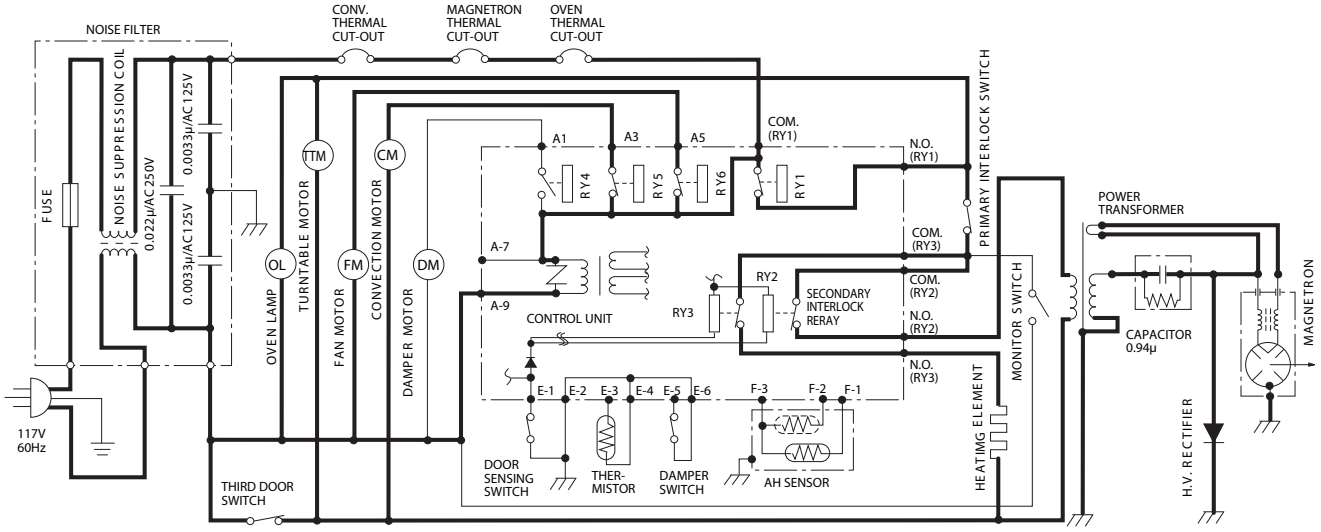


Fig 3-14. Oven Schematic, Automatic Mix Condition

COMPU BROIL/ COMPU ROAST/ COMPU BAKE

COMPU BROIL/ ROAST/ BAKE will automatically compute the oven temperature, microwave power and cooking time for baking, roasting and broiling. Set the desired program by touching the COMPU BROIL/ ROAST/ BAKE key, and number pad. Enter weight by touching the Number pads. When the START key is pressed, the following operations occur:

1. The COOK indicator will light and the Convection Fan Symbol will rotate.
2. The cooking time will appear on the display and start counting down to zero. Cooking time is adjusted automatically according to the weight of the food.
3. The shut-off relays (RY1, RY5 and RY6) are energized, turning on the oven lamp, turntable motor, cooling fan motor and convection motor. The power supply voltage is applied to the heating element.
4. Now, the oven is in the convection cooking mode.
5. When the oven temperature has reached the programmed convection temperature, the oven goes into the programmed cooking mode.
6. At the end of the COMPU BROIL/ ROAST/ BAKE cycle, the damper is returned to open position and the oven will go to off condition. The cooling fan will remain on until the oven has cooled.

SCHEMATIC

NOTE: CONDITION OF OVEN
1. DOOR CLOSED.
2. CONVECTION PAD TOUCHED.
3. DESIRED TEMP. TOUCHED.
4. COOKING TIME PROGRAMMED.
5. "START" PAD TOUCHED.

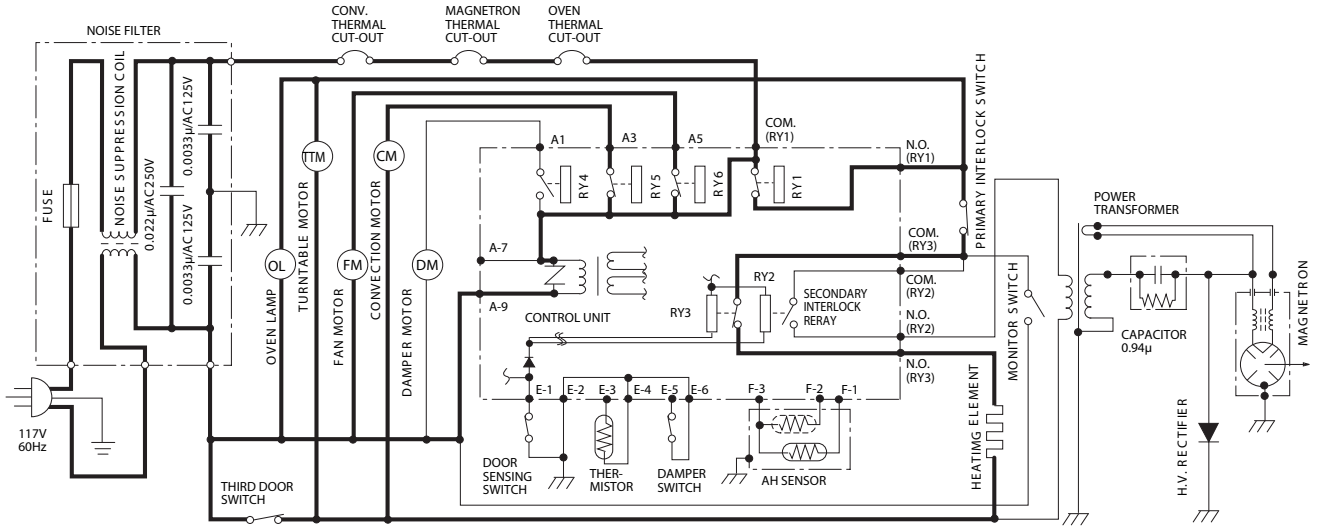


Fig 3-15. Oven Schematic, Convection Cooking Condition

COMPU DEFROST COOKING

The COMPU DEFROST key is a special function key to defrost meats and poultry faster and better. COMPU DEFROST automatically defrosts roast beef, etc.. When the COMPU DEFROST is selected and food weight is entered by using COMPU DEFROST key, the oven will cook according to the special cooking sequence.

FIRE SENSING FEATURE (MICROWAVE MODE)

This model incorporates a sensing feature which will stop the oven's operation if there is a fire in the oven cavity during microwave cooking. This is accomplished by the LSI repeatedly measuring the voltage across the temperature measurement circuit (thermistor) during it's 32-seconds time base comparing the obtained voltage measurements. If the most recent voltage measured is 300mV greater than the previous voltage measured, the LSI judges it as a fire in the oven cavity and switches off the relays to the power transformer, fan motor and convection motor. The LSI also stops counting down and closes the damper door so that no fresh air will enter the oven cavity. Please refer to the following section for a more detailed description.

Operation

NOTE: *Please refer to the timing diagrams below.*

1. The thermistor operates within a 32-seconds time base and is energized for three (3) seconds and off for 29 seconds. Two (2) seconds after the thermistor is energized, the voltage across the temperature measurement circuit is sampled by the LSI and twenty one (21) seconds after the thermistor is cut off the LSI turns on the cooling fan for six (6) seconds.
2. The above procedure is repeated. If the difference between the first voltage measured (in step 1) and the voltage measured when the procedure is repeated (step2) is greater than 300mV the LSI makes the judgment that there is a fire in the oven cavity and will switch off the relays to the power transformer, fan motor and convection motor. The LSI also stops counting down and closes the damper door so that no fresh air will enter the oven cavity.
3. Once the fire sensor feature has shut the unit down, the programmed cooking cycle may be resumed by pressing the "START" key or the unit may be reset by pressing the "CLEAR" key.

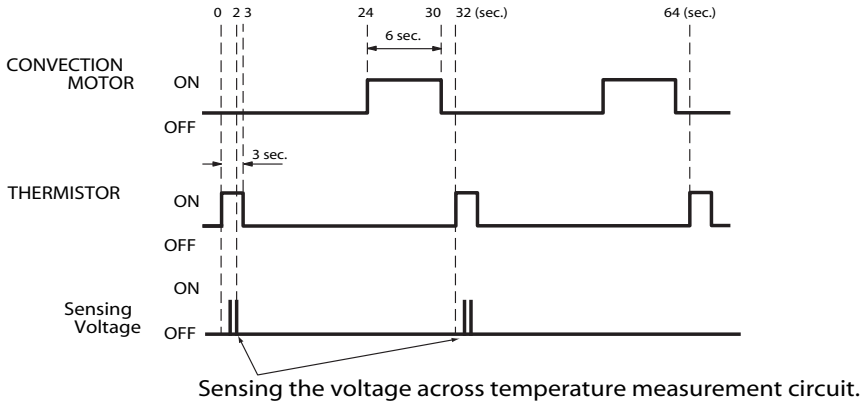


Figure 3-16. Fire Sensing Operation Timing Diagram

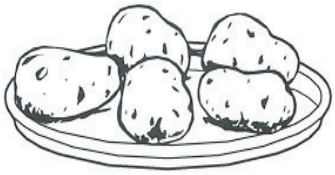
NOTE: *During sensor cooking operation, the fire sensing operation sequence will not begin until the AH sensor has detected vapors and initiated a sensor cooking cycle. This is because the operation of the convection fan would interfere with the AH sensor's vapor detection.*

Sensor Cooking Condition

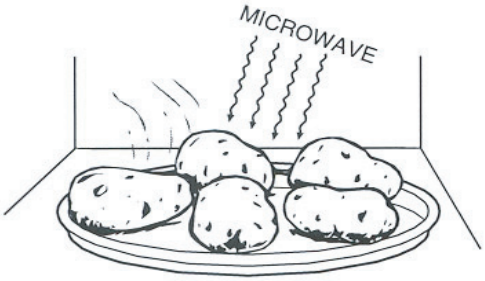
When using the SENSOR function, food is cooked without figuring time, power level or quantity. When the oven senses enough steam from the food, it relays the information to its microprocessor which will calculate the remaining cooking time and power level needed for best results. When the food is cooked, water vapor is developed, the sensor "senses" the vapor and its resistance increase gradually. When the resistance reaches the value set according to the menu, supplementary cooking is started.

The time of supplementary cooking was determined by experiment with each food category and inputted into the LSI (Large Scale Integration circuit).

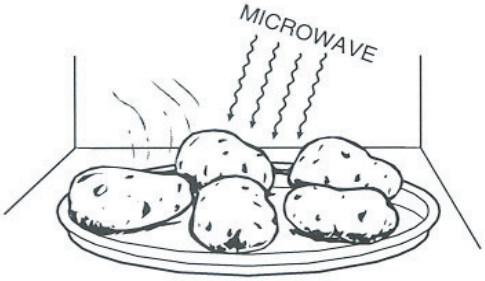
Example of how sensor cooking works (Potatoes):



1. Potatoes at room temperature. Vapor is emitted very slowly.



2. Heated Potatoes. Moisture and humidity is emitted very rapidly. You can smell the aroma as it cooks.



3. Sensor detects moisture and humidity and calculates cooking time and variable power.

Sensor Cooking Sequence:

1. Press SENSOR COOK key.

NOTE: *The oven should not be operated on SENSOR COOK immediately after plugging in the unit. Wait two minutes before cooking on SENSOR COOK.*

2. Select desired Sensor setting.
3. Press START key.
   The coil of shut-off relay (RY1, RY6) is energized, the oven lamp and cooling fan motor are turned on, but the power transformer is not turned on.
4. After about 16 seconds, the cook relay (RY-2) is energized. The power transformer is turned on, microwave energy is produced and first stage is started. The 16 seconds is the cooling time required to remove any vapor from the oven cavity and sensor.

NOTE: *During this first stage, do not open the door or press STOP/CLEAR* key.

5. When the sensor detects the vapor emitted from the food, the display switches over to the remaining cooking time and the timer counts down to zero. At this time, the door may be opened to stir food, turn it or season, etc.
6. When the timer reaches zero, an audible signal sounds. The shut-off relay and cook relay are de-energized and the power transformer, oven lamp, etc. are turned off.
7. Opening the door or pressing the STOP/CLEAR key, the time of day will reappear on the display and the oven will revert to an OFF condition.

ABSOLUTE HUMIDITY SENSOR CIRCUIT

Structure of AH Sensor

The absolute humidity sensor includes two thermistors (See Figure 3-17). One thermistor is housed in the closed vessel filled with dry air while another in the open vessel. Each sensor is provided with the protective cover made of metal mesh to be protected from the external airflow.

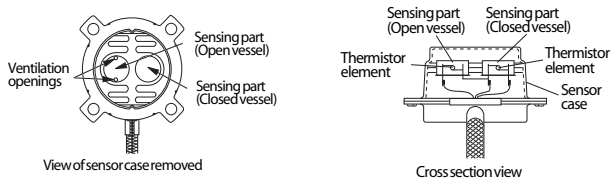


Figure 3-17. AH (Absolute Humidity) Sensor

AH Sensor Operational Principle

Figure 3-18 below shows the basic structure of an absolute humidity sensor. A bridge circuit is formed by two thermistors and two resistors (R1 and R2).
The output of the bridge circuit is to be amplified by the operational amplifier. Each thermistor is supplied with a current to keep it heated at about 150°C (302°F), the resultant heat is dissipated in the air and if the two thermistors are placed in different humidity conditions they show different degrees of heat conductivity leading to a potential difference between them causing an output voltage from the bridge circuit, the intensity of which is increased as the absolute humidity of the air increases. Since the output is very minute, it is amplified by the operational amplifier.

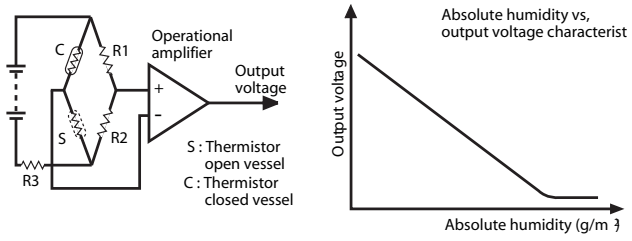


Figure 3-18. AH Sensor Basic Structure

Detector Circuit of AH Sensor Circuit

This detector circuit is used to detect the output voltage of the absolute humidity circuit to allow the LSI to control sensor cooking of the unit. When the unit is set in the sensor cooking mode, 16 seconds clearing cycle occurs than the detector circuit starts to function and the LSI observes the initial voltage available at its AN6 terminal.

With this voltage given, the switches SW1 to SW5 in the LSI are turned on in such a way as to change the resistance values in parallel with R50-1. Changing the resistance values results in that there is the same potential at both F-3 terminal of the absolute humidity sensor and AN7 terminal of the LSI. The voltage of AN6 terminal will indicate about -2.5V. This initial balancing is set up about 16 seconds after the unit is put in the Sensor Cooking mode. As the sensor cooking proceeds, the food is heated to generate moisture by which the resistance balance of the bridge circuit is deviated to increase the voltage available at AN6 terminal of the LSI.

Then the LSI observes that voltage at AN6 terminal and compares it with its initial value, and when the comparison rate reaches the preset value (fixed for each menu to be cooked), the LSI causes the unit to stop sensor cooking; thereafter, the unit goes in the next operation automatically.

When the LSI starts to detect the initial voltage at AN6 terminal, or 16 seconds after the unit has been put in the Sensor Cooking mode, if it is not possible to balance the bridge circuit due to disconnection of the absolute humidity sensor, ” ERROR “ will appear on the display and the cooking is stopped.

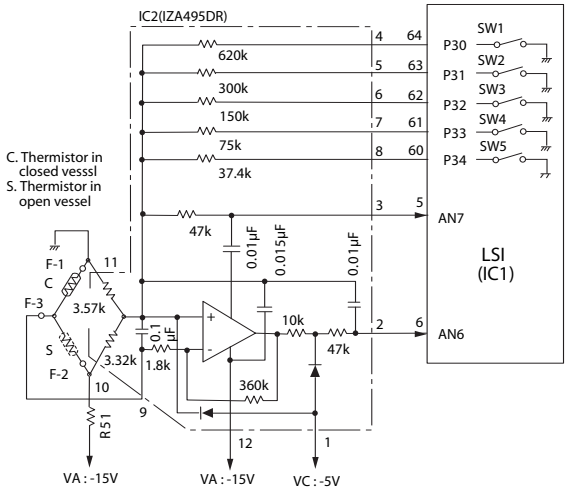


Figure 3-19. AH Sensor Circuit

MODES OF OPERATION AND FEATURES

This portion of the manual explains the input key strokes performed at the touch control panel in order to begin, use, and end different modes of operation and to enable specific features of the Wolf MWC24 convection microwave oven. For more detailed information on any of the following articles, refer to the complete Use and Care Guide, supplied with the unit.

Start-up Mode

When power is initially supplied to the unit, “WELCOME - PRESS - CLEAR - AND - PRESS - CLOCK ” will flash on display (See Figure 3-20). At this time, press the STOP/CLEAR key and “ **:** “ will appear on display (See Figure 3-21). The unit is now ready for use and the first input operation suggested is setting the clock.

NOTE: *If power to the microwave oven is interrupted, the unit will automatically enter Start-up Mode.*

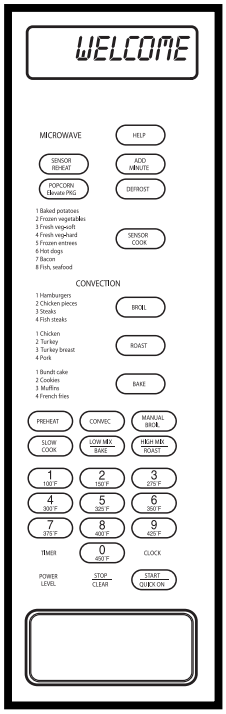


Figure 3-20. Start-up Mode Initiated When Unit Plugged In

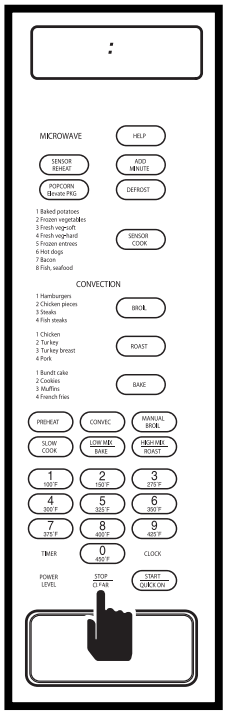


Figure 3-21. Press STOP/CLEAR Key to End Start-up Mode

Clock Set Mode

To set the correct time on the clock, follow the steps below:

1. Press the CLOCK key and “ ENTER - TIME ” will flash on display (See Figure 3-22).
2. Enter time of day by pressing the numbers in sequence. For example: If setting the time of 1:30, press the number 1 key, number 3 key, and number 0 key, display will flash “1:30 ” (See Figure 3-23).

   NOTE: *It is not possible to designate AM or PM.*
3. After the correct time of day isentered, press CLOCK key again to exit Clock Set Mode (See Figure 3-24).

NOTE: *If a mistake is made while setting the correct time, press the STOP/CLEAR key to start over.*

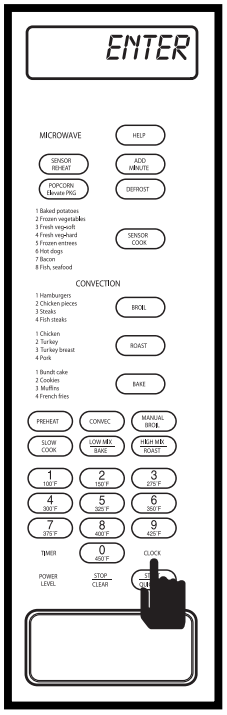


Figure 3-22. Press Clock Key

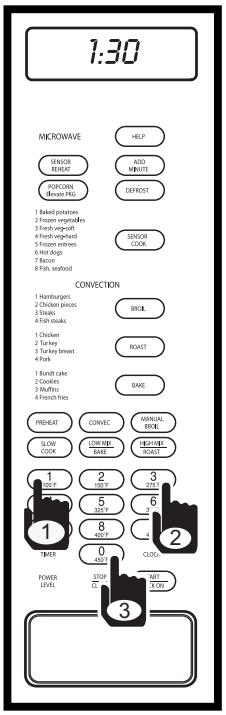


Figure 3-23. Enter Time of Day

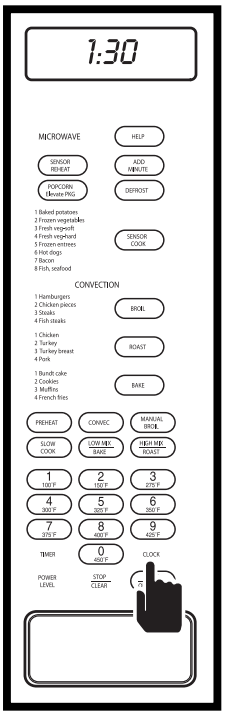


Figure 3-24. Press Clock Key

Timer Mode

If it is desired to time some event, it can be done with the clock on the microwave oven, without energizing the oven. One example would be: timing the boil of an egg on the stove. To start the Timer Mode, follow the steps below:

1. Press the TIMER key and "ENTER - TIME " will flash on display (See Figure 3-25).

2. Enter amount of time for the timer to countdown. For example: 3 minutes; press the number 3 key, and number 0 key twice, the display will flash "3.00 " (See Figure 3-26).

4. After amount of time is entered, press QUICK ON/START key to begin timer countdown (See Figure 3-27). At the end of the countdown, display will flash "END " and alarm will beep. Push the STOP/CLEAR key to return to normal operation.

NOTE: *To end the timer before the countdown time has elapsed, press the STOP/CLEAR key.*

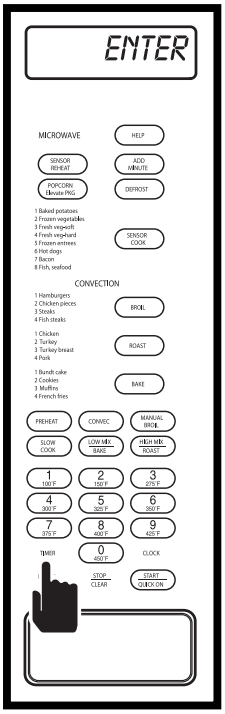


Figure 3-25. Press Time/Clock Key

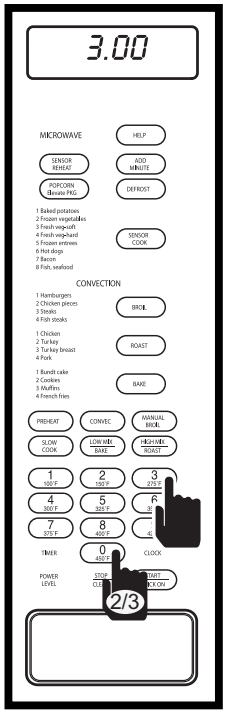


Figure 3-26. Enter Time Amount

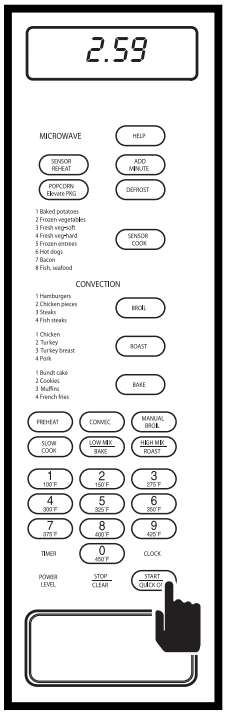


Figure 3-27. To Start, Press QUICK ON/START Key

Manual Time Cook Mode

The microwave oven can be programmed for up to 99 minutes and 99 seconds of cooking time, at various power levels. *(To explain basic Manual Time Cook Mode, the power level will not be adjusted in this example.)* To initiate Time Cook Mode, follow the steps below:

1. Enter desired cooking time duration. For example: 4 minutes; press the number 4 key, and number 0 key twice (See Figure 3-28), and the display will flash "4.00 - PRESS - START - OR - PRESS - POWER - LEVEL".

2. Press QUICK ON/START key to begin cooking for the time amount entered. The oven will energize and the display will show the time as it counts down. (See Figure 3-29) At end of the cooking time, "END " will flash on display and alarm will beep.

NOTE: *To stop the cooking process before the countdown time has elapsed, press the STOP/CLEAR key, or open the door. If the cooking process is interrupted, the countdown will remain on the display until cooking is resumed or the STOP/CLEAR key is pressed.*

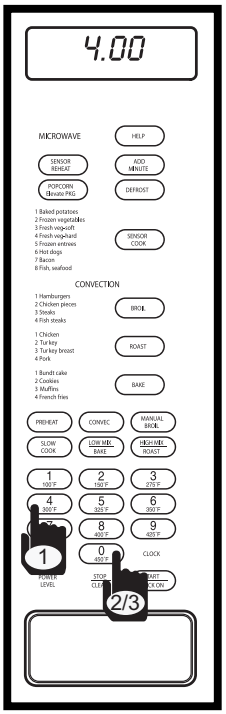


Figure 3-28. Enter Amount of Cooking Time

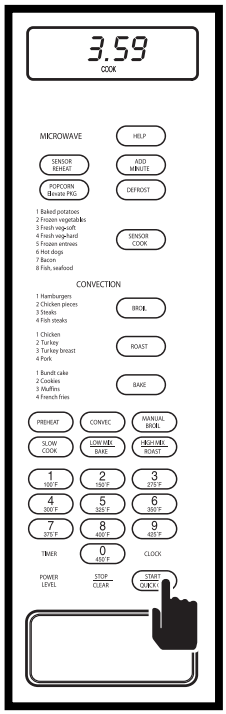


Figure 3-29. Press QUICK ON/START Key

Power Level Setting Feature

Without making any power level adjustments, the microwave oven will operate at 100% power. Power level adjustments would be performed if a recipe calls for a lower power level or if manually defrosting foods.

To cook at a lower power level, follow the steps below:

1. Enter desired cooking or defrost time duration. For example: 4 minutes; press the number 4 key, and number 0 key twice (See Figure 3-30), the display will flash "4.00 - PRESS - START - OR - PRESS - POWER -LEVEL".
2. Press POWER LEVEL key and "PRESS - POWER - LEVEL - KEY " will flash on display. For example: 70 percent power; press number 7 key. "P-70 - PRESS - START " will flash on display. (See Figure 3-31).

   NOTE: *Also see Power Level Table below.*
3. Press QUICK ON/START key to begin cooking at power level chosen. The oven will energize and display will show the time as it counts down. (See Figure 3-32) At the end of the cooking time, "END " will flash on the display and alarm will beep.

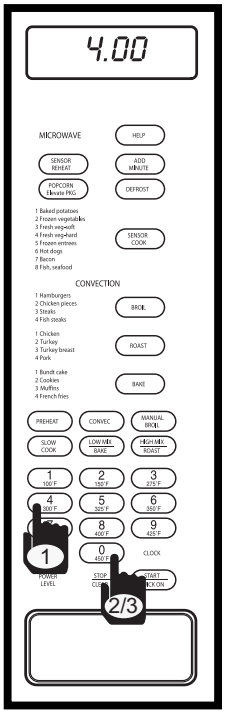


Figure 3-30. Enter Amount of Cooking Time

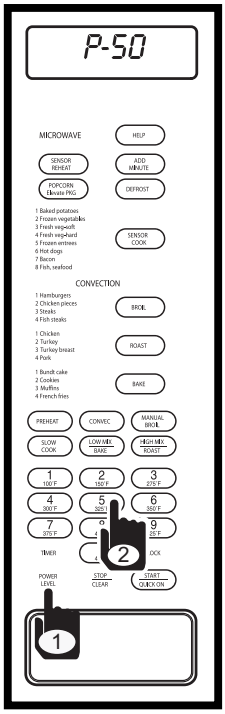


Figure 3-31. Press POWER LEVEL and Number 7 Key

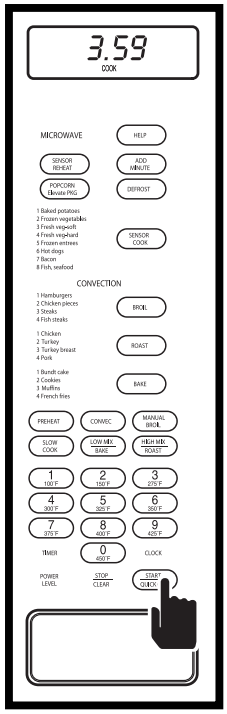


Figure 3-32. Press QUICK ON/START Key

NOTE: *To stop the cooking process before the countdown time has elapsed, press the STOP/CLEAR key, or open the door. If the cooking process is interrupted, the countdown will remain on the display until cooking is resumed or the STOP/CLEAR key is pressed.*

Power Level Table

Touch POWER LEVEL Key and NUMBER KEY for Desired Power Level	Percent of Microwave Power	Common Term for Power Levels
POWER LEVEL Key twice	100%	High
POWER LEVEL & Key 9	90%	
POWER LEVEL & Key 8	80%	
POWER LEVEL & Key 7	70%	Medium High
POWER LEVEL & Key 6	60%	
POWER LEVEL & Key 5	50%	Medium
POWER LEVEL & Key 4	40%	
POWER LEVEL & Key 3	30%	Medium Low / Defrost
POWER LEVEL & Key 2	20%	
POWER LEVEL & Key 1	10%	Low
POWER LEVEL & Key 0	0%	

Add Minute Feature

The Add Minute Feature works two ways.

1. If the microwave oven is off and the ADD MINUTE key is pressed, the microwave oven will automatically switch to Time Cook Mode at 100% power for one minute (See Figure 3-33). At the end of the cooking time, “END ” will flash on the display and alarm will beep.
2. If the microwave is already running in Time Cook Mode or Defrost Mode and the ADD MINUTE key is pressed, one minute will be added to the cooking time for every key stroke of the ADD MINUTE key (See Figure 3-34). At end of cooking time, “END ” will flash on display and alarm will beep.

NOTE: *To stop the cooking process before the countdown time has elapsed, press STOP/CLEAR key, or open the door. If the cooking process is interrupted, the countdown will remain on the display until cooking is resumed or the STOP/CLEAR key is pressed.*

NOTE: *Add Minute feature cannot be used with Sensor, Sensor Cook, Defrost, Convection Broil, Convection Roast, and Convection Bake.*

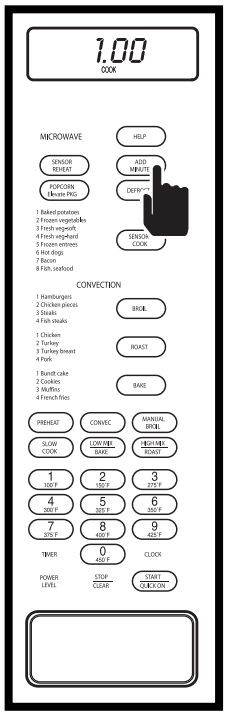


Figure 3-33. Press ADD MINUTE Key to Start Cooking

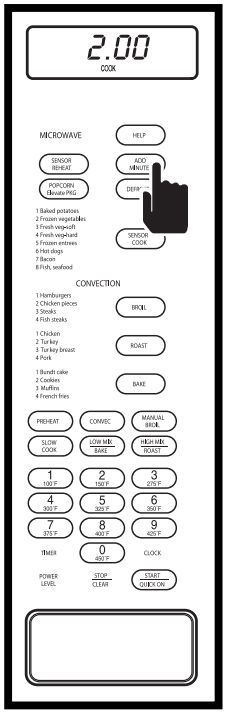


Figure 3-34. Press ADD MINUTE Key to Extend Cooking Time

Quick ON Mode

If the microwave oven is off and the QUICK ON/START key is pushed and held, the microwave oven will automatically switch on at 100% power and the display will begin counting up starting with “1”. (See Figure 3-35). Cooking will stop and the word “END “ will flash on the display as soon as the QUICK ON/START key is released. This can be done for a maximum of three minutes.

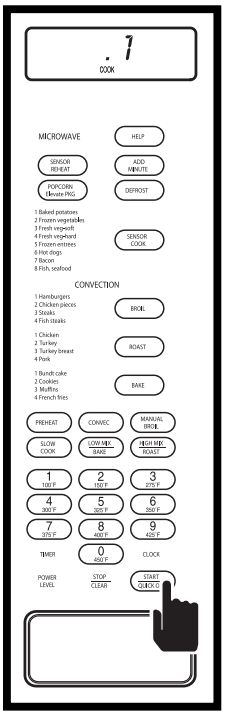


Figure 3-35. Press and Hold QUICK ON/START Key

Manual Defrost Mode

Manual Defrost Mode uses the same key strokes as the power level setting feature, except that 30% power is suggested for defrosting most foods. To initiate Manual Defrost Mode, follow the steps below:

1. Enter desired defrost time duration. For example: 4 minutes; press the number 4 key, and number 0 key twice (See Figure 3-36), the display will flash "4.00 - PRESS - START - OR - PRESS - POWER - LEVEL ".
2. Press POWER LEVEL key and number 3 key. Display will flash "P-30 - PRESS - START " (See Figure 3-37).
3. Press QUICK ON/START key to begin defrosting. The oven will energize at 30% and display will show the time as it counts down (See Figure 3-38). At the end of defrost time, "END " will flash on display and alarm will beep.

NOTE: *To stop the defrosting process before the countdown time has elapsed, press the STOP/CLEAR key, or open door. If the defrosting process is interrupted, the countdown will remain on the display until defrosting is resumed or the STOP/CLEAR key is pressed.*

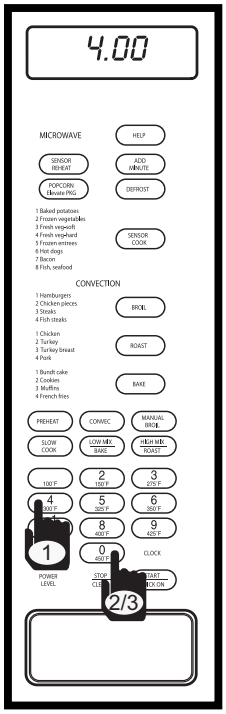


Figure 3-36. Enter Amount of Defrost Time

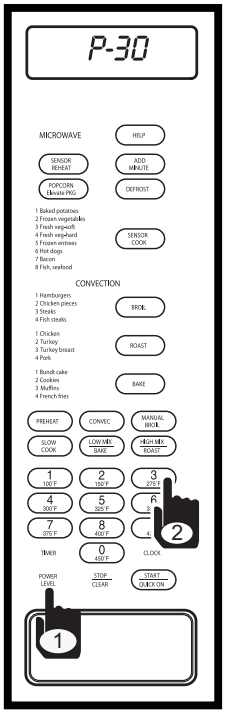


Figure 3-37. Press POWER LEVEL and Number 3 Key

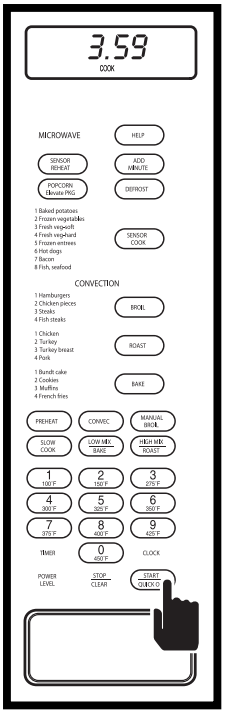


Figure 3-38. Press QUICK ON/START Key

Multiple Sequence Feature

The Multiple Sequence Feature allows up to four different time and power level adjustments to occur in a programmed sequence. For example, it's possible to defrost and cook food without having to reprogram the microwave for each feature.

To program the Multiple Sequence Feature, follow the steps below *(For this example, the sequence of cooking a roast for 5 minutes at 100% and continuing for 30 minutes at 50%)*:

1. Press the POWER LEVEL key twice. The display will flash "HIGH - ENTER - COOKING - TIME ".(See Figure 3-39).
2. Enter desired cooking time. Press the number 5 key and number 0 key twice. The display will flash "5.00 - PRESS - START " (See Figure 3-40).
3. Press the POWER LEVEL key once, display will show "PRESS - POWER - LEVEL - NUMBER " (See Figure 3-41).
4. Press the number 5 key once, display will flash "P-50 - ENTER - COOKING - TIME " (See Figure 3-42).
5. Enter desired cooking time. Press the number 3 key and number 0 key three times. The display will flash "30.00 - PRESS - START " (See Figure 3-43).
7. Press QUICK ON/START key to begin. The oven will energize, the display will show the countdown, starting with first input (See Figure 3-44), and the control will automatically switch from one time and power level to the next. At the end of Multiple Sequence Feature, "END " will flash on display and alarm will beep.

NOTE: *To stop the cooking process before countdown time has elapsed, press STOP/CLEAR key, or open door. If the cooking process is interrupted, the countdown will remain on the display until cooking is resumed or the STOP/CLEAR key is pressed.*

NOTE: *The Multiple Sequence Feature will <u>not</u> work in conjunction with Sensor Cook Mode or Auto Cook Modes..*

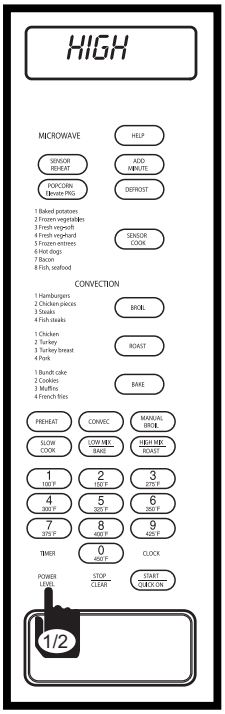


Figure 3-39. Press Power Level Twice

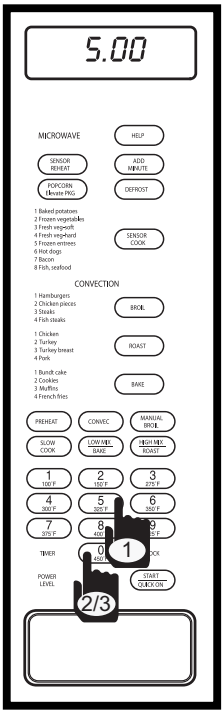


Figure 3-40. Enter Desired Cooking Time

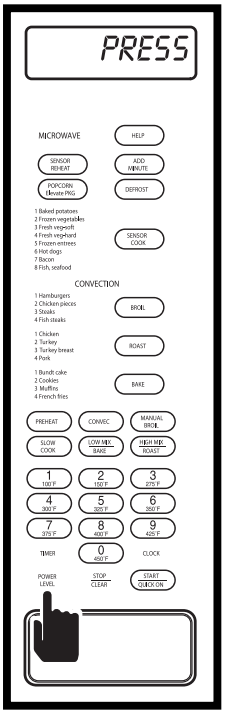


Figure 3-41. Press Power Level Key

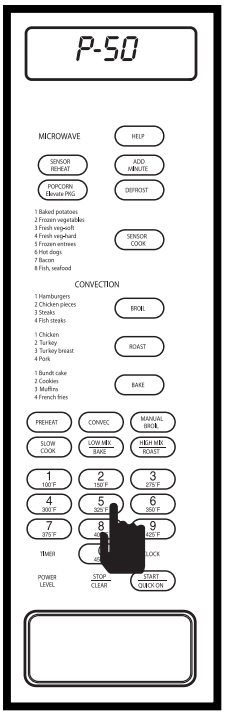


Figure 3-42. Press Number 5 Key

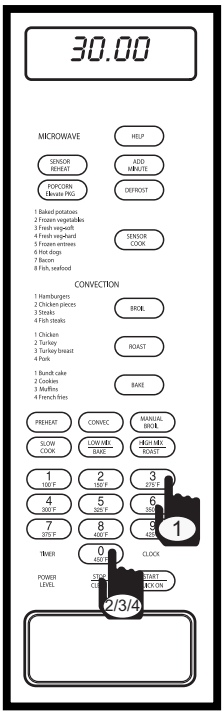


Figure 3-43. Enter Desired Cooking Time

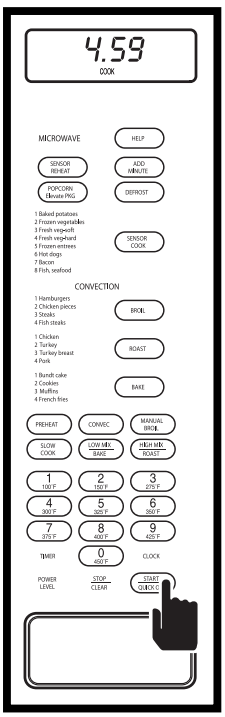


Figure 3-44. Press QUICK ON/START Key

Auto Start Feature

The Auto Start Feature allows the microwave oven to begin cooking automatically at a designated time of day (within 12 hours from program input). To program the Auto Start Feature, follow the steps below:

1. Press the HELP key and five help features will flash on the display, the third one will read "AUTO - START - PRESS 3 " (See Figure 3-45).
2. Press the number 3 key, "ENTER - START-TIME " will flash on display (See Figure 3-46).
3. Enter desired start time. For example: 6:00; press the number 6 key and number 0 key twice (See Figure 3-47). The display will flash "PRESS - CLOCK ".
4. Press CLOCK key, "ENTER - COOKING - PROGRAM " will flash on display (See Figure 3-48).

   Note: *Auto Start feature can be used with Manual Cooking, Convection Broil, Convection Roast, and Convection Bake.*
5. Enter desired cooking program. This example will use Manual Cooking. Enter time duration. For example: 4 minutes; press the number 4 key, and number 0 key twice (See Figure 3-49), and the display will flash "4.00 - PRESS - START - OR - PRESS - POWER - LEVEL".
6. Press QUICK ON/START key and start time will appear on display along with the word "ON " (See Figure 3-50). The microwave will now be energized at the time of day specified, for amount of time specified and at power level specified. At the end of the cooking time, "END " will flash on display and alarm will beep.

NOTE: *If the STOP/CLEAR key is pressed before Auto Start is initiated, then the correct time of day will be displayed.*

NOTE: *It is also possible to use the Auto Start Feature in conjunction with the Multiple Sequence Mode. The Auto Start Feature will <u>not</u> work in conjunction with Sensor Cook Mode or any of the Auto Modes.*

NOTE: *If oven door is opened after programming Auto Start, it is necessary to press the QUICK ON/START key for Auto Start time to reappear on the display and the oven to begin cooking at the chosen Auto Start time.*

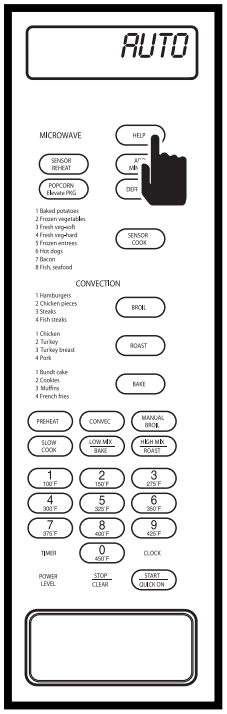


Figure 3-45. Press HELP Key

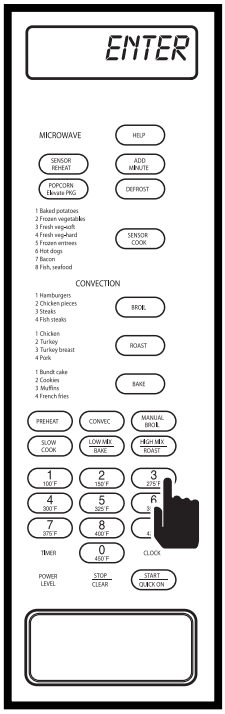


Figure 3-46. Press Number 3 Key

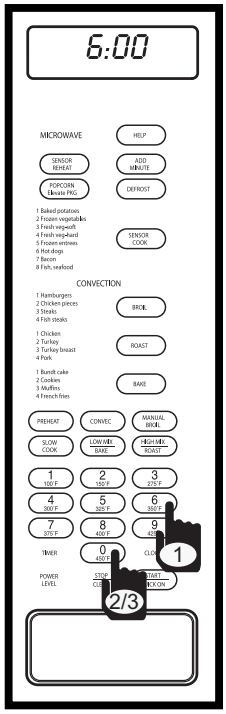


Figure 3-47. Enter Start Time

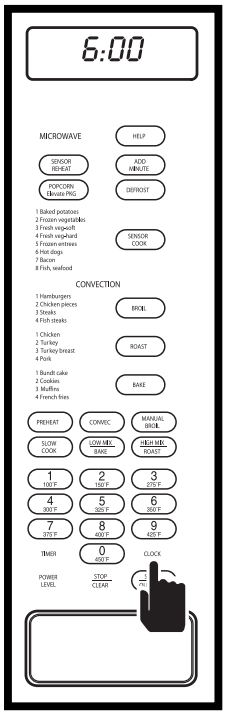


Figure 3-48. Press CLOCK Key

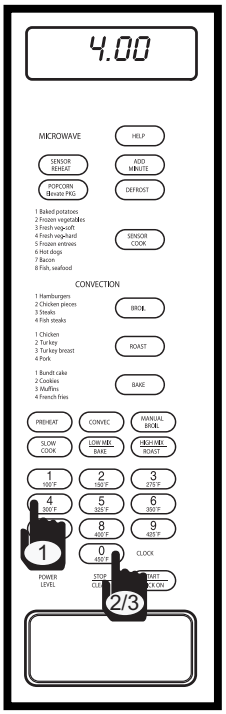


Figure 3-49. Enter Amount of Cooking Time

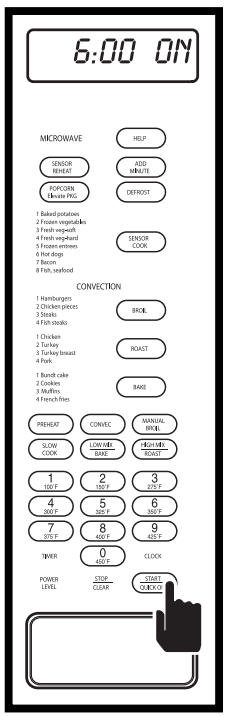


Figure 3-50. Press QUICK ON/START Key

Auto Defrost Mode

Auto Defrost Mode is to be used while referencing the Auto Defrost charts in the Use and Care Guide, supplied with the microwave oven.

NOTE: *If defrosting foods not found on the Auto Defrost charts, or if the food being defrosted is above or below the weights listed on the charts, it is recommended that the Manual Defrost Mode be used.*

To initiate Auto Defrost mode, follow the steps below: For example : Wanting to defrost a 2.0 pound steak.

1. Press DEFROST key, “REPEAT - TO - SELECT - FOOD ” will flash on display. (See Figure 3-51).
2. Select desired food by pressing the DEFROST key until display shows the food name. For example: The display will flash “ STEAK - ENTER - WEIGHT ”. (See Figure 3-52)
3. Enter weight of the food being defrosted. For example: press the number 2 key, and number 0 key for 2.0 pounds (See Figure 3-53). After weight is entered, display will flash “2.0 - PRESS - START “.
4. Press QUICK ON/START key to start the auto defrost process and the display will show the time as it counts down along with the word “DEFROST “ (See Figure 3-54).

   The microwave oven will stop/pause during the auto defrost process, the alarm will beep and the display will flash instructions. For example, “TURN - FOOD - OVER - COVER - EDGES “. Open door, turn steak over and cover any warm portions.

   After door is opened, the instructions are followed and door is closed, display will show “PRESS - START “.
5. Press QUICK ON/START key to resume the auto defrost process. Display will show the remaining time as it counts down along with the word “DEFROST “ (See Figure 3-55). At the end of the defrost time, “LET - STAND - COVERED ” will flash on display and alarm will beep.

NOTE: *To stop the auto defrost process before the countdown time has elapsed, press the STOP/CLEAR key, or open the door. If defrosting process is interrupted, the countdown will remain on the display until defrosting is resumed or the STOP/CLEAR key is pressed.*

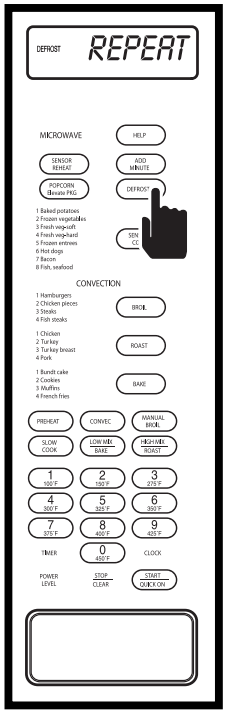


Figure 3-51. Press DEFROST Key

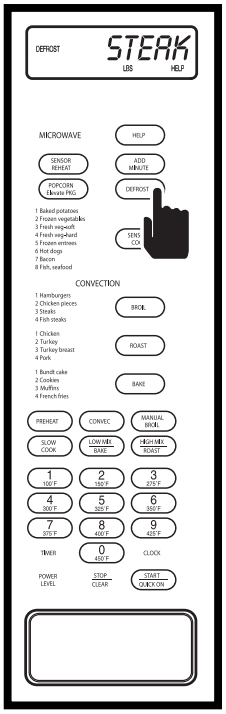


Figure 3-52. Press Desired Number From Charts

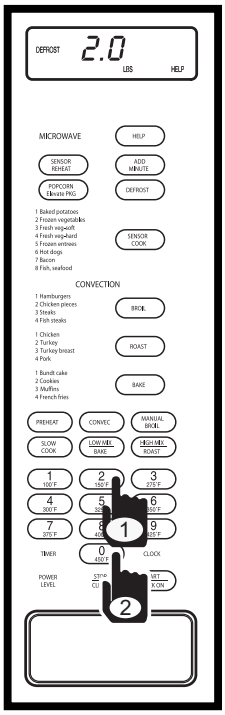


Figure 3-53. Enter Weight of Food

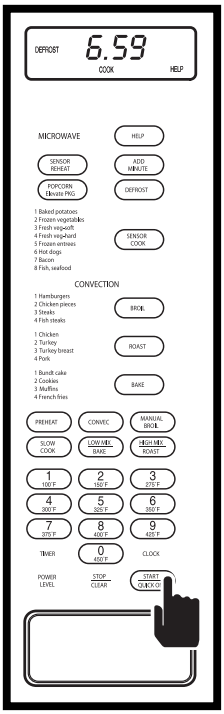


Figure 3-54. Press QUICK ON/START Key to Begin Cooking

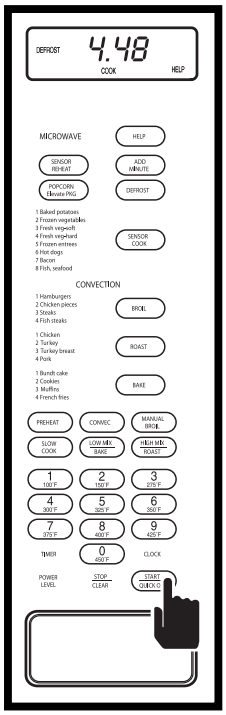


Figure 3-55. Press QUICK ON/START Key to Resume Cooking

Auto Sensor Cooking Modes

Auto Sensor Cooking Modes are to be used while referencing the recipes and related charts in the Use and Care Guide, supplied with the microwave oven.

When microwave is in Sensor Cooking Mode, food is cooked without figuring time, power level or quantity. When the sensor in the oven senses steam from the food, it relays information to the microprocessor which calculates cooking time and power level needed for best results.

There are eight preprogrammed Auto Sensor Cooking Modes.They are numbered to the left of the SENSOR COOK key: 1-BAKED POTATO, 2-FROZEN VEGETABLES, 3-FRESH VEG-SOFT, 4-FRESH VEG-HARD, 5-FROZEN ENTRIES, 6-HOT DOGS, 7-BACON, and 8-FISH, SEAFOOD.

To initiate one of the eight Preprogrammed Auto Sensor Cooking Modes, follow the steps below:

1. Press SENSOR COOK key. The display will flash "SELECT - FOOD - NUMBER ". (See Figure 3-56).
2. Press desired food number. For example: A baked potato. Press the number 1 key. Display will flash "BAKED - POTATO - PRESS - START " (See Figure 3-57)
3. Press QUICK ON/START key. When the sensor in the oven senses enough steam from the food, it will switch the microwave oven off, "END " will flash on display and alarm will beep.(See Figure 3-58)

NOTE: *If the STOP/CLEAR key is pressed before a Sensor Cooking Mode has finished, the display will flash "ERROR - PRESS - CLEAR ", requiring the STOP/CLEAR key to be pressed again.*

NOTE: *By pressing the HELP key before step 3, above, helpful hints will flash on the display.*

NOTE: *By pressing the HELP key after step 3, above, the approximate cooking time per measure/weight will flash on display.*

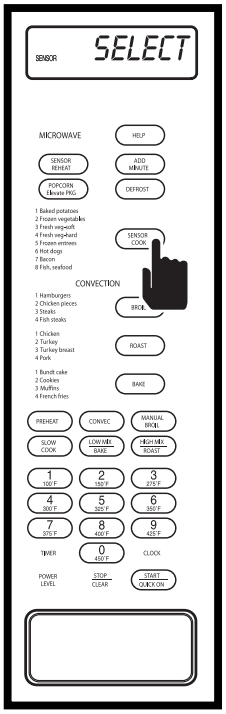


Figure 3-56. Press SENSOR COOK Key

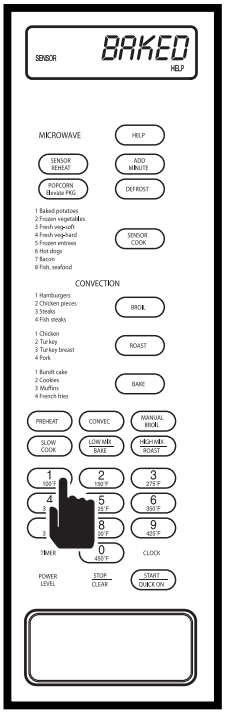


Figure 3-57. Press Desired Number From Charts

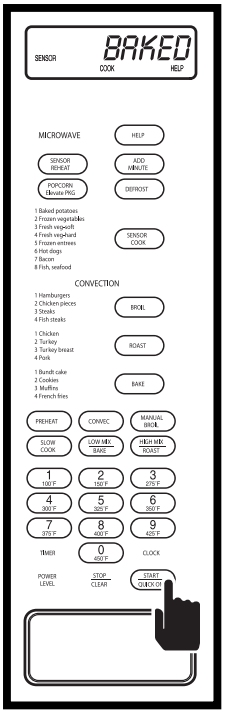


Figure 3-58. Press QUICK ON/START Key

More or Less Time Adjustment Feature

If it is discovered that it is desirable to have the food more or less done in the future, press the POWER LEVEL key once for "more" or twice for "less", before performing step number 3, as described in the Auto Sensor Cooking Modes article. The words "MORE - PRESS - START " or the words "LESS - PRESS - START " will flash on display, depending on the number of times the POWER LEVEL key is pressed. In this example, the POWER LEVEL key was pushed once (See Figure 3-59).

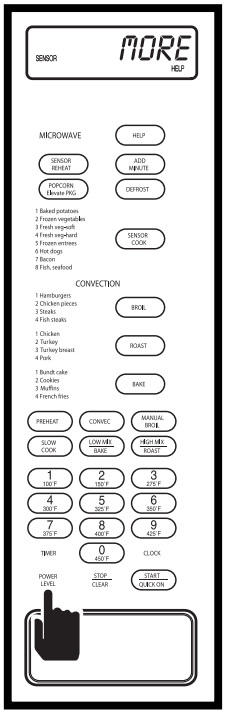


Figure 3-59. Press POWER LEVEL Key

Help Features

There are five help features accessible by pressing the HELP key. When the HELP key is pressed they will flash on the digital display in this order:

- CHILD LOCK - PRESS ONE
- TURN SOUND - ON OR OFF - PRESS 2
- AUTO START - PRESS 3
- CHOOSE ENGLISH - OR SPANISH - OR FRENCH - PRESS 4
- WEIGHT/TEMPERATURE SELECTIONS - PRESS 5

To utilize one of the Help Features, follow the steps below:

1. Press HELP key (See Figure 3-60), the display will flash the Help Features as listed above.
2. Press the number key that correlates with Help feature desired and follow instructions shown on display. For this example, “CHILD LOCK ” was chosen by pressing the number 1 key. “TO SET - LOCK - PRESS - START ” will flash on display (See Figure 3-61).
3. For this example, the QUICK ON/START key is pressed, initiating the Child Lock Feature. Display will then show time of day. (See Figure 3-62) With the Child Lock Feature on, all keys on the control panel, except the HELP key, will be disabled. If any of the keys are pressed, except the HELP key, “LOCK “ will flash on the display.
4. For this example, to switch the Child Lock Feature off, press the HELP key again and “TO - CANCEL - LOCK - PRESS - CLEAR ” will flash on display (See Figure 3-63).
5. When the STOP/CLEAR key is pressed at this time, the display will flash “LOCK - OFF ” (See Figure 3-64) and then show time of day.

NOTE: *The Child Lock Feature was used as one example of the Help Features. All Help Features require different key press sequences. After pressing the HELP key, follow the instructions shown on the display.*

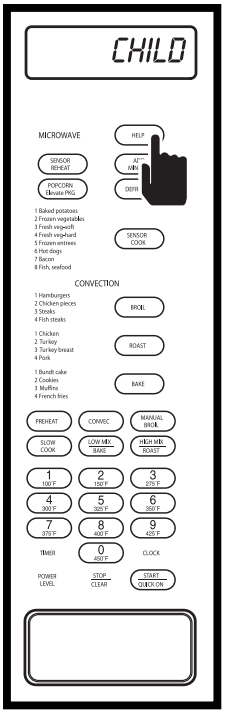


Figure 3-60. Press HELP Key *(Follow Display Instructions)*

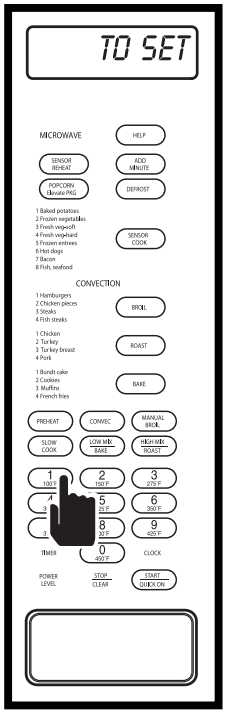


Figure 3-61. Press Desired Feature Number Key

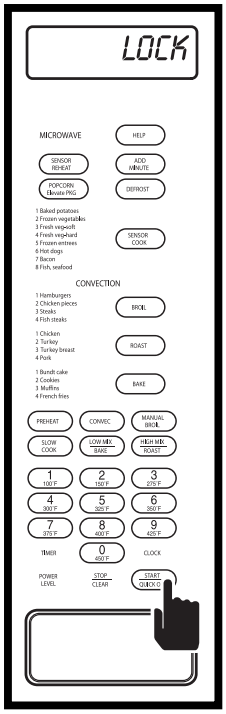


Figure 3-62. Press QUICK ON/START Key to Start

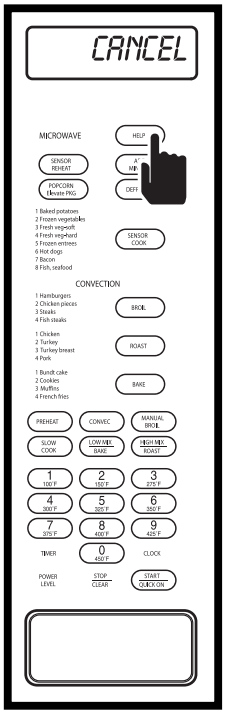


Figure 3-63. To Disable, Press HELP Key *(Follow Display Instructions)*

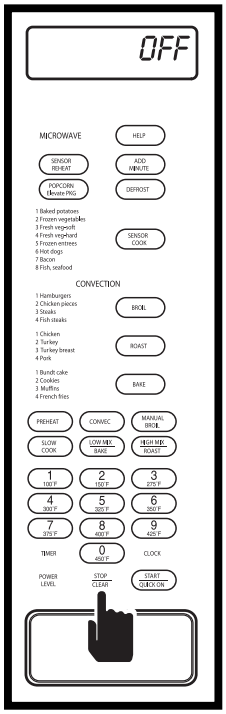


Figure 3-64. Press STOP/CLEAR Key

Demonstration Mode

Demo Mode was incorporated into the software of the microwave oven so that the appliance could be used in a showroom setting, allowing the keys to be pressed and display to function, without allowing power to microwave cooking components.

To initiate Demo Mode, follow the steps below:

1. Press CLOCK key, “ENTER - TIME ” will flash on the digital display (See Figure 3-65).
2. Press the number 0 key, “ :0 - PRESS - CLOCK ” will flash on display (See Figure 3-66).
3. Press and hold QUICK ON/START for three seconds. Display will flash “DEMO - ON - DURING - DEMO - NO - OVEN - POWER ” then show a steady “DEMO “ (See Figure 3-67). While in Demo Mode, any of the keys can be pressed and the display will show or flash the appropriate message. If the QUICK ON/START key is pressed, the microwave oven will function in all respects except that microwave cooking components will not be energized and the timer on display will abbreviate the count down from minutes to seconds.
4. To exit Demo Mode, press CLOCK again and “ENTER - TIME ” will flash on display (See Figure 3-68).
5. Press the number 0 key. Display will flash “TO - QUIT - DEMO - PRESS - CLEAR ”. (See Figure 3-69)
6. When the STOP/CLEAR key is pressed at this time, the display will flash “DEMO - OFF ” (See Figure 3-70) and then show time of day.

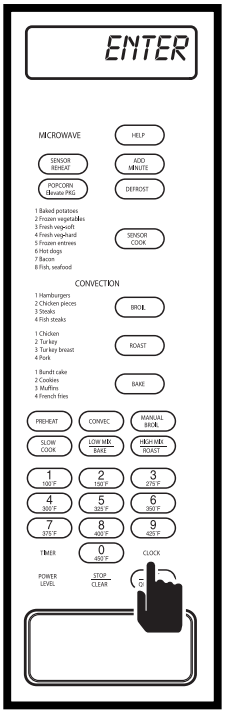


Figure 3-65. Press CLOCK Key

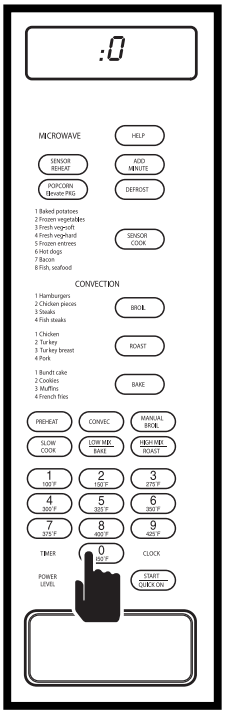


Figure 3-66. Press Number 0 Key

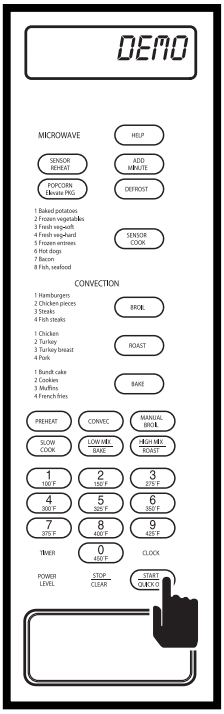


Figure 3-67. Press/Hold QUICK ON/START Key

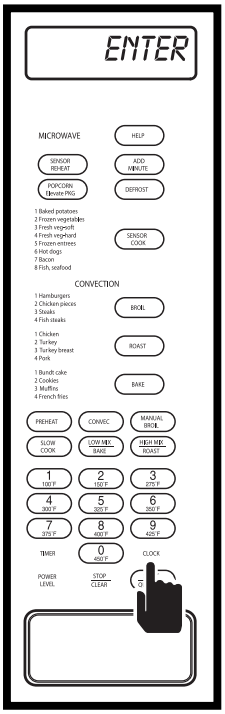


Figure 3-68. Press CLOCK Key

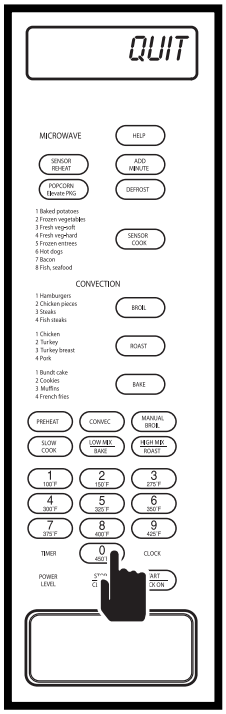


Figure 3-69. Press Number 0 Key

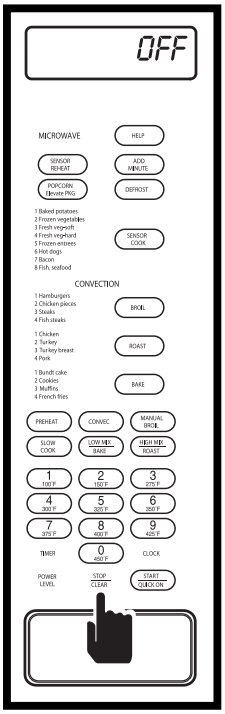


Figure 3-70. Press STOP/CLEAR Key

Manual Convection Cooking

NOTE: *Oven should not be used without the turntable in place, and should never be restricted so it cannot rotate. Turntable may be removed during preheating and when preparing food to be cooked directly on turntable.*

The microwave oven can be programmed for up to 99 minutes and 99 seconds of cooking time, at various power levels. *(To explain basic Manual Convection Cook Mode, the power level will not be adjusted in this example.)* To initiate Convection Time Cook Mode, follow the steps below: For example: Cooking at 350°F for 20 minutes.

⚠ CAUTION

The oven cabinet, cavity, door, turntable, turntable support, racks and dishes will become hot. To prevent burns, use thick oven gloves when removing food or turntable from oven.

1. Press CONVEC key."SELECT - TEMP " will flash on display (See Figure 3-71).
2. Select desired cooking temperature. Press the number 6 key, "350F - ENTER - COOKING - TIME " will flash on display (See Figure 3-72).
3. Enter desired cooking time. Press the number 2 key, and number 0 key three times."20.00 - PRESS - START " will flash on display (See Figure 3-73).
4. Press the QUICK ON/START key (See Figure 3-74).

NOTE: *To find the programmed oven temperature, press the CONVEC key. As long as the key is pressed, temperature will be displayed.*

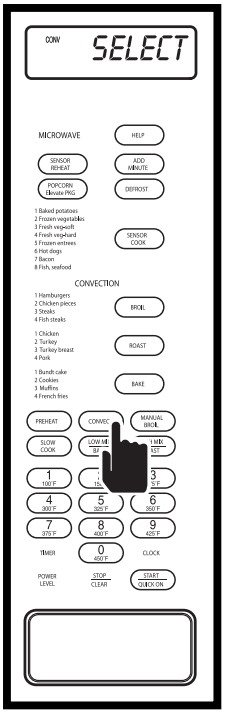


Figure 3-71. Press CONVEC Key

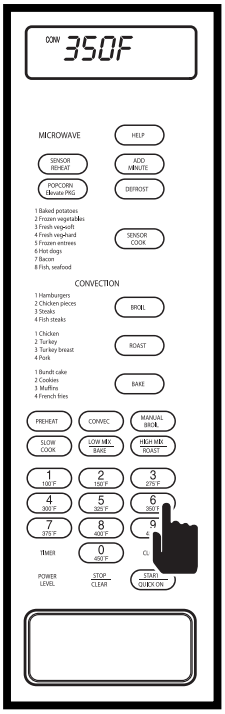


Figure 3-72. Enter Cooking Temperature

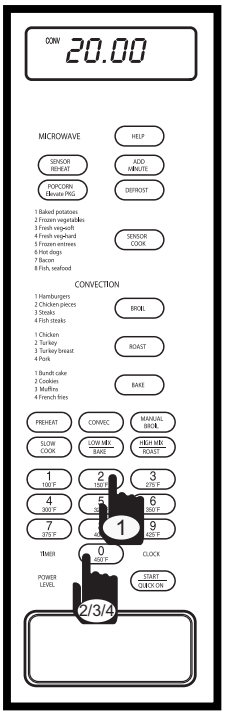


Figure 3-73. Enter Cooking Time

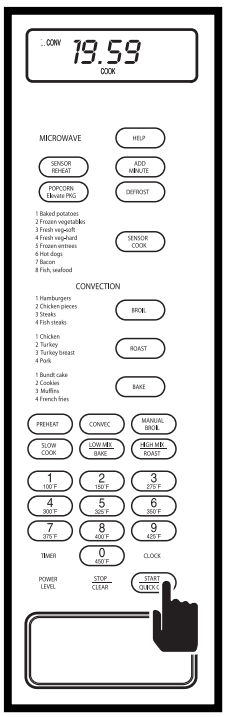


Figure 3-74 Press QUICK ON/START Key

Preheat with Convection Cooking

The oven may be programmed to combine preheating and convection cooking operations. Preheating maybe set to any temperature on the keypad. For example: Preheating the oven to 350°F then cooking at 375°F for 16 minutes.

NOTE: *Start with no food in oven.*

1. Press PREHEAT key, ”SELECT - PREHEAT - TEMP ” will flash on display. (See Figure 3-75)
2. Enter desired preheat temperature. Press the number 6 key, “350F - PRESS - START - OR - PRESS - CONVENT ” will flash on display. (See Figure 3-76)
3. Press CONVEC key, “SELECT - TEMP ” will flash on display. (See Figure 3-77)
4. Enter desired cooking temperature. Press number 7 key, “375F - ENTER - COOKING - TIME ” will flash on display. (See Figure 3-78)
5. Enter desired cooking time. Press number 1 key, number 6 key, and number 0 key twice, “25.00 - PRESS - START ” will flash on display. (See Figure 3-79)
6. Press QUICK ON/START key. (See Figure 3-80)

NOTE: *When oven reaches preheat temperature the oven will beep 4 times and “PLACE - FOOD - IN OVEN - PREHEAT - OVER ” will flash on display. Open door, place food in oven. Press QUICK ON/START key.*

NOTE: *If oven door is not opened, the oven will hold the preheat temperature for 30 minutes. After this time has elapsed, an audible signal will sound and oven will shut off.*

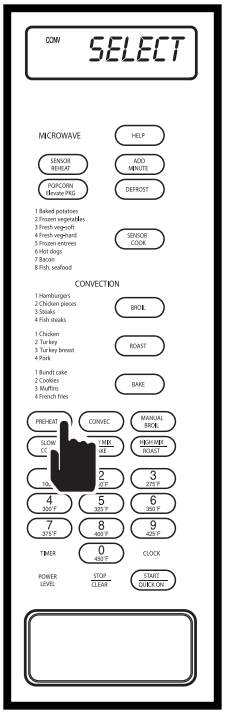


Figure 3-75. Press PREHEAT Key

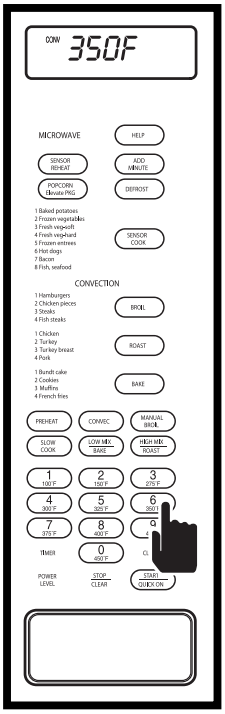


Figure 3-76. Enter Preheat Temperature

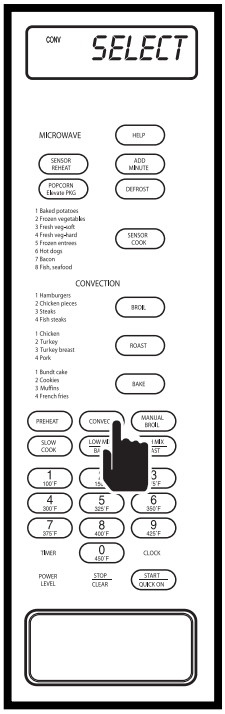


Figure 3-77. Press CONVEC Key

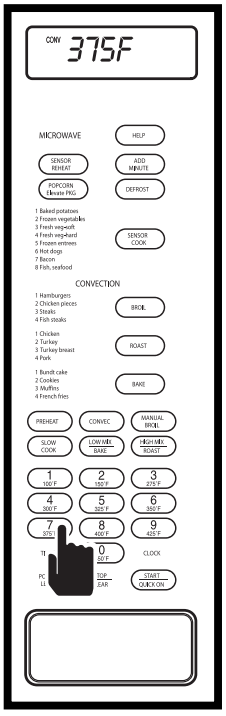


Figure 3-78. Enter Cooking Temperature

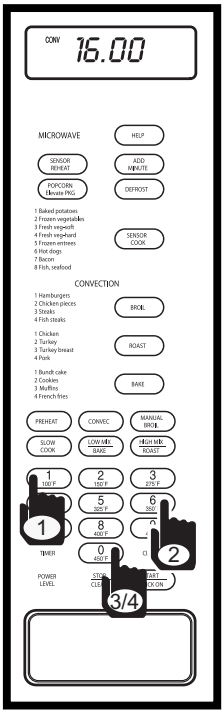


Figure 3-79. Enter Cooking Time

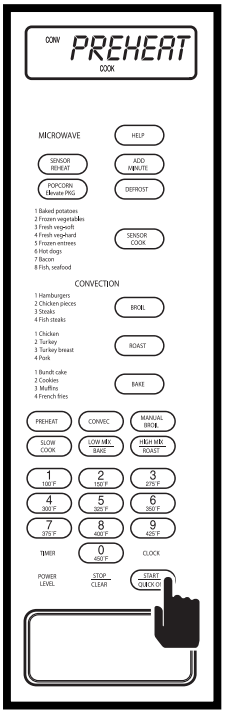


Figure 3-80. Press QUICK ON/START Key

MANUAL BROIL

Preheating is automatic when the Manual Broil setting is used. Only actual cooking time is entered, the oven will signal when it is preheated to 450°F. Oven temperature cannot be changed. For example: Broiling a steak for 16 minutes.

NOTE: *Start with no food in oven.*

1. Press MANUAL BROIL key, “450F -ENTER - COOKING - TIME ” will flash on display. (See Figure 3-81)
2. Enter desired cooking time. Press number 1 key, number 6 key, and number 0 key twice “16.00 ” will flash on display. (See Figure 3-82)
3. Press QUICK ON/START key. Oven will preheat to 450°F. When oven reaches temperature, oven will beep 4 times. (See Figure 3-83)
4. Open door, place steaks in oven, and close door. Press the QUICK ON/START key. (See Figure 3-84)

NOTE: *If oven door is not opened, the oven will hold the preheat temperature for 30 minutes. After this time has elapsed, an audible signal will sound and oven will shut off.*

NOTE: *Preheating for Broil may take 7 to 10 minutes depending on room temperature and available power.*

⚠ CAUTION

The oven cabinet, cavity, door, turntable, turntable support, racks and dishes will become hot. To prevent burns, use thick oven gloves when removing food or turntable from oven.

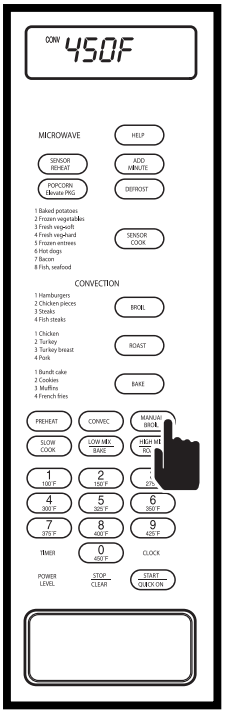


Figure 3-81. Press MANUAL BROIL Key

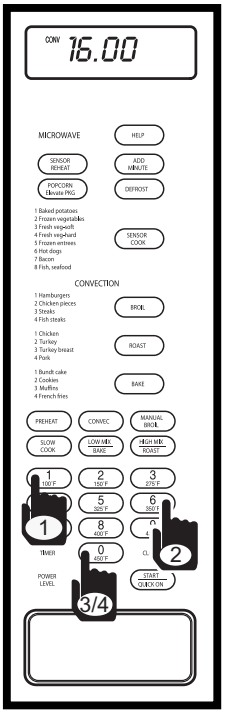


Figure 3-82. Enter Cooking Time

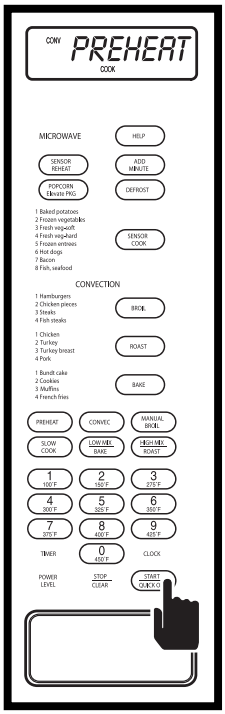


Figure 3-83. Press QUICK ON/START Key

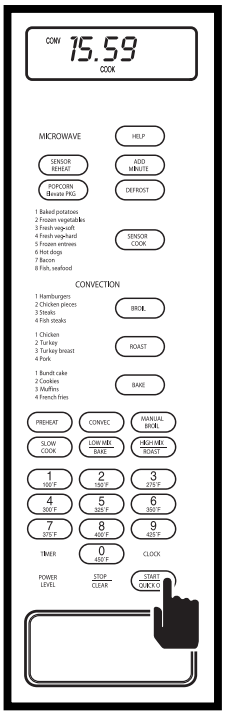


Figure 3-84. Press QUICK ON/START Key

SLOW COOK

Slow Cook is preset at 300°F for 4 hours. The temperature can be changed to below 300°F. Cooking time cannot be changed. For example: Change Slow Cook temperature from 300°F to 275°F.

1. Press SLOW COOK key, “300F - 4HOURS - PRESS - START ” will flash on display. (See Figure 3-85)
2. Press SLOW COOK key, “SELECT - TEMP ” will flash on display. (See Figure 3-86)
3. To change temperature, press the number 3 key, “275F - PRESS - START ” will flash on display. (See Figure 3-87)
4. Press QUICK ON/START key. Timer will start the count at 1 second. (See Figure 3-88)

NOTE: *If you do not change temperature omit steps 2 and 3.*

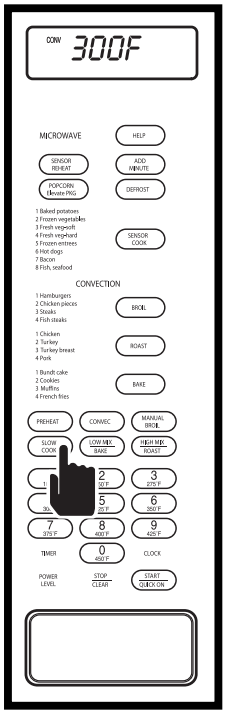


Figure 3-85. Press SLOW COOK Key

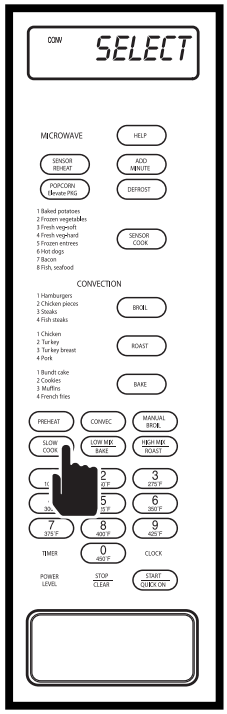


Figure 3-86. Press SLOW COOK Key

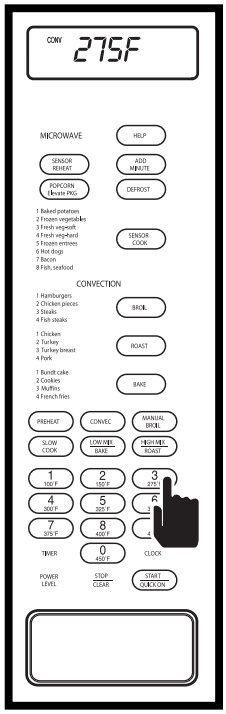


Figure 3-87. Change Temperature

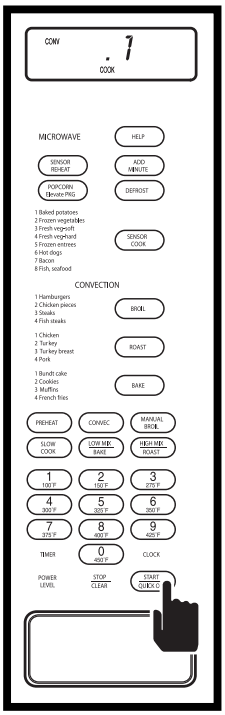


FIGURE 3-88. Press QUICK ON/START Key

AUTOMATIC MIX COOKING

This oven has two pre-programmed settings that cook with convection heat and microwave automatically. Temperatures can be changed from 100°F to 450°F. The microwave power cannot be changed. For HIGH MIX/ROAST the microwave is set at 30%. For LOW MIX/BAKE at 10%. For example: Changing the LOW MIX/BAKE to 325°F, then baking a cake for 25 minutes with LOW MIX/BAKE.

1. Press LOW MIX/BAKE key, ”300F - ENTER - COOKING - TIME ” will flash on display. (See Figure 3-89)
2. Press LOW MIX/BAKE key, “SELECT - TEMP ” will flash on display. (See Figure 3-90)
3. Enter desired cooking temperature. Press the number 5 key, “325F - ENTER - COOKING - TIME ” will flash on display. (See Figure 3-91)
4. Enter desired cooking time. Press the number 2 key, number 6 key, and number 0 key twice, “25.00 - PRESS - START ” will flash on display. (See Figure 3-92)
5. Press the QUICK ON/START key. (See Figure 3-93)

NOTE: *Oven may be programmed to combine preheating and automatic mix cooking operations. Refer to the Use and Care Guide, supplied with the microwave oven.*

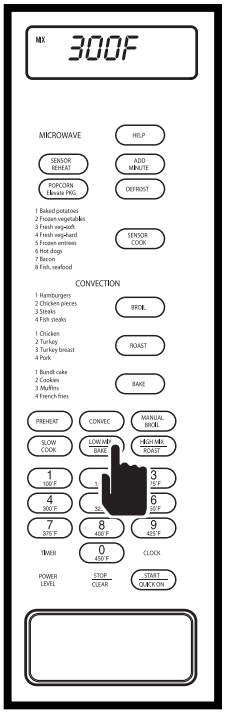


Figure 3-89. Press LOW MIX/BAKE Key

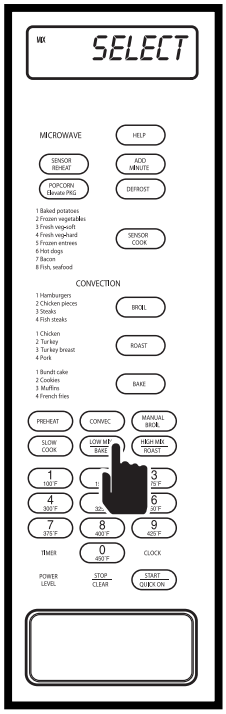


Figure 3-90. Press LOW MIX/BAKE Key

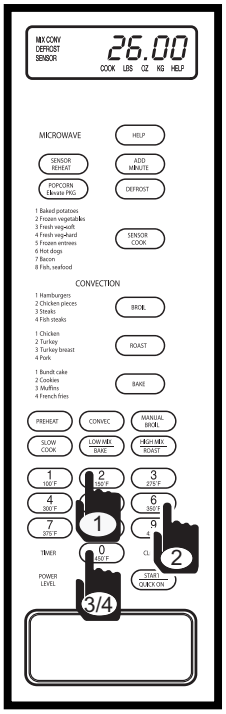


Figure 3-91. Enter Cooking Temperature

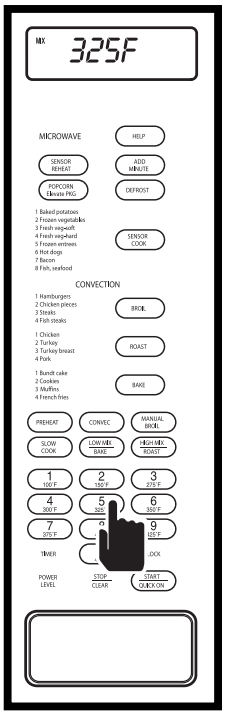


Figure 3-92. Enter Cooking Time

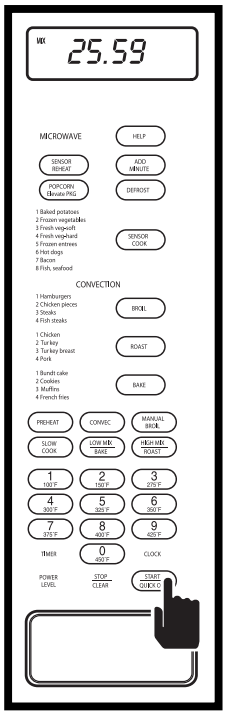


Figure 3-93. Press QUICK ON/START Key

CONVECTION BROIL

Preheating is automatic when the Convection Broil setting is used. Only actual cooking time is entered, the oven will signal when it is preheated to 450°F. Oven temperature cannot be changed. There are 4 Broil menus listed to the left of the BROIL key. For example: Broiling 2 pounds of steak.

NOTE: *Start with no food in oven.*

1. Press BROIL key, "SELECT - FOOD - NUMBER " will flash on display. (See Figure 3-94)
2. Select food number. The four choices are listed to left of the BROIL key. Press the number 3 key, "STEAKS - USE - LOW - RACK - ENTER - WEIGHT " will flash on display. (See Figure 3-95)
3. Press the number 2 key and number 0 key, "2.0 - NO FOOD - IN OVEN - FOR - MEDIUM - PRESS - START - OR - FOR - DONE - NESS - OPTIONS - PRESS - POWER - LEVEL" will flash on the display. (See Figure 3-96)
4. Press the QUICK ON/START key. Oven will preheat to 450°F. When oven reaches programmed temperature, oven will beep 4 times. (See Figure 3-97)
5. Open door, place steaks in oven, and close door. Press the QUICK ON/START key. (See Figure 3-98)

⚠ CAUTION

The oven cabinet, cavity, door, turntable, turntable support, racks and dishes will become hot. To prevent burns, use thick oven gloves when removing food or turntable from oven.

NOTE: *If oven door is not opened, the oven will hold the preheat temperature for 30 minutes. After this time has elapsed, an audible signal will sound and oven will shut off.*

NOTE: *Preheating for Broil may take 7 to 10 minutes depending on room temperature and available power.*

NOTE: *Convection Broil can be programmed with More/Less Time Adjustment.*

NOTE: *If the weight amount entered is more or less than is allowed in the Use and Care Manual supplied with the oven, an error message will be displayed.*

NOTE: *By pressing the HELP key before step 3, above, helpful hints will flash on the display.*

NOTE: *By pressing the HELP key after step 3, above, helpful hints will flash on the display.*

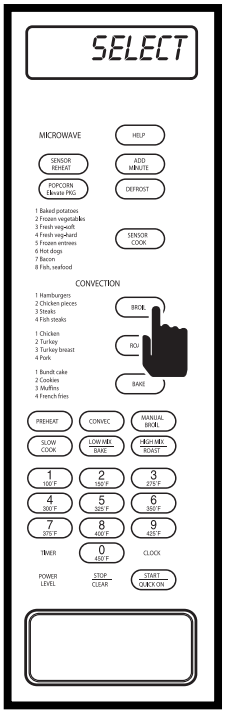


Figure 3-94. Press BROIL Key

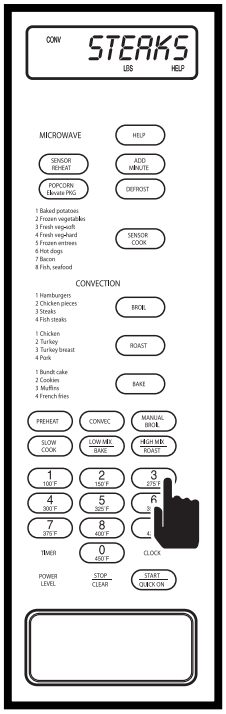


Figure 3-95. Select Desired Food

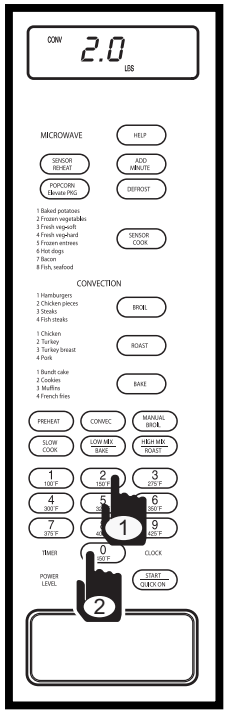


Figure 3-96. Enter Weight

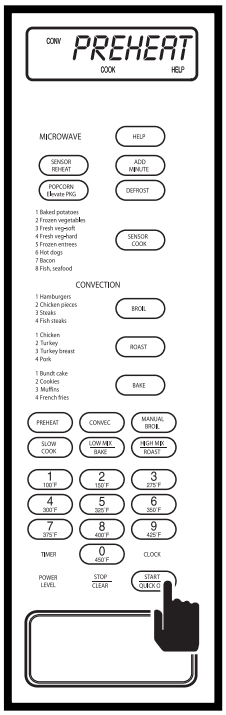


Figure 3-97. Press QUICK ON/START Key

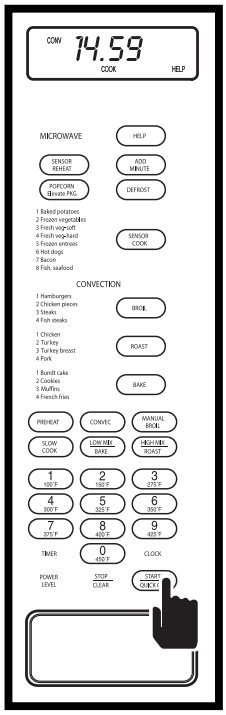


Figure 3-98. Press QUICK ON/START Key

CONVECTION ROAST

Convection Roast automatically roasts chicken, turkey, turkey breast, and pork. For example: Roasting a 2.5 pound chicken.

1. Press the ROAST key, “SELECT - FOOD - NUMBER ” will flash on display (See Figure 3-99).
2. Select food number. The four choices are listed to the left of the ROAST key. Press the number 1 key, “CHICKEN - USE - LOW - RACK - ENTER - WEIGHT ” will flash on display (See Figure 3-100).
3. Enter weight of the food. Press the number 2 key and number 5 key, “PRESS - START ” will flash on display (See Figure 3-101).

NOTE: *By pressing the HELP key before step 3, above, helpful hints will flash on the display.*

4. *Press QUICK ON/START key* (See Fig 3-102).

⚠ CAUTION

The oven cabinet, cavity, door, turntable, turntable support, racks and dishes will become hot. To prevent burns, use thick oven gloves when removing food or turntable from oven.

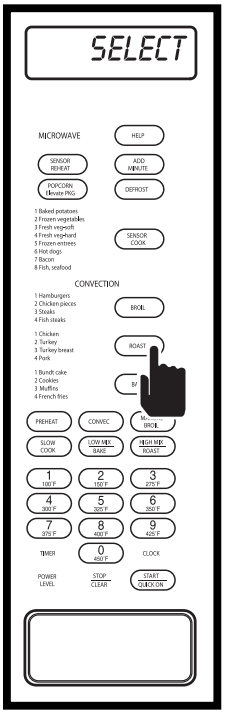


Figure 3-99. Press Roast Key

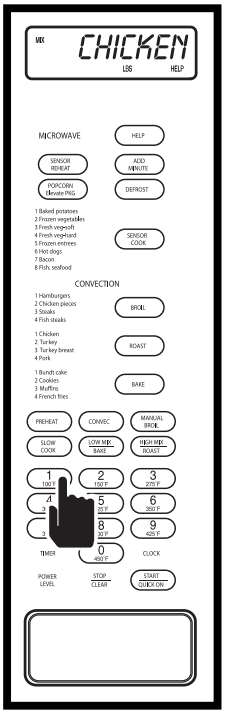


Figure 3-100. Select Food Number

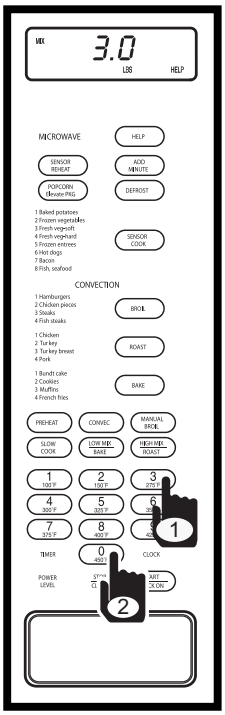


Figure 3-101. Enter Weight of Food

CONVECTION BAKE

Convection Bake automatically bakes cakes, cookies, muffins, and French fries. For example: Baking a bundt cake.

1. Press the BAKE key, “SELECT - FOOD - NUMBER ” will flash on display (See Figure 3-103).
2. Select the food type. The four choices are listed to the left of the BAKE key. Press the number 1 key, “ BUNDT - CAKE - USE - BUNDT - PAN - ON - TURN - TABLE ” will flash on display (See Figure 3-104).
3. Press QUICK ON/START key (See Figure 3-105).

NOTE: *By pressing the HELP key before step 3, above, helpful hints will flash on the display.*

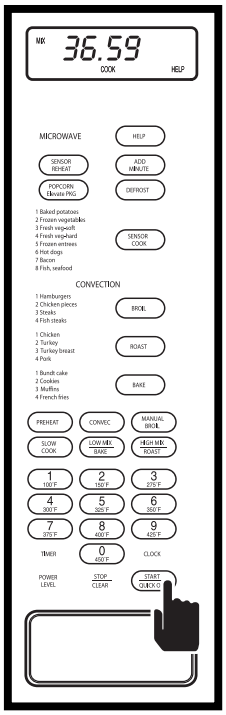


Figure 3-102. Press QUICK ON/START Key

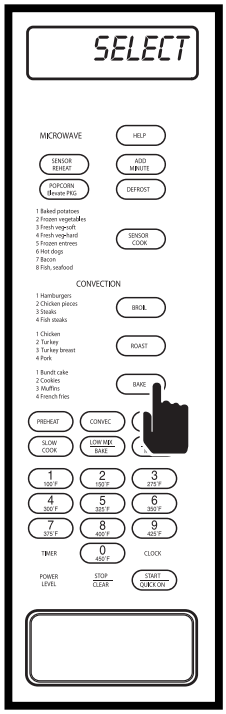


Figure 3-103. Press BAKE Key

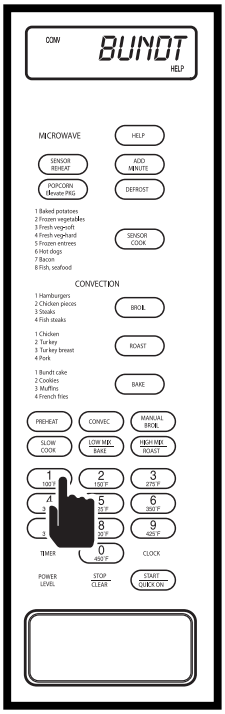


Figure 3-104. Enter Food Type

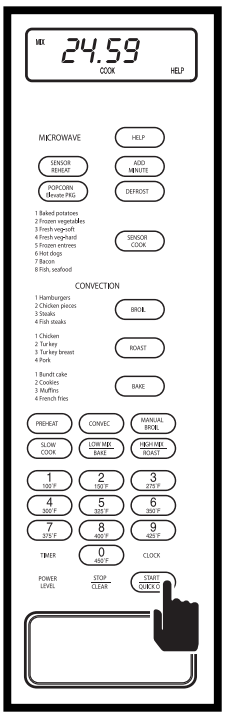


Figure 3-105. Press QUICK ON/START Key

SECTION 4

COMPONENT ACCESS & REMOVAL

COMPONENT ACCESS AND REMOVAL

This section explains how to adjust, access, and remove components in a model MWC24 Convection Microwave Oven.

An attempt has been made to arrange these procedures in such a way as to simulate which components would need to be removed first in order to gain access to other components. When following a component removal procedure, it may be necessary to reference another component removal procedure listed earlier in this section.

NOTE: *Before continuing, please take note of the WARNINGS and CAUTIONS below.*

⚠ WARNING

- **MICROWAVE OVENS CONTAIN CIRCUITRY CAPABLE OF PRODUCING VERY HIGH VOLTAGE AND CURRENT. CONTACT WITH THE FOLLOWING COMPONENTS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH:**
  - **TRANSFORMER**
  - **CAPACITOR**
  - **RECTIFIER**
  - **MAGNETRON**
  - **HIGH VOLTAGE HARNESS**

- **TO AVOID ELECTRIC SHOCK, POWER TO THE UNIT MUST BE DISCONNECTED WHENEVER ACCESSING AND/OR REMOVING COMPONENTS POWERED BY ELECTRICITY OR COMPONENTS NEAR OTHER ELECTRICAL COMPONENTS.**

- **BEFORE SERVICING THE MICROWAVE OVEN, THE CAPACITOR MUST BE DISCHARGED BY SHORTING THE CONNECTING LEAD OF THE RECTIFIER AGAINST THE CHASSIS WITH AN INSULATED SCREWDRIVER. FAILURE TO FOLLOW THIS STEP COULD RESULT IN SERIOUS PERSONAL INJURY OR DEATH.** ***NOTE: THE CAPACITOR REMAINS CHARGED APPROXIMATELY 60 SECONDS AFTER THE OVEN IS SWITCHED OFF. WAIT FOR 60 SECONDS, THEN SHORT THE CAPACITOR TO THE CHASSIS.***

- **TO AVOID EXPOSURE TO MICROWAVES, NEVER OPERATE OR ALLOW THE MICROWAVE OVEN TO BE OPERATED WITH THE DOOR OPEN.**

- **IF IT IS NECESSARY TO REMOVE THE MICROWAVE OVEN FROM ITS INSTALLATION, REMEMBER THAT THE UNIT IS HEAVY AND COULD TIP AND/OR FALL, RESULTING IN SERIOUS INJURY.**

- **AFTER PERFORMING ANY REPAIR TO THE DOOR, DOOR LATCH MECHANISM, OR DOOR CLOSING FACE, YOU MUST TEST THE INTEGRITY OF THE DOOR SEAL WITH A MICROWAVE LEAK DETECTOR TO VERIFY THERE ARE NO MICROWAVE LEAKS.**

⚠ CAUTION

- **Metal edges may be sharp. Use caution when servicing the unit to avoid personal injury.**

Turntable Tray and Turntable Support

The collar at the bottom center of the turntable support is placed onto the shaft of the turntable motor. The turntable tray sits on top of the turntable support.

To remove the turntable tray, lift it off of the support and out of the oven cavity. (See Figure 4-1)

To remove the turntable support, lift it straight up off of the turntable motor shaft and out of the oven cavity. (See Figure 4-1)

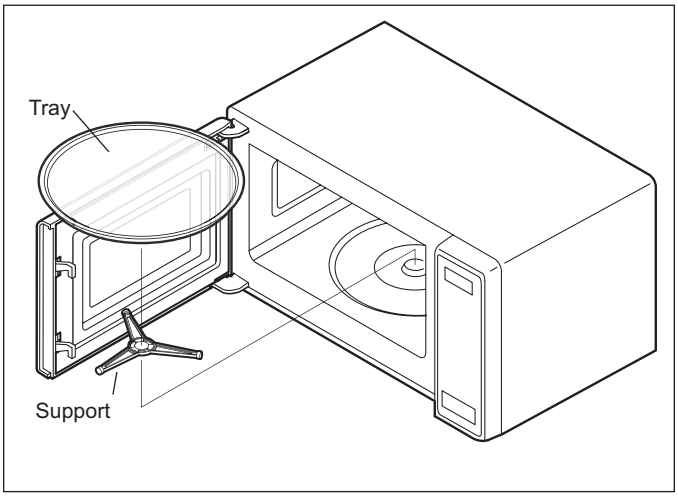


Figure 4-1. Turntable Tray & Support Removal

Door Removal (with Door Panel and Latch Head)

Extract the three screws holding lower oven hinge. Remove the lower oven hinge from oven cavity bottom flange. Lift the door assemble off the upper oven hinge pin on the oven. (See Figure 4-2)
When installing door assembly, insert the upper oven hinge pin into door assembly. Hold door parallel with oven face lines and door latch heads pass through latch holes properly. Insert lower oven hinge into oven cavity bottom flange then engage the lower oven hinge pin with locating hole on door assembly.

Note: *After servicing door make sure that door sensing switch and secondary interlock switch are operating properly. (Refer to Test Procedures in Section 6 Troubleshooting and Technical Data). An approved microwave survey meter should be used to assure compliance with proper microwave radiation emission limitation standards.*

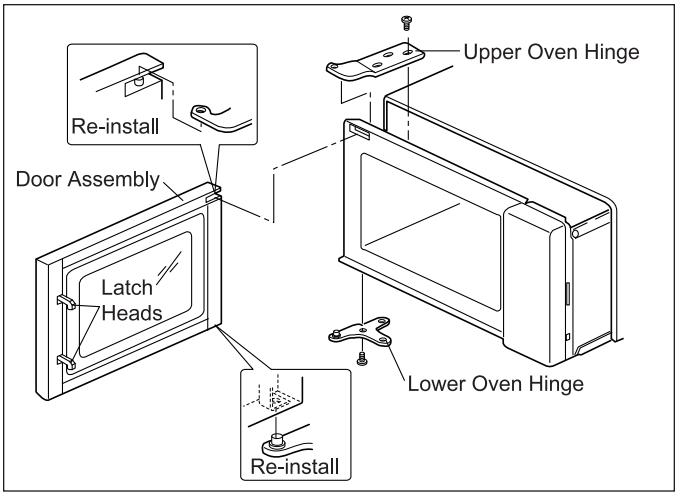


Figure 4-2. Door Removal

Choke Cover

The choke cover has a series of plastic tabs around its backside that fit into slots in the outer edge of the door panel.

To remove the choke cover, open the door and insert a putty knife into the gap between the choke cover and the door frame. Then, work the putty knife around the entire choke cover while prying it off of the door panel. (See Figure 4-3) The choke cover separates the door panel and frame. Plastic tabs on the backside of the choke cover fit into spaces in door frame.

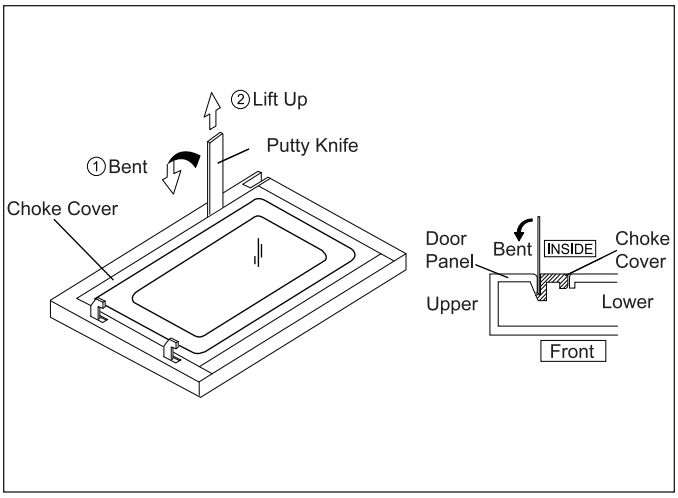


Figure 4-3. Choke Cover

Door Panel and Door Frame

To separate door panel and door frame remove assembly from oven, lay door frame on soft cloth with door latches up. To separate the door panel from the door frame, remove choke cover. Extract the mounting screws holding door panel to door frame assembly. Separate door panel from door frame assembly. (See Figure 4-4)

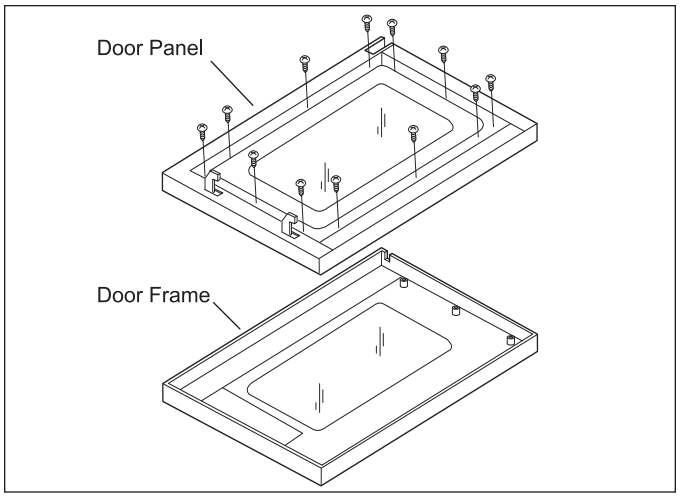


Figure 4-4. Door Disassembly

Latch Head and Latch Spring

The latch head spring is attached between a hook on the latch head and a hook on the backside of the door panel.

To remove the latch head and spring, the choke cover will need to be removed first. Extract the mounting screws holding the door frame assembly to the door panel. Separate door panel from door frame assembly. Extract two screws holding the latch head mounting bracket to door frame. Remove spring from pin on door panel. (See Figure 4-5)

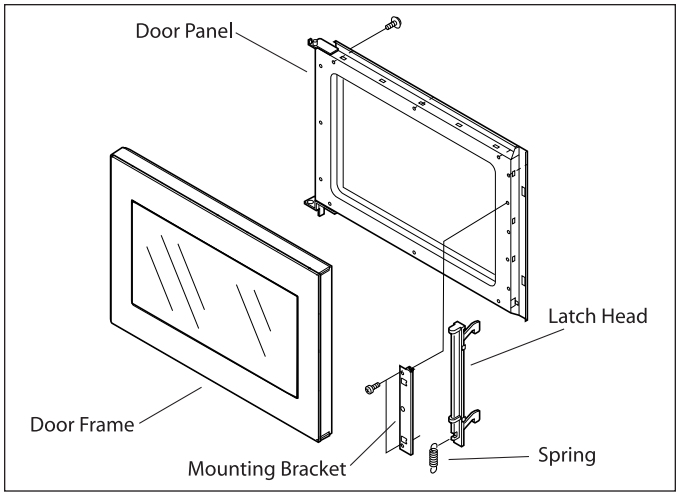


Figure 4-5. Latch Head and Spring Removal

Cabinet Case

A channel under the front top and front sides of the cabinet case fits over the front flange of the oven cavity frame. Tamperproof Torx-head screws and phillips-head screws secure the cabinet case to the base plate at the bottom of each side and to the oven cavity along the top and sides at the rear.

Begin removing the cabinet case by extracting the screws from the bottom of each side and along the top and sides at the rear. Then, lift the back of the cabinet case up slightly while sliding it toward the rear until the front flange of the oven cavity frame disengages from the channel in the cabinet case. Now, lift the cabinet case straight up. (See Figure 4-6)

NOTE: *When replacing the cabinet case, the two Tamperproof Torx-head screws must be reinstalled in the same place they were extracted from.*

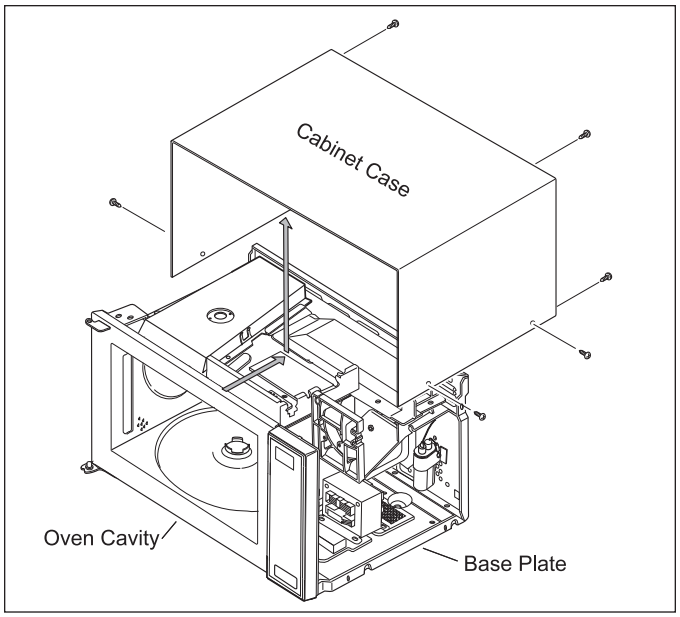


Figure 4-6. Cabinet Case Removal

Power Supply Cord

NOTE: *Electrical shock potential, refer to warnings on page 4-2.*

The power supply cord is attached to the back of the microwave oven by a grooved plastic mount.

To remove the power supply cord, the cabinet case must first be removed. Then, unplug the electrical leads from the terminals. Slide the plastic mount towards the larger side of opening, then pull the cord from oven. (See Figure 4-7)

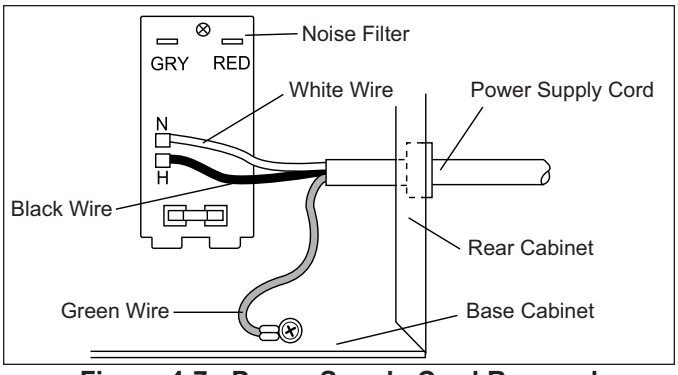


Figure 4-7. Power Supply Cord Removal

Control Panel Assembly

To remove the control panel assembly, the cabinet case must first be removed. Unplug all electrical leads from the back of the control panel assembly. Hold on to control panel assembly then extract four screws that hold the control panel assembly in place. (See Figure 4-8)

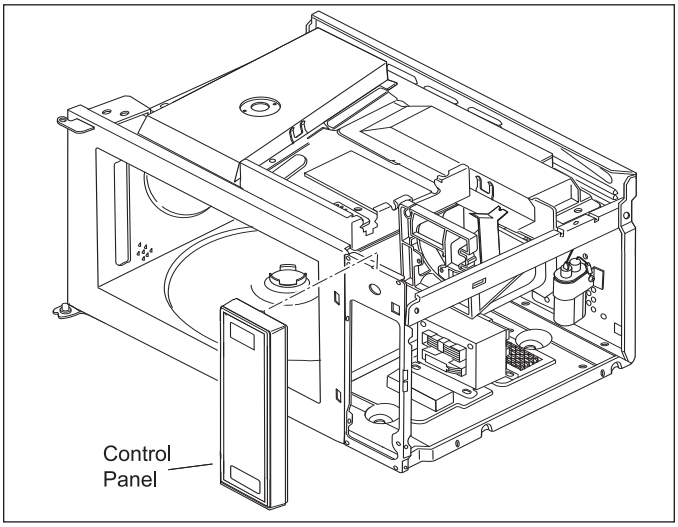


Figure 4-8. Control Panel Removal

Latch Hook/Switch Assembly

The latch hook/switch assembly consists of the latch hook, switch lever, door sensing switch, secondary interlock switch, monitor switch, monitor switch fuse and fuse holder. Plastic tabs on the latch heads fit into slots in the latch hook assembly. Two screws hold the latch hook/switch assembly to the oven flange and are tightened down to hold the assembly securely in place.

To remove the latch hook/switch assembly, the cabinet case must first be removed. Then, use a needle-nose pliers to disconnect all “Positive-Lock” wire connectors from the components on the assembly (See Figure 4-9). Extract the two latch hook mounting screws on oven flange. (See Figure 4-10) Remove latch hook assembly from oven flange. Push outward on one stopper tab holding each of the switches in place. Switches and switch lever are now free.

NOTE: *If the Monitor fuse needs to be replaced, the Monitor switch must also be replaced, even if the monitor switch operates normally.*

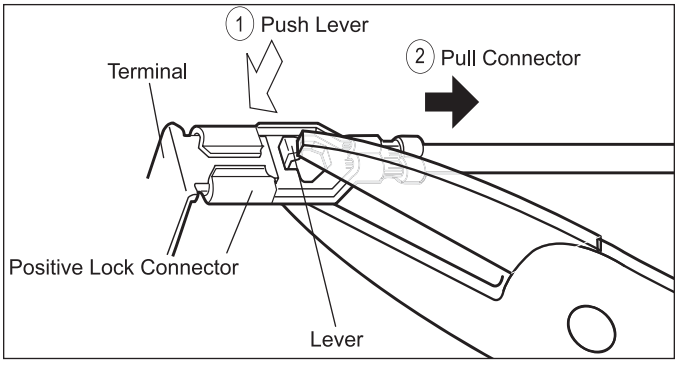


Figure 4-9. Disconnect Positive Lock Connectors

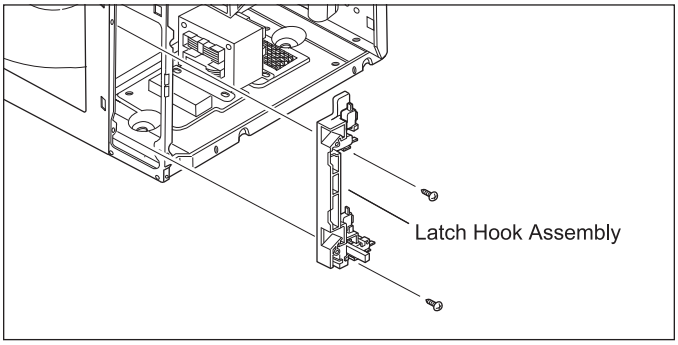


Figure 4-10. Remove Latch Hook Mounting Screws

Oven Lamp and Lamp Socket

The oven lamp is screwed into the lamp socket.

The lamp socket is inserted in a slotted metal bracket located above the right side of the oven cavity.

Oven Lamp **-** To remove the lamp, the cabinet case must first be removed. Turn the lamp counterclockwise to remove it from the socket. (See Figure 4-11)

Lamp Socket **-** To fully remove the lamp socket, the cabinet case must first be removed. Then, with a needle-nose pliers bend back the retaining metal tab enough for the lamp socket to be pulled straight up. After the socket is dismounted, the wire leads will need to be disconnected by unplugging them from the lamp socket terminals. With a small flat screwdriver push in the terminal hole of oven lamp socket. Pull wire leads from terminal. (See Figure 4-12)

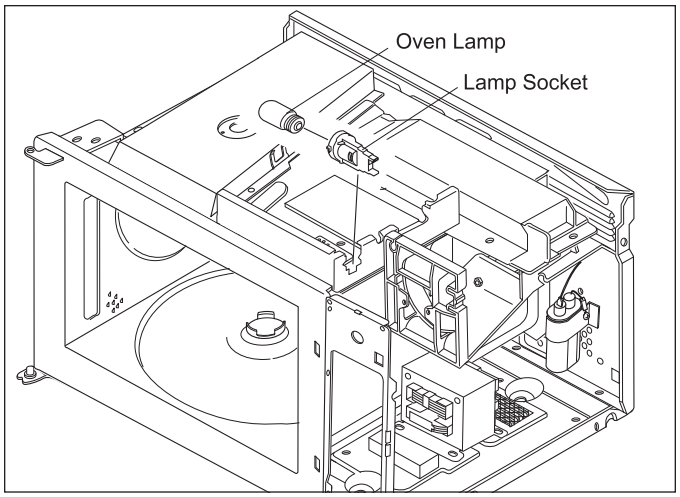


Figure 4-11. Oven Lamp Socket Removal

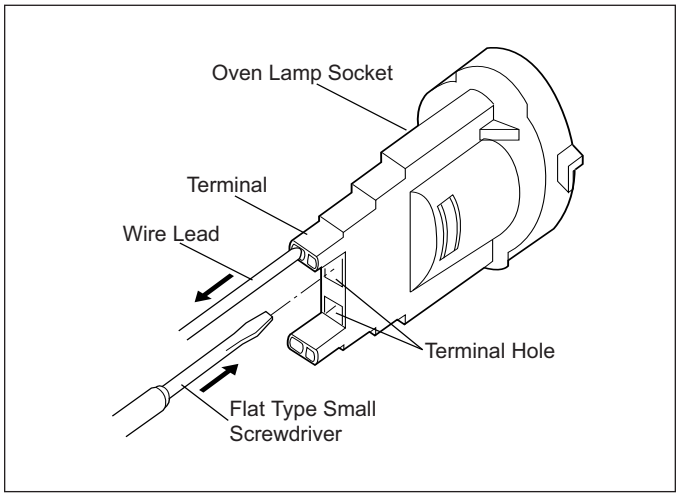


Figure 4-12. Wire Lead Removal

Oven Thermal Cut-out

The oven thermal cut-out is located on the top of oven cavity on right side of steam duct and is held in place by two spring clips.

To remove the oven thermal cut-out, the cabinet case must first be removed. Remove wire leads from oven thermal cut-out. Pull back on retaining clips and slide oven thermal cut-out up and out from under the retaining clips. (See Figure 4-13)

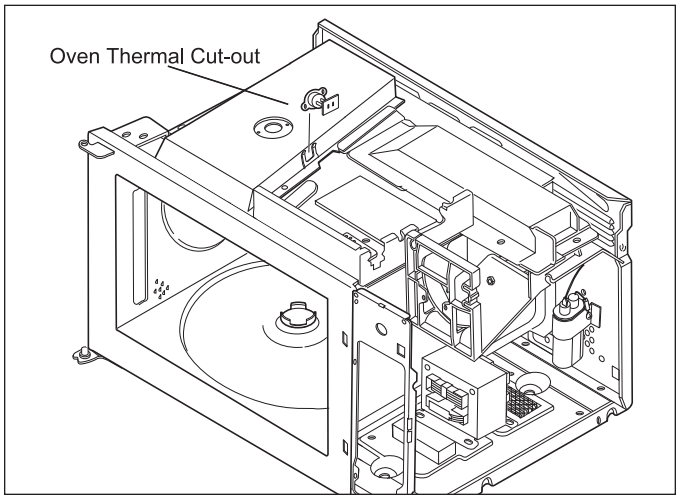


Figure 4-13. Removal Oven Thermal Cut-out

Convection Thermal Cut-out

The convection thermal cut-out is located on the right side of the left thermal protection plate and is held in place with two screws.

To remove convection thermal cut-out the outer case must first be removed. Disconnect wires from convection thermal cut-out. Extract two screws holding the convection thermal cut-out to thermal protection plate. Remove convection thermal cut-out from thermal protection plate. (See Figure 4-14)

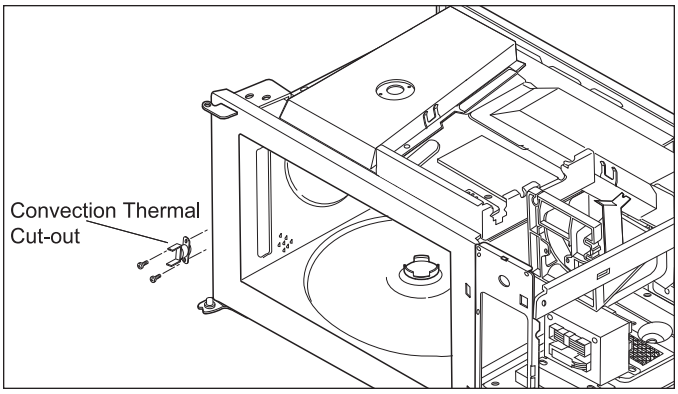


Figure 4-14. Convection Thermal Cut-out Removal

Magnetron Thermal Cut-out

The magnetron thermal cut-out is located on the waveguide on the top right of oven cavity and held in place with two spring clips.

To remove the magnetron thermal cut-out, the outer case must first be removed. Then, use a needle-nose pliers to disconnect all “Positive-Lock” wire connectors from the components on the assembly. (See Figure 4-15). Pull back on spring clips and slide magnetron thermal cut-out out from under spring clips. (See Figure 4-16)

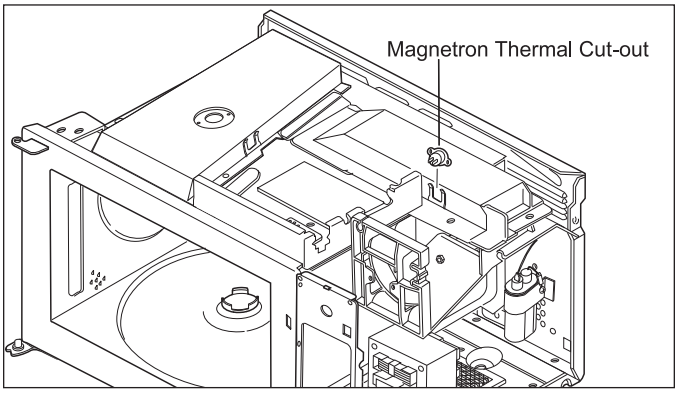


Figure 4-15. Magnetron Thermal Cut-out Removal

Chassis Support

The chassis support runs along the right hand side of oven frame. It is held in place with a locating slot and three screws. To remove the chassis support the cabinet case must first be removed. Extract the three mounting screws and remove chassis support. (See Figure 4-17)

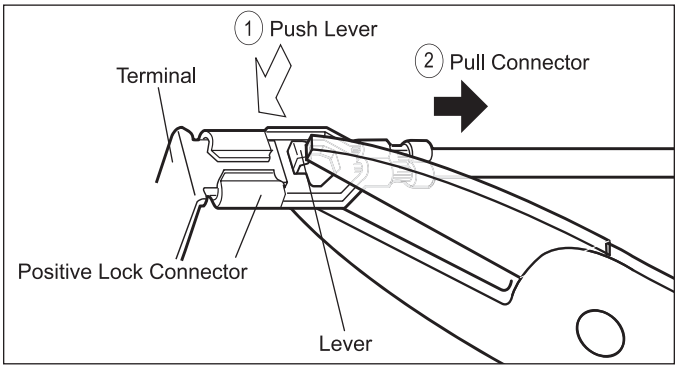


Figure 4-16. Disconnect Positive Lock

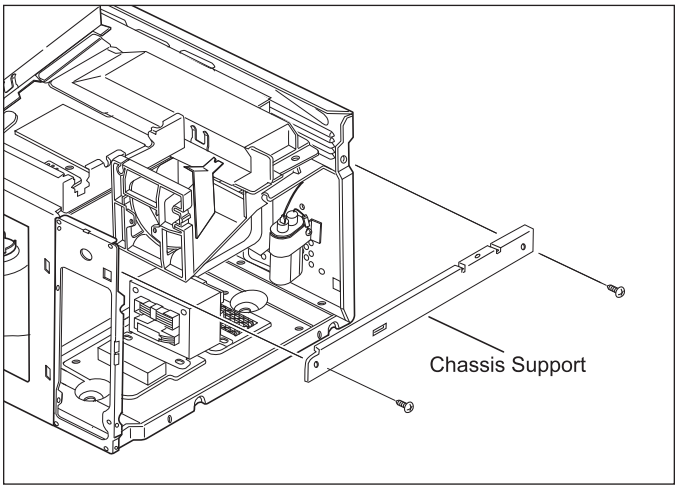


Figure 4-17. Chassis Support Removal

Cooling Fan Duct, Fan Blade and Fan Motor

NOTE: *Electrical shock potential, refer to warnings on page 4-2.*

The cooling fan and ducting is mounted to oven by a series of clips and locating pins. The fan blade is inserted onto the fan shaft and a small amount of Loc-tite is applied to help hold the blade on the shaft. The tabs at the top and right side of the fan duct fit into tabs on the back cover of the oven cavity to hold the duct in place.

Fan Duct - To remove the fan duct, the cabinet case must first be removed. The chassis support must also be removed. Then, remove wires from the wire retainers under the fan duct and disconnect from damper motor and switch. Pull the magnetron wire leads from the hole in the fan duct and remove ground wire. Then, remove wire leads from fan motor. Remove one screw holding the magnetron air guide and remove air guide. Bend back retaining tab on rear cabinet. With a needle-nose pliers press together retaining tabs located beneath the fan grounding screw. Bend right side of fan duct enough to clear oven frame and remove fan duct assembly from oven. (See Figure 4-18)

Fan Blade - To remove the fan blade, first follow the steps listed above to remove the fan duct. After the duct is removed, pull the fan blade from the shaft of the fan motor. (See Figure 4-18)

NOTE: *Because Loc-tite is used to secure blade to motor shaft, it may be necessary to hold fan motor rotor with pliers while pulling and rotating fan blade.*

Cooling Fan Motor - To remove the fan motor, first remove the fan duct. After the duct is removed, disconnect the wire leads from the fan motor. Extract the motor mounting screws from the back of the unit and lift the motor out. (See Figure 4-18)

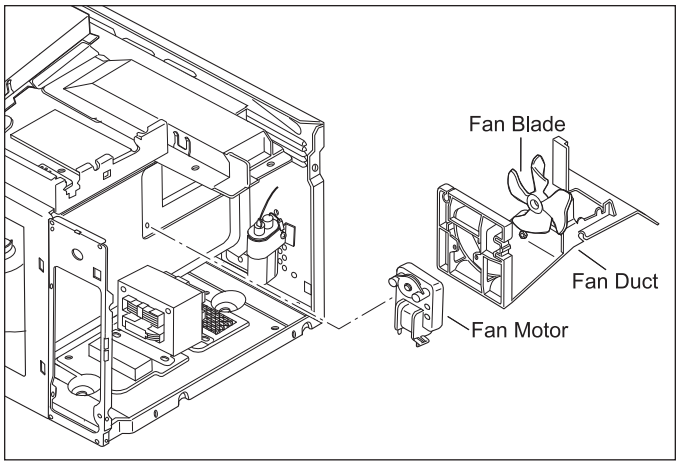


Figure 4-18. Fan Motor, Blade & Duct Removal

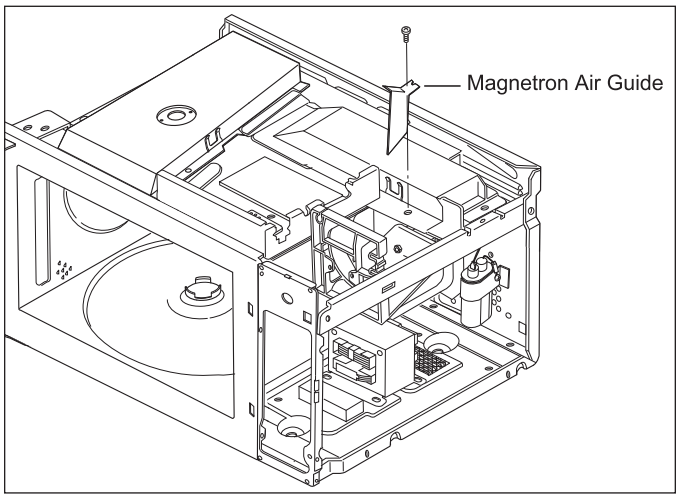


Figure 4-19. Magnetron Duct Removal

Magnetron and Magnetron Air Guide

NOTE: *Electrical shock potential, refer to warnings on page 4-2.*

The magnetron air guide is located to the left of the magnetron wave guide and held in place by one screw.

To remove the magnetron wave guide the outer case must first be removed. Then, extract one screw holding the air guide to magnetron wave guide. Remove air guide from oven. (See Figure 4-19)

The magnetron is attached to the mounting plate on the top right side of the oven cavity with four screws.

To remove the magnetron, the cabinet case, chassis support and fan duct assembly must be removed. Then, extract the magnetron mounting screws and pull the magnetron from the mounting plate. (See Figure 4-20)

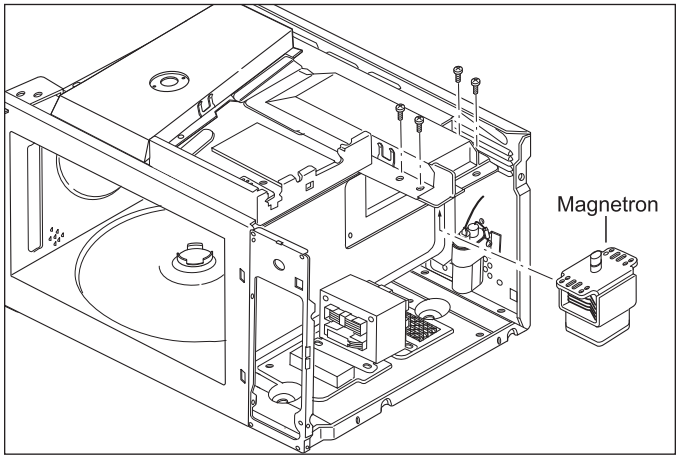


Figure 4-20. Magnetron Removal

Capacitor, Capacitor Band and Rectifier

NOTE: *Electrical shock potential, refer to warnings on page 4-2.*

The capacitor is held in place by the capacitor band. The capacitor band is attached to the rear panel with a screw on one side, while the other side fits into a channel on the rear panel. One end of the rectifier is connected to the capacitor band with a screw, the other end is attached to the wire connector at the capacitor end of the wire between the capacitor and the magnetron.

Capacitor and Capacitor Band - To remove the capacitor and capacitor band, the cabinet case must first be removed. Then, use a needle-nose pliers to disconnect the "Positive-Lock" wire connectors from the capacitor. (See Figure 4-21) Extract the screw that holds the capacitor band to the rear plate and pull the capacitor and capacitor band from the rear plate. (See Figure 4-22) Now, flex the legs of the capacitor band away from each other to release the capacitor from the band.

Rectifier - To remove the rectifier, follow the steps listed above to dismount the capacitor band first. Then, extract the screw which holds the rectifier to the capacitor band and cut off the wire connector at the capacitor end of the wire between the capacitor and the magnetron. (See Figure 4-23)

Transformer

NOTE: *Electrical shock potential, refer to warnings on page 4-2.*

Two corners of the transformer base fit into channels on the microwave oven base plate. Screws passing up through the base plate hold the other two corners of the transformer base to the base plate.

To remove the transformer, the cabinet case must first be removed. Then, use a needle-nose pliers to disconnect the "Positive-Lock" wire connectors from the transformer along with the "Positive-Lock" wire connector on the white wire at the capacitor. (See Figure 4-21) Now, extract the transformer mounting screws from the bottom side of the base plate and lift the transformer off the base plate. (See Figure 4-24)

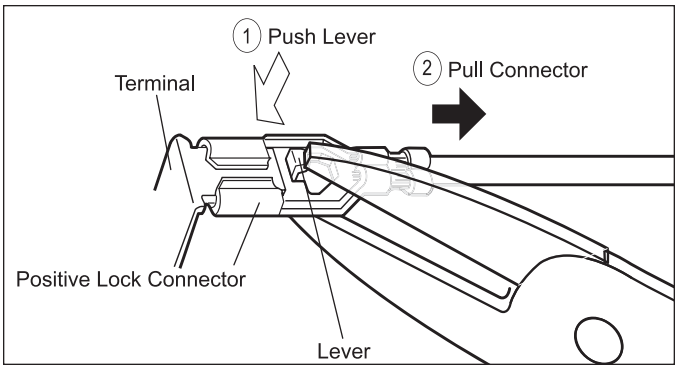


Figure 4-21. Disconnect Positive Lock Connectors

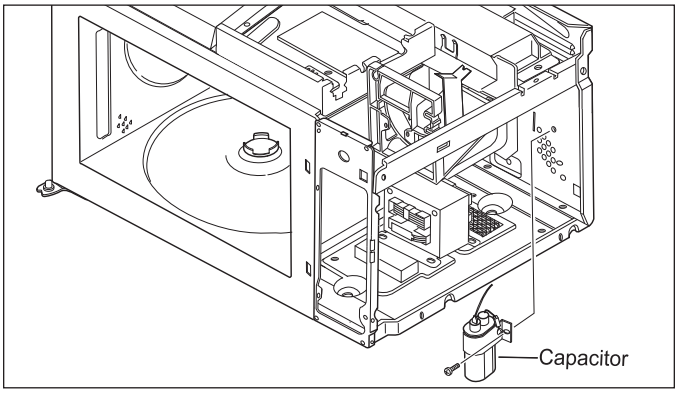


Figure 4-22. Capacitor & Band Removal

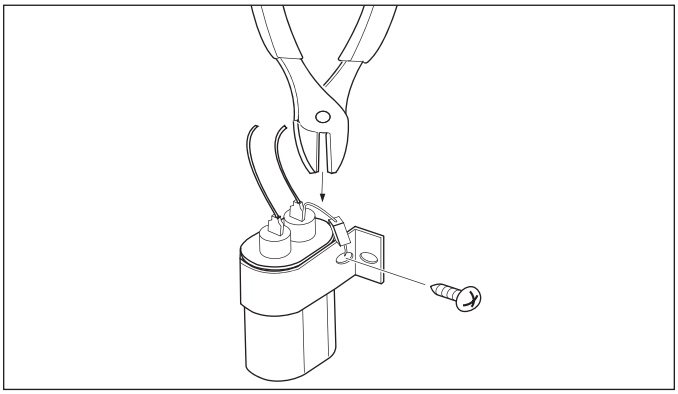


Figure 4-23. Rectifier Removal

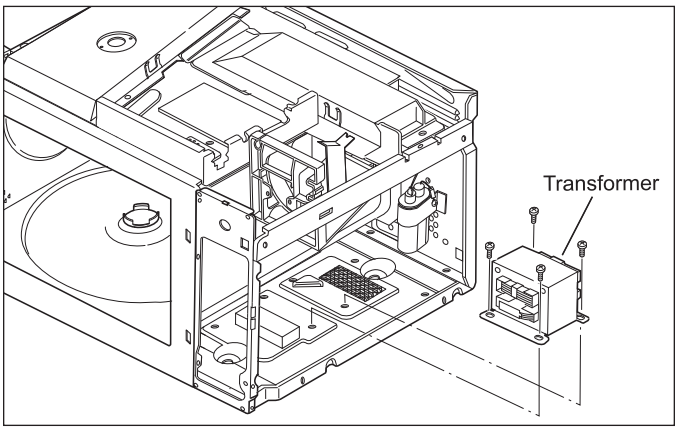


Figure 4-24. Transformer Removal

Thermistor

The thermistor is attached on the center of the left thermal protection plate.

To remove thermistor, the cabinet case must first be removed. Disconnect wires from power supply by holding on to the side of the quick disconnect and by pressing the plastic prong on quick disconnect. Separate the wire leads. Extract two mounting screws and remove thermistor from left thermal protection plate. (See Figure 4-25)

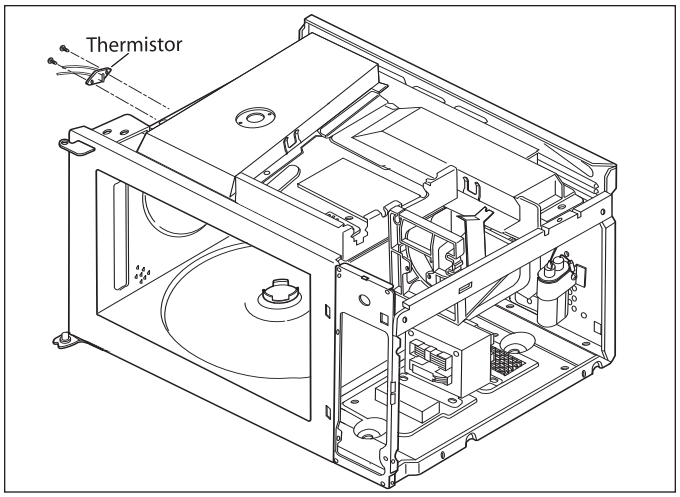


Figure 4-25. Thermistor Removal

AH (Absolute Humidity) Sensor and Sensor Duct

The AH sensor duct is positioned on the top left wall of the oven cavity and is held in place with four screws. The AH sensor is attached to the AH sensor duct with two screws.

AH Sensor - To remove the AH sensor, the cabinet case must first be removed. Then, disconnect the AH sensor wire lead from the back of the control panel assembly. Extract the two sensor mounting screws and pull the sensor from the sensor duct. (See Figure 4-26)

AH Sensor Duct - To remove the AH sensor duct, first follow the steps listed above to remove the AH sensor. After the sensor is removed, extract three duct mounting screws from the top left flange on top of oven cavity, then, remove the screw from inside oven cavity. (See

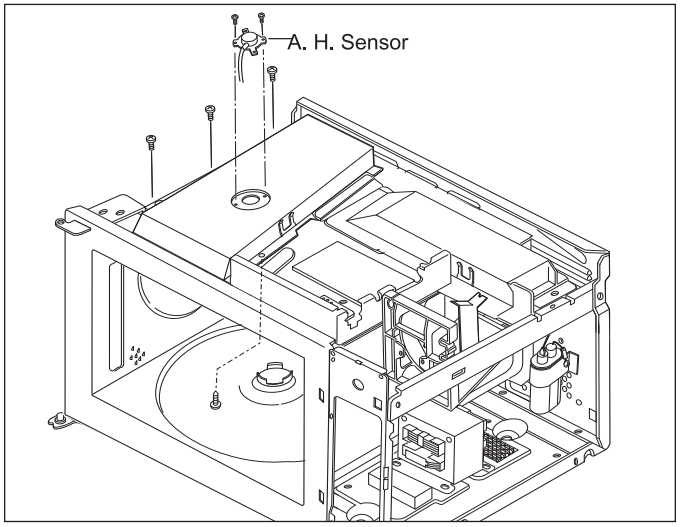


Figure 4-26. AH Sensor & Duct Removal

Convection Motor

The convection motor is located on the left side of oven and fastened to the convection motor mounting plate with two screws.

To remove convection motor the outer case must first be removed. Then, use a needle-nose pliers to disconnect the “Positive-Lock” wire connector from convection motor. (See Figure 4-27) Disconnect bottom wire lead to convection motor. Then, remove convection motor fan belt. Extract two screws holding convection motor mounting angle plate to base cabinet and thermal protection plate. (See Figure 4-28) Remove convection motor plate assembly from oven. Extract two screws holding convection motor to mounting plate. Remove pulley from motor shaft. Convection motor is now free.

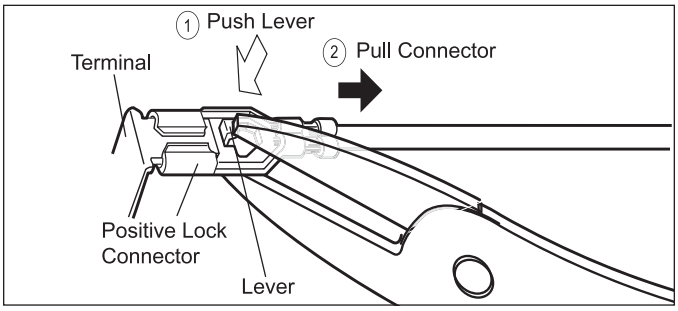


Figure 4-27. Disconnect Positive-Lock Connectors

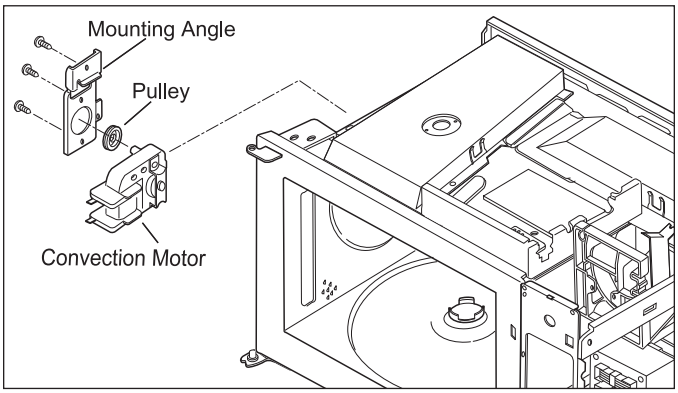


Figure 4-28. Convection Motor Removal

Heater Unit Assembly

The heater unit is located on left side of oven inside of left thermal protection plate.

To remove heater unit the outer case must first be removed. Wire leads must be disconnected from thermistor quick-disconnect, convection thermal cut-out, and convection motor. Then, use a needle-nose pliers to disconnect the “Positive-Lock” wire connector from convection motor and heating element. (See Figure 4-27) The convection motor mount must also be removed. On bottom of heater duct assembly remove plastic wire retainers from metal tabs with a needle-nose pliers. Next, extract two screws holding heater duct assembly to rear base cabinet. Extract three screws that fasten steam duct assembly and heater unit assembly to the oven chassis. From inside oven cavity, remove eight screws on left sidewall. (See Figure 4-29)
Heater unit assembly is now free. Remove heater unit assembly from oven.

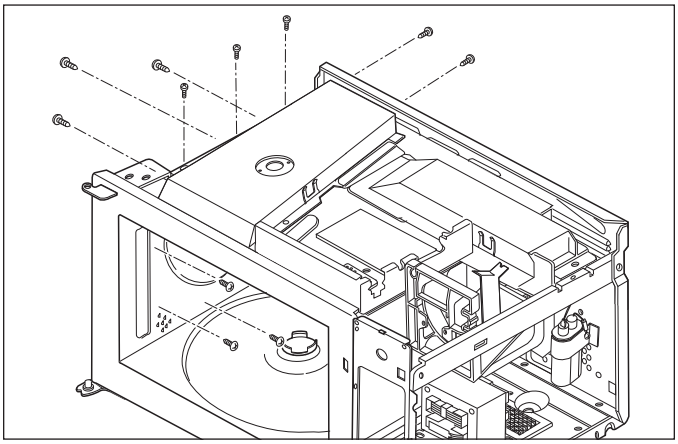


Figure 4-29. Screw Removal From Cabinet

Heater Element

The heater element is located inside the heater unit assembly.

To remove heater element, extract two screws holding heater element to heater duct assembly. Loosen screws that fasten the heating element holders to heater duct assembly and remove heating element. (See Figure 4-30)

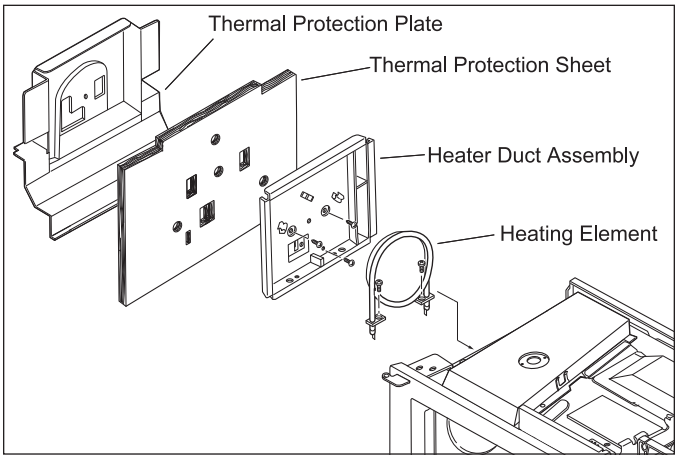


Figure 4-30. Heating Element Removal

Turntable Motor

NOTE: *8kg (17 1/2lbs) Maximum weight limit for turntable motor.*

The turntable motor is attached to the bottom side of the oven cavity with two screws.

To remove the turntable motor and cover, the turntable tray and turntable support must first be removed. Then, lay the oven on its backside or upside down, being careful not to scratch the counter top or the cabinet case. Extract screw holding turntable motor cover to bottom of oven. Remove turntable motor cover. Disconnect wire leads from turntable motor. Extract two screws holding turntable motor to base cabinet. Remove turntable motor from oven. (See Figure 4-31)

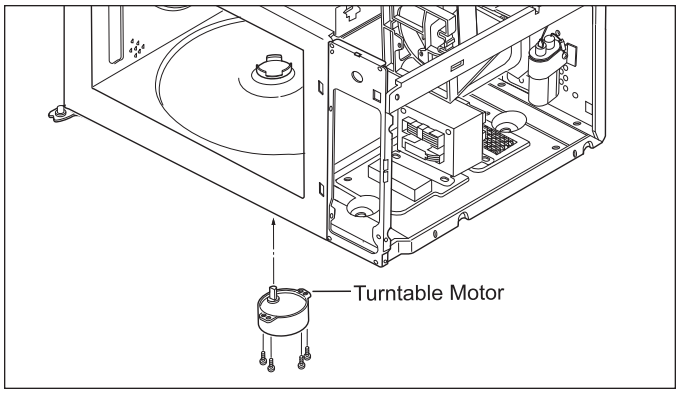


Figure 4-31. Turntable Motor Cover Removal

Damper Assembly

NOTE: *Electrical shock potential, refer to warnings on page 4-2.*

The damper assembly is located on the right side of oven between fan and magnetron.

To remove damper assembly the outer case must first be removed. Then, use a needle-nose pliers to disconnect the “Positive-Lock” wire connector from damper motor and damper motor switch. (See Figure 4-32) Extract two screws holding damper assembly to oven cavity. Damper assembly is now free to slide down and out of oven. (See Figure 4-33)

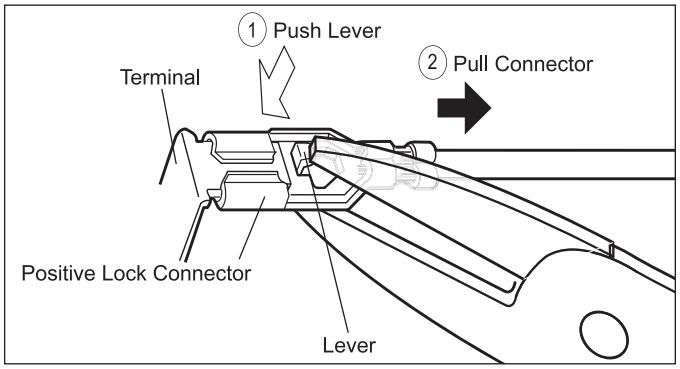


Figure 4-32. Disconnect Positive Lock

Damper Motor and Switch

The damper motor and switch is located under the damper assembly.

To remove the damper switch and motor the outer case must first be removed. Then, use a needle-nose pliers to disconnect the “Positive-Lock” wire connector from damper motor and damper motor switch. (See Figure 4-32) Extract the screw holding the damper motor to the damper assembly. Slide the damper motor from assembly and out from the retaining clip. (See Figure 4-33) The damper assembly must be removed to access the screw holding the damper switch. Extract the screw holding the damper switch to the damper assembly. The damper switch is now free. (See Figure 4-33)

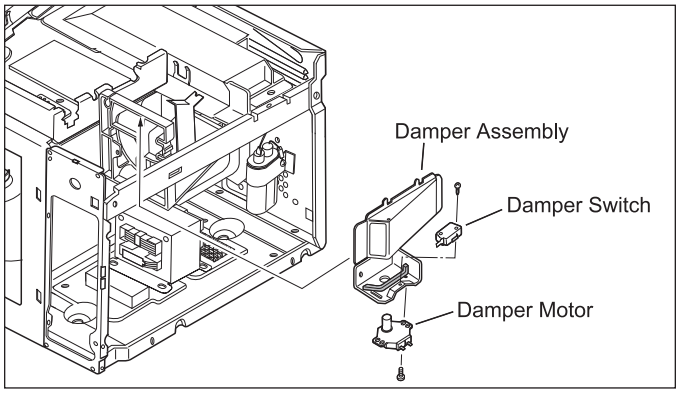


Figure 4-33. Damper Assembly Removal

SECTION 5

PART LISTS WITH EXPLODED VIEWS

	Ref. #	Part #	Description	Qty.

NOTE: *The parts with " **!** " at left may cause undue microwave exposure if defective or installed improperly.*
*The parts with " **V** " at left are used in voltage above 250 Volts. Observe all warnings when servicing.*

ELECTRICAL PARTS

	1-1	806146	Power Supply Cord	1
	1-2	806147	Monitor Fuse 20A and Monitor Switch (v-5220D) Assembly	1
	1-3	806148	Noise Filter	1
	1-4	806149	Primary Interlock Switch/ Third Door Switch/ Door Sensing Switch	3
	1-5	806150	Thermistor	1
	1-6	806151	Damper Switch	1
	1-7	806152	Magnetron Thermal Cut-out 125°C .	1
	1-8	806153	Oven and Convection Thermal Cut-out 150°C	2
	1-9	806154	Damper Motor	1
	1-10	806155	Oven Lamp	1
	1-11	806156	Oven Lamp Socket	1
	1-13	806157	Convection Fan Motor	1
	1-14	806158	Fan Motor	1
	1-15	806159	Heating Element	1
V	1-16	806160	Power Transformer	1
V	1-17	806161	H.V. Capacitor	1
V	1-18	806162	H.V. Rectifier Assembly	1
! V	1-19	806163	Magnetron	1
! V	1-19	806164	Magnetron (Interchangeable)	1
	1-20	806165	Turntable Motor	1
	1-21	806166	AH Sensor	1

CABINET PARTS

	2-1	806167	Outer Case Cabinet	1
	2-2	-	Base Cabinet (Not Replaceable)	1
	2-3	806169	Foot	4
	2-4	-	Rear Cabinet (Not Replaceable)	1
	2-5	806170	Cord Holder	1
	2-6	806171	Capacitor Holder	1
	2-7	806172	Oven Hinge (Lower)	1
!	2-8	806173	Latch Hook	1
	2-9	806174	Switch Lever	1
	2-10	806175	Turntable Motor Cover	1
	2-11	806176	CSA Barrier	1

CONTROL PANEL PARTS

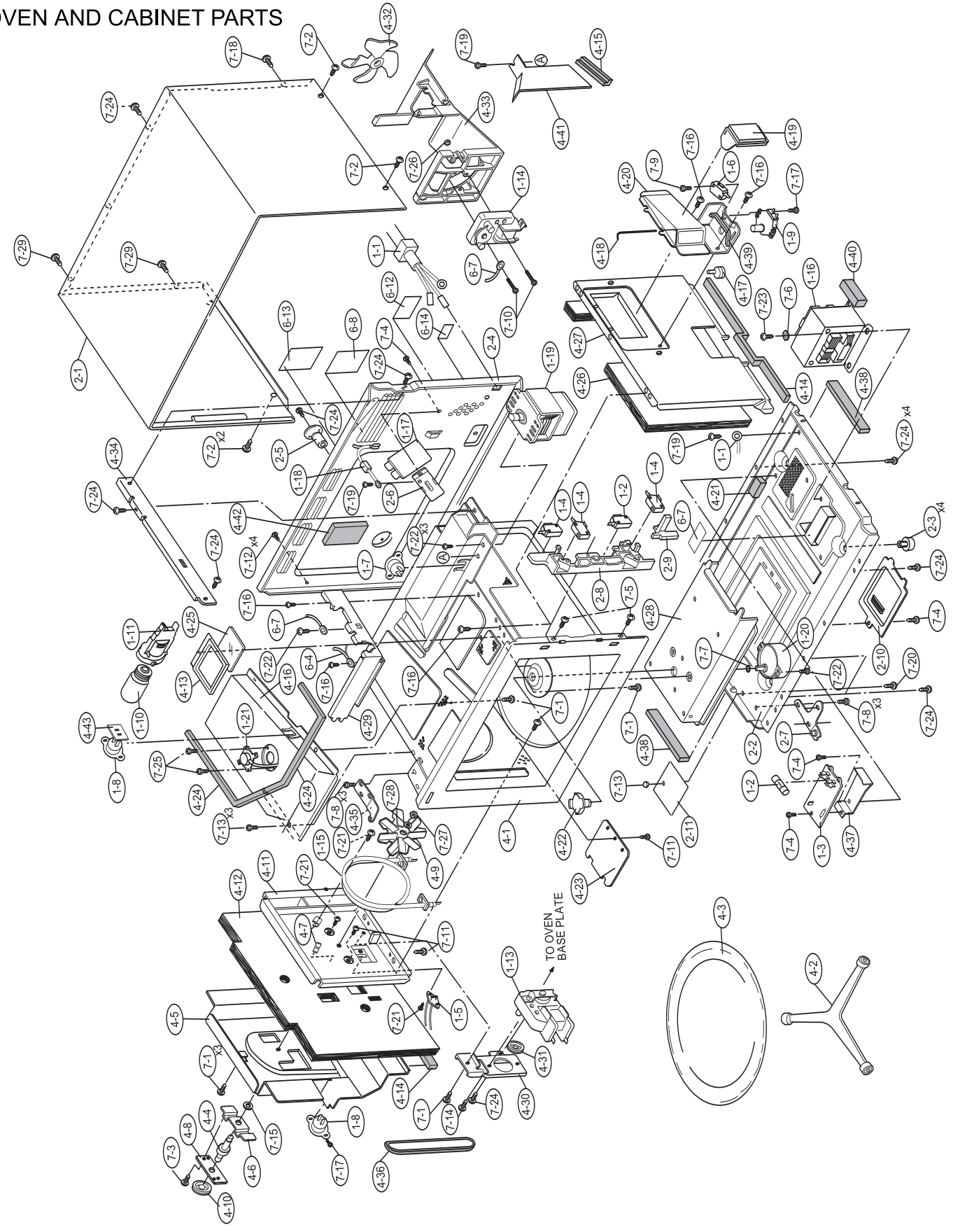
	3-1	806177	Control Unit	1
	3-2	809109	Control Panel Frame with Key Unit	1
	3-2-1	809108	Key Unit	1
	3-2-2	806180	Open Button	1
	3-2-3	806181	Open Button Spring	1
	3-3	806182	Control Panel Back Plate	1
	3-4	806183	Open Lever	1
	3-5	806184	Open Shaft	1
	3-6	806185	Screw ; Control Unit Mtg.	3
	3-7	806186	Screw ; Control Panel Back Plate Mtg.	3
	3-8	806187	Screw ; Control Panel Mtg.	2
	3-9	806188	Screw ; Power Unit Assy.	2

Ref. #	Part #	Description	Qty.
		OVEN PARTS	
4-1	-	Oven Cavity Assembly (Not Replaceable)	1
4-2	806190	Turntable Support	1
4-3	806191	Turntable Tray	----
	810541	Popcorn Tray (Not Shown)	
4-4	806192	Bearing Assy.	1
4-5	806193	Thermal Protection Plate (Left)	1
4-6	806194	Bearing Mounting Plate	1
4-7	806195	Heater Element Holder	1
4-8	806196	Bearing Holder Plate	1
4-9	806197	Convection Fan	1
4-10	806198	Pulley (F)	1
4-11	806199	Heater Duct Assembly	1
4-12	806200	Thermal Protection Sheet (Left)	1
4-13	806201	Glass Mounting Plate	
4-14	806202	Cushion	
4-15	806203	Cushion	
4-16	806204	Steam Duct Assembly	
4-17	806205	Damper Cam	
4-18	806206	Damper Shaft	
4-19	806207	Damper Door Assembly	
4-20	806208	Damper Duct	
4-21	806209	Cushion	
4-22	806210	Turntable Coupling	
4-23	806211	Wavecover Guide	
4-24	806212	Cushion	
4-25	806213	Light Glass	
4-26	806214	Thermal Protection Sheet (Right)	
4-27	806215	Thermal Protection Plate (Right)	
4-28	806216	Air Guide (Bottom)	
4-29	806217	Air Guide (Right)	
4-30	806218	Convection Motor Mounting Plate	
4-31	806219	Pulley (M)	
4-32	806220	Fan Blade	
4-33	806221	Cooling Fan Duct	
4-34	806222	Chassis Support	
4-35	806223	Oven Hinge (Upper)	
4-36	806224	Convection Fan Belt	
4-37	-	Nose Unit Angle (Not Replaceable)	
4-38	806225	Cushion	
4-39	806226	Damper Duct Cushion	
4-40	806227	Cushion	
4-41	806228	Magnetron Air Guide	
4-42	806229	Thermal Protection Sheet	
4-43	806230	Thermo Cover	

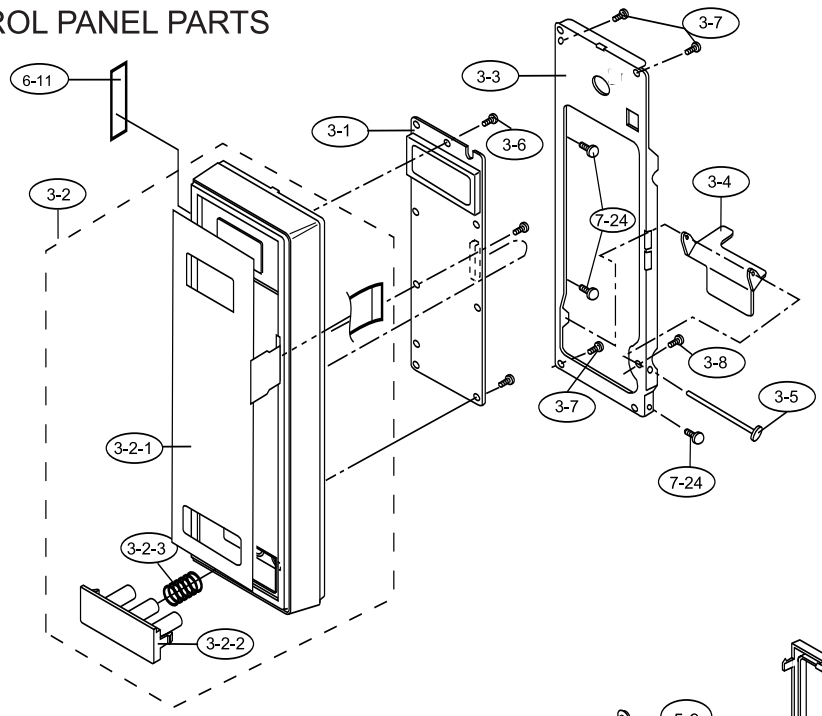
	Ref. #	Part #	Description	Qty.
			DOOR PARTS	
!	5	806231	Door Frame Assembly	1
!	5-1	806232	Door Panel	1
	5-2	806233	Choke Cover	1
	5-3	806235	Latch Angle	1
!	5-4	806236	Latch Head	1
	5-5	806237	Latch Head Spring	1
	5-6	806333	Thermal Plate U	1
	5-7	806328	Thermal Plate R	1
	5-8	806238	Screw, 4mm x 8mm	6
	5-9	806239	Screw, 3mm x 8mm	12
	5-10	806329	Cushion	1
			MISCELLANEOUS	
	6-1	806240	Low Rack (Boiling Trivet)	1
	6-2	806241	High Rack (Baking Rack)	1
	6-3	806242	Thermistor Harness	1
	6-4	806243	Main Wire Harness	1
	6-5	806244	High Voltage Wire B	1
	6-6	806245	Grounding Wire (Cooling Fan Motor)	1
	6-7	806246	Monitor Caution Label	1
	6-8	806247	NHW Caution Label	1
	6-9	806248	Operation Manual	1
	6-10	806249	Purse Lock LL	1
	6-11	806250	User Caution	1
	6-12	806251	BIK Label	1
	6-13	806252	GND Caution Label	1
	6-14	806330	UL Screw Label	1
			SCREWS, NUTS & WASHERS	
	7-1	806253	Screw, 4mm x 10mm	14
	7-2	806254	Screw, 4mm x 12mm	4
	7-3	806255	Screw, 4mm x 8mm	2
	7-4	806256	Screw, 4mm x 8mm	4
	7-5	806257	Special Screw	2
	7-6	806258	Washer, 6mm x 0.7mm	1
	7-7	806259	Washer	1
	7-8	806260	Special Screw	6
	7-9	806261	Screw, 3mm x 14mm	1
	7-10	806262	Screw, 4mm x 25mm	2
	7-11	806263	Screw, 4mm x 6mm	7
	7-12	806264	Screw, 4mm x 8mm	7
	7-13	806265	Special Nut	1
	7-14	806266	Screw, 4mm x 6mm	2
	7-15	806267	Washer	1
	7-16	806268	Screw, 4mm x 8mm	6
	7-17	806331	Screw, 4mm x 6mm	3
	7-18	806269	Special Screw	1
	7-19	806270	Screw, 4mm x 8mm	3
	7-20	806271	Screw, 4mm x 6mm	1
	7-21	806272	Screw, 3mm x 6mm	4
	7-22	806273	Screw, 4mm x 8mm	6
	7-23	806274	Screw, 6mm x 14mm	2

7-24	806275	Screw, 4mm x 12mm	21
7-25	806276	Screw, 3mm x 8mm	2
7-26	806277	Nut, 4mm x 3.2mm	2
7-27	806278	Nut, 4mm x 3.2mm	1
7-28	806279	Washer, 4mm x 1mm	1
7-29	806280	Screw, UL	2

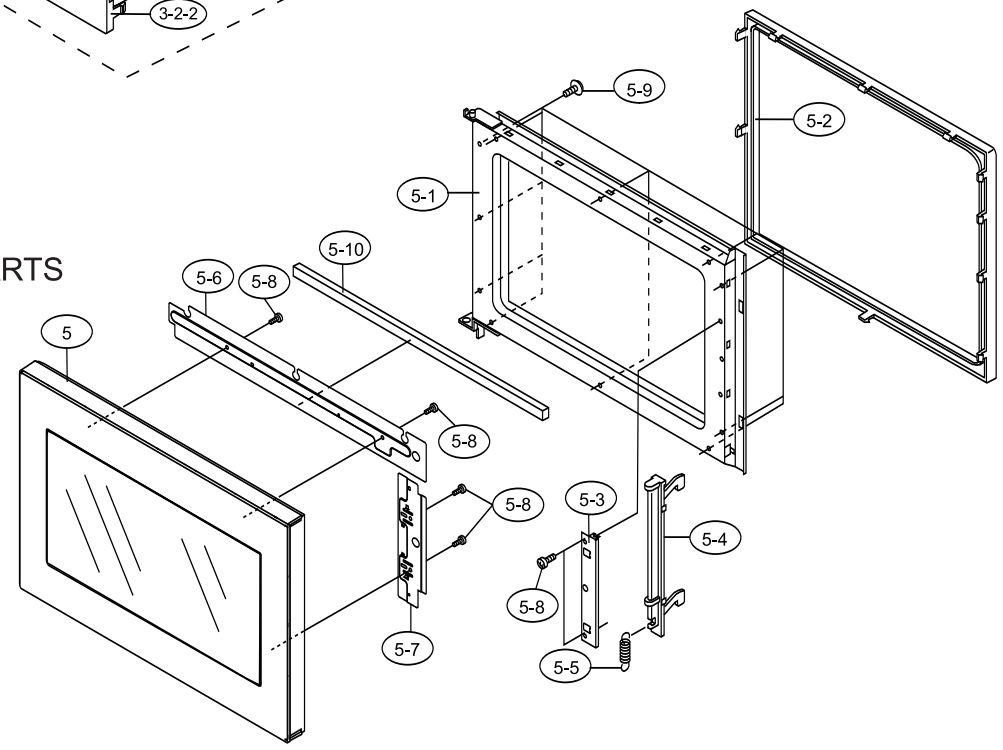
OVEN AND CABINET PARTS



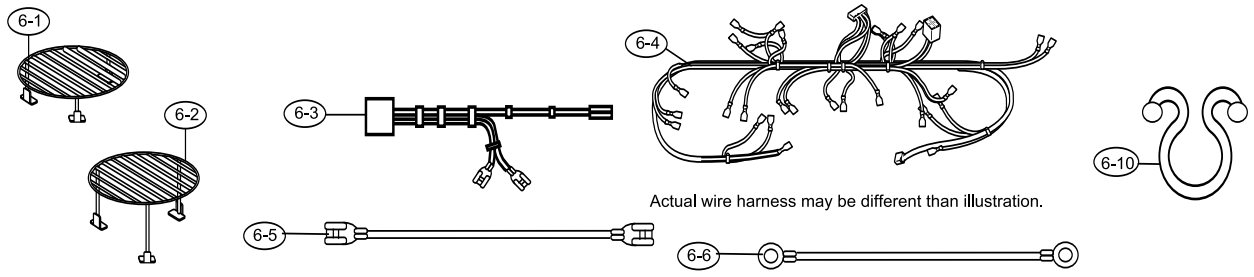
CONTROL PANEL PARTS



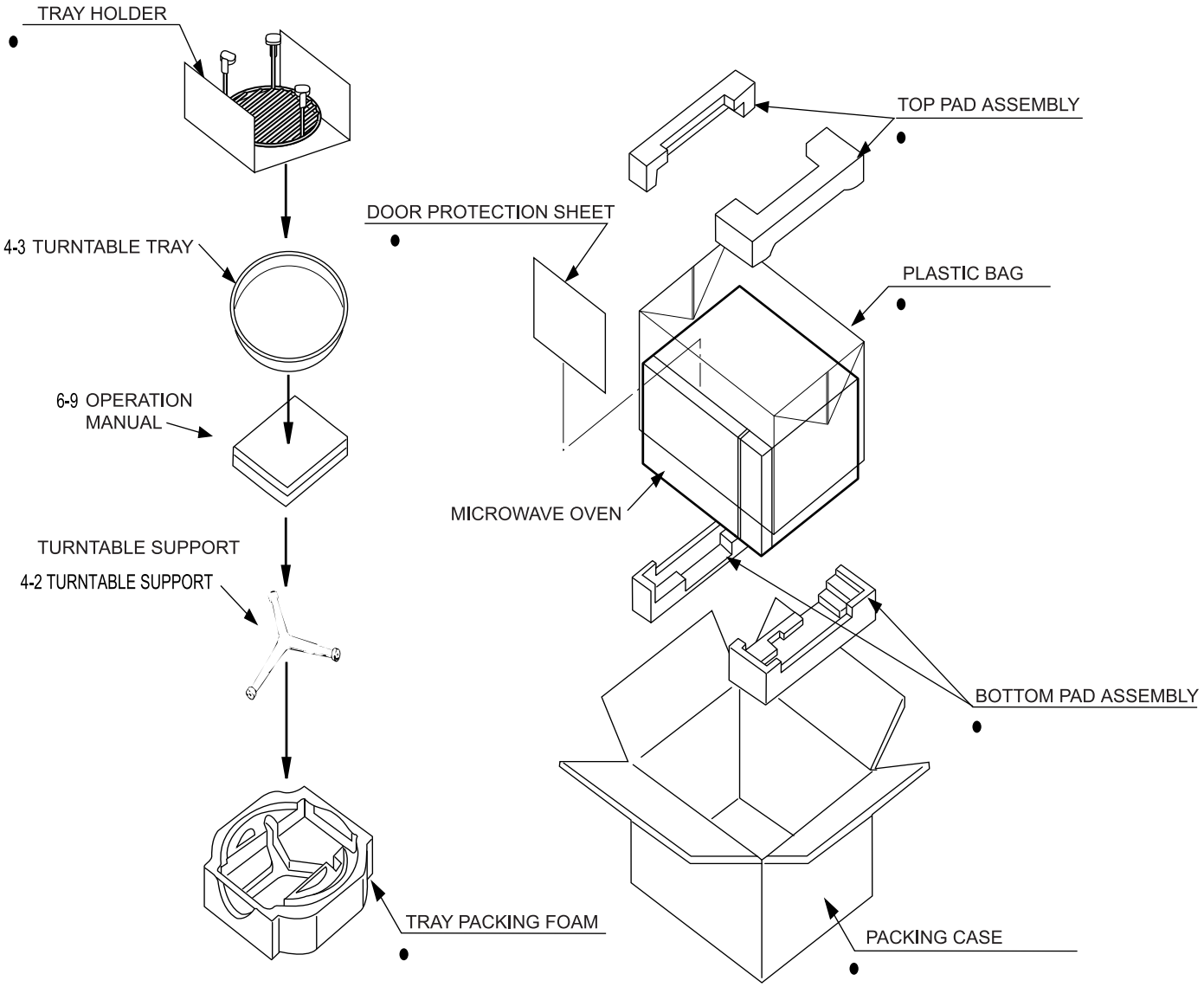
DOOR PARTS



MISCELLANEOUS



PACKING AND ACCESSORIES



● NOT REPLACEABLE ITEMS

SECTION 6

TROUBLESHOOTING AND TECHNICAL DATA

TROUBLESHOOTING AND TECHNICAL DATA

This section of the manual combines the Troubleshooting Guide with Technical Data. The troubleshooting table on the following page lists the condition and problems, as well as which parts need to be replaced or checked and which test procedures to follow. The test procedures on the pages following the troubleshooting table contain the appropriate technical data needed for each test.

When troubleshooting the microwave oven, it will be helpful to follow the Detailed Operating Sequence when performing the checks. Many of the possible causes of trouble will require that a specific test be performed. These tests are given a procedure letter which will be found in the "Test Procedure" portion of this troubleshooting guide. See “How to Use This Troubleshooting Table” on following page.

Before continuing, take note of the WARNING and Important Notes below.

⚠ WARNING

- **MICROWAVE OVENS CONTAIN CIRCUITRY CAPABLE OF PRODUCING VERY HIGH VOLTAGE AND CURRENT. CONTACT WITH THE FOLLOWING COMPONENTS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH:**
  - **TRANSFORMER**
  - **RECTIFIER**
  - **HIGH VOLTAGE HARNESS**
  - **MAGNETRON**
  - **CAPACITOR**

- **TO AVOID ELECTRIC SHOCK DURING TROUBLESHOOTING, NEVER TOUCH ANY PART OF THE ELECTRICAL CIRCUIT WITH HANDS OR UNINSULATED TOOLS WHILE THE POWER IS CONNECTED.**

- **BEFORE SERVICING THE MICROWAVE OVEN, THE CAPACITOR MUST BE DISCHARGED BY SHORTING THE CONNECTING LEAD OF THE RECTIFIER AGAINST THE CHASSIS WITH AN INSULATED SCREWDRIVER. FAILURE TO FOLLOW THIS STEP COULD RESULT IN SERIOUS PERSONAL INJURY OR DEATH. *NOTE: THE CAPACITOR REMAINS CHARGED APPROXIMATELY 60 SECONDS AFTER THE OVEN IS SWITCHED OFF. WAIT FOR 60 SECONDS, THEN SHORT THE CAPACITOR TO THE CHASSIS.***

IMPORTANT NOTE: *If the oven becomes inoperative because of a blown C/T fuse, defective monitor switch, interlock switch or door sensing switch, the complete Latch Hook/Switch Assembly must be replaced. See part #802955 in the Service Parts Price List.*

IMPORTANT NOTE: *When troubleshooting, it may be necessary in some cases to supply power to the unit with the outer cabinet case removed. In this event:*

1. *Disconnect the power supply cord, and then remove outer cabinet case.*
2. *Open the door and block it open.*
3. *Discharge high voltage capacitor.*
4. *Disconnect the leads to the primary of the power transformer.*
5. *Ensure that the leads remain isolated from other components and oven chassis by using insulation tape.*
6. *Only after performing the five steps listed above should the power supply cord be reconnected.*

When the testing is completed:

1. *Disconnect the power supply cord, then remove outer case.*
2. *Open the door and block it open.*
3. *Discharge high voltage capacitor.*
4. *Reconnect the leads to the primary of the power transformer.*
5. *Reinstall the outer cabinet.*
6. *Reconnect the power supply cord after the outer case is installed.*
7. *Run the oven and check all functions.*

How to use this table:

Letters indicate which test procedure to be performed. Test procedures can be found in alphabetical order on the following pages.

TEST PROCEDURE	CONDITION / PROBLEM / POSSIBLE CAUSE AND DEFECTIVE PARTS	OFF CONDITION					COOKING CONDITION				(MICROWAVE)					(CONVECTION)						(SENSOR COOKING)
		Home fuse blows when power cord is plugged into wall receptacle.	Monitor fuse blows when power cord is plugged into wall receptacle	88:88 does not appear in display when power cord is first plugged into wall receptacle.	Display does not operate properly when STOP/CLEAR pad is touched. (The time of day should appear on the display with beep sound.)	Oven lamp does not light with door opened.	Oven lamp does not light in cook cycle. (It light when door is opened).	Cooking cycle runs 1 minute then shuts down.	Oven lamp light, but turntable motor does not operate.	Turntable motor operates normally but cooling fan motor does not operate.	Oven does not go into a cook cycle, when START pad is touched.	Low or no power is produced during microwave cooking (The food is heated incompletely or not heated at all)	Extremely uneven heating is produced in oven load (food).	Function of variable cooking does not operate properly except HIGH power.	Function of COMPU DEFROST does not operate properly.	CONV indicator lights, but oven does not go into cook cycle when START pad is touched.	CONV indicator lights, but heating element does not heat.	Temperature in the oven cavity is lower or higher than preset.	Cooling fan motor runs intermittently or all the time.	Convection cycle runs 4 minutes and 15 seconds then shuts down.	Oven in the sensor cooking condition but AH sensor does not end or AH sensor turns off about max. 30 min. after start.
A	MAGNETRON											O									
B	POWER TRANSFORMER											O									
C	H.V. RECTIFIER ASSEMBLY											O									
D	HIGH VOLTAGE CAPACITOR											O									
E	THERMAL CUT-OUT			O																	
F	PRIMARY INTERLOCK SWITCH					O					O					O	O				
G	SECONDARY INTERLOCK SWITCH				O	O					O										
H	MONITOR SWITCH		O																		
I	MONITOR FUSE			O												O	O				
J	TOUCH CONTROL PANEL		O	O	O	O	O	O		O	O	O		O	O	O	O	O	O	O	O
K	KEY UNIT				O						O					O	O	O			
L	RELAY RY-1		O			O	O									O	O			O	
L	RELAY RY-2											O		O							
L	RELAY RY-3															O	O	O		O	
L	RELAY RY-4							O													
L	RELAY RY-5																	O			
L	RELAY RY-6									O									O		
N	FOIL PATTERN ON PWB.			O																	
O	AH SENSOR																				O
P	CONVECTION HEATER															O	O	O			
Q	THERMISTOR																	O	O	O	
R	DAMPER MOTOR							O													
S	DAMPER SWITCH							O													
T	LOW VOLTAGE																	O			
Replace	OVEN LAMP OR SOCKET					O															
Replace	FAN MOTOR									O									O		
Replace	TURNTABLE MOTOR								O				O								
Replace	CONVECTION MOTOR																	O			
Check	LOOSE WIRING		O	O	O	O		O	O	O	O	O	O			O	O	O	O	O	O
Check	SHORTED IN POWER CORD	O		O																	
Check	NO POWER AT OUTLET			O																	
U	NOISE FILTER		O	O														O			

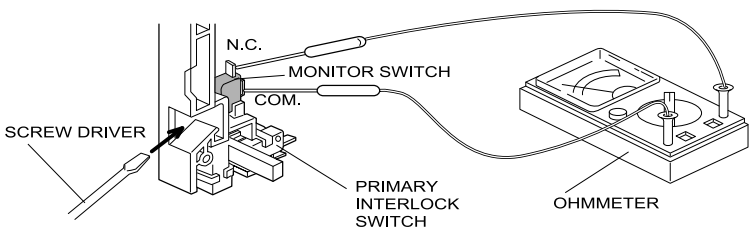
TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
A	**MAGNETRON ASSEMBLY TEST** 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. To test for an open filament, isolate the magnetron from the high voltage circuit. A continuity check across the magnetron filament leads should indicate less than 1 ohm. 5. To test for a shorted magnetron, connect the ohmmeter leads between the magnetron filament leads and chassis ground. This test should indicate an infinite resistance. If there is little or no resistance the magnetron is grounded and must be replaced. 6. Reconnect all leads removed from components during testing. 7. Reinstall the outer cabinet case, then reconnect power supply cord. 8. Run the oven and check all functions. ***NOTE:*** *Power output of the magnetron (also referred to as Microwave output power) can be measured by performing a water temperature rise test. This test should only be used if above tests do not indicate a faulty magnetron and there is no defect in the following components or wiring: power transformer, high voltage capacitor and silicon rectifier. This test will require a 16 ounce (453cc) measuring cup and an accurate mercury thermometer or thermocouple type temperature tester. For accurate results, the following procedure must be followed carefully:* *The following test procedure should be performed with the microwave oven fully assembled.* ***WARNING:*** *HIGH VOLTAGE IS PRESENT DURING THE COOK CYCLE, SO EXTREME CAUTION SHOULD BE OBSERVED.* *1. Fill the measuring cup with 16 oz. (453cc) of tap water and measure the temperature of the water with a thermometer or thermocouple temperature tester. Stir the thermometer or thermocouple through the water until the temperature stabilizes. Record the temperature of the water.* *2. Place the cup of water in the oven. Operate oven at POWER 10(HIGH) selecting more than 60 seconds cook time. Allow the water to heat for 60 seconds, measuring with a stop watch, second hand of a watch or the digital read-out countdown.* *3. Remove the cup from the oven and again measure the temperature, making sure to stir the thermometer or thermocouple through the water until the maximum temperature is recorded.* *4. Subtract the cold water temperature from the hot water temperature. The normal result should be 38°F to 78°F (21°C to 42.6°C) rise in temperature. If the water temperatures are accurately measured and tested for the required time period the test results will indicate if the magnetron tube has low power output (low rise in water temperature) which would extend cooking time or high power output (high rise in water temperature) which would reduce cooking time. Because cooking time can be adjusted to compensate for power output, the magnetron tube assembly should be replaced only if the water temperature rise test indicates a power output well above or below the normal limits. The test is only accurate if the power supply line voltage is 120 volts and the oven cavity is clean.*
B	**POWER TRANSFORMER TEST** 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. Disconnect the primary input terminals and measure the resistance of the transformer with an ohmmeter. Check for continuity of the coils with an ohmmeter. On the R x 1 scale, the resistance of the primary coil should be less than 1 ohm and the resistance of the high voltage coil should be approximately 90 ohms; the resistance of the filament coil should be less than 1 ohm. 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer cabinet case, then reconnect power supply cord. 7. Run the oven and check all functions. **WARNING:** HIGH VOLTAGE IS PRESENT AT THE HIGH VOLTAGE TERMINAL. DO NOT ATTEMPT TO MEASURE HIGH VOLTAGE AT THE FILAMENT.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
C	**HIGH-VOLTAGE RECTIFIER TEST** 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. Isolate the rectifier from the circuit. Using the highest ohm scale of the meter, read the resistance across the terminals and observe meter reading, then reverse the leads to the rectifier terminals and observe meter reading. If a short is indicated in both directions, or if an infinite resistance is read in both directions, the rectifier is probably defective and should be replaced. ***NOTE:*** *Be sure to use an ohmmeter that will supply a forward bias voltage of more than 6.3 volts.* 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer cabinet case, then reconnect power supply cord. 7. Run the oven and check all functions.
D	**HIGH VOLTAGE CAPACITOR TEST** 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. If the capacitor is open, no high voltage will be available to the magnetron. Disconnect input leads and check for short or open between the terminals using an ohmmeter. Checking with a high ohm scale, if the high voltage capacitor is normal, the meter will indicate continuity for a short time and should indicate 10 ohms once the capacitor is charged. If the above is not the case, check the capacitor with an ohmmeter to see if it is shorted between either of the terminals and case. If it is shorted, replace the capacitor. 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer cabinet case, then reconnect power supply cord. 7. Run the oven and check all functions.
E	**OVEN THERMAL CUT-OUT TEST** 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. A continuity check across the oven thermal cut-out terminals should indicate a closed circuit unless the temperature of the cavity temperature fuse reaches approximately 302°F (150°C). An open oven thermal cut-out indicates overheating of the oven, replace the oven thermal cut-out and check inside of oven cavity and for improper setting of cooking time or operation of control unit. Check for restricted air flow through the vent holes of the oven cavity, especially the cooling fan and air guide. 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer cabinet case, then reconnect power supply cord. 7. Run the oven and check all functions. **MAGNETRON THERMAL CUT-OUT TEST** 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. A continuity check across the magnetron fuse terminals should indicate a closed circuit unless the temperature of the magnetron cut-out fuse reaches approximately 257°F (125°C). An open magnetron thermal cut-out indicates overheating of the magnetron. Replace the magnetron thermal cut-out and check for restricted air flow to the magnetron, especially the cooling fan air guide. 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer cabinet case, then reconnect power supply cord. 7. Run the oven and check all functions.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
	CONVECTION THERMAL CUT-OUT 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. A continuity check across the oven thermal cut-out terminals should indicate a closed circuit unless the temperature of the cavity temperature fuse reaches approximately 302°F (150°C). An open oven thermal cut-out indicates overheating of the oven, replace the oven thermal cut-out and check inside of oven cavity and for improper setting of cooking time or operation of control unit. Check for restricted air flow through the vent holes of the oven cavity, especially the cooling fan and air guide. 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer cabinet case, then reconnect power supply cord. 7. Run the oven and check all functions.
F	**PRIMARY INTERLOCK SWITCH AND THIRD DOOR TEST** 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. Isolate switch and connect ohmmeter to common(COM.) and normally open (NO) terminal of switch. The meter should indicate an open circuit with the door open and a closed circuit with door closed. If improper operation is indicated, replace the switch.
G	**SECONDARY INTERLOCK SWITCH TEST** *DOOR SENSING SWITCH* 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. Isolate the switch and connect the ohmmeter to the common (COM) and normally open (NO) terminal of the switch. The meter should indicate an open circuit with the door open and a closed circuit with the door closed. If improper operation is indicated, replace the door sensing switch 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer cabinet case, then reconnect power supply cord. 7. Run the oven and check all functions. *SECONDARY INTERLOCK RELAY (RY2)* 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. Disconnect two wire leads from the male tab terminals of Secondary Interlock Relay (RY2). Check the state of the relay contacts with an ohmmeter, contacts should be open. If contacts are closed, replace entire circuit board or relay itself. 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer cabinet case, then reconnect power supply cord. 7. Run the oven and check all functions.
H	**MONITOR SWITCH TEST** 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. Before performing this test, make sure secondary interlock switch and primary interlock relay are operating properly. Then, disconnect wire lead from monitor switch (NC) terminal. Check monitor switch operation with ohmmeter as follows: With door open, meter should indicate a closed circuit. With monitor  ***(CONTINUED)***

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
	switch actuator pushed by a screw driver through the lower latch hole in oven cavity face plate and door opened (in this condition, monitor switch plunger is pushed in), meter should indicate an open circuit. If proper operation is indicated, reconnect wire lead to the monitor switch (COM) terminal and check continuity of monitor circuit. If monitor switch or monitor circuit indicates improper operation, replace switch. 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer cabinet case, then reconnect power supply cord. 7. Run the oven and check all functions.
I	**BLOWN MONITOR FUSE TEST** 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. If the monitor fuse is blown when the door is opened, check primary interlock switch,door sensing switch relay(RY1) and monitor switch according to "Test Procedures" for each switch before replacing monitor fuse. 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer cabinet case, then reconnect power supply cord. 7. Run the oven and check all functions. ***NOTE:*** *If monitor fuse is blown by improper switch operation, the monitor fuse and switch must be replaced with "Monitor Fuse and Switch Assembly" part number FFS-BA012WRK0, even if the monitor switch operates normally. The monitor fuse and switch assembly is packed with 20 ampere fuse and switch.*
J	**TOUCH CONTROL PANEL ASSEMBLY TEST** ***NOTE:*** *The touch control panel consists of circuits including semiconductors such as LSI, ICS, etc. Therefore, unlike conventional microwave ovens, proper troubleshooting cannot be performed with only a voltmeter and ohmmeter. In this service manual, the touch control panel assembly is divided into two units, Control Unit and Key Unit. Troubleshooting by unit replacement is described according to the symptoms indicated.* *Before Testing:* 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. Disconnect the leads to the primary of the power transformer and ensure that these leads remain isolated from other components and oven chassis by using insulation tape. 5. Re-connect the power supply cord. *KEY UNIT* 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. Check Key Unit ribbon connection before replacement. 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer cabinet case, then reconnect power supply cord. 7. Run the oven and check all functions. *The following symptoms indicate a defective Key Unit:* *a. When touching the pads, a certain pad produces no signal at all.* *b. When touching a number pad, two figures or more are displayed.* *c. When touching the pads, sometimes a pad produces no signal.* *If the Key unit is defective.* 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. Replace the Key Unit. 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer cabinet case, then reconnect power supply cord. 7. Run the oven and check all functions. ***(CONTINUED)***

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

CONTROL UNIT

The following symptoms may indicate a defective control unit. Before replacing the control unit, perform the Key Unit test (Procedure K) to determine if control unit is faulty.

a. In connection with pads.
1. When touching the pads, a certain group of pads do not produce a signal.
2. When touching the pads, no pads produce a signal.

b. In connection with indicators
1. At a certain digit, all or some segments do not light up.
2. At a certain digit, brightness is low.
3. Only one indicator does not light.
4. The corresponding segments of all digits do not light up; or they continue to light up.
5. Wrong figure appears.
6. A certain group of indicators do not light up.
7. The figure of all digits flicker.

c. Other possible problems caused by defective control unit.
1. Buzzer does not sound or continues to sound.
2. Clock does not operate properly.
3. Cooking is not possible.

When testing is completed:

1. Disconnect power supply cord and remove outer cabinet case.
2. Open door and block it open.
3. Discharge high-voltage capacitor.
4. Reconnect all leads removed from components during testing.
5. Reinstall the outer cabinet case, then reconnect power supply cord.
6. Run the oven and check all functions.

K **KEY UNIT TEST**

1. Disconnect power supply cord and remove outer cabinet case.
2. Open door and block it open.
3. Discharge high-voltage capacitor.
4. If the display fails to clear when the STOP/CLEAR pad is depressed, first verify the flat ribbon cable is making good contact, verify that the door sensing switch (stop switch) operates properly; that is the contacts are closed when the door is closed and open when the door is open. If the door sensing switch (stop switch) is good, disconnect the flat ribbon cable that connects the key unit to the control unit and make sure the door sensing switch is closed (either close the door or short the door sensing switch connecter). Use the Key unit matrix indicated on the control panel schematic and place a jumper wire between the pins that correspond to the STOP/CLEAR pad making momentary contact. If the control unit responds by clearing with a beep the key unit is faulty and must be replaced. If the control unit does not respond, it is faulty and must be replaced. If a specific pad does not respond, the above method may be used (after clearing the control unit) to determine if the control unit or key pad is at fault.
5. Reconnect all leads removed from components during testing.
6. Reinstall the outer cabinet case, then reconnect power supply cord.
7. Run the oven and check all functions.

	G 5	G 6	G 7	G 8	G 9	G10	G11	G12
G 4	ADD MINUTE	DEFROST	SENSOR COOK	BROIL	ROAST	BAKE	MANUAL BROIL	HIGH MIX / ROAST
G 3	POPCORN Elevate PKG	PREHEAT	CONVEC	1 100°F	2 150°F	3 275°F	4 300°F	5 325°F
G 2	SENSOR REHEAT	SLOW COOK	LOW MIX / BAKE	6 350°F	7 375°F	8 400°F	9 425°F	0 450°F
G 1	HELP			TIMER	POWER LEVEL	CLOCK	START / QUICK ON	STOP / CLEAR

KEY UNIT

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
L	**RELAY TEST**

1. Disconnect power supply cord and remove outer cabinet case.
2. Open door and block it open.
3. Discharge high-voltage capacitor.
4. Disconnect the leads to the primary of the power transformer and ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
5. Re-connect the power supply cord.
6. Check voltage between Pin No. 7 and 9 of the 9 pin connector (A) and the control unit with an A.C. voltmeter. The meter should indicate 120 volts, if not, check oven circuit.

RY1 and RY2 RELAY TEST

NOTE: *These relays are operated by D.C. voltage. Check voltage at the relay coil with a D.C. voltmeter during microwave cooking or convection operation.*

a. DC. voltage indicated ..... Defective relay.
b. DC. voltage not indicated ..... Check diode which is connected to the relay coil. If diode is good, control unit is defective.

RELAY SYMBOL	OPERATIONAL VOLTAGE	CONNECTED COMPONENTS
RY1	Approx. 19.0V D.C.	Oven lamp / Turntable motor
RY2(COOK)	Approx. 18.0V D.C.	Power transformer
RY3(HEATER)	Approx. 18.0V D.C.	Heating element
RY4	Approx. 19.0V D.C.	Damper motor
RY5	Approx. 19.0V D.C.	Convection motor
RY6	Approx. 19.0V D.C.	Cooling fan motor

10. Reconnect all leads removed from components during testing.
11. Reinstall the outer cabinet case, then reconnect power supply cord.
12. Run the oven and check all functions.

M — **COMPU DEFROST TEST**

WARNING: THE OVEN SHOULD BE FULLY ASSEMBLED BEFORE PERFORMING THE FOLLOWING PROCEDURE.

1. Place one cup of water in the center of the turntable tray in the oven cavity.
2. Close the door; press the Defrost key and number 5 key twice; Press the QUICK-ON/ START key.
3. The oven is in Compu Defrost cooking condition.
4. The oven will operate as follows:

WEIGHT	1ST STAGE		2ND STAGE		3RD STAGE		4TH STAGE	
	LEVEL	TIME	LEVEL	TIME	LEVEL	TIME	LEVEL	TIME
0.5lbs	70%	47sec.	0%	52 sec.	50%	32sec.	30%	40sec.

5. If improper operation is indicated, the control unit is probably defective and should be checked.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

N

FOIL PATTERN ON THE PRINTED WIRING BOARD TEST

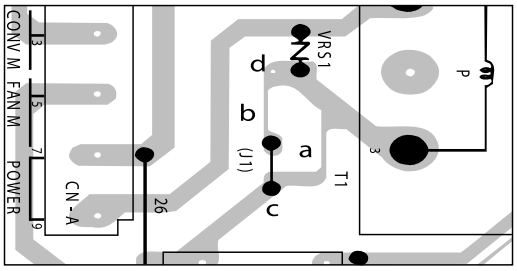
NOTE: *To protect the electronic circuits, this model is provided with a fine foil pattern added to the primary on the PWB, this foil pattern acts as a fuse.*

Foil pattern check and repairs.

1. Disconnect power supply cord and remove outer cabinet case.
2. Open door and block it open.
3. Discharge high-voltage capacitor.
4. Follow steps on troubleshooting table below for repair.

STEPS	OCCURRENCE	CAUSE OR CORRECTION
1	The rated voltage is not applied to POWER terminal of CPU connector (CN-A).	Check supply voltage and oven power cord.
2	The rated voltage is applied to primary side of power transformer.	Power transformer or secondary circuit defective. Check and repair.
3	Only pattern at "a" is broken.	*Insert jumper wire J1 and solder.
4	Pattern at "a" and "b" are broken.	*Insert the coil RCILF2003YAZZ between "c" and "d".

5. Make a visual inspection of the varistor. Check for burned damage and examine the transformer with an ohmmeter for the presence of layer short-circuit (check the primary coil resistance which is approximately 175 ohm ± 10%). If any abnormal condition is detected, replace the PWB.
6. Reconnect all leads removed from components during testing.
7. Reinstall the outer cabinet case, then reconnect power supply cord.
8. Run the oven and check all functions.



O

AH SENSOR TEST (Checking the initial sensor cooking condition)

WARNING: THE OVEN SHOULD BE FULLY ASSEMBLED BEFORE PERFORMING THE FOLLOWING PROCEDURE.

1. The oven should be plugged in at least two minutes before sensor cooking.
2. Room temperature should not exceed 95°F (35°C)
3. The unit should not be installed in any area where heat and steam are generated. The unit should not be installed for example, next to conventional surface unit. Refer to the "INSTALLATION GUIDE".
4. Exhaust vents are provided on the back of the unit for proper cooling and air flow in the cavity. To permit adequate ventilation, be sure to install so as not to block these vents. There should be some space for air circulation.
5. Be sure the exterior of the cooking container and the interior of the oven are dry. Wipe off any moisture with dry cloth or paper towel.
6. The Sensor works with food at normal storage temperature. For example, chicken pieces would be at refrigerator temperature and canned soup at room temperature.
7. Avoid using aerosol sprays or cleaning solvents near the oven while using Sensor settings. The sensor will detect the vapor given of by the spray and turn off before food is properly cooked.
8. After 30 minutes, if the sensor has not detected the vapor of the food, “ERROR” will appear and the oven will shut off.

(CONTINUED)

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

WATER LOAD COOKING TEST

NOTE: *Make sure the oven has been plugged in at least two minutes before checking sensor cook operation. The cabinet should be installed and screws tightened.*

1. The oven should be plugged in at least two minutes before sensor cooking.
2. Fill approximately 200 milliliters (7.2 oz) of tap water in 1000 milliliters measuring cup.
3. Place the container on center of tray in the oven cavity.
4. Close the door.
5. Touch the SENSOR COOK key and the Number 1 key. The oven is now in sensor cooking condition and "BAKED POTATO" will appear in the display.
6. The oven will operate for the first 16 seconds, without generating microwave energy.

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

7. After approximately 16 seconds, microwave energy is produced.
8. Display should start counting down remaining cooking time and oven should turn off after water is boiling. If oven does not turn off, replace the AH sensor or check control unit, refer to explanation below.

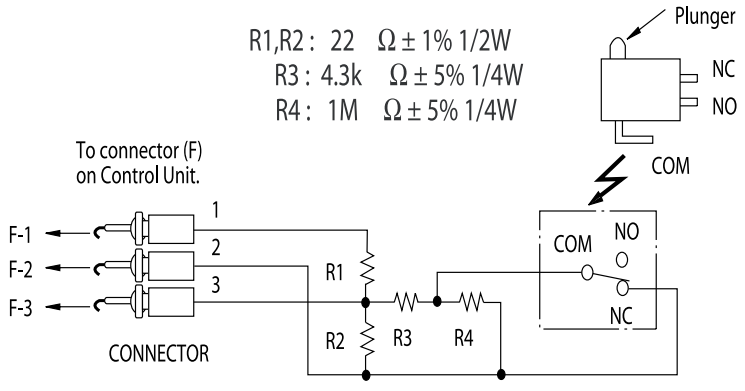
TESTING METHOD FOR AH SENSOR AND /OR CONTROL UNIT

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

1. Disconnect power supply cord and remove outer cabinet case.
2. Open door and block it open.
3. Discharge high-voltage capacitor.
4. Remove the AH sensor.
5. Install the new AH sensor.
6. Reconnect all leads removed from components during testing.
7. Reinstall the outer cabinet case, then reconnect power supply cord.
8. Perform the Water Load Cooking Test described above.
9. If new sensor does not operate properly, the problem is with the control unit, see Checking Control Unit.

CHECKING CONTROL UNIT

1. Disconnect power supply cord and remove outer cabinet case.
2. Open door and block it open.
3. Discharge high-voltage capacitor.
4. Disconnect wire leads from the cook relay.
5. Disconnect the sensor connector that is mounted to control panel.
6. Then connect the dummy resistor circuit (see diagram below) to the sensor connector of control panel.



Sensor Dummy Resistor Circuit

(CONTINUED)

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
	7. Disconnect the leads to the primary of power transformer. 8. Ensure that these leads remain isolated from other components and oven chassis by using insulation tape. 9. Re-connect the power supply cord. 10. Check the sensor cook operation proceed as follows: a. Press SENSOR COOK key and the Number 1 key. b. Press the QUICK ON/START key, the control panel is in the sensor cooking operation. c. After approximately 20 seconds, push plunger of select switch for more than 3 seconds. This condition is same as judgement by AH sensor. d. After approximately 3 seconds, the display shows "xx.xx" which is remaining cooking time, and the display count down. 1. If the above is not the case, the control unit is probably defective. 2. If the above is proper, the AH sensor is probably defective. 11. Disconnect power supply cord and remove outer cabinet case. 12. Open door and block it open. 13. Discharge high-voltage capacitor. 14. Reconnect the sensor connector that is mounted to control panel. 15. Carry out the necessary repair. 16. Reconnect all leads removed from components during testing. 17. Reinstall the outer cabinet case, then reconnect power supply cord. 18. Run the oven and check all functions. 19. Perform the Water Load Cooking Test described on previous page to ensure proper operation.
P	**HEAT ELEMENT TEST** ***NOTE:*** *Make sure heating element is fully cooled before running test.* 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. Disconnect wire leads from heating element. Using an ohmmeter on the R x 1 scale, measure resistance between the heating element terminals. The reading should be approximately 10.2 ohms. 5. Disconnect wire leads and measure the insulation resistance with 500V - 100ohms insulation resistance meter. The insulation resistance between heating element terminal and cavity should be more than 0.5M ohm. 6. If meter does not indicate above resistance, replace heating element. 7. Reconnect all leads removed from components during testing. 8. Reinstall the outer cabinet case, then reconnect power supply cord. 9. Run the oven and check all functions.
Q	**THERMISTOR TEST** 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. Disconnect connector-E from control unit. 5. With an ohmmeter measure resistance of thermistor by connecting ohmmeter leads to Pin numbers E-3 and E-4. Room Temperature: 68°F(20°C) - 86°F(30°C) — Resistance: Approx. 350kΩ - 155KΩ 6. If meter does not indicate above resistance, replace thermistor. 7. Reconnect all leads removed from components during testing. 8. Reinstall the outer cabinet case, then reconnect power supply cord. 9. Run the oven and check all functions.

TEST PROCEDURES

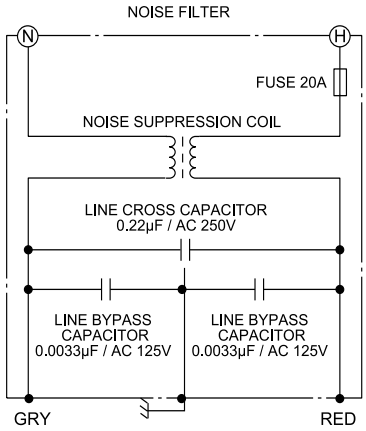
PROCEDURE LETTER	COMPONENT TEST
R	**DAMPER MOTOR TEST** 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. Re-connect power supply cord. 5. If motor does not operate, check for A.C. voltage (117 volts A.C.) with a voltmeter at motor. 6. Disconnect power supply cord. 7. Disconnect wire leads from damper motor and connect meter leads to the wire leads of the main wire harness. 8. Re-connect power supply cord. 9. If 117 volt A.C. is indicated at the wire leads, replace damper motor. If 117 volts A.C. is not indicated, check the wire harness and control unit. 10. Reconnect all leads removed from components during testing. 11. Reinstall the outer cabinet case, then reconnect power supply cord. 12. Run the oven and check all functions.
S	**DAMPER SWITCH TEST** 1. Disconnect power supply cord and remove outer cabinet case. 2. Open door and block it open. 3. Discharge high-voltage capacitor. 4. Disconnect wire leads from damper switch terminals. 5. With an ohmmeter, connect meter leads to the common(COM.) and normally open (N.O.) terminals of the damper switch. 6. When switch actuator is pushed by the damper motor cam, the meter should be indicating a closed circuit. 7. Re-connect power supply cord. 8. When power cord is plugged into the wall receptacle, the damper motor operates and damper cam will start to rotate. When the switch actuator is released, the meter should indicate open circuit. If improper operation is indicated, replace damper motor switch. 9. Reconnect all leads removed from components during testing. 10. Reinstall the outer cabinet case, then reconnect power supply cord. 11. Run the oven and check all functions.
T	**CHECKING TEMPERATURE IN CONVECTION MODE** ***NOTE:*** *It is difficult to measure the exact temperature in the convection oven. An accurate thermocouple type temperature tester must be used. A low priced bi-metal type thermometer is not reliable or accurate.* 1. Temperature should be checked with out the case cabinet installed, approximately 5 minutes after preheat temperature is reached (audible signal sounds four times). The temperature experienced may be approximately 30°F more or less than indicated on display, however, in most cases the food cooking results will be satisfactory. 2. Difference in power supply voltage will also affect oven temperature. The household power supply voltage may sometimes become lower than the rated voltage (117 V) and cause under-cooking. If the power supply voltage is 10% lower than rated voltage, longer cooking time is required by 10% to 20%.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
U	**NOISE FILTER TEST**

1. Disconnect power supply cord and remove outer cabinet case.
2. Open door and block it open.
3. Discharge high-voltage capacitor.
4. Disconnect wire leads from the noise filter terminal.
5. Using an ohmmeter, check between the terminals as described in the following table.

MEASURING POINT	INDICATION OF OHMMETER
Between N and H	Open circuit.
Between terminal N and GRAY	Short circuit.
Between terminal H and RED	Short circuit.



SECTION 7

WIRING DIAGRAMS & SCHEMATICS

MWC24 Pictorial Wire Diagram

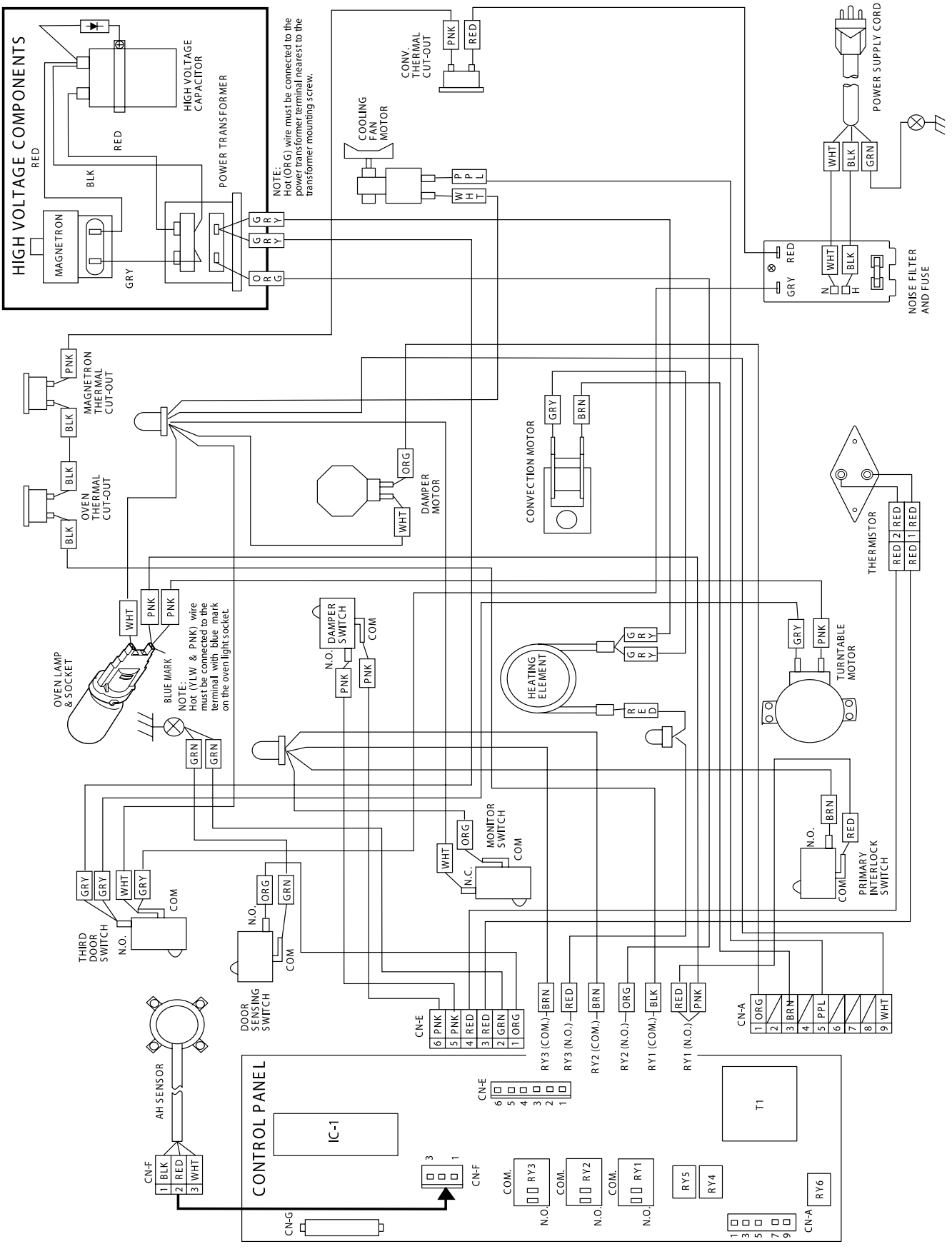


Figure S-1. Pictorial Diagram

MWC24 Wire Schematic

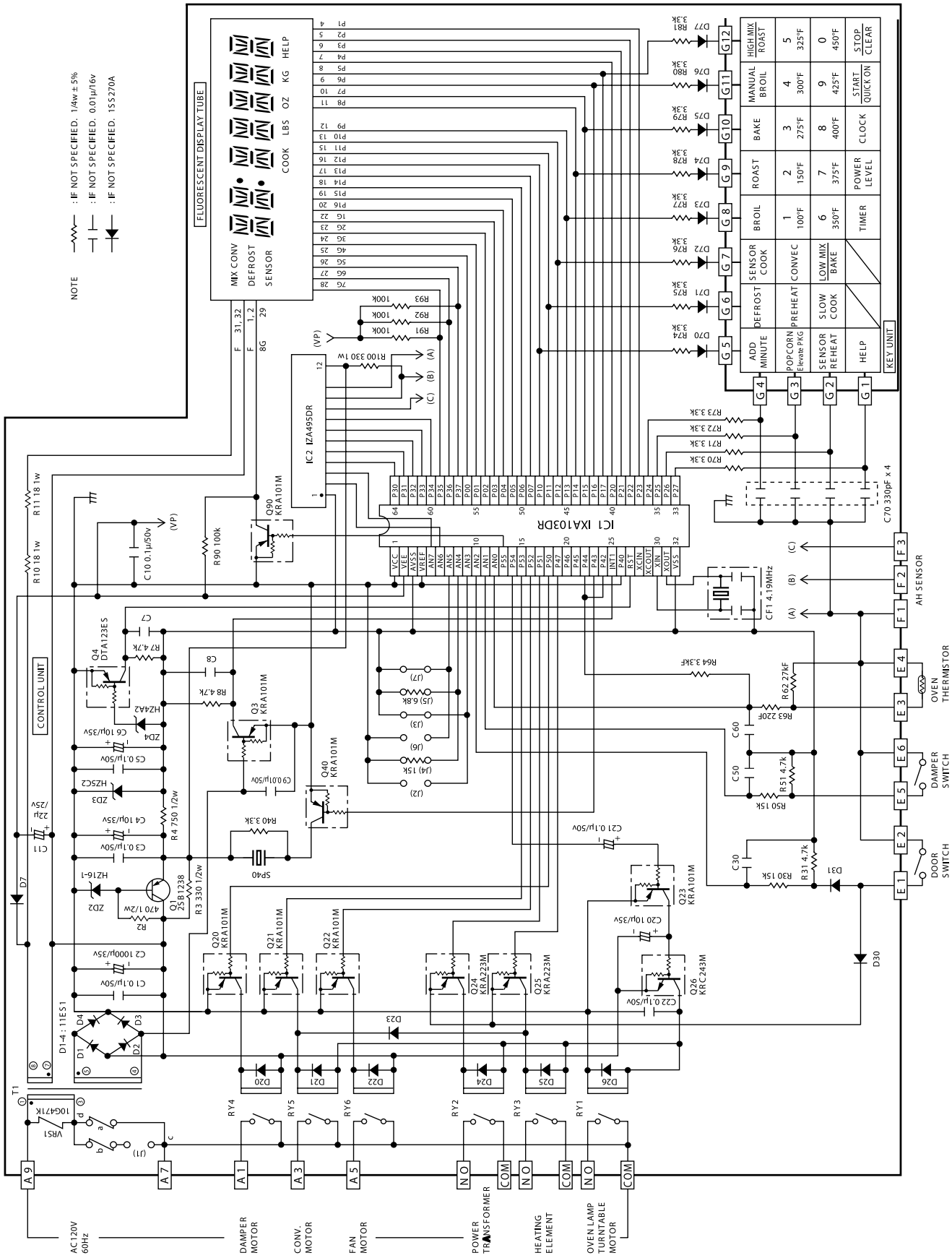


Figure S-2. Control Panel Circuit

MWC24 PC Printed Wiring Board

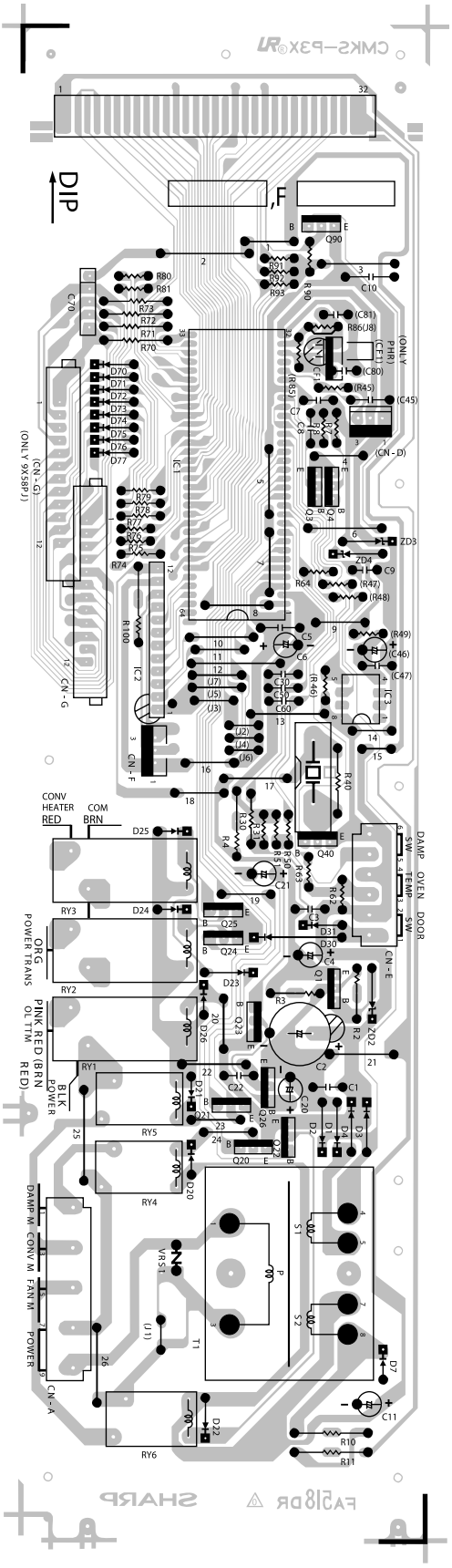


Figure S-3. Printed Wiring Board