

All About

Servicing

OVER THE RANGE

MICROWAVE OVENS

1.7 Cu. Ft. Model With Standard And
Electronic Controls

FRIGIDAIRETM

W White-Westinghouse

Gibson

Kelvinator 

TAPPAN

Electrolux Major Appliances; North America
250 Bobby Jones Expwy
Augusta, GA 30907

Safe Servicing Practices

Avoid personal injury and/or property damage by observing important Safe Servicing Practices. Following are some limited examples of safe practices:

1. DO NOT attempt a product repair if you have any doubts as to your ability to complete the repair in a safe and satisfactory manner.
2. Always Use The Correct Replacement Parts as indicated in the parts documentation. Substitutions may defeat compliance with Safety Standards Set For Home Appliances. Do not exceed maximum recommended wattage on light bulb replacements. Doing so could blow fuses and/or damage transformers.
3. Before servicing or moving an appliance:
 - Remove power cord from the electrical outlet, trip circuit breaker to the OFF position, or remove fuse.
4. Never interfere with the proper operation of any safety device.
5. Use ONLY REPLACEMENT PARTS CATALOGED FOR THIS APPLIANCE. Substitutions may defeat compliance with Safety Standards Set For Home Appliances.
6. GROUNDING: The standard color coding for safety ground wires is GREEN, or GREEN with YELLOW STRIPES. Ground leads are not to be used as current carrying conductors. It is EXTREMELY important that the service technician reestablish all safety grounds prior to completion of service. Failure to do so will create a hazard.
7. Prior to returning the product to service, ensure that:
 - All electrical connections are correct and secure.
 - All electrical leads are properly dressed and secured away from sharp edges, high-temperature components, and moving parts.
 - All non-insulated electrical terminals, connectors, heaters, etc. are adequately spaced away from all metal parts and panels.
 - All safety grounds (both internal and external) are correctly and securely connected.
 - All panels are properly and securely reassembled.

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Section 1 Basic Information

This Manual has been prepared to provide Service Personnel with Operation and Service Information for Frigidaire Microwave Ovens **CGMV173KB**, **CGMV173KW** and **CGMV174KF**.

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WARNING

Certain initial parts are intentionally not grounded and present a risk of electrical shock only during servicing. Service personnel - do not contact the following parts while the appliance is energized:

Inverter unit, that includes high voltage capacitor, high voltage power transformer, high voltage rectifier, heat sink, etc., magnetron, high voltage harness etc.;

If provided, fan assembly, cooling fan motor.

All the parts marked "*" on parts list are used at voltages more than 250v.

Removal of the outer wrapper gives access to voltage above 250v.

All the parts marked "⚠" on parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

WARNING

This service manual is intended for use by persons having electrical and mechanical training and a level of knowledge of these subjects generally considered acceptable in the appliance repair trade. Electrolux home products cannot be responsible, nor assume any liability, for injury or damage of any kind arising from the use of this manual.

WARNING

Never operate the oven until the following points are ensured.

- (A) The door is tightly closed.
- (B) The door brackets and hinges are not defective.
- (C) The door packing is not damaged.
- (D) The door is not deformed or warped.
- (E) There is no other visible damage with the oven.

Servicing and repair work must be carried out only by trained service personnel.

Danger High Voltage

Do not energize a microwave oven with the outer case cabinet removed, because a microwave oven generates high voltage in the circuit.

If you intend to operate the oven employing the high frequency switching power converter circuit, you should take special precautions to avoid an electrical shock hazard.

The high voltage transformer, high voltage capacitor and high voltage diode have energized high voltage potential of approximately 8KV.

The aluminium heat sink is connected to the switching power transistor collector pole, and has an energized high voltage potential of approximately 650V peak.

DO NOT ACCESS THE HIGH VOLTAGE TRANSFORMER, HIGH VOLTAGE CAPACITOR, HIGH VOLTAGE DIODE AND HEAT SINK WHEN THE POWER SUPPLY IS CONNECTED TO AN ELECTRICAL OUTLET.

Section 1 Basic Information

Precautions To Be Observed Before And During Servicing To Avoid Possible Exposure To Excessive Microwave Energy

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

Before Servicing (Canadian Residents)

Before servicing an operative unit, perform a microwave emission check as per the Microwave Measurement Procedure outlined in this service manual.

If microwave emissions level is in excess of the specified limit, contact ELECTROLUX CANADA CORPORATION immediately.

If the unit operates with the door open, service person should:

1. Tell the user not to operate the oven.
2. Contact ELECTROLUX CANADA CORPORATION and NHW, CANADA immediately.

Service personnel should inform ELECTROLUX CANADA CORPORATION of any certified unit found with emissions in excess of 4mW/cm². The owner of the unit should be instructed not to use the unit until the oven has been brought into compliance.

NOTE: This section is required by DHHS because this microwave oven is imported by way of U.S.A.

Before Servicing (All Other Countries)

NOTE

This section is required by DHHS because this microwave oven is imported by way of U.S.A.

Before servicing an operative unit, perform a microwave emission check as per the Microwave Measurement Procedure outlined in this service manual.

If microwave emissions level is in excess of the specified limit, contact ELECTROLUX HOME PRODUCTS, INC. immediately.

If the unit operates with the door open, service person should:

1. Tell the user not to operate the oven.
2. Contact Electrolux HOME PRODUCTS, INC. and Food and Drug Administration's Center for Devices and Radiological Health immediately.

Service personnel should inform ELECTROLUX HOME PRODUCTS, INC. of any certified unit found with emissions in excess of 4mW/cm². The owner of the unit should be instructed not to use the unit until the oven has been brought into compliance.

WARNING

Microwave ovens contain circuitry capable of producing very high voltage and current. contact with THE following parts may result in a severe, possibly fatal, electrical shock.

Inverter unit, that includes High Voltage Capacitor, High Voltage Power Transformer, High Voltage Rectifier, Heat sink etc., and Magnetron, High Voltage Harness etc..
Read the Service Manual carefully and follow all instructions.



Before Servicing

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.

NOTE

To discharge the high voltage capacitor, wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Whenever troubleshooting is performed, the power supply must be disconnected. It may, in some cases, be necessary to connect the power supply after the outer case has been removed, in this event:

1. Disconnect the oven power supply cord and then remove the outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect leads to the primary of the inverter unit.
5. Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, reconnect the power supply cord.

When Testing Is Completed

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.

NOTE

To discharge the high voltage capacitor, wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

4. Reconnect leads to the primary of the inverter unit.
5. Reinstall the outer case (cabinet).
6. Reconnect the power supply cord after the outer case is installed.
7. Run the oven and check all functions.

After repairing

1. Reconnect all leads removed from components during testing.
2. Reinstall the outer case (cabinet).
3. Reconnect the power supply cord after the outer case is installed.
4. Run the oven and check all functions. Microwave ovens should not be run empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven turntable, close the door and set the power to HIGH and then set the microwave timer for two (2) minutes. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out Before Servicing procedure and re-examine the connections to the component being tested.

Section 1 Basic Information

Microwave Measurement Procedure (Canada)

After adjustment of the door switches are completed individually or collectively, switch test and microwave leakage test must be performed with survey instrument and test result must be confirmed to meet the requirement of the performance standard for microwave ovens as under mentioned.

A. Requirements:

Every microwave oven shall function in such a manner that when the oven is fully assembled and operating with its service controls and user controls adjusted to yield the maximum output, the leakage radiation, at all points at least 5 cm. from the external surface of the oven, does not exceed:

- 1) 1.0 mW/cm² with the test load of 275 ± 15 ml of water at an initial temperature 20 ± 5°C.
- 2) 5.0 mW/cm² when the outer enclosure is removed with a test load of 275 ± 15 ml of water at an initial temperature 20 ± 5°C.
- 3) 5.0 mW/cm² without a test load.

B. Preparation for testing:

Before beginning the actual measurement of leakage, proceed as follows:

- 1) Make sure that the actual instrument is operating normally as specified in its instruction booklet. Survey instruments that comply with the requirement for instrumentation as prescribed by CSA and NHW performance standard for microwave ovens must be used for testing recommended instruments are, NARDA 8100 and NARDA 8200.
- 2) Place the oven tray in the oven cavity.
- 3) Place the load of 275 ± 15 ml (9.8 oz) of tap water initially at 20° ± 5°C (68°F) in the center of oven cavity. The water container shall be a low form of a 600 ml (20 oz) beaker with an inside diameter of approx. 8.5 cm (3-1/2 in.) and made of an electrically nonconductive material such as glass or plastic. The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
- 4) Set the cooking control on Full Power Cooking Mode.
- 5) Close the door and select a cook cycle of several minutes. If the water begins to boil before the survey is completed, replace it with 275 ml of cool water.

C. Leakage test with enclosure installed:

- 1) Grasp probe of survey instrument and hold it perpendicular to gap between door and the body of the oven.
- 2) Move the probe slowly, not faster than 2.5 cm/sec. along the gap, watching for maximum indication on meter.
- 3) Check for leakage at the door screen, sheet metal seams and other accessible positions where continuity of the metal has been breached (eg., around the switches, indicator, and vents). While testing for leakage around door, pull door away from the front of the oven as far as is permitted by the closed latch assembly.
- 4) Measure carefully at the point of highest leakage and make sure that the highest leakage is no greater than 4 mW/cm², and that the primary interlock switch and secondary interlock switch do turn the oven OFF before any door movement.

D. Leakage test without enclosure:

- 1) Remove the enclosure (cabinet).
- 2) Grasp the probe of the survey instrument and hold it perpendicular to all mechanical and electric parts of the oven that is accessible to the user of the oven including, but not limited to, the waveguide, cavity seams, magnetron gap between the door and the body of the oven.
- 3) Move probe slowly, not faster than 2.5 cm/sec. along the gap, watching for the maximum indication on meter.
- 4) Measure carefully at the point of highest leakage and make sure that the highest leakage is under 5 mW/cm².

CAUTION: Special attention should be given to avoid electrical shock because HIGH VOLTAGE is generated during this test.

E. No Load test

- 1) Operate the oven without a load and measure the leakage by the same method as the above test procedure "Leakage test with enclosure installed"
- 2) Make sure that the highest leakage should not exceed 5 mW/cm².

NOTE: After servicing, record data on service invoice and microwave leakage report.

Microwave Measurement Procedure (USA)

A. Requirements:

- 1) Microwave leakage limit (Power density limit): The power density of microwave radiation emitted by a microwave oven should not exceed 1 mW/cm^2 at any point 5 cm or more from the external surface of the oven, measured prior to acquisition by a purchaser, and thereafter (through the useful life of the oven), 5 mW/cm^2 at any point 5 cm or more from the external surface of the oven.
- 2) Safety interlock switches: Primary interlock switch shall prevent microwave radiation emission in excess of the requirement as above mentioned, secondary interlock switch shall prevent microwave radiation emission in excess of 5 mW/cm^2 at any point 5 cm or more from the external surface of the oven.

B. Preparation for testing:

Before beginning the actual measurement of leakage, proceed as follows:

- 1) Make sure that the actual instrument is operating normally as specified in its instruction booklet.
Important:
Survey instruments that comply with the requirement for instrumentation as prescribed by the performance standard for microwave ovens, 21 CFR 1030.10(c)(3)(i), must be used for testing.
- 2) Place the oven tray in the oven cavity.
- 3) Place the load of $275 \pm 15 \text{ ml}$ (9.8 oz) of tap water initially at $20^\circ \pm 5^\circ \text{C}$ (68°F) in the center of the oven cavity. The water container shall be a low form of 600 ml (20 oz) beaker with an inside diameter of approx. 8.5 cm (3-1/2 in.) and made of an electrically nonconductive material such as glass or plastic. The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
- 4) Set the cooking control on Full Power Cooking Mode.
- 5) Close the door and select a cook cycle of several minutes. If the water begins to boil before the survey is completed, replace it with 275 ml of cool water.

C. Leakage test:

Closed-door leakage test (microwave measurement)

- 1) Grasp the probe of the survey instrument and hold it perpendicular to the gap between the door and the body of the oven.
- 2) Move the probe slowly, not faster than 1 in./sec. (2.5 cm/sec.) along the gap, watching for the maximum indication on the meter.
- 3) Check for leakage at the door screen, sheet metal seams and other accessible positions where the continuity of the metal has been breached (eg., around the switches, indicator, and vents). While testing for leakage around the door pull the door away from the front of the oven as far as is permitted by the closed latch assembly.
- 4) Measure carefully at the point of highest leakage and make sure that the highest leakage is no greater than 4 mW/cm^2 , and that the primary interlock switch and secondary interlock switch do turn the oven OFF before any door movement.

NOTE: After servicing, record data on service invoice and microwave leakage report.

Section 1 Basic Information

Product Specification

Item	Description
Power Requirements	120 Volts / 14.0 Amperes 60 Hertz Single phase, 3 wire grounded
Power Output	1000 watts (IEC 705 Test Procedure) Operating frequency of 2450MHz
Case Dimensions (excluding handle)	Width 29-15/16" Height 16-3/8" Depth 17-15/16"
Cooking Cavity Dimensions (1.7 Cubic Feet)	Width 21" NOTE: Internal capacity is calculated by measuring Height 8-7/8 maximum width, depth and height. Actual Depth 14-7/16" capacity for holding food is less.
Hood Lamp	20 Watt x 2 incandescent light bulbs
Oven Cavity Light	20 Watt x 1 incandescent light bulb
Weight	Approx. Net 54 lbs. Gross 64 lbs.
Hood fan Control Complement	Approx. 300 C.F.M. Touch Control System Clock (1:00 - 12:59) Timer (0 - 99 min. 99 seconds) Microwave Power for Variable Cooking Repetition Rate; P-HI Full power throughout the cooking time P-90 approx. 90% of Full Power P-80 approx. 80% of Full Power P-70 approx. 70% of Full Power P-60 approx. 60% of Full Power P-50 approx. 50% of Full Power P-40 approx. 40% of Full Power P-30 approx. 30% of Full Power P-20 approx. 20% of Full Power P-10 approx. 10% of Full Power P-0 No power throughout the cooking time Timer on-off pad, Turntable on-off pad, User Pref pad, Sensor Cook pad Sensor Reheat pad, Auto Cook pad, Chicken nuggets pad, Snack Menu pad Auto Defrost pad, Popcorn pad, Baked Potato pad, Vegetables pad, Number pads, Quick start pads, START/Enter/+ 30sec pad, STOP/Clear pad Power level pad, Light Hi/Lo/Off pad, Vent Hi/Lo/Off pad
Safety Standard	NHW FCC DHHS, UL for use in USA or Canada

Grounding Instructions

This oven is equipped with a three prong grounding plug. It must be plugged into a wall receptacle that is properly installed and grounded in accordance with the National Electrical Code, local codes and ordinances. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current.



WARNING

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

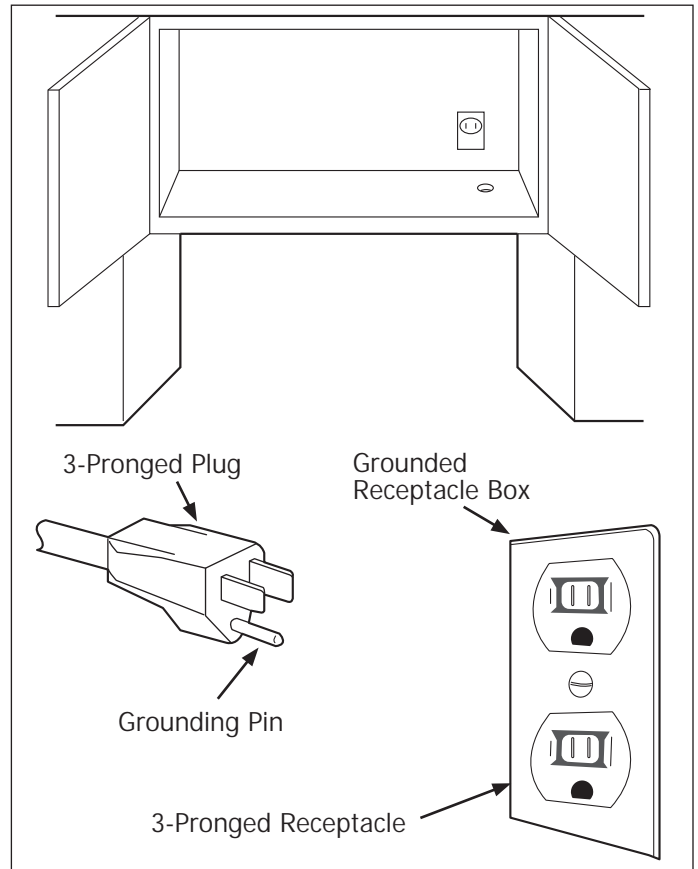
Electrical Requirements

The oven is equipped with a 3-prong grounding plug. **DO NOT UNDER ANY CIRCUMSTANCES CUT OR REMOVE THE GROUNDING PIN FROM THE PLUG.** The power supply cord and plug must be connected to a separate 120 Volt AC, 60 Hz, 15 Amp. or more dedicated line, using a grounded receptacle.

The receptacle should be located inside the cabinet directly above the Microwave Oven/Hood system mounting location.

When installing this appliance, observe all applicable codes and ordinances. A short power-supply cord is provided to reduce risks of becoming entangled in or tripping over a longer cord. Where a two-pronged wall-receptacle is encountered, it is the personal responsibility and obligation of the customer to contact a qualified electrician and have it replaced with a properly grounded three-pronged wall receptacle or have a grounding adapter properly grounded and polarized.

If an extension cord must be used, it should be a 3-wire, 15 amp. or more cord. Do not drape over a countertop or table where it can be pulled on by children or tripped over accidentally.

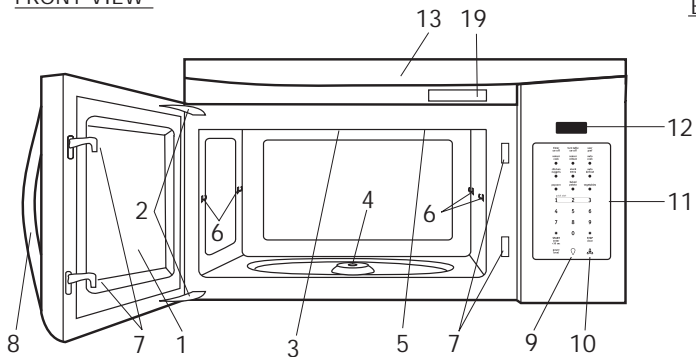


Section 1 Basic Information

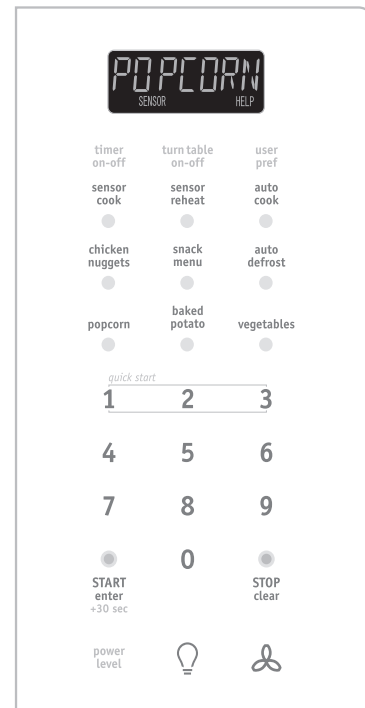
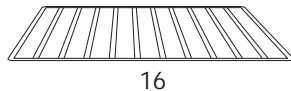
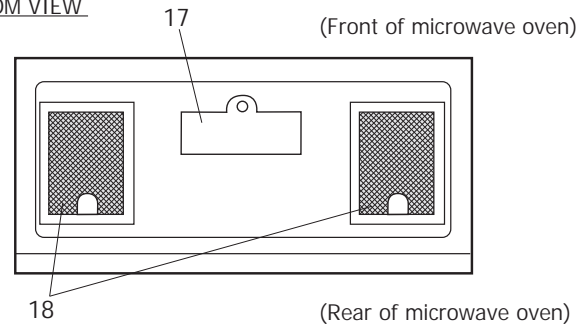
Oven Diagram

1. Oven door with see-through window.
2. Door hinges.
3. Waveguide cover. DO NOT REMOVE.
4. Turntable motor shaft.
5. Oven lamp. It will light when oven is operating or door is open.
6. Rack holders.
7. Safety door latches. The oven will not operate unless the door is securely closed.
8. Handle.
9. Light hi/lo/off pad. Press light hi/lo/off pad once for high, twice for low and three times to turn off light.
10. Vent hi/lo/off pad. Press the vent hi/lo/off pad once for high speed, twice for low speed and three times to turn off the fan.
11. Auto-Touch control panel.
12. Time display: Digital display, 99 minutes, 99 seconds.
13. Ventilation openings.
14. Removable turntable. The turntable will rotate clockwise or counterclockwise. Only remove for cleaning.
15. Removable turntable support. First, carefully place the turntable support in the motor shaft in the center of the microwave oven floor. Then, place the turntable on the turntable support securely.
16. Rack for 2-level cooking/ reheating.
17. Light cover.
18. Grease filters

FRONT VIEW



BOTTOM VIEW



Operating Sequence Description

The following is a description of component functions during oven operation.

OFF CONDITION

Closing the door activates the stop switch (door sensing switch) secondary interlock switch and third door switch. (In this condition, the monitor switch contacts are opened.) When oven is plugged in, 120 volts AC is supplied to the control unit. (Figure 2-1).

1. The display will show "ENJOY YOUR OVEN PRESS CLEAR". To set any program or set the clock, you must first touch the CLEAR/OFF pad. The display will clear, and " : " appears.

COOKING CONDITION

Program desired cooking time touching the NUMBER pads. When the START pad is touched, the following operations occur:

1. The contacts of relays are closed and components connected to the relays are turned on as follows. (For details, refer to Figure 2-2)

RELAY	CONNECTED COMPONENTS
RY1	Oven Lamp / Fan motor / Stirrer motor
RY2	Power Transformer
RY7	Turntable motor

2. 120 volts AC is supplied to the primary winding of the power transformer and is converted to about 3.3 volts AC output on the filament winding, and approximately 2000 volts AC on the high voltage winding.
3. The filament winding voltage heats the magnetron filament and the H.V. winding voltage is sent to a voltage doubler circuit.
4. The microwave energy produced by the magnetron is channeled through the waveguide into the cavity feedbox, and 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 turned off, and the generation of microwave energy is stopped. The oven will revert to the OFF condition.

6. When the door is opened during a cook cycle, monitor switch, door sensing switch, primary interlock switch, third door switch and secondary interlock relay are activated with the following results. The circuits to the stirrer motor, the cooling fan motor, the turntable motor, and the high voltage components are de-energized, and the digital read-out displays the time still remaining in the cook cycle when the door was opened.
7. The monitor switch is electrically monitoring the operation of the primary interlock switch, and stop switch (door sensing switch) is mechanically associated with the door so that it will function in the following sequence.
 - (1) When the door opens from a closed position, the secondary interlock relay, stop switch (door sensing switch) and primary interlock switch and third door switch open their contacts, and then the monitor switch contacts close.
 - (2) When the door is closed from the open position, the monitor switch contacts open first. Then the contacts of the primary interlock switch, stop switch (door sensing switch) and third door switch close. And contacts of the relay (RY1) open.

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

Section 2 Operation

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

SCHEMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED.
2. CLOCK APPEARS ON DISPLAY

LEAD WIRE COLOR CODE	
BLK : BLACK	GRY : GRAY
BRN : BROWN	WHT : WHITE
ORG : ORANGE	BLU : BLUE
PNK : PINK	GRN : GREEN
PPL : PURPLE	YLW : YELLOW
RED : RED	

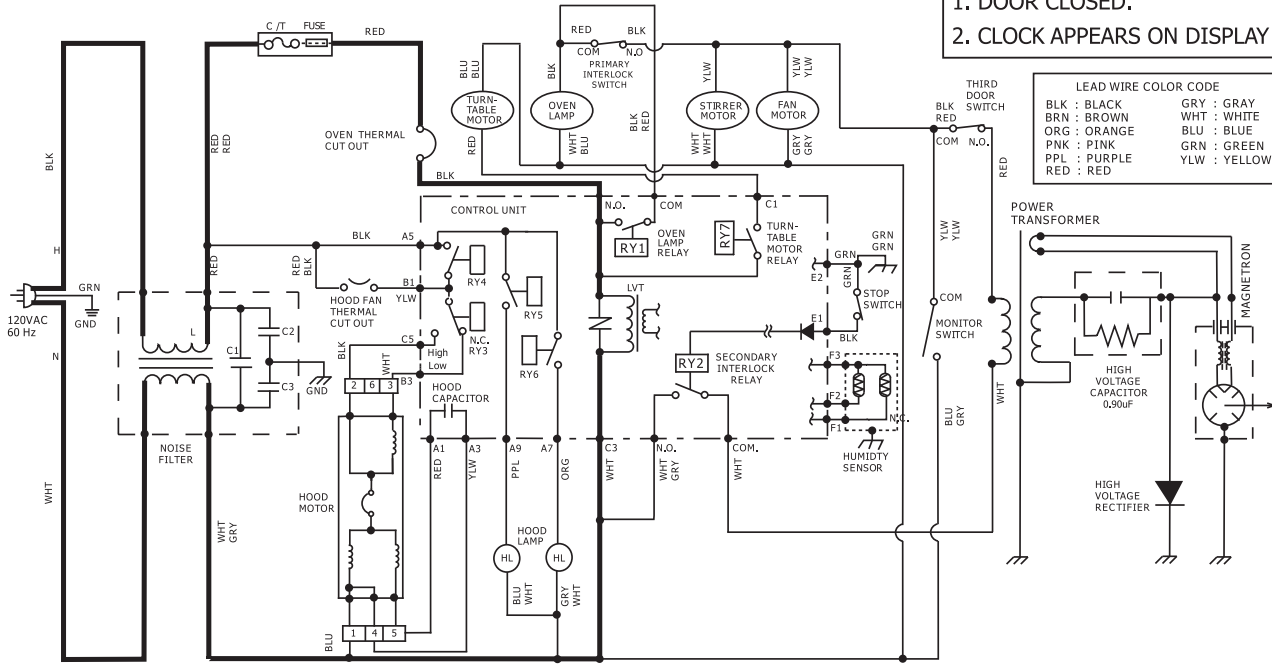


Figure 2-1. Oven Off Condition

SCHEMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED.
2. COOKING TIME PROGRAMMED.
3. VARIABLE COOKING CONTROL "100%".
4. START PAD TOUCHED.

LEAD WIRE COLOR CODE	
BLK : BLACK	GRY : GRAY
BRN : BROWN	WHT : WHITE
ORG : ORANGE	BLU : BLUE
PNK : PINK	GRN : GREEN
PPL : PURPLE	YLW : YELLOW
RED : RED	

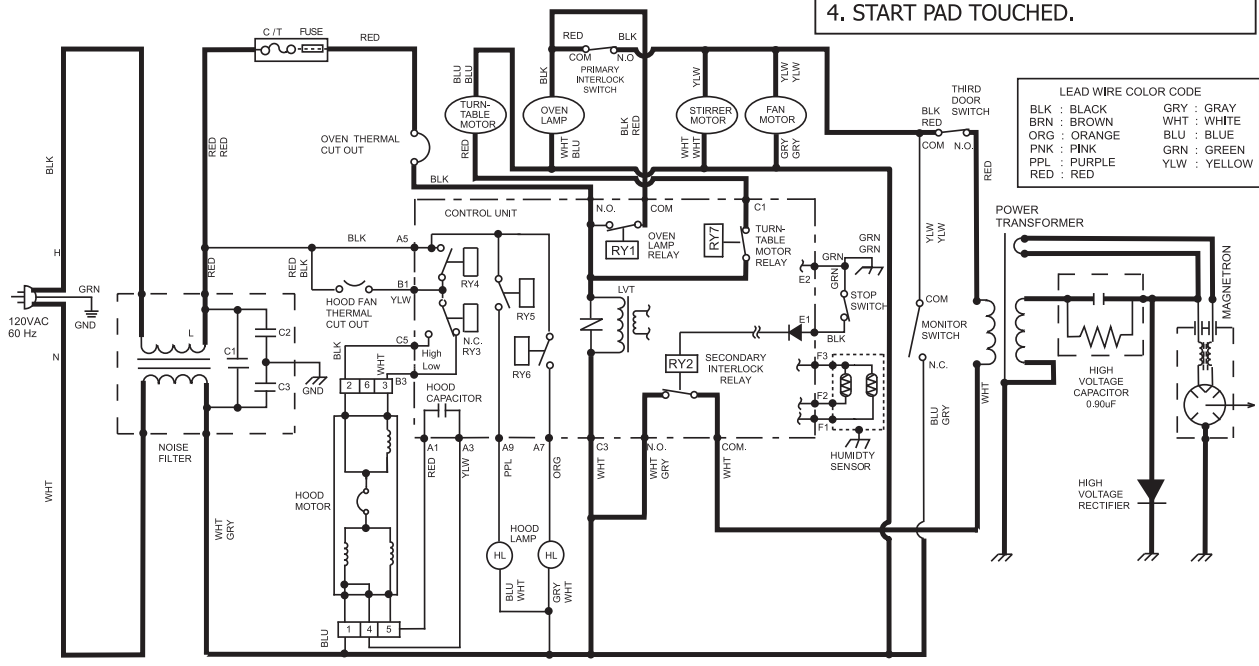
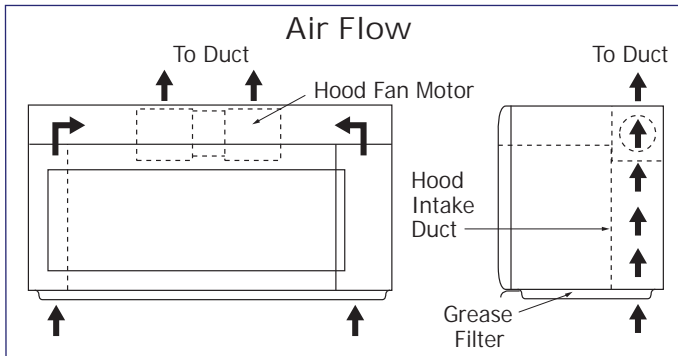


Figure 2-2. Oven ON (Cooking) Condition

VENTILATION METHODS HOT AIR EXHAUST

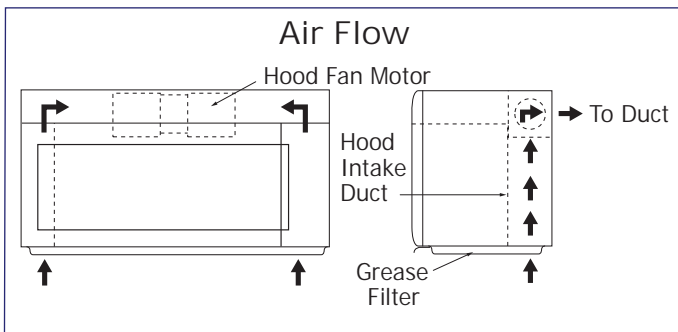
1. Vertical Venting

For this venting method, hot air rising from the conventional range below is drawn in by the hood fan motor through the grease filters at the right and left sides of the base cover, up through the right and left sides of the oven cavity, then discharged vertically at rear center top of the oven, into the customer's vent system.



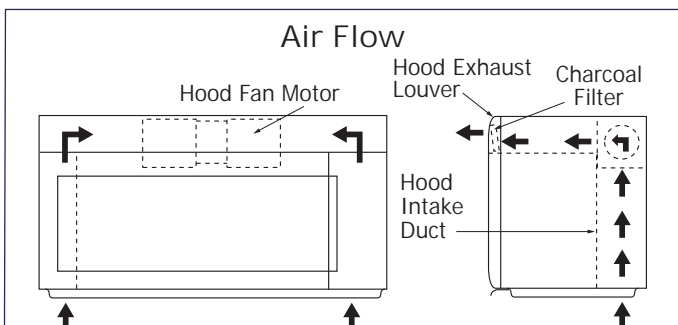
2. Horizontal Venting

The air handling is the same as Vertical Venting except that final air discharge is directed horizontally out from the top rear of oven into the customer's vent system.



3. Re-circulation (Inside venting)

The air handling is the same as VERTICAL VENTING except that the final air discharge is directed horizontally through the upper front of the oven into the kitchen.



POWER LEVEL P-0 TO P-90 COOKING

When Variable Cooking Power is programmed, the 120 volts A.C. is supplied to the power transformer intermittently through the contacts of relay (RY2) which is operated by the control unit within an interval second time base. Microwave power operation is as follows:

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

POWER OUTPUT REDUCTION

If the oven is set for over 40 minutes at 80%, 90% or 100% power level, after the first 40 minutes the power level will automatically adjust itself to 70% power to avoid overcooking.

Section 2 Operation

SENSOR COOKING CONDITION

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

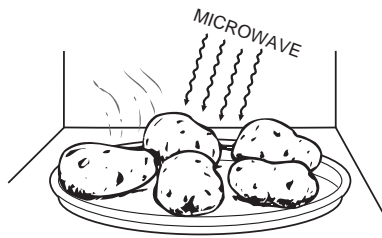
When food is cooked, water vapor is developed. The sensor "senses" the vapor and its resistance increases gradually. When the resistance reaches the value set according to the menu, supplementary cooking is started. The time of supplementary cooking is determined by experiment with each food category and inputted into the LSI.

An example of how the sensor works:
(BAKED POTATOES)

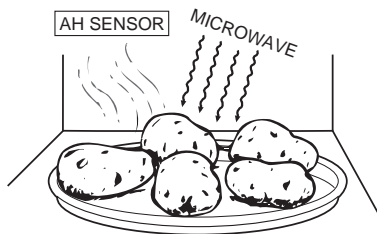
1. Potatoes at room temperature. Vapor is emitted very slowly.



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



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



COOKING SEQUENCE

1. Operate the oven in sensor cooking mode by referring to the operation manual.

NOTE

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

2. The coil of shut-off relays (RY1) are energized, the oven lamp, stirrer motor and cooling fan motor are turned on, but the power transformer is not turned on.
3. After about 32 seconds, the relay (RY2) is energized. The power transformer is turned on, microwave energy is produced and first stage is started. The 32 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 touch STOP/CLEAR pad.

4. When the sensor detects the vapor emitted from the food, the display switches over to the remaining cooking time and the timer counts down to zero. At this time, the door may be opened to stir, turn, or season food.
5. 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.
6. Opening the door or touching the STOP/CLEAR pad, the time of day will reappear on the display and the oven will revert to an OFF condition.

Touch Control Panel Assembly Outline

The touch control section consists of the following units.

- (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 generated in the LSI are sent to the key unit through P40 - P47. When a key pad is touched, a signal is completed through the key unit and passed back to the LSI through P20, P21, P22, P00 and P01 to perform the function that was requested.

CONTROL UNIT

Control unit consists of LSI, power source circuit, synchronizing signal circuit, reset circuit, buzzer circuit, relay circuit indicator circuit, humidity sensor circuit and back light circuit.

1. LSI
This LSI controls the key strobe signal, relay driving signal for oven function and indicator signal.
2. Power Source Circuit
This circuit generates voltages necessary for the control unit from the AC line voltage. In addition, the synchronizing signal is available in order to compose a basic standard time in the clock circuit.

Symbol	Voltage	Application
VC	-5.0V	LSI(IC1)

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. Reset Circuit
This circuit generates a signal which resets the LSI to the initial state when power is supplied.
5. Buzzer Circuit
The buzzer responds to signals from the LSI to emit audible sounds (key touch sound and completion sound).
6. Stop Switch (Door Sensing Switch)
A switch to inform the LSI if the door is open or closed.

7. Relay Circuit
To drive the magnetron, fan motor, turntable motor, stirrer motor, hood motor, and light the oven lamp and hood lamp.
8. Indicator Circuit
This circuit consists of 25 segments and 4 common electrodes using a Light Crystal Display.
9. Back Light Circuit
A circuit to drive the back light (Light emitting diodes LD1-LD5).
10. Humidity Sensor Circuit
This circuit detects moisture of the cooking food to allow its automatic cooking.

Section 2 Operation

Component Descriptions

DOOR OPEN MECHANISM

The door is opened by pulling the door handle, refer to the Figure 2-3.

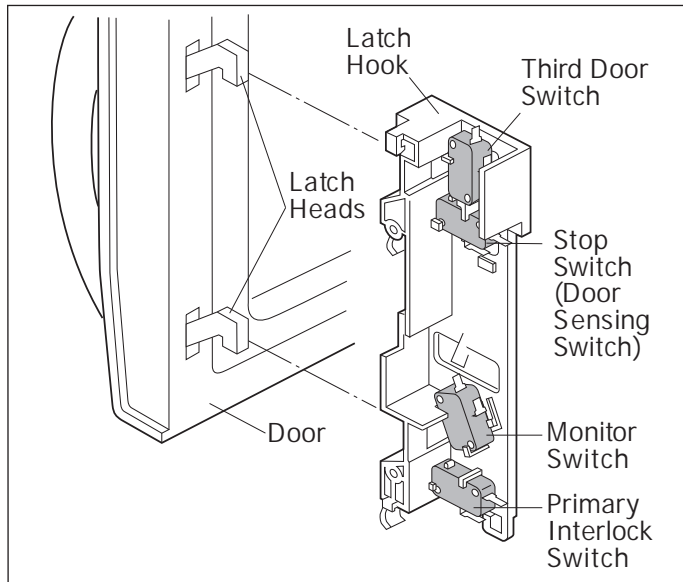


Figure 2-3. Door Open Mechanism

STOP SWITCH (DOOR SENSING SWITCH), PRIMARY INTERLOCK SWITCH AND THIRD DOOR SWITCH

The primary interlock switch is mounted in the lower position of the latch hook, the stop switch (door sensing switch) in the secondary interlock system is mounted in the upper position of the latch hook. The third door switch is mounted in the upper vertical position of the latch hook. 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 thereby 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 activated (the contacts opened) by the latch head on the door while the door is closed. The switch is intended to render the oven inoperative, by means of blowing the C/T fuse, when the contacts of the primary interlock switch fail to open when the door is opened.

Functions:

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

CAUTION

Before replacing a blown C/T fuse test the stop switch (door sensing switch), relay (RY1), primary interlock switch, third door switch and monitor switch components for proper operation.

NOTE

C/T fuse and monitor switch are replaced as an assembly.

THERMAL CUT-OUT (CAVITY)

This thermal cut-out is located on the top of the oven cavity. It is designed to prevent damage to the oven unit if the food in the oven catches 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, the thermal cut-out will open at 293°F (145°C) causing the oven to shut down.

THERMAL CUT-OUT (HOOD)

This thermal cut-out is located on the right base plate. It is designed to automatically turn on the hood fan motor whenever the hot air rising from the conventional range below causes the temperature at the thermal cut-out to rise to 140°F (60°C) or higher, thus removing this hot air from around microwave oven. When the temperature around the thermal cut-out drops to 113°F (45°C) or lower, the thermal cut-out shuts off the hood fan motor.

TURNTABLE MOTOR

The turntable motor rotates the turntable located on the bottom of the oven cavity, so that the foods on the turntable cook evenly during cooking. Turntable will turn in either direction. The turntable motor can be turned off by touching TURNTABLE ON/OFF pad.

COOLING FAN MOTOR

The cooling fan motor drives a blade which draws external cool air. This cool air is directed through the air vanes surrounding the magnetron and cools the magnetron. This air is channelled through the oven cavity to remove steam and vapors given off from the heating foods. It is then exhausted through exhausting air vents at the oven cavity.

HOOD FAN MOTOR

The hood fan motor is a two-speeds, single-phase, double pole induction type, requiring a hood fan capacitor. It is located outside the upper rear part of the oven cavity. The hood fan motor removes hot air from around the oven as it rises from the conventional electric or gas range over which it is installed. This air is then expelled either vertically or horizontally through the customer supplied duct system, or discharged back into the kitchen.

HOOD LAMP

The hood lamps are mounted at the hood lamp angle on the base cover. The hood lamps can be turned off and on by touching the Light HI/LO/OFF pad. The brightness can be varied to high or low by touching the Light HI/LO/OFF pad.

STIRRER MOTOR

The stirrer motor drives the stirrer fan to stir the microwave radiation from the waveguide.

C/T FUSE

1. The C/T fuse blows when the contacts (COM-NO) of the primary interlock switch remain closed with the oven door open and when the monitor switch closes.
2. If the wire harness or electrical components are short-circuited, this C/T fuse blows to prevent an electric shock or fire hazard.
3. The C/T fuse, located near the magnetron, is designed to prevent damage to the magnetron. If an over heated condition develops in the magnetron due to cooling fan failure, obstructed air guide, dirty or blocked air intake, etc., the C/T fuse will open.

Under normal operation, the C/T fuse remains closed. However, when abnormally high temperatures are reached within the oven cavity, the C/T fuse will open at 302°F (150°C), causing the oven to shut down or when the electric current is beyond 20 Amp flow, the C/T fuse will open.

Section 2 Operation

HUMIDITY SENSOR CIRCUIT

1. Structure of Absolute Humidity Sensor:

The absolute humidity sensor includes two thermistors as shown in the illustration below. One thermistor is housed in the closed vessel filled with dry air while another in is the open vessel. Each sensor is provided with the protective cover made of metal mesh to be protected from the external airflow.

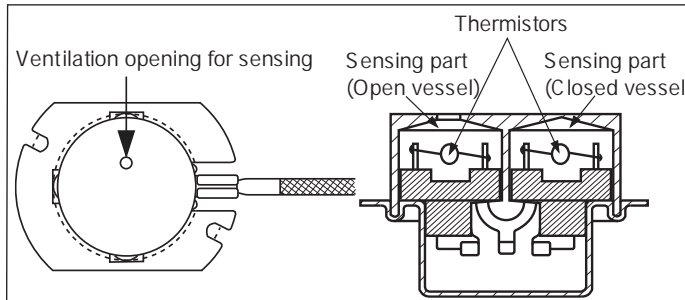


Figure 2-4. Humidity Sensor Diagram

2. Operational Principle of Absolute Humidity Sensor:

The figure 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.

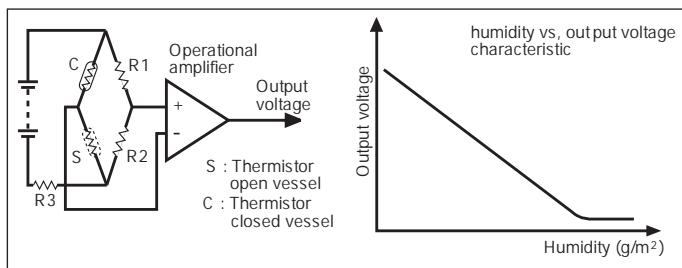
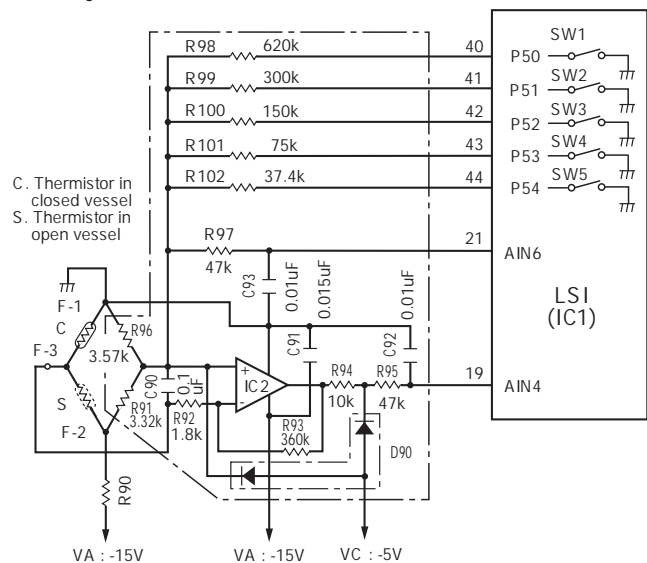


Figure 2-5. Humidity Sensor Operation

(3) Detector Circuit of Absolute Humidity Sensor Circuit:

This detector circuit is used to detect the output voltage of the humidity circuit to allow the LSI to control sensor cooking of the unit. When the unit is set in the sensor cooking mode, 32 seconds clearing cycle occurs than the detector circuit starts to function and the LSI observes the initial voltage available at its AIN4 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 R98 ~ R102 of IC2. Changing the resistance values results in that there is the same potential at both F-3 terminals of the humidity sensor and AIN6 terminal of the LSI. The voltage of AIN4 terminal will indicate about -2.5V. This initial balancing is set up about 32 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 the bridge circuit is deviated to increase the voltage available at AIN4 terminal of the LSI. Then the LSI observes that voltage at AIN4 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 AIN4 terminal 32 seconds after the unit has been put in the Sensor Cooking mode, if it is not possible to balance, of the bridge circuit due to disconnection of the humidity sensor, ERROR will appear on the display and the cooking is stopped.

Humidity sensor circuit:



Section 3 Troubleshooting and Testing

Troubleshooting Guide

When troubleshooting the microwave oven, it is helpful to follow the Sequence of Operation in 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" section.

CAUTION

If oven becomes inoperative because of a blown C/T fuse, check monitor switch, relay (RY1), secondary interlock relay (RY2), stop switch (door sensing switch), primary interlock switch and third door switch before replacing C/T fuse. If C/T fuse is replaced, the monitor switch must also be replaced.

WARNING

Whenever troubleshooting is performed with the power supply cord disconnected. It may in, some cases, be necessary to connect the power supply cord after the outer case has been removed, in this event:

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. To discharge high voltage capacitor, wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.
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.

WARNING

When the testing is completed:

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. To discharge high voltage capacitor, wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.
4. Reconnect the leads to the primary of the power transformer.
5. Reinstall the outer case (cabinet).
6. Reconnect the power supply cord after the outer case is installed.
7. Run the oven and check all functions.

Microwave ovens should not be run empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven turntable, close the door and set the power to HIGH and then set the microwave timer for two (2) minutes. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out Before Servicing procedure and re-examine the connections to the component being tested.

When all service work is completed and the oven is fully assembled, the microwave power output should be checked and a microwave leakage test should be carried out.


Section 3 Troubleshooting and Testing

CK = Check / RE = Replace



TEST PROCEDURE		A	B	C	D	E	F	F	F	H	I	J	K	L	M	N	N	N	N	N	O	RE	RE	RE	RE	CK	RE	CK	RE	CK	CK	CK	Q	P					
CONDITION	PROBLEM	MAGNETRON	POWER TRANSFORMER	H.V. RECTIFIER	HIGH VOLTAGE CAPACITOR	THERMAL CUT-OUT	PRIMARY INTERLOCK SWITCH	THIRD DOOR SWITCH	SECONDARY INTERLOCK SYSTEM	MONITOR SWITCH	C/F FUSE	HOOD HERMAL CUT-OUT	HOOD FAN MOTOR	CONTROL UNIT	KEY UNIT (MEMBRANE SWITCH)	RELAY (RY-1)	RELAY (RY-2)	RELAY (RY-7)	RELAY (RY-4)	RELAY (RY-3)	RELAY (RY-5, RY-6)	FOIL PATTERN ON P.W.B.	OVEN LAMP OR SOCKET	FAN MOTOR	TURNTABLE MOTOR	STIRRER MOTOR	TURNTABLE OFF CONDITION	HOOD LAMP OR SOCKET	HOOD MOTOR CAPACITOR	HOOD MOTOR OR SOCKET	OPENED OR SHORTED WIRING	SHORTED IN POWER CORD	NO POWER AT OUTLET	LOW VOLTAGE	NOISE FILTER	HUMIDITY SENSOR			
OFF CONDITION	Home fuse blows when power cord is plugged into wall receptacle.																																						
	C/T fuse blows when power cord is plugged into wall receptacle.																																						
	Display does not illuminate 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 during normal condition.)																																						
	Oven lamp does not light with door is opened.																																						
	Hood fan motor operates when power cord is first plugged into wall receptacle.																																						
	Temperature of oven base seems more than 140°F (60°C) because of operation of the range below. But hood fan motor does not turn on automatically. (Normally, food fan motor should be operating at low speed.)																																						
IDLE CONDITION	Hood lights do not turn on when Light hi/lo/off pad is pressed.																																						
	Hood fan motor does not rotate at all with touched Vent hi/lo/off pad.																																						
	Speed of the hood fan motor does not change when the Vent hi/lo/off pad is touched for this function.																																						
MICROWAVE COOKING CONDITION	Oven lamp does not light in cook cycle. (But it does light when door is opened.)																																						
	Fan motor does not operate. (Oven lamp and turntable motor operate.)																																						
	Turntable motor does not operate (Oven lamp lights and fan motor operate.)																																						
	Oven does not go into cook cycle when START pad is touched.																																						
	Oven seems to be operating but little or no heat is produced in oven load. (Food incompletely cooked or not cooked at all at end of cook cycle.)																																						
	Oven goes into a cook cycle but extremely uneven heating is produced in oven load (food).																																						
	Variable cooking does not operate properly except 100% power level mode.																																						
	Function of AUTO DEFROST does not operate properly.																																						
	Stirrer motor does not operate. (Other parts operate.)																																						
	Oven goes into AUTO DEFROST but food is not defrosted well.																																						
SENSOR COOKING CONDITION	The oven stops and "ERROR" is displayed or does not end during Sensor Cooking condition. (Oven does not shut off after a cup of water is boiling by Sensor Cooking.)																																						
	Oven stops at 32 seconds after starting.																																						

Section 3 Troubleshooting and Testing


Test Procedures

Procedure Letter	Component Test
A	<p>MAGNETRON ASSEMBLY TEST</p> <div style="background-color: #e0e0e0; padding: 5px; border: 1px solid black;">  WARNING High voltages are present during the cook cycle, so extreme caution should be observed. Discharge the high voltage capacitor before touching any oven components or wiring. </div> <ol style="list-style-type: none"> 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 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 case (cabinet). 8. Reconnect the power supply cord after the outer case is installed. 9. Run the oven and check all functions. <p>MICROWAVE OUTPUT POWER</p> <p>Power output of the magnetron 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: silicon rectifier, high voltage capacitor and power transformer. This test will require a 16 ounce (453 cc.) measuring cup and an accurate mercury thermometer or thermocouple type temperature tester. For accurate results, the following procedure must be followed carefully:</p> <ol style="list-style-type: none"> 1. Fill the measuring cup with 16 oz. (453 cc.) 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 100% POWER 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 29.2 to 54.2°F (16.2 to 30.1°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 beyond the normal limits. The test is only accurate if the power supply line voltage is 120 volts and the oven cavity is clean.


Section 3 Troubleshooting and Testing

Procedure Letter	Component Test
B	<p>POWER TRANSFORMER TEST</p> <p> WARNING</p> <p>Do not touch the components of the power transformer while power transformer is energized. It is dangerous because this has high voltage components. (High voltages are present at the high voltage terminal, so do not attempt to measure the filament and high voltage.)</p> <ol style="list-style-type: none">1. Disconnect the power supply cord, and then remove outer case.2. Open the door and block it open.3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1)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 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 105.5 ohms for RTRN-A779WRZZ, 100 ohms for RTRN-A765WRZZ; 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 case (cabinet).7. Reconnect the power supply cord after the outer case is installed.8. Run the oven and check all functions.
C	<p>HIGH VOLTAGE RECTIFIER TEST</p> <ol style="list-style-type: none">1. Disconnect the power supply cord, and then remove outer case.2. Open the door and block it open.3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1)4. Isolate the rectifier from the circuit. Using the highest ohm scale of the meter, read the resistance across the terminals and observe, 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.5. Reconnect all leads removed from components during testing.6. Reinstall the outer case (cabinet).7. Reconnect the power supply cord after the outer case is installed.8. Run the oven and check all functions. <p> NOTE</p> <p>Be sure to use an ohmmeter that will supply a forward bias voltage of more than 6.3 volts.</p>

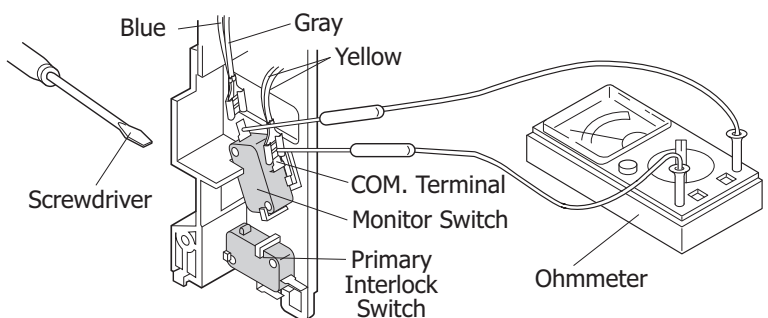
Section 3 Troubleshooting and Testing

Procedure Letter	Component Test
D	<p>HIGH VOLTAGE CAPACITOR TEST</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 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 an open circuit 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 case (cabinet). 7. Reconnect the power supply cord after the outer case is installed. 8. Run the oven and check all functions.
E	<p>THERMAL CUT-OUT AND TEMPERATURE FUSE TEST</p> <p>CAVITY THERMAL CUT-OUT TEST</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 4. A continuity check across the thermal cut-out terminals should indicate a closed circuit unless the temperature of the thermal cut-out reaches approximately 293°F (145°C). An open thermal cut-out indicates overheating of the oven, exchange 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 case (cabinet). 7. Reconnect the power supply cord after the outer case is installed. 8. Run the oven and check all functions. <div style="background-color: #cccccc; padding: 5px; margin-top: 10px;"> <p> CAUTION</p> <p>If the temperature fuse indicates an open circuit at room temperature, replace thermal cut-out.</p> </div>

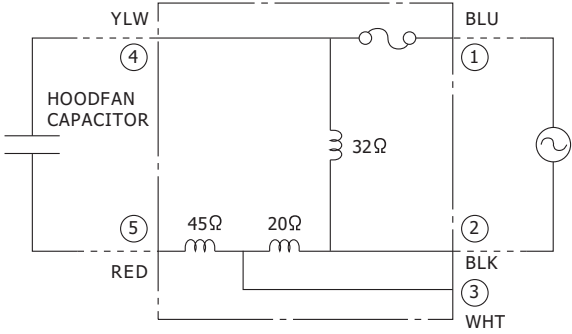
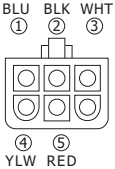
Section 3 Troubleshooting and Testing

Procedure Letter	Component Test
F	<p>PRIMARY INTERLOCK SWITCH AND THIRD DOOR SWITCH TEST</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 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 stop switch (door sensing switch). 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer case (cabinet). 7. Reconnect the power supply cord after the outer case is installed. 8. Run the oven and check all functions.
G	<p>SECONDARY INTERLOCK SYSTEM TEST</p> <p>STOP SWITCH (DOOR SENSING SWITCH)</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 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 stop switch (door sensing switch). 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer case (cabinet). 7. Reconnect the power supply cord after the outer case is installed. 8. Run the oven and check all functions. <div style="background-color: #cccccc; padding: 5px; margin: 10px 0;"> <p> CAUTION</p> <p>If the stop switch (door sensing switch) contacts fail in the open position and the door is closed, the cooling fan motor, stirrer motor and oven light will be activated by RY1.</p> </div> <p>SECONDARY INTERLOCK RELAY (RY2)</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 4. Disconnect two (2) wire leads from the male tab terminals of the Secondary Interlock Relay. Check the state of the relay contacts using an ohmmeter. The relay contacts should be open. If the relay contacts are closed, replace the circuit board entirely or the relay itself. 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer case (cabinet). 7. Reconnect the power supply cord after the outer case is installed. 8. Run the oven and check all functions.

Section 3 Troubleshooting and Testing

Procedure Letter	Component Test
H	<p>MONITOR SWITCH TEST</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 4. Before performing this test, make sure that the primary interlock switch and the Oven lamp relay (RY-1) are operating properly, according to the above Switch Test Procedure. Disconnect the wire lead from the monitor switch (COM) terminal. Check the monitor switch operation by using the ohmmeter as follows. When the door is open, the meter should indicate a closed circuit. When the monitor switch actuator is pushed by a screw driver through the lower latch hole on the front plate of the oven cavity with the door opened (in this condition the plunger of the monitor switch is pushed in), the meter should indicate an open circuit. If improper operation is indicated, the switch may be defective. After testing monitor switch, reconnect the wire lead to the monitor switch (COM) terminal and check the continuity of the monitor circuit. 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer case (cabinet). 7. Reconnect the power supply cord after the outer case is installed. 8. Run the oven and check all functions. <div style="text-align: right; margin-top: 20px;">  </div>
I	<p>BLOWN C/T FUSE TEST</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 4. A continuity check across C/T fuse terminals should indicate a closed circuit unless temperature of C/T fuse reaches approximately 302°F(150°C). An open C/T fuse indicates overheating of the magnetron. Check for restricted air flow to the magnetron, especially the cooling fan air guide. 5. If the C /T fuse is blown when the door is opened, check the oven lamp relay (RY-1), primary interlock switch and monitor switch according to the "TEST PROCEDURE" for those parts before replacing the blown C/T fuse. <div style="background-color: #e0e0e0; padding: 5px; margin-top: 10px;"> <p>! CAUTION If the stop switch (door sensing switch) contacts fail in the open position and the door is closed, the cooling fan motor, stirrer motor and oven light will be activated by RY1.</p> </div> <p>If the C/T fuse is blown by improper switch operation, the C/T fuse and monitor switch must be replaced with "C/T fuse and monitor switch assembly" part number FFS-BA043WRKZ or FFS-BA044WRKZ , even if the monitor switch operates normally. The C/T fuse and monitor switch assembly is comprised of a 20 ampere fuse and switch.</p> <ol style="list-style-type: none"> 6. Reconnect all leads removed from components during testing. 7. Reinstall the outer case (cabinet). 8. Reconnect the power supply cord after the outer case is installed. 9. Run the oven and check all functions.

Section 3 Troubleshooting and Testing

Procedure Letter	Component Test
<p>J</p>	<p>HOOD THERMOSTAT TEST</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 4. A continuity check across the thermal cut-out terminals should indicate an open circuit unless the temperature of the thermal cut-out reaches approximately 140°F (60°C) or more. At that temperature, the contacts will close. The thermal cut-out opens automatically at approximately 113°F (45°C). 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer case (cabinet). 7. Reconnect the power supply cord after the outer case is installed. 8. Run the oven and check all functions.
<p>K</p>	<p>HOOD FAN MOTOR TEST</p> <ol style="list-style-type: none"> 1. Disconnect power supply cord, and remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 4. If the motor does not turn, touch the FAN pad once and check voltage between pins "1" and "2" (Blue and Black wires) of the 6 pin connector. If 120 Volts appear and the hood capacitor is good, replace the hood fan assembly. If 120 Volts does not appear, check the motor circuit. The resistance values of motor terminals are shown below: 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer case (cabinet). 7. Reconnect power supply cord after the outer case is installed. 8. Run oven and check all functions. <div style="display: flex; align-items: flex-start; margin-top: 20px;"> <div style="flex: 1;">  </div> <div style="flex: 1; padding-left: 20px;"> <p><u>Resistance between;</u></p> <p>BLU (1) AND YLW (4) = 0Ω (Shorted)</p> <p>BLK (2) AND YLW (4) = 32Ω</p> <p>BLU (1) AND BLK (2) = 32Ω</p> <p>BLK (2) AND WHT (3) = 20Ω</p> <p>WHT (3) AND RED (5) = 45Ω</p> </div> <div style="flex: 0.2; text-align: center; margin-left: 20px;">  <p>6-PIN CONNECTOR OF HOOD FAN MOTOR</p> </div> </div>

Section 3 Troubleshooting and Testing

Procedure Letter	Component Test
L	<p>TOUCH CONTROL PANEL ASSEMBLY TEST</p> <p>The touch control panel consists of circuits including semiconductors such as LSI, ICs, etc. Therefore, unlike conventional microwave ovens, proper maintenance 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, and troubleshooting by unit replacement is described according to the symptoms indicated.</p> <p>Before testing,</p> <ol style="list-style-type: none"> 1. Disconnect power supply cord, and remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 4. Disconnect the leads to the primary of the power transformer. 5. Ensure that these leads remain isolated from other components and oven chassis by using insulation tape. 6. After that procedure, re-connect the power supply cord. <p>KEY UNIT (Membrane Switch)</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord, and then remove outer case. 2. Open the 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. Re-install the outer case (cabinet). 7. Reconnect the power supply cord after the outer case is installed. 8. Run the oven and check all functions. <p>The following symptoms indicate a defective key unit.</p> <ol style="list-style-type: none"> 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. <p>If the key unit is defective.</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. 4. Replace the key unit (membrane switch). 5. Reconnect all leads removed from components during testing. 6. Re-install the outer case (cabinet). 7. Reconnect the power supply cord after the outer case is installed. 8. Run the oven and check all functions.

Section 3 Troubleshooting and Testing

Procedure Letter	Component Test
L	<p data-bbox="300 289 487 315">CONTROL UNIT</p> <p data-bbox="300 331 1469 394">The following symptoms indicate a defective control unit. Before replacing the control unit, perform the Key unit test (Procedure M) to determine if control unit is faulty.</p> <ol data-bbox="300 405 1396 913" style="list-style-type: none"><li data-bbox="300 405 1396 430">1. In connection with pads.<ol data-bbox="349 436 1258 504" style="list-style-type: none"><li data-bbox="349 436 1258 462">a) When touching the pads, a certain group of pads do not produce a signal.<li data-bbox="349 468 998 493">b) When touching the pads, no pads produce a signal.<li data-bbox="300 510 1396 535">2. In connection with indicators.<ol data-bbox="349 541 1396 772" style="list-style-type: none"><li data-bbox="349 541 1039 567">a) At a certain digit, all or some segments do not light up.<li data-bbox="349 573 803 598">b) At a certain digit, brightness is low.<li data-bbox="349 604 771 630">c) Only one indicator does not light.<li data-bbox="349 636 1396 661">d) The corresponding segments of all digits do not light up; or they continue to light up.<li data-bbox="349 667 641 693">e) Wrong figure appears.<li data-bbox="349 699 901 724">f) A certain group of indicators do not light up.<li data-bbox="349 730 730 756">g) The figure of all digits flicker.<li data-bbox="300 783 1031 808">3. Other possible problems caused by defective control unit.<ol data-bbox="349 814 925 913" style="list-style-type: none"><li data-bbox="349 814 925 840">a) Buzzer does not sound or continues to sound.<li data-bbox="349 846 771 871">b) Clock does not operate properly.<li data-bbox="349 877 657 903">c) Cooking is not possible. <p data-bbox="300 934 665 959">When testing is completed,</p> <ol data-bbox="300 982 1291 1213" style="list-style-type: none"><li data-bbox="300 982 755 1008">1. Disconnect the power supply cord.<li data-bbox="300 1014 738 1039">2. Open the door and block it open.<li data-bbox="300 1045 1291 1071">3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1)<li data-bbox="300 1077 1079 1102">4. Reconnect all leads removed from components during testing.<li data-bbox="300 1108 755 1134">5. Re-install the outer case (cabinet).<li data-bbox="300 1140 1055 1165">6. Reconnect the power supply cord after the case is installed.<li data-bbox="300 1171 795 1197">7. Run the oven and check all functions.

Section 3 Troubleshooting and Testing

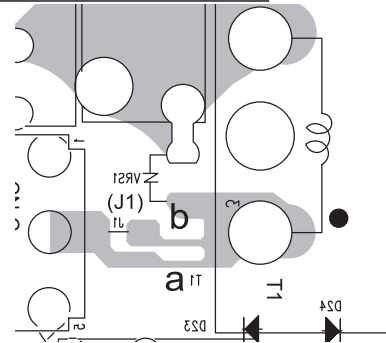
Procedure Letter	Component Test																																																																				
M	<p>KEY UNIT (MEMBRANE SWITCH) TEST</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 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 connector). 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 case (cabinet). 7. Reconnect the power supply cord after the outer case is installed. 8. Run the oven and check all functions. <p>The diagram shows a grid of 8 columns and 4 rows of buttons. The columns are labeled with numbers 1 through 8. The rows are labeled with letters G1 through G4. The buttons are labeled as follows:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>59</td> <td>58</td> <td>57</td> <td>56</td> <td>55</td> <td>54</td> <td>53</td> <td>52</td> </tr> <tr> <td></td> <td>G5</td> <td>G6</td> <td>G7</td> <td>G8</td> <td>G9</td> <td>G10</td> <td>G11</td> <td>G12</td> </tr> <tr> <td>60</td> <td>G4</td> <td>user pref</td> <td>auto cook</td> <td>auto defrost</td> <td>vegetables</td> <td>3</td> <td>6</td> <td>9</td> <td>STOP clear</td> </tr> <tr> <td>61</td> <td>G3</td> <td>/</td> <td>/</td> <td>/</td> <td>/</td> <td>/</td> <td>/</td> <td>⚡</td> <td>power level</td> </tr> <tr> <td>62</td> <td>G2</td> <td>turn table on-off</td> <td>sensor reheat</td> <td>snack menu</td> <td>baked potato</td> <td>2</td> <td>5</td> <td>8</td> <td>0</td> </tr> <tr> <td>1</td> <td>G1</td> <td>timer On-off</td> <td>sensor cook</td> <td>chicken nuggets</td> <td>pop corn</td> <td>1</td> <td>4</td> <td>7</td> <td>START enter +30 sec</td> </tr> <tr> <td>51</td> <td>G13</td> <td>/</td> <td>/</td> <td>/</td> <td>/</td> <td>/</td> <td>/</td> <td>/</td> <td>⚙️</td> </tr> </table> <p style="text-align: center;">KEY UNIT</p>		59	58	57	56	55	54	53	52		G5	G6	G7	G8	G9	G10	G11	G12	60	G4	user pref	auto cook	auto defrost	vegetables	3	6	9	STOP clear	61	G3	/	/	/	/	/	/	⚡	power level	62	G2	turn table on-off	sensor reheat	snack menu	baked potato	2	5	8	0	1	G1	timer On-off	sensor cook	chicken nuggets	pop corn	1	4	7	START enter +30 sec	51	G13	/	/	/	/	/	/	/	⚙️
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60	G4	user pref	auto cook	auto defrost	vegetables	3	6	9	STOP clear																																																												
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Section 3 Troubleshooting and Testing




Procedure Letter	Component Test																					
N	<p>RELAY TEST</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 4. Disconnect the leads to the primary of the power transformer. 5. Ensure that these leads remain isolated from other components and oven chassis by using insulation tape. 6. After that procedure, re-connect the power supply cord. 7. Remove the outer case and check voltage between Pin No. 3 of the 3 pin connector (CN-C) and the lower side terminal of the relay RY-1 on the control unit with an A.C. voltmeter. The meter should indicate 20 volts, if not check oven circuit. <p>RY1 and RY2 Relay Test</p> <p>These relays are operated by D.C. voltage Check voltage at the relay coil with a D.C. voltmeter during the microwave cooking operation. DC. voltage indicated..... Defective relay. DC. voltage not indicated Check diode which is connected to the relay coil. If diode is good, control unit is defective.</p> <table border="1" data-bbox="310 932 1255 1157"> <thead> <tr> <th>RELAY SYMBOL</th> <th>OPERATIONAL VOLTAGE</th> <th>CONNECTED COMPONENTS</th> </tr> </thead> <tbody> <tr> <td>RY-1</td> <td>Approx. 24.0V D.C.</td> <td>Oven lamp / Fan motor / Stirrer motor</td> </tr> <tr> <td>RY-2 (COOK)</td> <td>Approx. 24.0V D.C.</td> <td>Power transformer</td> </tr> <tr> <td>RY-3</td> <td>Approx. 24.0V D.C.</td> <td>Hood motor (HIGH/LOW selection)</td> </tr> <tr> <td>RY-4</td> <td>Approx. 24.0V D.C.</td> <td>Hood motor</td> </tr> <tr> <td>RY-5, RY-6</td> <td>Approx. 24.0V D.C.</td> <td>Hood lamp</td> </tr> <tr> <td>RY-7</td> <td>Approx. 24.0V D.C.</td> <td>Turntable motor</td> </tr> </tbody> </table> <ol style="list-style-type: none"> 8. If any abnormal condition is detected, replace the control unit. 9. Disconnect the power supply cord and then remove outer case. 10. Open the door and block it open. 11. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 12. Reconnect all leads removed from components during testing. 13. Re-install the hood intake duct R. 14. Re-install the outer case (cabinet). 15. Reconnect the power supply cord after the outer case is installed. 16. Run the oven and check all functions. 	RELAY SYMBOL	OPERATIONAL VOLTAGE	CONNECTED COMPONENTS	RY-1	Approx. 24.0V D.C.	Oven lamp / Fan motor / Stirrer motor	RY-2 (COOK)	Approx. 24.0V D.C.	Power transformer	RY-3	Approx. 24.0V D.C.	Hood motor (HIGH/LOW selection)	RY-4	Approx. 24.0V D.C.	Hood motor	RY-5, RY-6	Approx. 24.0V D.C.	Hood lamp	RY-7	Approx. 24.0V D.C.	Turntable motor
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RY-7	Approx. 24.0V D.C.	Turntable motor																				

Section 3 Troubleshooting and Testing

Procedure Letter	Component Test																		
O	<p>FOIL PATTERN ON THE PRINTED WIRING BOARD TEST</p> <p>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.</p> <p>Fuse check and repairs.</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord. 2. Open the door and block it open. 3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 4. Follow the troubleshooting guide given below for repair. <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <thead> <tr> <th style="width: 15%;">STEPS</th> <th style="width: 40%;">OCCURRENCE</th> <th style="width: 45%;">CAUSE OR CORRECTION</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>Only pattern at "a" is broken.</td> <td>*Insert jumper wire J1 and solder.</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Pattern at "a" and "b" are broken.</td> <td>Replace the control unit.</td> </tr> </tbody> </table> <ol style="list-style-type: none"> 5. Make a visual inspection of the varistor. Check for burned damage and examine the transformer with a tester for the presence of layer short-circuit (check the primary coil resistance which is approximately $780\Omega \pm 10\%$). If any abnormal condition is detected, replace the control unit. 6. Reconnect all leads removed from components during testing. 7. Re-install the control unit to the control panel and re-install the control panel to the oven. 8. Reconnect the power supply cord. Run the oven and check all functions. <p>Follow the troubleshooting guide given below, if indicator does not light up after above check and repairs are finished.</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord and then remove outer 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. Ensure that these leads remain isolated from other components and oven chassis by using insulation tape. 5. After that procedure, re-connect the power supply cord. 6. Follow the troubleshooting guide given below for repair. <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <thead> <tr> <th style="width: 15%;">STEPS</th> <th style="width: 45%;">OCCURRENCE</th> <th style="width: 40%;">CAUSE OR CORRECTION</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>The rated AC voltage is not present between Pin No. 3 of the 3-pin connector (CN-C) and the lower side terminal of the relay RY-1</td> <td>Check supply voltage and oven power cord.</td> </tr> <tr> <td style="text-align: center;">2</td> <td>The rated AC voltage is present at primary side of low voltage transformer.</td> <td>Low voltage transformer or secondary circuit defective. Check and replace the control unit.</td> </tr> </tbody> </table> <ol style="list-style-type: none"> 7. Disconnect the power supply cord. 8. Open the door and block it open. 9. To discharge high voltage capacitor, wait for 60 seconds. 10. Reconnect all leads removed from components during testing. 11. Re-install the outer case (cabinet). 12. Reconnect the power supply cord after the outer case is installed. 13. Run the oven and check all functions. 	STEPS	OCCURRENCE	CAUSE OR CORRECTION	1	Only pattern at "a" is broken.	*Insert jumper wire J1 and solder.	2	Pattern at "a" and "b" are broken.	Replace the control unit.	STEPS	OCCURRENCE	CAUSE OR CORRECTION	1	The rated AC voltage is not present between Pin No. 3 of the 3-pin connector (CN-C) and the lower side terminal of the relay RY-1	Check supply voltage and oven power cord.	2	The rated AC voltage is present at primary side of low voltage transformer.	Low voltage transformer or secondary circuit defective. Check and replace the control unit.
STEPS	OCCURRENCE	CAUSE OR CORRECTION																	
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2	The rated AC voltage is present at primary side of low voltage transformer.	Low voltage transformer or secondary circuit defective. Check and replace the control unit.																	



Section 3 Troubleshooting and Testing

Procedure Letter	Component Test
P	<p>HUMIDITY SENSOR TEST</p> <p>Checking the initial sensor cooking condition</p> <div data-bbox="300 394 1481 510" style="background-color: #f0f0f0; padding: 5px;">  WARNING The oven should be fully assembled before following procedure. </div> <ol style="list-style-type: none"> 1. The oven should be plugged in at least two minutes before sensor cooking. 2. Room temperature should not exceed 35°C. 3. The unit should not be installed in any area where heat and steam are generated. The unit should not be installed, for example, next to a conventional surface unit. Refer to Section 2. 4. Exhaust vents are provided on the back of the unit for proper cooling and air flow in the cavity. To permit adequate ventilation, be sure to install so as not to block these vents. There should be some space for air circulation. 5. Be sure the exterior of the cooking container and the interior of the oven are dry. Wipe off any moisture with a dry cloth or paper towel. 6. The Sensor works with food at normal storage temperature. For example, chicken pieces would be at refrigerator temperature and canned soup at room temperature. 7. Avoid using aerosol sprays or cleaning solvents near the oven while using Sensor settings. The sensor will detect the vapor given off by the spray and turn off before food is properly cooked. 8. After the oven is started on sensor cooking condition, if the sensor has not detected the vapor of the food, ERROR will appear and the oven will shut off. <p>WATER LOAD COOKING TEST</p> <div data-bbox="300 1121 1481 1236" style="background-color: #f0f0f0; padding: 5px;">  WARNING The oven should be fully assembled before following procedure. </div> <p>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.</p> <ol style="list-style-type: none"> 1. Fill approximately 200 milliliters of tap water in a 1000 milliliter measuring cup. 2. Place the container on the center of tray in the oven cavity. 3. Close the door. 4. Touch the Timer On-Off pad once, the POWER LEVEL pad twice and the START pad once. And touch the number pads 1 once and the number pad 2 once. Now, the oven is in the sensor cooking condition, and "AH10" and "COOK" will appear in the display. 5. The oven will operate for the first 32 seconds, without generating microwave energy. <div data-bbox="300 1566 1481 1709" style="background-color: #f0f0f0; padding: 5px;">  NOTE ERROR will appear if the door is opened or STOP/CLEAR pad is touched during first stage of sensor cooking. </div> <ol style="list-style-type: none"> 6. After approximately 32 seconds, microwave energy is produced. If ERROR is displayed or the oven does not turn off, replace the humidity sensor or check the control unit, refer to explanation below.

Section 3 Troubleshooting and Testing

Procedure Letter	Component Test
P	<p>TESTING METHOD FOR HUMIDITY SENSOR AND/OR CONTROL UNIT</p> <p>To determine if the sensor is defective, the simplest method is to replace it with a new replacement sensor.</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. 4. Remove the humidity sensor. 5. Install the new humidity sensor. 6. Reconnect all leads removed from components during testing. 7. Re-install the outer case (cabinet). 8. Reconnect the power supply cord after the outer case is installed. 9. Reconnect the oven to the power supply and check the sensor cook operation as follows: <ol style="list-style-type: none"> a) Fill approximately 200 milliliters of tap water in a 1000 milliliter measuring cup. b) Place the container on the center of tray in the oven cavity. c) Close the door. d) Touch the Timer On-Off pad once, the POWER LEVEL pad twice and the START pad once. And touch the number pads 1 once and the number pad 2 once. e) The control panel is in automatic Sensor operation. f) The oven turns off automatically, and the time for detecting moisture will be displayed. <p>If new sensor dose not operate properly, the problem is with the control unit, and refer to explanation below.</p> <p>CHECKING CONTROL UNIT</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. 4. Disconnect the sensor connector that is mounted to control panel. 5. Then connect the dummy resistor circuit (see fig.) to the sensor connector of control panel. 6. Disconnect the leads to the primary of the power transformer. 7. Ensure that these leads remain isolated from other components and oven chassis by using insulation tape. 8. After that procedure, re-connect the power supply cord. 9. Check the sensor cook operation proceed as follows: <ol style="list-style-type: none"> a) Close the door. Touch the Timer On-Off pad once, the POWER LEVEL pad twice and the START pad once. And touch the number pads 1 once and the number pad 2 once. b) The control panel is in the sensor cooking operation. c) After approximately 41 seconds, push plunger of select switch for more than 3 seconds. This condition is same as judgement by humidity sensor. d) After approximately 3 seconds, the display shows "X X. X X " which is the time for detecting moisture. <p>If the above is not the case, the control unit is probably defective. If the above is proper, the humidity sensor is probably defective.</p>

Section 3 Troubleshooting and Testing

Procedure Letter	Component Test								
<p>P</p>	<ol style="list-style-type: none"> 10. Disconnect the power supply cord, and then remove outer case. 11. Open the door and block it open. 12. Discharge high voltage capacitor. 13. Disconnect the dummy resistor circuit from the sensor connector of control panel. 14. Carry out necessary repair. 15. Reconnect all leads removed from components during testing and repairing. 16. Re-install the outer case (cabinet). 17. Reconnect the power supply cord after the outer case is installed. Run the oven and check all functions. 18. Carry out "Water load cooking test" again and ensure that the oven works properly. <div style="text-align: center;"> <p style="text-align: center;"> R1,R2: $22\Omega \pm 1\%$ 1/2W R3: $4.3k\Omega \pm 5\%$ 1/4W R4: $1M\Omega \pm \%$ 1/4W </p> </div>								
<p>Q</p>	<p>NOISE FILTER TEST</p> <ol style="list-style-type: none"> 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. (See Warnings and Instructions on page 3-1) 4. Disconnect the leads to the primary of the power transformer. 5. Using an ohmmeter, check between the terminals as described in the following table. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>MEASURING POINT</th> <th>INDICATION OF OHMMETER</th> </tr> </thead> <tbody> <tr> <td>Between N and H</td> <td>Open circuit.</td> </tr> <tr> <td>Between terminal N and GRY</td> <td>Short circuit.</td> </tr> <tr> <td>Between terminal L and RED</td> <td>Short circuit.</td> </tr> </tbody> </table> <p>If incorrect readings are obtained, replace the noise filter.</p> <ol style="list-style-type: none"> 6. Reconnect all leads removed from components during testing. 7. Reinstall the outer case (cabinet). 8. Reconnect the power supply cord after the outer case is installed. 9. Run the oven and check all functions. <div style="text-align: center;"> </div>	MEASURING POINT	INDICATION OF OHMMETER	Between N and H	Open circuit.	Between terminal N and GRY	Short circuit.	Between terminal L and RED	Short circuit.
MEASURING POINT	INDICATION OF OHMMETER								
Between N and H	Open circuit.								
Between terminal N and GRY	Short circuit.								
Between terminal L and RED	Short circuit.								

WARNING

To prevent an electric shock, take the following precautions:

1. Before wiring:
 - A. Disconnect the power supply.
 - B. Open the door and wedge the door open.
 - C. Discharge the high voltage capacitor and wait for 60 seconds.
2. DO NOT let wire leads touch to the following parts:
 - A. High voltage parts: Magnetron, High voltage transformer, High voltage capacitor and High voltage rectifier assembly.
 - B. Hot parts: Oven lamp, Magnetron, High voltage transformer and Oven cavity.
 - C. Sharp edge: Bottom plate, Oven cavity, Waveguide flange, Chassis support and other metallic plates.
 - D. Movable parts (to prevent a fault) Fan blade, Fan motor, Switch, Switch lever, Open button.
3. Do not catch the wire leads in the outer case cabinet.
4. Insert the positive lock connector completely until its pin is locked. Make sure that the wire leads should not come off even if the wire leads are pulled.
5. To prevent an error function, connect the wire leads correctly, referring to the Pictorial Diagram.

WARNING

Avoid possible exposure to microwave energy. Please follow instructions below before operating oven.

1. Disconnect the power supply cord.
2. Make sure that a definite "click" can be heard when the microwave oven door is unlatched. (Hold the door in a closed position with one hand, then push the door open button with the other, this causes the latch leads to rise, it is then possible to hear a "click" as the door switches operate.)
3. Visually check the door and cavity face plate for damage (dents, cracks, signs of arcing etc.). Carry out any remedial work that is necessary before operating the oven.

Do not operate the oven if any of the following conditions exist;

1. Door does not close firmly.
2. Door hinge, support or latch hook is damaged.
3. The door gasket or seal is damaged.
4. The door is bent or warped.
5. There are defective parts in the door interlock system.
6. There are defective parts in the microwave generating and transmission assembly.
7. There is visible damage to the oven.

Do not operate the oven:

1. Without the RF gasket (Magnetron).
2. If the wave guide or oven cavity are not intact.
3. If the door is not closed.
4. If the outer case (cabinet) is not fitted.

CAUTION

Disconnect oven from power supply before removing outer case. Discharge high voltage capacitor before touching any oven components or wiring after removing outer case.

Section 4 Component Teardown

NOTE

The following adjustments or component replacement can be performed without removing the oven from the wall.

1. Hood lamps, sockets and grease filter.
2. Oven lamp, base cover and lamp glass assembly.
3. Turntable motor.
4. Hood exhaust louver.
5. Control panel assembly or components.
6. Stirrer cover and stirrer fan.

Hood Exhaust Louver Removal

1. Disconnect the power supply cord.
2. Open the oven door and block it open.
3. Remove the one (1) screw holding the outer case cabinet to the oven cavity front face plate (the position is front / center on the outer case cabinet).
4. Remove the two (2) screws holding the hood louver to the oven cavity.
5. Remove the hood louver from the over by pushing the right and left tabs of the hood louver.
6. Now, the hood exhaust louver is free.

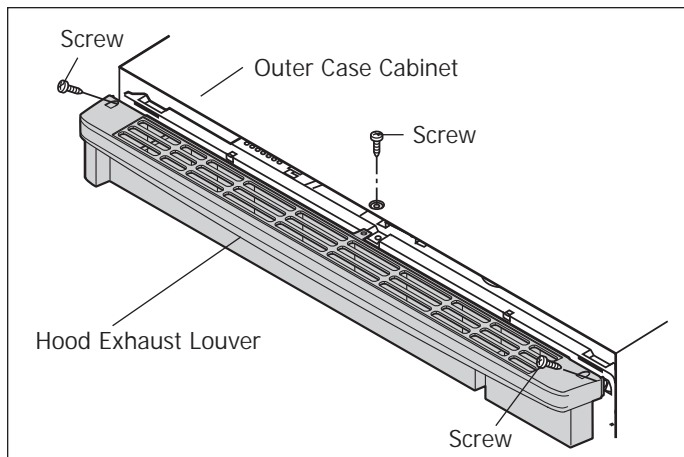


Figure 4-1.

Removal Of Oven From Wall

(Two persons recommended to remove the oven)

1. Disconnect the power supply cord, and uncoil the power supply cord.
2. To discharge the high voltage capacitor, wait for 60 seconds.
3. Remove the turntable tray and support from the oven cavity.
4. While supporting the front of the oven, unfasten the two (2) screws holding the oven to the unit mounting plate.
5. While supporting the oven, remove the two (2) screws holding the oven (outer case cabinet) to the top cabinet.
6. Remove the oven from the unit mounting plate and pull the power cord out of the wall cabinet.
7. The oven is now free and can be placed on the work surface selected for servicing the oven.
8. Installation is the reverse of this procedure.

Outer Case Removal

Remove the oven from the wall and proceed as follows:

1. Disconnect the power supply cord.
2. Open the door and block it open.
3. Remove three (3) screws holding the hood exhaust louver to the oven. (Refer to procedure of "HOOD EXHAUST LOUVER REMOVAL".)
4. Remove four (4) screws holding the rear stay to the hood fan motor or the oven, and remove it.
5. Remove the two (2) screws holding the left side of the base cover to the outer case cabinet.
6. Remove the four (4) screws from the rear of the outer case cabinet.
7. Slide the outer case cabinet back about 1 inch (3 cm) to free it from retaining clips on the cavity face plate.
8. Disconnect the three (3) pin connector of the power supply cord from the wiring harness and remove the power supply cord together with the outer case.
9. Discharge high voltage capacitor.

CAUTION

Disconnect oven from power supply before removing outer case.

Discharge the high voltage capacitor before touching any oven components or wiring.

Power Transformer Removal

REMOVAL

1. Disconnect the power supply cord, remove the oven from wall, and remove outer case. (Refer to procedure of "Removal Of Oven From Wall" and "Outer Case Removal".) Proceed as follows.
2. Open the door and block it open.
3. Discharge high voltage capacitor.

NOTE

To discharge the high voltage capacitor, wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

4. Remove one (1) screw holding the hood duct to the oven cavity front flange.
5. Disconnect the stop switch harness from the chassis support and disconnect the wire leads from the fan motor.
6. Lift up the fan motor side of the hood duct.
7. Disconnect filament leads of transformer from the magnetron and capacitor.
8. Disconnect high voltage leads of capacitor from the transformer.
9. Disconnect wire leads from transformer.
10. Remove two (2) screws holding the transformer to right base plate.

RE-INSTALL

1. Install by sliding the transformer on the right base plate with its primary terminals toward outer case.
2. Secure the transformer with two (2) screws to bottom plate.
3. Re-connect wire leads (primary and high voltage) to the transformer and filament leads of transformer to magnetron and high voltage capacitor. Refer to "PICTORIAL DIAGRAM".
4. Re-install the hood duct holding the fan motor to the oven cavity front flange with one (1) screw.
5. Re-connect the wire leads to the chassis support and the fan motor, referring to "PICTORIAL DIAGRAM".
6. Re-install the outer case and check that oven is operating properly.



CAUTION

Make sure the wire leads never touch the fan blade.

Hood Fan Motor, Hood Duct, Oven Lamp Socket And AH Sensor Removal

1. Disconnect the power supply cord and remove the oven from wall and remove outer case. (Refer to procedure of "Removal of Oven from Wall" and "Outer Case Removal".)
2. Open the door and block it open.
3. Discharge high voltage capacitor.

NOTE

To discharge the high voltage capacitor, wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

HOOD FAN MOTOR

4. Disconnect the 6-pin connector of the hood fan motor from the main wire harness located at the right edge of the hood duct and release the snap band from the hood duct.
5. Remove the hood fan motor from the hood duct by lifting it up.
6. Now, the hood fan motor is free.

HOOD DUCT

7. Disconnect the connector CN-F from the control unit.
8. Remove one (1) screw holding the hood duct to the oven cavity front plate.
9. Release the 6-pin connector and the 3-pin connector of the main harness A from the hood duct.
10. Disconnect the wire leads from the fan motor and chassis support, and release the wire leads from holes of the hood duct.
11. Remove the two (2) unit mounting screws from the chassis support (right side) and the hood duct (left side).
12. Remove the one (1) screw holding the chassis support.
13. Remove the chassis support.
14. Remove the hood duct from the oven cavity by lifting it up.

Continued on next page

Section 4 Component Teardown

OVEN LAMP SOCKET

15. Screw the oven lamp out from the lamp socket.
16. Remove the lamp socket from the lamp angle.
17. Pull the wire leads from the oven lamp socket by pushing the terminal hole of the oven lamp socket with a small flat type screw driver.
18. Now, the oven lamp socket is free.

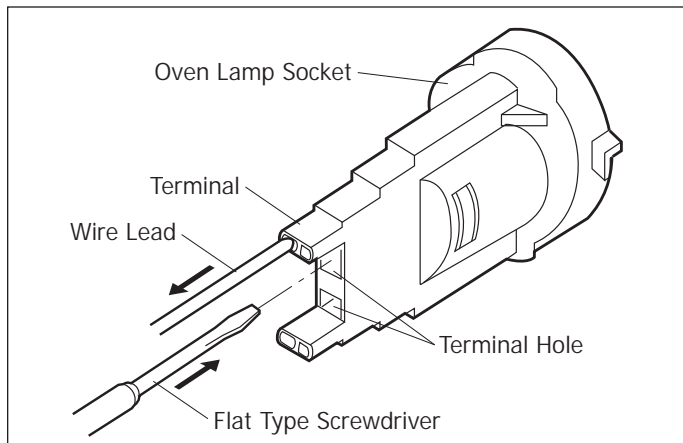


Figure 4-2.

AH SENSOR

19. Release the harness of the AH sensor assembly from three (3) wire holders of the hood duct.
20. Remove two (2) screws holding the AH sensor assembly to the hood duct.
21. Now, the AH sensor assembly is free.

Magnetron Removal

1. Disconnect power supply cord, remove oven from wall and remove outer case (Refer to procedure of "Removal of Oven from Wall" and "Outer Case Removal".)
2. Open the door and block it open.
3. Discharge high voltage capacitor.

NOTE

To discharge the high voltage capacitor, wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

4. Disconnect the wire leads from the fan motor and the chassis support, and release them from the holes of hood duct.
5. Remove the one (1) screw holding the hood duct to the oven cavity front plate, and lift up the fan motor side of the hood duct.
6. Remove the one (1) screw holding the capacitor holder to the hood intake duct.
7. Disconnect the high voltage wire leads of the high voltage rectifier assembly from the magnetron.
8. Disconnect the filament lead of the transformer from the magnetron.
9. Remove the power transformer from the right base plate, referring to "POWER TRANSFORMER REMOVAL".
10. Carefully remove four (4) mounting screws holding the magnetron to waveguide. When removing the screws hold the magnetron to prevent it from falling.
11. Remove the magnetron from the unit with care so the magnetron tube should not be hit by any metal object around the tube.
12. Remove the one (1) screw holding the magnetron air guide to the magnetron.
13. Remove the magnetron air guide.

CAUTION

When replacing the magnetron, be sure the R.F. Gasket is in place and mounting screws are tightened securely.

High Voltage Rectifier And High Voltage Capacitor Removal

1. Disconnect power supply cord, remove oven from wall and remove outer case (Refer to procedure of "Removal of Oven from Wall" and "Outer Case Removal".)
2. Open the door and block it open.
3. Discharge high voltage capacitor.

NOTE

To discharge the high voltage capacitor, wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

4. Disconnect the wire leads from the fan motor and the chassis support, and release them from the holes of hood duct.
5. Remove the one (1) screw holding the hood duct to the oven cavity front flange, and lift up the fan motor side of the hood duct.
6. Disconnect the high voltage wire leads with high voltage rectifier from the magnetron.
7. Disconnect filament lead of the transformer from high voltage capacitor.
8. Disconnect high voltage wire from capacitor.
9. Remove one (1) screw holding capacitor holder and high voltage rectifier to the hood intake duct.
10. Disconnect the high voltage rectifier assembly from the high voltage capacitor.
11. Now, the high voltage rectifier assembly is free.
12. Remove capacitor from the holder.
13. Now, the high voltage capacitor is free.

CAUTION

When replacing the high voltage rectifier assembly, the ground side terminal must be secured firmly with a grounding screw.

Turntable Motor Removal

1. Disconnect the power supply cord.
2. Open the door and block it open.
3. Remove the three (3) screws holding the base cover to the oven cavity
4. Remove the base cover from the oven cavity by pulling down and moving to the left slightly.
5. Disconnect the wire leads from the turntable motor.
6. Remove one (1) screw holding turntable motor to the oven cavity.
7. Now the turntable motor is free.

Hood Fan Thermal Cut-Out Removal

1. Disconnect power supply cord, remove oven from wall and remove outer case (Refer to procedure of "Removal of Oven from Wall" and "Outer Case Removal".)
2. Open the door and block it open.
3. Discharge high voltage capacitor.

NOTE

To discharge the high voltage capacitor, wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

4. Disconnect the wire leads from the hood fan thermal cut-out.
5. Remove one (1) screw holding the thermal cut-out to the right base plate.
6. Remove the hood fan thermal cut-out from the right base plate.
7. Hood fan thermal cut-out is now free.

Section 4 Component Teardown

Thermal Cut-Out (Cavity) Removal

1. Disconnect power supply cord, remove oven from wall and remove outer case (Refer to procedure of "Removal of Oven from Wall" and "Outer Case Removal".)
2. Open the door and block it open.
3. Discharge high voltage capacitor.

NOTE

To discharge the high voltage capacitor, wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

4. Remove two (2) unit mounting screws.
5. Remove the hood duct. (Refer to the procedure of "HOOD FAN MOTOR, HOOD DUCT AND OVEN LAMP SOCKET REMOVAL".)
6. Straighten the tab holding the thermal cut-out to the top plate of the oven cavity.
7. Release the thermal cut-out (cavity) from the one slit of the oven cavity top plate.
8. Disconnect the wire leads from the thermal cut-out (cavity).
9. Now, the thermal cut-out (cavity) is free.

NOTE

When the tab is broken or turned off, use the another tab which is fixed near the slit when the new thermal cut-out is replaced.

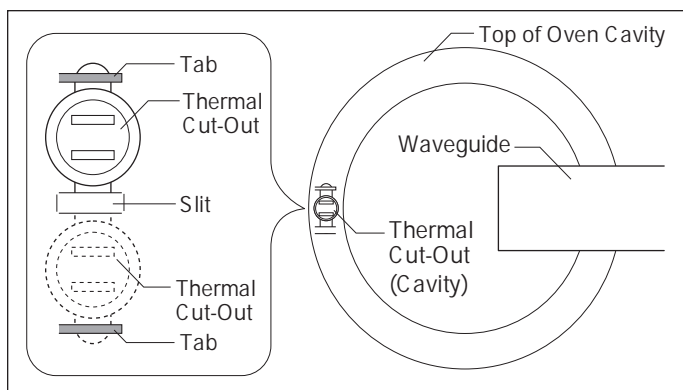


Figure 4-3.

Cooling Fan Motor Removal

REMOVAL

1. Disconnect the power supply cord, remove the oven from wall and remove outer case (Refer to procedure of "Removal of Oven from Wall" and "Outer case Removal".)
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the wire leads from the fan motor and the chassis support.
5. Remove one (1) screw holding the hood duct to oven cavity.
6. Release the wire leads from the hole of the hood duct.
7. Lift up the fan motor side of the hood duct.
8. Remove the two (2) screws holding the fan motor to the hood duct.
9. Remove the fan blade from the fan motor shaft according the following procedure.
10. Hold the edge of the rotor of the fan motor by using a pair of groove joint pliers.

CAUTION

Make sure that any pieces do not enter the gap between the rotor and the stator of the fan motor. The rotor is easy shaven by pliers and metal pieces may be produced. Do not touch the pliers to the coil of the fan motor because the coil may be cut or damaged. Do not disfigure the bracket by touching with the pliers.

11. Remove the fan blade from the shaft of the fan motor by pulling and rotating the fan blade with your hand.
12. Now, the fan blade will be free.

CAUTION

Do not re-use the removed fan blade because the hole (for shaft) may be larger than normal.

INSTALLATION

1. Install the fan blade to the fan motor shaft according to the following procedure.
2. Hold the center of the bracket which supports the shaft of the fan motor on the flat table.
3. Apply the screw lock tight into the hole (for shaft) of the fan blade.

Section 4 Component Teardown

4. Install the fan blade to the shaft of fan motor by pushing the fan blade with a small, light weight, ball peen hammer or rubber mallet.

CAUTION

Do not hit the fan blade strongly when installing because the bracket may be deformed. Make sure that the fan blade rotates smoothly after installation. Make sure that the axis of the shaft is not slanted.

5. Install the fan motor to the hood duct with the two (2) screws.
6. Install the hood duct to the oven cavity with the one (1) screw.
7. Re-install wire leads to the hole of the hood duct.
8. Connect the wire leads to the fan motor and chassis support, referring to the pictorial diagram.
9. Refer to procedure of "Outer case Removal" and reverse their procedure. Re-install the outer case.

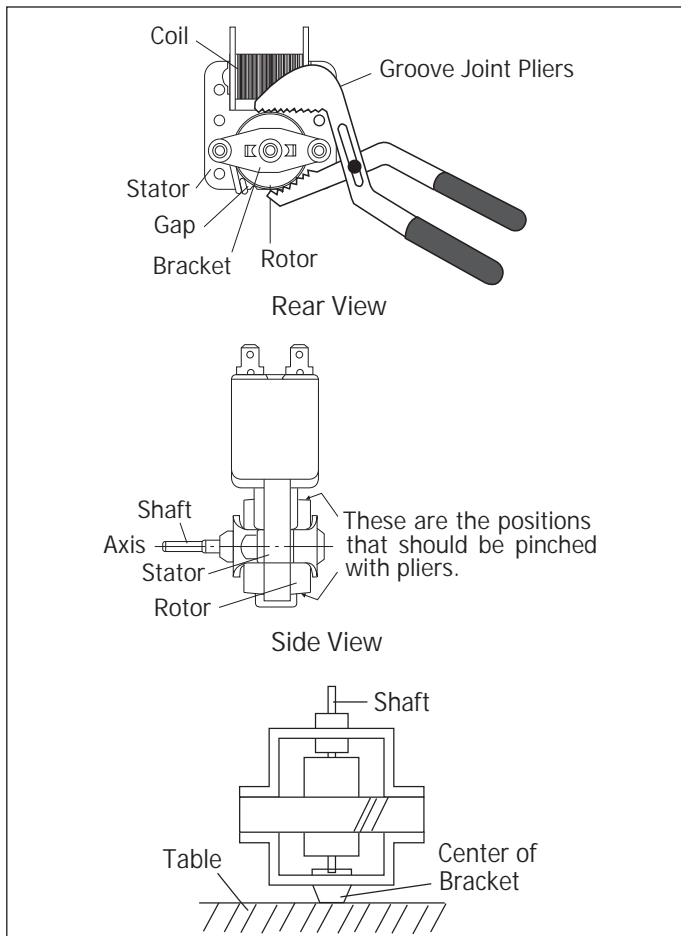


Figure 4-4.

Oven Lamp Removal

1. Disconnect the power supply cord.
2. Remove three (3) screws holding the hood exhaust louver to oven cavity front flange.
3. Remove the hood exhaust louver from the oven by pushing the right and left tabs of the hood exhaust louver. (Refer to procedure of "HOOD EXHAUST LOUVER REMOVAL")
4. Lift the oven lamp cover up.
5. Now, the oven lamp and the socket are found.
6. Screw the oven lamp out from the lamp socket.
7. Now, the oven lamp is free.

Positive Lock® Connector (No-Case Type) Removal

1. Disconnect the power supply cord and remove the oven from wall and outer case. (Refer to procedure of "Removal of Oven from Wall" and Outer Case Removal")
2. Open the door and block it open.
3. Discharge high voltage capacitor.

NOTE

To discharge the high voltage capacitor, wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

4. Push the lever of positive lock® connector.
5. Pull down on the positive lock® connector.

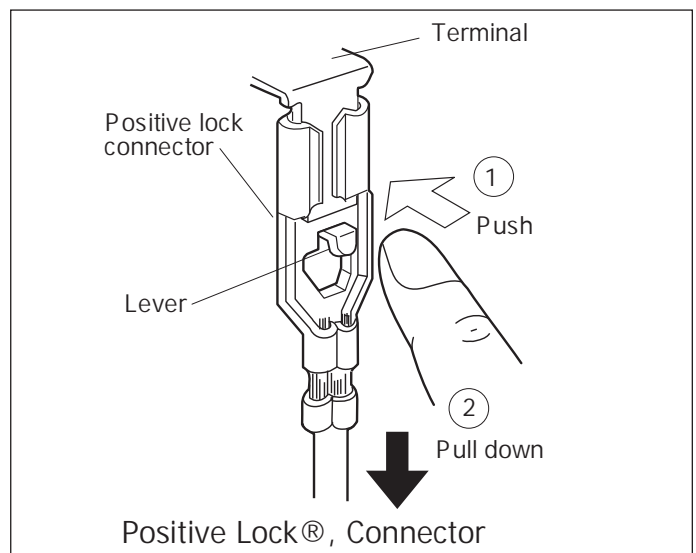


Figure 4-5. Door Switch Components

Section 4 Component Teardown

Stirrer Motor Removal

1. Disconnect the power supply cord and remove the oven from wall and outer case. (Refer to procedure of "Removal of Oven from Wall" and Outer case Removal")
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Remove the hood fan motor and the hood duct from the oven cavity, referring to the procedure of "HOOD FAN MOTOR, HOOD DUCT AND OVEN LAMP SOCKET REMOVAL".
5. Disconnect the wire leads from the stirrer motor.
6. Remove the two (2) screws holding the stirrer motor to the waveguide of the oven cavity.
7. Remove the stirrer motor from the waveguide.
8. Now, the stirrer motor is free.
9. When installing the stirrer motor, the shaft of stirrer motor must be inserted to the stirrer fan shaft. Refer to the procedure of "STIRRER COVER AND STIRRER FAN INSTALLATION".

Stirrer Cover And Stirrer Fan Removal

1. Put the stirrer fan on the stirrer cover to match the stirrer fan shaft to the center of the stirrer support.
2. Insert the shaft of stirrer fan to the shaft of stirrer motor.
3. Insert the cutout of stirrer cover to the tabs on the ceiling.
4. Install the stirrer cover to the oven cavity, and secure it by one canoe clip

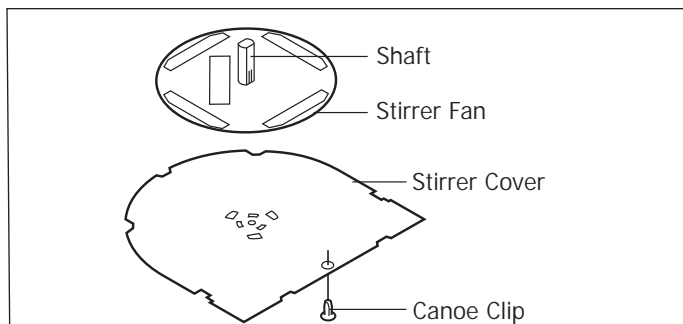


Figure 4-6.

Servicing The Touch Control Panel

Precautions For Handling Electronic Components

This unit uses CMOS LSI in the integral part of the circuits. When handling these parts, the following precautions should be strictly followed. CMOS LSI have extremely high impedance at its input and output terminals. For this reason, it is easily influenced by the surrounding high voltage power source, static electricity charge in clothes, etc. and sometimes it is not fully protected by the built-in protection circuit.

In order to protect CMOS LSI.

1. When storing and transporting, thoroughly wrap them in aluminium foil. Also wrap all PW boards in aluminium foil.
2. When soldering, ground the technician and use a grounded soldering iron and work table.

Servicing of Touch Control Panel

The following are procedures to permit servicing of the touch control panel of the microwave oven and the precautions you must take when doing so. To perform the servicing, power to the touch control panel is available either from the power line of the oven itself or from an external power source.

A. Servicing the touch control panel with power supply of the oven:

CAUTION

The high voltage transformer of the microwave oven is still live during servicing and presents a hazard.

Therefore, before checking the performance of the touch control panel:

1. Disconnect the power supply cord and then remove the outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.

NOTE

To discharge the high voltage capacitor, wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

4. Disconnect the leads to the primary of the power transformer.
5. Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, re-connect the power supply cord.

After checking performance of the touch control panel:

1. Disconnect the power supply cord.
2. Open the door and block it open.
3. Reconnect the leads to the primary of the power transformer.
4. Reinstall the outer case (cabinet).
5. Reconnect the power supply cord after the outer case is installed.
6. Run the oven and check all functions.
 - a) On some models, the power supply cord between the touch control panel and the oven itself is so short that the two can't be separated. For those models, check and repair all the controls (sensor-related ones included) of the touch control panel while keeping it connected to the oven.
 - b) On some models, the power supply cord between the touch control panel and the oven proper is long enough that they may be separated from each other. For those models, it is possible to check and repair the controls of the touch control panel while keeping it apart from the oven proper; in this case you must short both ends of the door sensing switch (on PWB) of the touch control panel with a jumper, which activates an operational state that is equivalent to the oven door being closed. As for the sensor-related controls of the touch control panel, checking them is possible if dummy resistor(s) with resistance equal to that of the controls are used.

B. Servicing the touch control panel with power supply from an external power source:

Disconnect the touch control panel completely from the oven proper, and short both ends of the door sensing switch (on PWB) of the touch control panel, which brings about an operational state that is equivalent to the oven door being closed. Connect an external power source to the power input terminal of the touch control panel, then it is possible to check and repair the controls of the touch control panel; it is also possible to check the sensor-related controls of the touch control panel by using the dummy resistor(s).

Servicing Tools

Tools required to service the touch control panel assembly.

1. Soldering iron: 60W (It is recommended to use a soldering iron with a grounding terminal.)
2. Oscilloscope: Single beam, frequency range: DC - 10MHz type or more advanced model.
3. Others: Hand tools

Other Precautions

1. Before turning on power source of the control unit, remove the aluminium foil applied for preventing static electricity.
2. Connect the connectors of the key unit to the control unit, being sure that the lead wires are not twisted.
3. After aluminium foil is removed, be careful that abnormal voltage due to static electricity etc. is not applied to the input or output terminals.
4. Attach connectors, electrolytic capacitors, etc. to PWB, making sure that all connections are tight.
5. Be sure to use specified components where high precision is required.

Section 4 Component Teardown

Control Panel Assembly And Control Unit Removal

1. Disconnect the power supply cord.
2. Open the door and block it open.
3. Remove one (1) screw holding the hood exhaust louver to oven cavity front flange.
4. Remove the hood exhaust louver from the oven by pushing the right and left tabs of the hood exhaust louver. (Refer to procedure of "HOOD EXHAUST LOUVER REMOVAL")
5. Remove one (1) screw holding the control panel to the oven cavity front face plate.
6. Release the control panel from the oven cavity front face plate by lifting it up.
7. Disconnect the wire leads from the relays RY1 and RY2.
8. Disconnect the connectors CN-A, CN-B, CN-C, CN-E and CN-F from the control unit.
9. Remove the control panel assembly from the oven.
10. Now, the control panel assembly is free.
11. Disconnect the ribbon cable from the connector CN-G.
12. Remove three (3) screws holding the control unit to the key fixing plate.
13. Now, the control unit is free.

Graphic Sheet And Membrane Switch Replacement

REMOVAL

1. Disconnect the power supply cord and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.

NOTE

To discharge the high voltage capacitor, wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

4. Remove the control panel assembly, referring to chapter of CONTROL PANEL ASSEMBLY AND CONTROL UNIT REMOVAL.
5. Disconnect the ribbon cable from the connector CN-G.

6. Tear away the graphic sheet from the control panel frame.
7. Tear away the membrane switch from the control panel frame.

REINSTALLATION

1. Remove remaining adhesive on the control panel frame surfaces with a soft cloth soaked in alcohol.
2. Tear the backing paper from the new membrane switch.
3. Insert the ribbon cable of the membrane switch into the slit of the control panel frame and key fixing frame.
4. Adjust the upper edge and right edge of the membrane switch to the small depression on the surface of the control panel frame.
5. Attach the membrane switch to the control panel frame by rubbing with a soft cloth not to scratch.
6. Tear the backing paper from the new graphic sheet.
7. Adjust the upper edge and right edge of the graphic sheet to the large depression on the surface of the control panel frame.
8. Attach the graphic sheet to the control panel frame by rubbing with a soft cloth not to scratch.
9. Reconnect the ribbon cable to the connector CN-G.
10. Reconnect all leads and connectors removed from the control unit
11. Reinstall the control panel assembly to the oven

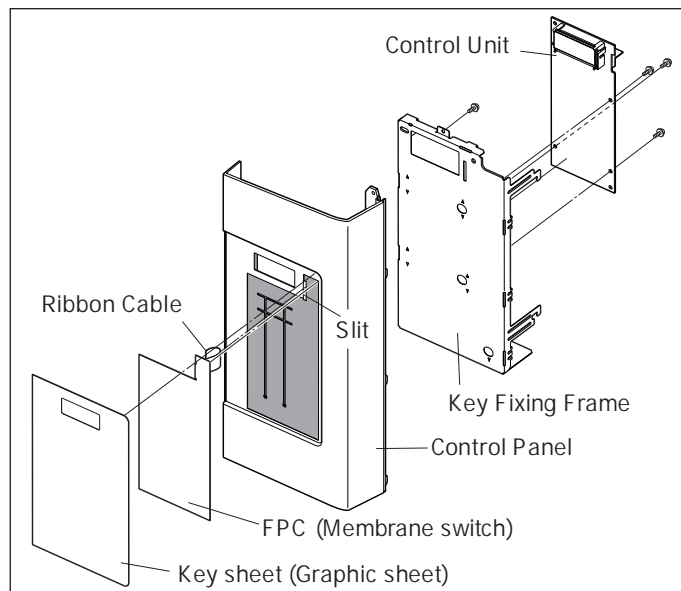


Figure 4-7. Key Unit Location

Stop Switch (Door Sensing Switch), Primary Interlock Switch, Third Door Switch And Monitor Switch Removal

Removal

1. Disconnect the power supply cord and remove the oven from wall and remove outer case. (Refer to procedure of "Removal of Oven from Wall" and "Outer case Removal")
2. Open the door and block it open.
3. Discharge high voltage capacitor.

NOTE

To discharge the high voltage capacitor, wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

4. Remove the control panel assembly, referring to the procedure of "CONTROL PANEL ASSEMBLY, CONTROL UNIT AND KEY UNIT REMOVAL".
5. Remove the two (2) screws holding the latch hook to the oven cavity front flange.
6. Remove latch hook from oven cavity front flange.
7. Disconnect the wire leads of each switch.
8. Remove each switch from the latch hook by pushing the one (1) stopper tub holding each switch.
9. Now, each switch is free.

Reinstall

1. Re-install each switch in its place. The primary interlock switch is in the lower position, door sensing switch is in the upper position, the third door switch is in the upper vertical position and the monitor switch is in the middle position.
2. Re-connect wire leads to each switch. Refer to pictorial diagram.
3. Secure the latch hook (with two (2) mounting screws) to oven cavity front flange.
4. Make sure that the monitor switch is operating properly and check continuity of the monitor circuit. Refer to chapter "Test Procedure" and "Adjustment procedure".

Stop Switch (Door Sensing Switch), Primary Interlock Switch, Third Door Switch And Monitor Switch Adjustment

1. Disconnect the power supply cord and remove the oven from wall and remove outer case. (Refer to procedure of "Removal of Oven from Wall" and "Outer case Removal")
2. Open the door and block it open.
3. Discharge high voltage capacitor.

NOTE

To discharge the high voltage capacitor, wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

4. Remove the control panel assembly, referring to the procedure of "CONTROL PANEL ASSEMBLY, CONTROL UNIT AND KEY UNIT REMOVAL".

If door sensing switch, primary interlock switch and monitor switch do not operate properly due to a misadjustment, the following adjustment should be made.

5. Loosen the two (2) screws holding latch hook to the oven cavity front flange.
6. With door closed, adjust latch hook by moving it back and forth, and up and down. In and out play of the door allowed by the upper and lower position of the latch hook should be less than 0.5mm. The vertical position of the latch hook should be adjusted so that the door sensing switch, primary interlock switch are activated with the door closed. The horizontal position of the latch hook should be adjusted so that the monitor switch and third door switch are activated with the door closed.
7. Secure the screws with washers firmly.
8. Check all of the switches operation. If any switch has not activated with the door closed, loosen screw and adjust the latch hook position.

Section 4 Component Teardown

After adjustment, check the following.

1. In and out play of door remains less than 0.5mm when in the latched position. First check upper position of latch hook, pushing and pulling upper portion of door toward the oven face. Then check lower portion of the latch hook, pushing and pulling lower portion of the door toward the oven face. Both results (play in the door) should be less than 0.5mm.
2. The contact of door sensing switch and primary interlock switch open within 1.2mm gap between right side of cavity face plate and door when door is open.
3. Monitor switch contacts close when door is opened.
4. The third door switch contacts open when the door is open.
5. Re-install outer case and check for microwave leakage around door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

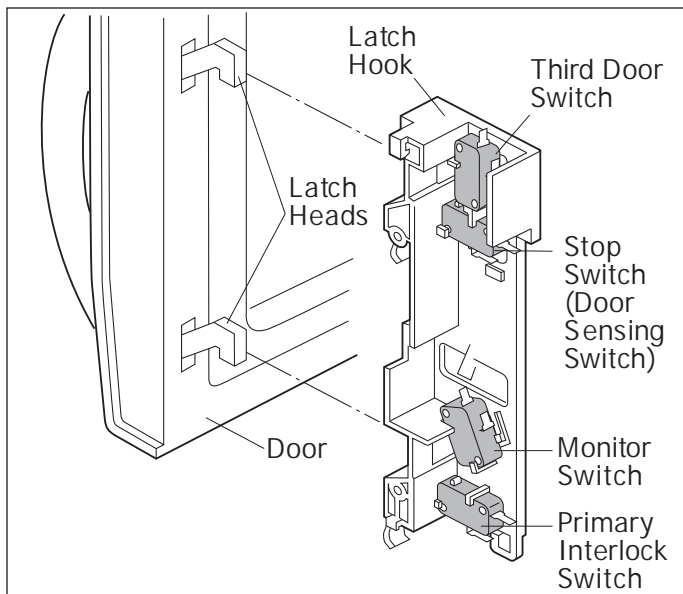


Figure 4-8. Latch Switch Adjustments

Door Replacement

Removal

1. Disconnect the power supply cord and remove the oven from wall and remove outer case. (Refer to procedure of "Removal of Oven from Wall" and "Outer case Removal")
2. Open the door and block it open.
3. To discharge high voltage capacitor, wait for 60 seconds.
4. Remove the hood exhaust louver from the oven cavity. (Refer to the procedure of "HOOD EXHAUST LOUVER REMOVAL".)
5. Insert a putty knife (thickness of about 0.5mm) into the gap A between the door stopper and the choke cover as shown in Figure 4-10 to free engaging parts.
6. Lift up the door stopper.
7. Now, the door stopper is free from door assembly.
8. Lift up the door assembly to release the upper and lower door hinge pins from the upper and lower oven hinges.
9. Now, the door assembly is free.

NOTE

When the individual parts are replaced, refer to "Door Disassembly".

Reinstall

1. On re-installing door, insert the lower oven hinge to lower door hinge pin.
2. Insert the upper oven hinge to the upper door hinge pin.
3. Shut the door (close the contacts of interlock switches).
4. Make sure upper and lower oven hinges are inserted into the upper and lower door hinge pins.
5. Make sure the door is parallel with oven face lines (left and upper side lines) and door latch heads pass through latch holes correctly.
6. Re-install the door stopper to the door assembly.
7. Re-install the hood exhaust louver to the oven cavity front face plate.

Section 4 Component Teardown

NOTE

After any service to the door:

1. Make sure that door sensing switch and secondary interlock switch are operating properly. (Refer to section 3 "Test Procedures".)
2. An approved microwave survey meter should be used to assure compliance with proper microwave radiation emission limitation standards.

After any servicing, make sure of the following:

1. Door latch heads smoothly catch latch hook through latch holes and that latch head goes through center of latch hole.
2. Deviation of door alignment from horizontal line of cavity face plate is to be less than 1.0mm.
3. Door is positioned with its face pressed toward cavity face plate.
4. Re-install outer case and check for microwave leakage around door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

NOTE

The door on a microwave oven is designed to act as an electronic seal preventing leakage of microwave energy from oven cavity during cook cycle. This function does not require that door be air-tight, moisture-tight or light-tight. Therefore, occasional appearance of moisture, light or sensing of gentle warm air movement around oven door is not abnormal and does not indicate a leakage of microwave energy from oven cavity.

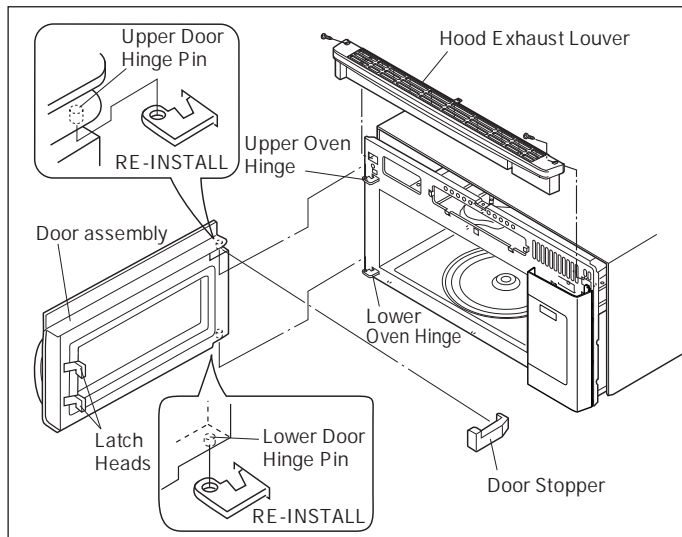


Figure 4-9. Door Components

Door Disassembly

Removal

1. Disconnect the power supply cord and remove the oven from wall and remove outer case. (Refer to procedure of "Removal of Oven from Wall" and "Outer case Removal")
2. Open the door and block it open.
3. To discharge high voltage capacitor, wait for 60 seconds.
4. Remove the hood exhaust louver from the oven cavity. (Refer to the procedure of "HOOD EXHAUST LOUVER REMOVAL".)
5. Remove door assembly, refer to "Door Replacement" Replacement of door components are as follows:
6. Place door assembly on a soft cloth with latches facing up.

NOTE

As engaging part of choke cover and door frame are provided at 15 places, do not force any particular part.

Choke Cover

7. Insert a putty knife (thickness of about 0.5mm) into the gap A between the choke cover and door stopper and between the choke cover and the door frame as shown Figure 4-10 to free engaging parts.
8. Pry the choke cover by inserting a putty knife in order shown in Figure 4-10.
9. Now choke cover is free from door panel and door frame.

Door Frame Assembly

10. Remove four (4) screws holding the door panel to the door frame assembly.
11. Release door panel from the door frame assembly.

NOTE

It is easier to release the engaging parts of the upper or lower door hinge pin side at first.

12. Now, door frame assembly is free.

Section 4 Component Teardown

Latch Spring, Latch Head And Door Panel

13. Release the latch spring from the tab of the latch head and tab of the door panel.
14. Release the latch head from the door panel.
15. Now, the latch spring, latch head and door panel are free.

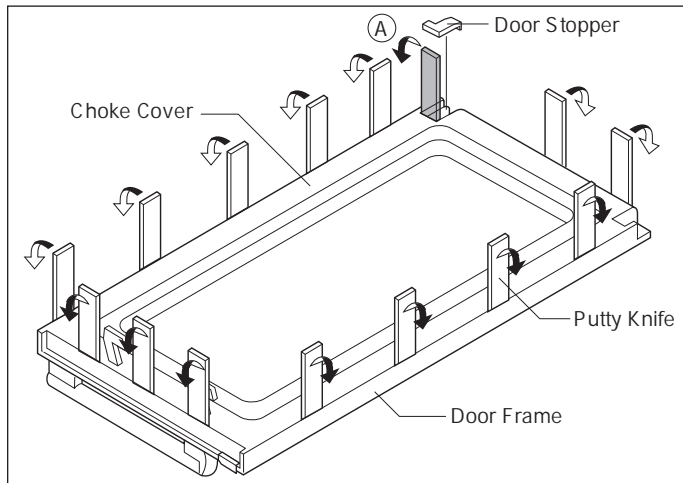


Figure 4-10. Door Disassembly

Door Glass For CGMV173KW/KB

13. Remove one (1) screw holding the glass stopper to the door frame.
14. Remove the glass stopper from the door frame.
15. Remove the door glass cap from the door frame.
16. Slide the door glass upwards.
17. Remove the door glass from the door frame by sliding it rightward.
18. Now, the door glass is free.

NOTE

The door glass can not be exchanged for model CGMV174KF.

Door Handle

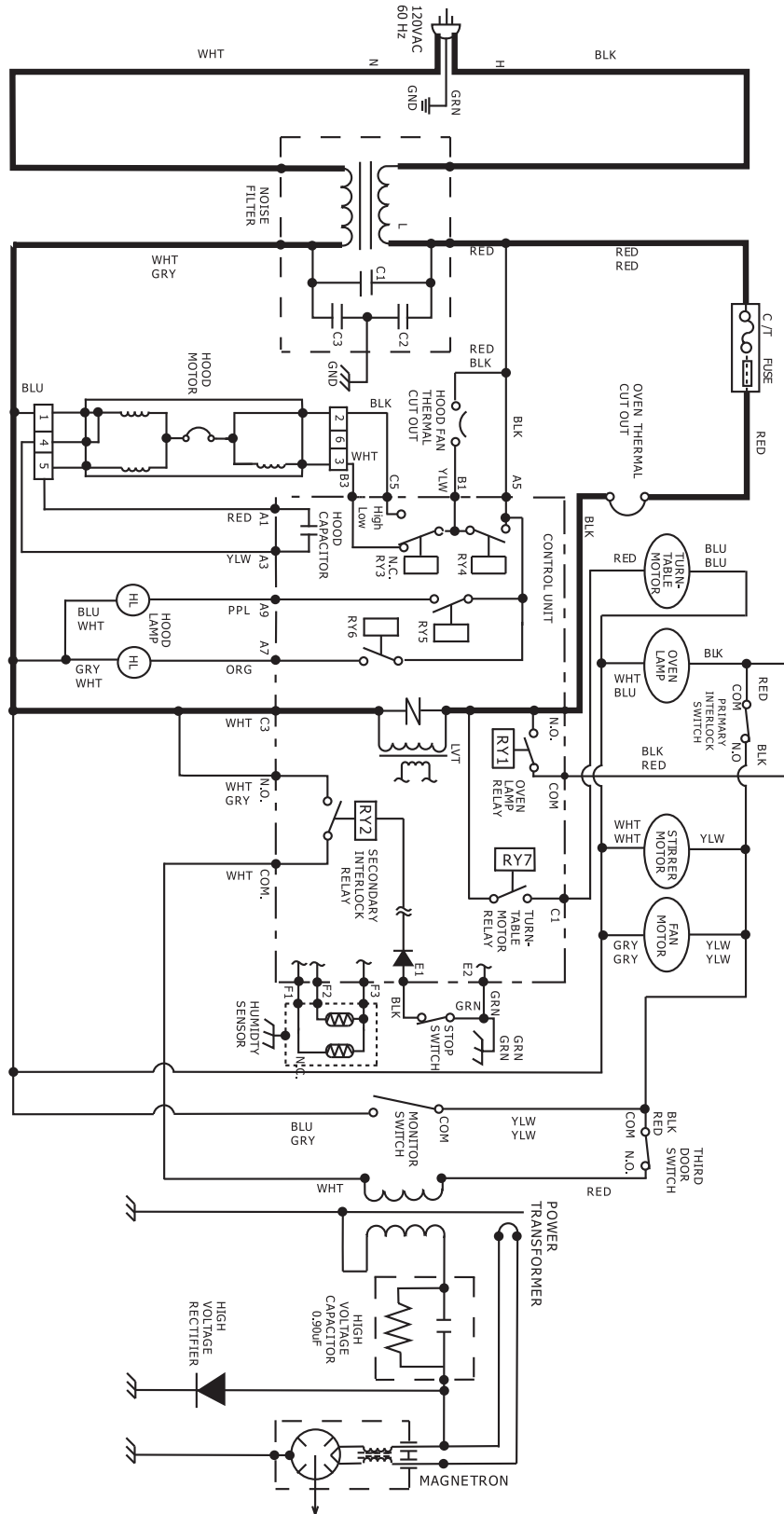
13. Remove the one (1) screw holding the screw cap to the door frame.
14. Remove the screw cap.
15. Remove the two (2) screws holding the door handle to the door frame.
16. Now, the door handle is free.

Wiring Schematic Oven ON Condition

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

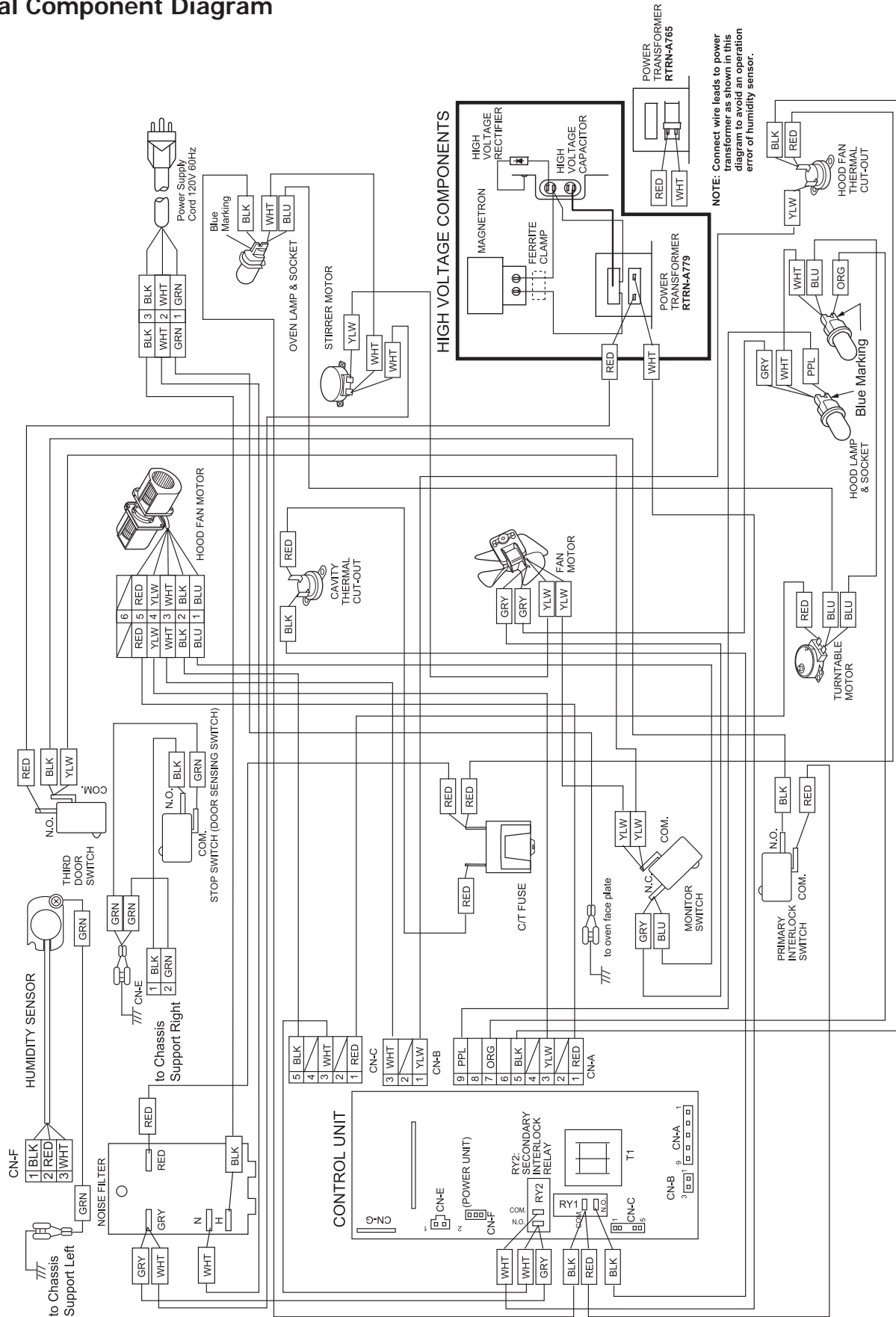
SCHEMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED.
2. CLOCK APPEARS ON DISPLAY

LEAD WIRE COLOR CODE			
BLK : BLACK	GRY : GRAY	WHT : WHITE	BLU : BLUE
BRN : BROWN	WHT : WHITE	BLU : BLUE	GRN : GREEN
ORG : ORANGE	PPL : PURPLE	RED : RED	YLW : YELLOW

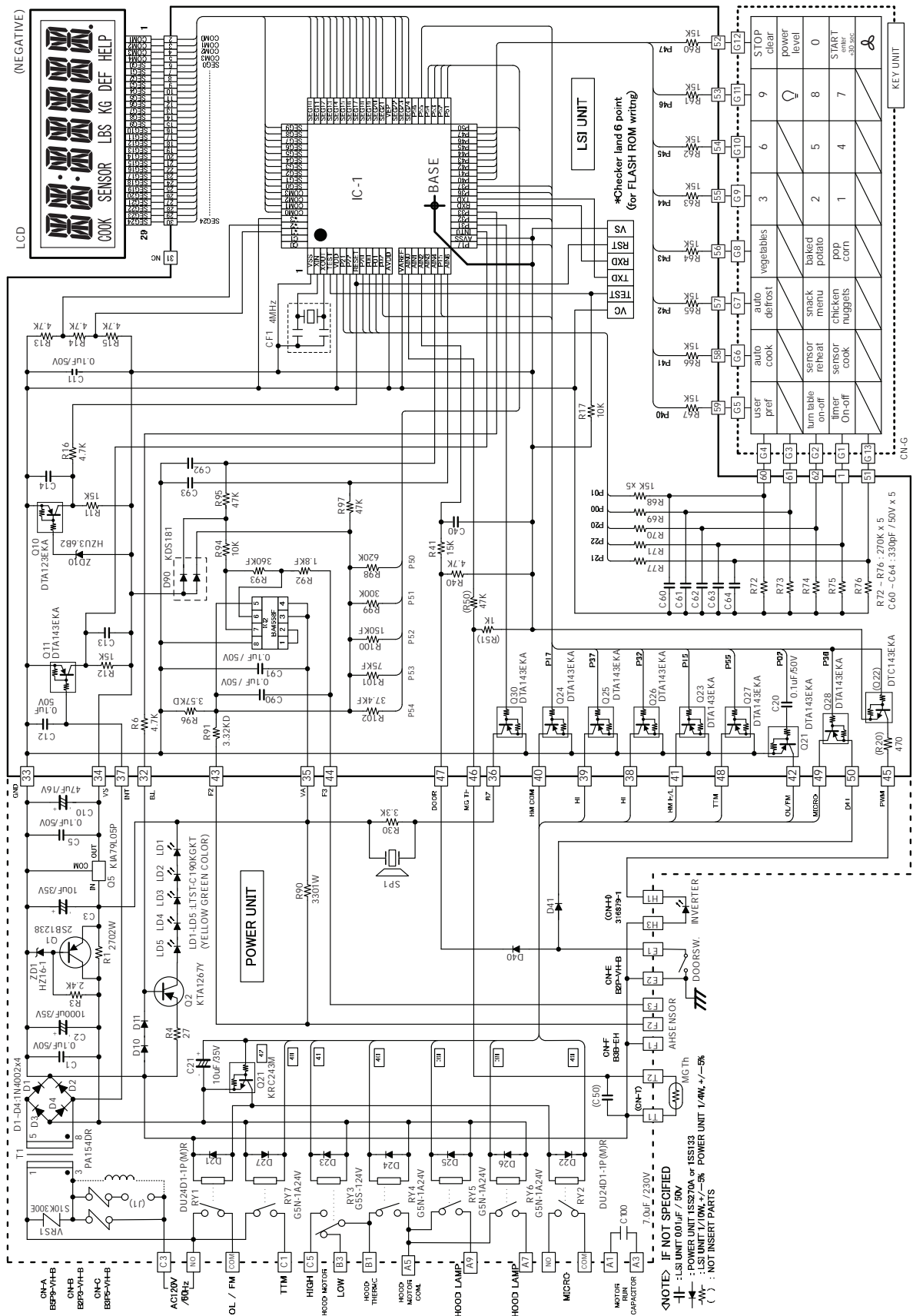


Section 5 Wiring Diagrams

Pictorial Component Diagram

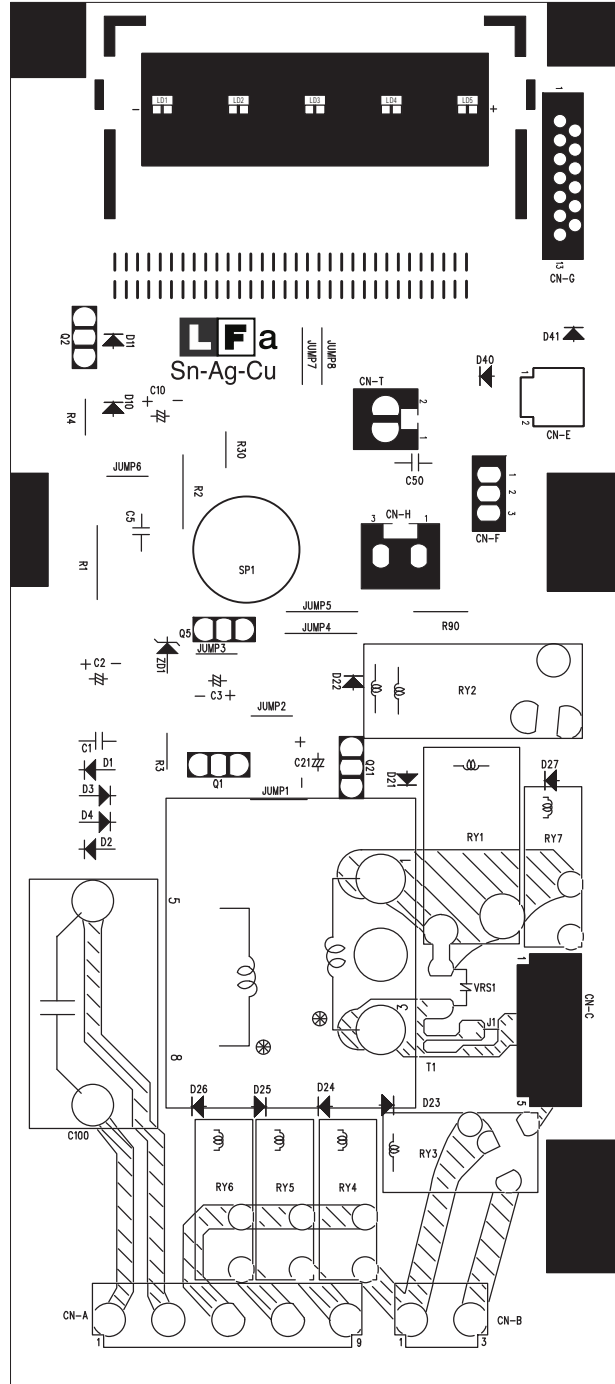


Wiring Diagram



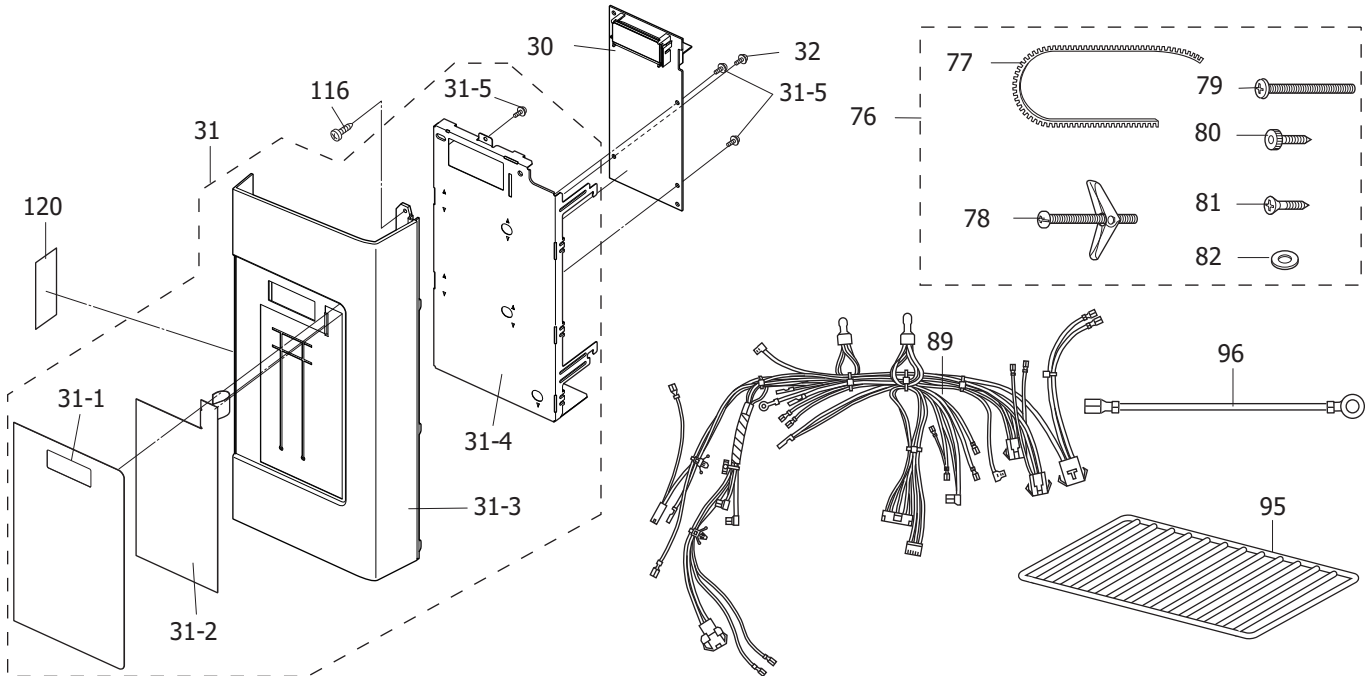
Section 5 Wiring Diagrams

Control Board



Control Panel Parts

NO.	DESCRIPTION
CONTROL PANEL PARTS AND MISCELLANEOUS	
30	Control unit
31	Panel sub. assembly
31-1	Key sheet (Graphic sheet)
31-2	FPC (Membrane switch)
31-3	Control panel See Note 1.
31-4	Key fixing angle
31-5	Screw :3mm x 8mm
32	Screw :3mm x 8mm
76	Installation material assembly
77	Grommet
78	Toggle screw
79	Screw :5mm x 85mm
80	Screw :4mm x 8mm
81	Screw :5mm x 35mm
82	Washer
89	Main harness
95	Rack
120	User caution label
Note 1: If the control panel (31-3) is exchanged, the key sheet (31-1) and FPC (31-2) must be exchanged at the same time.	



Section 6 Parts List

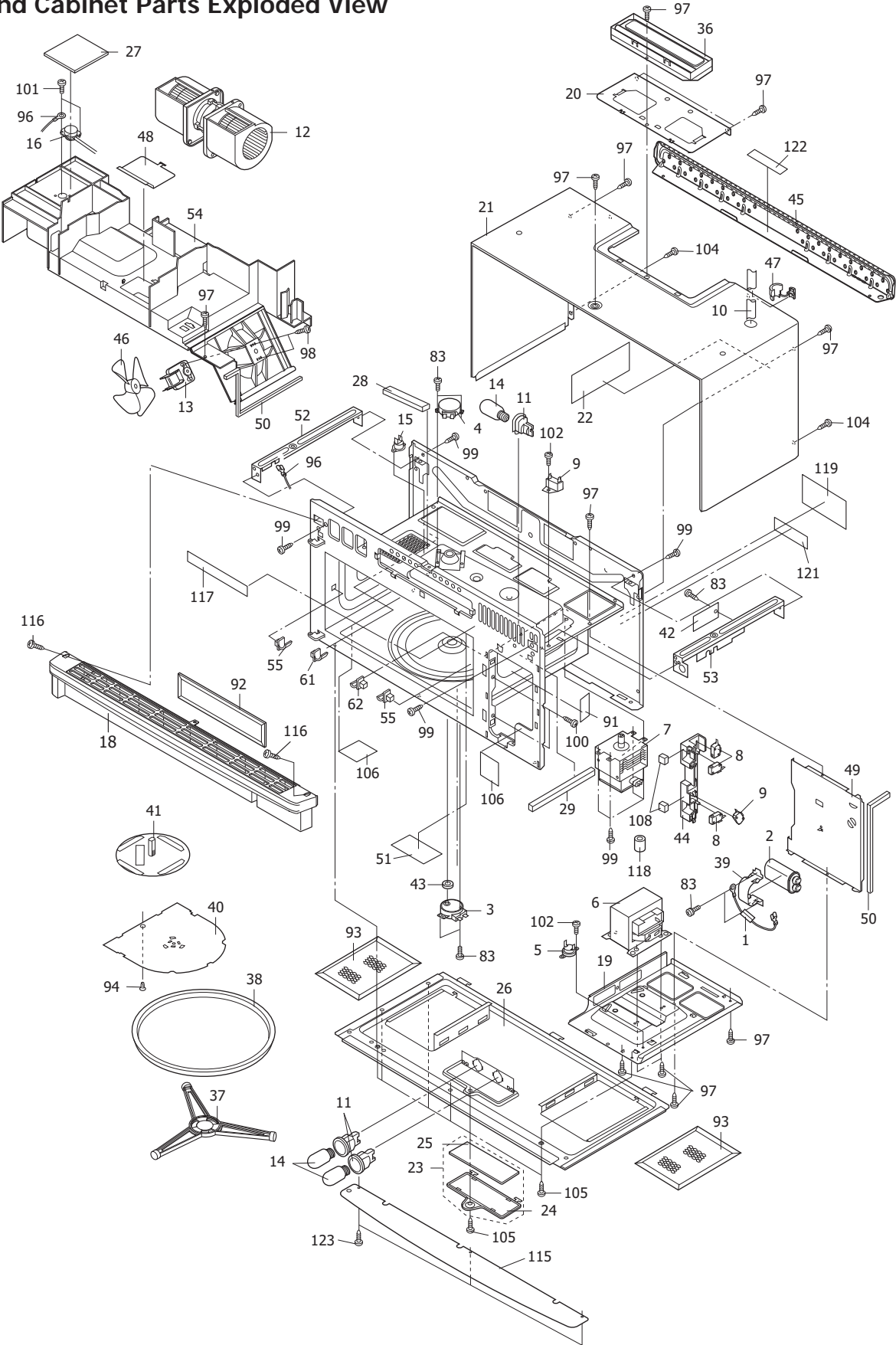
Oven And Cabinet Part Listing

NOTE: Parts marked "*" may cause undue microwave exposure.
Parts marked "Δ" are used in voltage more than 250V.

NO.	DESCRIPTION
ELECTRIC PARTS	
Δ 1	High voltage rectifier
Δ 2	High voltage capacitor (interchangeable)
3	Turntable motor (interchangeable)
4	Stirrer motor (interchangeable)
5	Thermal cut-out 60°C (Hood Fan)
Δ 6	Power transformer (Interchangeable)
*Δ 7	Magnetron
8	Pri. Interlock, Stop and Thrid door switches (interchangeable)
9	Monitor swtch (V- 5220Q) & C/T fuse assembly (20A 150°C) or Monitor swtch (D3V-1G-2C25) & C/T fuse assembly (20A 150°C interchangeable)
10	Power supply cord
11	Oven lamp socket
12	Hood fan motor
13	Fan motor
14	Oven lamp (interchangeable)
15	Thermal cut-out 145°C (Cavity) (Interchangeable)
16	AH sensor (Humidity sensor)
118	Ferrite clamp
CABINET PARTS	
18	Hood exhaust louver
19	Right base plate
20	Rear stay
21	Outer case cabinet
22	Schematic diagram
23	Hood lamp glass assembly
24	Hood lamp glass angle
25	Hood lamp glass
26	Base cover
27	Cushion
28	Rubber cushion
29	Mag cushion
OVEN PARTS	
36	Exhaust damper assembly
37	Turntable support assembly
38	Turntable tray

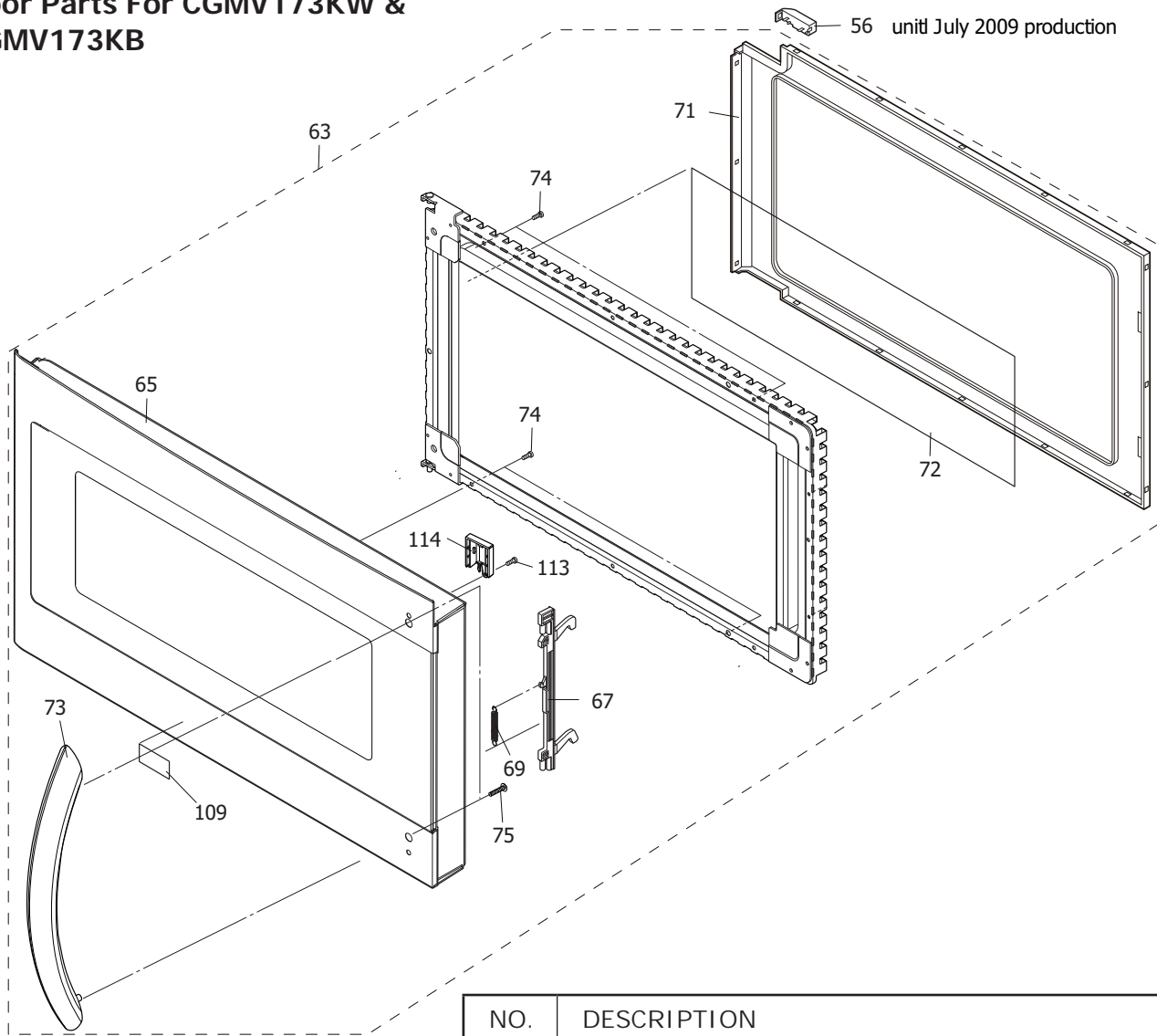
NO.	DESCRIPTION
39	Capacitor holder
40	Stirrer cover assembly
41	Stirrer fan assembly
42	Noise filter unit
43	Turntable motor packing
* 44	Latch hook
45	Unit mounting plate
46	Fan blade
47	Cord bushing
48	Oven lamp cover
49	Hood intake duct R
50	Hood intake duct cushion
51	Lamp filter
52	Chassis support left
53	Chassis support right
54	Hood duct
55	Rack Holder
61	Left rack holder
62	Right rack holder
91	Monitor caution lael
92	Charcoal filter
93	Grease filter
94	Canoe clip
108	Cushion
115	Deflector
117	Menu label
119	HWC caution
121	Ground catuion label
122	Installation caution
SCREWS, NUTS, WASHERS AND MISC.	
83	Screw : 4mm x 8mm
96	Sensor grd wire
97	Screw : 4mm x 8mm
98	Screw : 4mm x 12mm
99	Screw : 4mm x 8mm
100	Special screw
101	Special screw
102	Screw : 3mm x 6mm
104	Screw : 4mm x 12mm
105	Screw : 4mm x 8mm
106	DHHS caution
116	Screw : 3mm x 8mm
123	Screw : 4mm x 10mm

Oven and Cabinet Parts Exploded View



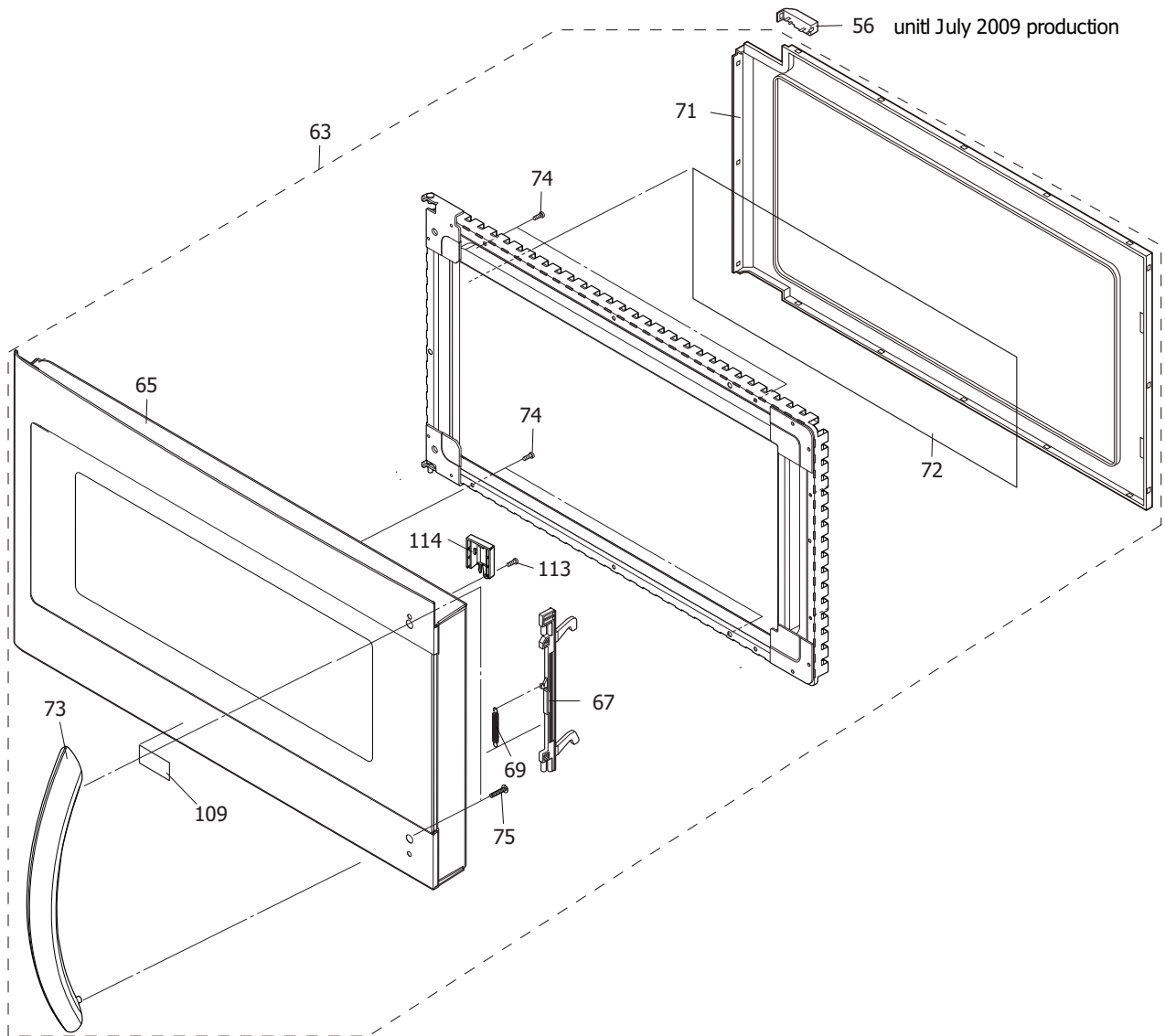
Section 6 Parts List

Door Parts For CGMV173KW & CGMV173KB



NO.	DESCRIPTION
DOOR PARTS FOR CGMV173KW / CGMV173KB	
56	Door stopper (NOTE: unitl July 2009 production)
* 63	Door assembly
* 65	Door frame
* 67	Latch head
69	Latch spring
* 71	Choke cover assembly (NOTE: unitl July 2009 production)
* 71	Choke cover assembly (NOTE: from August 2009 production)
72	Sealer film
73	Door handle
74	Screw :4mm x 8mm
75	Screw :4mm x 20mm
109	Bage
110	Door glass
111	Glass stopper
112	Door glass cap
113	Screw : 3mm x 8mm
114	Screw cover

Door Parts For CGMV174KF



NO.	DESCRIPTION
DOOR PARTS FOR CGMV174KF	
56	Door stopper (NOTE: unit/ July 2009 production)
* 63	Door assembly
* 65	Door frame assembly
* 67	Latch head
69	Latch spring
* 71	Choke cover assembly (NOTE: unit/ July 2009 production)
* 71	Choke cover assembly (NOTE: from August 2009 production)
72	Sealer film
73	Door handle
74	Screw :4mm x 8mm
75	Special screw
109	Baffle
113	Screw : 3mm x 8mm
114	Screw cover

Section 6 Parts List

Packing and Accessories

NO.	DESCRIPTION
PACKING AND ACCESSORIES	
36	Exhaust damper assembly
38	Turntable tray
76	Installation material assembly
84	Installation instruction
85	Operation manual
86	Top template
87	Wall template
93	Grease filter 2
95	Rack

