SEARS

Department 731A Toronto

TECHNICAL FLASH

T.F. 22-433

Kenmore®

BASIC SERVICE MANUAL

FOR

MICROWAVE OVEN

MODEL 767.8505500

APRIL, 2000

CAUTION

SAFETY PRECAUTIONS

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

a. Do not operate or allow the oven to be operated with the door open.

b. Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary; (1) Interlock operation, (2) proper door closing, (3) seal and sealing surfaces (arcing, wear, and other damage), (4) damage to or loosening of hinges and latches, (5) evidence of dropping or abuse.

c. Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.

d. Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.

e. A Microwave leakage check to verify compliance with the CSA Standard should be performed on each oven prior to release to the owner.

- Proper operation of the microwave ovens requires that the magnetron be assembled to the wave guide and cavity. Never operate the magnetron unless it is properly installed.

- Be sure that the magnetron gasket is properly installed around the dome of the tube whenever installing the magnetron.

- Routine service safety procedures should be exercised at all times.

- Untrained personnel should not attempt service without a thorough review of the test procedures and safety information contained in this manual.

CONTENTS

(Page)

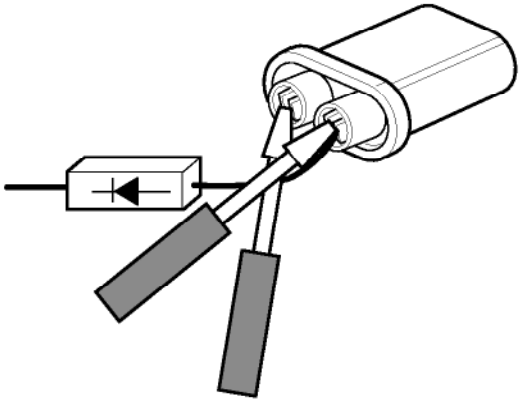
SPECIFICATIONS

ITEM	DESCRIPTION
MODEL	**767.8505500**
Power Requirement	120 Volts AC 60Hz Single phase, 3 wire grounded Microwave 1,500W Convection 1,500W Combination 1,500W
Power Output	1,000W full microwave power(IEC705)
Microwave Frequency	2,450MHz
Magnetron	2M246
Timer	0~99min. 99sec.
Outside Dimensions	22 5/8"(W) X 14 7/8"(H) X 20"(D)
Cavity Dimensions	15 1/4"(W) X 10 7/8"(H) X 15 1/4"(D)
Net Weight	52 lbs (approx.)
Shipping weight Control Complement	59 lbs (approx.) Touch Control System Clock : 1:00 - 12:59 Microwave Power for Variable Cooking Power level HIGH ----------Full power throughout the cooking time 9 (Saute) ----------approx. 90% of Full power, 8 (Reheat) --------approx. 80% 7 (Med.-High) ----------approx. 70%, 6 (Medium) --------approx. 60% 5 (Med.-Low) ----------approx. 50%, 4 (Defrost) ---------approx. 40% 3 (Low) ----------approx. 30%, 2 (Simmer)---------approx. 20% 1 (Warm)----------approx. 10% • Convection - 100°F and 225°F to 450°F • Combination
Accessories	Owner's Manual Glass Tray Rotating Ring Short Metal Rack
This microwave oven is designed for household use only. It is not recommended for commercial purposes.	

CAUTIONS

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

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

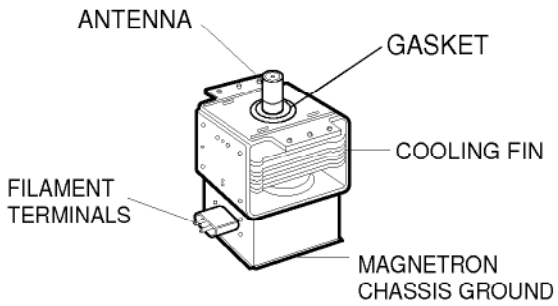


- Remove your watche whenever working close to or replacing the Magnetron.
- DO NOT touch any parts of the control panel circuit. A resulting static electric discharge may damage this P.C.B.
- NEVER operate the oven with no load.
- NEVER injure the door seal and front plate of the oven cavity.
- NEVER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

MICROWAVE RADIATION

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

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



MAGNETRON

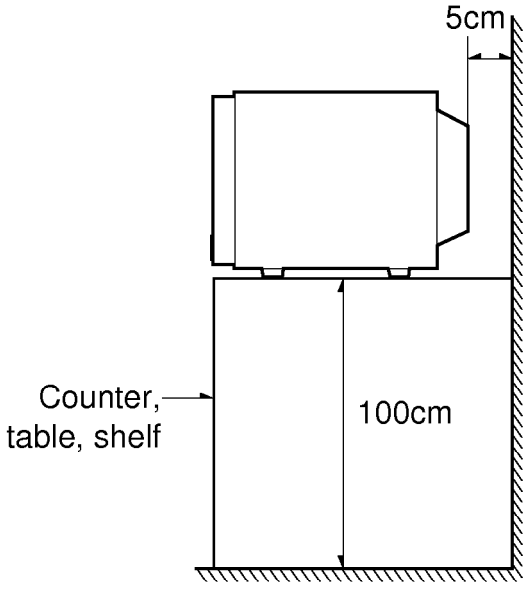
THE OVEN IS TO BE SERVICED ONLY BY PROPERLY QUALIFIED SERVICE PERSONNEL.

INSTALLATIONS

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

INSTALLING

1. Empty the microwave oven and clean inside it with a soft, damp cloth. Check for damage such as misaligned door, damage around the door, dents inside the cavity, or on the exterior.
2. Put the oven on a counter, table, or shelf at least 100 cm (39.4 inches) from floor that is strong enough to hold the oven and the food and utensils you put in it. (The control panel side of the oven is the heavy side. Use care when handling.)
3. Do not block the vent and the air intake openings. Blocking vent or air intake openings can cause damage to the oven and poor cooking results. Make sure the microwave oven legs are in place to ensure proper air flow.
4. The oven should not be installed in any area where heat and steam are generated, because they may damage the electronic or mechanical parts of the unit. Do not install the oven next to a conventional surface unit or above a conventional wall oven.
5. Use microwave oven in an ambient temperature less than 104°F (40°C).
6. Place the microwave oven on a sturdy and flat surface at least 5cm (2 inches) from the wall.
7. Place the microwave oven as far away as possible from TV, RADIO, COMPUTER, etc., to prevent interference.



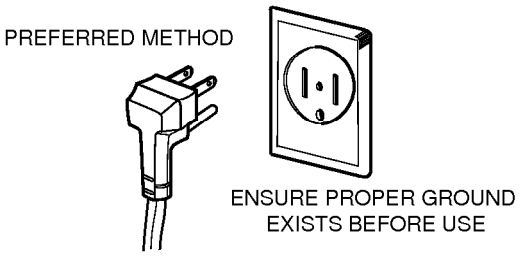
GROUNDING INSTRUCTIONS

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

In the event of an electrical short circuit, grounding reduces the risk of electrical shock.
The plug must be plugged into an outlet that is properly installed and grounded.

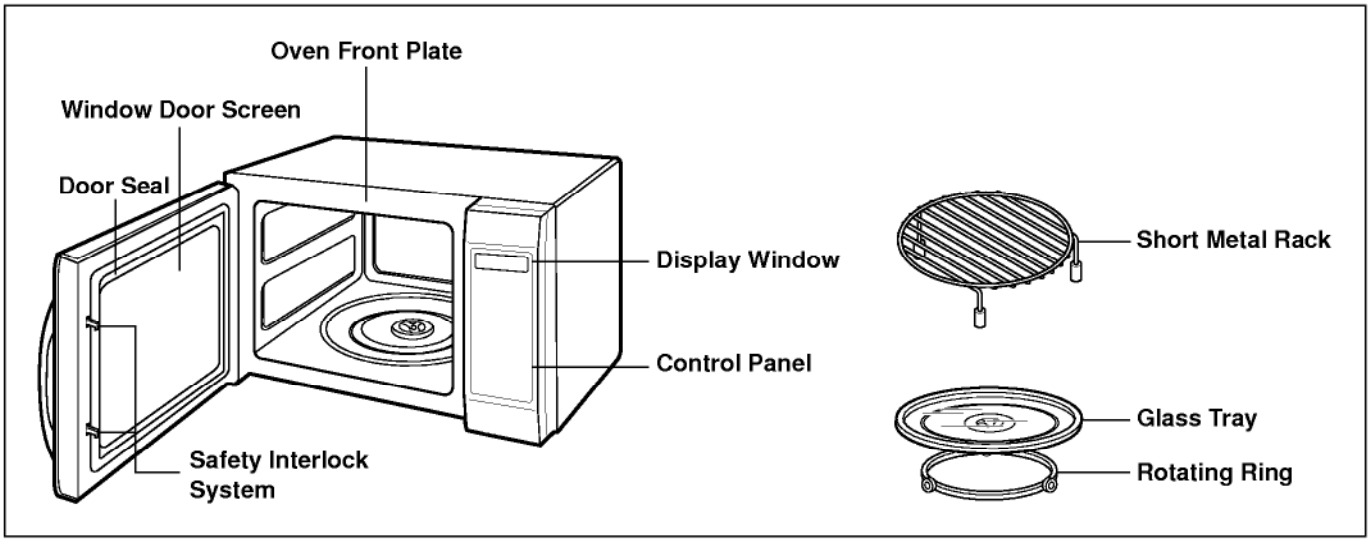
WARNING

Improper use of the grounding plug can result in a risk of electric shock.
Do not, under any circumstances, cut or remove the third ground prong from the power cord plug.

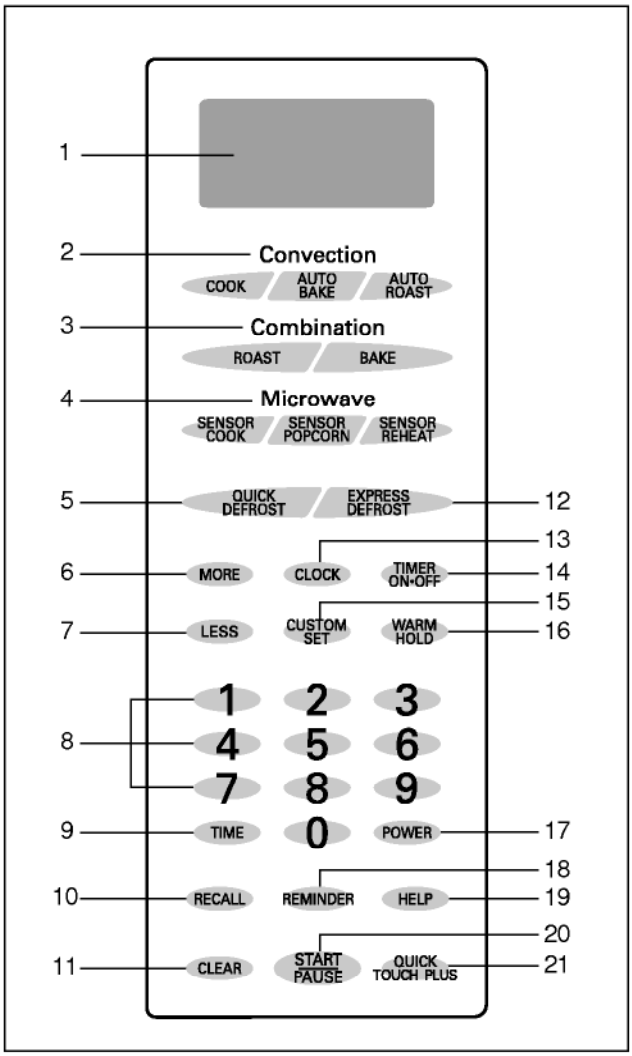


OPERATING INSTRUCTIONS

FEATURES



CONTROL PANEL

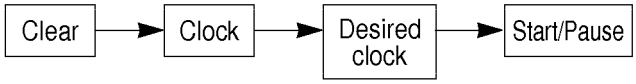


1. **DISPLAY:** The display includes a clock and indicators that tell you time of day, cooking time settings, and cooking functions selected.
2. **CONVECTION:** Touch this pad to cook Convection cooks.
3. **COMBINATION:** Touch this pad to cook Combination cooks.
4. **MICROWAVE:** Touch this pad to cook without entering a cook power or time.
5. **QUICK DEFROST:** Touch this pad to defrost foods quickly.
6. **MORE:** Each time you touch this pad, you add 10 seconds to the cooking time.
7. **LESS:** Each time you touch this pad, you subtract 10 seconds from the cooking time.
8. **NUMBER PADS:** Touch number pads to enter cooking time, power level, quantities, or weights.
9. **TIME:** Touch this pad to set a cooking time.
10. **RECALL:** Touch this pad to repeat cooking menu once more.
11. **CLEAR:** Touch this pad to clear all entries.
12. **EXPRESS DEFROST:** Touch this pad to defrost foods by entering weight, or cook time.
13. **CLOCK:** Touch this pad to enter the time of day.
14. **TIMER ON/OFF:** Touch this pad to use your microwave oven as a kitchen timer.
15. **CUSTOM SET:** Touch this pad to select Custom function.
16. **WARM HOLD:** Touch this pad to keep hot, cooked foods warm in your microwave oven.
17. **POWER.** Touch this pad to set a cooking power.
18. **REMINDER:** Touch this pad to use your oven like alarm clock.
19. **HELP:** Touch this pad to refer to feature information.
20. **START/PAUSE:** Touch this pad to start all entries, or stop cooking without opening the door.
21. **QUICK TOUCH PLUS:** Touch this pad to cook at 100% cook power for 1 to 99 minutes, 59 seconds.

OPERATING SEQUENCE

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

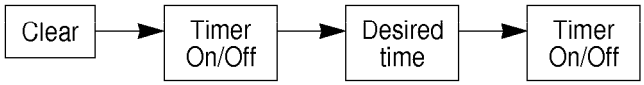
1. SETTING THE CLOCK



2. START/PAUSE and CANCEL FUNCTION

1) Touch Start/Pause pad to start oven or pause the oven temporarily during cooking.
2) Touch Clear pad to cancel a program during cooking or Erase during programming.

3. TIMER ON/OFF



To cancel timer at any time, touch Timer On/Off.

4. CHILD LOCK

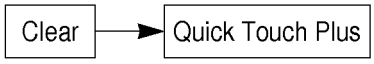
TO SET CHILD LOCK

- Touch and hold **0** pad → **LOCKED** appears in the display.

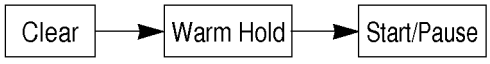
TO CANCEL CHILD LOCK

- Touch and hold **0** pad → **LOCKED** disappears in the display.

5. QUICK TOUCH PLUS



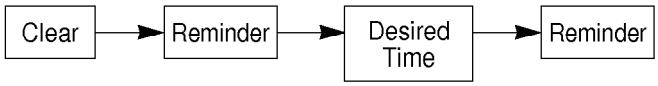
6. WARM HOLD



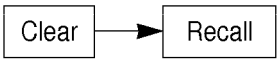
To keep hot, cooked food warm.

7. REMINDER

The reminder feature can be used like an alarm clock without starting the oven.



8. RECALL



The oven will repeat the previous cooking program.

9. MORE/LESS

- The More and Less functions will adjust the cook time of many oven functions.
- More(Less) will add(subtract) 10 seconds to the cook time each time you press it.

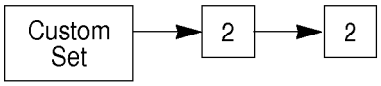
NOTE:

- For convection cooking, More and Less are used as temperature selection pads.

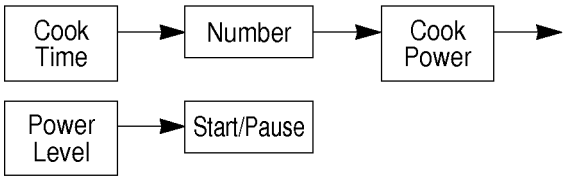
10. CUSTOM SET

Program your microwave oven to turn the clock and demo modes on or off, adjust the sound level, adjust the scroll speed of the display, and switch between pounds and kilograms, ˚C and ˚F.

- To turn off the clock.

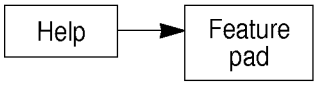


11. TIMED COOKING



12. HELP

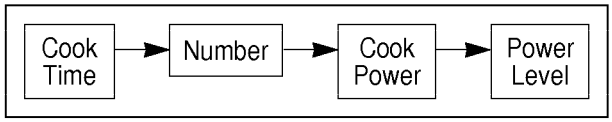
The help displays feature information and helpful hints.



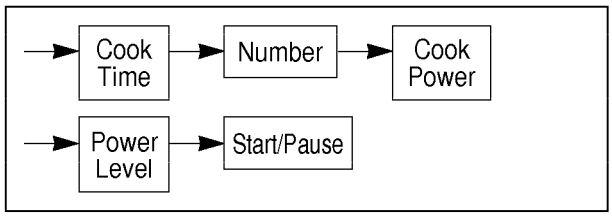
OPERATING SEQUENCE

13. MULTI-STAGE COOKING

1ST STAGE

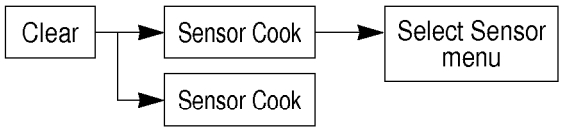


2ND STAGE

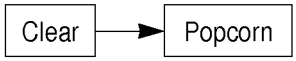


14. SENSOR TOUCH COOKING

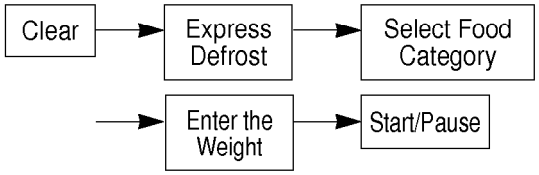
• Sensor cook and reheat

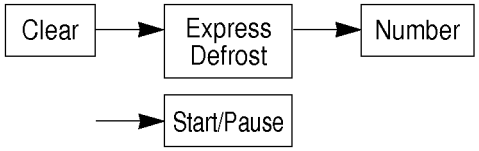


• Sensor Popcorn

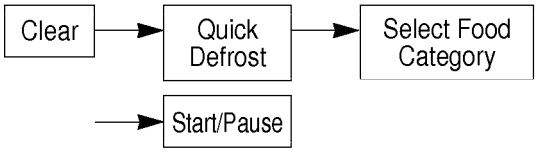


15. EXPRESS DEFROST

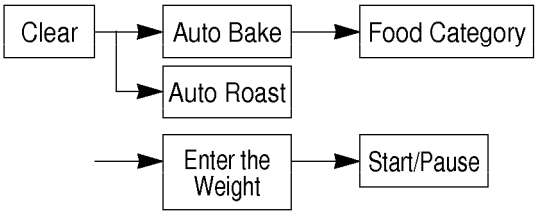




16. QUICK DEFROST

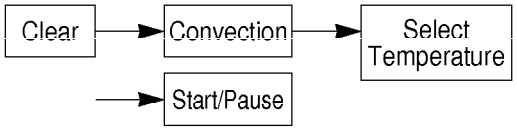


17. AUTO BAKE/ROAST

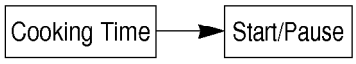


18. CONVECTION

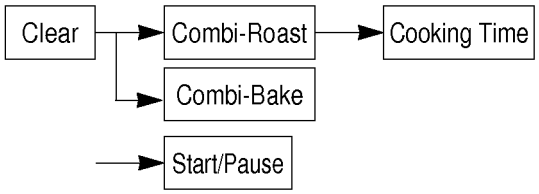
TO PREHEAT



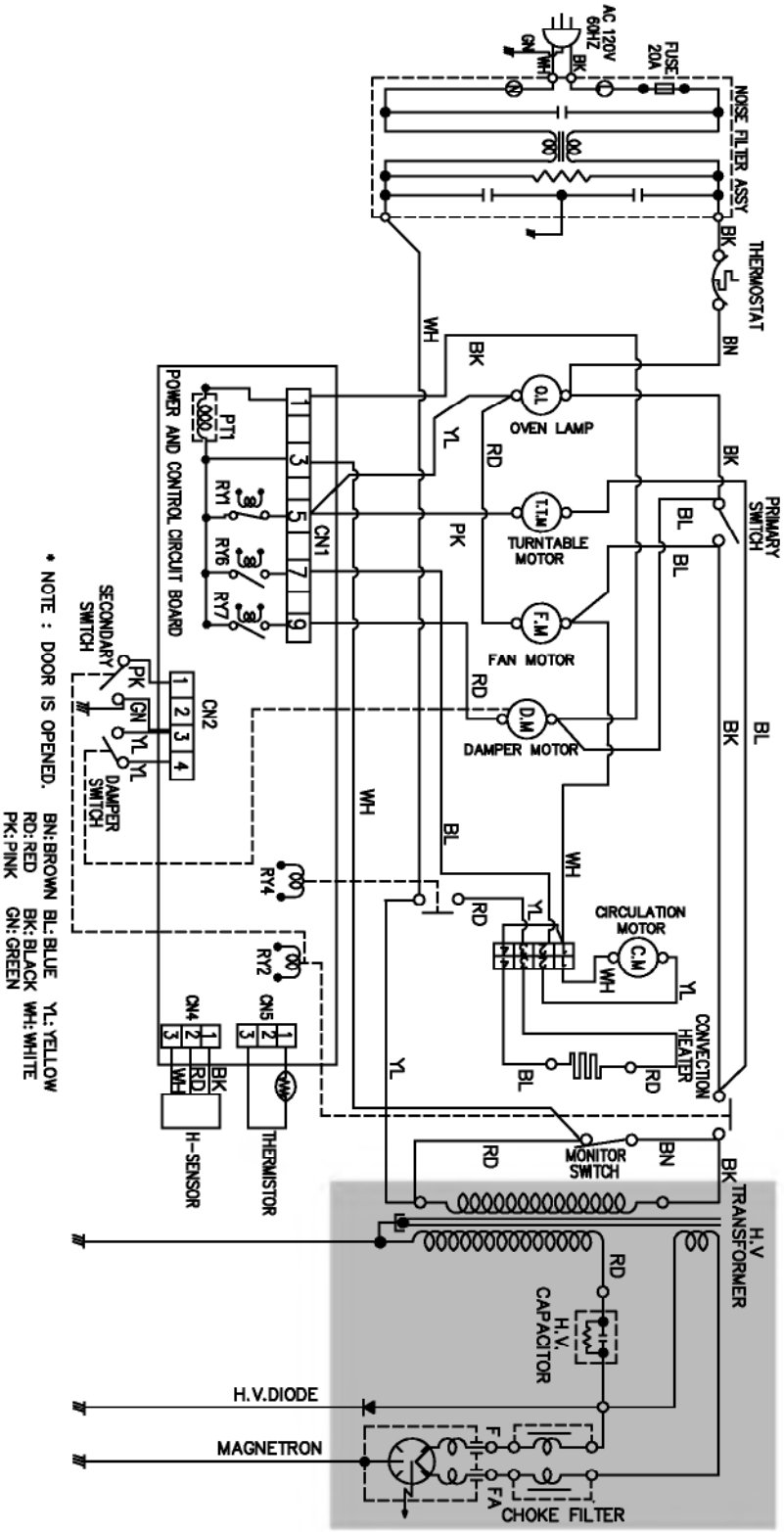
TO COOK(After preheating)



19. COMBINATION



SCHEMATIC DIAGRAM



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

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

CIRCUIT DESCRIPTION

GENERAL DETAILS

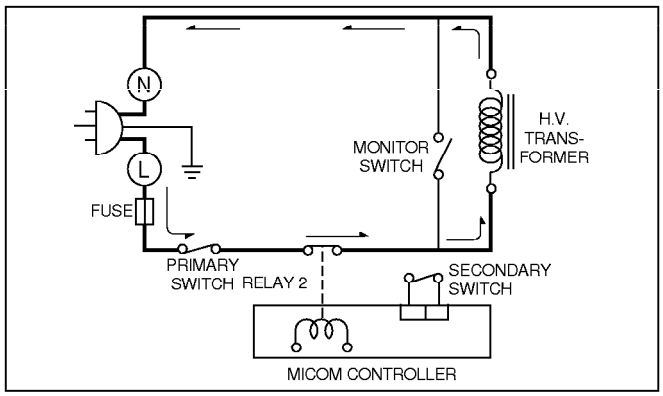
- The low voltage transformer supplies the necessary voltage to the micom controller when power cord is plugged in.
- When the door is closed, the primary switch is ON, the secondary switch is ON, and the monitor switch opens (contact COM and NO).

WHEN SELECTING COOKING POWER LEVEL AND TIME

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

WHEN TOUCHING THE START PAD

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



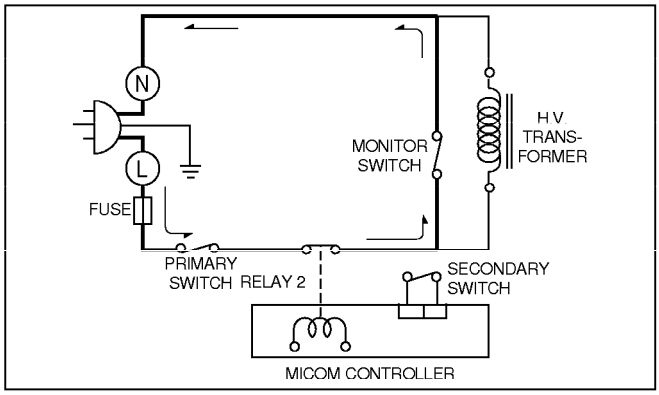
- The fan motor rotates and cools the magnetron by blowing the air.
- The air is also directed into the oven to exhaust the vapor in the oven through the upper plate.
- Cooking time starts counting down.
- 3.15 volts AC is generated from the filament winding of the high voltage transformer. This 3.15 volts is applied to the magnetron to heat the magnetron filament through two noise-preventing choke coils.
- A high voltage of approximately 2,210 volts AC is generated in the secondary of the high voltage transformer which is increased by the action of the high voltage diode and charging of the high voltage capacitor.
- The negative 4,000 Volts DC is applied to the filament of the magnetron.

WHEN THE OVEN IS SET AT ANY LEVEL EXCEPT MAXIMUM.

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

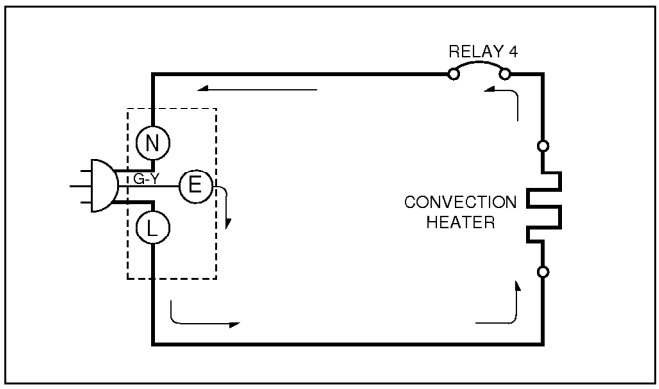
WHEN THE DOOR IS OPENED DURING COOKING

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



WHEN TOUCHING THE START KEY WITH THE CONVECTION COOKING.

- The contacts of the primary switch and the secondary switch close the circuit.
- Damper close.
- Turntable rotates.
- Fan Motor, Circulation Motor rotate.



SERVICE INFORMATION

TOOLS AND MEASURING INSTRUMENTS

NECESSARY TOOLS

Tools normally used for TV servicing are sufficient.
Standard tools are listed below.

- Diagonal pliers
- Long nose pliers
- Phillips screwdriver
- Flat blade screwdriver
- Wrench (size 5mm)
- Nutdriver (size 5mm)
- Adjustable wrench
- Soldering iron
- Solder
- Vinyl insulation tape
- Polishing cloth

NECESSARY MEASURING INSTRUMENTS

- TESTER (VOLTS-DC, AC, Ohmmeter)
- Microwave survey meter
  - Holaday HI-1500
    HI-1501
  - Narda 8100
    8200
- Inch scale
- 600 cc non conductive material beaker (glass or plastic), inside diameter: approx. 8.5 cm ($3^1/_2$ in.)
- Cylindrical and made of borosilicate glass vessel.
  max. thickness: 3 mm
  outside diameter: approx. 190mm
  height: approx. 90mm
- Glass thermometer: 100°C or 212°F (1 deg scale)

MICROWAVE LEAKAGE TEST

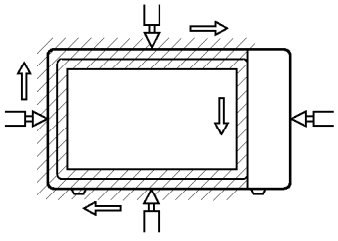
CAUTIONS

- **Be sure to check microwave leakage prior to servicing the oven if the oven is operative prior to servicing.**
- **The service personnel should inform the manufacture importer, or assembler of any certified oven unit found to have a microwave emission level in excess of 5 mW/cm²** and should repair any unit found to have excessive emission levels at no cost to the owner and should ascertain the cause of the excessive leakage. The service personnel should instruct the owner not to use the unit until the oven has been brought into compliance.
- **If the oven operates with the door open, the service personnel should:**
  - Tell the user not to operate the oven.
  - Contact the manufacturer.
- The service personnel should check all surface and vent openings for microwave leakage.
- Check for microwave leakage after every servicing. The power density of the microwave radiation leakage emitted by the microwave oven should not exceed 5 mW/cm². Always start measuring of an unknown field to assure safety for operating personnel from radiation leakage.

MEASURING MICROWAVE ENERGY LEAKAGE

- **Pour 275±15cc of 20±5℃ (68±9℉) water in a beaker which is graduated to 600 cc, and place the beaker on the center of the turntable.**
- **Set the energy leakage monitor to 2,450 MHz and use it following the manufacturer's recommended test procedure to assure correct result.**
- **When measuring the leakage, always use the 2-inch (5cm) spacer supplied with the probe.**
- **Operate the oven at its maximum output.**
- **Measure the microwave radiation using and electromagnetic radiation monitor by holding the probe perpendicular to the surface being measured**

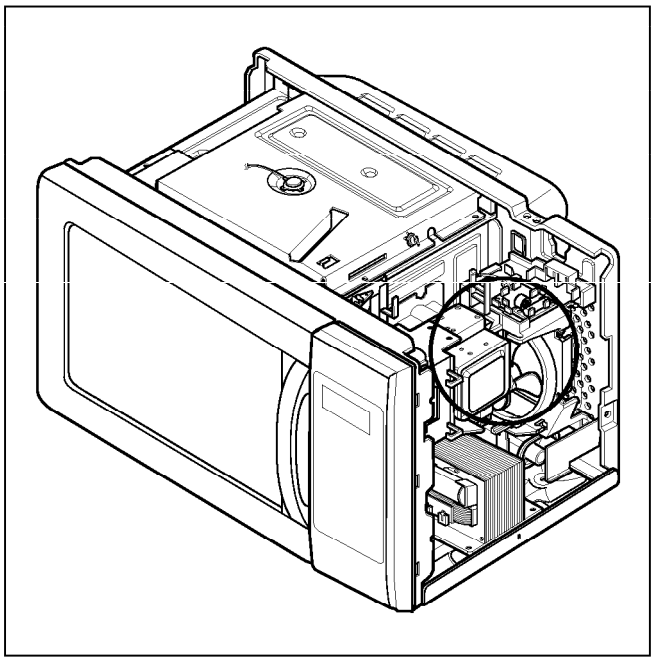
Move probe along shaded area
//////////////////////////////////
Probe scanning speed
Less than 2.5 cm/sec
(1in/sec)



MEASUREMENT WITH OUTER CASE REMOVED

• When you replace the magnetron, measure for microwave energy leakage around the door view window, the exhaust opening, and air inlet opening before the outer case is installed and after all necessary components are replaced or adjusted.
Special care should be taken in measuring the following parts. (Circled area of Fig. below)
- Around the magnetron
- The waveguide

WARNING : AVOID CONTACTING ANY HIGH VOLTAGE PARTS



MEASUREMENT WITH A FULLY ASSEMBLED OVEN

• After all components, including the outer case, are fully assembled, measure for microwave energy leakage around the door viewing window.

NOTES WHEN MEASURING

• Do not exceed meter full scale deflection.
• The test probe must be removed no faster than 1 inch/sec (2.5 cm/sec) along the shaded area, otherwise a false reading may result.
• The test probe must be held with the grip portion of the handle.
A false reading may result if the operator's hand is between the handle and the probe.
• When testing near a corner of the door, keep the probe perpendicular to the surface making sure the probe horizontally along the oven surface; this may possibly cause probe damage.

RECORD KEEPING AND NOTIFICATION AFTER MEASUREMENT

• After adjustment and repair of any microwave energy interruption or microwave energy blocking device, record the measured values for future reference. Also enter the information on the service invoice.
• The microwave energy leakage should not be more than 5 mW/cm^2. after determining that all parts are in good condition, functioning properly and genuine replacement parts which are listed in this manual have been used.
• At least once a year, have the electromagnetic energy leakage monitor checked for calibration by its manufacturer.

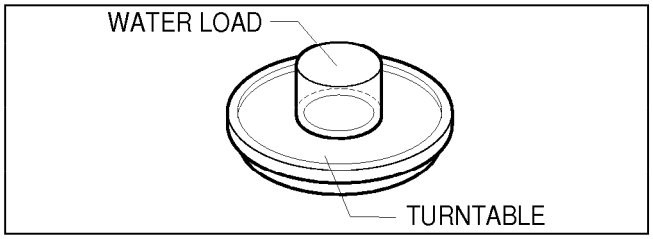
MEASUREMENT OF MICROWAVE POWER OUTPUT

- Microwave power output measurement is made with the microwave oven supplied at its rated voltage and operated at its maximum microwave power setting with a load of (1000±5) g of potable water.
- The water is contained in a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190mm.
- The oven and the empty vessel are at ambient temperature prior to the start of the test.
- The initial temperature (T1) of the water is (10±2)°C It is measured immediately before the water is added to the vessel. After addition of the water to the vessel, the load is immediately placed on the center of the turntable which is in the lowest position and the microwave power switched on.
- The time T for the temperature of the water to rise by a value Δ T of (10±2)°K is measured, where T is the time in seconds and ΔT is the temperature rise. The initial and final water temperatures are selected so that the maximum difference between the final water temperature and the ambient temperature is 5°K.
- The microwave power output P in watts is calculated from the following formula :

$$P = \frac{4187 \times (\Delta T) + 0.88 \times (T_2 - T_0) \times M}{T}$$

  - T_2: Temperature after heating
  - T_0: Temperature of bowl
  - M: Weight of bowl

  is measured while the microwave generator is operating at full power. Magnetron filament heat-up time is not included. (about 3 sec)
- The water is stirred to equalize temperature throughout the vessel, prior to measuring the final water temperature.
- Stirring devices and measuring instruments are selected in order to minimize addition or removal of heat.



DISASSEMBLY AND ADJUSTMENT

A. OUTER CASE REMOVAL

1) Disconnect the power supply cord from the outlet.
2) Remove the screws from the rear of the case.
   The outer case must be moved backward to be lifted off.

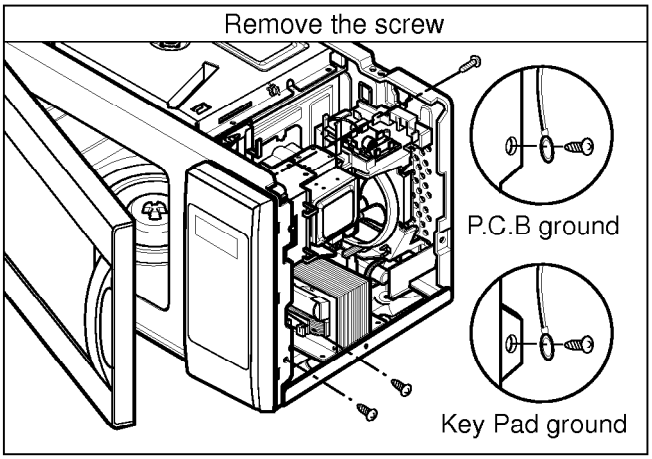
B. POWER SUPPLY CORD REMOVAL

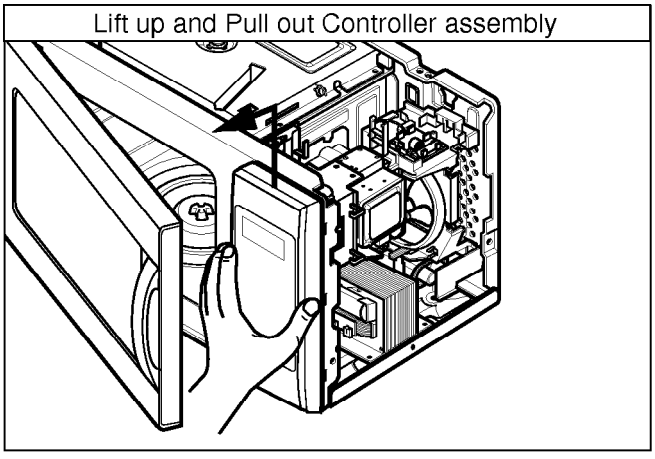
1) Remove the outer case.
2) Disconnect two terminals, and remove one screw of the ground terminal.

C. CONTROLLER ASSEMBLY REMOVAL

1) Open the door.
2) Remove the screws which hold the CONTROLLER Assembly to the cavity and of the ground terminal.
3) Disconnect the leadwires from RELAY and connector of the P.C.B. SUB Assembly.
4) Lift up and pull out CONTROLLER Assembly carefully from the cavity.

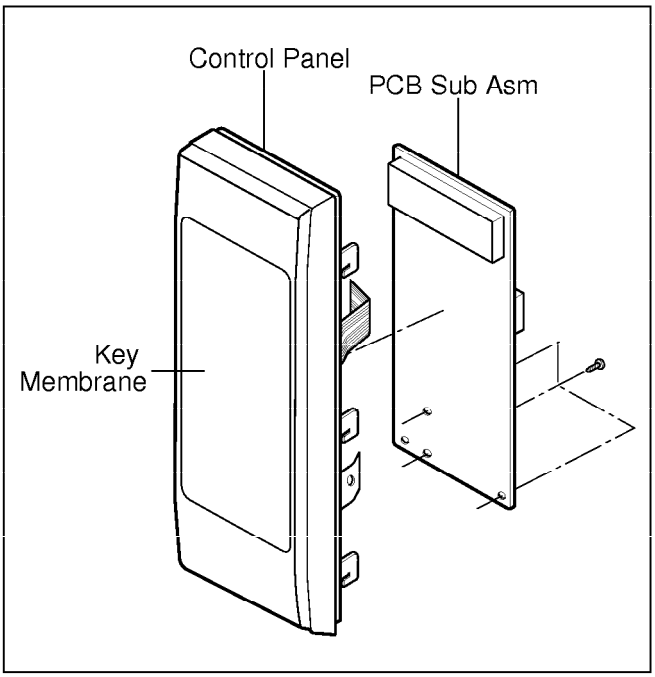
CAUTION: DISCHARGE THE HIGH VOLTAGE CAPACITOR BEFORE SERVICING
(refer to page 2-1)





D. P.C.B. ASSEMBLY REMOVAL

1) Remove the control panel assembly from the cavity. (Refer to control panel assembly removal on previous page.)
2) Remove screws which hold the P.C.B. SUB Assembly to the control panel.
3) Pull P.C.B. SUB Assembly carefully from the control panel.



E. DOOR MAIN ASSEMBLY REMOVAL

1) Open the door.
2) Remove the choke cover very carefully with a flat-blade screwdriver.

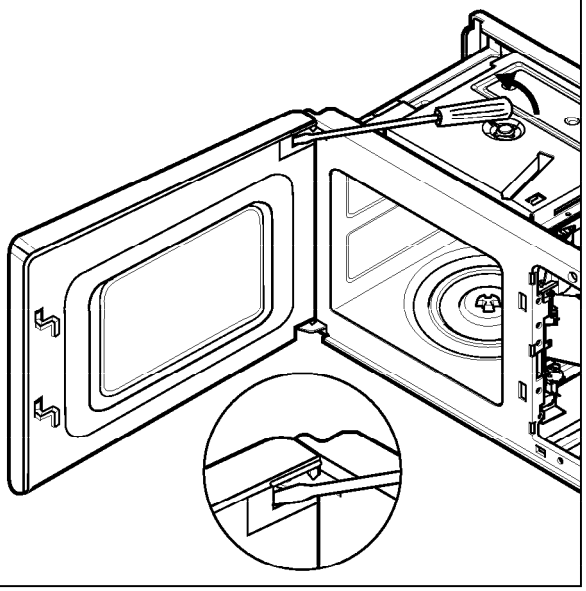
CAUTION: Be careful not to damage door seal plate by screwdriver.

3) Lift up and pull the door.

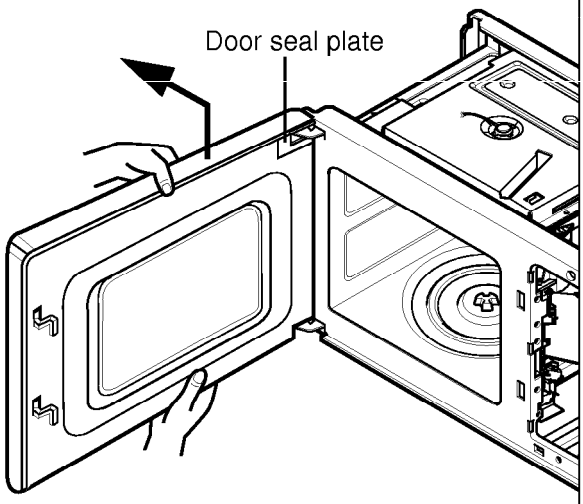
NOTE:

1. After replacing the door, be sure to check that the primary switch, monitor switch, and secondary switch operate normally.
2. After replacing the door, check for microwave energy leakage with a survey meter. Microwave energy must be below the limit of 5 mW/cm^2. (with a 275 ml water load)
3. When mounting the door assembly to the oven assembly, be sure to adjust the door assembly parallel to the chassis. Also adjust so the door has no play between the inner door surface and oven frame assembly. If the door assembly is not mounted properly, microwaves may leak from the clearance between the door and the oven.

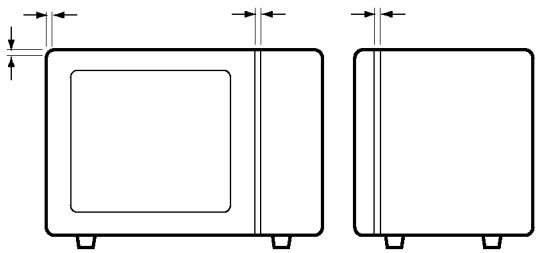
Remove choke cover



Remove door

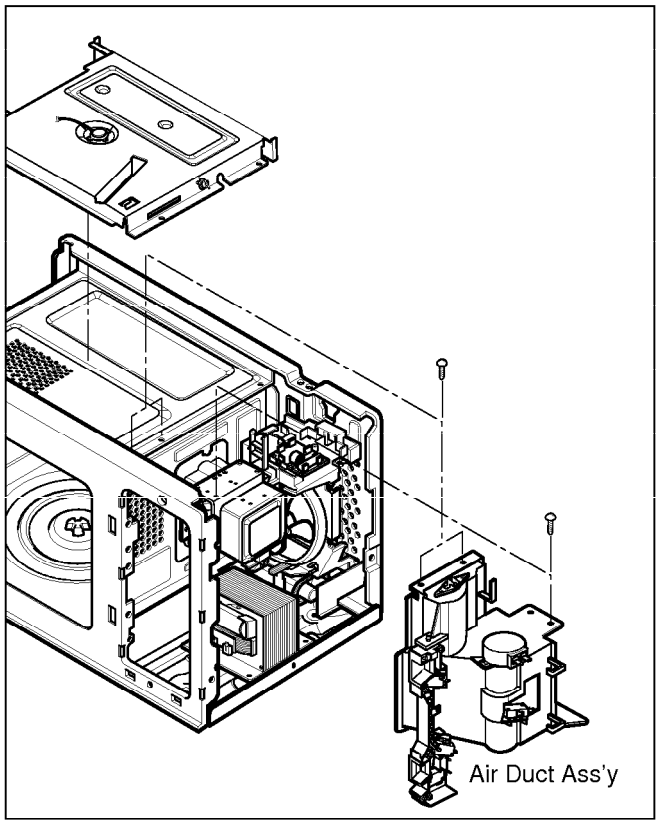


Spacer



F. AIR DUCT ASSEMBLY REMOVAL

1) Disconnect the leadwires from the lamp, micro switch, damper motor, and damper switch.
2) Remove the screws holding the oven cavity and latch board, air duct, and air tunnel assembly.
3) Remove the mounting screws holding the magnetron and air duct assembly.
4) Remove air tunnel.
5) Pull latch board assembly and air duct assembly.

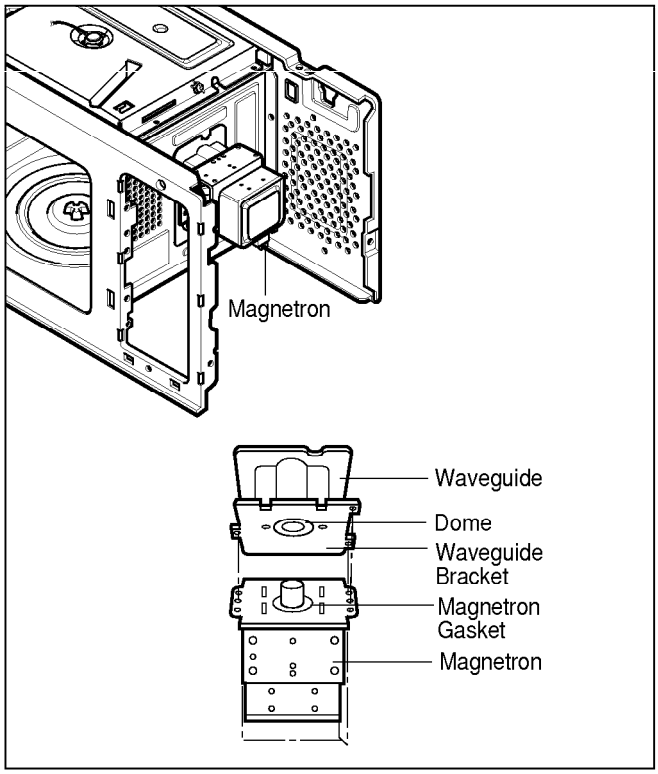


G. MAGNETRON REMOVAL

1) Remove the mounting screw holding the magnetron and air duct assembly.
2) Disconnect the leadwire from the magnetron.
3) Carefully remove the mounting screws holding the magnetron and the waveguide.
4) Remove the magnetron from the waveguide.

NOTE:

1. When removing the magnetron, make it sure dome does not hit any adjacent parts, or it may be damaged.
2. When replacing the magnetron, be sure to install the magnetron gasket in the correct position and be sure that the gasket is in good condition.
3. After replacing the magnetron, check for microwave leakage with a survey meter around the magnetron. Microwave energy must be below the limit of 5 mW/cm^2. (With a 275 ml. water load).
   Make sure that gasket is rigidly attached to the magnetron. To prevent microwave leakage, tighten the mounting screws properly, making sure there is no gap between the waveguide and the magnetron.

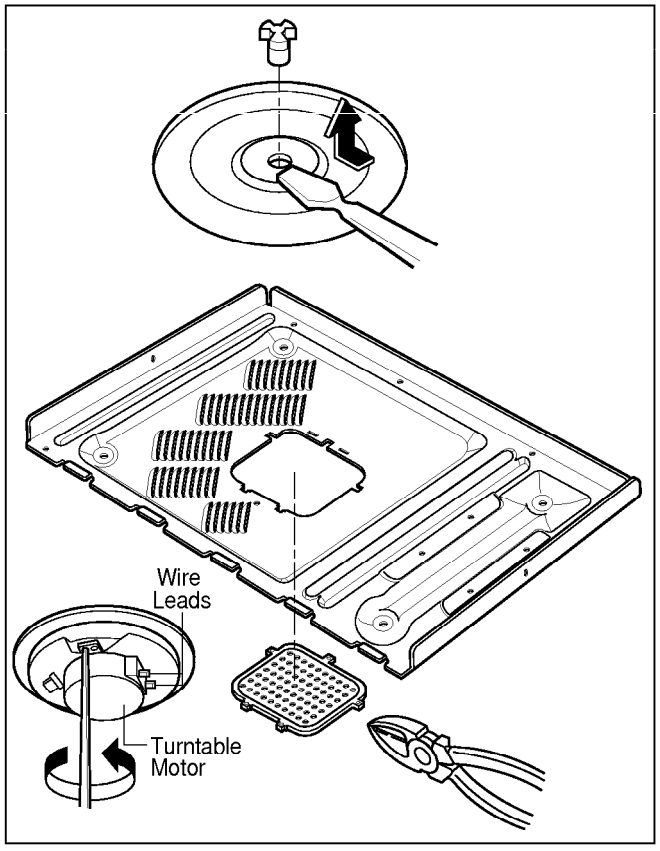


H. THE TURNTABLE MOTOR REMOVAL

1) Remove the turntable and rotating ring.
2) Lay the unit down on its back.
3) Remove the turntable motor cover.
   The turntable base cover is easily removed by pinching the six parts with a wire cutting.
4) Disconnect the leadwire from the turntable motor terminals.
5) Remove the screws securing the turntable motor to the oven cavity assembly.
6) After repairing the motor, rotate the removed turntable motor cover.
7) Fit the turntable motor cover's projecting part to the base plate slit.

NOTE:

1. Remove the leadwire lead from the turntable motor VERY CAREFULLY.
2. Be sure to grasp the connector, not the wires, when removing.



I. HIGH VOLTAGE TRANSFORMER REMOVAL

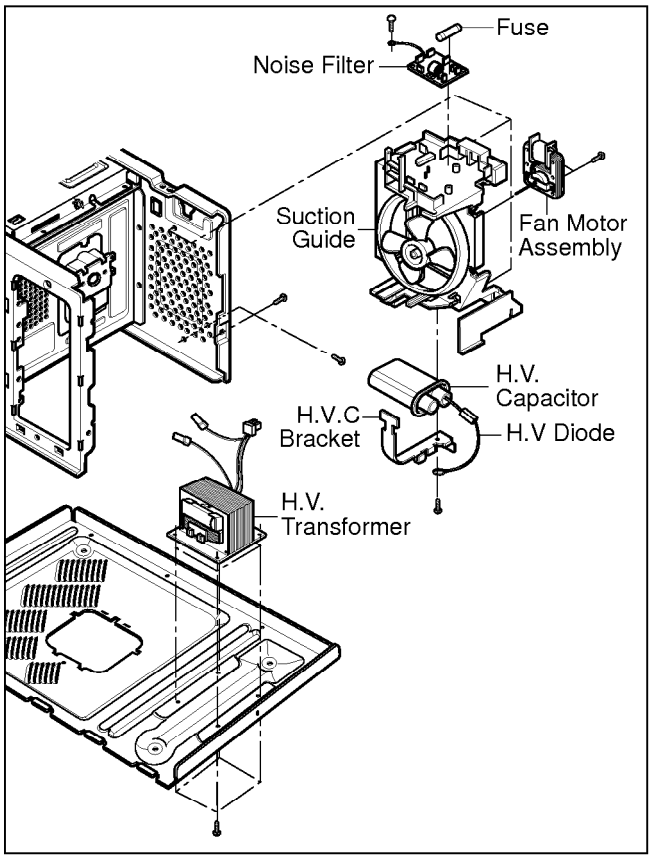
1) Discharge the high voltage capacitor.
2) Disconnect the leadwires from magnetron, and high voltage capacitor.
3) Remove the screws holding the high voltage transformer to the baseplate.

J. FAN MOTOR ASSEMBLY REMOVAL

1) Discharge the high voltage capacitor.
2) Disconnect the leadwires from fan motor, fuse holder, and high voltage capacitor.
3) Remove the two screws holding the the suction guide assembly to the oven cavity and remove the high voltage diode earth screw.
4) Remove the two screws holding the fan motor assembly to the suction guide assembly.

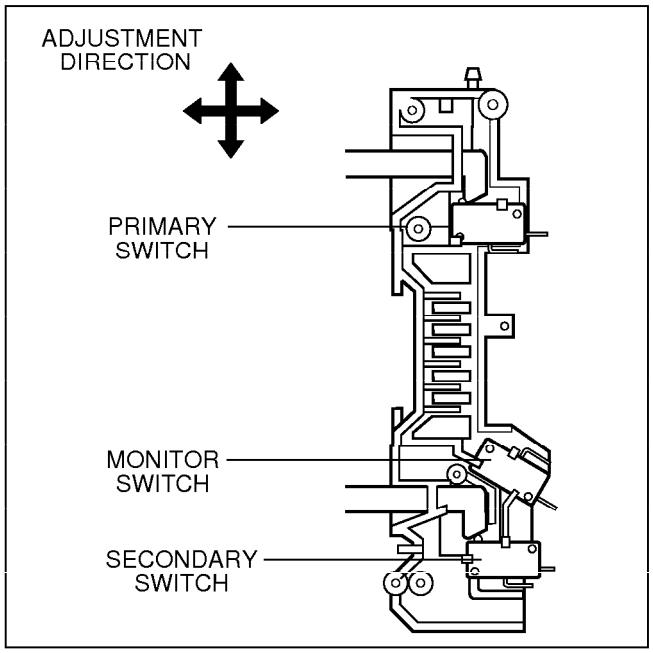
K. HIGH VOLTAGE CAPACITOR AND DIODE REMOVAL

1) Discharge the high voltage capacitor.
2) Disconnect the leadwires from fan motor, fuse holder, and high voltage capacitor.
3) Remove the screw holding the suction guide assembly to the oven cavity and remove the high voltage diode earth screw.
4) Remove the screw holding the high voltage capacitor bracket.



L. INTERLOCK SYSTEM

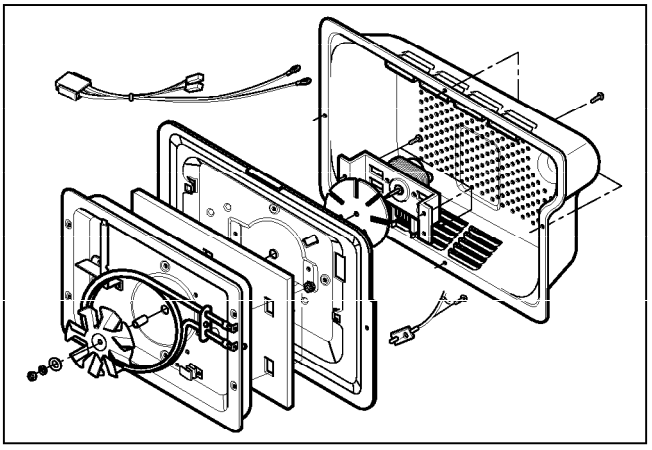
1) INTERLOCK MECHANISM
The door lock mechanism is a device which has been specially designed to eliminate completely microwave activity when the door is opened during cooking and thus to prevent the danger resulting from the microwave leakage.



2) MOUNTING OF THE PRIMARY/MONITOR/ SECONDARY SWITCHES TO THE LATCH BOARD
3) INSTALLATION AND ADJUSTMENT OF THE LATCH BOARD TO THE OVEN ASSEMBLY
- Mount the latch board to the oven assembly.
- Adjust the latch board in the arrow direction so that oven door will not have any play in it when the door is closed.
- Tighten the mounting screw.
- **Check for play in the door by pulling and pushing the door handle. Door movement should be less than 0.5 mm. (1/64 inch)**
Don't pull the door handle while making this adjustment. Make sure that the latch moves smoothly after adjustment is completed and that the screws are tight. Make sure the primary, monitor, and secondary switches operate properly by following the continuity test procedure.

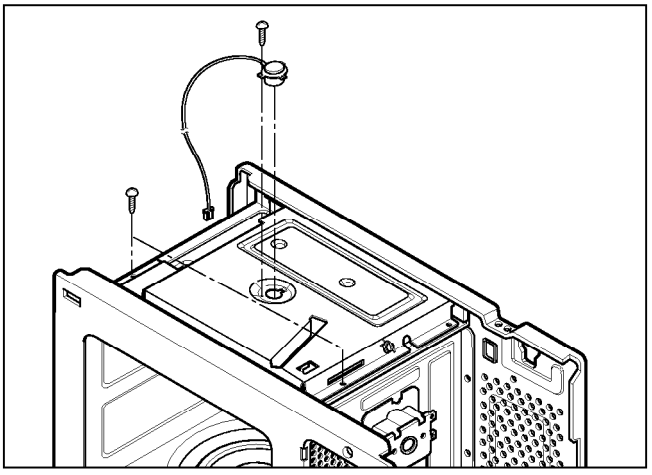
M. C-MOTOR, THERMISTOR AND SHEATH HEATER REMOVAL

1) Remove back cover after untiring four screws securing the cover assembly to the oven cavity.
2) Disconnect the leadwire from the circulation motor and the sheath heater terminal.
3) Remove four hex nuts holding chamber assembly to the oven cavity.
4) Remove the screws of the thermistor, and lift up chamber assembly.
5) Remove a hex nut securing the circulation fan to shaft of the C-motor.
6) Remove screws securing sheath heater to chamber wall.
7) Remove sheath heater from chamber assembly.



N. SENSOR REMOVAL

1) Disconnect the sensor connector from P.C.B. Sub Assembly.
2) Remove the screw securing sensor to Air tunnel.



INTERLOCK CONTINUITY TEST

WARNING : FOR CONTINUED PROTECTION AGAINST EXCESSIVE RADIATION EMISSION, REPLACE ONLY WITH IDENTICAL REPLACEMENT PARTS.

TYPE NO. SZM-V 16-FA-63 OR VP-533A-OF FOR PRIMARY SWITCH
TYPE NO. SZM-V 16-FA-62 OR VP-532A-OF FOR MONITOR SWITCH
TYPE NO. SZM-V 16-FA-63 OR VP-533A-OF FOR SECONDARY SWITCH

A. PRIMARY INTERLOCK SWITCH TEST

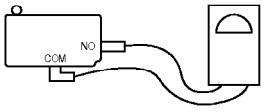
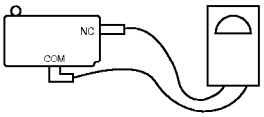
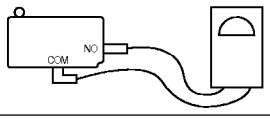
When the door handle is depressed slowly with the door closed, an audible **click** should be heard at the same time or successively at intervals.
When the door handle is released slowly, the latches should activate the switches with an audible **click**.
If the latches do not activate the switches when the door is closed, the switches should be a adjusted in accordance with the adjustment procedure. Disconnect the wire lead from the primary switch. Connect the ohmmeter leads to the common (COM) and normally open (NO) terminal of the switch. The meter should indicate an open circuit in the door open condition.
When the door is closed, the meter should indicate a closed circuit.
When the primary switch operation is abnormal, make the necessary adjustment or replace the switch only with the same type of switch.

B. SECONDARY INTERLOCK SWITCH TEST

Disconnect the wire lead from the secondary switch.
Connect the ohmmeter leads to the common (COM) and normally open (NO) terminals of the switch. The meter should indicate a open circuit in the door open condition. When the door is closed, meter should indicate an closed circuit. When the secondary switch operation is abnormal, make the necessary adjustment or replace the switch only with the same type of switch.

C. MONITOR SWITCH TEST

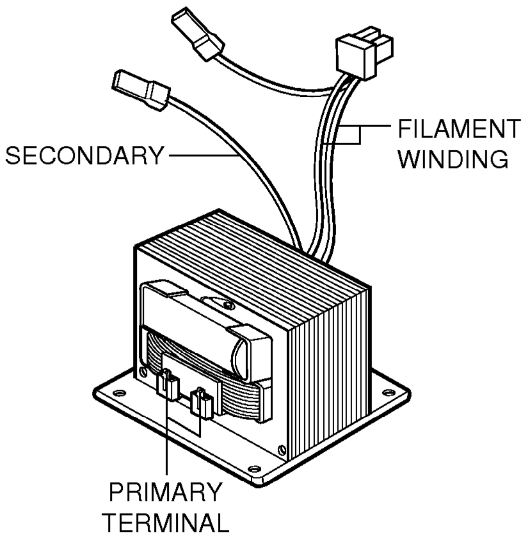
Disconnect the wire lead from the monitor switch.
Connect the ohmmeter leads to the common (COM) and normally closed (NC) terminals of the switch. The meter should indicate closed circuit in the door open condition. When the door is closed, meter should indicate an open circuit. When the monitor switch operation is abnormal, replace with the same type of switch.
NOTE: After repairing the door or the interlock system, it is necessary to do this continuity test before operating the oven.

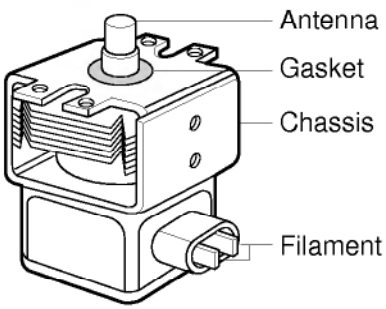
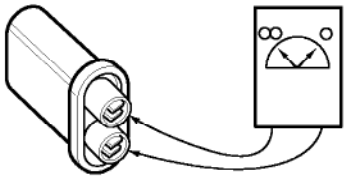
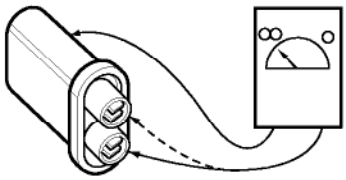
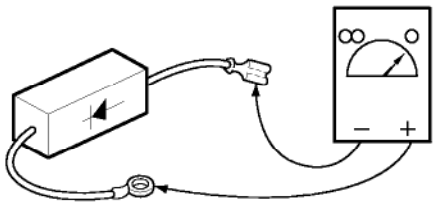
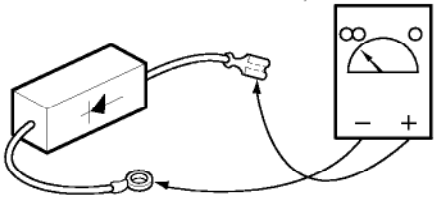
COMPONENTS	TEST PROCEDURE		RESULTS	
SWITCHES (Wire leads removed)	Check for continuity of the switch with an Ohm-meter		Door open	Door closed
	Primary Switch			
	Monitor Switch			
	Secondary Switch			
	NOTE : After checking for the continuity of switches, make sure that they are connected correctly.			

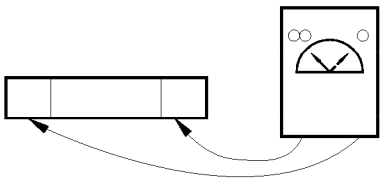
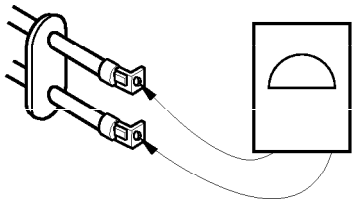
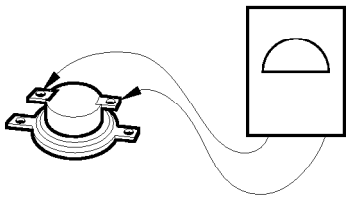
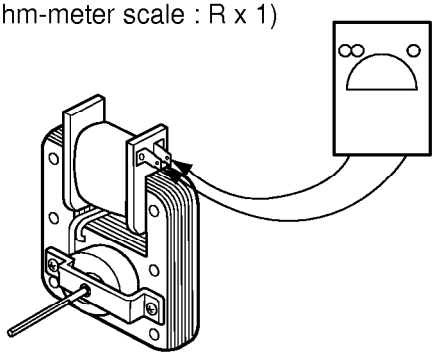
COMPONENT TEST PROCEDURE

CAUTIONS

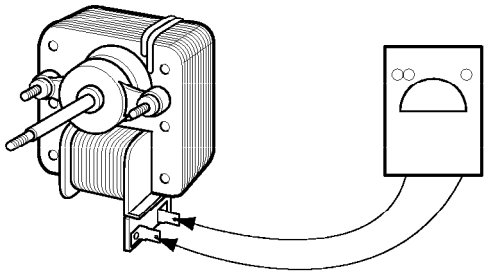
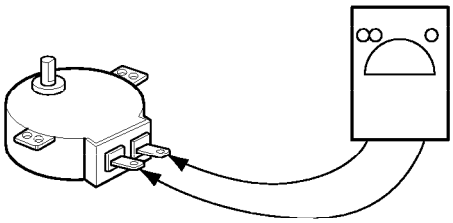
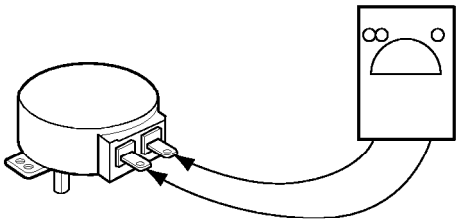
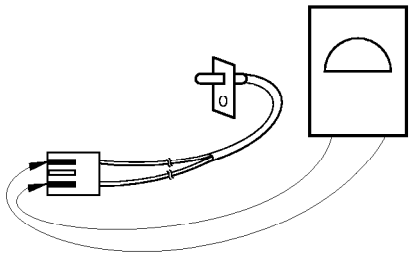
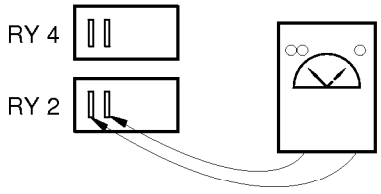
1. DISCONNECT THE POWER SUPPLY CORD FROM THE OUTLET WHENEVER REMOVING THE OUTER CASE FROM THE UNIT. PROCEED WITH THE TEST ONLY AFTER DISCHARGING THE HIGH VOLTAGE CAPACITOR AND REMOVING THE WIRE LEADS FROM THE PRIMARY WINDING OF THE HIGH VOLTAGE TRANSFORMER. (SEE PAGE 2-1)
2. ALL OPERATIONAL CHECKS WITH MICROWAVE ENERGY MUST BE DONE WITH A LOAD (1 LITER OF WATER IN CONTAINER) IN THE OVEN.

COMPONENTS	TEST PROCEDURE	RESULTS
HIGH VOLTAGE TRANSFORMER (Wire leads removed)		
	1. Measure the resistance. (Ohm-meter scale: Rx1 and Rx100) • Primary winding • Secondary winding • Filament winding	 Approx.: 0.3 ~ 0.6 ohm Approx.: 70 ~ 100 ohm Less than: 1 ohm
	2. Measure the resistance. (Ohm-meter scale: Rx1000) • Primary winding to ground • Filament winding to ground	 Normal: Infinite Normal: Infinite
MAGNETRON (Wire leads removed)	1. Measure the resistance. (Ohm-meter scale: Rx1) • Filament terminal	 Normal: Less than 1 ohm
	2. Measure the resistance. (Ohm-meter scale: Rx1000) • Filament to chassis	 Normal: Infinite

COMPONENTS	TEST PROCEDURE	RESULTS
	 NOTE: When testing the magnetron, be sure to install the magnetron gasket in the correct position and be sure that the gasket is in good condition.	
HIGH VOLTAGE CAPACITOR	Measure the resistance. (Ohm-meter scale: Rx10,000) • Terminal to terminal. 	Normal: Momentarily indicates several ohms, and then gradually returns to infinite.
	Measure the resistance. (Ohm-meter scale: Rx10,000) • Terminal to case. 	Normal: Infinite.
HIGH VOLTAGE DIODE NOTE : Some inexpensive meters may indicate infinite resistance in both direction.	Measure the continuity (Forward). (Ohm-meter scale: Rx10000) 	Normal: Continuity. Abnormal: Infinite.
	Measure the continuity (Reverse). (Ohm-meter scale: Rx10000) 	Normal: Infinite. Abnormal: Continuity.

<table>
<tr><th>COMPONENTS</th><th>TEST PROCEDURE</th><th colspan="2">RESULTS</th></tr>
<tr><td rowspan="2">FUSE
(Wire leads removed.)</td><td rowspan="2">Check for continuity of the switch with a Multi-meter.
  </td><td>Normal</td><td>Abnormal</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td></td><td colspan="3">NOTE: If the fuse is blown, check the primary, the secondary, and the monitor switches, H.V.D. and H.V.C. before replacing the fuse.
If the fuse is blown by improper switch operation replace the defective switch and the fuse at the same time.
Replace just the fuse if the switches operate normally.</td></tr>
<tr><td rowspan="2">CONVECTION HEATER
(Wire leads removed)</td><td>Measure the resistance.
(Multi-meter scale : R x 1)
  </td><td colspan="2">Normal :
Approx. 9.5 ohm
(at 20~30°C)</td></tr>
<tr><td colspan="3">NOTE: Make sure heater is fully cooled when tested.</td></tr>
<tr><td rowspan="2">MAGNETRON
THERMOSTAT</td><td rowspan="2">  </td><td>Normal</td><td>Abnormal</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>FAN MOTOR
(Wire leads removed)</td><td>Measure the resistance.
(Ohm-meter scale : R x 1)
  </td><td colspan="2">Normal:
Approx. 49 ohm.

Abnormal: Infinite or several ohm.</td></tr>
</table>

COMPONENTS	TEST PROCEDURE	RESULTS
CIRCULATION MOTOR (Wire leads removed)	Measure the resistance. (Multi-meter scale : R x 1) 	Normal : Approx. 29.5 ohm Abnormal : Infinite or several ohm.
TURNTABLE MOTOR (Wire leads removed)	Measure the resistance. (Ohm-meter scale : R x 1000) 	Normal : Approx. 3.48 Kohm Abnormal : Infinite or several ohm.
DAMPER MOTOR (Wire leads removed)	Measure the resistance. (Ohm-meter scale : R x 1000) 	Normal : Approx. 2.93 Kohm Abnormal : Infinite or several ohm.
THERMISTOR (Disconnect the 2 pin connector from P.C.B.)		Normal at room temperature (20°C~30°C) Approx. 255 Kohm
RELAY 2, 3, 4 OF P.C.B. (leadwires removed.) RY2 : Microwave RY4 : Convection		Cooking Start / OFF  

NOTE : A MICROWAVE ENERGY LEAKAGE TEST MUST ALWAYS BE PERFORMED WHEN THE UNIT IS SERVICED FOR ANY REASON.
MAKE SURE THE WIRE LEADS ARE CORRECT POSITION.
WHEN REMOVING THE WIRE LEAD FROM THE PARTS, BE SURE TO GRASP THE CONNECTOR, NOT THE WIRES.

TROUBLESHOOTING

WHEN YOU GET A COMPLAINT FROM YOUR CUSTOMER, EVALUATE THE COMPLAINT CAREFULLY. IF THE FOLLOWING SYMPTOMS APPLY, PLEASE INSTRUCT THE CUSTOMER IN THE PROPER USE OF THE MICROWAVE OVEN. THIS CAN ELIMINATE AN UNNECESSARY SERVICE CALL.

CAUTIONS

1. Check grounding before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge the high voltage capacitor. (See page 2-1)
4. When checking the continuity of the switches or of the high voltage transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
5. Do not touch any part of the circuit on the P.C.B. since static electric discharge may damage this control panel.
   Always touch yourself to ground while working on this panel to discharge any static charge built up in your body.

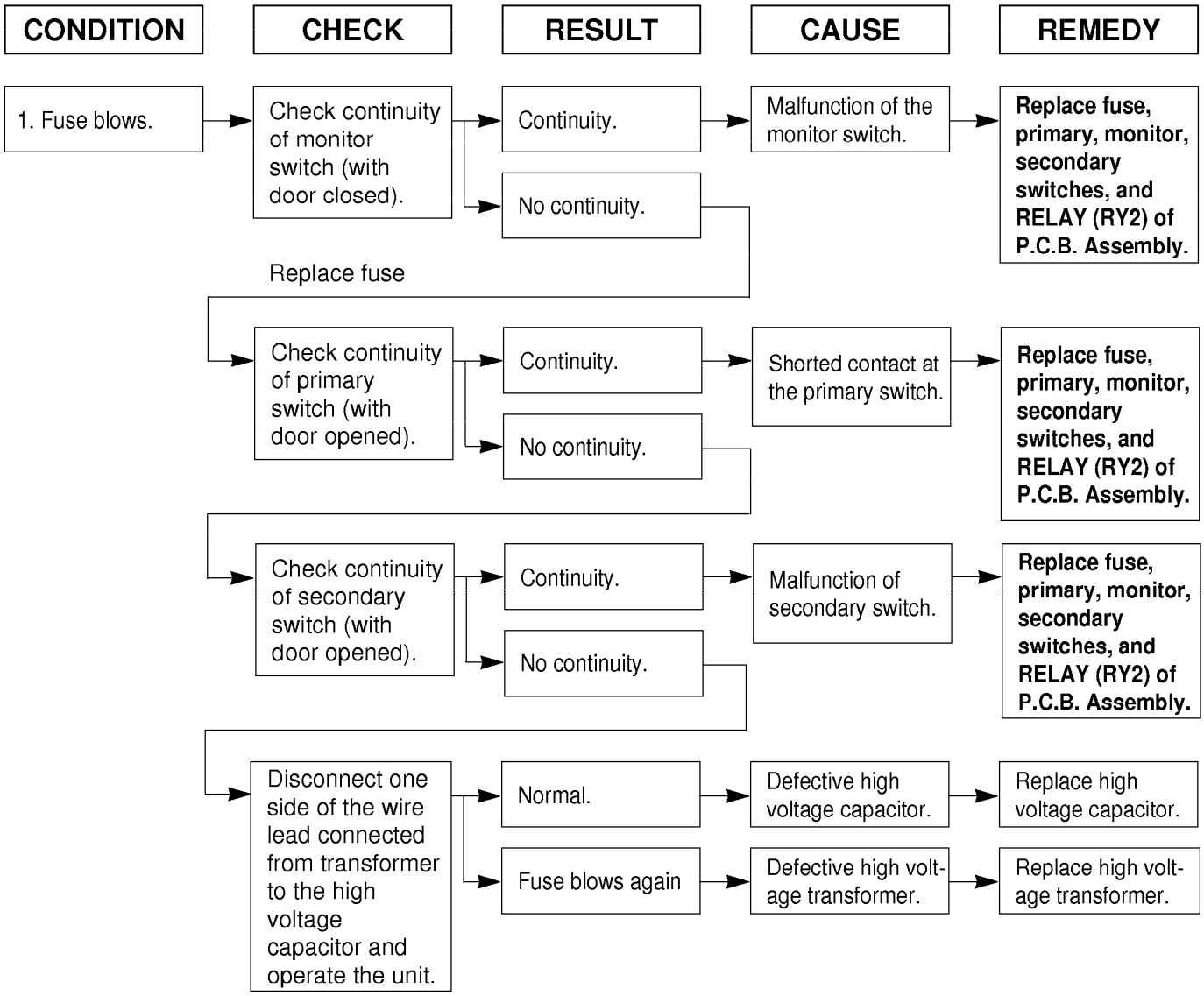
CONDITION	CAUSE	REMEDY
Microwave oven does not work.	Inserting many plugs into one outlet and using them at the same time. (blown fuse or breaker)	Avoid using other electrical appliances when you use the microwave oven.
	Microwave oven plug is not inserted tightly.	Insert microwave oven plug securely.
Output power is too low.	Low AC input voltage.	Use the microwave oven at adequate line voltage.
	Food temperature is too low.	This may not be a defect. It is possible that the food should be cooked for a longer time period.
Sparks occur.	Using metallic ware and allowing it to touch the oven wall.	Do not use metallic ware for cooking except that noted in the cooking guide.
	Ceramic ware trimmed in gold or silver powder is used.	Do not use any type of cookware with metallic trimming.
Uneven cooking.	Inconsistent intensity of microwave by their characteristics.	1. Use plastic wrap or lid. 2. Stir once or twice while cooking soup, cocoa or milk, etc.

(TROUBLE 1) The following visual conditions indicate a probable defective control circuit.

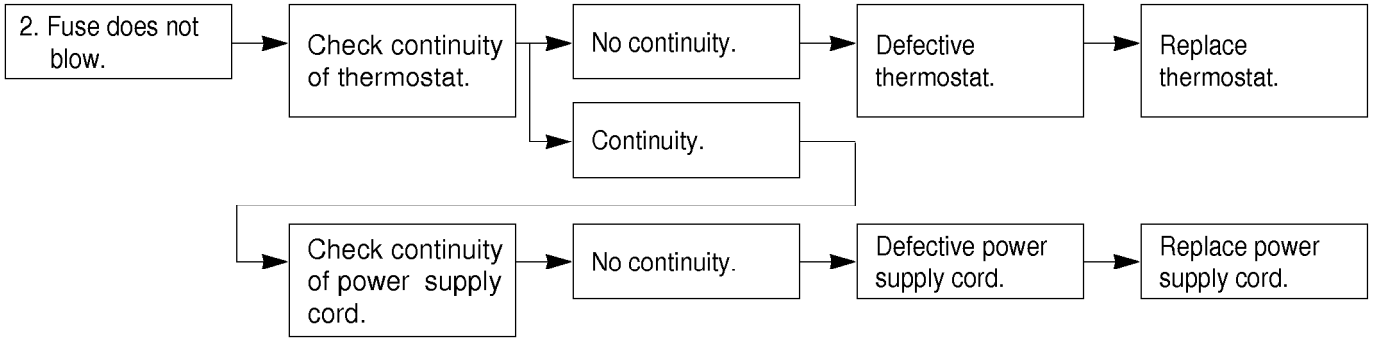
1. Incomplete segments.
   - Segment missing.
   - Partial segment missing.
   - Digit flickering (NOTE: Slight flickering is normal.)
2. Colon does not turn on or blink.
3. A distinct change in the brightness of one or more numbers in display.
4. One or more digits in the display are not lighting.
5. Display indicates a number different from one touched, for example, key in **5** and **3** appears in the display.
6. Specific numbers (for example 7 or 9) does not display when key pad is touched.
7. Display does not count down with time blinking or up with clock operation.
8. Display obviously jumps in time while counting down.
9. Display counts down too fast while cooking.
10. Each indicator light does not turn on after setting cooking cycle.
11. Display time of day does not reappear when cooking is finished.

CONDITION	CHECK	RESULT	CAUSE	REMEDY
1. No input can be programmed.	Check the connection between membrane key assembly and P.C.B. assembly.	Continuity	Defective P.C.B. assembly.	Replace P.C.B. assembly.
		No continuity	Loose connection.	Connect them tightly.
2. Some inputs cannot be programmed.	Replace key membrane assembly and check operation.	Everything works as specified.	Defective key membrane assembly.	Replace key membrane assembly.
3. Display shows a number or figure different from one touched.		Still have trouble.	Defective P.C.B. assembly.	Replace P.C.B. assembly.
4. Random programming when touching other pads.				
5. Display is fixed at some figure and can not accept any input.				

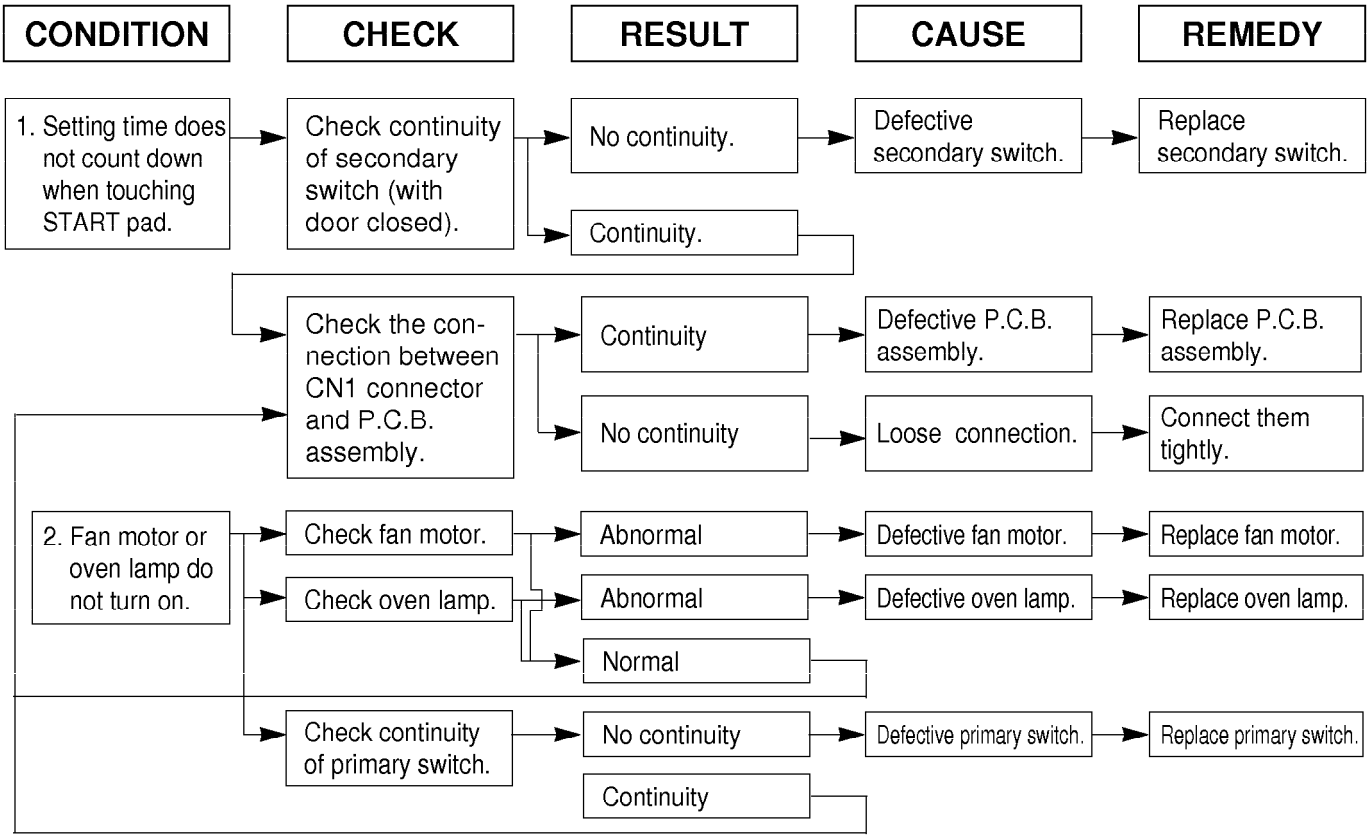
(TROUBLE 2) Oven does not operate at all, display window does not display any figures, and no input is accepted.



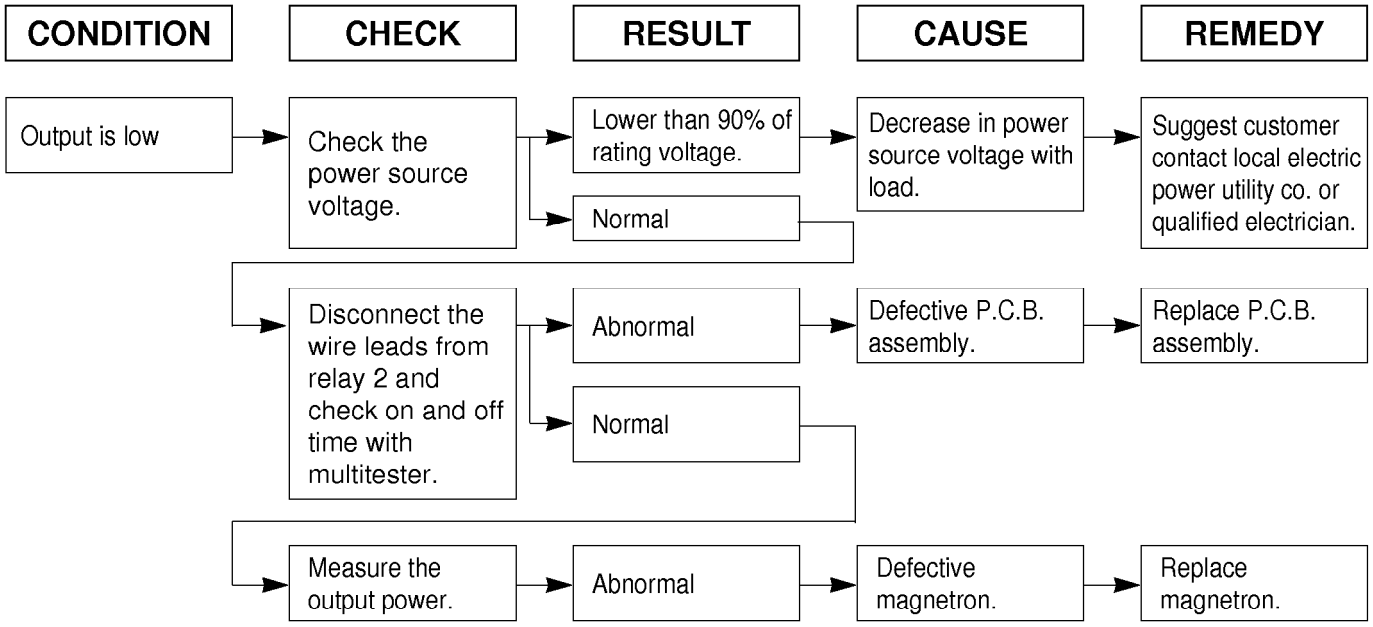
NOTE : All these switches must be replaced at the same time. Refer to page 5-7, 5-8



(TROUBLE 3) Display shows all figures set, but oven does not start cooking while desired program times are set and START pad is touched.

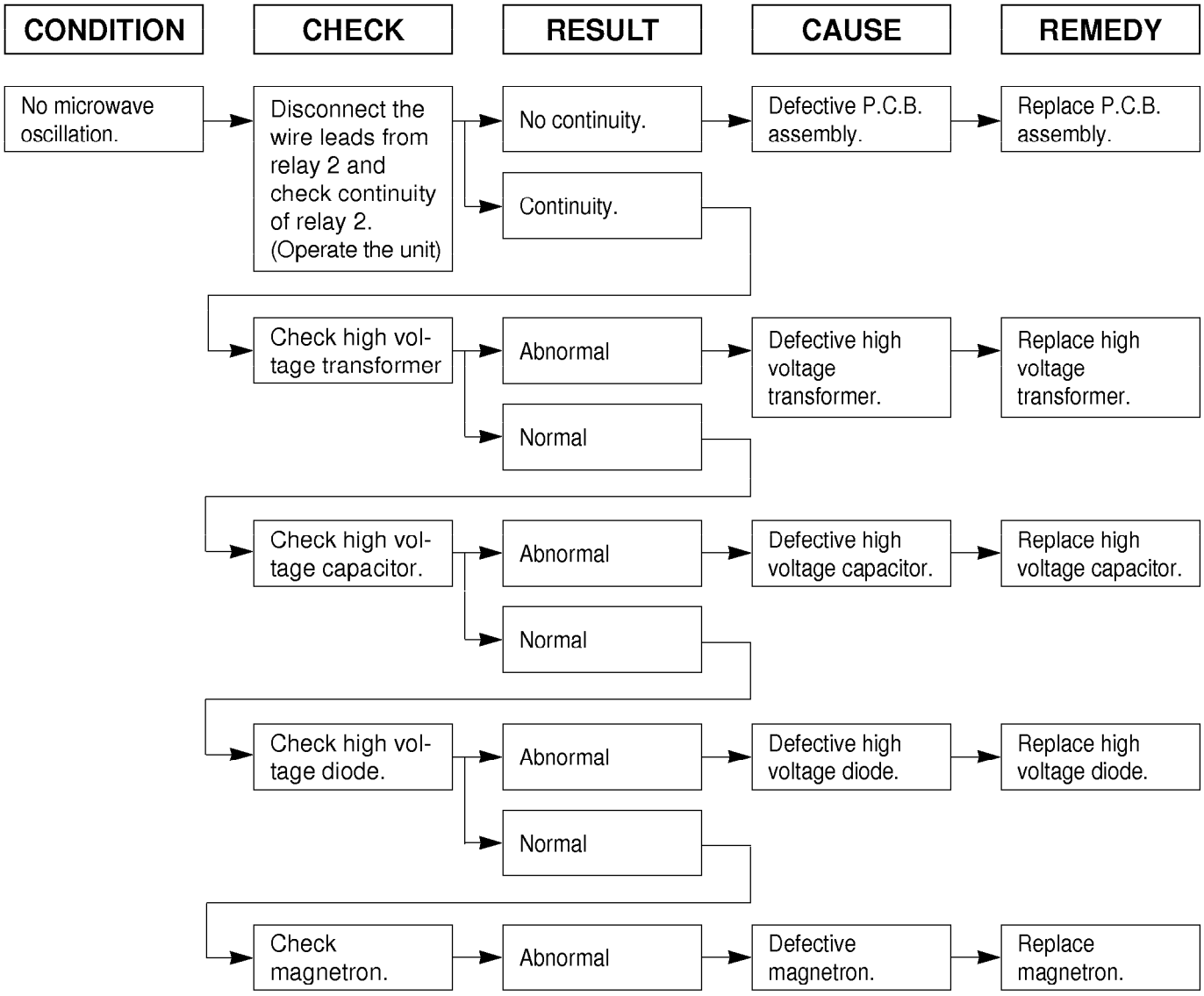


(TROUBLE 4) Oven seems to be operating but little heat is produced in oven load.

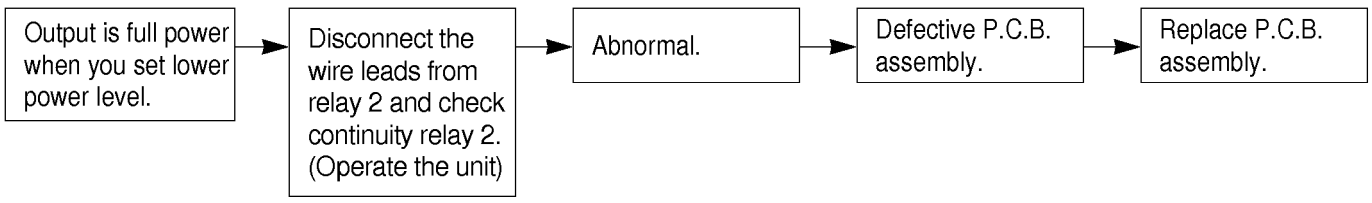


NOTE : Simple test of power output-conducted by heating one liter water for one minute if available.
Minimum 8.5℃ temperature rise is normal condition.

(TROUBLE 5) No microwave oven operation even though oven lamp and fan motor run. (Display operates properly)



NOTE : • Make sure the wire leads correct position.
• When Removing the wire leads from the parts, be sure to grasp the connector, not the wires.
• When removing the magnetron, be sure to install the magnetron gasket in the correct position and in good condition.

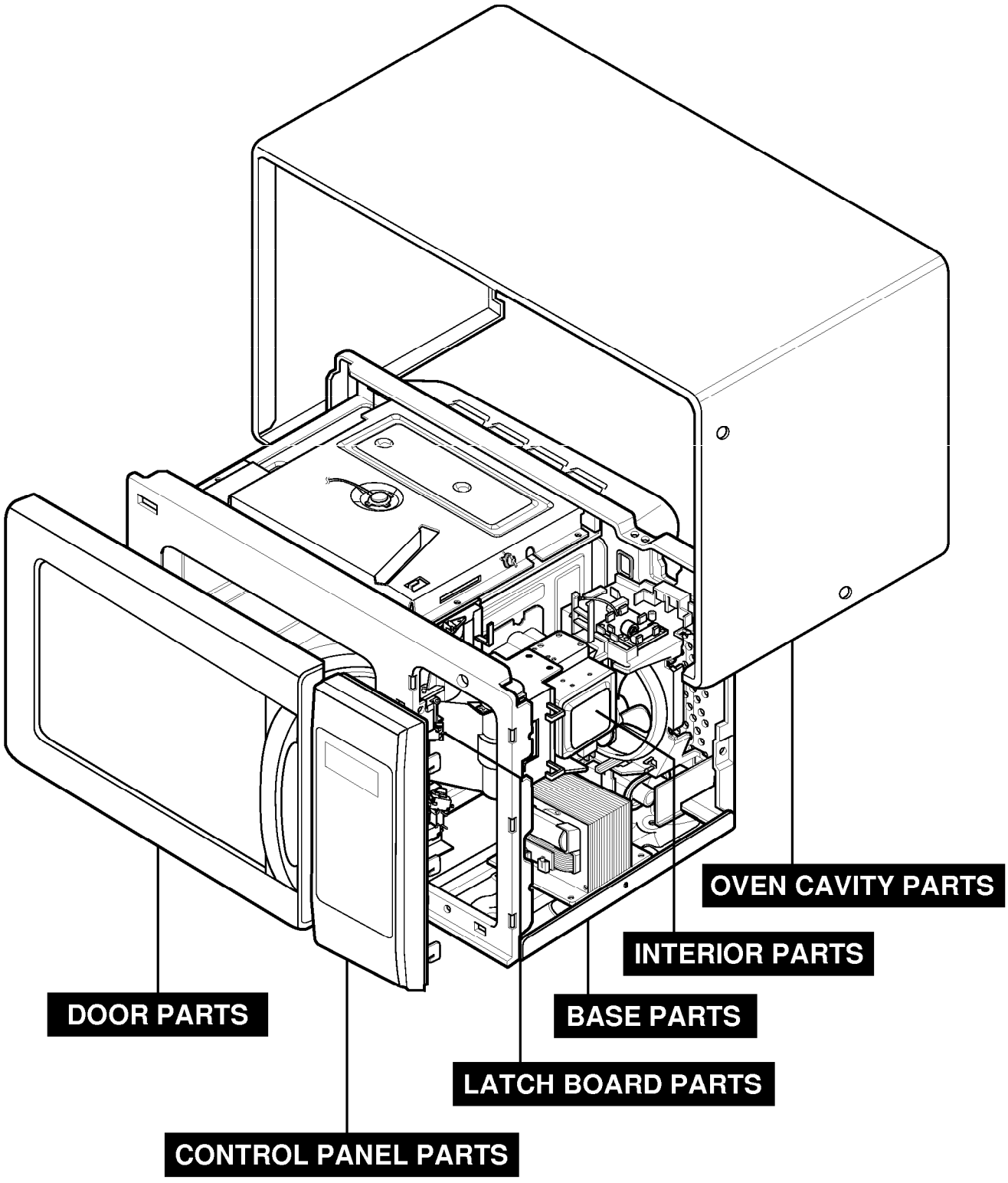


(TROUBLE 6) Convection oven does not operate at all or convection cook is bad.

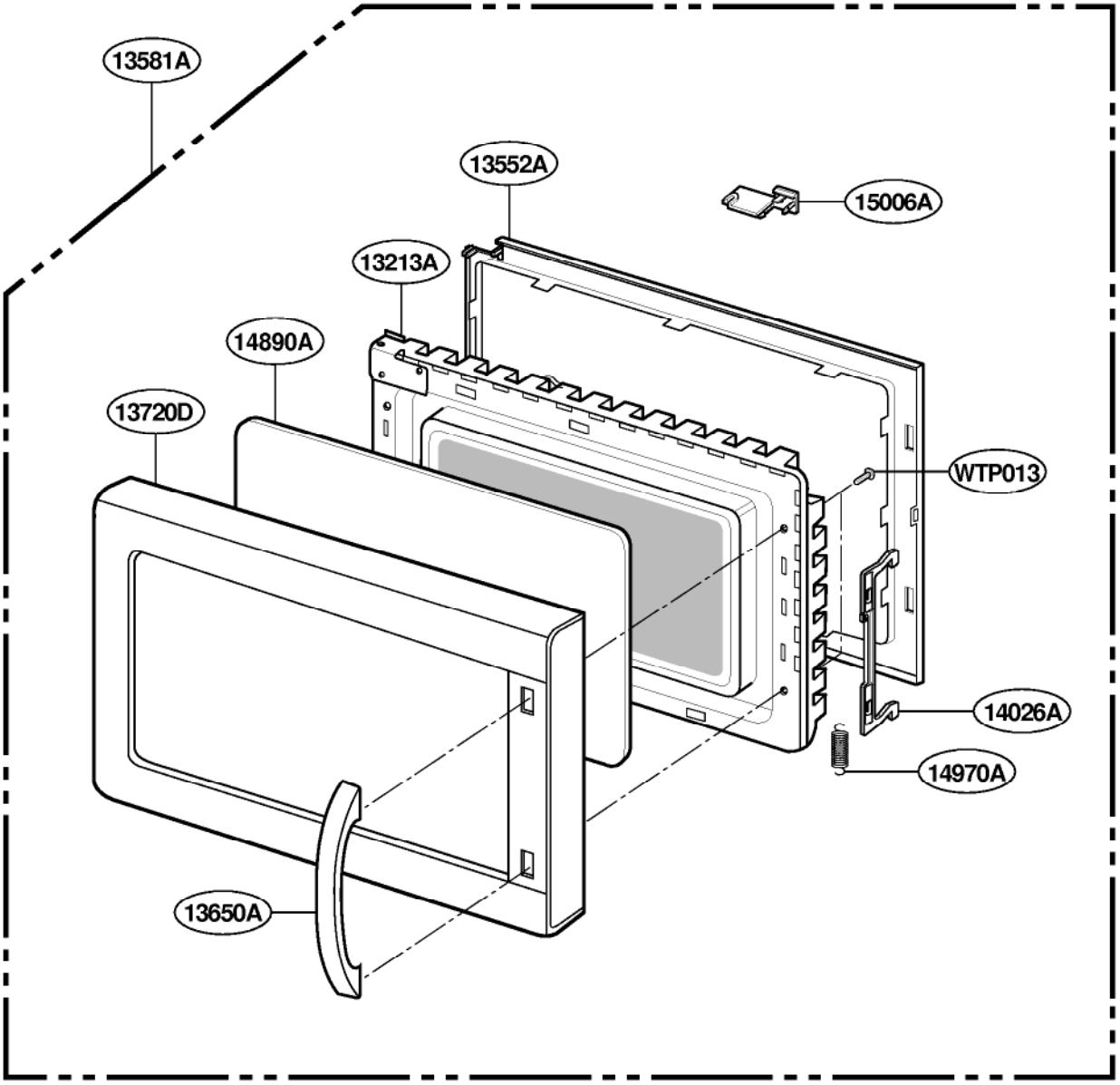
CONDITION	CHECK	RESULT	CAUSE	REMEDY
Convection indicator light but oven does not go into cook cycle when START pad is touched.	Check the Relay 4 or 6 of P.C.B. assembly .	Abnormal	Defective Relay 4 or 6.	Replace Relay 4 or 6.
		Normal		
	Check the connection between P.C.B. assembly and headwire connector.	No continuity.	Loose connection.	Connect them tightly.
Temperature in the oven cavity is lower or higher than preset.	Check the Relay 4 or 6 of P.C.B. assembly .	Abnormal	Defective Relay 4 or 6.	Replace Relay 4 or 6.
		Normal		
	Check the convection heater element.	Abnormal	Defective convection heater.	Replace convection heater.
		Normal		
	Check the circulation motor.	Abnormal	Defective circulation motor.	Replace circulation motor.
		Normal		
	Check the damper motor.	Abnormal	Defective damper motor.	Replace damper motor.
		Normal		
	Check the air duct assembly.	Interference Damper open and close at air duct assembly.	Defective air duct assembly.	Replace air duct assembly.
		Normal		
	Check the thermistor.	Error message shows in the display.	Thermistor open or short.	Replay thermistor.
		Normal		
	Check the Rack.	Cook on the glass tray.	Without metal rack.	Cook with metal rack.

EXPLODED VIEW

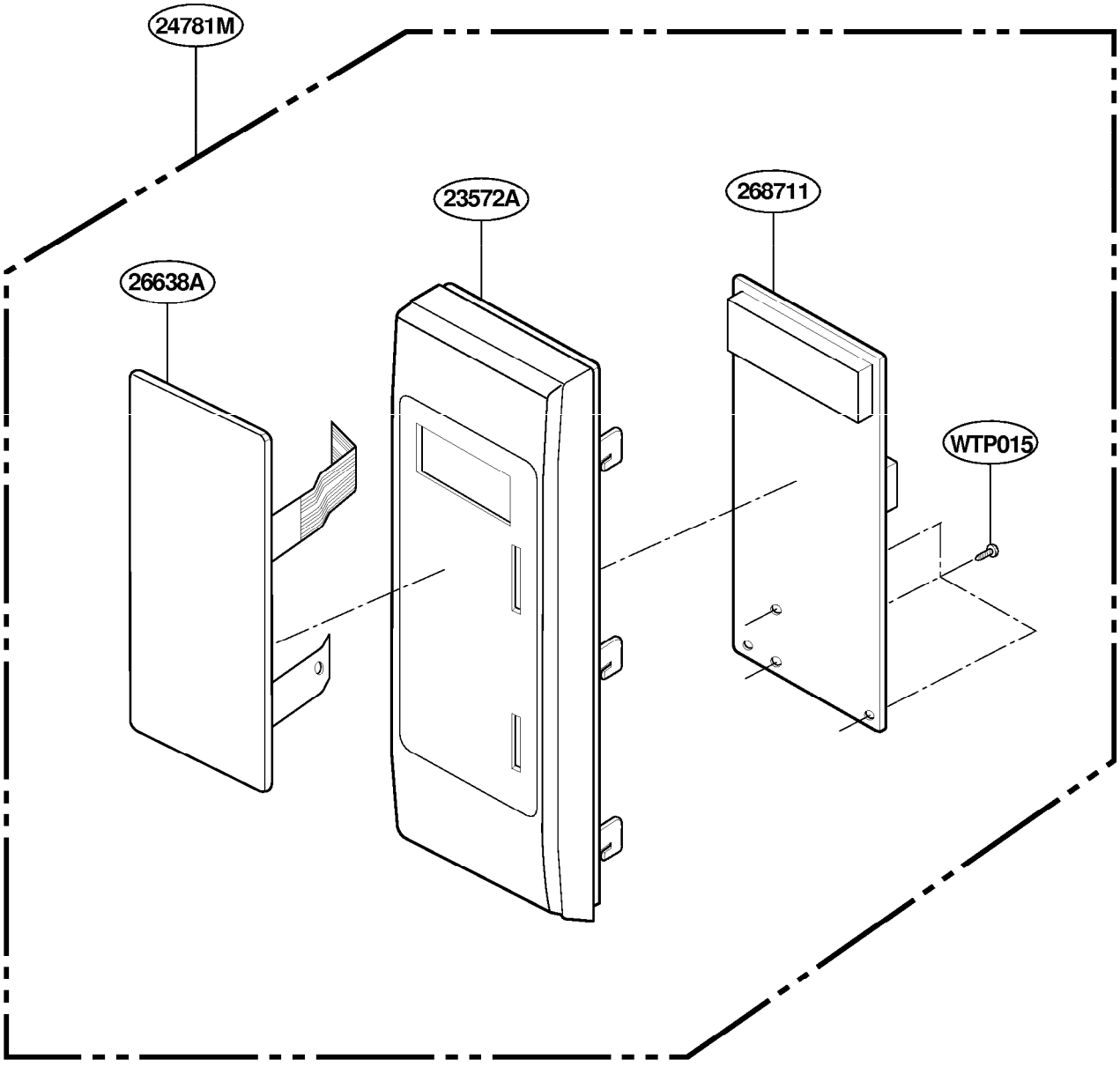
INTRODUCTION



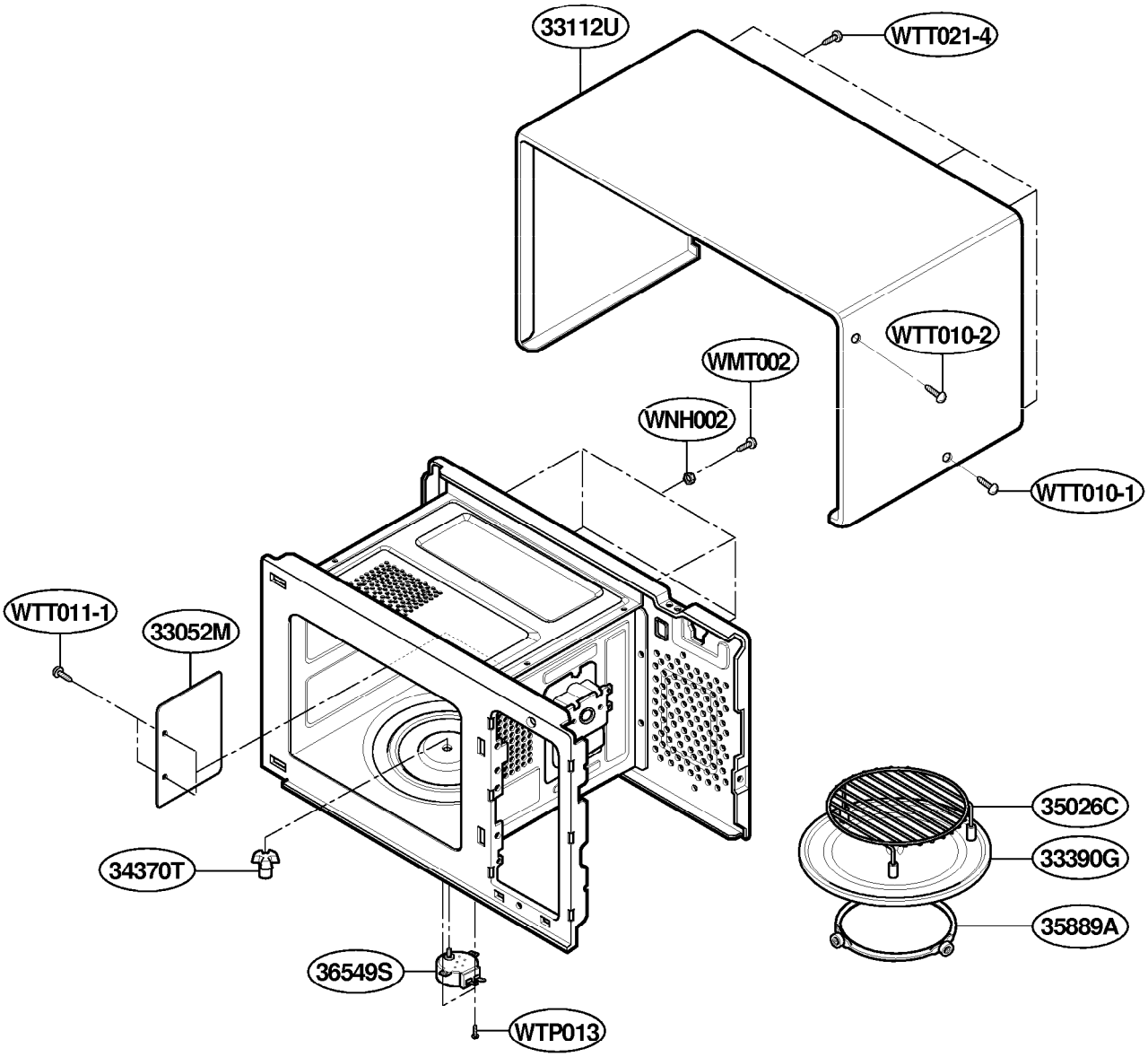
DOOR PARTS


13581A
13552A
15006A
13213A
14890A
13720D
WTP013
14026A
14970A
13650A

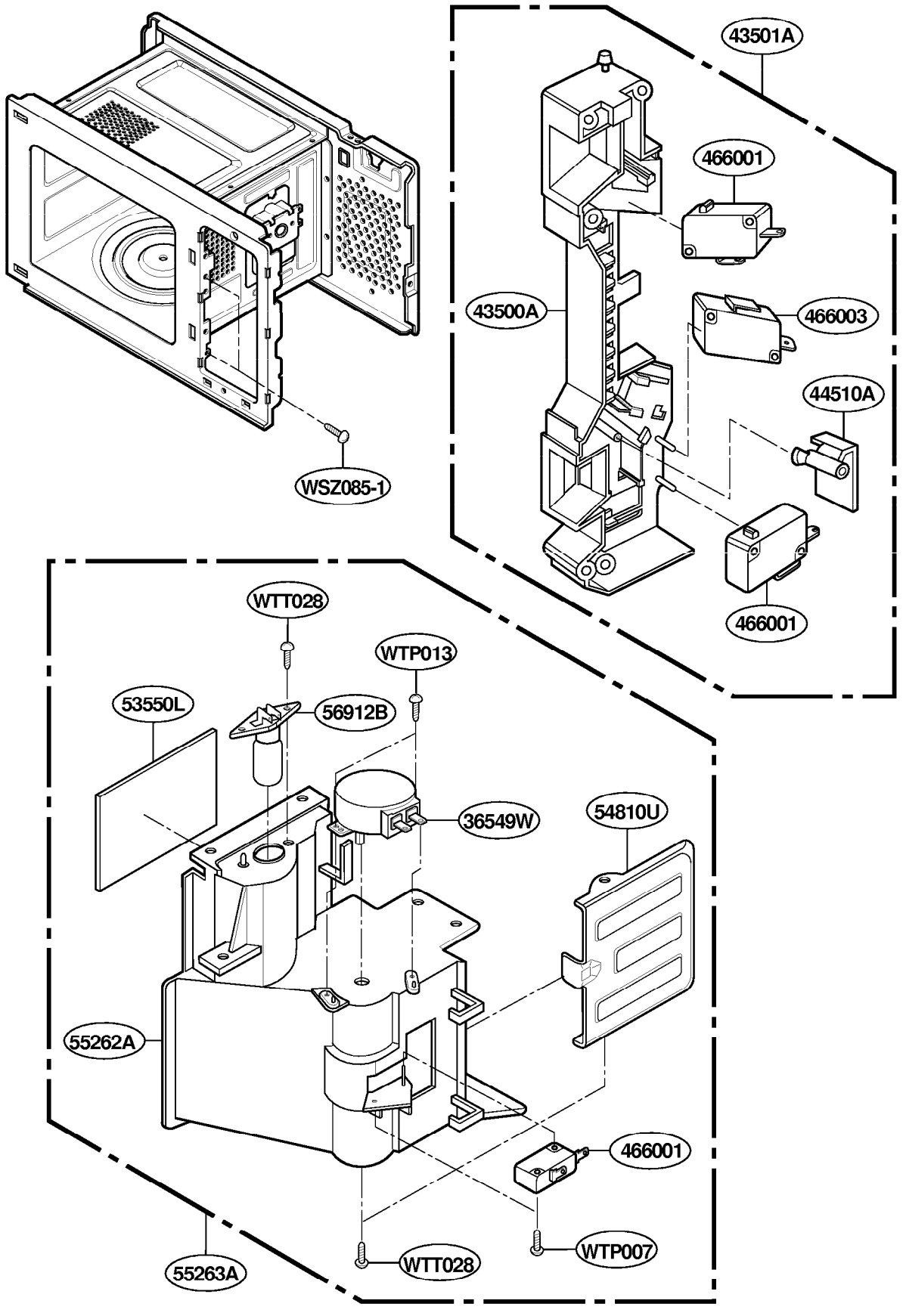
CONTROLLER PARTS



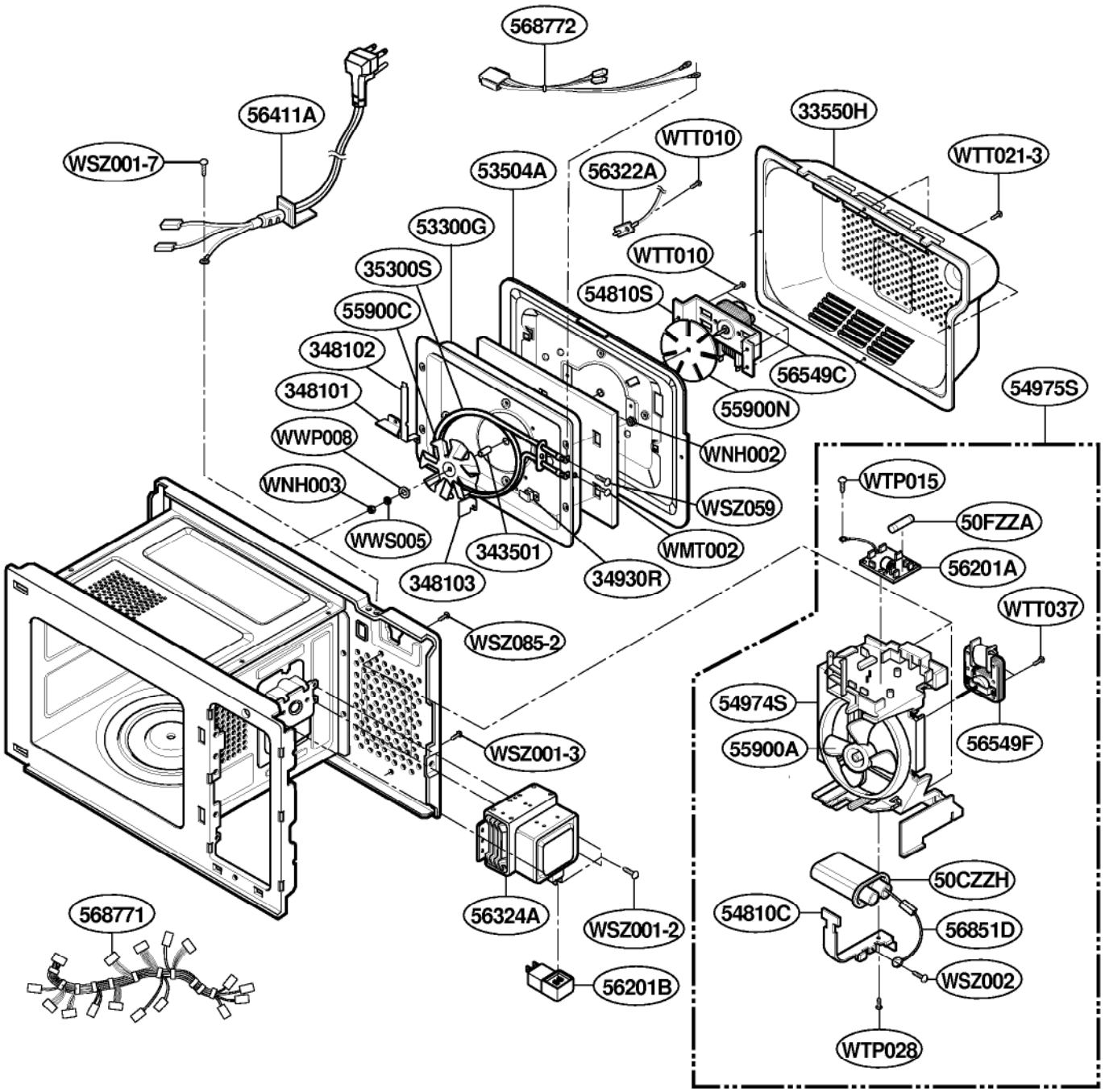
OVEN CAVITY PARTS



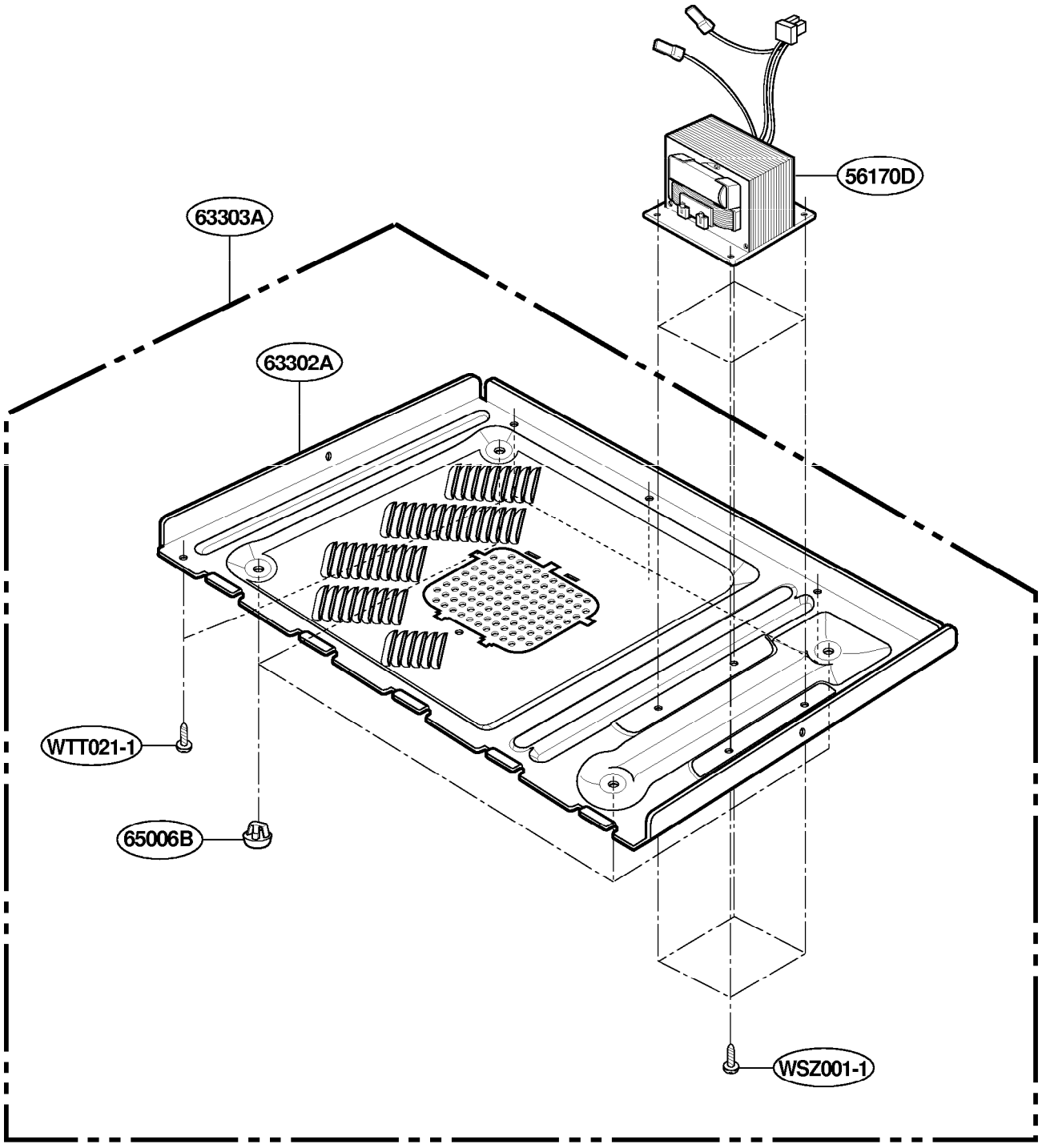
LATCH BOARD PARTS



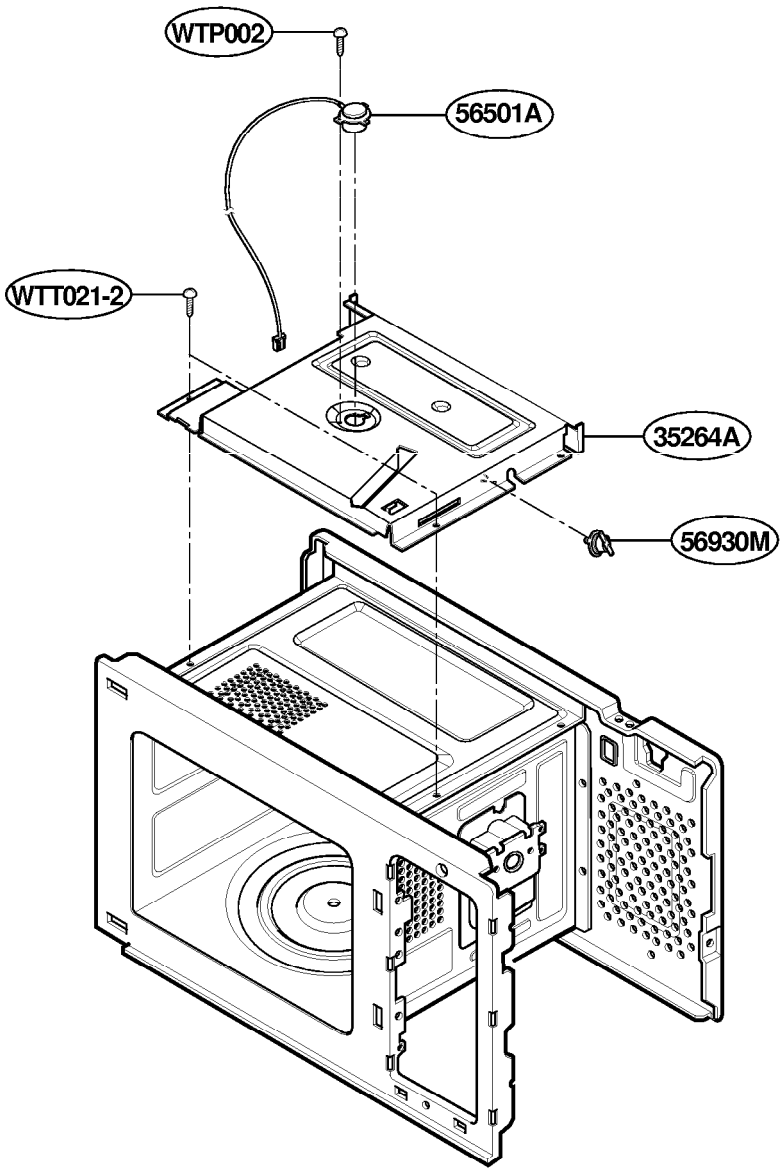
INTERIOR PARTS



BASE PLATE PARTS



SENSOR PARTS



REPLACEMENT PARTS LIST

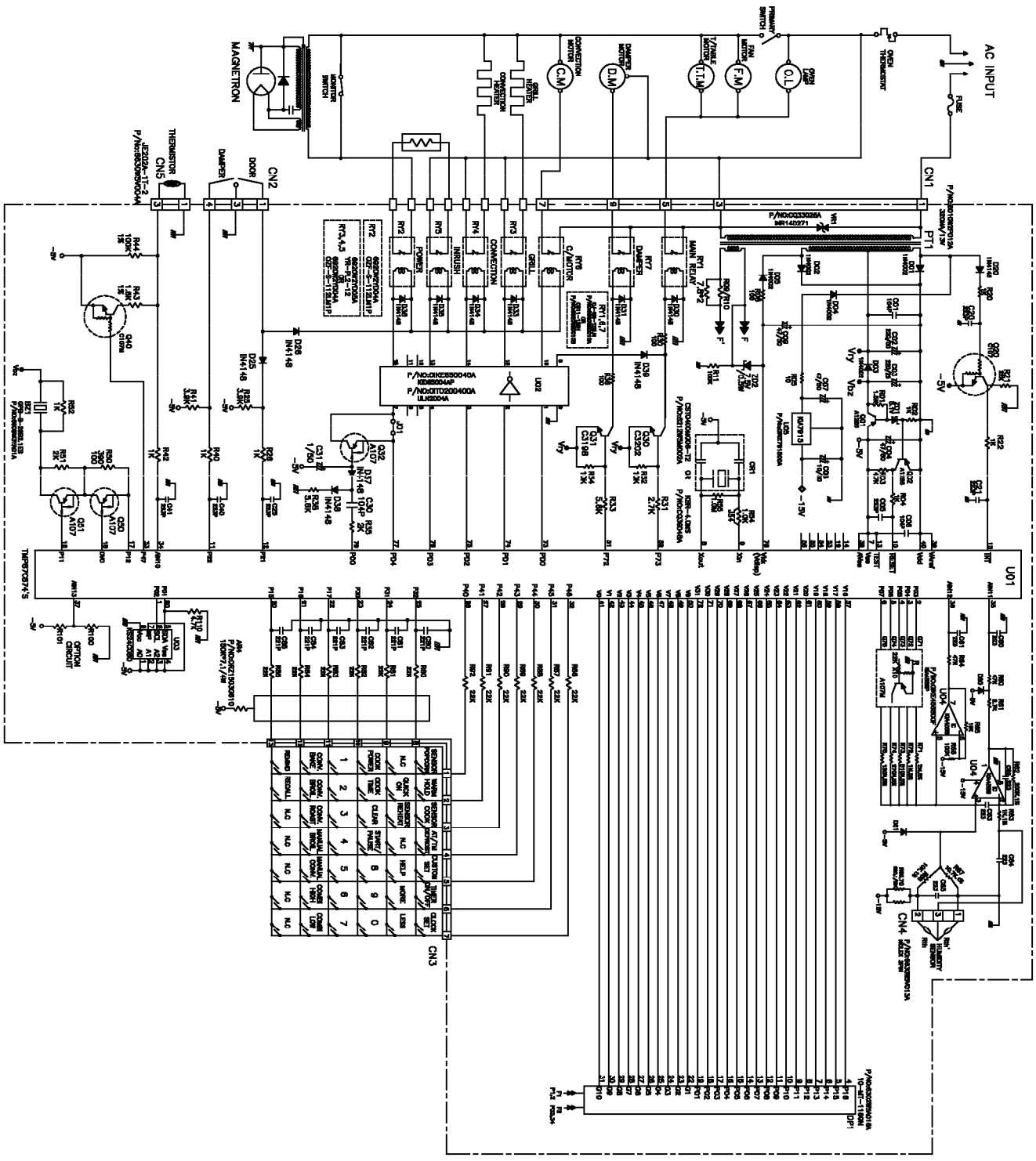
LOC. NO.	PART NO.	DESCRIPTION	SVC	ALTER
13213A	3213W0A002C	DOOR FRAME ASSY	R	
13552A	3552W0A002A	CHOKE COVER	R	
13581A	3581W0A003G	DOOR ASSY,[MWO]	S	
13650A	3650W1A035A	HANDLE,[DOOR]	R	
13720D	3720W0D149C	PANEL,[DOOR]	R	
14026A	4026W2A015A	LATCH	R	
14890A	4890W1A007C	GLASS	S	
14970A	4970WRA001B	SPRING	R	
15006A	5006W3A017A	CAP	R	
23572A	3572W0A173A	CONTROL PANEL	R	
24781M	4781W1M215E	CONTROLLER ASSY,[MICOM]	R	
26638A	6638W2A369A	KEY MEMBRANE	R	
268711	6871W2S155C	PWB(PCB) ASSY,[MAIN]	R	
33052M	3052W3M022A	CANOPY,[MICA]	R	
33112U	3112W0U036A	OUT CASE,[U-BENDING]	R	
33390G	1B71961E	TRAY,[GLASS]	R	
33550H	3550W1A090A	COVER,[AIR DUCT COVER]	R	
343501	4B73725A	RING	R	
34370T	4370W3A001A	SHAFT,[TURN TABLE]	R	
348101	4810W3H003A	BRACKET,[HEATER]	R	
348102	4810W3H002A	BRACKET,[HEATER]	R	
348103	4810W3H004A	BRACKET,[HEATER]	R	
34930R	4930W3A014A	HOLDER	R	
35026C	5026W1A035D	SHELF	R	
35264A	5264W1A015A	AIR TUNNEL	R	
35300S	5300W1S006A	HEATER,[SHEATH]	R	
35889A	5889W2A017A	ROTATING RING ASSY	R	
36549S	6549W1S013A	MOTOR(CIRC),SYNCHRONOUS	R	
36549W	6549WRS001P	MOTOR(CIRC),SYNCHRONOUS	R	6549W1S003E
43500A	3500W1A013A	BOARD,[LATCH]	R	
43501A	3501W1A019A	BOARD ASSY,[LATCH]	R	
44510A	4510W4A005A	LEVER	R	
466001	6600W1K001D	SWITCH,MICRO	R	3B73362E
466001	6600W1K001D	SWITCH,MICRO	R	3B73362E
466003	6600W1K001C	SWITCH,MICRO	R	3B73361D
50CZZH	0CZZW1H002H	CAPACITOR[HIGH VOLTAGE]	R	6120W3H003H
50FZZA	3B74133K	FUSE[ALL]	R	3B74133H
53300G	3300W1G088A	PLATE,[INNER]	R	
53504A	3300W1G087A	CHAMBER	R	
53550L	3550W3L001A	COVER,[LAMP COVER]	R	
54810C	4810W4C003A	BRACKET,[CAPACITOR]	R	
54810S	3B72717A	BRACKET,[CONVETION MOTOR]	R	
54810U	4810W2U002A	BRACKET,[DAMPER]	R	
54974S	4974W1S046A	GUIDE,SUCTION	R	
54975S	4975W1S043N	GUIDE ASSY,[SUCTION]	S	
55262A	3550W1A093A	COVER,[AIR DUCT COVER]	R	

R, S : SERVICE PARTS

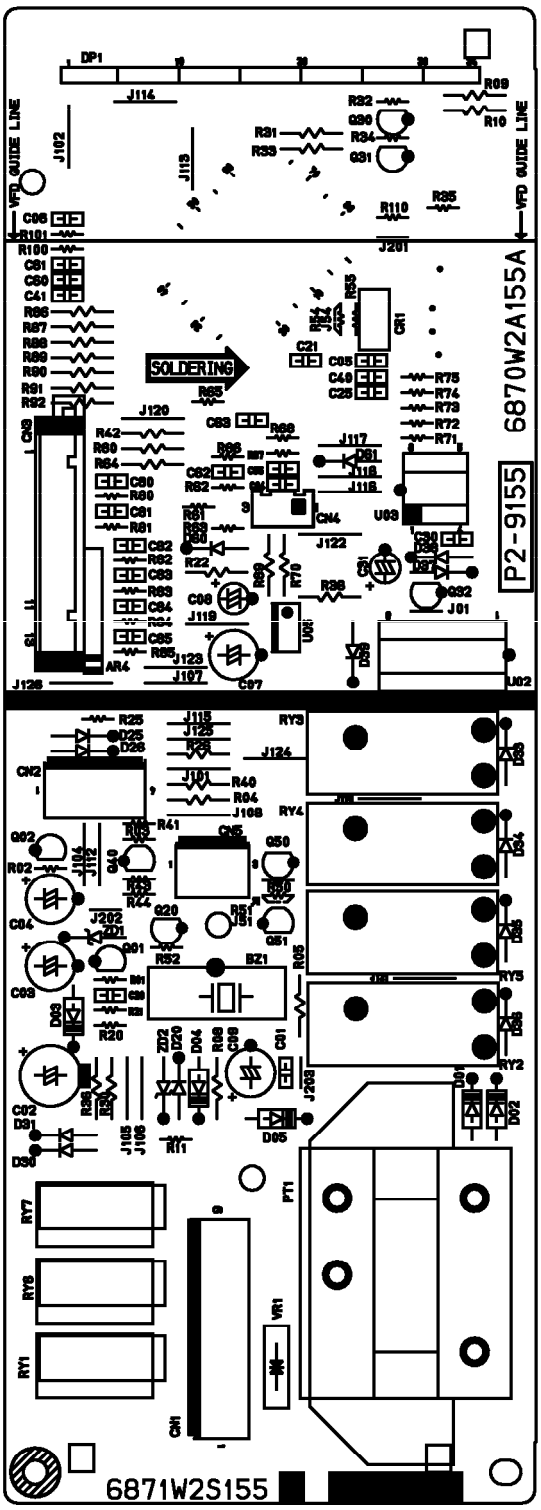
LOC. NO.	PART NO.	DESCRIPTION	SVC	ALTER
55263A	5263W1A020F	DUCT ASSY,[AIR]	R	
55900A	2B72279B	FAN	R	
55900C	5900W3A004B	STIRRER FAN	R	
55900N	3B72559A	FAN	R	
56170D	6170W1D012G	TRANSFORMER,HIGH VOLTAGE	R	
56201A	6201W2A018A	FILTER ASSY,NOISE	R	
56201B	6201W2A019A	FILTER ASSY,CHOKE	R	
56322A	6322W2A001A	THERMISTOR,VARI	R	
56324A	6324W1A001B	MAGNETRON	R	
56411A	6411W2A002Z	POWER CORD ASSY	R	
56501A	6501W1A004A	SENSOR ASSY	R	
56549C	2B72066G	MOTOR(CIRC),CIRCULATION	R	
56549F	6549W2F017N	MOTOR(CIRC),FAN	R	
56851D	6021W3B001M	CABLE ASSY,DIODE	R	6021W3B001K
568771	6877W1A264A	LEAD WIRE ASSY	R	
568772	6877W2A002A	LEAD WIRE ASSY	R	
56912B	6912W3B002E	LAMP[OVEN/BASELESS]	R	
56930M	6930W1A002B	THERMOSTAT,BIMETAL	R	6930WRT003B
63302A	3302W0A022A	BASE PLATE	R	
63303A	3303W1A045A	BASE PLATE ASSY	R	
65006B	5006W3A016B	CAP	R	
*01	3828W5A1567	MANUAL,[OWNERS]MWO	R	
*02	3828W5S1510	MANUAL,[SERVICE]	R	
WMT002	1MTC0402832	SCREW MACHINE,TRUSS HEAD	R	
WNH002	1NHA0400018	NUT,HEXAGON[1]	R	
WNH003	1NHA0400032	NUT,HEXAGON[1]	R	
WSZ001	1SBF0402418	SCREW TAP TITE(S),BINDING HEAD	R	
WSZ002	1SBF0402418	SCREW TAP TITE(S),BINDING HEAD	R	
WSZ059	4000W4A001A	SCREW,	R	
WSZ085	4B70188C	SCREW,	R	
WTP002	1TPL0302018	SCREW TAPPING,PAN HEAD	R	
WTP007	1TPL0303118	SCREW TAPPING,PAN HEAD	R	
WTP013	1TPL0402418	SCREW TAPPING,PAN HEAD	R	
WTP015	1TPL0402618	SCREW TAPPING,PAN HEAD	R	
WTT010	1TTG0402422	SCREW TAPPING,TRUSS HEAD	R	
WTT011	1TTG0402632	SCREW TAPPING,TRUSS HEAD	R	
WTT021	1TTL0402418	SCREW TAPPING,TRUSS HEAD	R	
WTT028	1TTL0402818	SCREW TAPPING,TRUSS HEAD	R	
WTT037	1TTL0403818	SCREW TAPPING,TRUSS HEAD	R	
WWP008	1WPL0500032	WASHER,PLAIN	R	
WWS005	1WSD0400032	WASHER,SPRING LOCK	R	

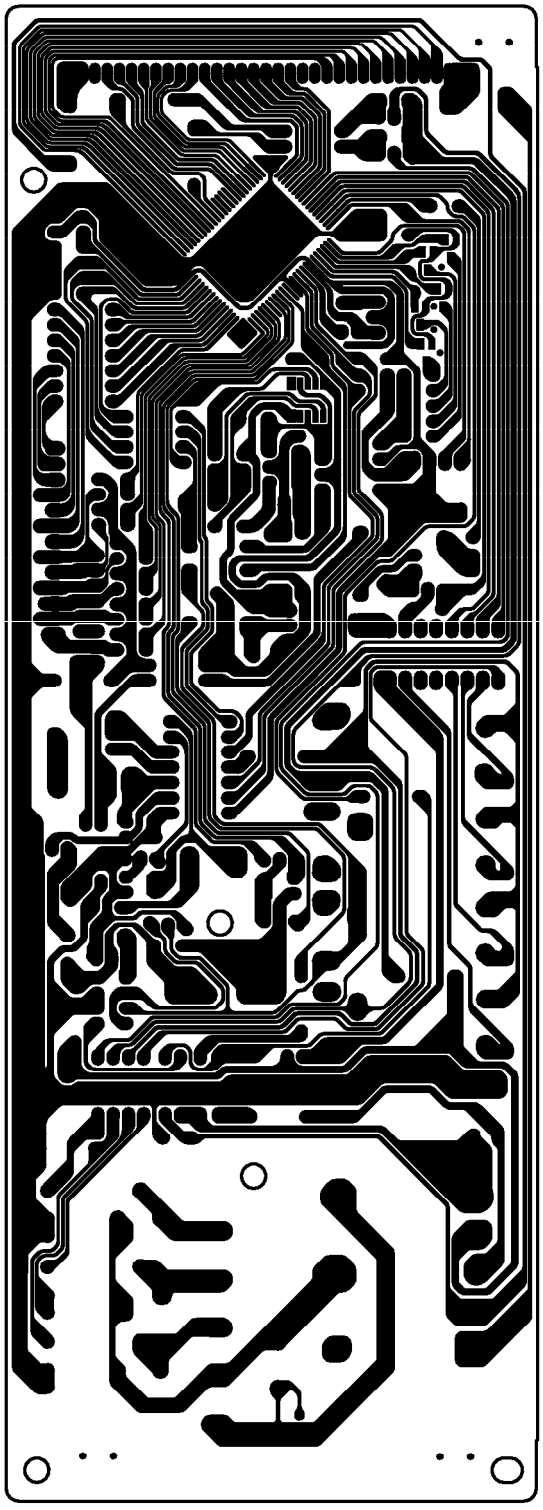
R, S : SERVICE PARTS

SCHEMATIC DIAGRAM OF P.C.B.



PRINTED CIRCUIT BOARD





P.C.B PARTS LIST

LOC. NO.	PART NO.	DESCRIPTION	SPEC	SVC	ALTER
AR4	0RZ1503G610	RESISTOR,ARRAY SMART 150KOHM 5% 8PIN -		R	
BZ1	6908W3YA01A	BUZZER,PIEZO CERAMIC	GPB-B-26B2.1ES(EXTERNAL)	R	
C01	0CK1040K518	CAPACITOR,CERAMIC (HIGH DIELEC	0.1000UF 50V K B TA26	R	
C02	0CE2271K610	CAPACITOR,AL.ELECTROLYTIC	220M SM 50V M FL	R	
C03	0CE2272H638	CAPACITOR,AL.ELECTROLYTIC	220UF SME 25V M FM5 TP5	R	
C04	0CE4761K638	CAPACITOR,AL.ELECTROLYTIC	47UF SM,SA 50V M FM5 TP 5	R	
C05	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C06	0CK1040K518	CAPACITOR,CERAMIC (HIGH DIELEC	0.1000UF 50V K B TA26	R	
C07	0CE4761K638	CAPACITOR,AL.ELECTROLYTIC	47UF SM,SA 50V M FM5 TP 5	R	
C08	0CE1061K638	CAPACITOR,AL.ELECTROLYTIC	10M SM 50V TP(5)	R	
C09	0CE4761K638	CAPACITOR,AL.ELECTROLYTIC	47UF SM,SA 50V M FM5 TP 5	R	
C20	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C21	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C25	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C40	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C41	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C60	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C61	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C62	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C63	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C64	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C65	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C80	0CK2210K518	CAPACITOR,CERAMIC (HIGH DIELEC	220PF 50V K B TA26	R	
C81	0CK2210K518	CAPACITOR,CERAMIC (HIGH DIELEC	220PF 50V K B TA26	R	
C82	0CK2210K518	CAPACITOR,CERAMIC (HIGH DIELEC	220PF 50V K B TA26	R	
C83	0CK2210K518	CAPACITOR,CERAMIC (HIGH DIELEC	220PF 50V K B TA26	R	
C84	0CK2210K518	CAPACITOR,CERAMIC (HIGH DIELEC	220PF 50V K B TA26	R	
C85	0CK2210K518	CAPACITOR,CERAMIC (HIGH DIELEC	220PF 50V K B TA26	R	
CN1	6630W5V012B	CONNECTOR (CIRC),WAFER	YW396-9AV(2,4,6,8VOID)	R	
CN2	6630W5YA10B	CONNECTOR (CIRC),WAFER	YW396-04AV,4PIN,2VOID	R	6630W5V007A
CN3	6630W5YA19E	CONNECTOR (CIRC),WAFER	FCZ254-13D	R	6630W5V017D
CN4	6630W5V013A	CONNECTOR (CIRC),WAFER	MOLEX , 35312-0312 , 3PIN , RE	R	
CN5	6630WRYA01A	CONNECTOR (CIRC),WAFER	YW396-03AVY,#2 VOID(YELLOW)	R	6630W5V005A
CR1	6212W5M002A	RESONATOR	CSTS0400MG06-T2	R	CQ39048A
CU4	4850W4C001B	CUSHION	5MM	R	
D01	0DD400209AA	DIODE,RECTIFIER	1N4002 TP PYUNG CHANG	R	
D02	0DD400209AA	DIODE,RECTIFIER	1N4002 TP PYUNG CHANG	R	
D03	0DD400209AA	DIODE,RECTIFIER	1N4002 TP PYUNG CHANG	R	
D04	0DD400209AA	DIODE,RECTIFIER	1N4002 TP PYUNG CHANG	R	
D05	0DD400209AA	DIODE,RECTIFIER	1N4002 TP PYUNG CHANG	R	
D20	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D25	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D26	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D30	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D31	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D34	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D36	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D39	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D60	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D61	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
DP1	6302W5A016A	DIGITRON	10-MT-116GN,MI-4 CONV	R	
PT1	6010W2P012A	TRANSFORMER,POWER	120V/60HZ,13V/320MA	R	
Q01	0TR101509AB	TRANSISTOR	A1015=KTA12660 KEC O TO-92 TP	R	
Q02	0TR101509AB	TRANSISTOR	A1015=KTA12660 KEC O TO-92 TP	R	

R:SERVICE PARTS

LOC. NO.	PART NO.	DESCRIPTION	SPEC	SVC	ALTER
AR4	0RZ1503G610	RESISTOR,ARRAY	SMART 150KOHM 5% 8PIN -	R	
Q20	0TR107009AD	TRANSISTOR	KRC 107M TP KEC	R	
Q30	0TR320209BA	TRANSISTOR	KTC3202-O TP KEC TO92 MWO	R	
Q31	0TR181509AB	TRANSISTOR	KTC1815-Y=KTC3198YTO-92 TP KEC	R	
Q40	0TR107009AD	TRANSISTOR	KRC 107M TP KEC	R	
R01	0RD1501F608	RESISTOR,FIXED CARBON FILM	1.5K 1/6W 5 TA26	R	
R02	0RD1001F608	RESISTOR,FIXED CARBON FILM	1.0K 1/6W 5 TA26	R	
R03	0RD4701F608	RESISTOR,FIXED CARBON FILM	4.7K 1/6W 5 TA26	R	
R04	0RD1001G608	RESISTOR,FIXED CARBON FILM	1K OHM 1/4 W 5% TA26	R	
R05	0RD0102G608	RESISTOR,FIXED CARBON FILM	10 1/4W 5 TA26	R	
R08	0RD1000G608	RESISTOR,FIXED CARBON FILM	100 OHM 1/4 W 5% TA26	R	
R09	0RD0751G608	RESISTOR,FIXED CARBON FILM	7.5 OHM 1/4 W 5% TA26	R	
R10	0RD0751G608	RESISTOR,FIXED CARBON FILM	7.5 OHM 1/4 W 5% TA26	R	
R100	0RD3302F608	RESISTOR,FIXED CARBON FILM	33K 1/6W 5 TA26	R	
R101	0RD1202F608	RESISTOR,FIXED CARBON FILM	12K 1/6W 5 TA26	R	
R11	0RD1003F608	RESISTOR,FIXED CARBON FILM	100K 1/6W 5 TA26	R	
R20	0RD1001F608	RESISTOR,FIXED CARBON FILM	1.0K 1/6W 5 TA26	R	
R21	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K 1/6W 5 TA26	R	
R22	0RD1001G608	RESISTOR,FIXED CARBON FILM	1K OHM 1/4 W 5% TA26	R	
R25	0RD3901F608	RESISTOR,FIXED CARBON FILM	3.9K 1/6W 5 TA26	R	
R26	0RD1001G608	RESISTOR,FIXED CARBON FILM	1K OHM 1/4 W 5% TA26	R	
R30	0RD1000G608	RESISTOR,FIXED CARBON FILM	100 OHM 1/4 W 5% TA26	R	
R31	0RD2701G608	RESISTOR,FIXED CARBON FILM	2.7K 1/4W 5 TA26	R	
R32	0RD1002F608	RESISTOR,FIXED CARBON FILM	10K 1/6W 5 TA26	R	
R33	0RD5601G608	RESISTOR,FIXED CARBON FILM	5.6K 1/4W 5 TA26	R	
R34	0RD1002F608	RESISTOR,FIXED CARBON FILM	10K 1/6W 5 TA26	R	
R36	0RD1000G608	RESISTOR,FIXED CARBON FILM	100 OHM 1/4 W 5% TA26	R	
R40	0RD1001G608	RESISTOR,FIXED CARBON FILM	1K OHM 1/4 W 5% TA26	R	
R41	0RD3901F608	RESISTOR,FIXED CARBON FILM	3.9K 1/6W 5 TA26	R	
R42	0RD1001G608	RESISTOR,FIXED CARBON FILM	1K OHM 1/4 W 5% TA26	R	
R43	0RN1801F408	RESISTOR,FIXED METAL FILM	1.8K 1/6W 1 TA26	R	
R44	0RN1003F408	RESISTOR,FIXED METAL FILM	100K 1/6W 1% TA26	R	
R50	0RD3900F608	RESISTOR,FIXED CARBON FILM	390 1/6W 5 TA26	R	
R51	0RD2001F608	RESISTOR,FIXED CARBON FILM	2K 1/6W 5% TA26	R	
R52	0RD1001F608	RESISTOR,FIXED CARBON FILM	1.0K 1/6W 5 TA26	R	
R55	0RD1004F608	RESISTOR,FIXED CARBON FILM	1.0M 1/6W 5 TA26	R	
R60	0RD4702G608	RESISTOR,FIXED CARBON FILM	47K 1/4W 5 TA26	R	
R61	0RD2701F608	RESISTOR,FIXED CARBON FILM	2.7K 1/6W 5 TA26	R	
R62	0RN2003F408	RESISTOR,FIXED METAL FILM	200KOHM 1/6 W 1% TA26	R	
R63	0RN1001F408	RESISTOR,FIXED METAL FILM	1K 1/6W 1% TA26	R	
R64	0RD4702G608	RESISTOR,FIXED CARBON FILM	47K 1/4W 5 TA26	R	
R65	0RD1002F608	RESISTOR,FIXED CARBON FILM	10K 1/6W 5 TA26	R	
R66	0RD1003F608	RESISTOR,FIXED CARBON FILM	100K 1/6W 5 TA26	R	
R67	0RN1072F408	RESISTOR,FIXED METAL FILM	10.7KOHM 1/6 W 1% TA26	R	
R68	0RN1002F408	RESISTOR,FIXED METAL FILM	10K 1/6W 1% TA26	R	
R69	0RD6600H608	RESISTOR,FIXED CARBON FILM	660 OHM 1/2 W 5% TA26 RDM(J)	R	
R70	0RD6600H608	RESISTOR,FIXED CARBON FILM	660 OHM 1/2 W 5% TA26 RDM(J)	R	
R71	0RD2004F608	RESISTOR,FIXED CARBON FILM	2MOHM 1/6 W 5% TA26	R	
R72	0RD1004F608	RESISTOR,FIXED CARBON FILM	1.0M 1/6W 5 TA26	R	
R73	0RD5103F608	RESISTOR,FIXED CARBON FILM	510K 1/6W 5% TA26	R	
R74	0RD2703F608	RESISTOR,FIXED CARBON FILM	270K 1/6W 5% TA26	R	
R75	0RD1503F608	RESISTOR,FIXED CARBON FILM	150K 1/6W 5 TA26	R	
R80	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K 1/6W 5 TA26	R	
R81	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K 1/6W 5 TA26	R	

R:SERVICE PARTS

LOC. NO.	PART NO.	DESCRIPTION	SPEC	SVC	ALTER
R82	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K 1/6W 5 TA26	R	
R83	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K 1/6W 5 TA26	R	
R84	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K 1/6W 5 TA26	R	
R85	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K 1/6W 5 TA26	R	
R86	0RD2202G608	RESISTOR,FIXED CARBON FILM	22K 1/4W 5 TA26	R	
R87	0RD2202G608	RESISTOR,FIXED CARBON FILM	22K 1/4W 5 TA26	R	
R88	0RD2202G608	RESISTOR,FIXED CARBON FILM	22K 1/4W 5 TA26	R	
R89	0RD2202G608	RESISTOR,FIXED CARBON FILM	22K 1/4W 5 TA26	R	
R90	0RD2202G608	RESISTOR,FIXED CARBON FILM	22K 1/4W 5 TA26	R	
R91	0RD2202G608	RESISTOR,FIXED CARBON FILM	22K 1/4W 5 TA26	R	
R92	0RD2202G608	RESISTOR,FIXED CARBON FILM	22K 1/4W 5 TA26	R	
RY1	6920W5A008A	RELAY	DQ1U DAIICHI DC12V DC16.7MA DC	R	6920W2D010A
RY1	6920W5A008A	RELAY	DQ1U DAIICHI DC12V DC16.7MA DC	R	6920W5A007A
RY2	6920W2YD04A	RELAY	OZF-S-112LM1P,DC12V,SPST,OEG	R	
RY4	6920W2YD04A	RELAY	OZF-S-112LM1P,DC12V,SPST,OEG	R	
RY6	6920W5A008A	RELAY	DQ1U DAIICHI DC12V DC16.7MA DC	R	6920W2D010A
RY6	6920W5A008A	RELAY	DQ1U DAIICHI DC12V DC16.7MA DC	R	6920W5A007A
RY7	6920W5A008A	RELAY	DQ1U DAIICHI DC12V DC16.7MA DC	R	6920W2D010A
RY7	6920W5A008A	RELAY	DQ1U DAIICHI DC12V DC16.7MA DC	R	6920W5A007A
U02	0ITO200400A	IC,TOSHIBA	ULN2004A 16DIP BK INVERER MWO	R	0IKE650040A
U05	0ISS791500A	IC,SAMSUNG ELECTRONICS	KA7915 ST REGULATOR IC S/S	R	0IKE791500A
ZD1	0DZ510009AE	DIODE,ZENER	UZ5.1BS TP26 SM 0.5W	R	
ZD2	0DZ750009AC	DIODE,ZENER	UZ7.5BS TP P-CHANG 26MM 1/2W 7	R	

R:SERVICE PARTS

P/NO : 3828W5S1510

Printed in Korea