



SEARS

MODEL 721.64282
721.64289
721.64283

DIVISION 20

BASIC FIELD MANUAL

FOR

MICROWAVE AND CONVECTION OVEN

MODEL 721.64282300 / 721.64282301
721.64289300 / 721.64289301
721.64283300 / 721.64283301

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CAUTION

WARNING TO SERVICE TECHNICIANS

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 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 adjusted by procedures described in this manual before the oven is released to the owner.
 - e. A Microwave leakage check to verify compliance with the Federal performance standard should be performed on each oven prior to release to the owner.
- 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.

FOREWORD

Read this Manual carefully. Failure to adhere to or observe the information in this Manual may result in exposing yourself to the Microwave Energy normally contained within the oven cavity.

**MODEL 721.64282
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MECHANICAL SERVICE INFORMATION

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1. ADJUSTMENT PROCEDURES

To avoid possible exposure to microwave energy leakage, adjust the door latches and interlock switches, using the following procedure.

ONLY AUTHORIZED SERVICE PERSONNEL SHOULD MAKE THIS ADJUSTMENT.

The Interlock Monitor and Primary Interlock Switch acts as the final safety switch protecting the user from microwave energy. The terminals between "COM" and "NC" of the Interlock Monitor must close when the door is opened. After adjusting the Interlock Monitor Switch, make sure that it is correctly connected. See Figures 1-a and 1-b throughout this procedure.

CHECK THE DOOR LATCH AND SWITCH CLOSING.

NOTE: The outer cover of the microwave oven is removed.

- (1) Set the microwave oven on its side so that you can see the latch board and the switches, as shown in Figure 1-a.
- (2) Close the door tightly and check gaps A and B to be sure they are no more than 1/64" (0.5 mm). See Figure 1-b for close-up view of gaps A and B (door latches). If all gaps are less than 1/64" (0.5 mm), adjustment of the latch board may not be necessary. Go to Steps 5 and 6 to check the sequence of the switches.

NOTE: To correct sequence of the Primary Interlock Switch, Secondary Interlock Switch and the Interlock Monitor Switch is very important.

If any gap is larger than 1/64" (0.5 mm), you will need to adjust the latch board-U, L. Go to step 3 and follow all steps in order.

ADJUST THE LATCH AND SWITCH CLOSING

- (3) Loosen the two screws holding the plastic latch board as shown.
- (4) With the oven door closed tightly, move the latch board upward toward the top of the oven and/or away from the door latch until the gaps are less than 1/64" (0.5 mm).

Hold the latch board tightly in this position until you check the sequence of the switches in steps 5 and 6.

TEST THE LATCH AND SWITCH SEQUENCE

- (5) Open the oven door slowly. Watch the door latch, the Primary Switch. Release Rod and Lever on the switches to make sure they are zero to the body of the switches in the following sequence:
 - Primary Interlock Switch
 - Secondary Interlock Switch
 - Interlock Monitor Switch

Adjust the latch board until the switches operate in this sequence. See Steps 3 and 4.

- (6) Close the oven door slowly and be sure it is tightly closed. Watch the three switches to make sure they are zero to the body of the switches in the following sequence:
 - Interlock Monitor Switch
 - Primary Interlock Switch
 - Secondary Interlock Switch

NOTE: The Interlock Monitor Switch is an added safety check on the Primary and Secondary Interlock Switches. If the Primary and Secondary Interlock Switches allow the oven to operate with the door open, the Monitor Switch will blow the fuse.

- (7) When you achieve the proper sequence of switches in Steps 5 and 6, tighten the latch board screws at that point.

TEST THE MICROWAVE ENERGY LEAKAGE

- (8) Using a survey meter, make sure the microwave energy is below 5 mW/cm².sq.

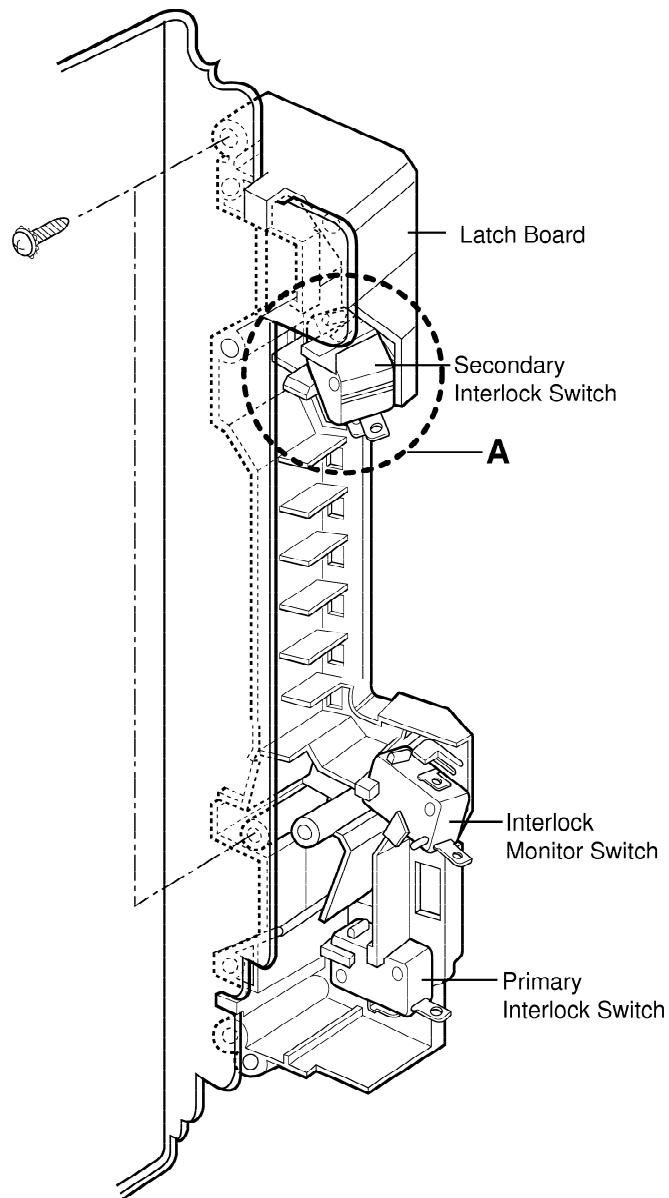


Figure 1-a

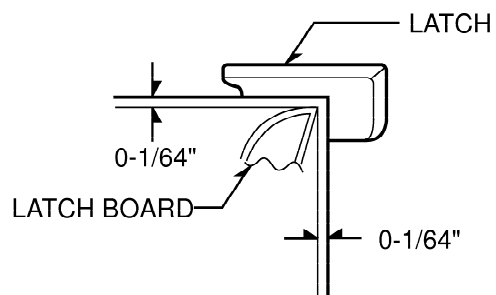


Figure 1-b

2. PRECAUTIONS ON INSTALLATION

(Figure 2)

- A. Plug the power supply cord into a 120 V AC, 60 Hz, single-phase power source with a capacity of at least 20 amperes.
- B. Since the unit weights about 44 lbs, be sure to place it on a sturdy and flat surface.
- C. Avoid placing the unit in a location where there is direct heat or splashing water.
- D. Place the unit as far away as possible from TV, radio, etc. to prevent interference. And do not place on or near a hot gas or electric burner or in a heated oven.

CAUTION

This unit is equipped with a 3-prong plug for your safety. If the wall outlet is a grounded 3-hole type, the unit will be grounded automatically.

Properly Polarized and Grounded Outlet

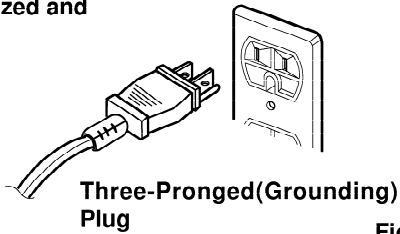


Figure 2

3. GENERAL PRECAUTIONS IN USE

- A. Never operate the unit when it is empty. Operating the oven with no load may shorten the life of the magnetron. Whenever cooking dry foods (dried fish, bread, etc.) or a small amount of food, be sure to put a glass of water into the cooking compartment. The turntable tray may become hot after operating, be careful when touching it.
- B. Aluminum foil should be avoided because it will disrupt cooking and may cause arcing. However, small pieces may be used to cover some parts of food to slow the cooking. Any aluminum foil used should never be closer than 2.5 cm to any side wall of the oven.

4. TRIAL OPERATION

After installation, the following sequences and results should be checked carefully.

- A. Put a container filled with water (about 1 liter) into the oven, and close the door tightly.
- B. Touch the STOP/CLEAR and the MICROWAVE keys.
- C. Set cooking time for 10 minutes by touching "1" and then "0" three times. "1000" appears in the display window.
- D. Touch the START key.
Make sure the cavity light comes on. The unit will begin cooking and the display window will show the time counting down by seconds.
- E. After about 5 minutes, make sure the primary interlock switch, the secondary interlock switch and the interlock monitor and oven lamp switch operate properly by opening and closing the door several times. Touch the START key each time the door is closed.
- F. Continue operating the unit. Four long beep sound signal is heard when the time is up. The unit will shut off automatically.
- G. Confirm the water is hot.
- H. Finally, measure the output power according to "POWER OUTPUT MEASUREMENT" on page 12.

5. FEATURES AND SPECIFICATIONS

- A. The safety systems incorporated in this oven are:
 - (1) Primary interlock switch
 - (2) Secondary interlock switch
 - (3) Interlock monitor switch
 - (4) Choke system
 - (5) Oven cavity thermostat
(Note: This thermostat located on the oven cavity will open and stop the unit from operation only if a high temperature is reached, such as, a fire created by overcooking food.)
- B. Any one of 10 power output levels ranging 100W to 1000W can be selected by the touch control and electronic computer system.
- C. Cooking time can be displayed on the digital readout. And MWO mode and Convection mode can be displayed to avoid confusion.
- D. Three different cooking stages can be set. The oven remembers three cooking stages and changes from one cooking stage to another. This is made possible with the memory function of the microprocessor.

SPECIFICATIONS

Rated Power Consumption	1400W
Output	
Microwave oven	1000W (*IEC 60705 Rating standard) Adjustable 100W through 1000W, 10 steps
Toaster	1350W
Frequency	2,450 MHz ± 50 MHz
Power Supply	120V ±12V AC, 60Hz
Rated Current.....	12.5 Amp.
Magnetron & Heater Cooling.....	Forced Air Cooling
Microwave Stirring.....	Turntable
Rectification.....	Rectification Voltage Doubler Half-Wave
Door Sealing	Choke System
Safety Devices	
Microwave oven	MGT Thermostat : Open at 150 °C ± 5°C, Close at 60 °C ± 5°C Fuse(20A) Primary Interlock Switch Secondary Interlock Switch Interlock Monitor Oven Thermostat : Open at 145 °C ± 5°C, Close at 60 °C ± 5°C
Magnetron	2M246
High Voltage Capacitor	Capacitor: 1.0µF, 2.1KV Ac
High Voltage Diode	350mA, 9.0KV
Cavity Lamp	125V, 20W
Timer	Digital, up to 99 min. (in each cooking stage)
Tray	Tempered Safety Glass
Thermistor, NTC.....	200 °C ± 5%
Crumb Tray	Crumbs of bread lay on it
Overall Dimensions	20 ^{1/8} " (W) x 12 ^{1/4} " (H) x 19 ^{5/16} " (D)
Oven Cavity Size.....	14" (W) x 8 ^{1/2} " (H) x 13 ^{13/16} " (D)
Effective Capacity of Oven Cavity	1.0 Cu.ft.
Accessories.....	Use and Care Manual ,Glass Turntable, Metal Tray, Metal Rack, Turntable Roller Rest

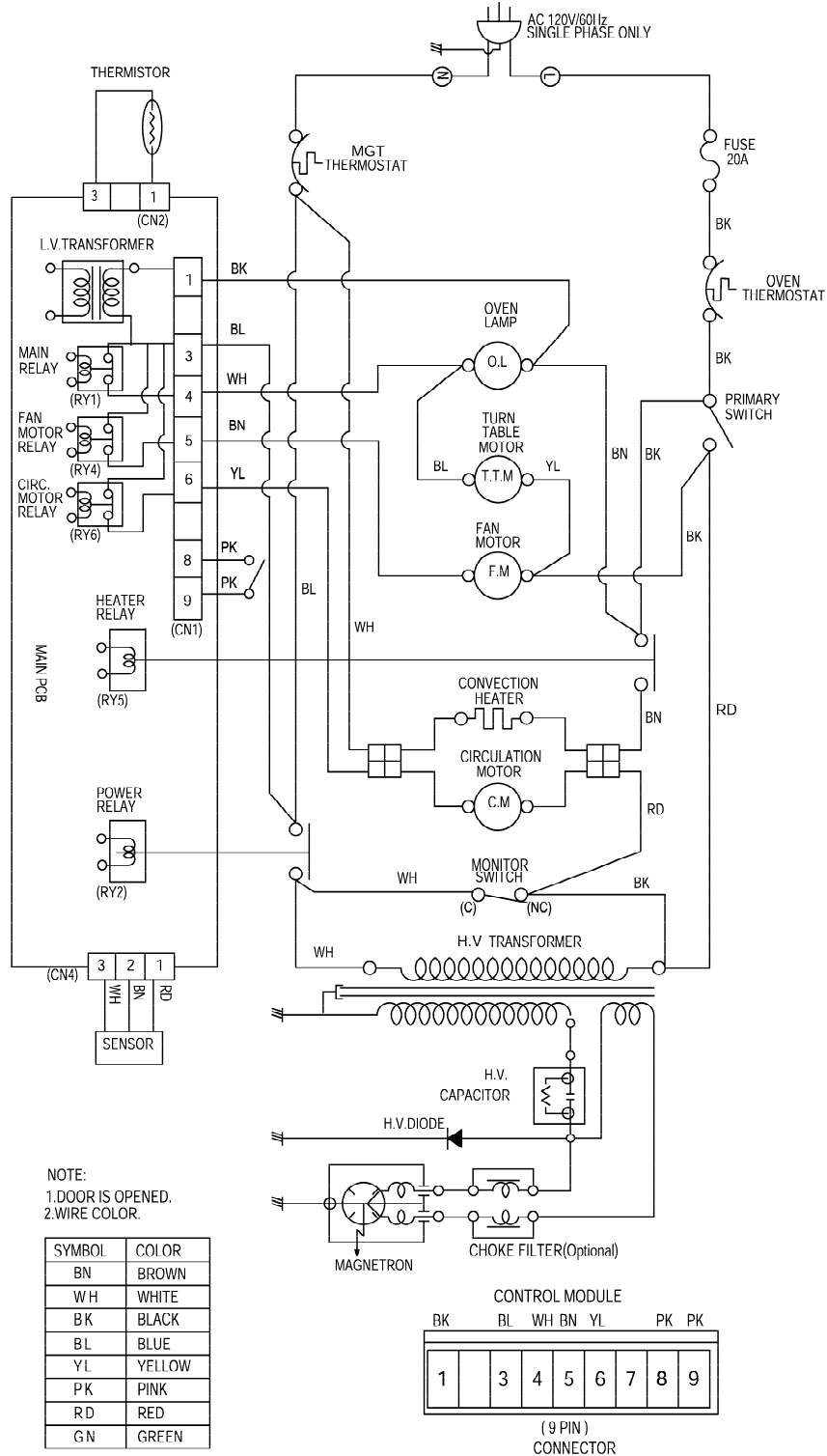
SWITCH TABLE

SWITCH MODE	PRIMARY INTERLOCK SWITCH	SECONDARY INTERLOCK SWITCH	INTERLOCK MONITOR SWITCH
CONDITIONS	COM NO	COM NO	COM NC
DOOR OPEN	∞	∞	0
DOOR CLOSED	0	0	∞

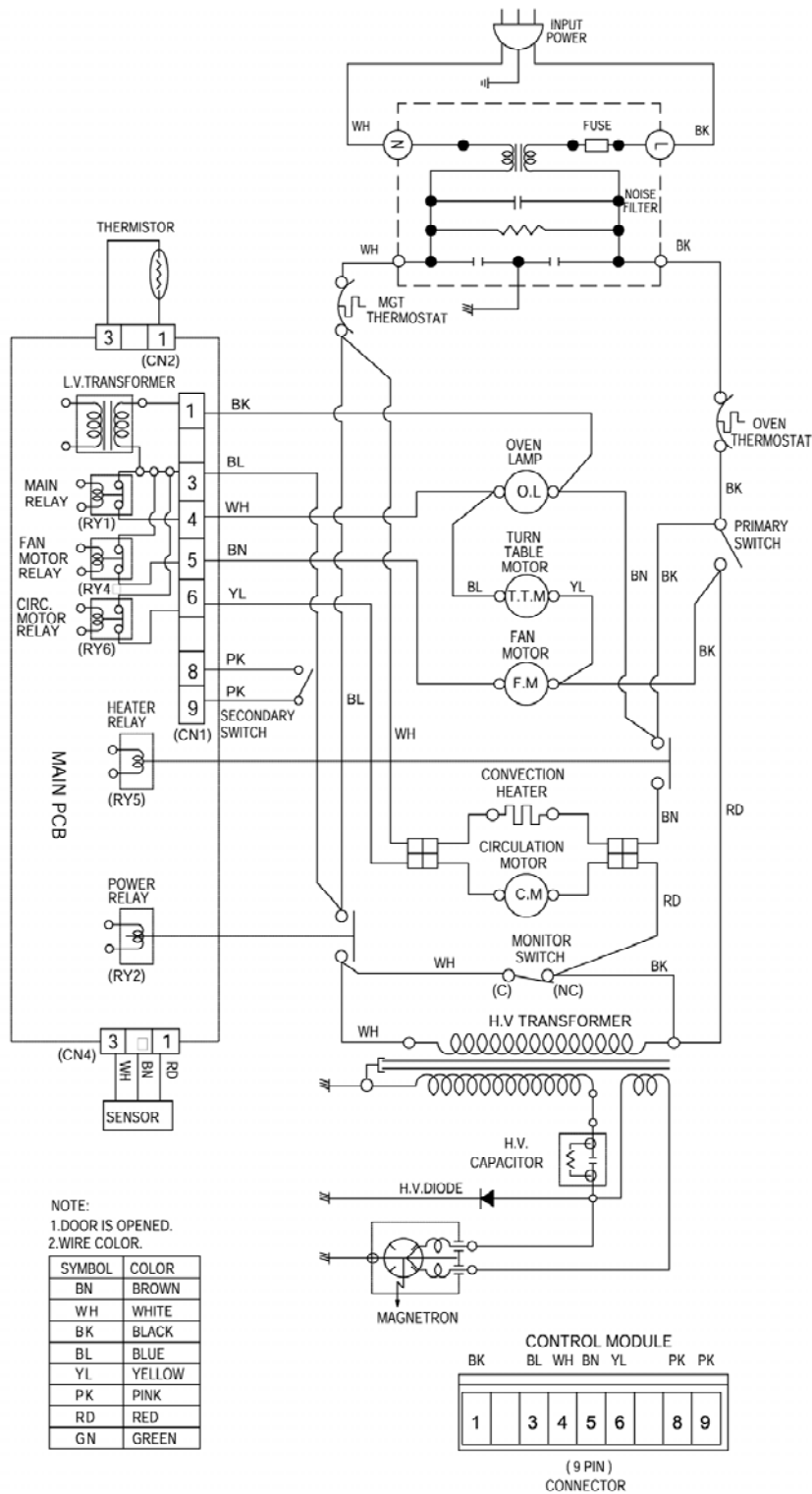
NOTE: Use the above switch table with circuit diagram on page 7.

6. OVERALL CIRCUIT DIAGRAM

A (I). SCHEMATIC DIAGRAM *Check the Model No.



A (II). SCHEMATIC DIAGRAM *Check the Model No. (ADD Noise filter)



B. MATRIX CIRCUIT FOR TOUCH KEY BOARD

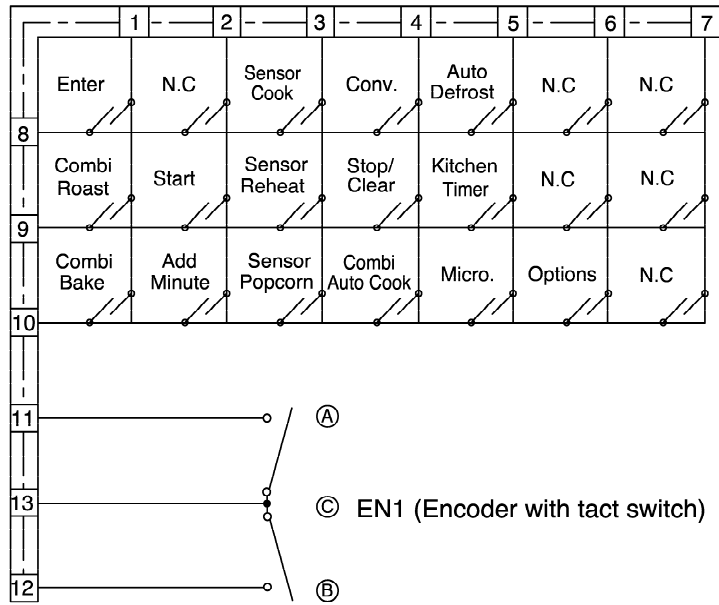
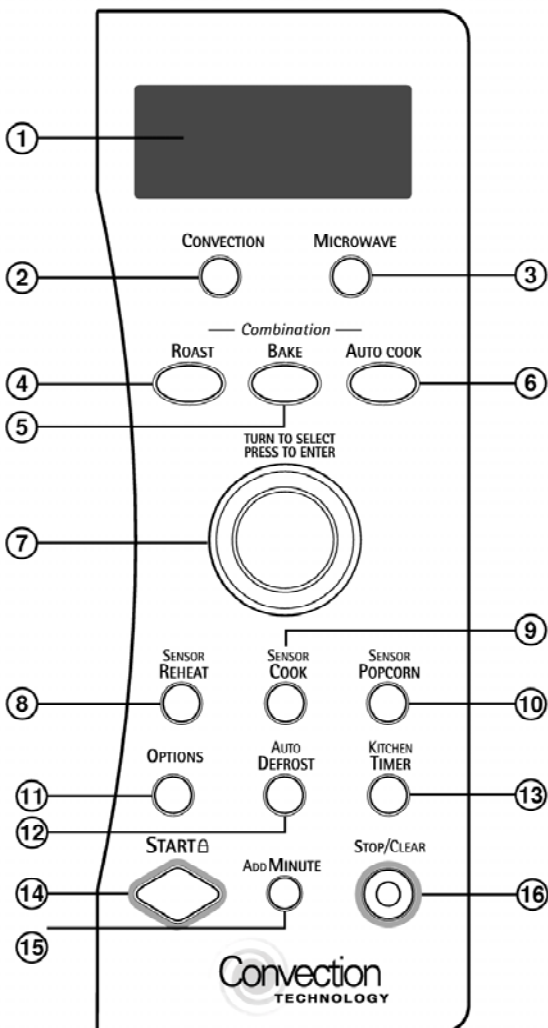


Figure 4

7. OPERATING PROCEDURES

A. OVEN 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 button to cook foods on convection mode.
- 3. MICROWAVE.** Touch this button to cook foods on microwave mode, and to set cooking time and power level.
- 4. ROAST.** Touch this button to roast foods on combination mode.
- 5. BAKE.** Touch this button to bake foods on combination mode.
- 6. AUTO COOK.** Touch this pad to cook foods automatically on combination mode.
- 7. TURN TO SELECT, PRESS TO ENTER .** Turn the dial to set clock, category, temperature, cooking time, power level, food quantity and then press it to enter.
- 8. SENSOR REHEAT.** Touch this button to reheat foods without entering cooking time and power level.
- 9. SENSOR COOK.** Touch this button to cook most of your favorite foods without entering cooking time or power level.
- 10. SENSOR POPCORN.** Touch this button to cook popcorn automatically.
- 11. OPTIONS.** Touch this button to change the oven's default settings for sound, clock, scroll speed and Lbs/kg.
- 12. AUTO DEFROST:** Touch this button to defrost Meat, Poultry, Fish and Bread automatically.
- 13. KITCHEN TIMER.** Touch this button to use your oven as a kitchen timer.
- 14. START.** Touch this button to start entries and to turn Child Lock on or off.
- 15. ADD MINUTE.** Touch this button to cook at 100% cooking power for 1 minute to 99 minutes 59 seconds .
- 16. STOP/CLEAR:** Touch this button to stop the oven or to clear entries.

B. EASY USE TABLE

(1) KITCHEN TIMER

1. Touch STOP/CLEAR.
2. Touch KITCHEN TIMER.
3. Turn the dial to set time.
4. Touch START.

(2) CHILD LOCK

To set:

1. Touch STOP/CLEAR.
2. Touch START more than 4 seconds.

To cancel:

1. Touch STOP/CLEAR.
2. Touch START more than 4 seconds.

(3) SENSOR COOK

1. Touch STOP/CLEAR.
2. Touch SENSOR COOK.
3. Turn the dial to set menu.
(Start cooking automatically)

(4) ADD MINUTE

1. Touch STOP/CLEAR.
2. Touch ADD MINUTE.
(Start cooking automatically)

(5) AUTO DEFROST

1. Touch STOP/CLEAR.
2. Touch AUTO DEFROST.
3. Turn the dial to set menu.
(Meat, Poultry, Fish and Bread)
4. Turn the dial to set the weight of your food in decimal increments.
5. Touch START.
6. At beeping, turn food over by following the instructions in the manual.
7. After turning food over, touch START to resume defrosting.

(6) TIMED COOKING

1. Touch STOP/CLEAR.
2. Touch MICROWAVE.
3. Turn the dial to set cooking time.
4. Turn the dial.
(If you touch START, the oven will operate in full power.)
5. Turn the dial to set cooking power level.
6. Touch START.

(7) MULTI-STAGE COOKING

1. Touch STOP/CLEAR.
2. Touch MICROWAVE.
3. Turn the dial to set cooking time.
4. Turn the dial.
(If you touch START, the oven will operate in full power.)
5. Turn the dial to set cooking power level.
6. Repeat steps 2-5 to set 2nd cooking stage.
7. Touch START.

(8) OPTIONS

1. Touch STOP/CLEAR.
2. Touch OPTIONS.
3. Turn the dial to set option.
(Clock setting, Sound On/Off, Clock On/Off, Scroll Speed and Unit)

(9) SENSOR REHEAT

1. Touch STOP/CLEAR.
2. Touch SENSOR REHEAT.
3. Turn the dial to set menu.
(Start cooking automatically)

(10) CONVECTION

To preheat:

1. Touch STOP/CLEAR.
2. Touch CONVECTION.
3. Turn the dial to set temperature.
4. Touch START.

To cook (After preheating):

5. Turn the dial to set cooking time.
6. Touch START.

8. PROCEDURE FOR MEASURING MICROWAVE ENERGY LEAKAGE

A. CAUTIONS

- (1) Be sure to check a microwave emission prior to servicing the oven if the oven is operative prior to servicing.
- (2) The service personnel should inform the manufacturer, importer, or assembler of any certified oven unit found to have a microwave emission level in excess of 5mW/cm^2 .sq. 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.
- (3) If the oven operates with the door open, the service personnel should;
 - Tell the user not to operate the oven
 - Contact the manufacturer and CDRH (Center for Devices and Radiological Health) immediately.

NOTE: Address on CDRH
Office of Compliance (HFZ-312)
Center for Devices and Radiological Health
1390 Piccard Drive
Rockville, Maryland 20850

- (4) The service personnel should check all surface and vent openings for microwave emission testing.
- (5) Check for microwave energy leakage after every servicing. The power density of the microwave radiation leakage emitted by the microwave oven should not exceed 1mW/cm^2 .sq. And always start measuring of an unknown field to assure safety for operating personnel from radiation leakage.

NOTE: The standard is 5mW/cm^2 .sq. while in the customer's home. 1mW/cm^2 .sq. stated here is manufacturer's own voluntary standard for units in customer's home.

EQUIPMENT

- Electromagnetic energy leakage monitor (NARDA 8100B, HOLADAY HI 1501)
- 600cc glass beaker
- Glass thermometer 100°C

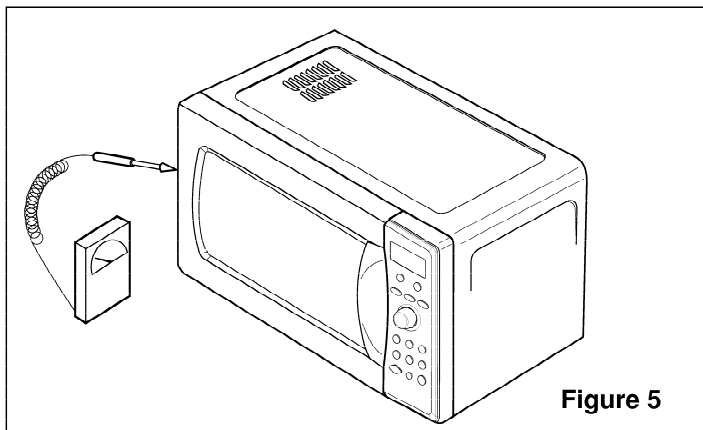
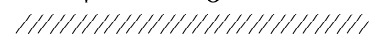


Figure 5

B. MEASURING MICROWAVE ENERGY LEAKAGE

- (1) Pour $275\pm 15\text{cc}$ of $20\pm 5^\circ\text{C}$ water in a beaker which is graduated to 600 cc, and place the beaker in the center of the oven.
- (2) Set the energy leakage monitor to 2,450 MHz and use it following the manufacturer's recommended test procedure to assure correct result.
- (3) When measuring the leakage, always use the 2 inch (5cm) spacer supplied with the probe.
- (4) Operate the oven at its maximum output.
- (5) Measure the microwave radiation using and

Move probe along shaded area.



Probe scanning speed
less than 2.5 cm/sec .

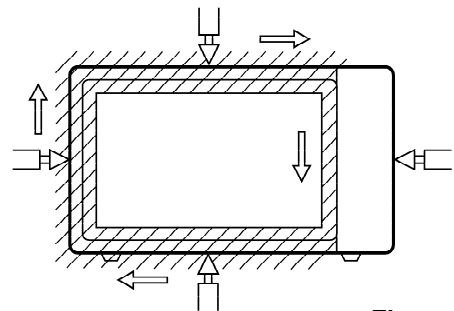


Figure 6

electromagnetic radiation monitor by holding the probe perpendicular to the surface being measured. (See Figure 6)

C. MEASUREMENT WITH THE OUTER CASE REMOVED

- (1) When you replace the magnetron, measure for microwave energy leakage 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.
 - Around the magnetron
 - The waveguide

WARNING: AVOID CONTACTING ANY HIGH VOLTAGE PARTS.

D. MEASUREMENT WITH A FULLY ASSEMBLED OVEN

- (1) After all components, including the outer panels, are fully assembled, measure for microwave energy leakage around the door viewing window, the exhaust opening and air inlet openings.
- (2) Microwave energy leakage must not exceed the values prescribed below.

NOTES:

Leakage with the outer panels removed - less than 5mW/cm.sq. Leakage for a fully assembled oven (Before the latch switch (primary) is interrupted) with the door in a slightly opened position - less than 1 mW/cm².sq.

E. NOTE WHEN MEASURING

- (1) Do not exceed meter full scale deflection.
- (2) The test probe must be removed no faster than 1 inch/sec (2.5cm/sec) along the shaded area, otherwise a false reading may result.
- (3) 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.
- (4) 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.

F. RECORD KEEPING AND NOTIFICATION AFTER MEASUREMENT

- (1) 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.
- (2) Should the microwave energy leakage not be more than 1mW/cm².sq. after determining that all parts are in good condition, functioning properly and genuine replacement parts which are listed in this manual have been used.
- (3) At least once a year, have the electromagnetic energy leakage monitor checked for calibration by its manufacturer.

G. POWER OUTPUT MEASUREMENT

- (1) Fill the test beaker with 59 °F(15 °C) ~ 75 °F(24 °C) 1 liter tap water.
- (2) Stir the water in the beaker with thermometer (°F or °C) and measure temperature as T1.
- (3) Place the beaker on the center of turntable.
- (4) Set for one (1) minute and three (3) seconds and operate the oven at high power.

NOTE: The additional three (3) seconds is to allow the magnetron to begin generating power.

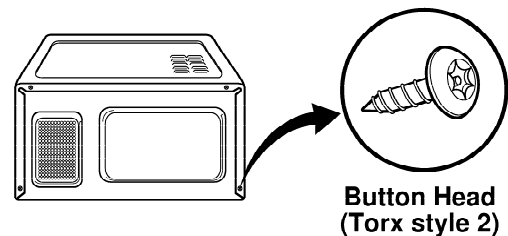
- (5) When the heating is finished, stir the water again with thermometer and measure the temperature of water as T2.
- (6) Subtract T1 from T2, this will give you the temperature rise.
- (7) The microwave power output is within specification, if the temperature rise is as shown below:

Line Voltage	Temperature Rise	
	Degrees °F	Degrees °C
120 V	14.9 ~ 22.1	8.3 ~ 12.3
108 V	Min. 10.8	Min. 6.0

- (8) Power output will be influenced by line voltage of power supply. Consequently, correct power output must be measured within 120V AC ± 1 Volt while unit is operating.

SPECIAL TIP

- This oven used the button head screws.



- When you remove the screws, using the tamper-resistant Torx driver have a pin-in-head.

9. DISASSEMBLY INSTRUCTIONS

IMPORTANT NOTES:

UNIT MUST BE DISCONNECTED FROM ELECTRICAL OUTLET WHEN MAKING REPAIRS, RE-PLACEMENTS, ADJUSTMENTS AND CONTINUITY CHECKS. WAIT AT LEAST ONE MINUTE, UNTIL THE HIGH VOLTAGE CAPACITOR IN THE HIGH VOLTAGE POWER SUPPLY HAS FULLY DISCHARGED. THE CAPACITOR SHOULD BE DISCHARGED BY USING INSULATED WIRE - I.E. TEST PROBE CONNECTED TO 10KOHM RESISTOR IN SERIES TO GROUND. WHEN RECONNECTING THE WIRE LEADS TO ANY PART, MAKE SURE THE WIRING CONNECTIONS AND LEAD COLORS ARE CORRECTLY MATCHED ACCORDING TO THE OVERALL CIRCUIT DIAGRAM. (ESPECIALLY SWITCHES AND HIGH VOLTAGE CIRCUIT.)

A. REMOVING OUTER CASE (Figure 7)

- (1) Remove five screws from the rear section.
(Two head screws)
- (2) Remove one screw from the side section.
- (3) Push the outer case back about 1 inch (3cm).
- (4) Lift the case from the set.

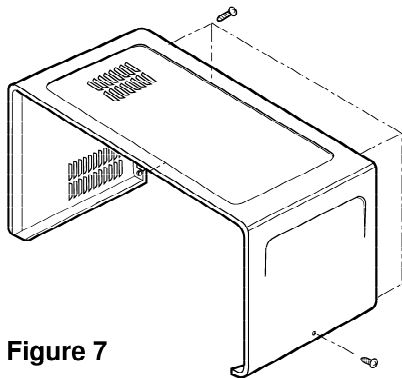
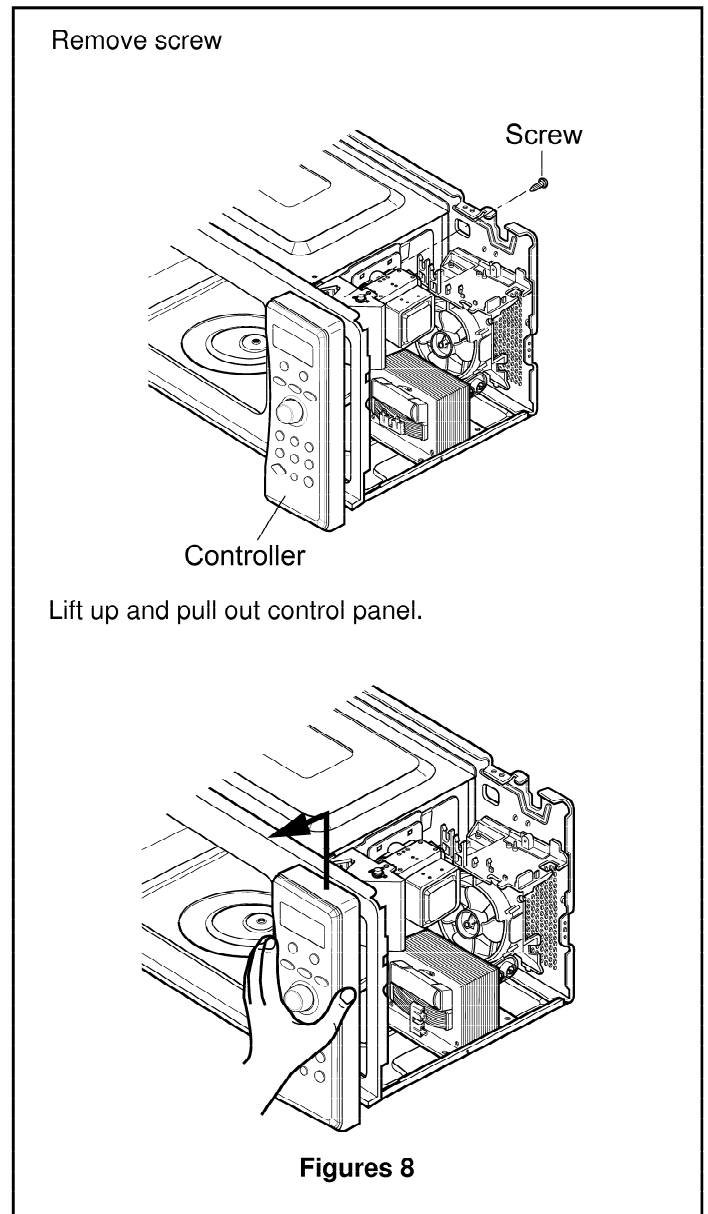


Figure 7

B. REMOVING CONTROL PANEL (Figure 8)

- (1) Open the door.
- (2) Remove screws, holding the controller.
- (3) Disconnect the lead wire from connectors and relays.
- (4) Lift up and pull out control panel carefully from the cavity.



C. DOOR GROSS ASSEMBLY REMOVAL

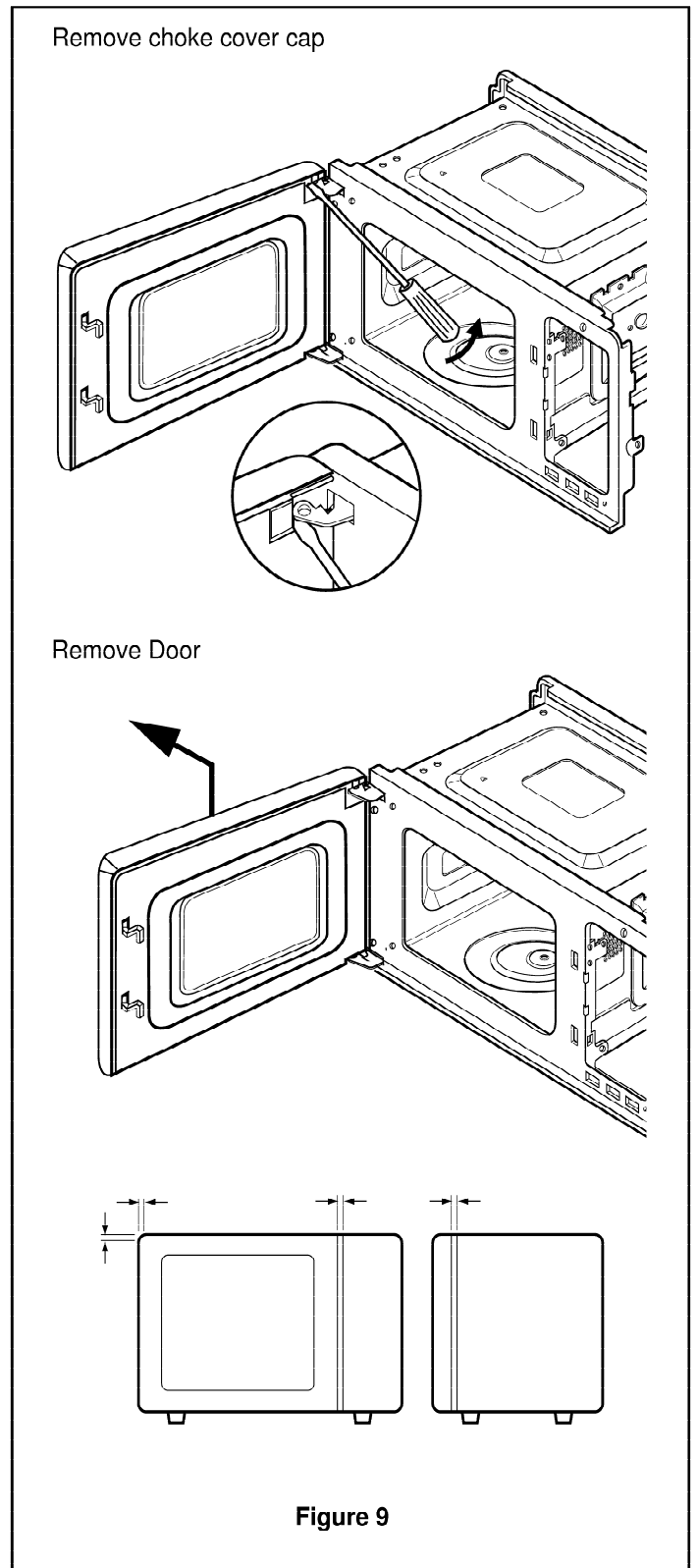
- (1) Open the door.
- (2) Remove the choke cover cap very carefully with a flat-blade screwdriver.

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

- (3) Lift up and push 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/cm².sq. (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.



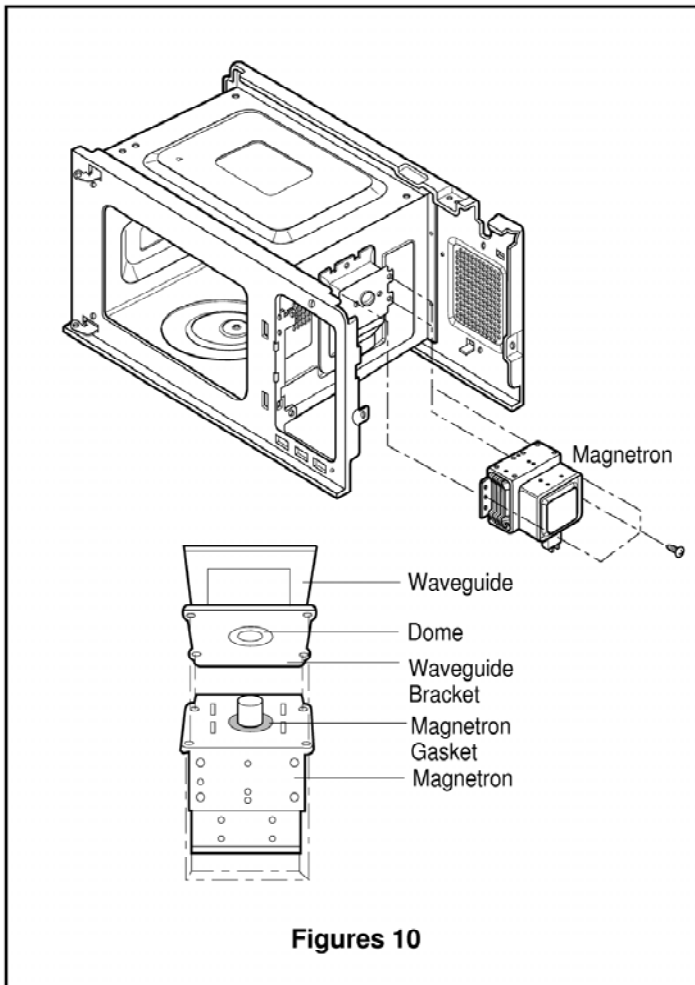
D. MAGNETRON REMOVAL (Figure 10)

- (1) Disconnect the wire lead from the magnetron.
- (2) Carefully remove the mounting screws holding the magnetron and the waveguide.
- (3) Remove the magnetron assembly until the tube is clear from the waveguide.

NOTE:

1. When removing the magnetron, make sure its 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.

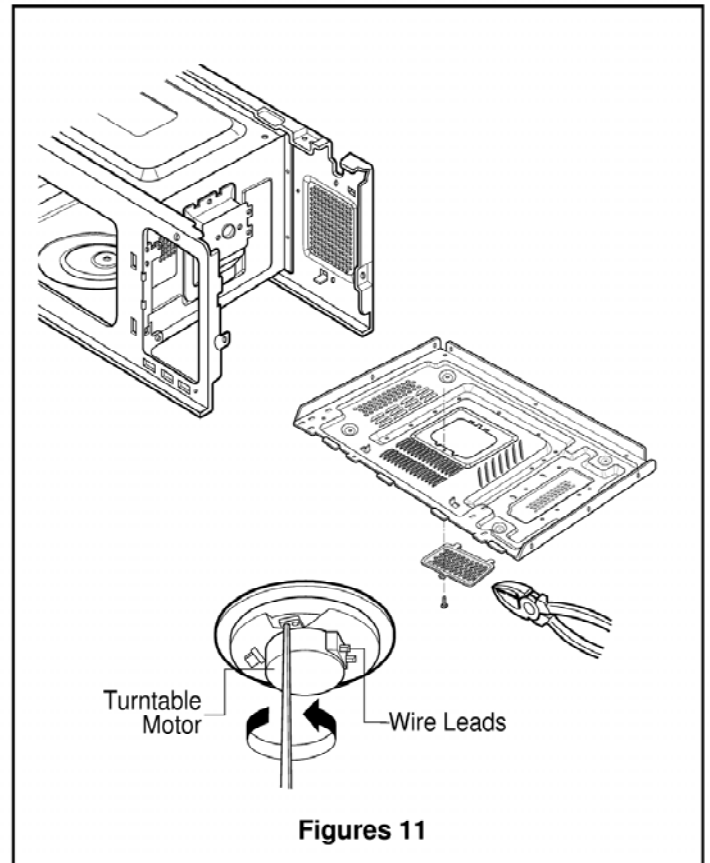


E. REMOVING THE TURNTABLE MOTOR (Figure 11)

- 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 eight parts with a wire cutting.
- 4) Disconnect the leadwire from the turntable motor terminals.
- 5) Remove the screw 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 wire lead from the turntable motor VERY CAREFULLY.
2. Be sure to grasp the connector, not the wires, when removing.



F. HIGH VOLTAGE TRANSFORMER REMOVAL

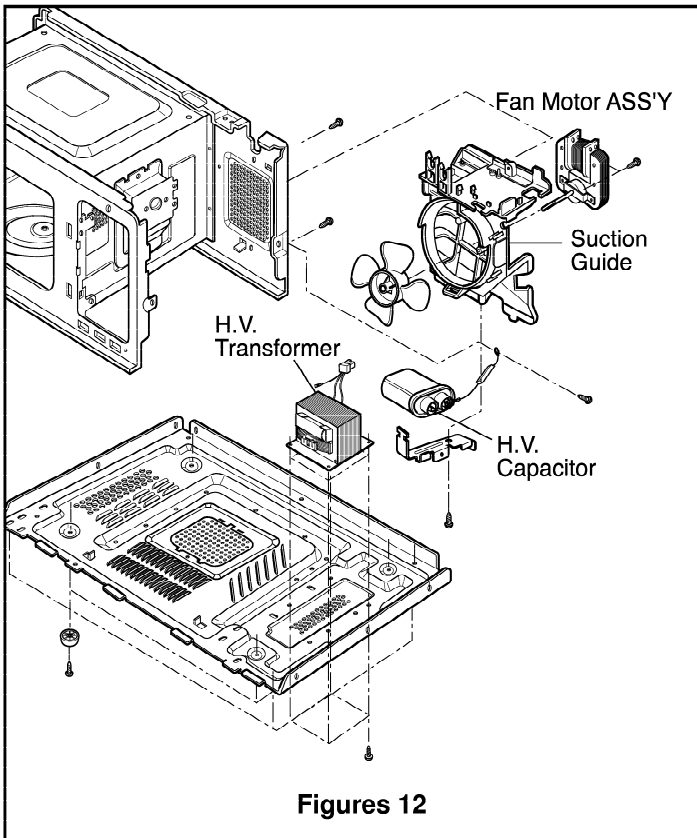
- 1) Discharge the high voltage capacitor.
- 2) Disconnect the leadwire from magnetron, high voltage transformer, and capacitor.
- 3) Remove the screw holding the high voltage transformer to the baseplate.

G. FAN MOTOR ASSEMBLY REMOVAL

- 1) Discharge the high voltage capacitor.
- 2) Disconnect the leadwire from fan motor and high voltage capacitor.
- 3) Remove the two screws holding the the suction guide ASSEMBLY to the oven cavity.
- 4) Remove the two screws holding the fan motor ASSEMBLY to the suction guide ASSEMBLY.

H. HIGH VOLTAGE CAPACITOR AND DIODE REMOVAL

- 1) Discharge the high voltage capacitor.
- 2) Disconnect the leadwire from fan motor and high voltage capacitor.
- 3) Remove the screw holding the suction guide ASSEMBLY to the oven cavity.
- 4) Remove the screw holding the high voltage capacitor bracket and remove the high voltage diode earth screw.



I. 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.

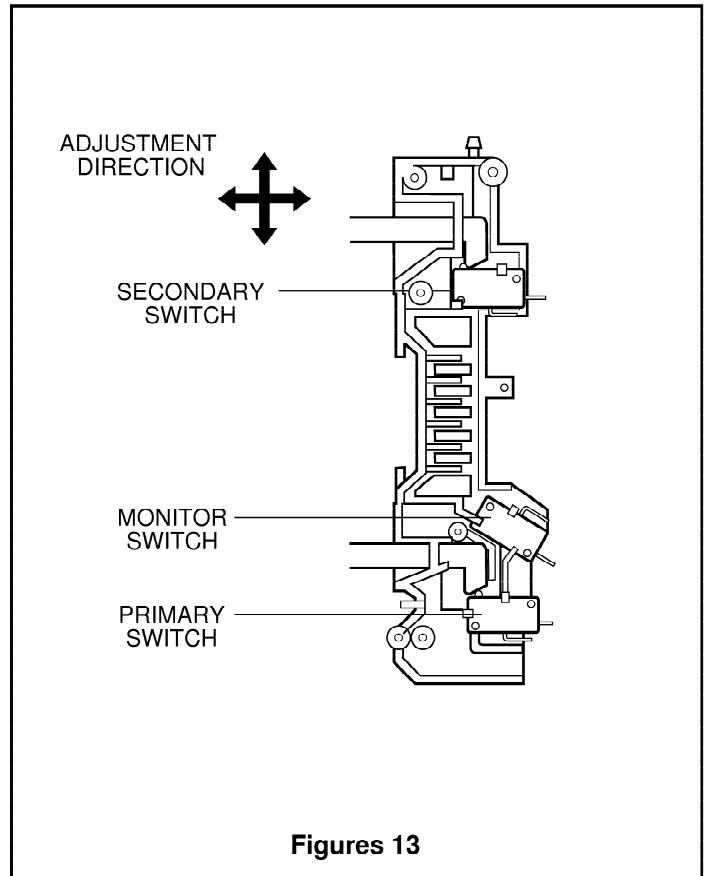
2) MOUNTING OF THE PRIMARY/MONITOR/

SECONDARY SWITCHES TO THE LATCH BOARD

3) INSTALLATION AND ADJUSTMENT OF THE LATCH BOARD TO THE OVEN ASSEMBLY

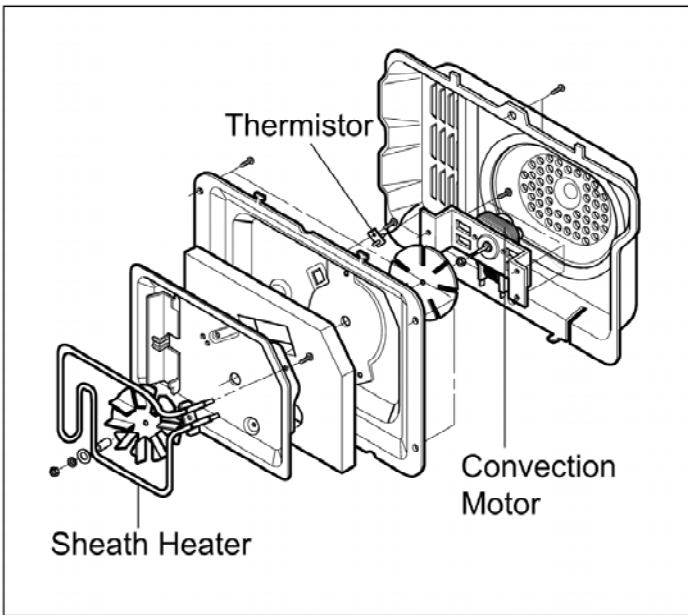
- Mount the latch board to the oven assembly.
- Adjust the latch board in the arrow direction so that oven door will not have any play in it when the door is closed.
- Tighten the mounting screw.
- **Check for play in the door by pushing the door release button. Door movement should be less than 0.5 mm. (1/64 inch)**

Don't push the door release button 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.



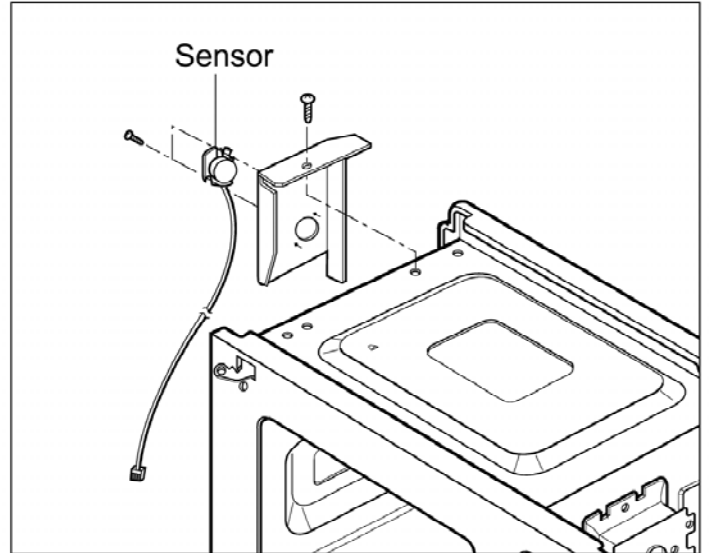
J. C-MOTOR, THERMISTOR AND SHEATH HEATER REMOVAL

- 1) Remove the two screws securing the cover assembly to the oven cavity.
- 2) Disconnect the leadwire from the circulation motor terminal and the sheath heater.
- 3) Remove the screws of the thermistor, guide assy-chamber and lift up the guide assy-chamber.
- 4) Remove a hex nut securing the circulation fan to shaft of the C-motor.
- 5) Remove screws securing the motor bracket to the guide assy-chamber.
- 6) Remove two hex nuts securing the C-motor to the motor bracket.



K. SENSOR ASSEMBLY REMOVAL

- 1) Remove the sensor assembly from the oven cavity.
- 2) Disconnect the leadwire from PCB assembly.
- 3) Remove screws which hold the sensor to the sensor duct.



10. 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 OR V-5230Q FOR PRIMARY SWITCH
 TYPE NO. SZM-V 16-FA-62, VP-532A-OF OR V-5220Q FOR MONITOR SWITCH
 TYPE NO. SZM-V 16-FA-63 OR VP-533A-OF OR V-5230Q FOR SECONDARY SWITCH

A. PRIMARY INTERLOCK SWITCH TEST

When the door release button is depressed slowly with the door closed, an audible **click** should be heard at the same time or successively at intervals. When the button 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 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.

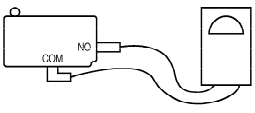

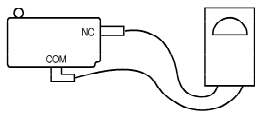

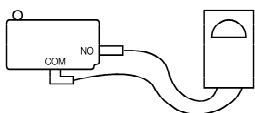

B. SECONDARY INTERLOCK SWITCH TEST

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	
		Door open	Door closed
SWITCHES (Wire leads removed)	Check for continuity of the switch with an Ohm-meter		
	Primary Switch		
	Monitor Switch		
	Secondary Switch		

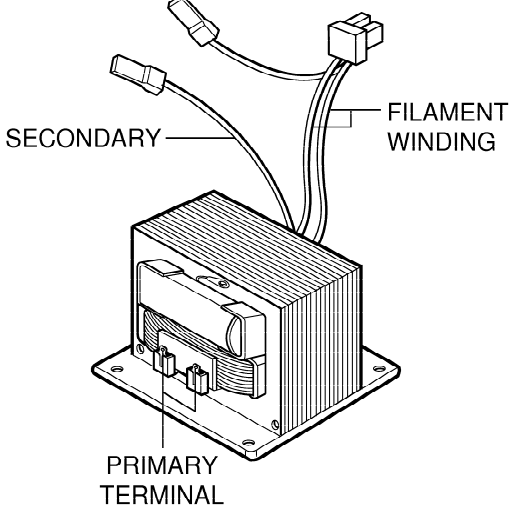
NOTE : After checking for the continuity of switches, make sure that they are connected correctly.

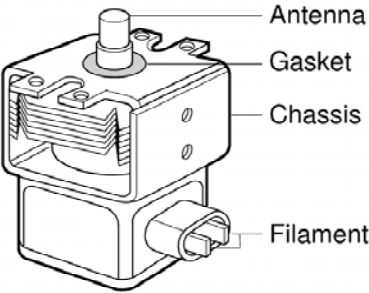
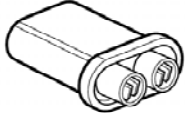
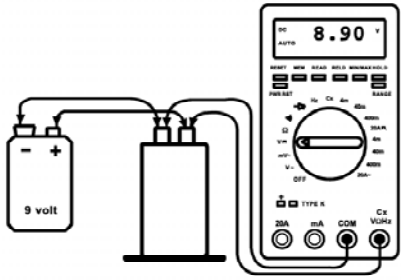
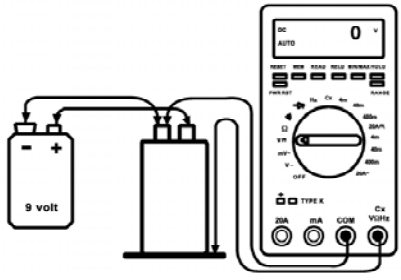
11. TEST AND CHECKOUT PROCEDURES, AND TROUBLESHOOTING

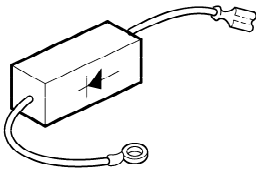
CAUTIONS

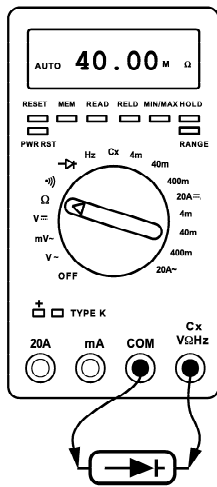
1. DISCONNECT THE POWER SUPPLY CORD FROM THE OUTLET WHENEVER REMOVING THE OUTER CASE FROM THE UNIT. PROCEED WITH THE TEST ONLY AFTER DISCHARGING THE HIGH VOLTAGE CAPACITOR AND REMOVING THE WIRE LEADS FROM THE PRIMARY WINDING OF THE HIGH VOLTAGE TRANSFORMER.
2. ALL OPERATIONAL CHECKS WITH MICROWAVE ENERGY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

A. TEST PROCEDURES

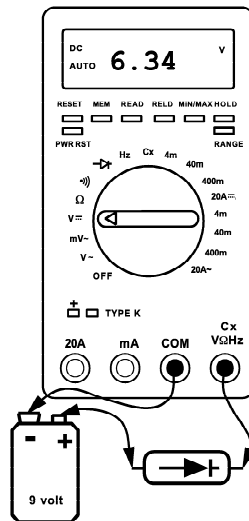
COMPONENTS	TEST PROCEDURE	RESULTS
<p>HIGH VOLTAGE TRANSFORMER (Wire leads removed)</p>	 <p>The diagram shows a high voltage transformer with three sets of wire leads. One lead is labeled 'SECONDARY', another 'FILAMENT WINDING', and the base has 'PRIMARY TERMINAL' connections.</p> <ol style="list-style-type: none"> 1. Measure the resistance. (Select the ohm scale on the meter) <ul style="list-style-type: none"> • Primary winding • Secondary winding • Filament winding 2. Measure the resistance. (Select the ohm scale on the meter) <ul style="list-style-type: none"> • Primary winding to ground • Filament winding to ground 	<p>Approx.: 0.6 ~ 0.9 ohm Approx.: 70 ~ 90 ohm Less than: 1 ohm</p> <p>Normal: Infinite Normal: Infinite</p>
<p>MAGNETRON (Wire leads removed)</p>	<ol style="list-style-type: none"> 1. Measure the resistance. (Select the ohm scale on the meter) <ul style="list-style-type: none"> • Filament terminal 2. Measure the resistance. (Select the ohm scale on the meter) <ul style="list-style-type: none"> • Filament to chassis 	<p>Normal: Less than 1 ohm</p> <p>Normal: Infinite</p>

COMPONENTS	TEST PROCEDURE	RESULTS
	 <p>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.</p>	
<p>HIGH VOLTAGE CAPACITOR</p> 	<ol style="list-style-type: none"> 1. Check DC 9V battery before performing tests. 2. Select the DCV scale on the meter. 3. Using the meter, battery, and jump wire, connect the items as illustrated in figures. <ul style="list-style-type: none"> • Terminal to terminal. 	<p>Normal: Approximately 9V</p>
	<ol style="list-style-type: none"> 1. Check DC 9V battery before performing tests. 2. Select the DCV scale on the meter. 3. Using the meter, battery, and jump wire, connect the items as illustrated in figures. <ul style="list-style-type: none"> • Terminal to case. 	<p>Normal: Approximately 0V or a value displayed in mV Will be seen.</p>

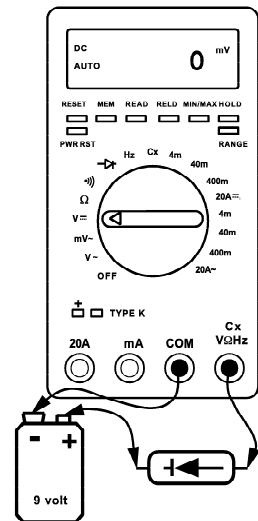
COMPONENTS	TEST PROCEDURE	RESULTS
<p>H.V.Diode (rectifier)</p> 	<p>STEP 1. Test the diode to see if it is shorted. Procedure: 1. Select the Ω scale on the meter. 2. Place the meter leads across the diode as pictured in Figure 14-a. The reading should be "40MΩ," "OL," or a reading of infinity. 3. Reverse the meter leads. The reading should again indicate a reading of infinity. If the diode shows "infinity" in BOTH directions, it is NOT shorted. 4. If the diode is not shorted, proceed to step 2.</p> <p>STEP 2. Test the diode for forward biasing. Procedure: 1. Select the DCV scale on the meter. 2. Using the meter, battery, and jumper wire, connect the items as illustrated in Figure 14-b. This has the positive side of the battery connected to the cathode of the diode. 3. The diode should be forward biased therefore a voltage reading of approximately 4.7 VDC to 6.4 VDC will be read depending on meter, battery strength, etc. (Note: If the meter leads were reversed, a negative voltage of the same amount would be seen.)</p> <p>STEP 3. Test the diode for reverse biasing. Procedure: 1. Using the same scale on the meter, connect the positive side of the battery to the anode of the diode as illustrated in Figure 14-c. 2. The diode should be reverse biased therefore a reading of 0 volt or a value displayed in mV will be seen. (The display will be erratic changing values rapidly in the mV scale.)</p>	<p>Normal: Approximately 4.7-6.4V</p> <p>Normal: Approximately 0V</p>



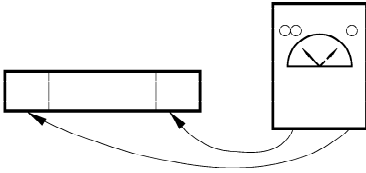


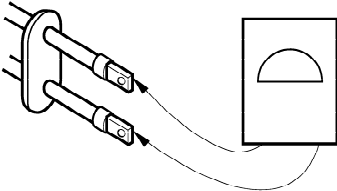
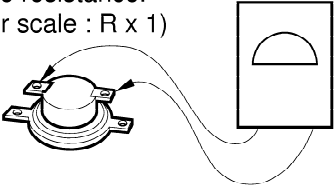


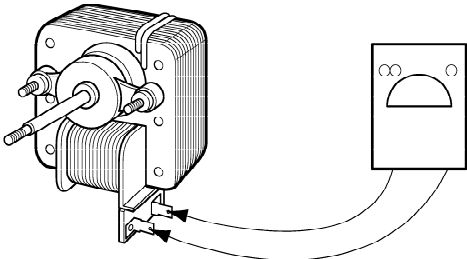
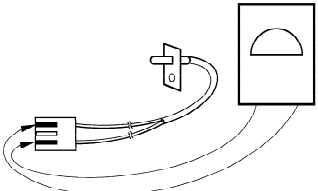
Figures 14-a

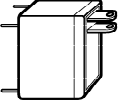
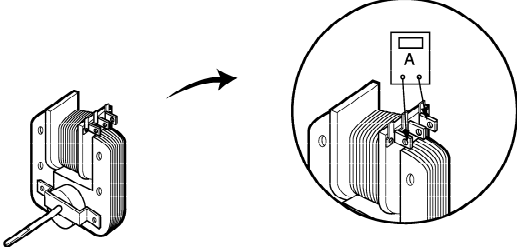
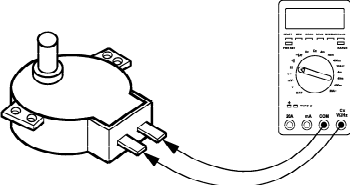


Figures 14-b



Figures 14-c

COMPONENTS	TEST PROCEDURE	RESULTS	
		Normal	Abnormal
FUSE (Wire leads removed.)	Check for continuity of the switch with a Multi-meter. 		
	<p>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.</p>		
CONVECTION HEATER (Wire leads removed)	Measure the resistance. (Multi-meter scale : R x 1) 	Normal : Approx. 10~15 ohm (at 20~30 °C)	
	<p>NOTE: Make sure heater is fully cooled when tested.</p>		
MAGNETRON / OVEN THERMOSTAT	Measure the resistance. (Ohm-meter scale : R x 1) 		
	Normal : Approx. 25~35 ohm Abnormal : Infinite or several ohm.		
CIRCULATION MOTOR (Wire leads removed)	Measure the resistance. (Multi-meter scale : R x 1) 	Normal : Approx. 25~35 ohm Abnormal : Infinite or several ohm.	
	Normal at room temperature (20 °C~30 °C) Approx. 250~350 Kohm		
THERMISTOR (Disconnect the 3 pin connector from P.C.B.)		Normal at room temperature (20 °C~30 °C) Approx. 250~350 Kohm	

COMPONENTS	TEST PROCEDURE	RESULTS		
<p>RELAY 2 (Power Relay)</p> 	<p>1. Measure continuity. 2. Remove the lead wires and operate oven at power level 1 through power level 10.</p>	POWER LEVEL	0	0.1
<p>FAN MOTOR</p>	<p>1. Remove wire leads. 2. Measure resistance.</p> 	<p>Normal: A: Approximately 75~120 ohms.</p> <p>Abnormal: Infinite</p>		
<p>TURNTABLE MOTOR</p>	<p>1. Remove wire leads. 2. Measure resistance.</p> 	<p>Normal: Approx. 100~150 ohms Abnormal: Infinite or several ohm.</p>		
<p>NOTE : • A MICROWAVE LEAKAGE TEST MUST ALWAYS BE PERFORMED WHEN THE UNIT IS SERVICED FOR ANY REASON. • MAKE SURE THE WIRE LEADS ARE IN THE CORRECT POSITION. • WHEN REMOVING THE WIRE LEADS FROM THE PARTS, BE SURE TO GRASP THE CONNECTOR, NOT THE WIRES.</p>				

B. CHECKOUT PROCEDURES

(1) CHECKOUT PROCEDURES FOR FUSE BLOWING

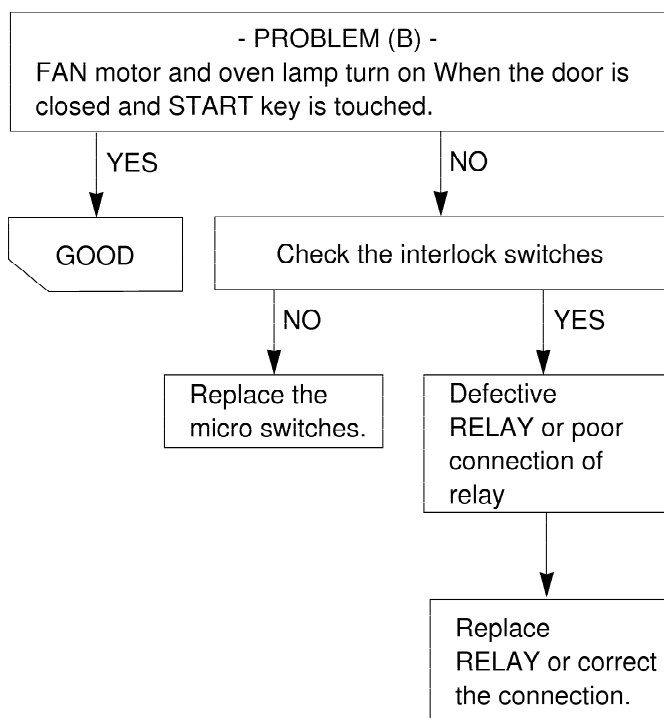
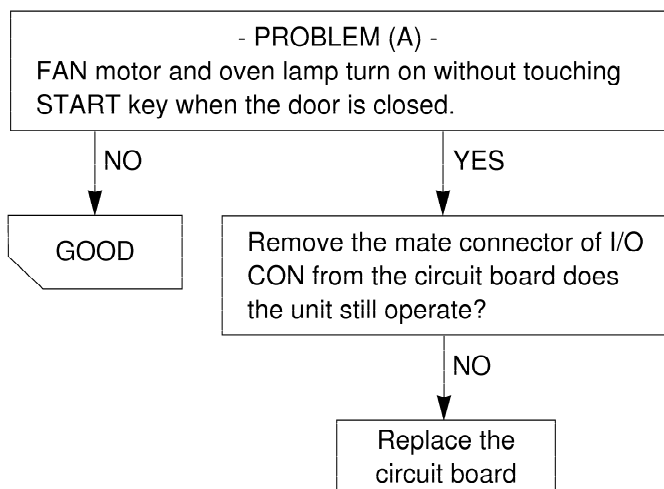
CAUTION: REPLACE BLOWN FUSE WITH 20 AMPERE FUSE.

PROBLEMS	CAUSES
Fuse blows immediately after the door is closed.	Improper operation of the primary interlock, secondary interlock switches and/or the interlock monitor switch.
Fuse blows immediately after the door is opened.	
Fuse blows when the door is closed and START key is touched.	Malfunction of the high voltage transformer; the high voltage capacitor including the diode, the magnetron, the blower motor or the circuit board.

NOTES:

- If the fuse is blown by an improper switch operation, replace the defective switches and the fuse at the same time. After replacing the defective switches with new ones, make sure that they are correctly connected.
- Check for microwave energy leakage according to "1. ADJUSTMENT PROCEDURES" on page 3, when the primary interlock, secondary interlock switches and/or the interlock monitor switches are adjusted or replaced.

(2) CHECKOUT PROCEDURES FOR RELAY



(3) CHECKOUT PROCEDURES FOR CIRCUIT BOARD

The following symptoms indicate a defective circuit board.

- (1) The start function fails to operate but the high voltage Systems, the interlock switches, the door sensing and the relay check good.
- (2) The unit with a normal relay continuously operates.
- (3) The buzzer does not sound or continues to sound.
- (4) Some segments of one or more digits do not light up, or they continue to light up, or segments light when they should not.
- (5) Wrong figures appear.
- (6) The figures of all digits flicker.
- (7) Some of the indicators do no light up.
- (8) The clock does not keep time properly.

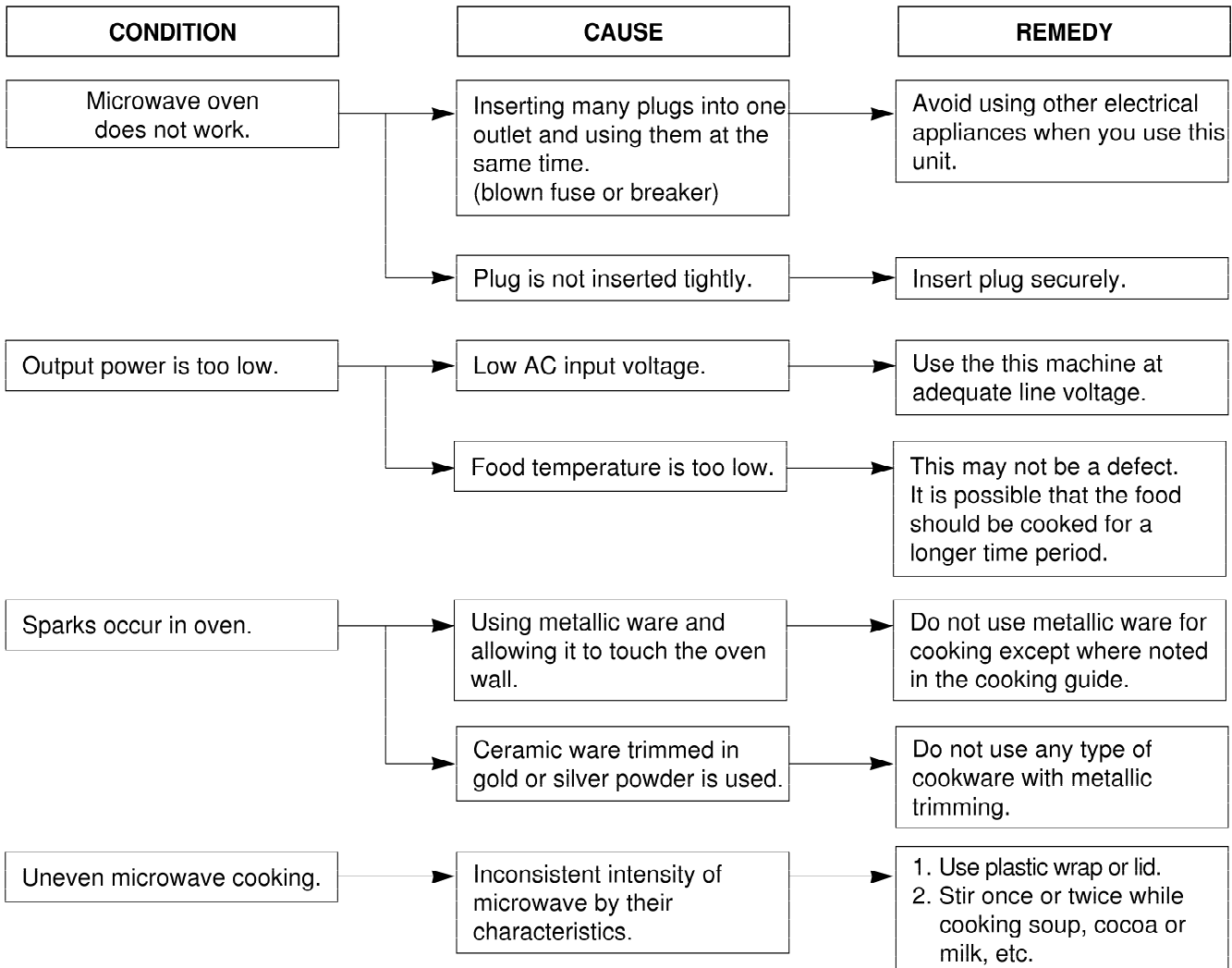
NOTE: A MICROWAVE ENERGY LEAKAGE TEST MUST ALWAYS BE PERFORMED WHEN THE UNIT IS SERVICED FOR ANY REASON.

C. TROUBLE SHOOTING

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 TOASTER AND MICROWAVE OVEN. THIS CAN ELIMINATE AN UNNECESSARY SERVICE CALL.

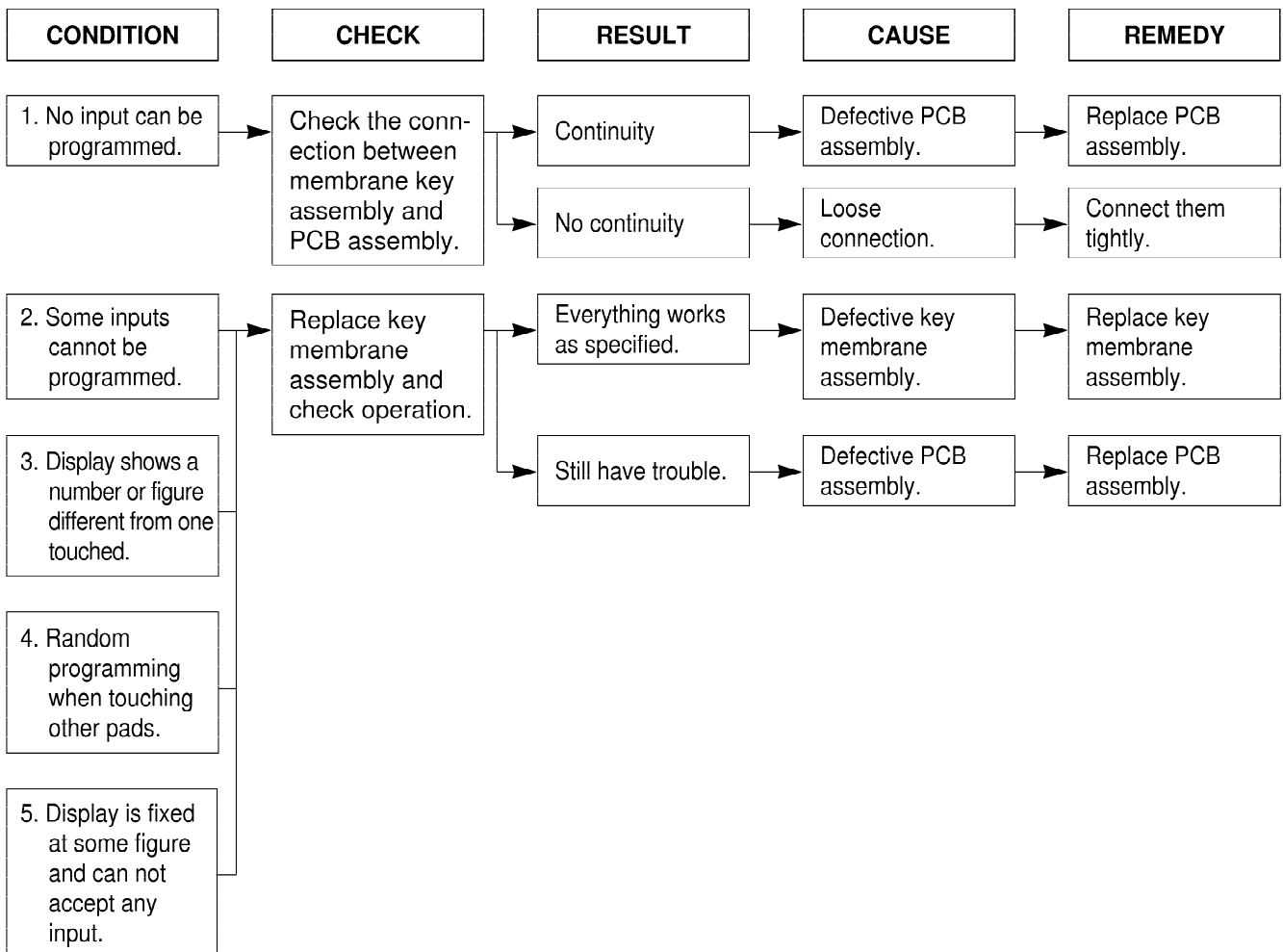
CAUTIONS

1. Check grounding and cool this unit before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge the high voltage capacitor.
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 PCB 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. (Micom model only)



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

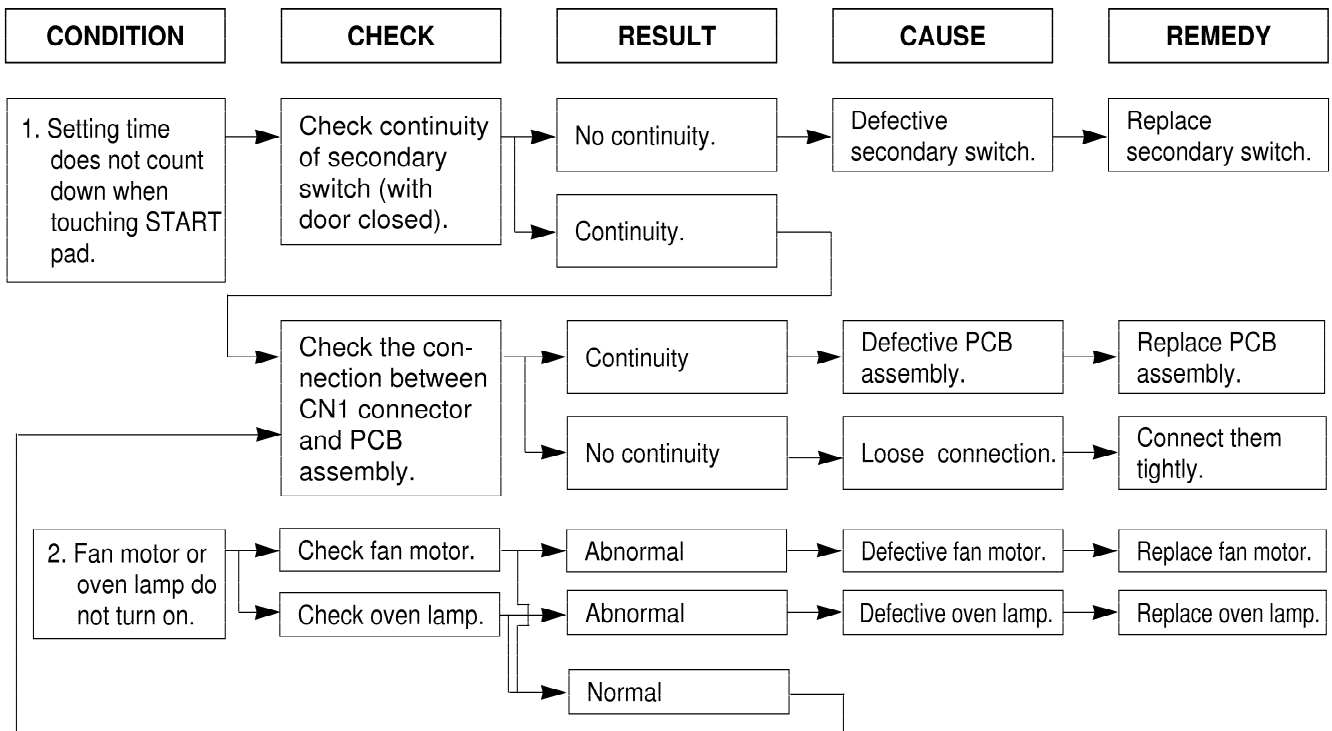
1. Incomplete segments.
 - Segment missing.
 - Partial segment missing.
 - Digit flickering (NOTE: Slight flickering is normal.)
2. Colon does not turn on or blink.
3. A distinct change in the brightness of one or more numbers in display.
4. One or more digits in the display are not lighting.
5. Display 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) will 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.



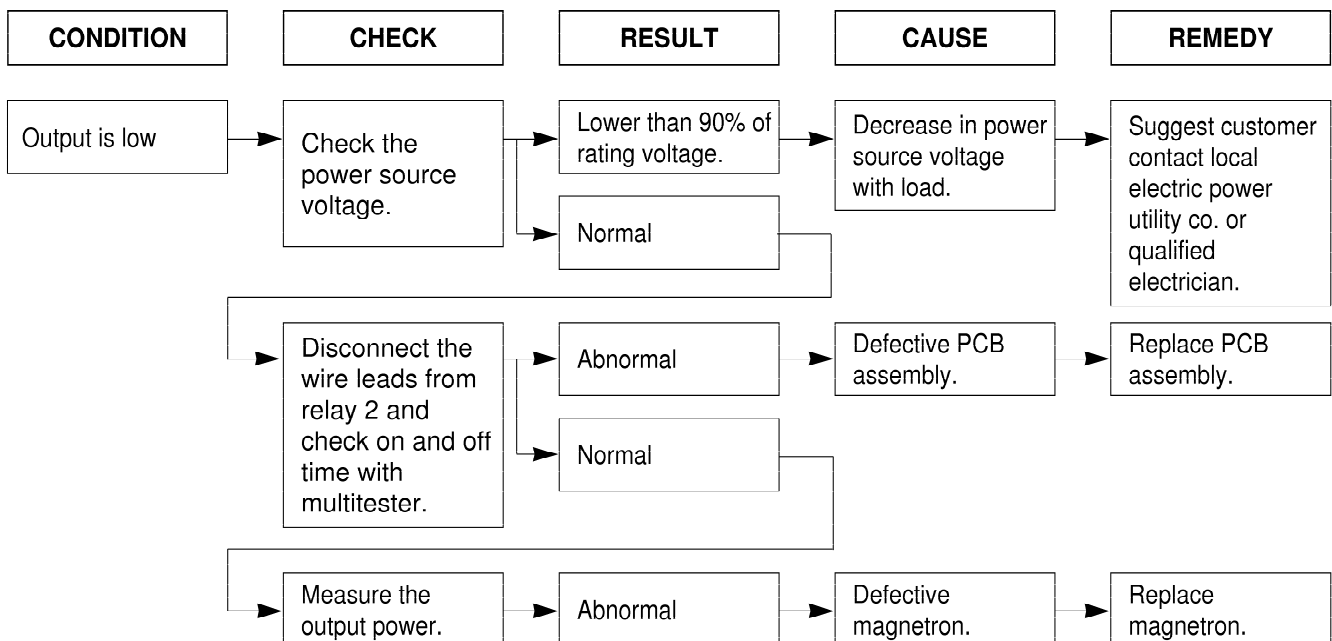
(TROUBLE 2) Microwave oven does not operate at all, Display window does not display any figures, and no input is accepted.

CONDITION	CHECK	RESULT	CAUSE	REMEDY		
1. Fuse blows.	Check continuity of monitor switch (with door closed).	Continuity.	Malfunction of the monitor switch.	Replace fuse, primary, monitor switches, and RELAY(RY2) of P.C.B Assembly.		
		No continuity.				
	Replace fuse					
	Check continuity of primary switch (with door opened).	Continuity.	Shorted contact at the primary switch.		Replace fuse, primary, monitor switches, and RELAY(RY2) of P.C.B Assembly.	
		No continuity.				
	Disconnect one side of the wire lead connected from transformer to the high voltage capacitor and operate the unit.	Normal.	Defective high voltage capacitor.			Replace high voltage capacitor.
Fuse blows again			Defective high voltage transformer.	Replace high voltage transformer.		
2. Fuse does not blow.		Check continuity of thermostat.	No continuity.	Defective thermostat.		Replace thermostat.
			Continuity.			
2. Fuse does not blow.	Check continuity of power supply cord.	No continuity.	Defective power supply cord.	Replace power supply cord.		

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

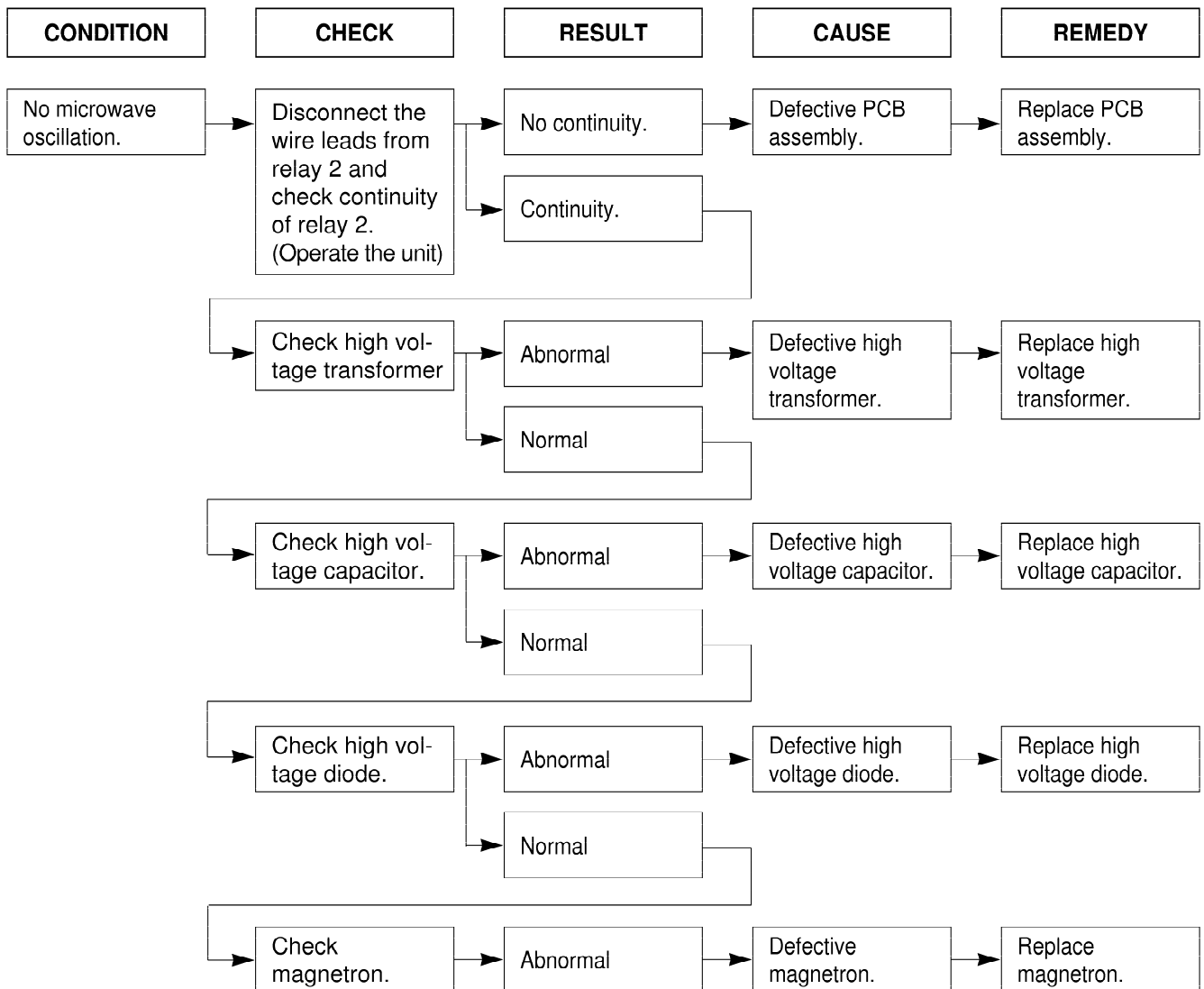


(TROUBLE 4) Microwave oven seems to be operating but little heat is produced in oven load.



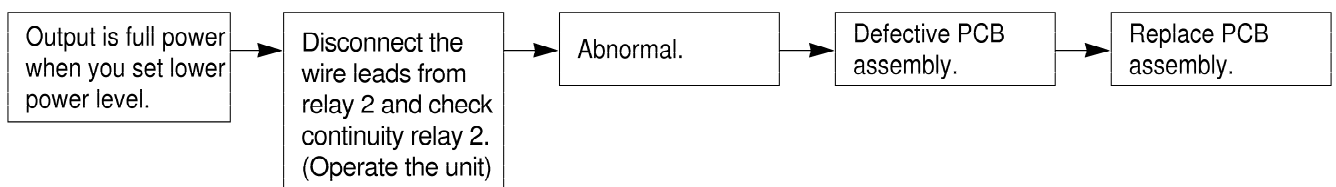
NOTE : Simple test of power output-conducted by heating one liter water for one min. if available. Minimum 8.5°C temperature rise is normal condition.

**(TROUBLE 5) No microwave oscillation 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.



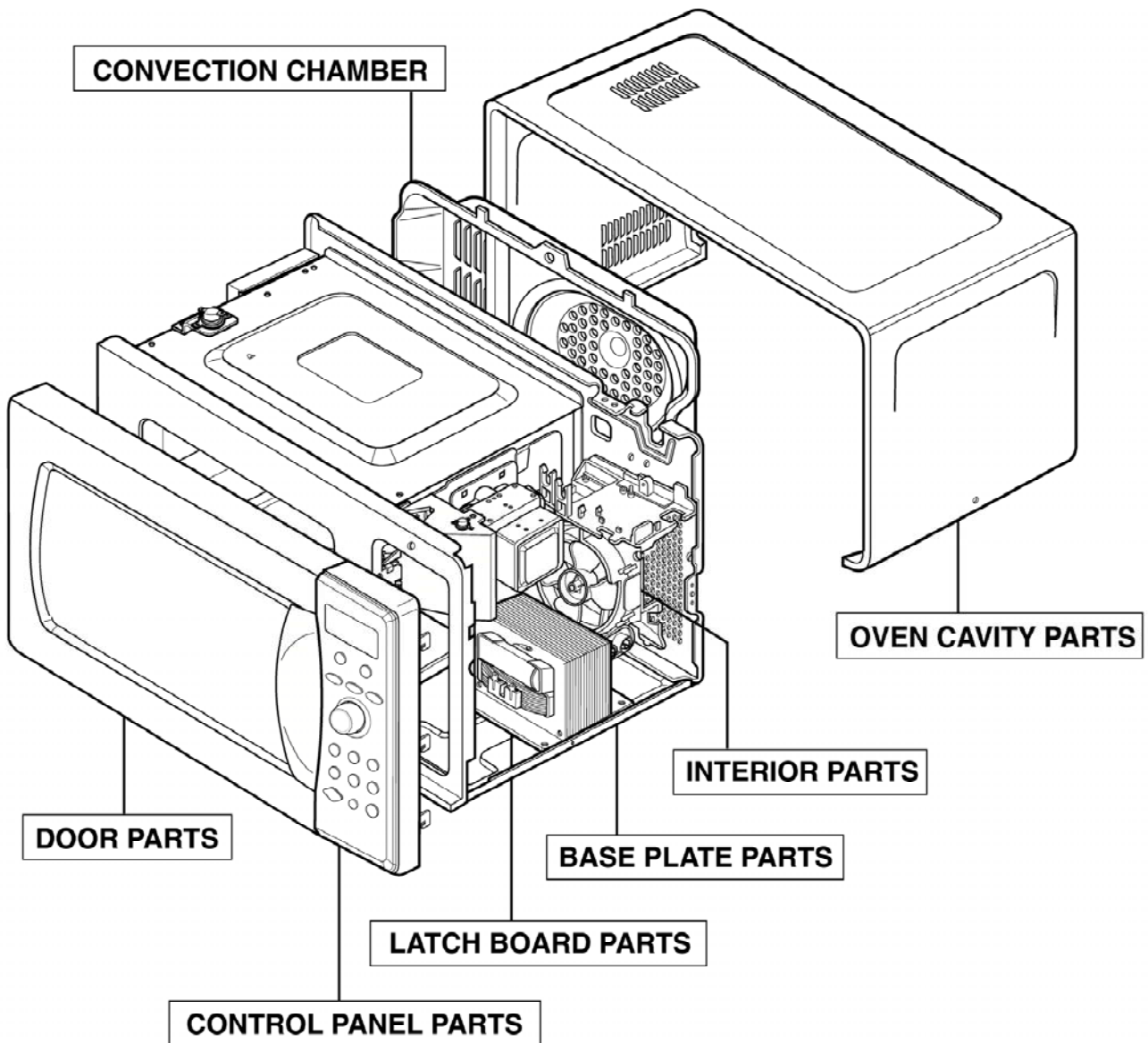
(TROUBLE 6) Convection oven does not operate at all or convection cook is bad.

CONDITION	CHECK	RESULT	CAUSE	REMEDY
Convection indicator light but oven does not go into cook cycle when START pad is touched.	Check the Relay 5 or 6 of P.C.B. assembly .	Abnormal	Defective Relay 5 or 6.	Replace Relay 5 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 5 or 6 of P.C.B. assembly .	Abnormal	Defective Relay 5 or 6.	Replace Relay 5 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 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.

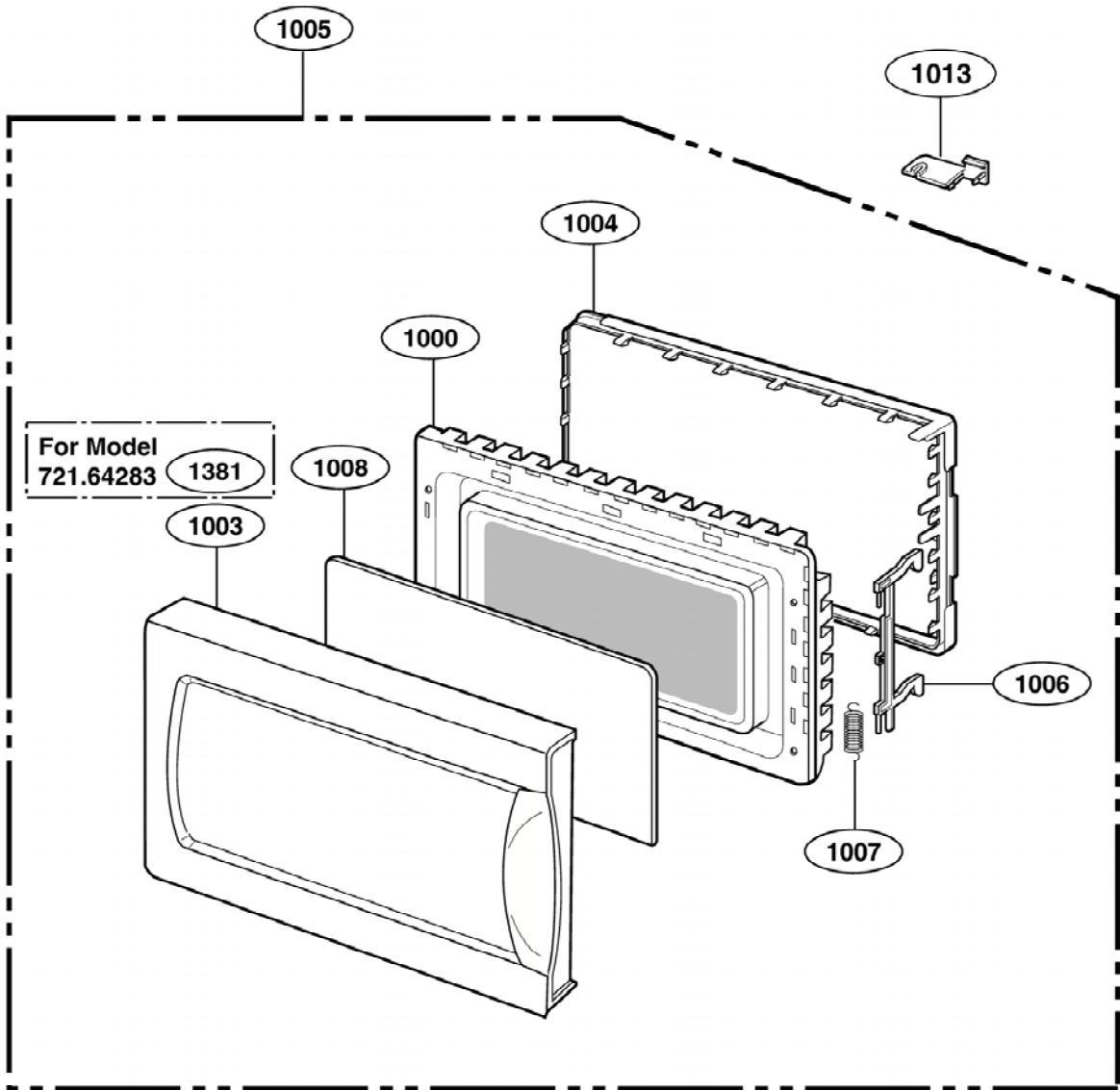
EXPLODED VIEW

INTRODUCTION

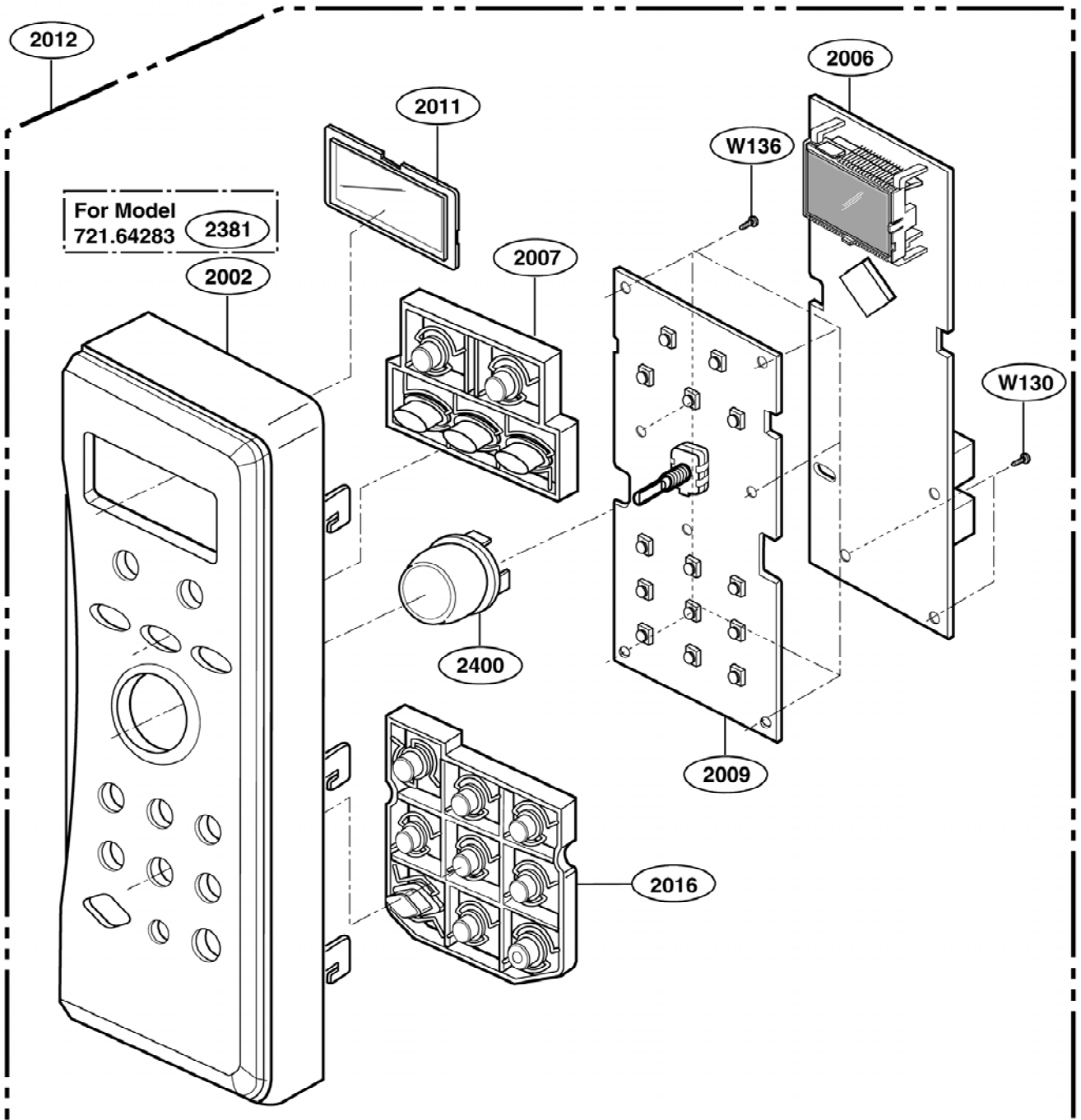
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721.64289300 / 721.64289301
721.64283300 / 721.64283301



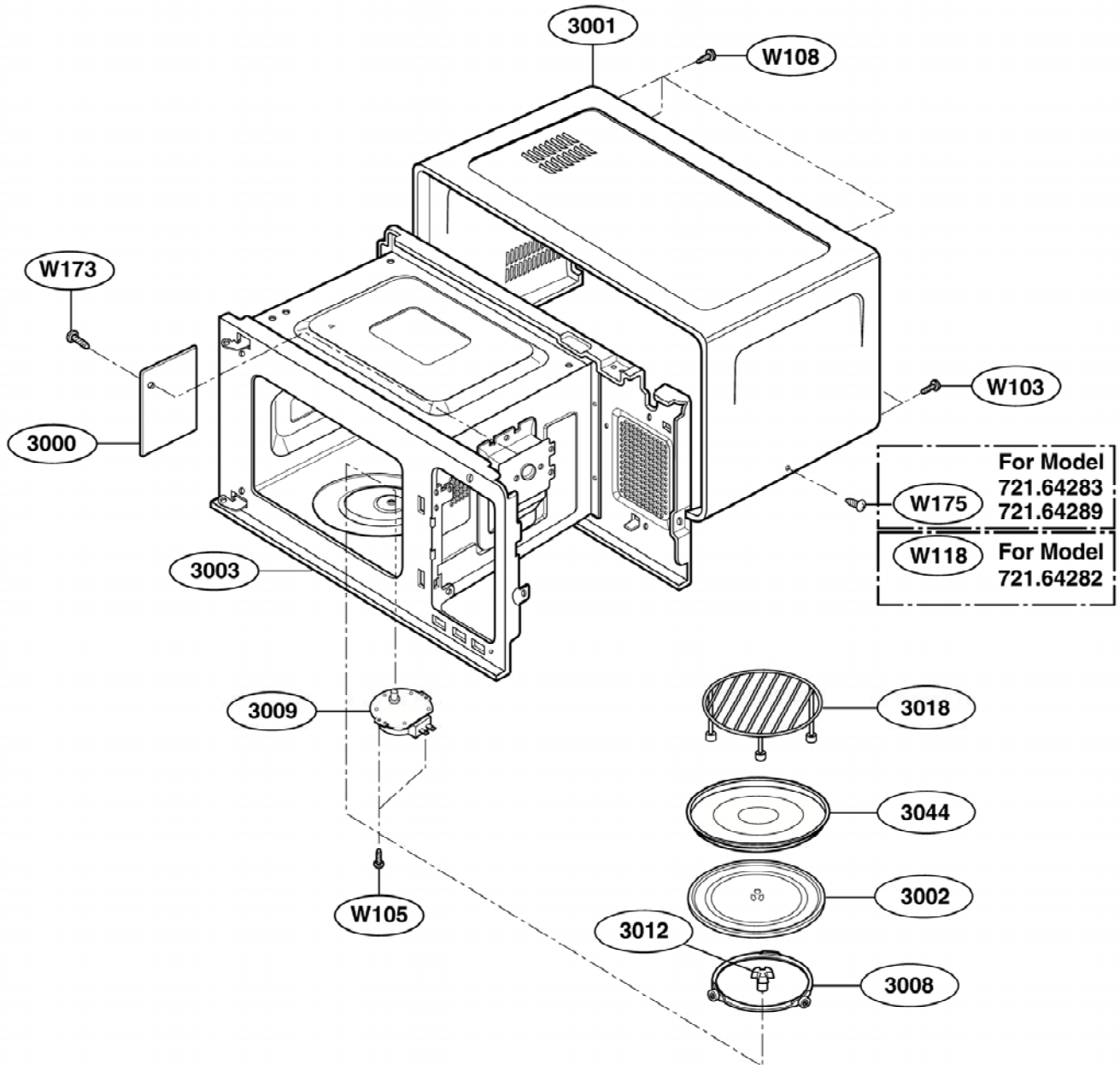
DOOR PARTS



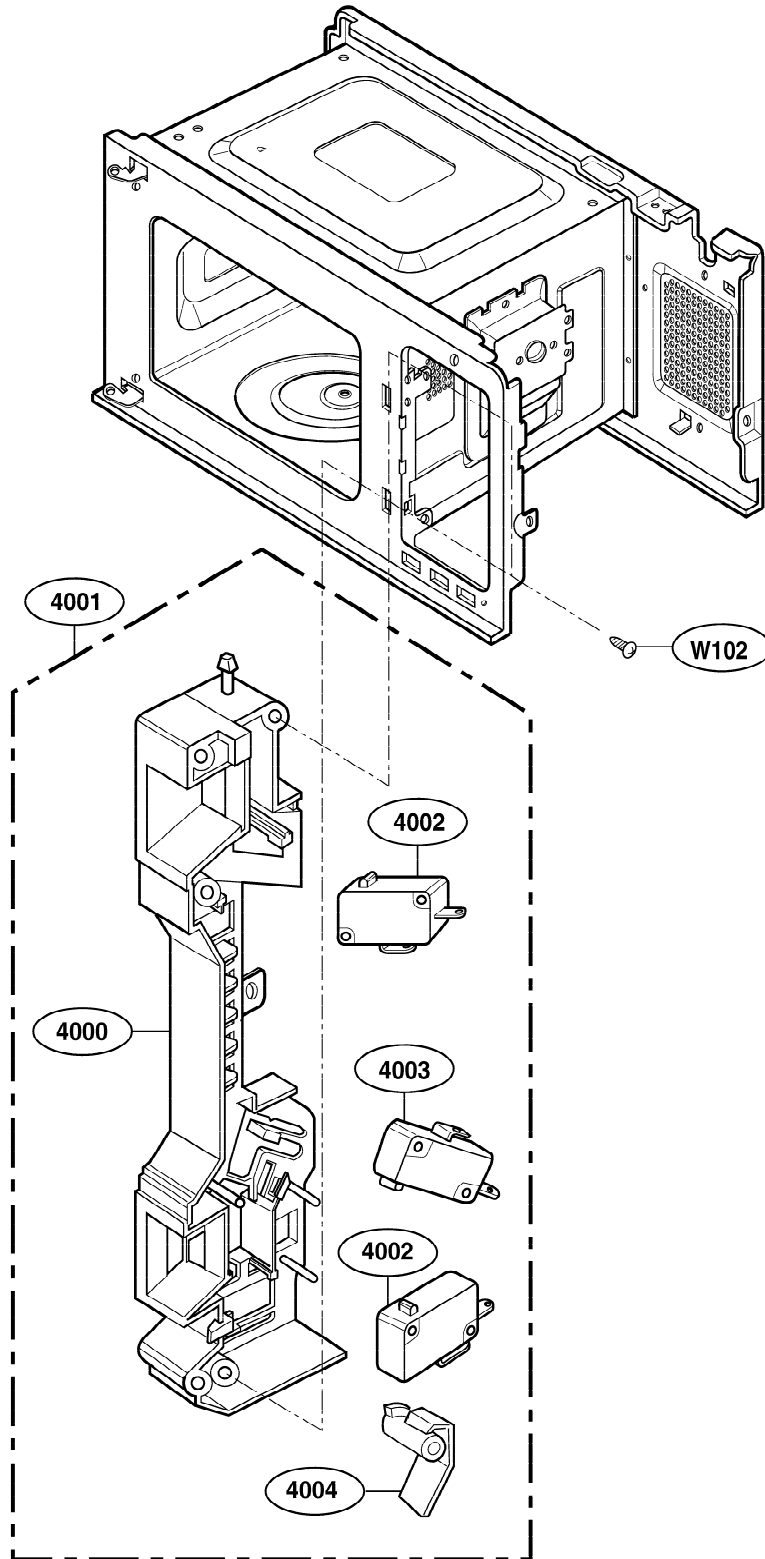
CONTROLLER PARTS



OVEN CAVITY PARTS



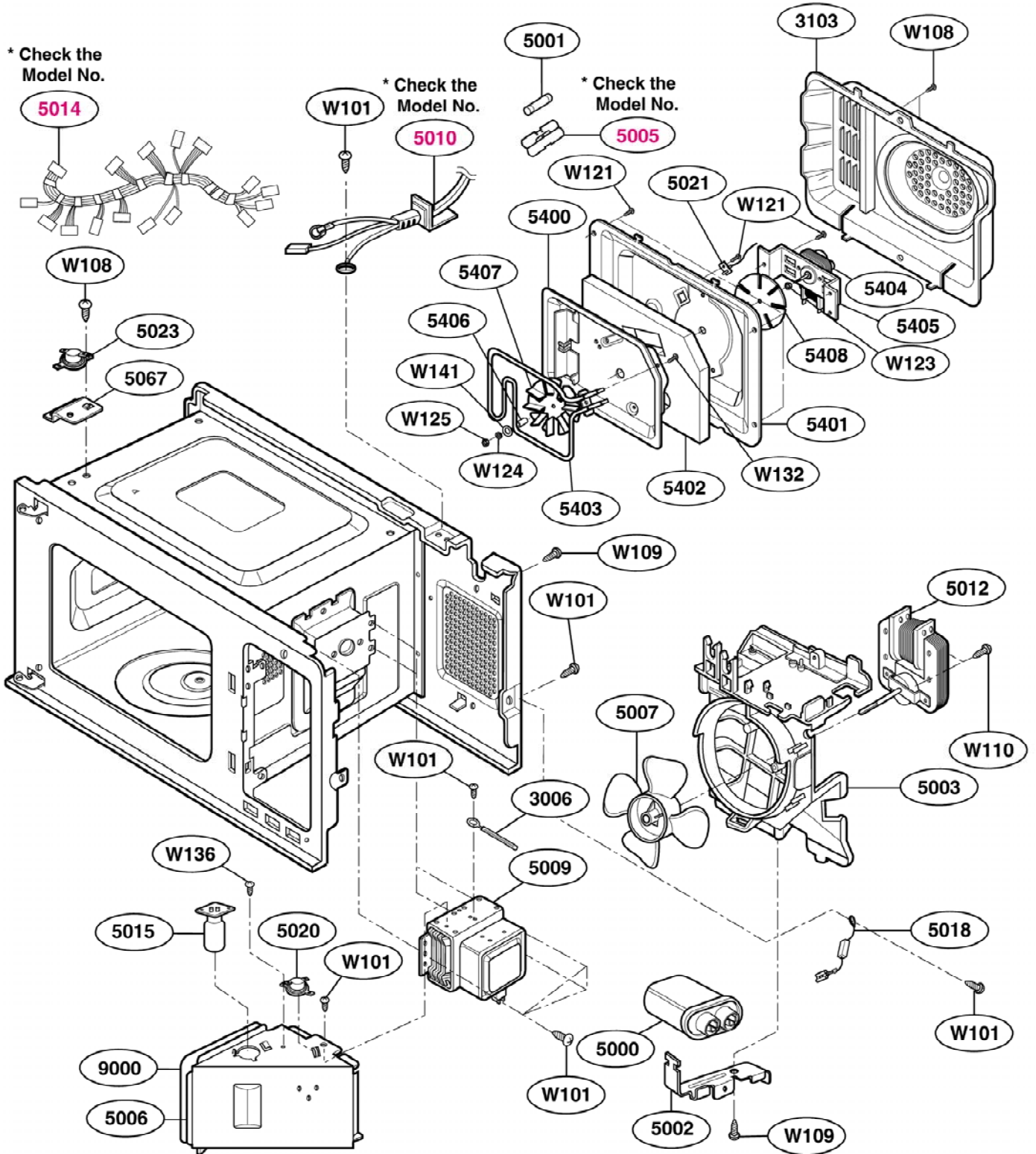
LATCH BOARD PARTS



INTERIOR PARTS (I)

Model: 721.64282300
721.64289300
721.64283300

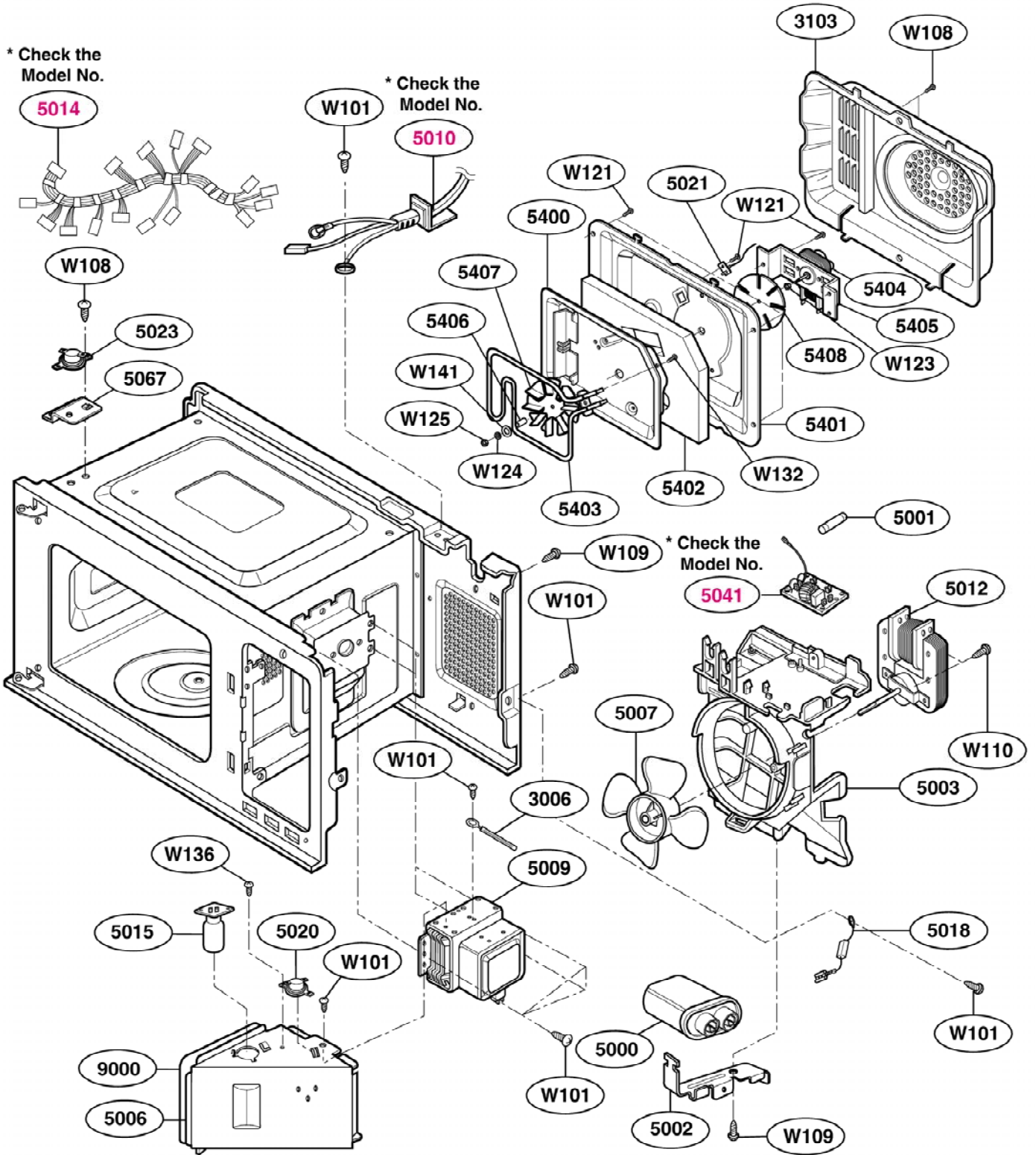
Check the rating label of **Model** and order SVC parts according to the **Model No.**



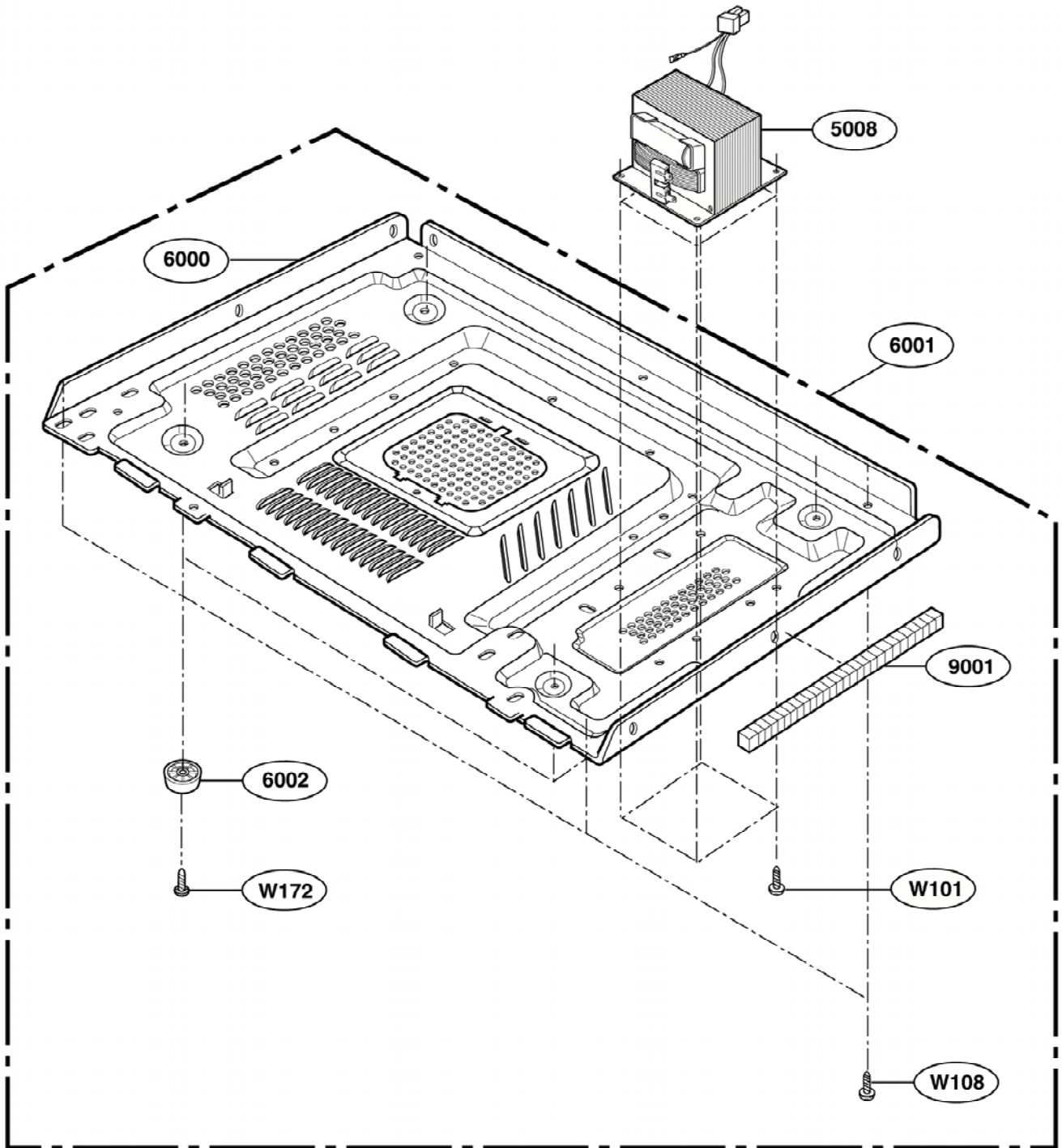
INTERIOR PARTS (II)

Model: 721.64282301
721.64289301
721.64283301

Check the rating label of **Model** and order SVC parts according to the **Model No.**



BASE PLATE PARTS



SENSOR PARTS

