

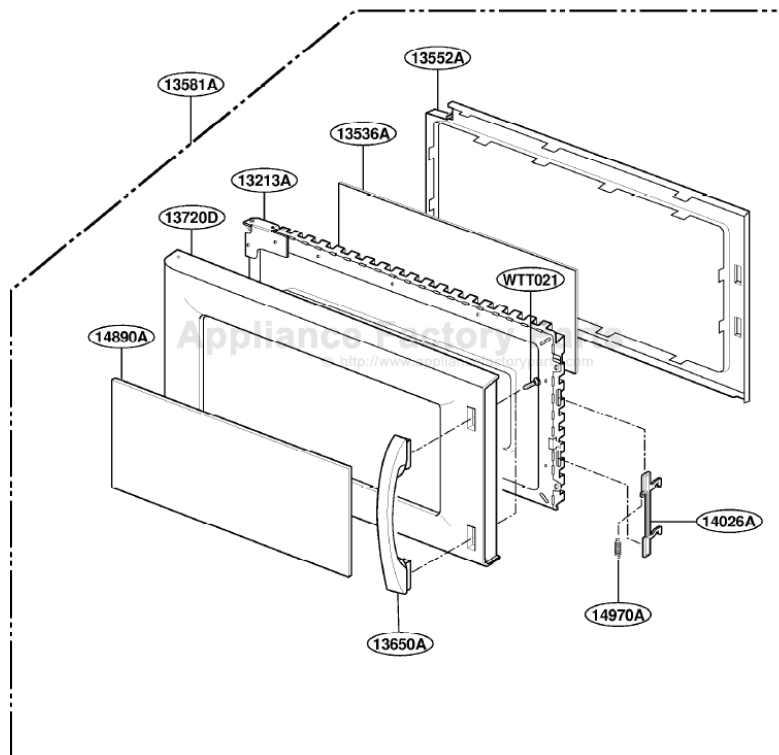
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# Kenmore 767.8510000 Owner's Manual

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Department 731A Toronto

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**BASIC SERVICE MANUAL**

**FOR**

**MICROWAVE OVEN**

**MODEL 767. 8510000**

**FEBRUARY, 2001**

# **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.

## 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.

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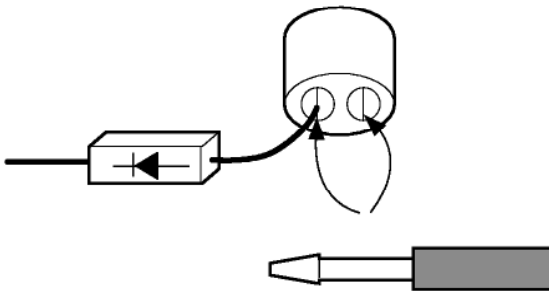
# SPECIFICATIONS

Rated Power Consumption .....	1,500W maximum (Microwave oven+Cook top lamp+Ventilation fan)
Microwave Output .....	900W (IEC 60 705)
	Adjustable 100W through 1000W, 10 steps
Frequency .....	2,450 MHz $\pm$ 50 MHz
Power Supply .....	120 VAC, 60 Hz
Rated Current .....	13 Amp. (Microwave oven+Cook top lamps+Ventilation fan)
Magnetron Cooling .....	Forced Air Cooling
Rectification .....	Rectification Voltage Double Half-Wave
Door Sealing .....	Choke System
Safety Devices .....	Oven Cavity Thermostat: Open at 90°C $\pm$ 5°C
	Fuse(20A)
	Primary Interlock Switch
	Secondary Interlock Switch
	Interlock Monitor
Magnetron .....	2M214-39F
High Voltage Capacitor .....	Capacitor: 1.0 $\mu$ F, 2.1 KV AC
High Voltage Diode .....	Diode; 350mA, 9.0 KV
Cook top Lamp .....	125 V, 30 W
Cavity Lamp .....	125 V, 30 W
Timer .....	Digital, up to 99 mim. 99 sec. (in each cooking stage)
Tray .....	Tempered Safety Glass
Overall Dimensions .....	29 <sup>15</sup> / <sub>16</sub> " (W)x16 <sup>7</sup> / <sub>16</sub> " (D)x15 <sup>3</sup> / <sub>8</sub> " (H)
Oven Cavity Size .....	19 <sup>7</sup> / <sub>8</sub> " (W)x14 <sup>3</sup> / <sub>16</sub> " (D)x8 <sup>15</sup> / <sub>16</sub> " (H)
Effective Capacity of Oven Cavity .....	1.5 Cu.ft.
Accessories .....	Owner's Manual & Cooking Guide, Installation Manual, Exhaust Adapter, Exhaust Damper, Mounting Kit and Two Filters, Rotating Ring Assembly

# CAUTIONS

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

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

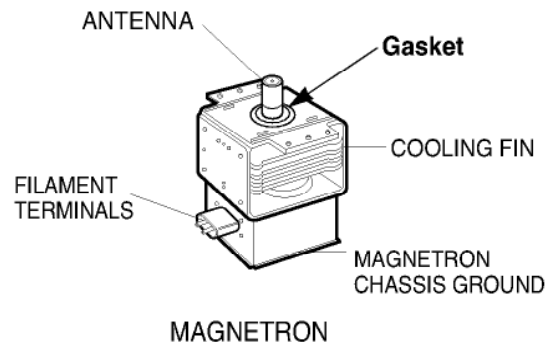


- Remove your watches whenever working close to or replacing the Magnetron.
- DO NOT touch any parts of the control panel circuit. A resulting static electric discharge may damage this P.C.B.
- NEVER operate the oven with no load.
- NEVER injure the door seal and front plate of the oven cavity.
- NEVER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

## MICROWAVE RADIATION

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

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



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

# INSTALLATIONS

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

## PRECAUTIONS ON INSTALLATION

- A. Plug the power supply cord into a 120V AC, 60Hz, single-phase power source with a capacity of 15A or 20A.
- B. Avoid placing the unit in a location where there is direct heat or splashing water.
- C. Install the unit on the mounting plate firmly.
- D. Place the unit as far away as possible from TV, radio, etc. to prevent interference.

## GROUNDING INSTRUCTIONS

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

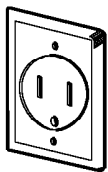
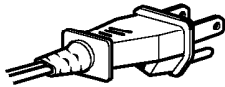
In the event of an electrical short circuit, grounding reduces the risk of electrical shock.

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

### 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.

**Plug with Ground  
Prong**



**Properly Polarized  
and Grounded  
Outlet**

### WARNING

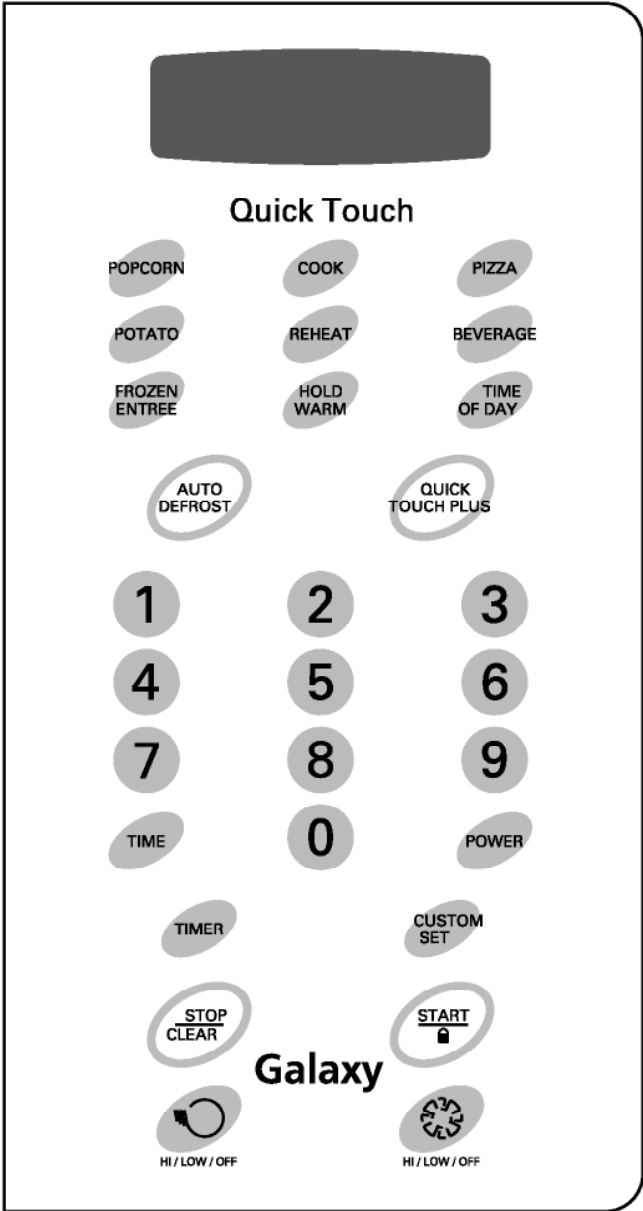
Improper use of the grounding plug can result in a risk of electric shock.

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

# OPERATING INSTRUCTIONS

## CONTROL PANEL

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## CONTROL PANEL INSTRUCTIONS

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The entire operation is done by simple touch control pads.

(1) Display Window

Numbers and letters are shown in the display window (Vacuum Fluorescent Tube).

Each Indicator Light shows which function is set and involved in the course of cooking by turning itself on. Indicator Lights automatically go out upon completion of cooking.

(2) POWER Key

Used to select cooking power level.

(3) Quick Touch Plus Key

Used to cook for one minute at 100% power level. It can be used to extend cooking time in multiples of one minute up to 99 minutes.

(4) TIME OF DAY(CLOCK) Key

Used in setting Time of Day.

(5) STOP/CLEAR Key

Used to stop the oven or clear all entries except Time of Day.

(6) START Key

Touch the START key after setting the desired cooking times etc. Also touch the START key to resume cooking after the cooking is temporarily stopped by opening the door. The key will not function unless the door is closed.

(7) AUTO DEFROST Key

Used to defrost for frozen foods by weight.

(8) TIMER Key

Used to set the timer.

(9) CUSTOM SET Key

Touch this pad to change the oven's default setting for sound, clock, display speed, defrost weight, and demo mode operations.

(10)  HI/LO/OFF Key

Touch FAN once for HIGH fan speed, twice for low fan speed, or threetimes to turn the fan off.

(11)  HI/LO/OFF Key

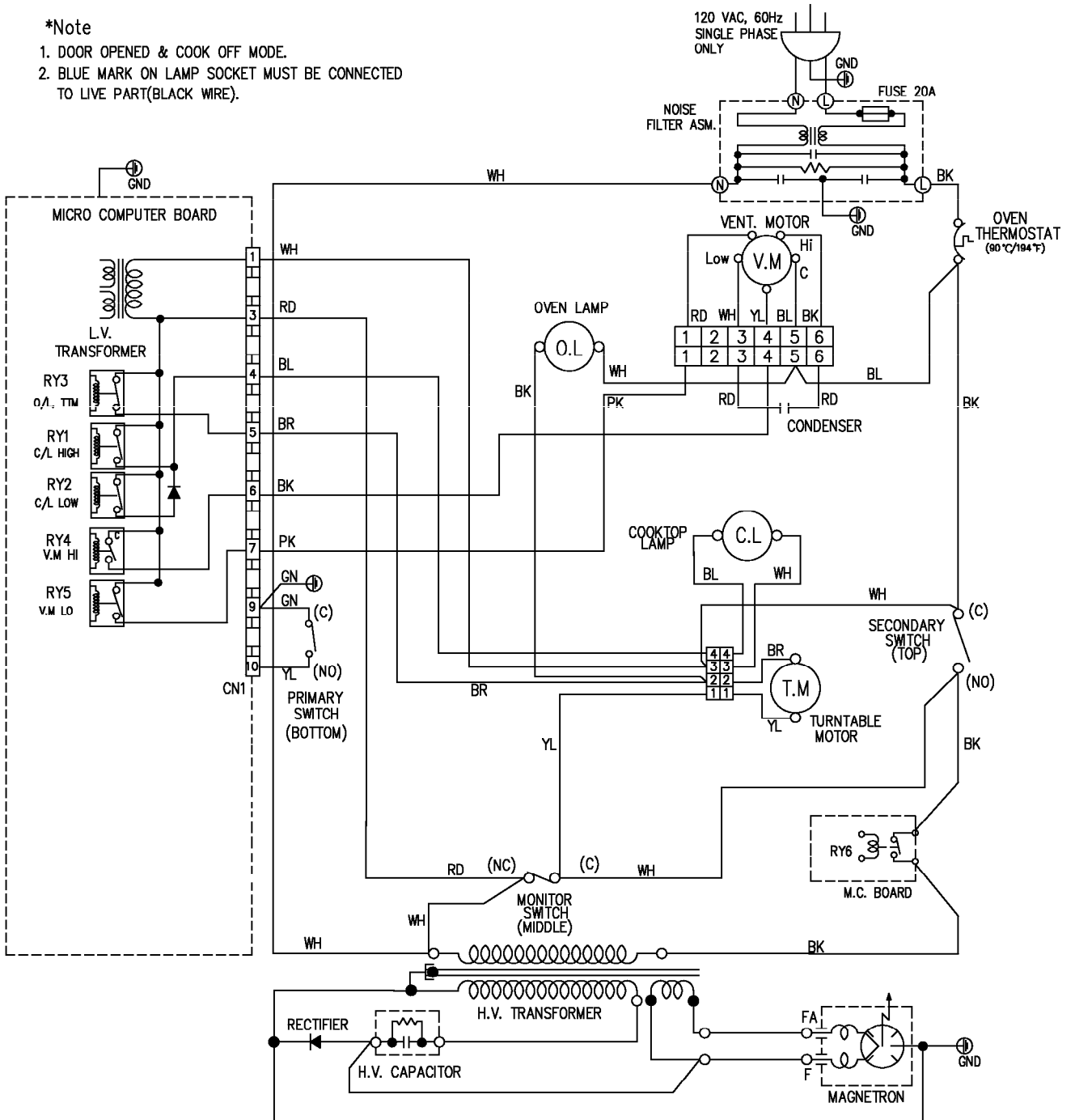
Touch LIGHT once for bright light, twice for the night light, or three times to turn the light off.

# OVERALL CIRCUIT DIAGRAM

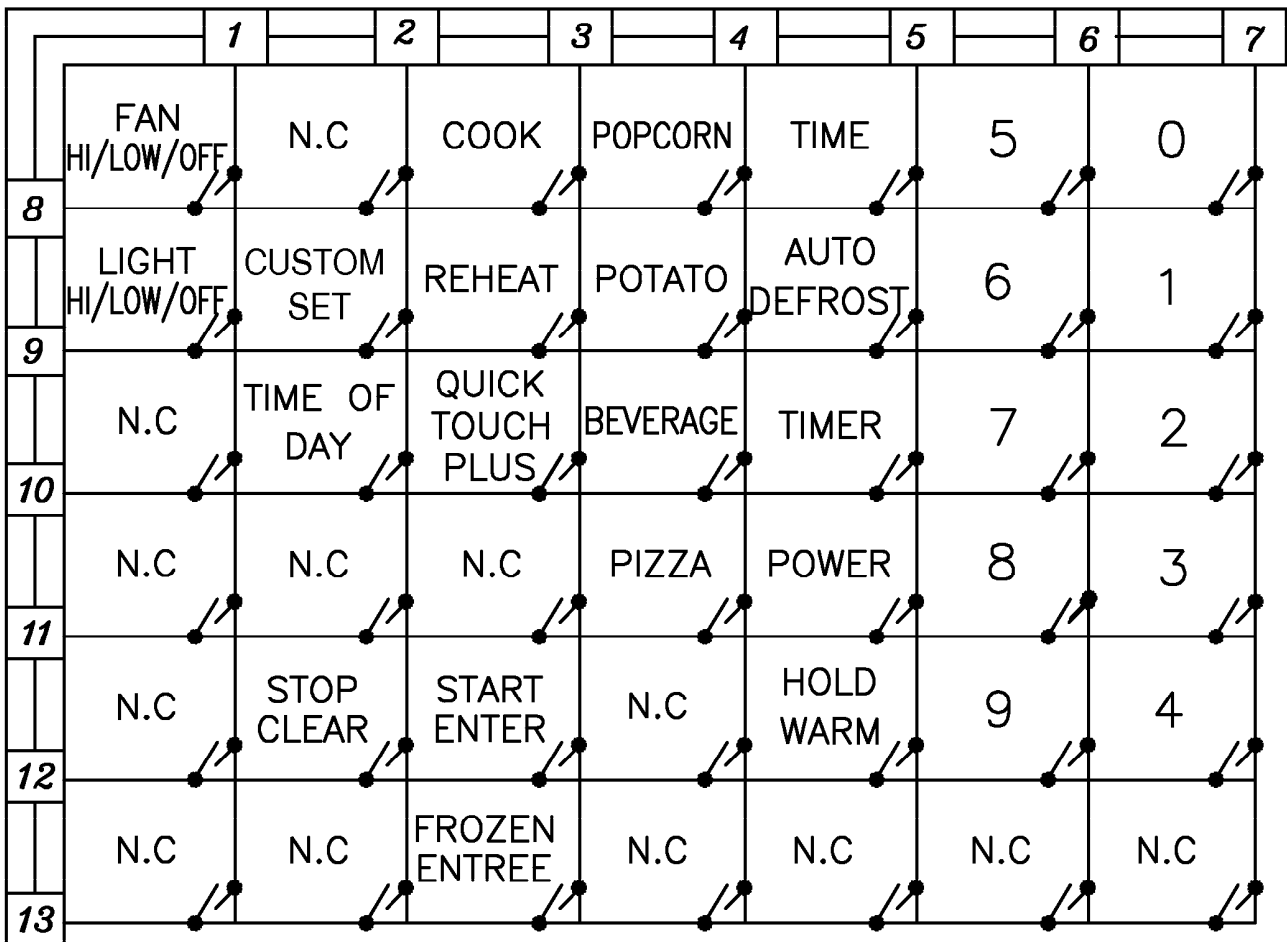
## SCHEMATIC DIAGRAM

**\*Note**

1. DOOR OPENED & COOK OFF MODE.
2. BLUE MARK ON LAMP SOCKET MUST BE CONNECTED TO LIVE PART(BLACK WIRE).



# MATRIX CIRCUIT FOR TOUCH KEY BOARD



# GENERAL INFORMATION FOR SERVICE

## 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 glass turntable 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.

- (1) Primary interlock switch
- (2) Secondary interlock switch
- (3) Interlock monitor switch
- (4) Choke system
- (5) Magnetron thermostat
- (6) 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.

## 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. Set cooking time for 10 minutes by touching "1" and then "0" three times. "1, 0, 0, 0" appears in the display window.
- C. 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.
- D. After about 5 minutes, make sure the primary interlock switch, the secondary interlock switch and the interlock monitor switch operate properly by opening and closing the door several times. Touch the START key each time the door is closed.
- E. Continue operating the unit. Two short and a long beep sound signal is heard when the time is up.  
The unit will shut off automatically.
- F. Confirm the water is hot.
- G. Finally, measure the output power according to "POWER OUTPUT MEASUREMENT" on page 7-3.

## FEATURES AND SPECIFICATIONS

### FEATURES

- A. The safety systems incorporated in this model are:

# SERVICE INFORMATION

## PRECAUTIONS AND REPAIR SERVICE TIPS

### PRELIMINARY

**A. SINCE NEARLY 2,100 VOLTS EXISTS IN SOME CIRCUITS OF THIS UNIT REPAIRS SHOULD BE CARRIED OUT WITH GREAT CARE.**

The filament leads of magnetron carry High Voltage with respect to ground. Extreme caution must be exercised. Never plug the unit into a power source to determine which component is defective in high voltage section.

**B. TO AVOID POSSIBLE EXPOSURE TO MICROWAVE ENERGY LEAKAGE, THE FOLLOWING PRECAUTIONS MUST BE TAKEN BEFORE SERVICING.**

- (1) Before the power is applied:
  - (a) Make sure the primary interlock switch, the secondary interlock switch and the interlock monitor switch operate properly by opening and closing the door several by opening and closing the door several times.
  - (b) Make sure the perforated screen and the dielectric choke of the door are correctly and firmly mounted.
- (2) After power is applied:
  - (a) Make sure the interlock switch mechanism is operating properly by opening and closing the door.
  - (b) Check microwave energy leakage must be below the limit of 5 mW/cm<sup>2</sup>.  
(All service adjustments should be made for minimum microwave energy leakage readings).

- (3) Do not operate the unit until it is completely repaired, if any of the following conditions exist. The unit must not be operated.

- (a) The door does not close firmly.
- (b) The hinge is broken.
- (c) The door seal is damaged.
- (d) The door is bent or warped, or there is any other visible damage on the unit that may cause microwave energy leakage.

**NOTE:** Always keep the seal clean.

- (e) Make sure that there are no defective parts in the interlock mechanism.
  - (f) Make sure that there are no defective parts in the microwave generating and transmission assembly (especially waveguide).
- (4) The following items should be checked after the unit is repaired:
    - (a) The interlock monitor switch is connected correctly and firmly.
    - (b) The magnetron gasket is properly positioned and mounted.
    - (c) The waveguide and the oven cavity are intact. (no microwave energy leakage)
    - (d) The door can be properly closed and the safety switches work properly.
    - (e) The unit must stop when the door is opened or the time is up.

The unit must not be operated with any of the above components removed or by-passed.

## 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/cm<sup>2</sup> 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.
- 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 4 mW/cm<sup>2</sup>. Always start measuring of an unknown field to assure safety for operating personnel from radiation leakage.

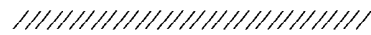
### EQUIPMENT

- TESTER (VOLTS-DC, AC, Ohmmeter)
- Microwave survey meter
  - Holaday HI-1500  
HI-1501
  - Narda 8100  
8200
- 600 cc non conductive material beaker (glass or plastic), inside diameter: approx. 8.5 cm (3<sup>1</sup>/<sub>2</sub> in.)
- Glass thermometer: 100°C or 212°F (1 deg scale)

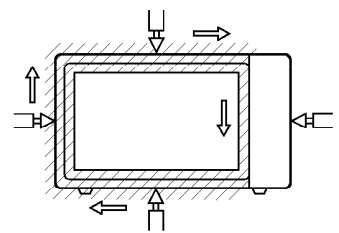
### MEASURING MICROWAVE ENERGY LEAKAGE

- Pour 275±15cc of 20±5°C(68±9°F) 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. ( 1 in/sec)



## 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.**

## 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 5 mW/cm<sup>2</sup>.

Leakage for a fully assembled oven ("Before the latch switch (primary) is interrupted") with the door in a slightly opened position - less than 2 mW/cm<sup>2</sup>.

## 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.

## 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 2 mW/cm<sup>2</sup> 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.

## POWER OUTPUT MEASUREMENT

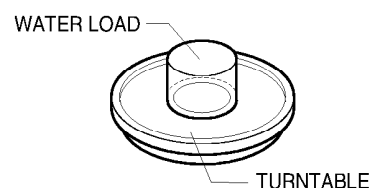
- (1) Microwave power output measurement is made with the microwave oven supplied at its rated voltage and operated at its maximum microwave power setting with a load of (1000±5) g of potable water.
- (2) The water is contained in a cylindrical borosilicate glass vessel having a maximum material thickness of 1/8" (3 mm) and an outside diameter of approximately 7.6" (190mm).
- (3) The oven and the empty vessel are at ambient temperature prior to the start of the test.
- (4) The initial temperature (T<sub>1</sub>) of the water is (10±2)°C (50°F) 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.
- (5) The time T for the temperature of the water to rise by a value ΔT 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.

- (6) The microwave power output P in watts is calculated from the following formula :

$$P = \frac{4187 \times (\Delta T)}{T}$$

is measured while the microwave generator is operating at full power. Magnetron filament heat-up time is not included. (about 3 sec)

- (7) The water is stirred to equalize temperature throughout the vessel, prior to measuring the final water temperature.
- (8) Stirring devices and measuring instruments are selected in order to minimize addition or removal of heat.



# DISASSEMBLY INSTRUCTIONS

## IMPORTANT NOTES:

UNIT MUST BE DISCONNECTED FROM ELECTRICAL OUTLET WHEN MAKING REPAIRS, REPLACEMENTS, 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 10K-OHM 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 POWER AND CONTROL CIRCUIT BOARD (Figures 1, 2 and 3)

- (1) Remove a screw securing the control panel assembly to the oven cavity.
- (2) Remove the control panel with pushing it upward.
- (3) Remove the connector (CN1) and wire leads (Relay6) from the circuit board.

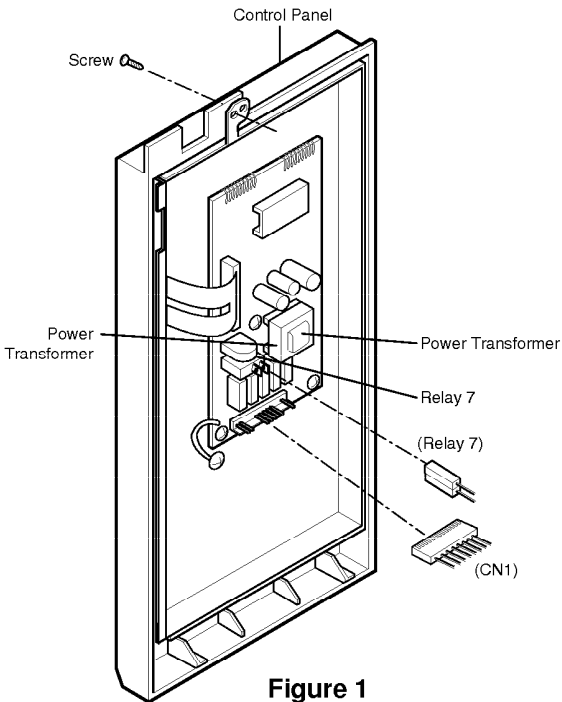


Figure 1

- (4) Remove 2 screws securing the circuit board.

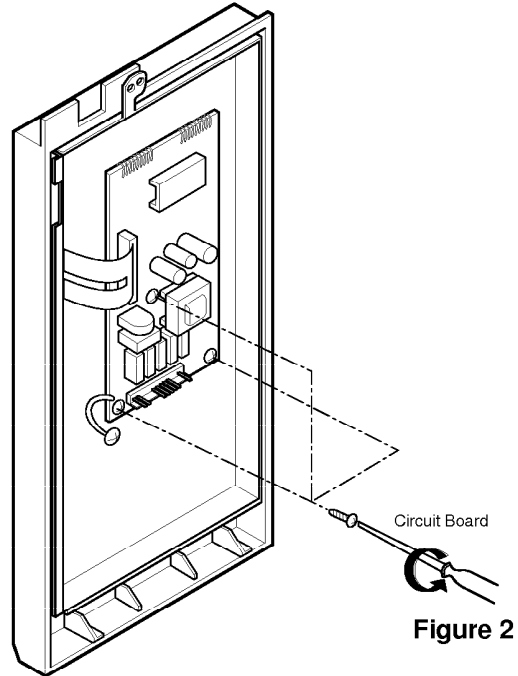


Figure 2

- (5) Remove the FPC connector from the terminal socket following "HOW TO REMOVE THE FPC CONNECTOR" on the next page.
- (6) Remove the circuit board from the control bracket carefully.

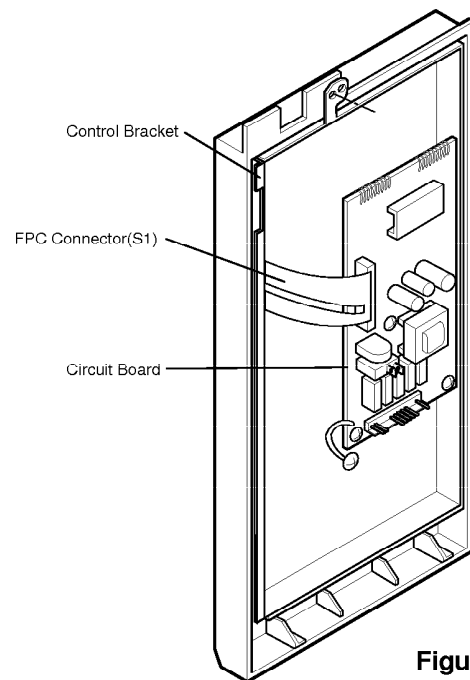


Figure 3

## HOW TO REMOVE THE F.P.C. CONNECTOR

Follow the steps below as illustrated in Figures 4 and 5 to remove the F.P.C. connector.

- (1) Hold the edges of the plastic fastener with thumb and forefinger. (Figure 4)
- (2) Lift up the lever of the plastic fastener from the terminal socket by lightly pressing the lever end with forefinger. (Figure 5)
- (3) Remove the F.P.C. connector from the terminal socket.

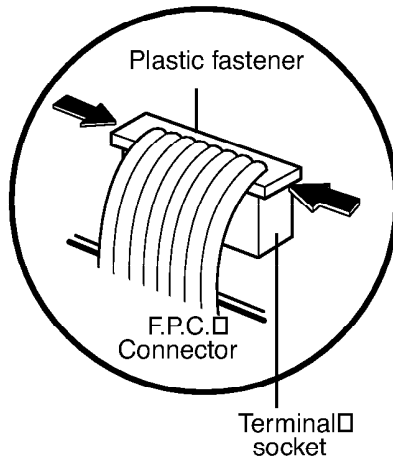


Figure 4

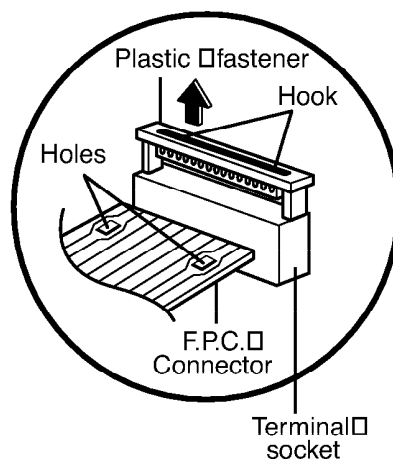


Figure 5

## HOW TO INSERT THE F.P.C. CONNECTOR

Follow the steps below as illustrated in Figures 6 and 7 to insert the F.P.C. connector.

- (1) Insert the F.P.C. connector into the terminal socket securely with the fingers.
- (2) Hold the plastic fastener with thumb and forefinger of the other hand, and push it slowly into the terminal socket. (Figure 6)

**NOTE:** When reconnecting the F.P.C. connector make sure that the holes on the F.P.C. connector are properly engaged with the hooks on the plastic fastener

- (3) Lock the level of the plastic fastener into the hook of the terminal socket securely by releasing the fingers. (Figure 7)

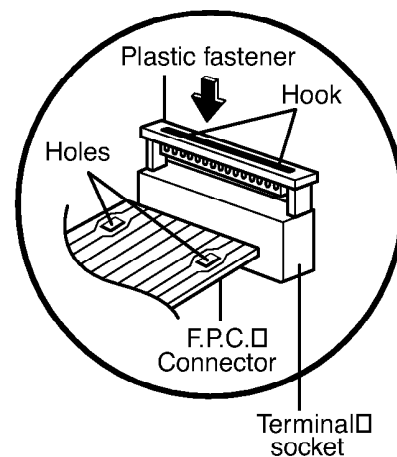


Figure 6

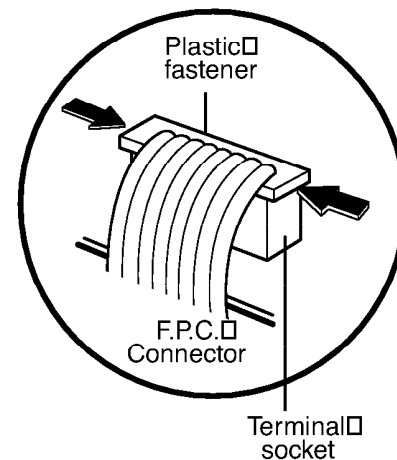


Figure 7

## B. REMOVING THE OUT CASE(Figure 8)

- (1) Remove the vent grille by removing two screws securing it to the out case.
- (2) Remove two screws securing it to the front bracket.
- (3) Remove two screws securing it to the air duct.
- (4) Remove the mounting plate by turning the two screws securing it to the out case.
- (5) Remove the base plate by removing six screws securing it to the out case. Remove the Mount, All from the out case by removing two screws securing it to the out case and one screw securing it to the ventilation motor ASS'Y and cavity.
- (6) Remove the power cord cover from outcase by removing a screw.
- (7) Remove the power cord to the inner of the out case with turning power cord and remove the out case with pushing it back.

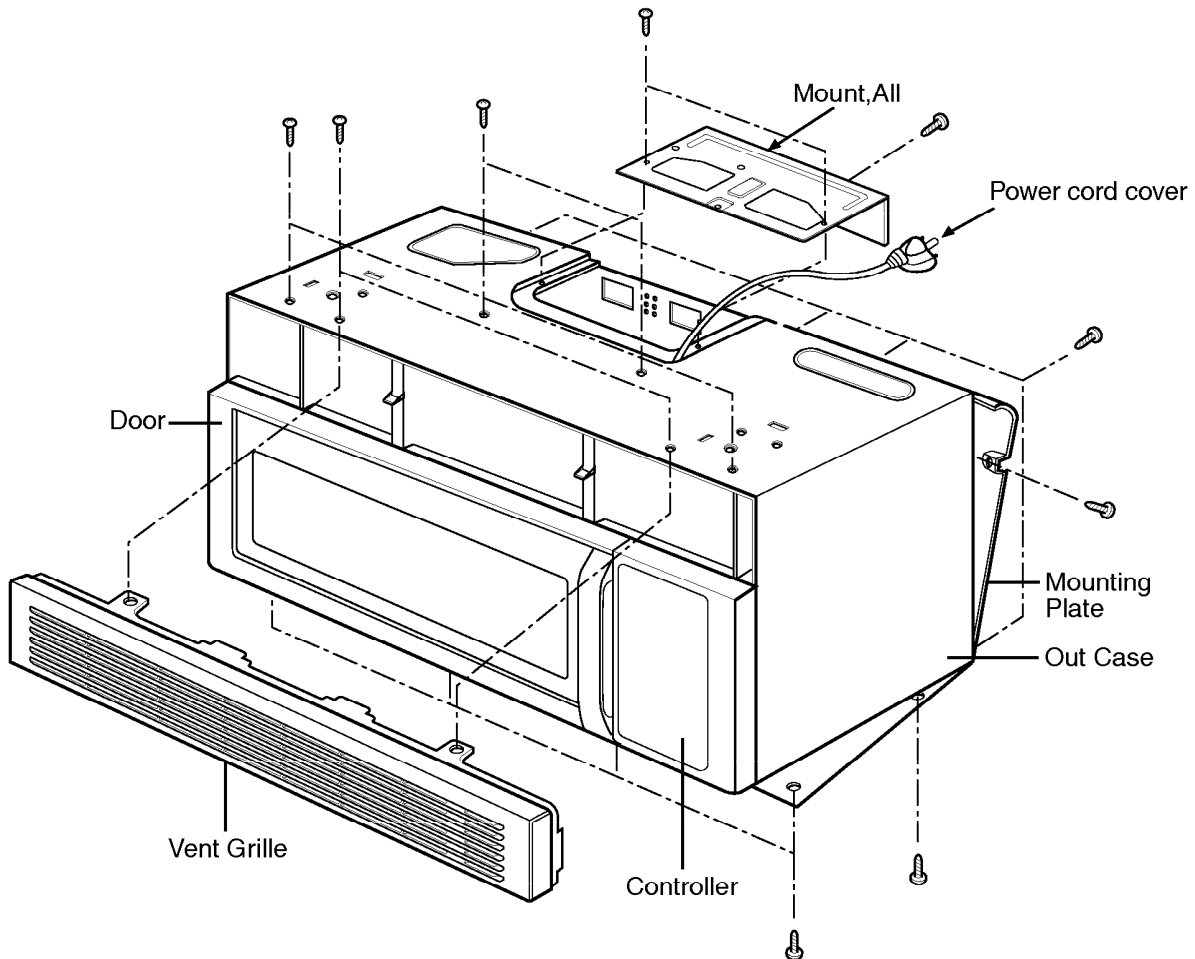
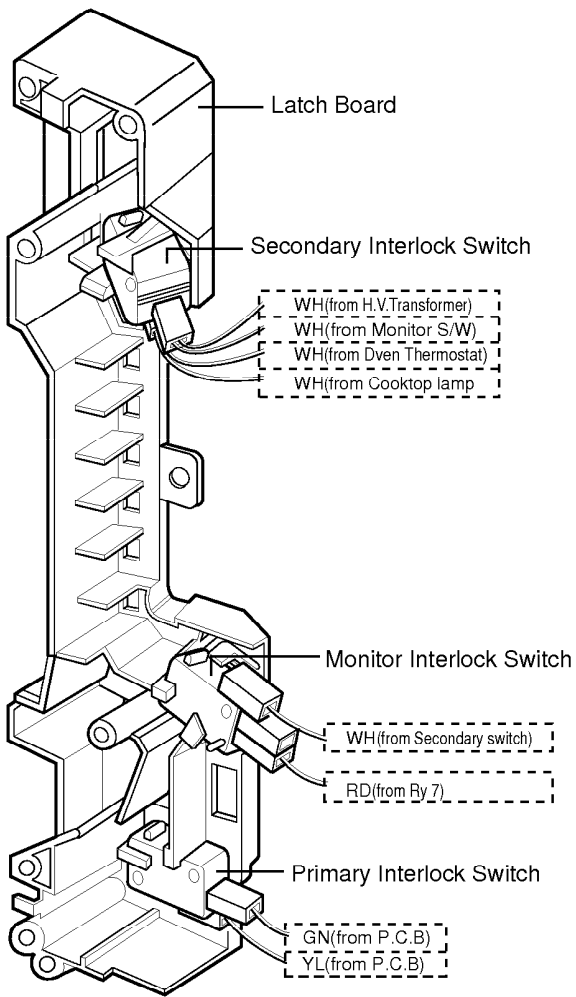


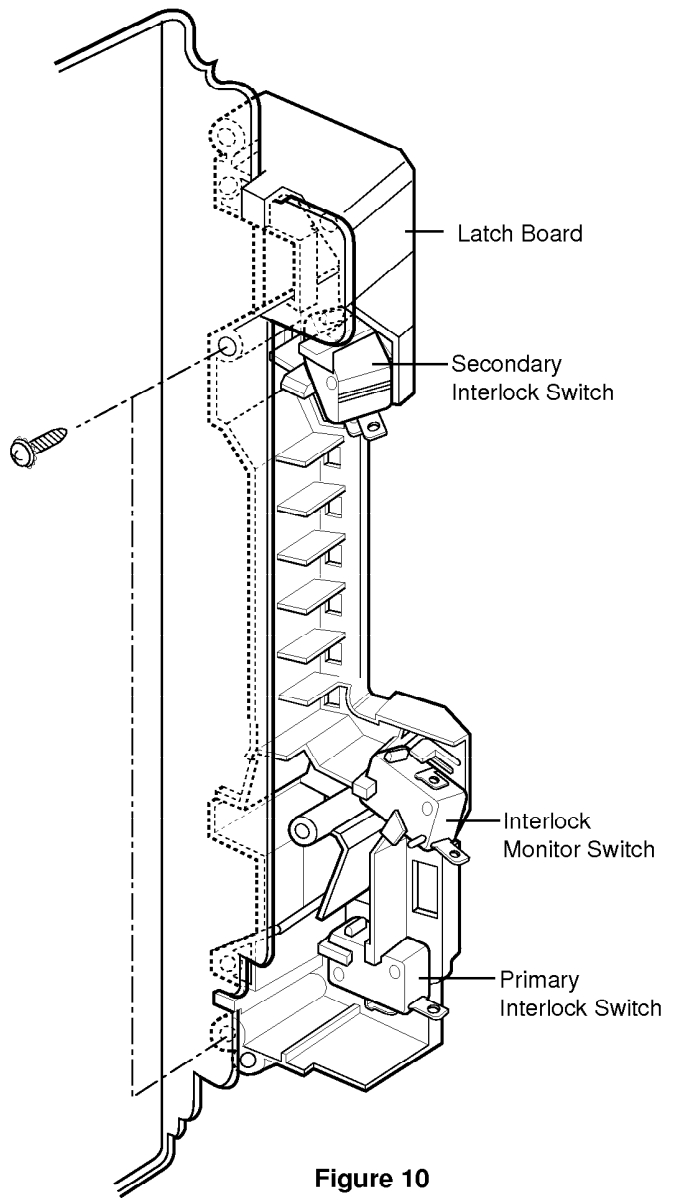
Figure 8

### C REMOVING THE DOOR INTERLOCK SWITCHES (Figures 9,10)

- (1) Disconnect the wire leads from the interlock switches.
- (2) Remove two screws securing the Latch Board.
- (3) Make necessary replacements and check microwave energy leakage according to "ADJUSTMENT PROCEDURE" on page 7-12.



**Figure 9**



**Figure 10**

#### WIRE COLOR

SYMBOL	COLOR
WH	WHITE
BK	BLACK
BR	BROWN
RD	RED
BL	BLUE
PK	PINK
GY	GREY
GN	GREEN
N.P.	Not Provided

## D. REMOVING MAGNETRON

(Figures 11 Through 13)

- (1) Remove vertgrille.
- (2) Remove mount all.
- (3) Remove outcase.
- (4) Disconnect the wireleads.
- (5) Remove the **Magnetron** very carefully.

### NOTES:

- When removing the magnetron, make sure that its dome does not hit any adjacent parts, or it may be damaged.
- 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.
- After replacing the magnetron, check for microwave energy leakage with a survey meter. Check microwave energy leakage must be below the limit of 5 mW/cm<sup>2</sup>. (All service adjustments should be made for minimum microwave energy leakage readings.)

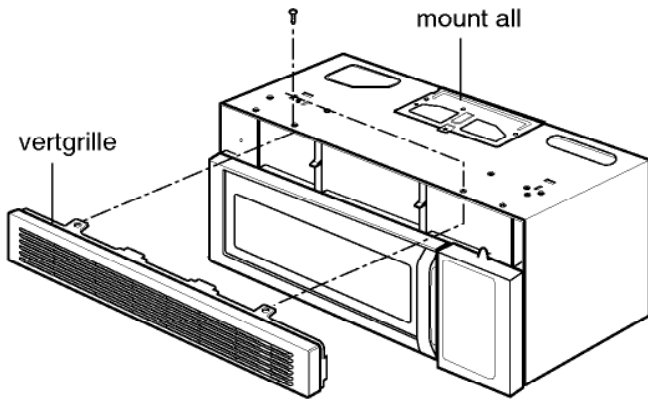


Figure 11

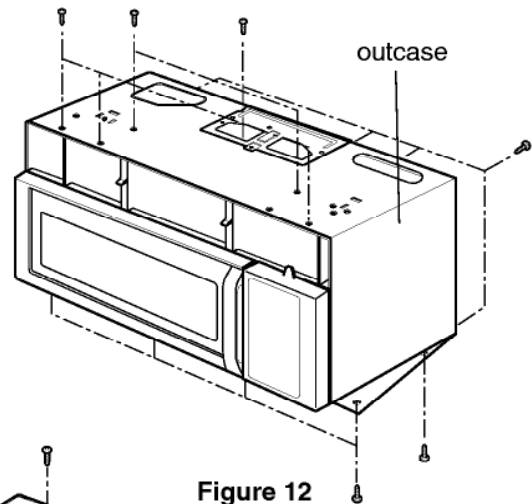


Figure 12

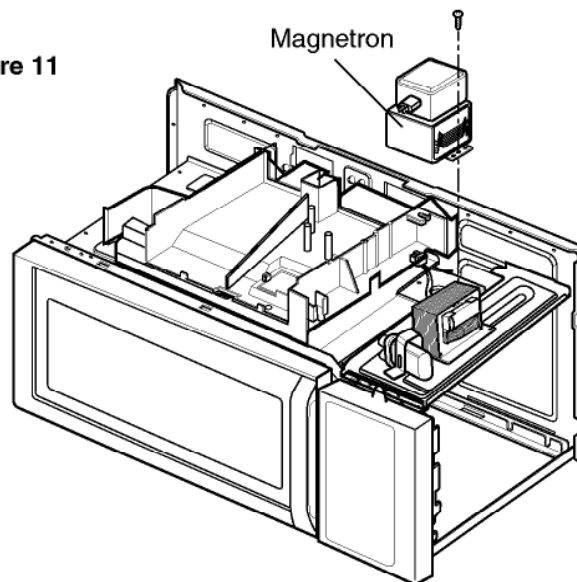


Figure 13

## F. REMOVING DOOR (Figure 14)

- (1) Remove the vent grille by two screws securing it to the outcase loosening.
- (2) Lift up and draw the door.

### NOTES:

- After replacing the door, be sure to check that the primary interlock switch, the secondary interlock switch and the interlock monitor switch is in good operating normally.
- After replacing the door, check for microwave energy leakage with a survey meter. Microwave energy leakage must be below the limit of  $5\text{mW}/\text{cm}^2$ . (With a 275 ml water load)

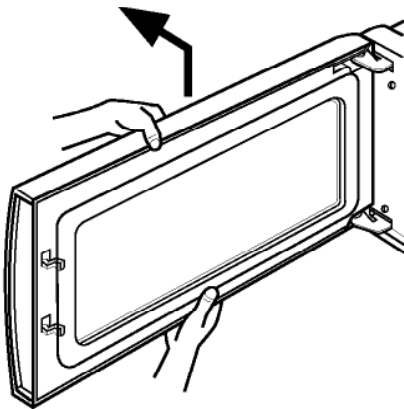


Figure 14

## G. DISASSEMBLING DOOR (Figure 15)

- (1) Remove the dielectric choke by using knife blade or small screw driver, etc.
- (2) Remove two screws securing it to the door handle.

**CAUTION:** Be careful not to damage door seal plate with the screwdriver.

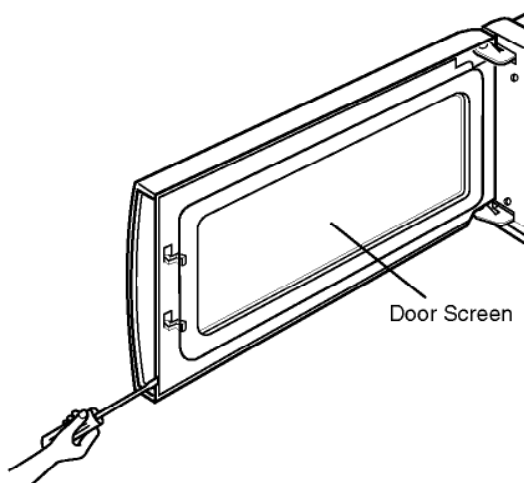
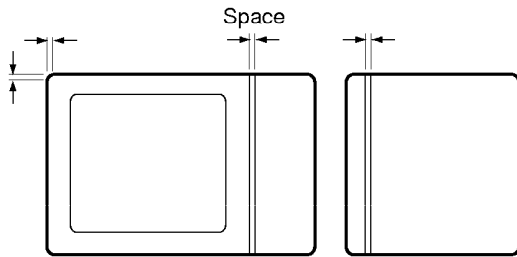


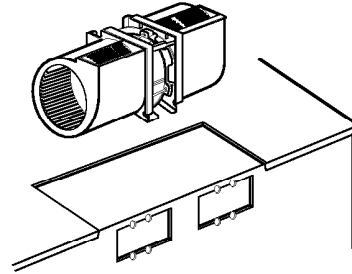
Figure 15

## H. ASSEMBLING DOOR

- (1) 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.



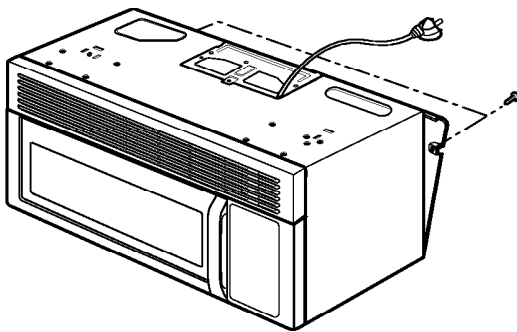
- (3) Carefully pull the ventilation motor ASS'Y out of the microwave oven. (See Figure 18)



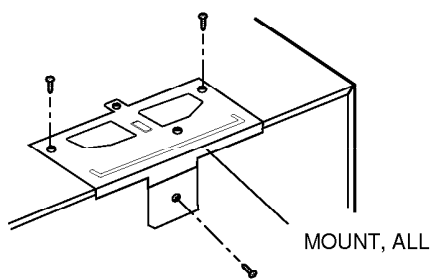
**Figure 18**

## I. REMOVING THE VENTILATION FAN ASS'Y

- (1) Remove the mounting plate by removing two screws securing it to the back plate. (See Figure 16)
- (2) Remove the two screws securing the MOUNT, ALL and one screw securing the ventilation fan ASS'Y. (See Figure 17)



**Figure 16**



**Figure 17**

## K. REMOVING THE TURNTABLE MOTOR

- (1) Remove the turntable.
- (2) Remove the turntable shaft VERY CAREFULLY with a slotted screwdriver. (Figure 19)
- (3) Remove the base plate by removing 6 screws securing it to the oven cavity. (Figure 20)
- (4) Disconnect the leadwire from the turntable motor terminals.
- (5) Remove the 2 screws securing the turntable motor to the oven cavity ASS'Y. (Figure 21)

### NOTES:

- Remove the leadwire from the turntable motor VERY CAREFULLY.
- Be sure to grasp the connector not the wires when removing.

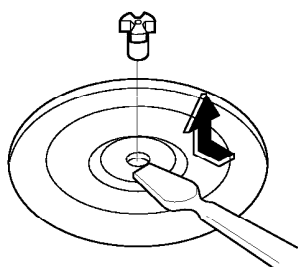


Figure 19

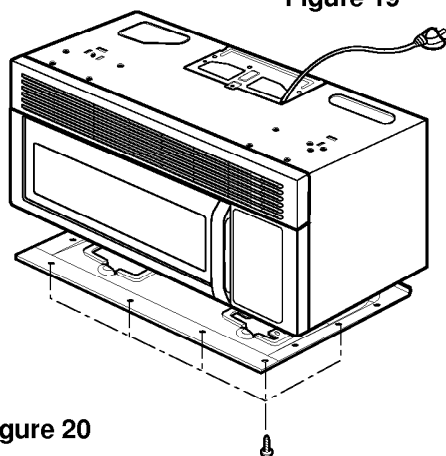


Figure 20

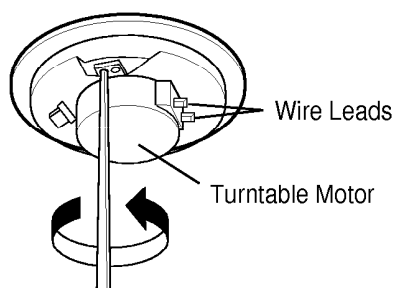


Figure 21

# INTERLOCK SYSTEM

## 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.

### ADJUSTMENT PROCEDURES

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

The Interlock Monitor and Primary Interlock Switch act 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.

Mounting of the primary/monitor/secondary switches to the latch board.

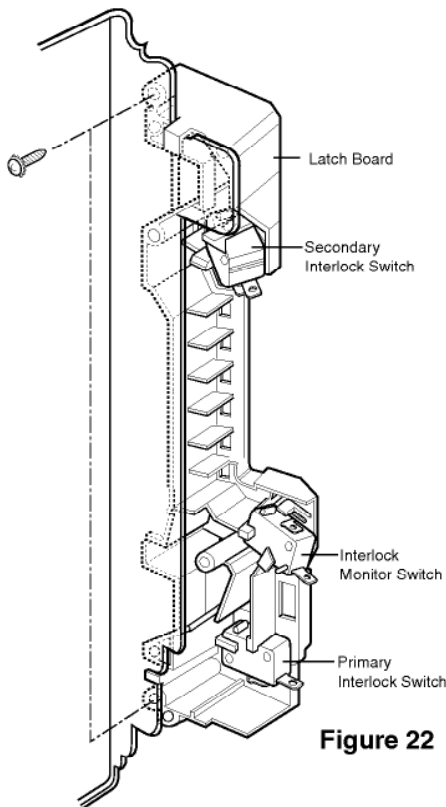


Figure 22

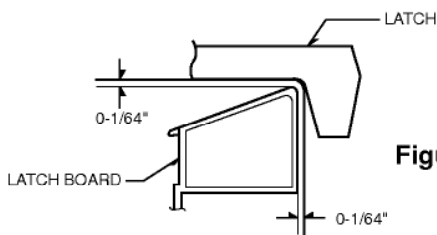


Figure 23

### 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 22.
- (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 23 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". 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 Secondary 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

Make sure the microwave energy leakage is below the limit of 1mW/cm<sup>2</sup> (with a 275 ml water load) and 5mW/cm<sup>2</sup> (with a 275 ml water load without the cabinet) when measured with a survey meter.

# INTERLOCK CONTINUITY TEST

## A. PRIMARY INTERLOCK SWITCH TEST

When the door is opened slowly, an audible **click** should be heard at the same time or successively at intervals and 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

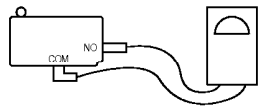


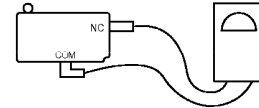


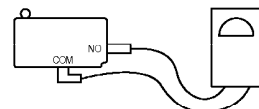


Disconnect the wire lead from the secondary switch.

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.				

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

TYPE NO. SZM-V16-FA-63 OR VP-533A-OF OR V-5230Q FOR PRIMARY SWITCH

TYPE NO. SZM-V16-FA-62 OR VP-532A-OF OR V-5220Q FOR MONITOR SWITCH

TYPE NO. SZM-V16-FA-63 OR VP-533A-OF OR V-5230Q FOR SECONDARY SWITCH

## TEST AND CHECKOUT PROCEDURES, AND TROUBLE SHOOTING

### - CAUTIONS -

- DISCONNECT THE POWER SUPPLY CORD FROM THE WALL OUTLET WHENEVER REMOVING THE CABINET FROM THE UNIT. PROCEED WITH THE TESTS ONLY AFTER DISCHARGING THE HIGH VOLTAGE CAPACITOR AND REMOVING THE WIRE LEADS FROM THE PRIMARY WINDING OF THE HIGH VOLTAGE TRANSFORMER. (SEE FIGURE 24)
- ALL OPERATIONAL CHECKS WITH MICROWAVE ENERGY MUST BE DONE WITH A LOAD (1 LITER OF WATER IN CONTAINER) IN THE OVEN.

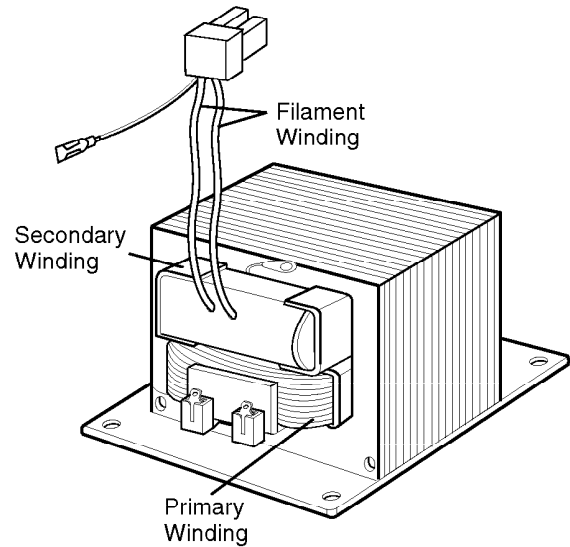
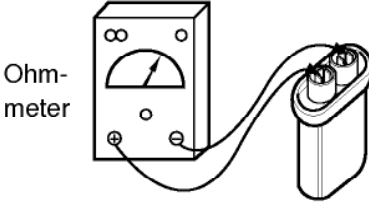
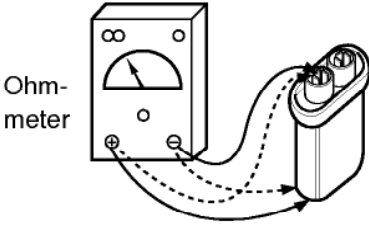
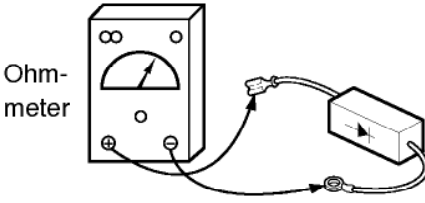
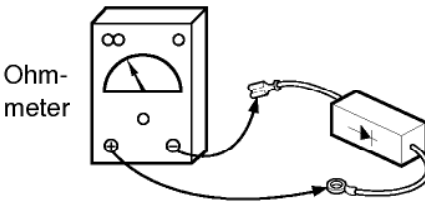


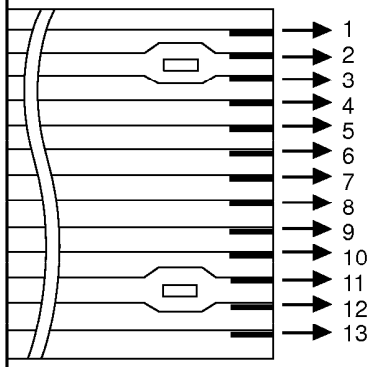
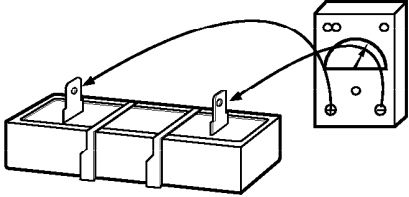
Figure 24

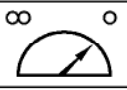

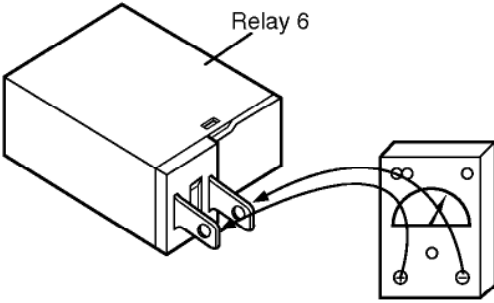
### A. TEST PROCEDURES

COMPONENTS	TEST PROCEDURES	RESULTS
MAGNETRON (Wire leads are removed)	<ol style="list-style-type: none"> <li>1) Measure the resistance: Across the filament terminals of the magnetron with an ohm-meter on Rx1 scale.</li> <li>2) Measure the resistance: Between each filament terminal of the magnetron and the chassis ground with an ohm-meter on high test scale.</li> </ol>	<p>Normal reading: Less than 1 ohm.</p> <p>Normal reading: Infinite ohms.</p> <p>NOTE: Replace the magnetron, if the magnetron checks and all of the high voltage component tests are good, but the unit still does not heat a load.</p>
HIGH-VOLTAGE TRANSFORMER (Wire leads are removed)	<ol style="list-style-type: none"> <li>1) Measure the resistance: With an ohm-meter on Rx1 scale. <ol style="list-style-type: none"> <li>a. Primary winding;</li> <li>b. Filament winding;</li> <li>c. Secondary winding;</li> </ol> </li> <li>2) Measure the resistance: With an ohm-meter on highest scale. <ol style="list-style-type: none"> <li>a. Primary winding to ground;</li> <li>b. Filament winding to ground;</li> </ol> </li> </ol>	<p>Normal readings: Approx. 0.3 to 0.5 ohm. Less than 0.1 ohm. Approx. 65 to 120 ohms.</p> <p>Normal readings: Infinite ohms. Infinite ohms.</p>

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

COMPONENTS	TEST PROCEDURES	RESULTS
HIGH-VOLTAGE CAPACITOR	Measure the resistance: (1) Terminal to terminal   <b>Figure 25-a</b>	Normal reading: Momentarily indicates several ohms, and then gradually returns to infinite ohms.  Abnormal reading: Indicates continuity or infinite ohms from the beginning.
	(2) Terminal to case   <b>Figure 25-b</b>	Normal readings: Infinite.  Abnormal reading: Indicates continuity.
HIGH-VOLTAGE DIODE	Measure the continuity: (1) Forward   <b>Figure 26-a</b>	Normal readings: continuity.  Abnormal reading: Infinite.
	(1) Reverse   <b>Figure 26-b</b>	Normal readings: Infinite.  Abnormal reading: continuity.

COMPONENTS	TEST PROCEDURES	RESULTS																																																													
<p>TOUCH KEY BOARD</p>	<p>Measure the resistance between terminal pins of connector KEY CONNECTOR. NOTE: When reconnecting the FPC connector, make sure that the holes on the FPC connector are properly engaged with hooks on the plastic fastener.</p> <p>MATRIX CIRCUIT FOR TOUCH KEY BOARD CONNECTOR(KEY CON) (For detail matrix circuit of each model, refer to page 5-2.)</p> <table border="1" data-bbox="435 741 938 1106"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> <tr> <td>8</td> <td>FAN HI/LOW/OFF</td> <td>N.C</td> <td>COOK</td> <td>POPCORN</td> <td>TIME</td> <td>5</td> <td>0</td> </tr> <tr> <td>9</td> <td>LIGHT HI/LOW/OFF</td> <td>CUSTOM SET</td> <td>REHEAT</td> <td>POTATO</td> <td>AUTO DEFROST</td> <td>6</td> <td>1</td> </tr> <tr> <td>10</td> <td>N.C</td> <td>TIME OF DAY</td> <td>QUICK TOUCH PLUS</td> <td>BEVERAGE</td> <td>TIMER</td> <td>7</td> <td>2</td> </tr> <tr> <td>11</td> <td>N.C</td> <td>N.C</td> <td>N.C</td> <td>PIZZA</td> <td>POWER</td> <td>8</td> <td>3</td> </tr> <tr> <td>12</td> <td>N.C</td> <td>STOP CLEAR</td> <td>START ENTER</td> <td>N.C</td> <td>HOLD WARM</td> <td>9</td> <td>4</td> </tr> <tr> <td>13</td> <td>N.C</td> <td>N.C</td> <td>FROZEN ENTREE</td> <td>N.C</td> <td>N.C</td> <td>N.C</td> <td>N.C</td> </tr> </table> <p>Figure 27</p>		1	2	3	4	5	6	7	8	FAN HI/LOW/OFF	N.C	COOK	POPCORN	TIME	5	0	9	LIGHT HI/LOW/OFF	CUSTOM SET	REHEAT	POTATO	AUTO DEFROST	6	1	10	N.C	TIME OF DAY	QUICK TOUCH PLUS	BEVERAGE	TIMER	7	2	11	N.C	N.C	N.C	PIZZA	POWER	8	3	12	N.C	STOP CLEAR	START ENTER	N.C	HOLD WARM	9	4	13	N.C	N.C	FROZEN ENTREE	N.C	N.C	N.C	N.C	<table border="1" data-bbox="970 297 1442 461"> <tr> <td rowspan="2">Resistance value</td> <td>When touched</td> <td>When not touched</td> </tr> <tr> <td>Less than 400 ohms</td> <td>More than 1 mega ohm</td> </tr> </table> <p>FPC CONNECTOR Top</p>  <p>Figure 28</p>	Resistance value	When touched	When not touched	Less than 400 ohms	More than 1 mega ohm
	1	2	3	4	5	6	7																																																								
8	FAN HI/LOW/OFF	N.C	COOK	POPCORN	TIME	5	0																																																								
9	LIGHT HI/LOW/OFF	CUSTOM SET	REHEAT	POTATO	AUTO DEFROST	6	1																																																								
10	N.C	TIME OF DAY	QUICK TOUCH PLUS	BEVERAGE	TIMER	7	2																																																								
11	N.C	N.C	N.C	PIZZA	POWER	8	3																																																								
12	N.C	STOP CLEAR	START ENTER	N.C	HOLD WARM	9	4																																																								
13	N.C	N.C	FROZEN ENTREE	N.C	N.C	N.C	N.C																																																								
Resistance value	When touched	When not touched																																																													
	Less than 400 ohms	More than 1 mega ohm																																																													
<p>RESISTOR CIMENT</p>	<p>Measure the resistance</p>  <p>Figure 29</p>	<p>Normal reading: Approx. 15 ohm</p> <p>Abnormal reading: Infinite</p>																																																													

COMPONENTS	TEST PROCEDURES	RESULTS		
		POWER LEVEL		
RELAY2	<p>Check for continuity of relay 6 with an ohm-meter. (Remove wire leads from relay 6 and operate the unit.)</p>  <p style="text-align: center;">Figure 30</p> <p><b>⚠ CAUTION: The relay connector 2(White) and 5(Red) must be correctly connected Relay 6. These two connectors are not interchangeable.</b></p>	1	4 sec	18 sec
		2	6 sec	16 sec
		3	8 sec	14 sec
		4	10 sec	12 sec
		5	12 sec	10 sec
		6	14 sec	8 sec
		7	16 sec	6 sec
		8	18 sec	4 sec
		9	20 sec	2 sec
		10	22 sec	0

**NOTES:**

- A MICROWAVE ENERGY 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.

**B. CHECKOUT PROCEDURES**

(1) CHECKOUT PROCEDURES FOR FUSE BLOWING

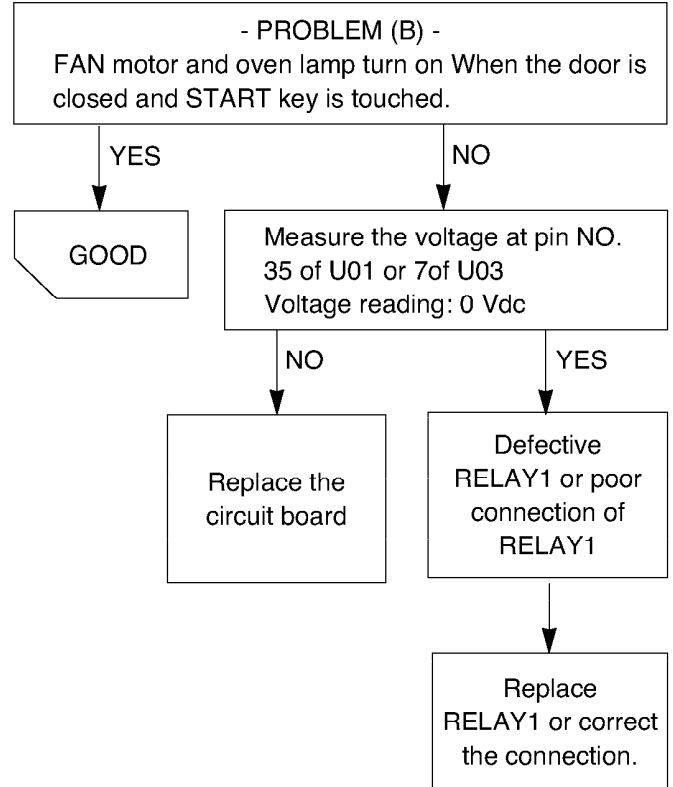
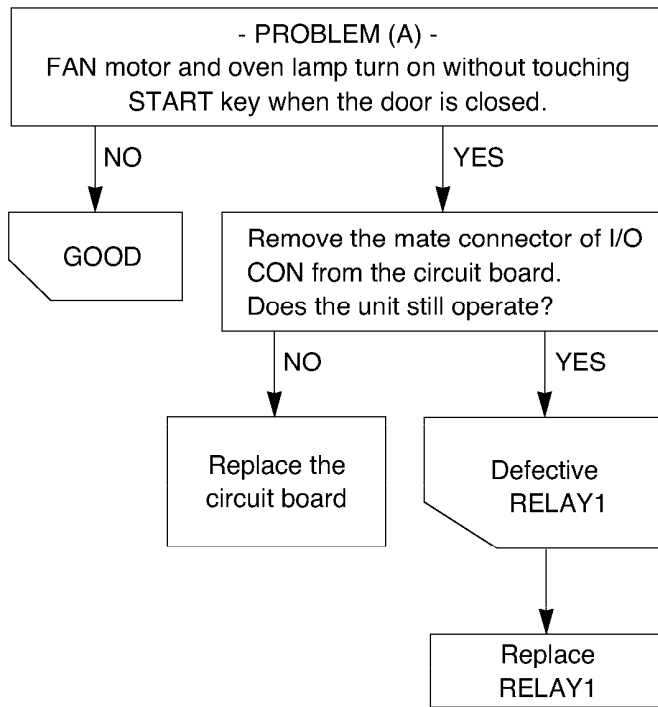
**CAUTION:** REPLACE BLOWN FUSE WITH 20 AMPERE FUSE.

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 all 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 INTERLOCK ADJUSTMENT PROCEDURES on page 7-12 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) Proper temperature measurement is not obtained.
- 4) The buzzer does not sound or continues to sound.
- 5) Some segments of one or more digits do not light up, or they continue to light up, or segments light when they should not.
- 6) Wrong figures appear.
- 7) The figures of all digits.
- 8) Some of the indicators do no flicker light up.
- 9) 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.

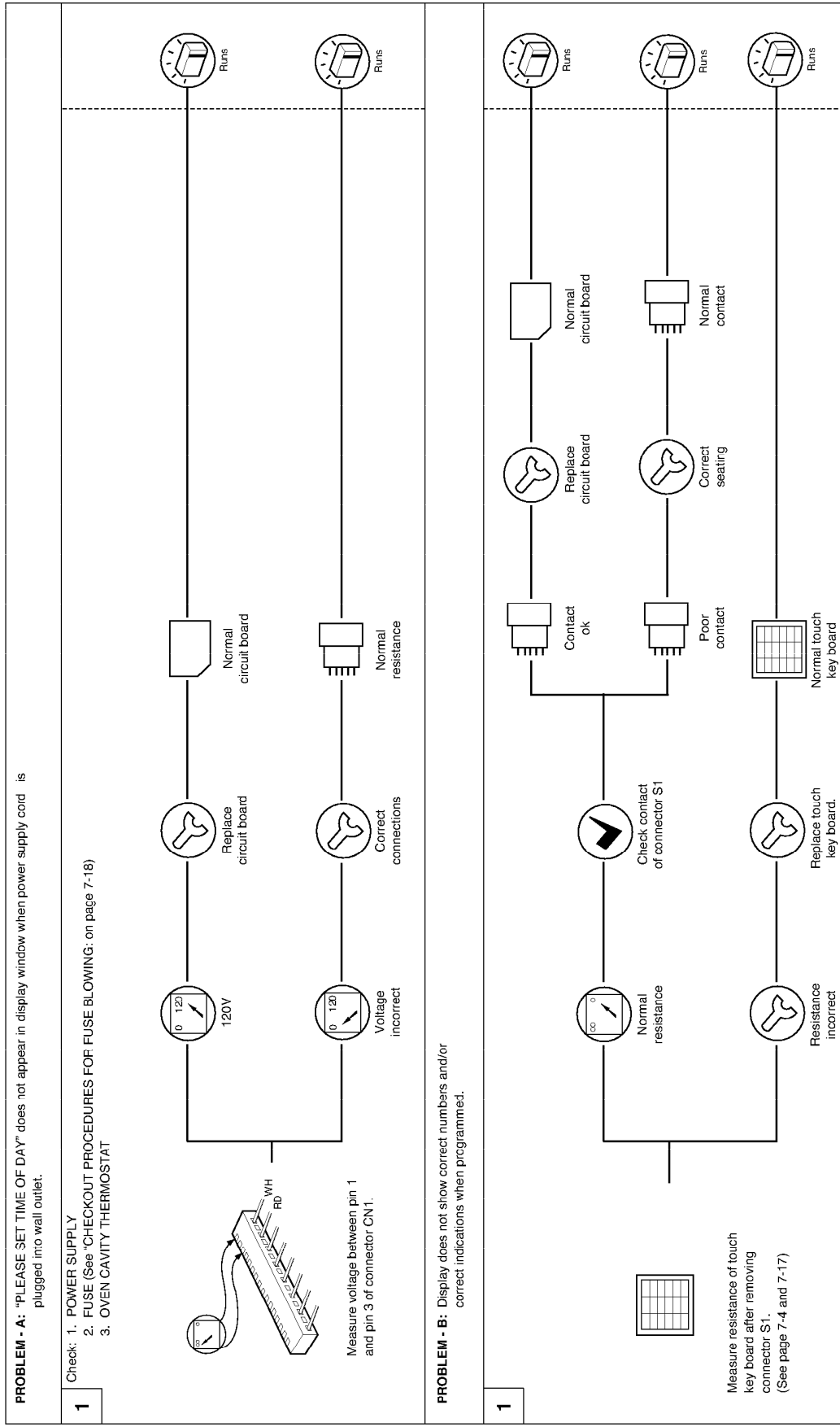
**C. TROUBLE SHOOTING**

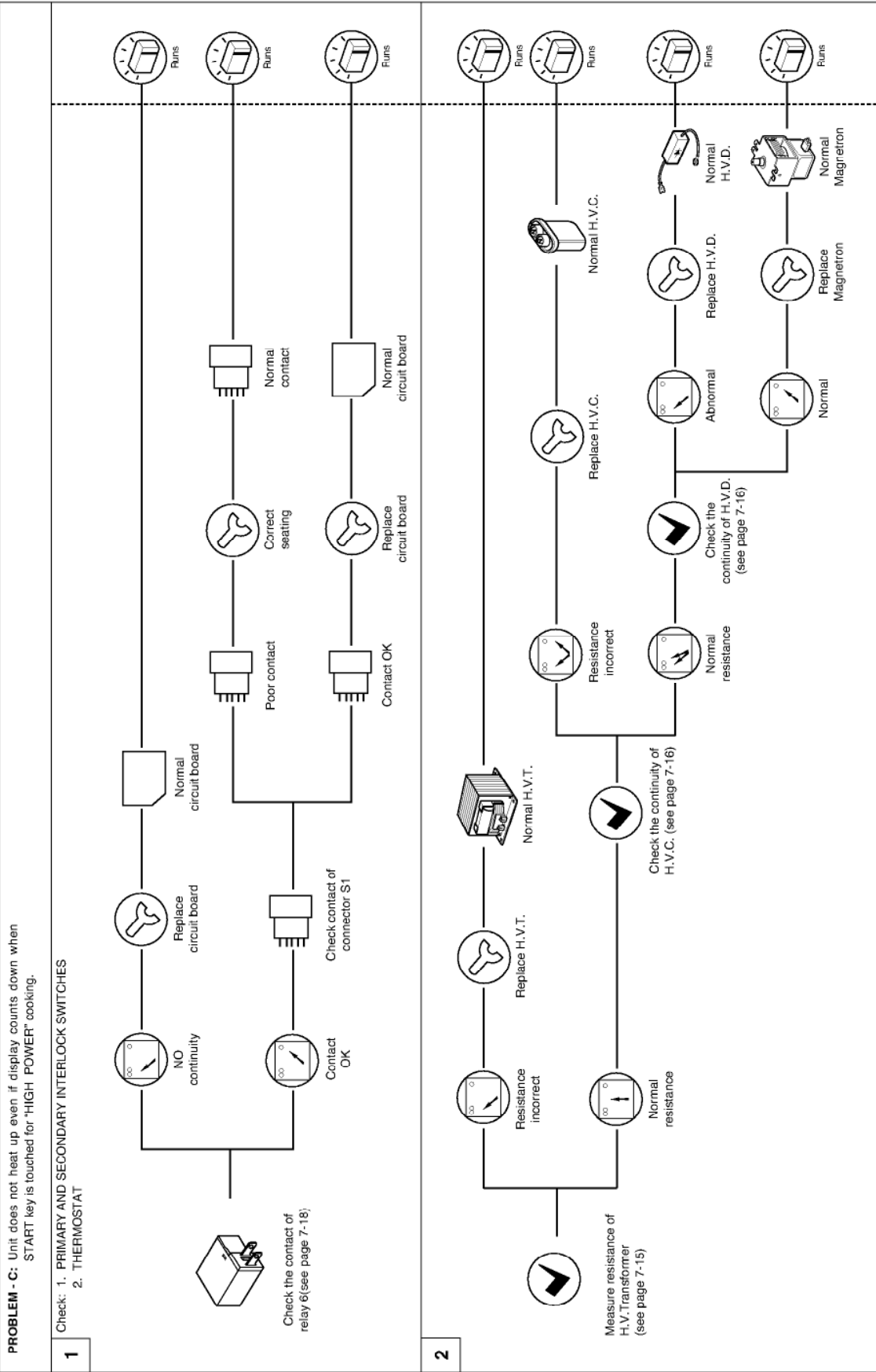
Before following this troubleshooting read "TRIAL OPERATION" on page 6-1.

fU "DISPLAY" Problems, "A" thru "C"

fU "HELP UP" Problems, "D" thru "E"

fU "BUZZER Problems, "F"





**PROBLEM - D:** No buzzing when touching the key, between stages or at end of cooking

1



Check normal operation circuit board



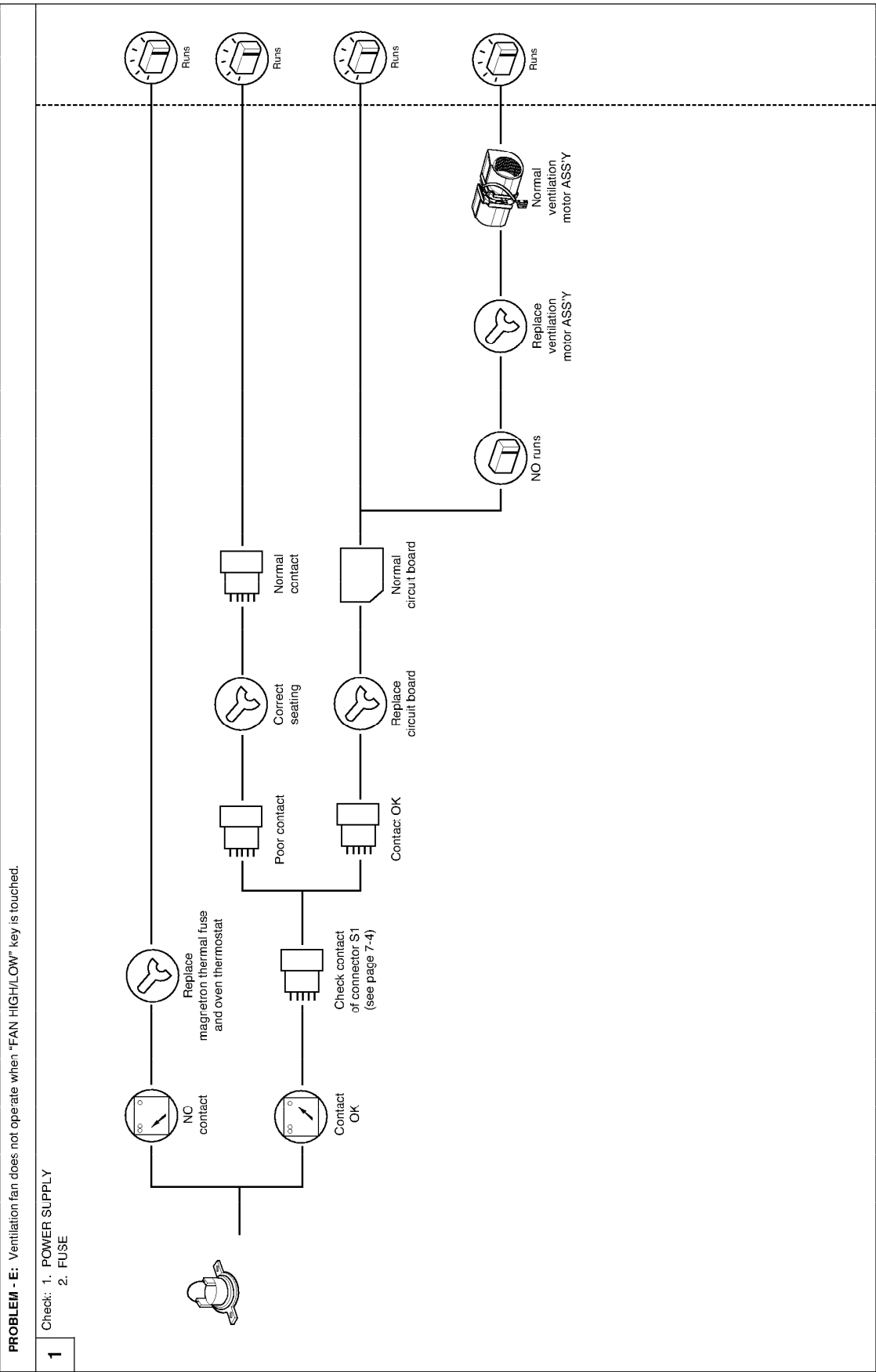
Replace circuit board



Normal circuit board

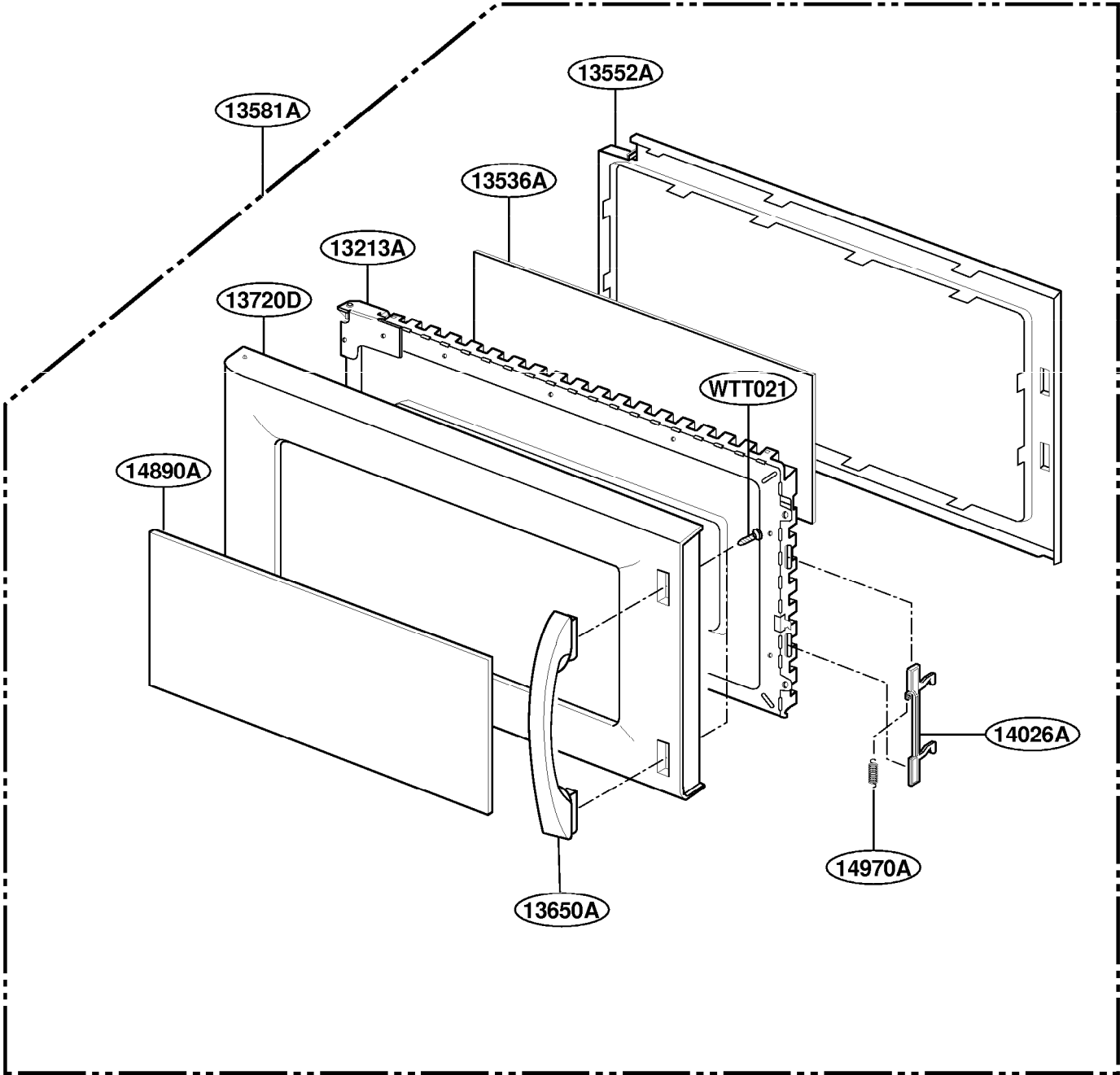


Runs

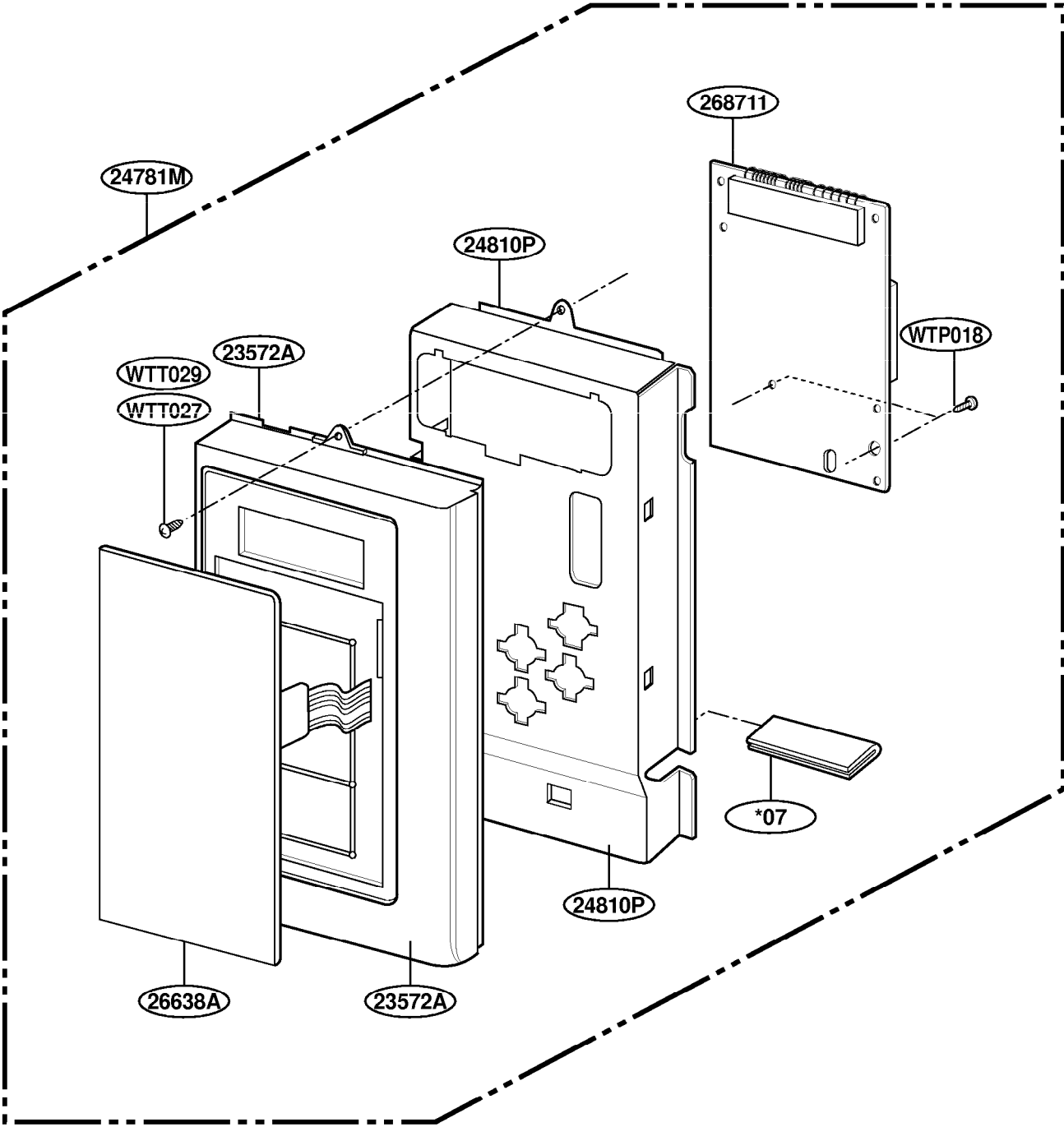


# EXPLODED VIEW

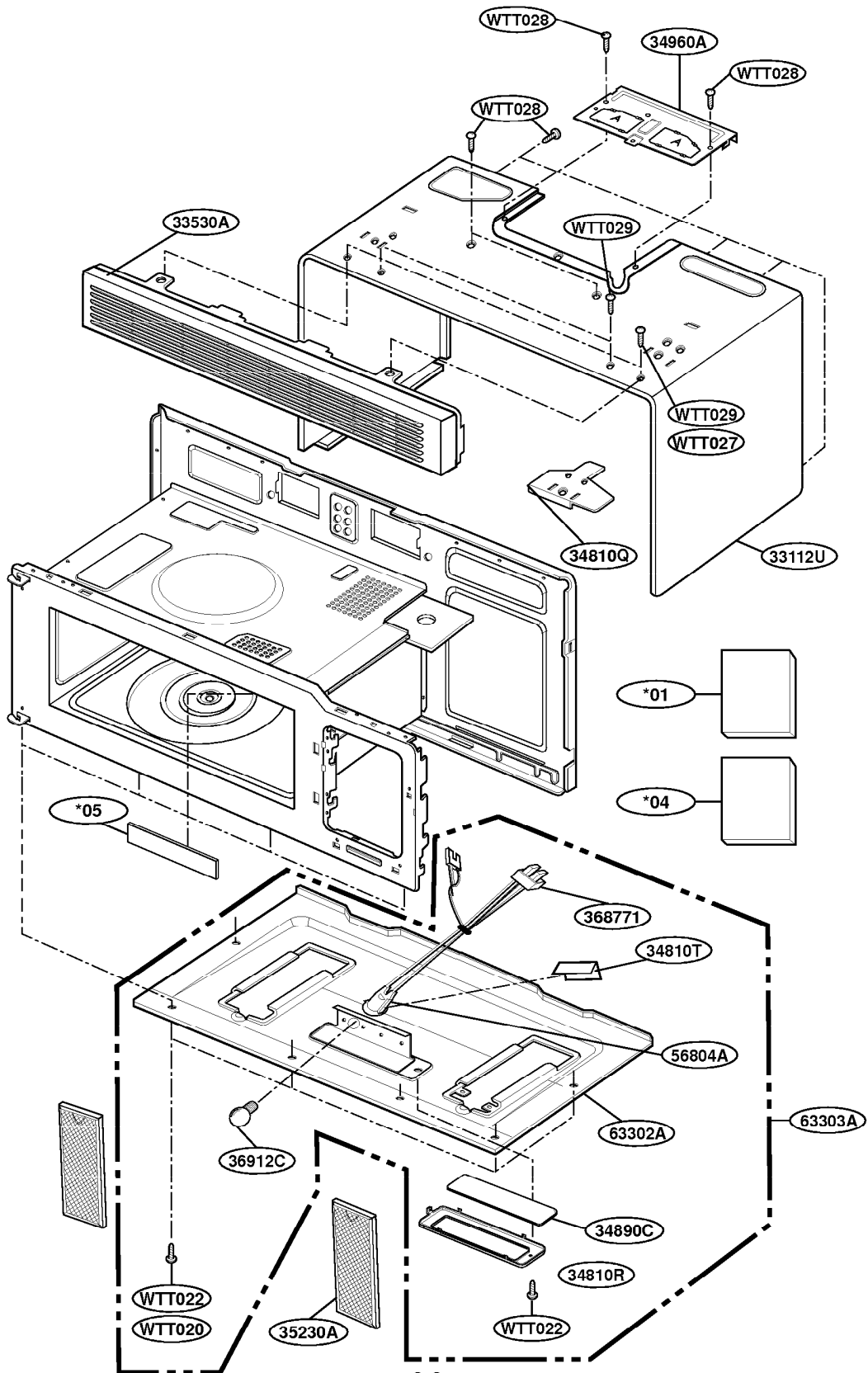
## DOOR PARTS



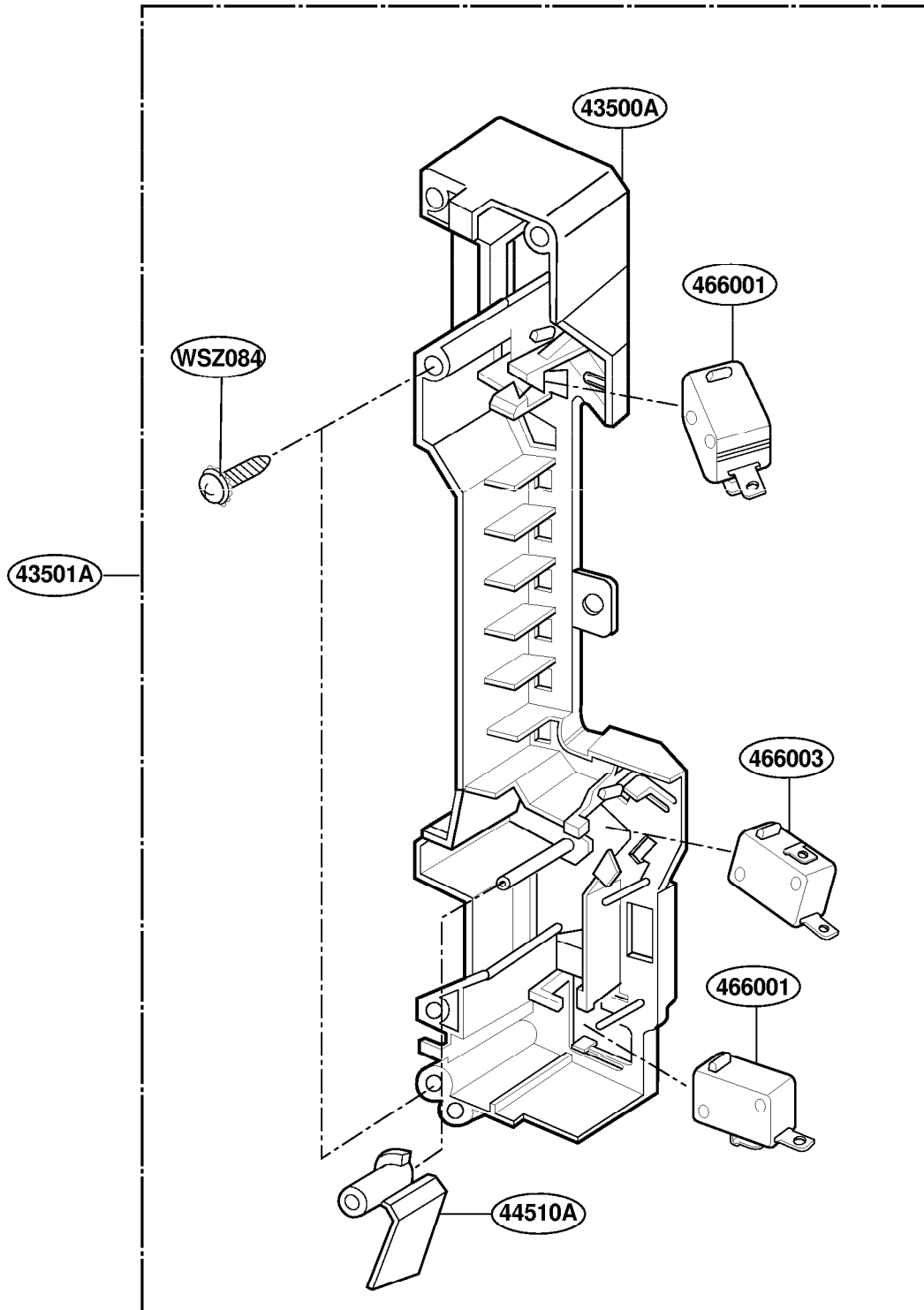
# CONTROLLER PARTS



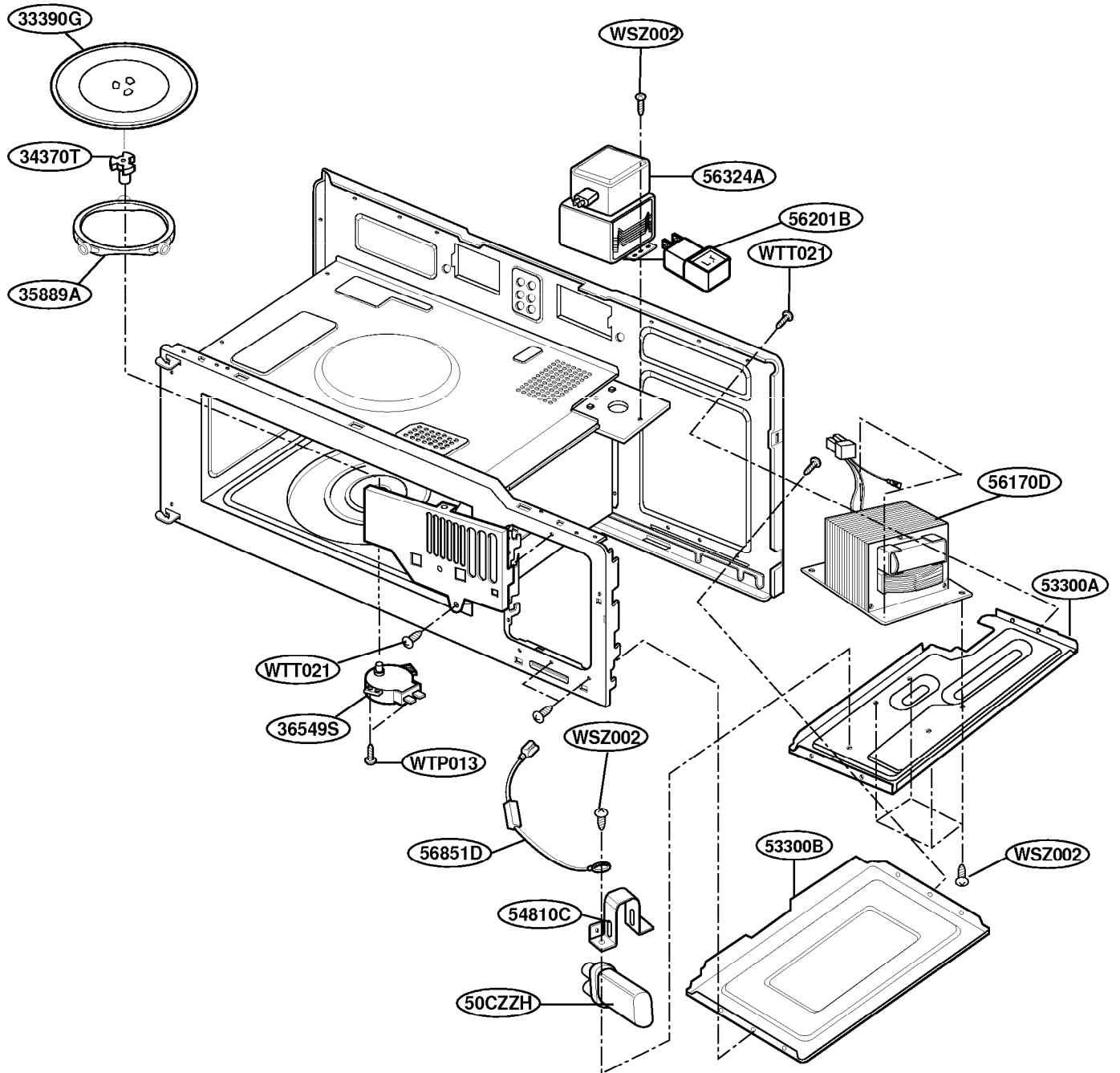
# OVEN CAVITY PARTS



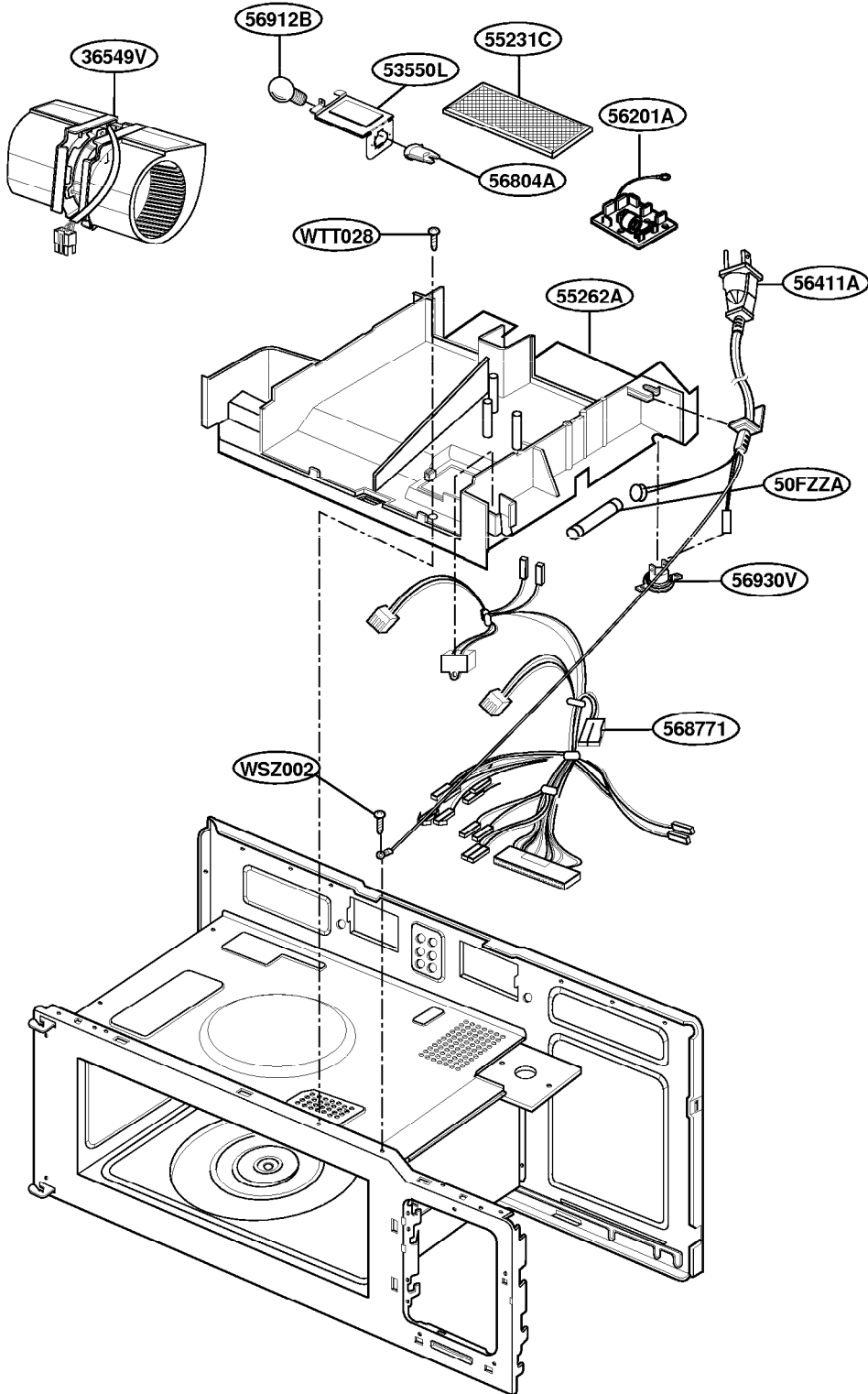
# LATCH BOARD PARTS



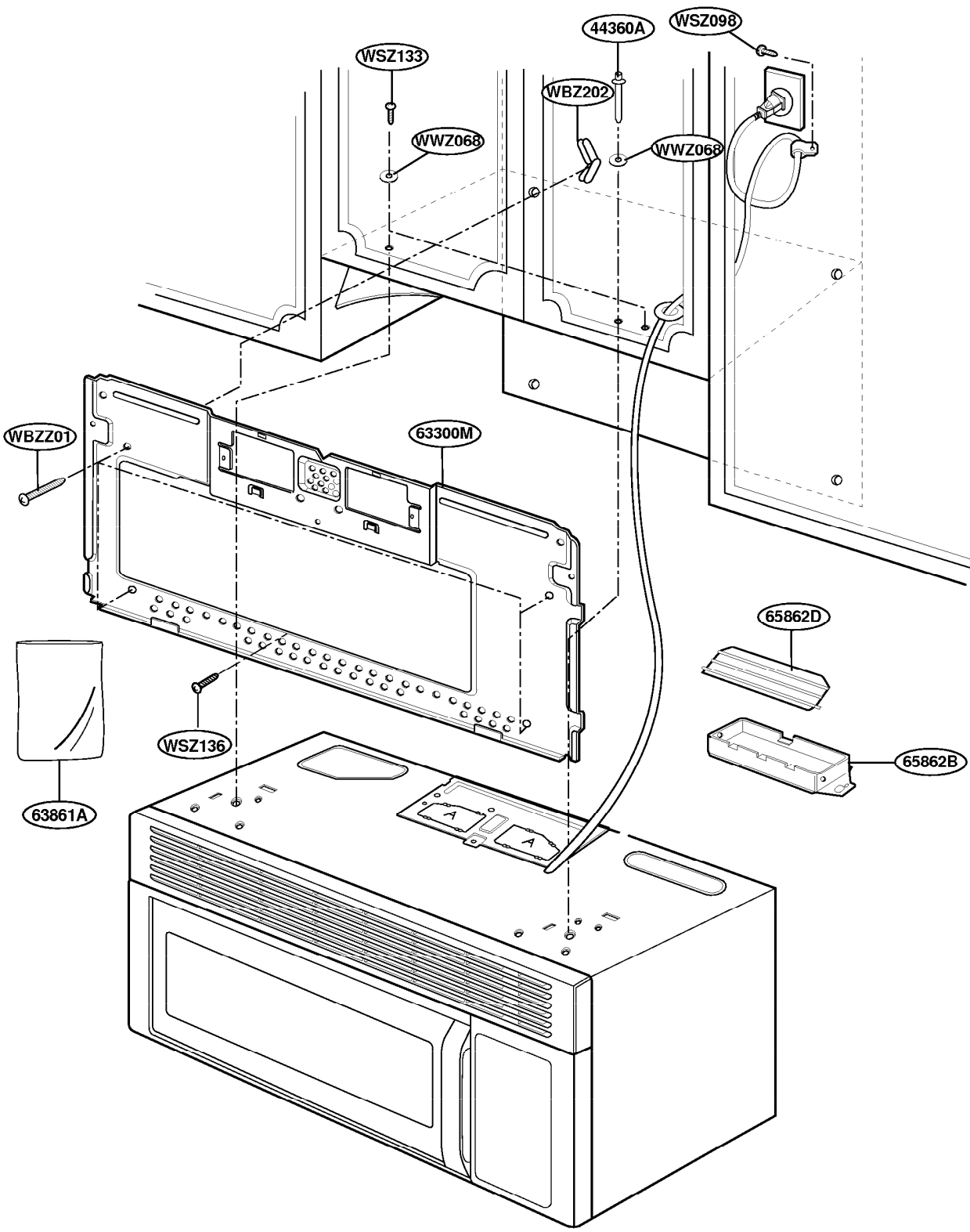
# INTERIOR PARTS(I)



# INTERIOR PARTS (II)



# INSTALLATION PARTS



# REPLACEMENT PARTS LIST

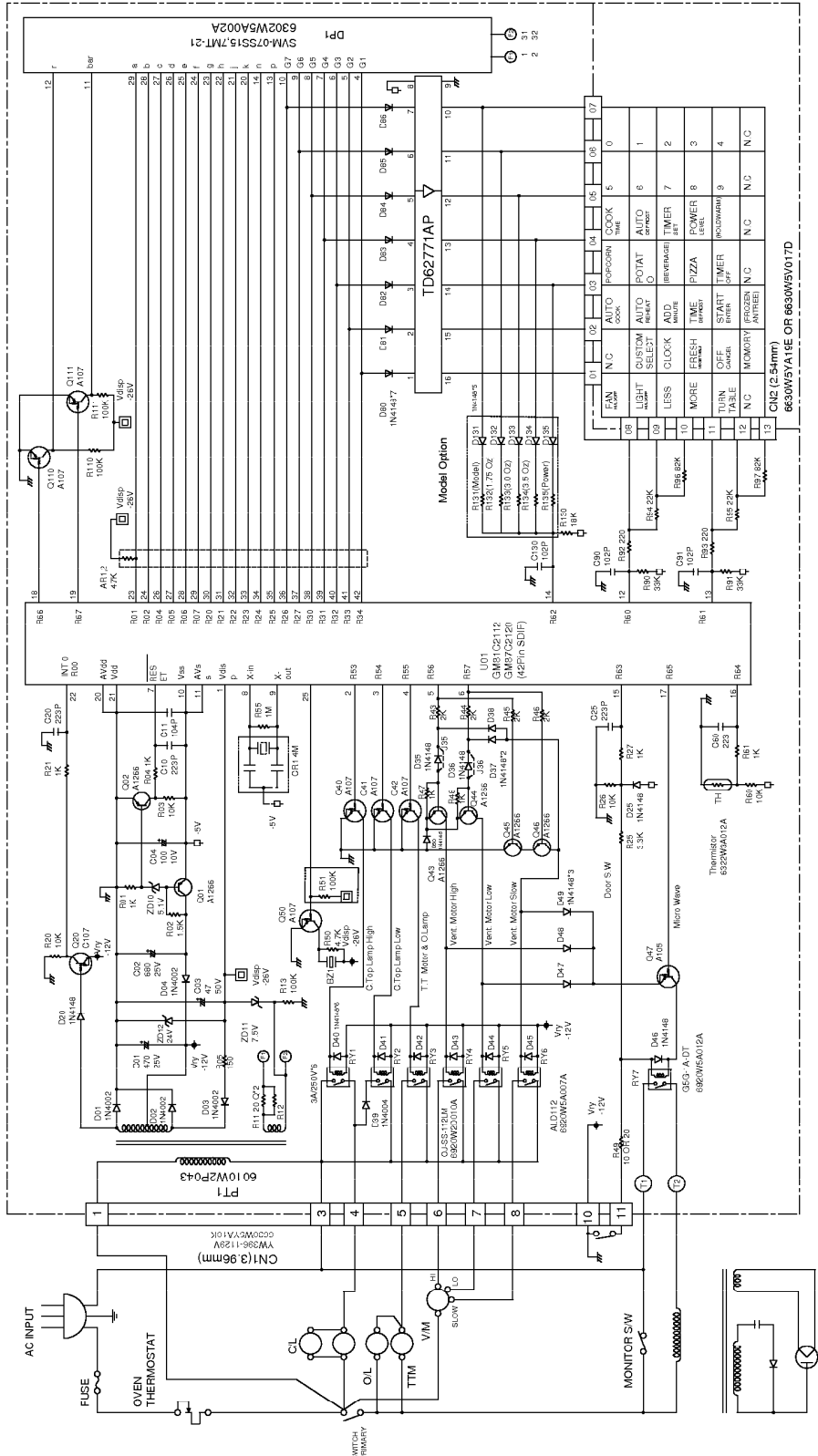
LOC. NO.	PART NO.	DESCRIPTION	SVC	ALTER
*01	3828W5A1955	MANUAL,[OWNERS]MWO	R	
*02	3828W5S1820	MANUAL,[SERVICE]	R	
*03	3878W5B0010	COOK BOOK	R	
*04	3828W5U0136	MANUAL,[INSTALLATION]	R	
*07	3840W3T001J	CARD,[TECHNICAL]	R	
13213A	3213W1A035D	DOOR FRAME ASSY	R	
13536A	3536WRA001R	SEAL TAPE	R	
13552A	3552W1A032B	CHOKE COVER	R	
13581A	3581W1A280B	DOOR ASSY	R	
13650A	3651W1A004A	HANDLE ASSY	R	
13720D	3720W0D193A	PANEL,[DOOR]	R	
14026A	4026W2A015A	LATCH	R	
14890A	4890W1D042P	GLASS	R	
14970A	4970WRA001G	SPRING	R	
23572A	3572W1A174A	CONTROL PANEL	R	
24781S	4781W1A210F	CONTROLLER ASSY,[SUB]	R	
24810P	4810W1A017A	BRACKET,[CONTROL PANEL]	R	
26638A	6638W1A072A	KEY MEMBRANE	R	
268711	6871W1S045B	PWB(PCB) ASSEMBLY,[MAIN]	R	
33052A	3052W3A016A	CANOPY,[RESIN]	R	
33112U	3112W1U026A	OUT CASE,[U-BENDING]	R	
33390G	1B71961F	TRAY,[GLASS]	R	
33530A	3530W0A018A	GRILLE,[VENT GRILL]	R	
33740A	3740W1A005A	PROTECTOR (MECH)	R	
34370T	4370W3A001A	SHAFT,[TURN TABLE SHAFT]	R	
34810Q	4810W3G062A	BRACKET,[MOUNT]	R	
34810T	4810W3G100A	BRACKET,COOKTOP	R	
34890C	4890W4A001B	GLASS	R	4890W4A001F
34960A	4960W2A008B	MOUNT	R	
35230A	2B72705B	FILTER(MECH),[GREASE]	R	
35889A	5889W2A012A	ROTATING RING ASSY	R	
36549S	6549W1S007G	MOTOR(CIRC),SYNCHRONOUS	R	2B72754E
36549V	6549W1V006C	MOTOR(CIRC),VENTILATION	R	
368771	6877W1A340A	CONNECTOR ASSEMBLY	R	
36912C	3B70067A	LAMP[OVEN/BASELESS]	R	
43500A	3500W1A005A	BOARD,[LATCH BOARD]	R	
43501A	3501W1A016K	BOARD ASSY,LATCH	R	
44510A	4510W4A005A	LEVER	R	
466001	3B73362F	SWITCH,MICRO	R	6600W1K004C

R,S : SERVICE PARTS  
\* : ALTERNATE PARTS

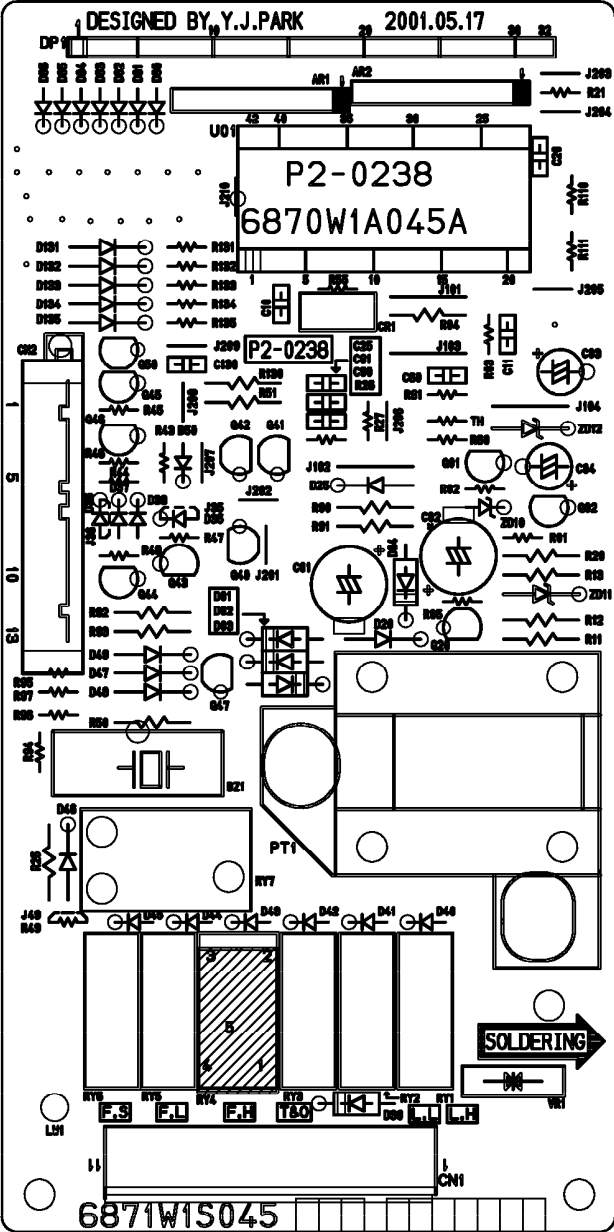
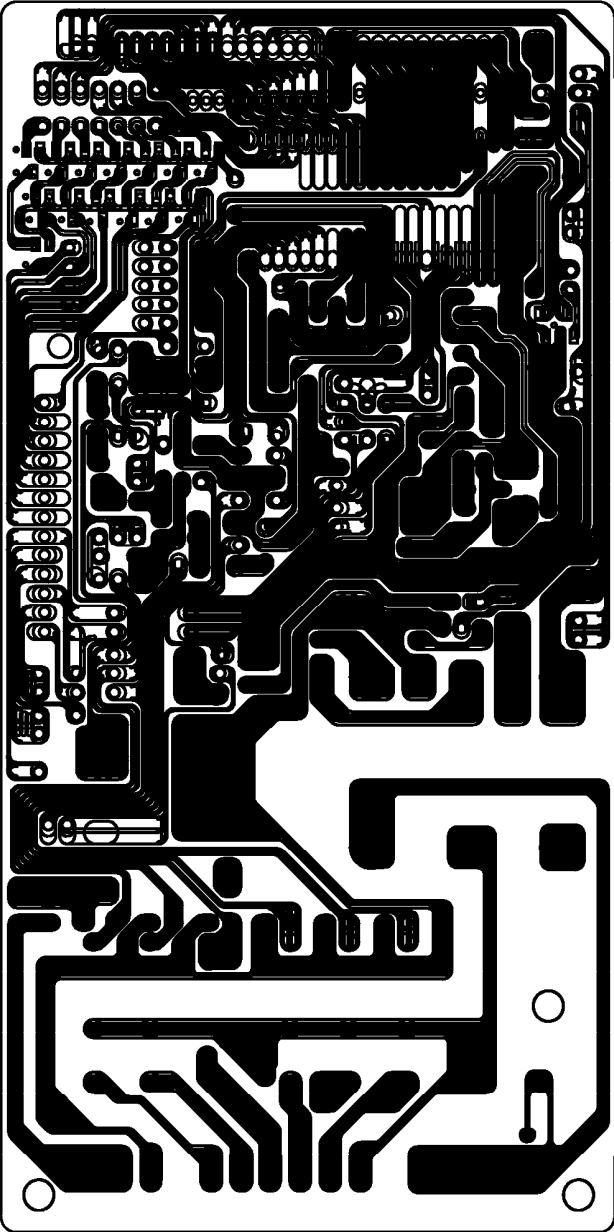
LOC. NO.	PART NO.	DESCRIPTION	SVC	ALTER
466003	3B73361E	SWITCH,MICRO	R	6600W1K004B
50CZZH	0CZZW1H002H	CAPACITOR,DRAWING[HIGH VOLTAGE]	R	0CZZW1H004B
50FZZA	3B74133K	FUSE,DRAWING	R	
53300A	3300W1A003A	PLATE,[BOTTOM PLATE]	R	
53300B	3300W1A002A	PLATE,[BOTTOM PLATE]	R	
53550L	3550W3A082A	COVER,[LAMP COVER]	R	
54810C	4810W3C002A	BRACKET,[CAPACITOR]	R	
55231C	2B72706D	FILTER(MECH),[CHARCOAL]	R	
55262A	5208W0A005A	DUCT,[AIR DUCT]	R	
56170D	6170W1D051A	TRANSFORMER,HIGH VOLTAGE	R	
56201A	2B72130F	FILTER ASSY,NOISE	R	
56201B	6201W2A019D	FILTER ASSY,CHOKE	R	
56324A	2B71732B	MAGNETRON	R	
56411A	6411W1A010K	POWER CORD ASSY	R	6411W1A010J
56804A	6804W3A001A	SOCKET(CIRC),LAMP	R	
56851D	6021W3B001A	CABLE ASSEMBLY	R	
568771	6877W1A352A	CONNECTOR ASSEMBLY	R	
56912B	6912W3Q001A	LAMP[OVEN/BASELESS]	R	
56930V	6930W3A001S	THERMOSTAT	R	6930W1A002K
63300M	3300W0M003A	PLATE,[MOUNTING PLATE]	R	
63302A	3302W0A013H	BASE PLATE	R	
63303A	3303W1A041N	BASE PLATE ASSY	R	
63861A	2B72771A	KIT ASSY	R	2B72771F
64360A	4360W4A001A	ROD	R	
65862B	3B72144A	EXHAUST,ADAPTER	R	
65862D	3B71432A	EXHAUST,DAMPER	R	
WBZZ01	4B72059B	BOLT[TOGGLE]	R	
WBZZ02	4B72059C	BOLT[TOGGLE]	R	
WSZ002	1SBF0402418	SCREW TAP TITE(S),BINDING HEAD	R	
WSZ084	4B70188B	SCREW,	R	
WSZ098	4B70637B	SCREW,	R	
WSZ133	4B73234A	SCREW,	R	
WSZ136	4B73243A	SCREW,	R	
WTP004	1TPL0302418	SCREW TAPPING,PAN HEAD	R	
WTP013	1TPL0402418	SCREW TAPPING,PAN HEAD	R	
WTP018	1TPL0402818	SCREW TAPPING,PAN HEAD	R	
WTT021	1TTL0402418	SCREW TAPPING,TRUSS HEAD	R	
WTT022	1TTL0402422	SCREW TAPPING,TRUSS HEAD	R	
WTT028	1TTL0402818	SCREW TAPPING,TRUSS HEAD	R	
WTT029	1TTL0402822	SCREW TAPPING,TRUSS HEAD	R	
WWZ068	4B73055A	WASHER	R	

R,S : SERVICE PARTS  
\* : ALTERNATE PARTS

# SCHEMATIC DIAGRAM



# PRINTED CIRCUIT BOARD



# P.C.B PARTS LIST

LOC. NO.	PART NO.	DESCRIPTION	SPECIFICATION	SVC	ALTER
BZ1	6908W3YA01C	BUZZER,PIEZO CERAMIC	TFM-57 CW EAST 2048HZ 70DB 3V 0.0012A 0	R	6908W3YA01B
C01	0CE4771H610	CAPACITOR,AL.ELECTROLYTIC	470UF SM 25V M FL BULK	R	
C02	0CE6871H610	CAPACITOR,AL.ELECTROLYTIC	680UF SM 25V M FL BULK	R	
C03	0CE4761K638	CAPACITOR,AL.ELECTROLYTIC	47UF SM,SA 50V M FM5 TP 5	R	
C04	0CE1071D638	CAPACITOR,AL.ELECTROLYTIC	100M SM 10V M TP(5)	R	
C10	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C11	0CK1040K518	CAPACITOR,CERAMIC (HIGH DIELEC	0.1000UF 50V K B TA26	R	
C130	0CK1020H908	CAPACITOR,FIXED CERAMIC(High dielectric)	UP050 B102K-A	R	
C20	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	
C60	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C90	0CK1020H908	CAPACITOR,FIXED CERAMIC(High dielectric)	UP050 B102K-A	R	
C91	0CK1020H908	CAPACITOR,FIXED CERAMIC(High dielectric)	UP050 B102K-A	R	
CN1	6630W5YA10K	CONNECTOR (CIRC),WAFER	YW396-1129V YEONHO 11PIN 3.96MM STRAIGHT	R	
CN2	6630W5YA19E	CONNECTOR (CIRC),WAFER	FCZ254-13D	R	6630W5V017D
CR1	6212W5M002A	RESONATOR,CRYSTAL	CSTS0400 MURATA 4MHZ ±0.5% 15PF TP NONE	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	
D131	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D132	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D133	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D134	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D20	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D25	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D39	0DD400409AA	DIODE,RECTIFIER	1N4004TA TP KEC	R	
D40	0DD414809AB	DIODE	1N4148M TP ROHM-K	R	
D41	0DD414809AB	DIODE	1N4148M TP ROHM-K	R	
D42	0DD414809AB	DIODE	1N4148M TP ROHM-K	R	
D43	0DD414809AB	DIODE	1N4148M TP ROHM-K	R	
D44	0DD414809AB	DIODE	1N4148M TP ROHM-K	R	
D46	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D47	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D48	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D50	0DD414809AB	DIODE	1N4148M TP ROHM-K	R	
D80	0DD414809AB	DIODE	1N4148M TP ROHM-K	R	

R,S : SERVICE PARTS  
\* : ALTERNATE PARTS

LOC. NO.	PART NO.	DESCRIPTION	SPECIFICATION	SVC	ALTER
D81	0DD414809AB	DIODE	1N4148M TP ROHM-K	R	
D82	0DD414809AB	DIODE	1N4148M TP ROHM-K	R	
D83	0DD414809AB	DIODE	1N4148M TP ROHM-K	R	
D84	0DD414809AB	DIODE	1N4148M TP ROHM-K	R	
D85	0DD414809AB	DIODE	1N4148M TP ROHM-K	R	
D86	0DD414809AB	DIODE	1N4148M TP ROHM-K	R	
DP1	6302W5A002A	DIGITRON	SVM-07SS15, 7-MT-213GN	R	
LW1	3B72342F	CONNECTOR ASSEMBLY	85MM	R	
PT1	6010W2P043A	TRANSFORMER,POWER	120V/60HZ,144MA/12V	R	
Q01	0TRFC80002A	TRANSISTOR,BIPOLARS	FAIRCHILD KSA733C R/TP TO-92L 60V 100A	R	0TR101509AB
Q02	0TRFC80002A	TRANSISTOR,BIPOLARS	FAIRCHILD KSA733C R/TP TO-92L 60V 100A	R	0TR101509AB
Q110	0TR107009AC	TRANSISTOR	KRA107S-T1(PG)10-47 CHIP KEC	R	
Q111	0TR107009AC	TRANSISTOR	KRA107S-T1(PG)10-47 CHIP KEC	R	
Q20	0TRFC90012A	TRANSISTOR,BIPOLARS	FAIRCHILD KSR1006 TP TO92 50V 100MA	R	0TR107009AD
Q40	0TRFC90021A	TRANSISTOR,BIPOLARS	FAIRCHILD KSR2006 TP TO92 50V 100MA	R	0TR107009AE
Q41	0TRFC90021A	TRANSISTOR,BIPOLARS	FAIRCHILD KSR2006 TP TO92 50V 100MA	R	0TR107009AE
Q42	0TRFC90021A	TRANSISTOR,BIPOLARS	FAIRCHILD KSR2006 TP TO92 50V 100MA	R	0TR107009AE
Q43	0TRFC80002A	TRANSISTOR,BIPOLARS	FAIRCHILD KSA733C R/TP TO-92L 60V 100A	R	0TR101509AB
Q44	0TRFC80002A	TRANSISTOR,BIPOLARS	FAIRCHILD KSA733C R/TP TO-92L 60V 100A	R	0TR101509AB
Q47	0TRFC90002A	TRANSISTOR,BIPOLARS	FAIRCHILD KSR2013 TP TO92 50V 0.1A	R	0TR105009AD
Q50	0TRFC90021A	TRANSISTOR,BIPOLARS	FAIRCHILD KSR2006 TP TO92 50V 100MA	R	0TR107009AE
Q80	0TR107009AG	TRANSISTOR,BIPOLARS	KEC KRC107S R/TP SOT23 50V 100MA	R	
Q81	0TR107009AG	TRANSISTOR,BIPOLARS	KEC KRC107S R/TP SOT23 50V 100MA	R	
Q82	0TR107009AG	TRANSISTOR,BIPOLARS	KEC KRC107S R/TP SOT23 50V 100MA	R	
Q83	0TR107009AG	TRANSISTOR,BIPOLARS	KEC KRC107S R/TP SOT23 50V 100MA	R	
Q84	0TR107009AG	TRANSISTOR,BIPOLARS	KEC KRC107S R/TP SOT23 50V 100MA	R	
Q85	0TR107009AG	TRANSISTOR,BIPOLARS	KEC KRC107S R/TP SOT23 50V 100MA	R	
Q86	0TR107009AG	TRANSISTOR,BIPOLARS	KEC KRC107S R/TP SOT23 50V 100MA	R	
Q90	0TR107009AC	TRANSISTOR	KRA107S-T1(PG)10-47 CHIP KEC	R	
Q91	0TR107009AC	TRANSISTOR	KRA107S-T1(PG)10-47 CHIP KEC	R	
Q92	0TR107009AC	TRANSISTOR	KRA107S-T1(PG)10-47 CHIP KEC	R	
Q93	0TR107009AC	TRANSISTOR	KRA107S-T1(PG)10-47 CHIP KEC	R	
Q94	0TR107009AC	TRANSISTOR	KRA107S-T1(PG)10-47 CHIP KEC	R	
Q95	0TR107009AC	TRANSISTOR	KRA107S-T1(PG)10-47 CHIP KEC	R	
Q96	0TR107009AC	TRANSISTOR	KRA107S-T1(PG)10-47 CHIP KEC	R	
R01	0RD1001F608	RESISTOR,FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	R	
R02	0RD1501F608	RESISTOR,FIXED CARBON FILM	1.5K OHM 1/6 W 5.00% TA26	R	
R03	0RD1002F608	RESISTOR,FIXED CARBON FILM	10K OHM 1/6 W 5.00% TA26	R	
R04	0RD1001G608	RESISTOR,FIXED CARBON FILM	1K OHM 1/4 W 5.00% TA26	R	
R11	0RD0202G608	RESISTOR,FIXED CARBON FILM	20 OHM 1/4 W 5.00% TA26	R	

R,S : SERVICE PARTS  
\* : ALTERNATE PARTS

LOC. NO.	PART NO.	DESCRIPTION	SPECIFICATION	SVC	ALTER
R110	0RD1003F608	RESISTOR, FIXED CARBON FILM	100K OHM 1/6 W 5.00% TA26	R	
R111	0RD1003F608	RESISTOR, FIXED CARBON FILM	100K OHM 1/6 W 5.00% TA26	R	
R12	0RD0202G608	RESISTOR, FIXED CARBON FILM	20 OHM 1/4 W 5.00% TA26	R	
R13	0RD1003G608	RESISTOR, FIXED CARBON FILM	100K OHM 1/4 W 5.00% TA26	R	
R130	0RD1802G408	RESISTOR, FIXED CARBON FILM	18K OHM 1/4 W 1.00% TA26	R	
R131	0RD1003F608	RESISTOR, FIXED CARBON FILM	100K OHM 1/6 W 5.00% TA26	R	
R132	0RD5101F608	RESISTOR, FIXED CARBON FILM	5.1K OHM 1/6 W 5.00% TA26	R	
R133	0RD1502F608	RESISTOR, FIXED CARBON FILM	15K OHM 1/6 W 5.00% TA26	R	
R134	0RD1502F608	RESISTOR, FIXED CARBON FILM	15K OHM 1/6 W 5.00% TA26	R	
R20	0RD1002G608	RESISTOR, FIXED CARBON FILM	10K OHM 1/4 W 5.00% TA26	R	
R21	0RD1001F608	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	R	
R25	0RD3301G608	RESISTOR, FIXED CARBON FILM	3.3K OHM 1/4 W 5.00% TA26	R	
R26	0RD1002F608	RESISTOR, FIXED CARBON FILM	10K OHM 1/6 W 5.00% TA26	R	
R27	0RD1001F608	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	R	
R43	0RD2001F608	RESISTOR, FIXED CARBON FILM	2K OHM 1/6 W 5.00% TA26	R	
R44	0RD2001F608	RESISTOR, FIXED CARBON FILM	2K OHM 1/6 W 5.00% TA26	R	
R47	0RD1001F608	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	R	
R48	0RD1001F608	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	R	
R49	0RD0102F608	RESISTOR, FIXED CARBON FILM	10 OHM 1/6 W 5.00% TA26	R	
R50	0RD4701G608	RESISTOR, FIXED CARBON FILM	4.7K OHM 1/4 W 5.00% TA26	R	
R55	0RD1004F608	RESISTOR, FIXED CARBON FILM	1M OHM 1/6 W 5.00% TA26	R	
R60	0RD1002F608	RESISTOR, FIXED CARBON FILM	10K OHM 1/6 W 5.00% TA26	R	
R61	0RD1001F608	RESISTOR, FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	R	
R90	0RD2202G408	RESISTOR, FIXED CARBON FILM	22K OHM 1/4 W 1.00% TA26	R	
R91	0RD2202G408	RESISTOR, FIXED CARBON FILM	22K OHM 1/4 W 1.00% TA26	R	
R94	0RD1802F608	RESISTOR, FIXED CARBON FILM	18K OHM 1/6 W 5.00% TA26	R	
R95	0RD1802F608	RESISTOR, FIXED CARBON FILM	18K OHM 1/6 W 5.00% TA26	R	
R96	0RD8202F608	RESISTOR, FIXED CARBON FILM	82K OHM 1/6 W 5.00% TA26	R	
R97	0RD8202F608	RESISTOR, FIXED CARBON FILM	82K OHM 1/6 W 5.00% TA26	R	
RY1	6920W5A007A	RELAY	ALD112 MATSUSHITA DC12V 16.7MA	R	
RY2	6920W5A007A	RELAY	ALD112 MATSUSHITA DC12V 16.7MA	R	
RY3	6920W5A007A	RELAY	ALD112 MATSUSHITA DC12V 16.7MA	R	
RY4	6920W2D010A	RELAY	OJ-SS-112LM	R	
RY5	6920W5A007A	RELAY	ALD112 MATSUSHITA DC12V 16.7MA	R	
RY7	6920W5A012A	RELAY	G5G-1A-DT1-LG OMRON DC12V 41.7MA 250V 16	R	
TH	6322W3A012A	THERMISTOR, NTC	T5D410J44HBPD-0 DAEWOO 100KOHM±5% NONE -	R	
U01	0IZZW5A119A	IC, DRAWING	GMS81C2112K 42 SDIP BK OPP OTR 12 K BYTE	R	
ZD10	0DZ510009AD	DIODE, ZENER	UZ5.1B 0.5W TP 52	R	
ZD11	0DZ750009AA	DIODE, ZENER	7.5V TP(52MM), ROHM	R	

