

DAEWOO

# Service Manual

Microwave Oven

Model: KOR-220S



DAEWOO ELECTRONICS CO., LTD.

# 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 (arching, wear, and other damage), (4) Damage to or loosening of hinges and latches, (5) Evidence of dropping or abuse.
- (c) Before turning on power to the microwave oven 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 Federal performance standard should be performed on each oven prior to release to the owner.

<b>SAFETY AND PRECAUTIONS .....</b>	<b>3</b>
FOR SAFE OPERATION .....	3
FOR SAFE SERVICE PROCEDURES .....	3
<b>SPECIFICATIONS.....</b>	<b>4</b>
<b>EXTERNAL VIEW .....</b>	<b>5</b>
OUTER DIMENSION .....	5
FEATURE DIAGRAM.....	6
CONTROL PANEL .....	7
<b>INSTALLATION .....</b>	<b>8</b>
<b>OPERATIONS AND FUNCTIONS .....</b>	<b>9</b>
<b>DISASSEMBLY AND ASSEMBLY .....</b>	<b>10</b>
<b>INTERLOCK MECHANISM AND ADJUSTMENT .....</b>	<b>17</b>
<b>TROUBLE SHOOTING GUIDE .....</b>	<b>18</b>
<b>MEASUREMENT AND TEST .....</b>	<b>22</b>
MEASUREMENT OF THE MICROWAVE POWER OUTPUT .....	22
MICROWAVE RADIATION TEST .....	23
COMPONENT TEST PROCEDURE .....	24
<b>WIRING DIAGRAM.....</b>	<b>25</b>
<b>PRINTED CIRCUIT BOARD .....</b>	<b>26</b>
CIRCUIT CHECK PROCEDURE .....	26
P.C.B. CIRCUIT DIAGRAM .....	29
P.C.B. LOCATION NO .....	30
<b>EXPLODED VIEW AND PARTS LIST .....</b>	<b>32</b>
DOOR ASSEMBLY .....	32
CONTROL PANEL ASSEMBLY .....	32
TOTAL ASSEMBLY .....	32

# PRECAUTIONS

## CAUTION

This Device is to be Serviced Only by Properly Qualified Service Personnel. Consult the Service Manual for Proper Service Procedures to Assure Continued Safety Operation and for Precautions to be Taken to Avoid Possible Exposure to Excessive Microwave Energy.

## 1. FOR SAFE OPERATION

Damage that allows the microwave energy (that cooks or heats the food) to escape will result in poor cooking and may cause serious bodily injury to the operator.

IF ANY OF THE FOLLOWING CONDITIONS EXIST, OPERATOR MUST NOT USE THE APPLIANCE.

(Only a trained service personnel should make repairs.)

- 1) A broken door hinge.
- 2) A broken door viewing screen.
- 3) A broken front panel, oven cavity.
- 4) A loosened door lock.
- 5) A broken door lock.

The door gasket plate and oven cavity surface should be kept clean.

No grease, soil or spatter should be allowed to build up on these surfaces or inside the oven.

DO NOT ATTEMPT TO OPERATE THIS APPLIANCE WITH THE DOOR OPEN. The microwave oven has concealed switches to make sure the power is turned off when the door is opened. Do not attempt to defeat them.

DO NOT ATTEMPT TO SERVICE THIS APPLIANCE UNTIL YOU HAVE READ THIS SERVICE MANUAL.

## 2. FOR SAFE SERVICE PROCEDURES

- 1) If the oven is operative prior to servicing, a microwave emission check should be performed prior to servicing the oven.
- 2) If any certified oven unit is found to servicing, a microwave emission check should be performed prior to servicing the oven.
  - (a) inform the manufacturer, importer or assembler,
  - (b) repair the unit at no cost to the owner,
  - (c) attempt to ascertain the cause of the excessive leakage,
  - (d) tell the owner of the unit not to use the unit until the oven has been brought into compliance.
- 3) If the oven operates with the door open, the service person should tell the user not to operate the oven and contact the manufacturer and CDRH immediately.

## CAUTION

### MICROWAVE RADIATION

PERSONNEL SHOULD NOT BE EXPOSED TO THE MICROWAVE ENERGY WHICH MAY RADIATE FROM THE MAGNETRON OR OTHER MICROWAVE GENERATING DEVICE IF IT IS IMPROPERLY USED OR CONNECTED. ALL INPUT AND OUTPUT MICROWAVE CONNECTIONS, WAVEGUIDE FLANGES AND GASKETS 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.

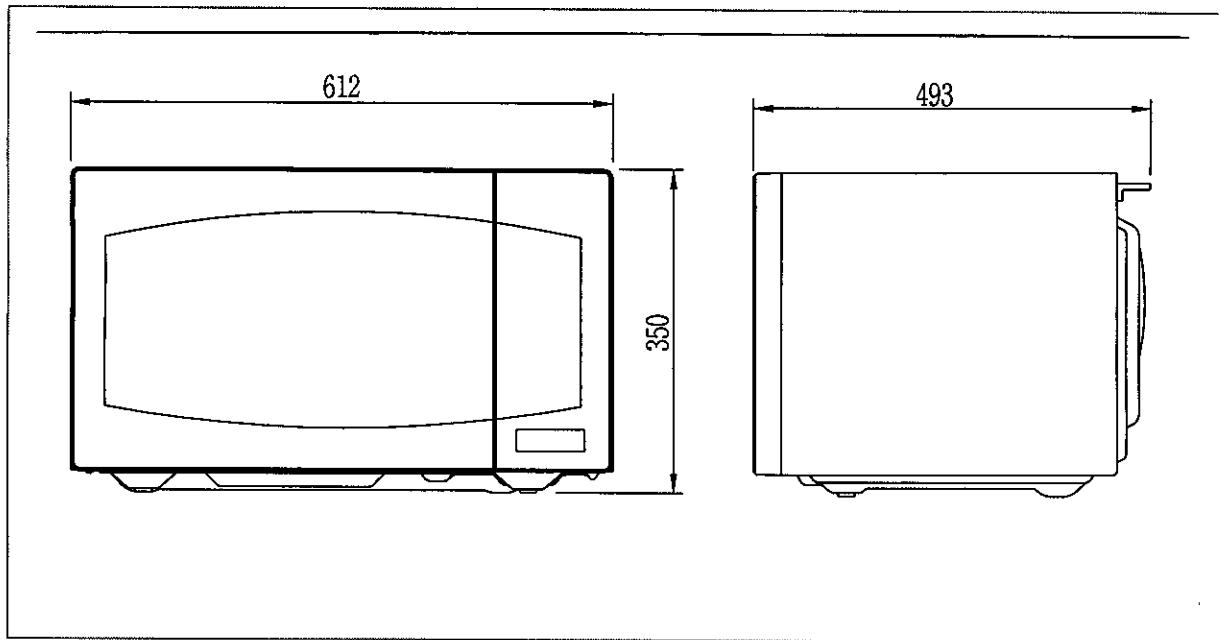
# SPECIFICATIONS

MODEL	KOR-220S	
POWER SUPPLY	120V~60Hz, SINGLE PHASE WITH GROUNDING	
POWER CONSUMPTION	MICROWAVE	1650W
	GRILL	
	COMBINATION	
MICROWAVE ENERGY OUTPUT	1200W	
MICROWAVE FREQUENCY	2450MHz	
OUTSIDE DIMENSIONS (W X H X D)	612 x 350 x 493 mm (24.1 x 13.8 x 19.4 in.)	
CAVITY DIMENSIONS (W X H X D)	434 x 292 x 481 mm (17.1 x 11.3 x 18.9 in.)	
NET WEIGHT	APPROX. 20 Kg ( 44.1 lbs.)	
TIMER	99 min. 99 sec.	
FUNCTION SELECTIONS	MICROWAVE	
POWER SELECTIONS	10 LEVELS	
CAVITY VOLUME	2.1 Cu.Ft.	

□ SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

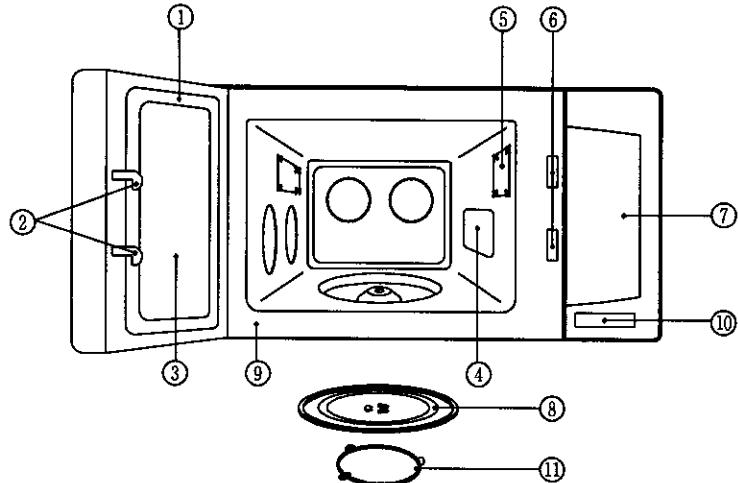
## EXTERNAL VIEW

### 1. OUTER DIMENSION



*Throughout this manual, features and appearance may vary from your model.*

## 2. FEATURE DIAGRAM



## 1. DOOR SEAL

Door seal maintains the microwave within the oven cavity and prevents microwave leakage.

## 2. DOOR HOOK

When door is closed, it will automatically lock shut. If door is opened while oven is operating, magnetron tube will immediately stop operating.

## 3. DOOR SCREEN

Allows viewing of food. Microwave cannot pass through perforations in screen.

## 4. SPATTER SHIELD

Protects the microwave outlet from splashes of cooking foods.

## 5. OVEN LAMP

Automatically turns on during oven operating.

## 6. SAFETY INTERLOCK SYSTEM

## 7. CONTROL PANEL

## 8. GLASS COOKING TRAY

Made of special heat resistant glass. The tray must always be in proper position before operating. Do not cook food directly on the tray.

## 9. OVEN FRONT PLATE

## 10. DOOR OPENING BUTTON

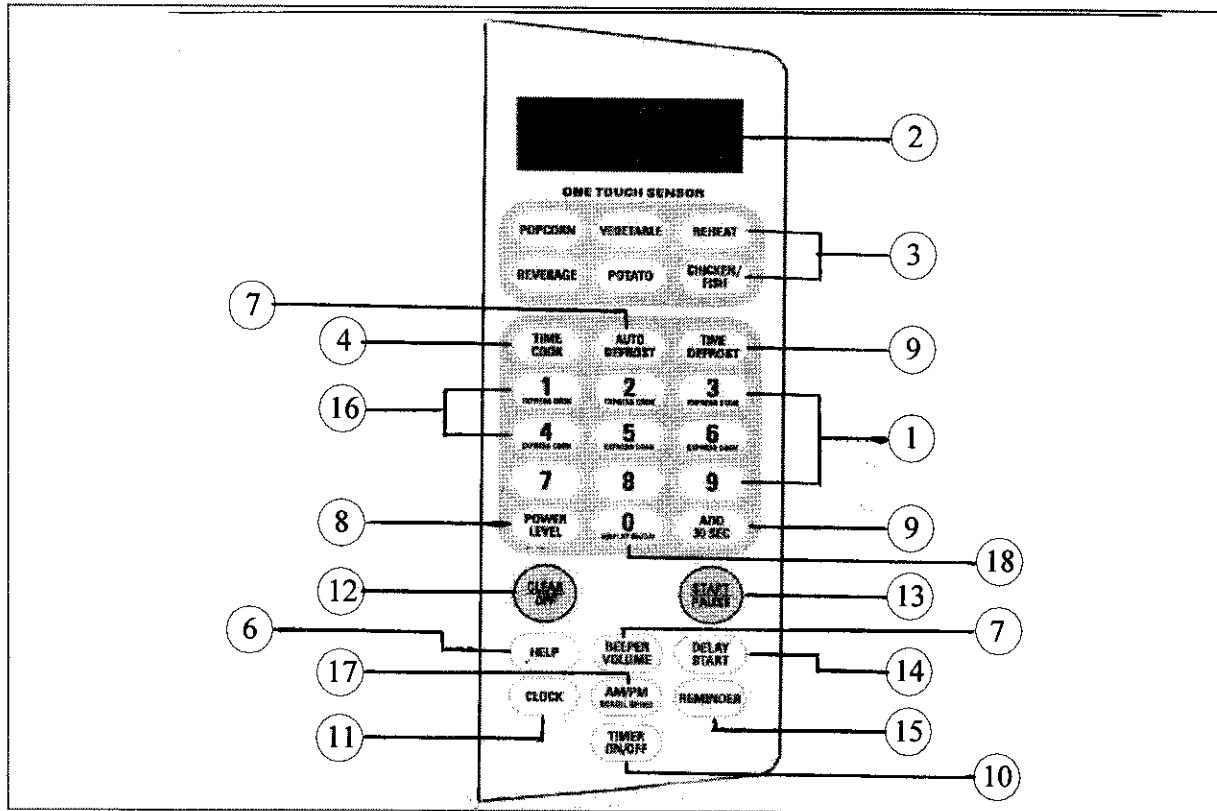
To open the door, push the door opening button. When door is closed, it will automatically lock shut. If door is opened while oven is operating, magentron tube will immediately stop operating.

## 11. ROLLER GUIDE

Supports the glass cooking tray.

## EXTERNAL VIEW

### 3. CONTROL PANEL



1. Time set pad - Used to set the cooking time and the present time.
2. Display - Cooking time, power level, indicators and present time are displayed.
3. One touch sensor - Used to cook or reheat specific quantities of food.
4. Time cook - Used to set time cook.
5. Add - Used to add time to cooking.
6. Help - Used to set help to understand all features.
7. Beeper volume - Used to set sound level.
8. Power level - Used to set power level.
9. Time defrost - Used to defrost foods.(for time)
10. Timer ON / OFF - Used to set minute timer ON or OFF.
11. Clock - Used to set clock.
12. Clear / Off - Used to stop the oven operation or to delete the cooking data.
13. Start / Pause - Used to start the oven and also to pause operation.
14. Delay start - Used to set delay cooking.
15. Reminder - Used to set reminder.
16. Express cook - Used to start the oven immediately.
17. AM / PM - Used to set AM / PM.
18. Display ON / OFF - Used to set display ON or OFF.

# INSTALLATION

## 1. Steady, flat location

This microwave oven should be set on a steady, flat surface.

## 2. Leave space behind and side

All air vents should be kept a clearance. If all vents are covered during operation, the oven may overheat and, eventually, cause oven failure.

## 3. Away from radio and TV sets

Poor television reception and radio interference may result if the oven is located close to a TV, radio, antenna or feeder and so on.

## 4. Away from heating appliances and water taps

Keep the oven away from hot air, steam or splash when choosing a place to position it, or the insulation might be adversely affected and breakdowns occur.

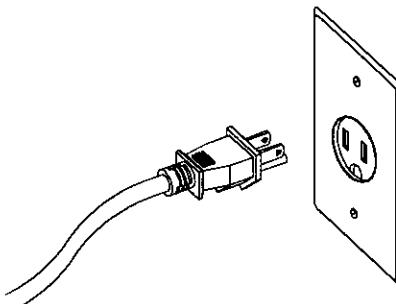
## 5. Power supply

Check your local power source.

This microwave oven requires a current of approximately 14 amperes, 120 Volts, 60 Hz grounded outlet.

Power supply cord is about 1.1 meters long.

1. A short power-supply cord is provided to reduce the risks resulting from becoming entangled in or tripping over a longer cord.
2. Longer cord sets or extension cords are available and may be used if care is exercised in their use.
3. If a long cord or extension cord is used:
  - 1) The marked electrical rating of the cord set or extension cord should be at least as great as the electrical rating of the appliance.
  - 2) The extension cord must be a grounding type 3-wire cord.
  - 3) The longer cord should be arranged so that it will not drape over the counter top or tabletop where it can be pulled on by children or tripped over unintentionally.



## 6. Examine the oven after unpacking for any damage such as:

A misaligned door, broken door or a dent in cavity.

If any of the above are visible, DO NOT INSTALL, and notify dealer immediately.

# OPERATIONS AND FUNCTIONS

1. Connect the main lead to an electrical outlet..
2. After placing the food in a suitable container, open the oven door and put it on the glass tray. The glass tray must always be in place during cooking.
3. Close the door securely.
4. The oven door can be opened at any time during operation by touching the door release button on the control panel. The oven will automatically shut off. To restart the oven, close the door and then touch START.
5. Each time a pad is touched, a BEEP will sound to acknowledge the touch.
6. The oven automatically cook on full power unless set to a lower power level.
7. The display will show all segments and then scrolls some character.
8. Time clock returns to the present time when the cooking time ends.
9. When the START /PAUSE pad is touched during the oven operation, the oven stops cooking and all information retained. To erase all information (except the present time), touch the CLEAR /OFF pad once more. If the oven door is opened during the oven operation, all information is retained.
10. If the Express Cook pad is touched after CLEAR/OFF pad is touched and the oven does not operate, check the area between the door and door is closed securely. The oven will not start cooking under the door is completely closed or the program has been reset.

Make sure the oven is properly installed and plugged into the electrical

## Wattage output chart

The power level is set by pressing the POWER LEVEL pad and Time set pad. The chart shows the display, the power level and the percentage of power.

Power level	Display	Wattage output
Power level or Power level + 10	PL - 10	100%
Power level + 9	PL - 9	90%
Power level + 8	PL - 8	80%
Power level + 7	PL - 7	70%
Power level + 6	PL - 6	60%
Power level + 5	PL - 5	50%
Power level + 4	PL - 4	40%
Power level + 3	PL - 3	30%
Power level + 2	PL - 2	20%
Power level + 1	PL - 1	10%

# DISASSEMBLY AND ASSEMBLY

## Cautions to be observed when trouble shooting

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. It is completely safe during normal operation. However, carelessness in servicing the oven can result in an electric shock or possible danger from a short circuit.

You are asked to observe the following precautions carefully.

1. Always remove the power plug from the outlet before servicing.
2. Use an insulated screwdriver and wear rubber gloves when servicing the high voltage side.
3. Discharge the high voltage capacitor before touching any oven components or wiring.

### 1) Check the grounding.

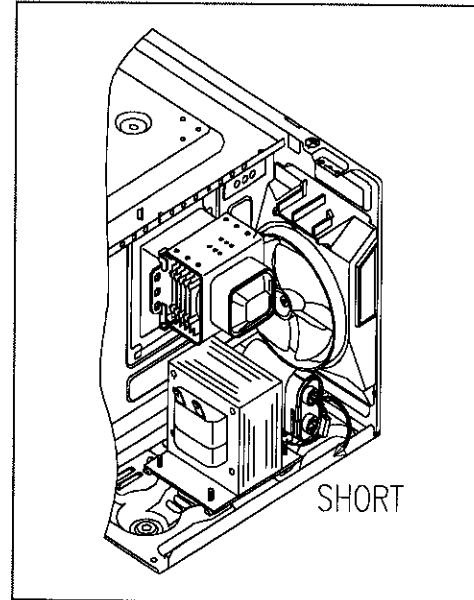
Do not operate on a two-wire extension cord.

The microwave oven is designed to be used while grounded.

It is imperative, therefore, to make sure it is grounded properly before beginning repair work.

- 2) Warning about the electric charge in the high voltage capacitor.  
For about 30 seconds after the operation has stopped, electric charge remains in the high voltage capacitor. When replacing or checking parts, short between oven chassis and the negative high terminal of the high voltage capacitor by using a properly insulated screwdriver to discharge.

4. When the 20A fuse is blown due to the operation of the monitor switch; replace primary interlock switch, secondary interlock switch and interlock monitor switch.
5. After repair or replacement of parts, make sure that the screws are properly tightened, and all electrical connections are tightened.
6. Do not operate without cabinet.



## CAUTION

Service personnel should remove their watches whenever working close to or replacing the magnetron.

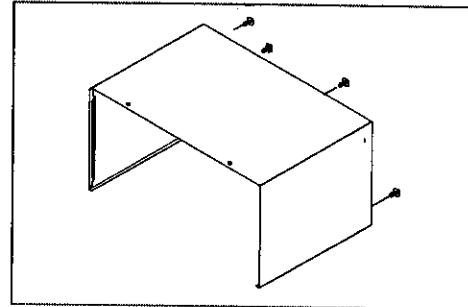
## WARNING

When servicing the appliance, take care when touching or replacing high potential parts because of electrical shock or exposing microwave. These parts are as follows - HV Transformer, Magnetron, HV Capacitor, HV Diode.

## DISASSEMBLY AND ASSEMBLY

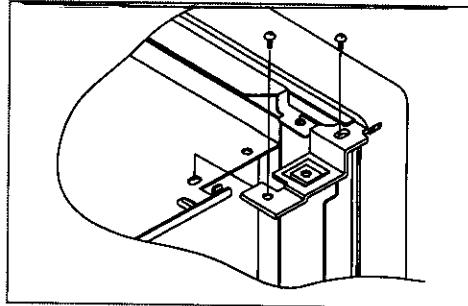
### 1. To remove cabinet

- 1) Remove four screws on cabinet back.
- 2) Push the cabinet backward.



### 2. To remove door assembly

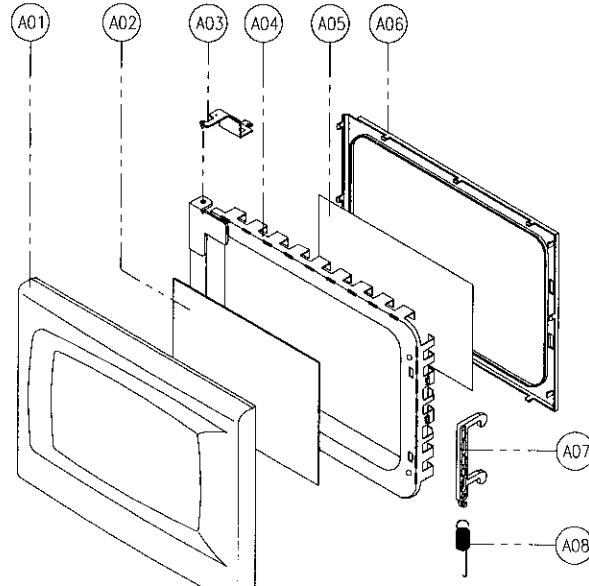
- 1) Remove two screws which secure the stopper hinge top.
- 2) Remove the door assembly from top plate of cavity.
- 3) Reverse the above for reassembly.



### NOTE

After replacing the door assembly, perform a check of correct alignment with the hinge and cavity front plate.

## 3. To remove door parts.



ITEM NO.	PART NUMBER	NAME	DESCRIPTION	QTY
A01	3512206100	FRAME DOOR	ABS SG-175, SG-0760D	1
A02	3517007800	BARRIER-SCREEN *O	SAN T1.5	1
A03	3515202900	STOPPER HINGE *T AS	KOR-121M0A	1
A04	3511719000	DOOR PAINTING AS	KOR-220S	1
A05	3517007900	BARRIER-SCREEN *I	PE T0.1	1
A06	3512302600	GASKET DOOR	PP	1
A07	3513101400	HOOK	POM	1
A08	3515101900	SPRING HOOK	PW-1	1

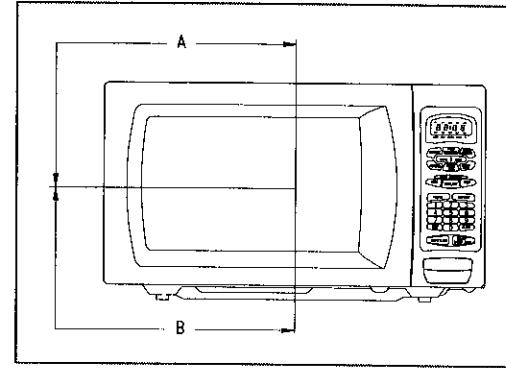
- 1) Remove the gasket door from door plate.
- 2) Remove the barrier screen inner from door plate.
- 3) Remove the door frame from door plate.
- 4) Remove the stopper hinge top from door plate.
- 5) Remove the spring and the hook.
- 6) Remove the barrier screen outer from door frame.
- 7) Reverse the above steps for reassembly.

## **DISASSEMBLY AND ASSEMBLY**

### **4. Method to reduce the gap between the door seal and the oven front surface.**

#### **1) To reduce gap located on part 'A'.**

Loosen two screw on stopper hinge top, and then  
push the door to contact the door seal to oven front surface.  
Tighten two screws.

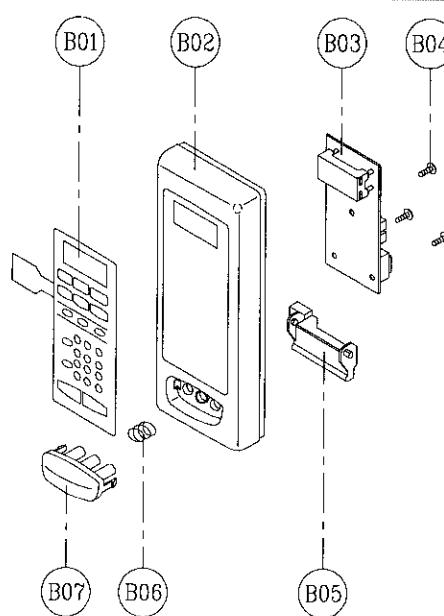


#### **2) To reduce gap located on part 'B'**

Loosen two screws on stopper hinge under, and then  
push the door to contact the door seal to oven front surface.  
Tighten two screws.

**A small gap may be acceptable if the microwave leakage does not exceed 4mW/cm<sup>2</sup>.**

## 5. To remove control panel parts.



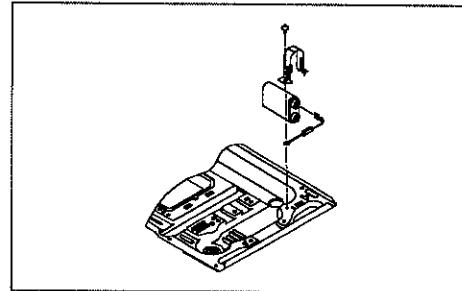
REF. NO.	PART NUMBER	PART NAME	DESCRIPTION	QTY
B01	3518523800	SWITCH MEMBRANE	KOR-220S	1
B02	3511678400	CONTROL-PANEL	ABS AF-348, VT-0826	1
B03	3514328100	PCB AS	KOR-220S	1
B04	7122401211	SREW TAPPING	T2S TRS 4x12 MFZN	1
B05	3513702900	LEVER DOOR OPEN	PP	1
B06	441G430171	SPRING BUTTON	SWP DIA0.7	1
B07	3516910500	BUTTON DOOR OPEN	ABS SG-175 SG-0760D	1

- 1) Remove the screw which secure the control panel, push up two snap fits and draw forward the control panel assembly.
- 2) Remove the door open lever from the control panel.
- 3) Remove three screws which secure the PCB assembly to control panel.
- 4) Disconnect membrane tail from the connector of the PCB assembly.
- 5) Detach membrane from the control panel.
- 6) Remove door open button and button spring from the control panel.
- 7) Reverse the above steps for reassembly.

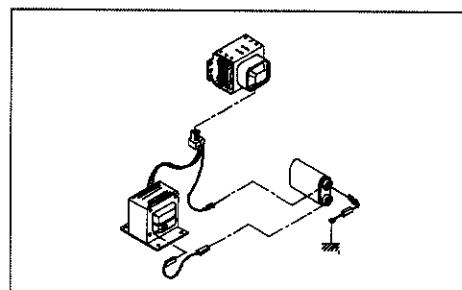
## DISASSEMBLY AND ASSEMBLY

### 6. To remove high voltage capacitor.

- 1) Remove a screw which secure the grounding ring terminal of the H.V.diode and the capacitor holder.
- 2) Remove the H.V. diode from the capacitor holder.
- 3) Reverse the above steps for reassembly.

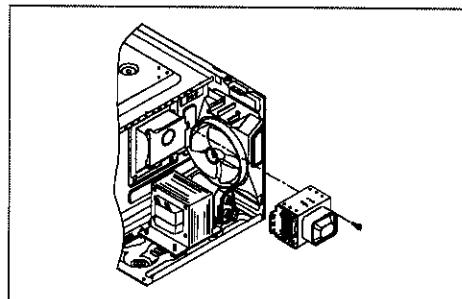


High voltage circuit wiring



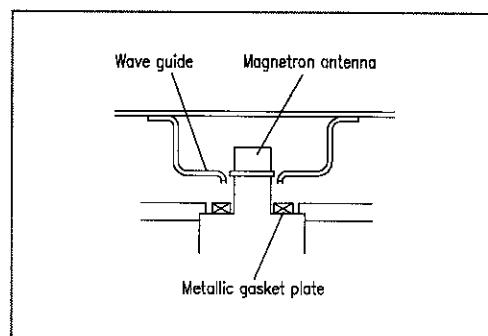
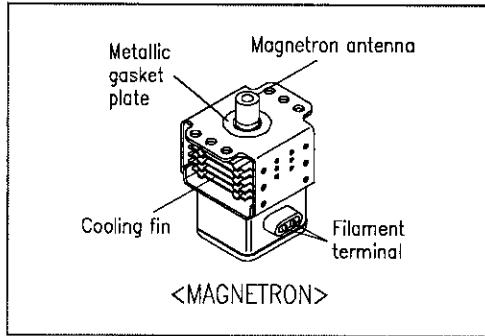
### 7. To remove magnetron.

- 1) Remove a screw which secure the magnetron.
- 2) Remove the magnetron.
- 3) Reverse the above steps for reassembly.



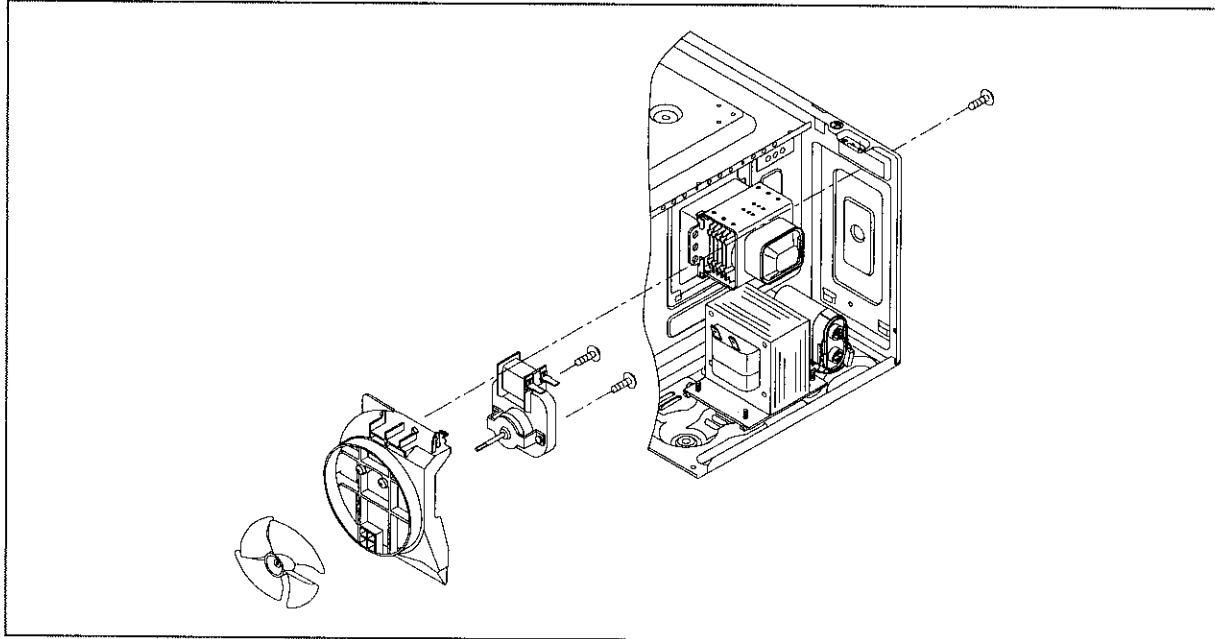
## NOTE

Never install the magnetron without the metallic gasket plate which is packed with each magnetron to prevent microwave leakage. Whenever repair work is carried out on magnetron, check the microwave leakage. It shall not exceed  $4\text{mW/cm}^2$  for a fully assembled oven with door normally closed.



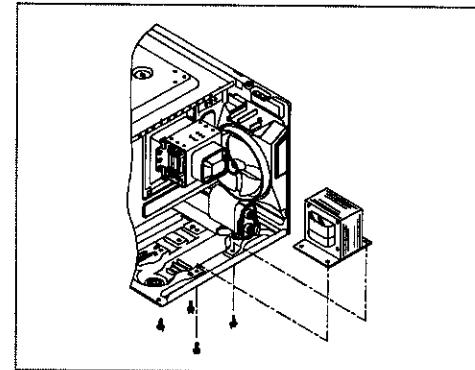
#### **8. To remove wind guide assembly.**

- 1) Remove a screw which secure the wind guide assembly.
- 2) Draw forward the wind guide assembly.
- 3) Pull the fan from the motor shaft.
- 4) Remove two screws which secure the motor shaded pole.
- 5) Remove the motor shaded pole.
- 6) Reverse the above steps for reassembly.



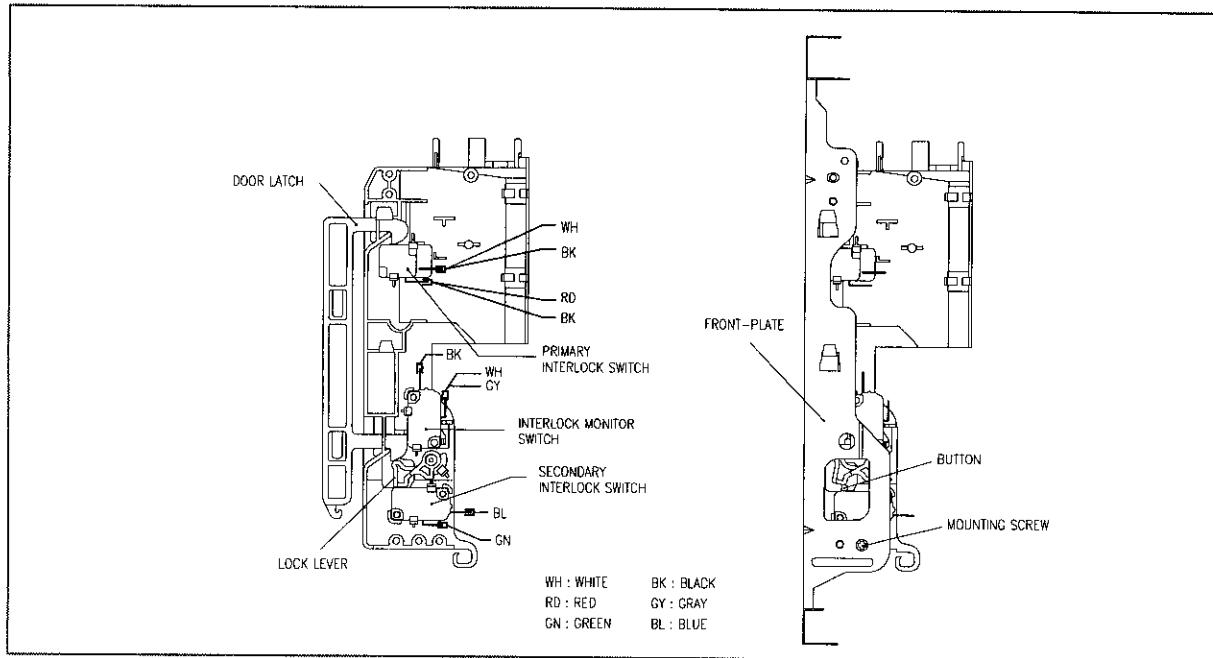
## 9. To remove H.V.transformer.

- 1) Remove four screws holding the H.V.transformer.
- 2) Remove the H.V.transformer.
- 3) Reverse the above steps for reassembly.



# INTERLOCK MECHANISM AND ADJUSTMENT

The door lock mechanism is a device which has been specially designed to completely eliminate microwave radiation when the door is opened during operation, and thus to perfectly prevent the danger resulting from the leakage of microwave.



## (1) Primary interlock switch

When the door is closed, the hook locks the oven door. If the door is not closed properly, the oven will not operate.

When the door is closed, the hook pushes the button of the microswitch. Then the button of the primary interlock switch bring it under ON condition.

## (2) Secondary interlock switch and interlock monitor switch

When the door is closed, the hook pushes the lock lever downward, and also presses the button of the interlock monitor switch to bring it under NO condition. The lock lever presses the button of the secondary interlock switch to bring it under ON condition.

## ADJUSTMENT

### Interlock monitor switch

When the door is closed, the interlock monitor switch should be changed(NO condition) before other switches are closed.

When the door is opened, the interlock monitor switch should be changed(NC condition) after other switches are opened.

## (3) Adjustment steps

- Loosen the one mounting screw.
- Adjust interlock switch assembly position.
- Make sure that lock lever moves smoothly after adjustment is completed.
- Tighten completely one mounting screw.

## NOTE

Microwave emission test should be performed after adjusting interlock mechanism. If the microwave emission exceed 4mW/cm<sup>2</sup>, readjust interlock mechanism.

# TROUBLE SHOOTING GUIDE

Following the procedure below to check if the oven is defective or not.

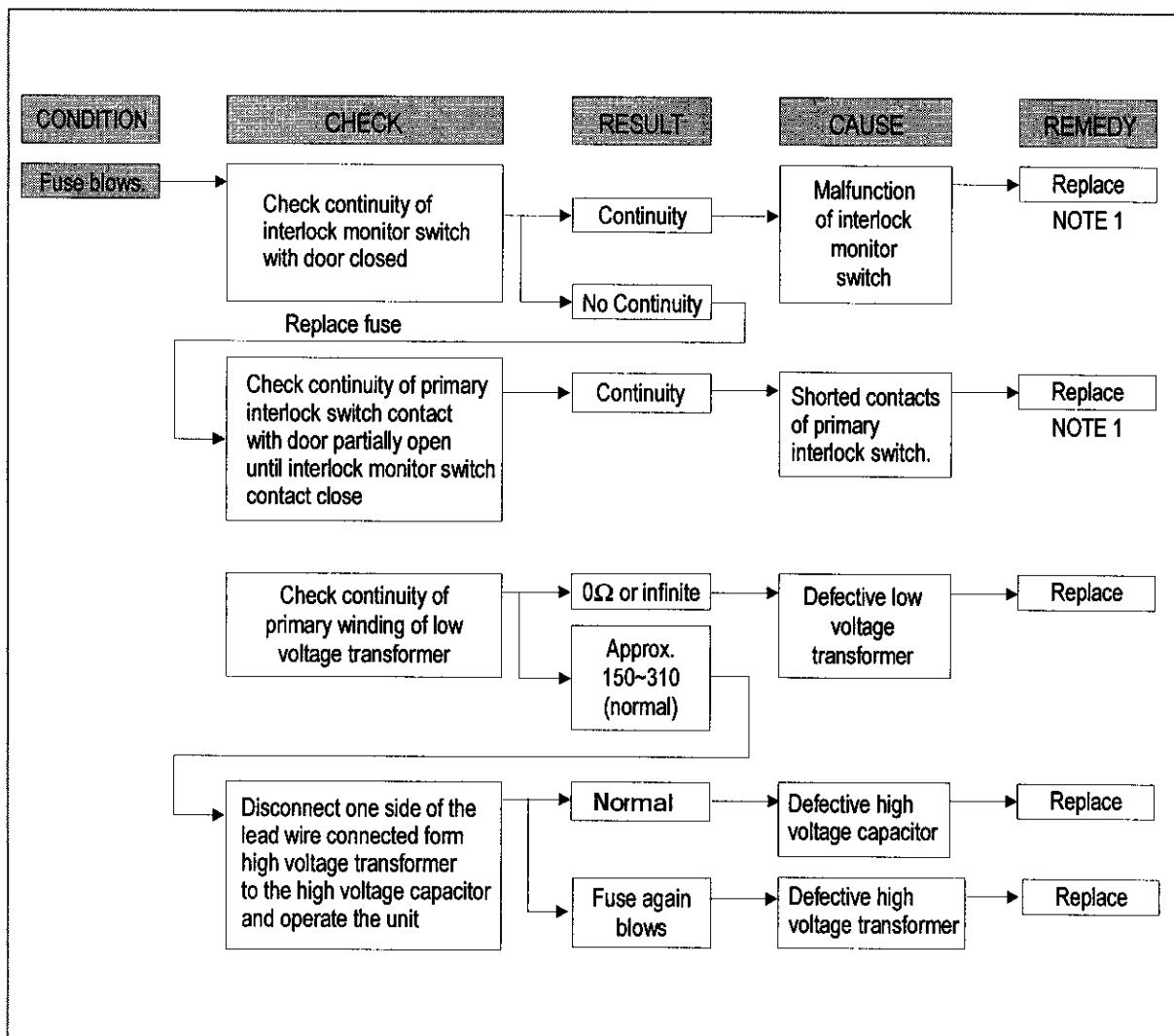
- 1) Check grounding before trouble checking.
- 2) Be careful of the high voltage circuit.
- 3) Discharge the high voltage capacitor.
- 4) When checking the continuity of the switches, fuse or high voltage transformer, disconnect one lead wire from these parts and check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.

## NOTE

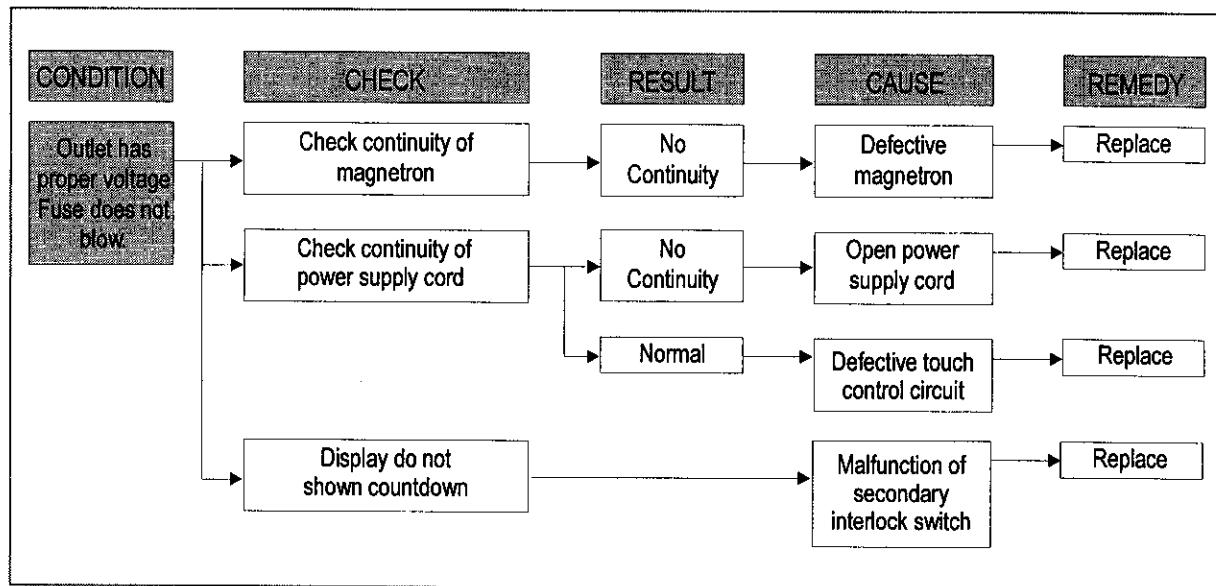
When electric parts are checked, be sure the power cord is not inserted the wall outlet.

Check wire harness, wiring and connected of the terminals and power cord before check the parts listed below.

(TROUBLE 1) Oven does not operate at all : any inputs can not be accepted.

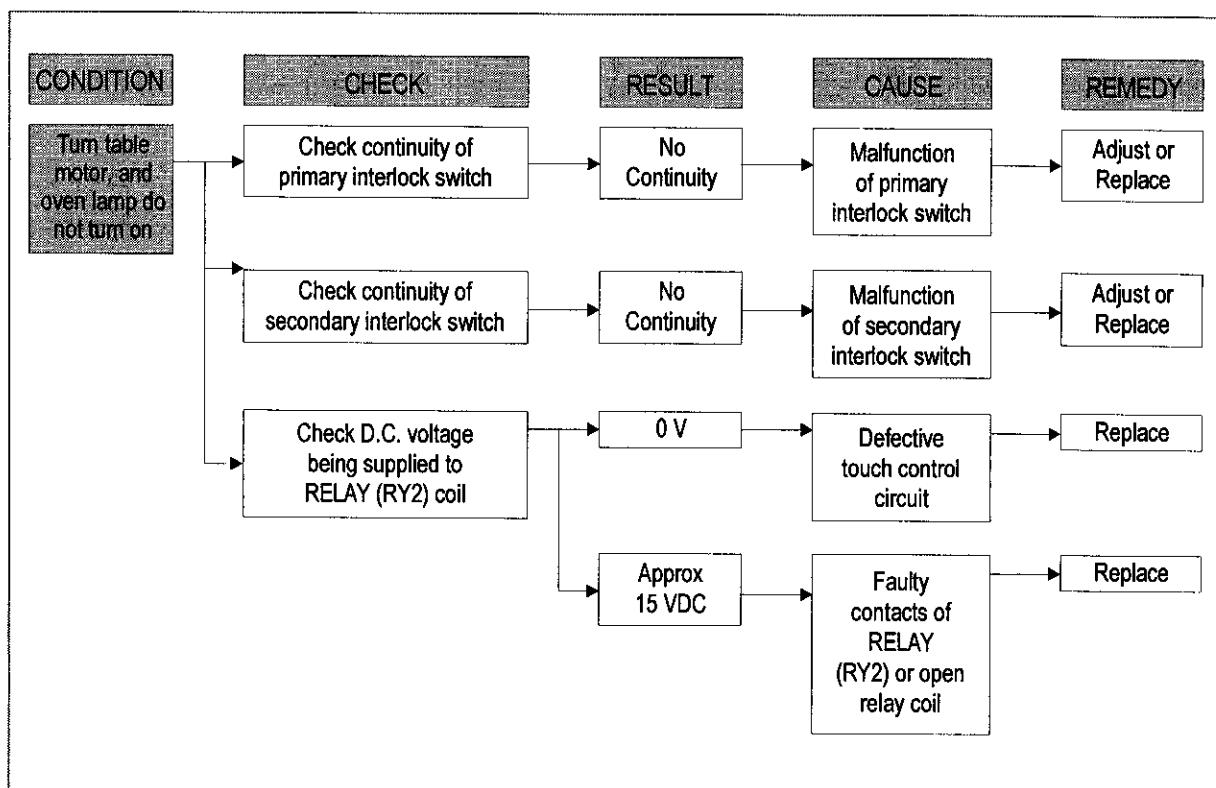


## TROUBLE SHOOTING GUIDE



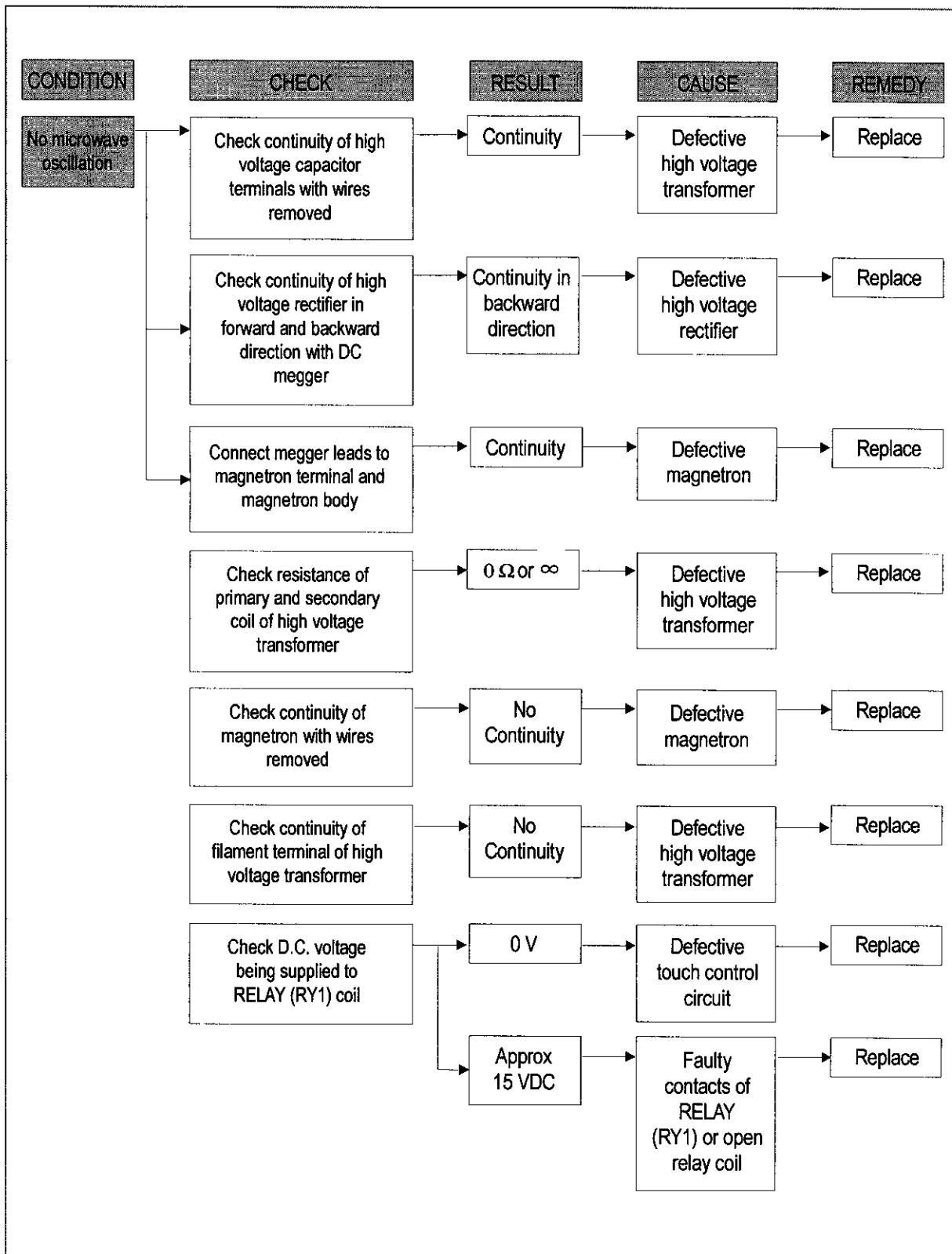
All these switches must be replaced at the same time, please refer to "Interlock Mechanism And Adjustment".

(TROUBLE 2) Display shows all figures selected, but oven does not start cooking, even though desired program and time are set and start pad is tapped.



## TROUBLE SHOOTING GUIDE

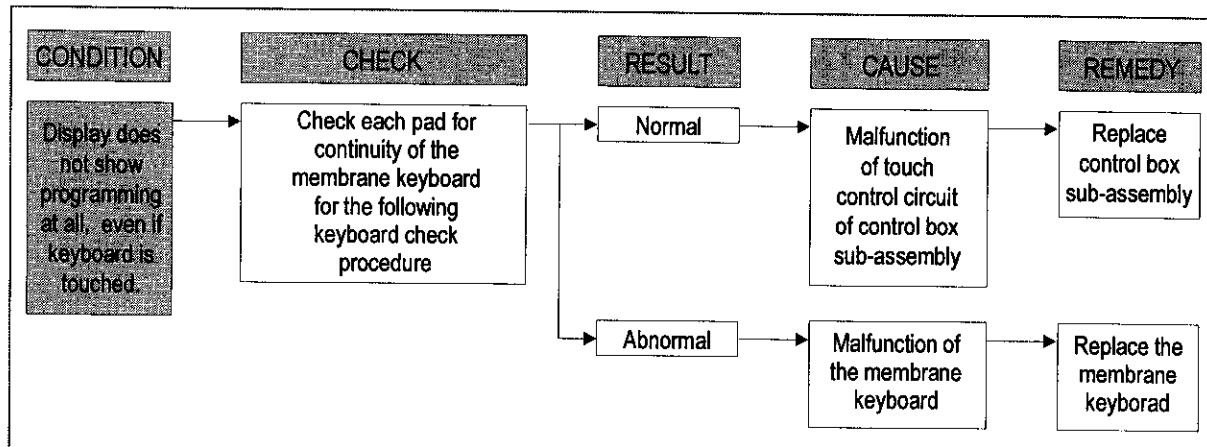
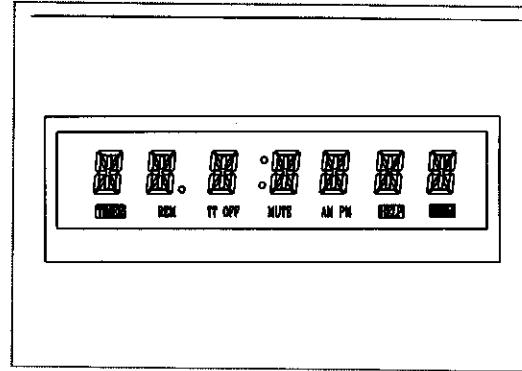
( TROUBLE 3 ) No microwave oscillation even though fan motor rotates.



## TROUBLE SHOOTING GUIDE

**(TROUBLE 4)** The following visual conditions indicate a probable defective touch control circuit or membrane switch assembly.

1. Incomplete segments,
  - 1) Segments missing.
  - 2) Partical segments missing.
  - 3) Digit flickering other than normal display slight flickering.
  - 4) " : 0 " does not display when power is on.
2. A distinct change in the diplay are not on when they numbers is the display.
3. One or more digits in the diplay are not on when they should be.
4. Display indicates a number different from one touched.
5. Specific numbers (for example 2 or 3) will not display when the panel is touched.
6. Display does not count down or up with time cooking or clock operation.
7. Oven is programmable and cooks normally but no display shows.
8. Display obviously jumps in time while counting down.
9. Display counts down noticeably too fast while cooking.
10. Display does not show the time of day when clear pad is touched.
11. Oven lamp and turntable motor do not stop although cooking is finished. Check if the RELAY 2 contacts close if they are close, replace touch control circuit.



### NOTE

Before following the particular steps listed above in the trouble shooting guide for the membrane keyboard's, failure, please check for the continuity of each wire-harness between the membrane keyboard and P.C.B. assembly.

# MEASUREMENT AND TEST

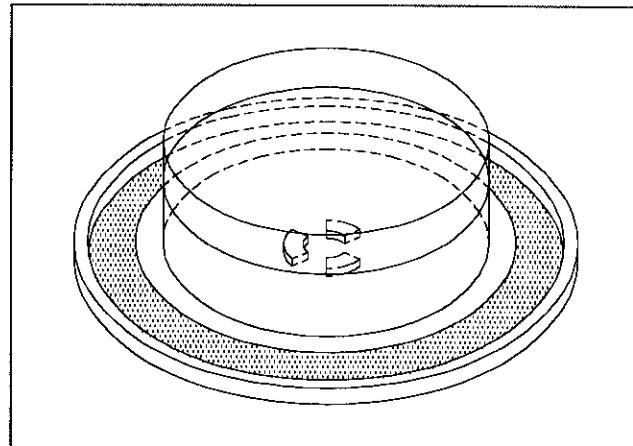
## 1. MEASUREMENT OF THE MICROWAVE POWER OUTPUT

Microwave output power can be checked by indirectly measuring the temperature rise of a certain amount of water exposed to the microwave as directed below.

### PROCEDURE

1. Microwave power output measurement is made with the microwave oven supplied at rated voltage and operated at its maximum microwave power setting with a load of  $1000 \pm 5\text{cc}$  of potable water.
2. The water is contained in a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190 mm.
3. The oven and the empty vessel are at ambient temperature prior to the start of the test. The initial temperature of the water is  $10 \pm 2^\circ\text{C}$  ( $50 \pm 3.6^\circ\text{F}$ ). 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 shelf, which is in the lowest normal position.
4. Microwave power is switched on.
5. Heating time should be exactly A seconds.  
(Refer to table as following)  
Heating time is measured while the microwave generator is operating at full power. The filament heat-up time for magnetron is not included.
6. The initial and final temperature of water is selected so that the maximum difference between the ambient and final water temperature is 5K.
7. The microwave power output P in watts is calculated from the following formula:

$$P = 4187 \times T$$



T is difference between initial and ending temperature.

t is the heating time.

The power measured should be B (Refer to SPECIFICATIONS)  $W \pm 10.0\%$ .

### CAU-

1. Water load should be measured exactly to 1 liters.
2. Input power voltage should be exactly specified voltage (Refer SPECIFICATIONS).
3. Ambient temperature should be  $20 \pm 2^\circ\text{C}$  ( $68 \pm 3.6^\circ\text{F}$ )

### \* Heating time for power output:

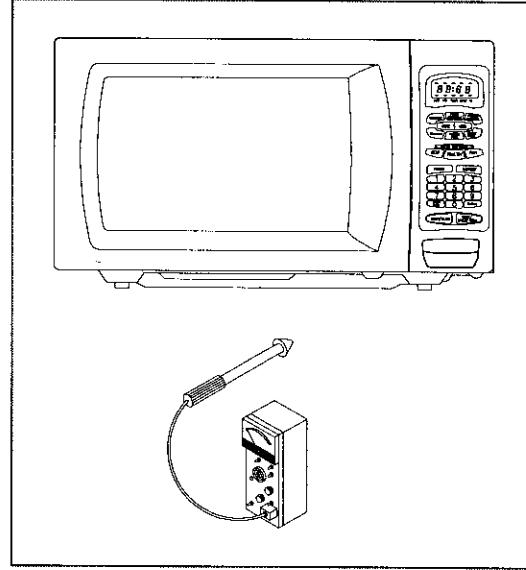
A(second)	70	64	60	56	52	49	47	44	42	40	38	35
B(W)	600	650	700	750	800	850	900	950	1000	1050	1100	1200

## **2. MICROWAVE RADIATION TEST**

1. Make sure to check the microwave leakage before and after repair of adjustment.
2. Always start measuring of an unknown field to assure safety for operating personnel from microwave energy.
3. Do not place your hands into any suspected microwave radiation field unless the safe density level is known.
4. Care should be taken not to place the eyes in direct line with the source of microwave energy.
5. Slowly approach the unit under test until the radiometer reads an appreciable microwave leakage from the unit under the test.

### **PROCEDURE**

1. Prepare Microwave Energy Survey Meter, 600cc glass beaker, and glass thermometer 100°C (212°F).
2. Pour 275cc  $\pm$ 15cc of tap water initially at  $20 \pm 5$  °C (68  $\pm$  9°F) in the 600 cc glass beaker with an inside diameter of approx. 95mm(3.5 in.).
3. Place it at the center of the tray and set it in a cavity.
4. Close the door and operate the oven.
5. Measure the leakage by using Microwave Energy Survey Meter with dual ranges, set to 2450MHz.
  - 1) Measured radiation leakage must not exceed the value prescribed below. Leakage for a fully assembled oven with door normally closed must be less than  $4\text{mW/cm}^2$ .
  - 2) When measuring the leakage, always use the 5cm (2 in.) space cone with probe. Hold the probe perpendicular to the cabinet and door. Place the space cone of the probe on the door, cabinet, door seem, door viewing screen, the exhaust air vents and the suction air vents.
  - 3) Measuring should be in a counter-clockwise direction at a rate of 1 in./sec. If the leakage of the cabinet door seem is unknown, move the probe more slowly.
  - 4) When measuring near a corner of the door, keep the probe perpendicular to the areas making sure the probe end at the base of the cone does not get closer than 2 in. from any metal. If it does not, erroneous reading may result.



### 3. COMPONENT TEST PROCEDURE

High voltage is present at the high voltage terminal of the high voltage transformer during any cooking cycle.

It is neither necessary nor advisable to attempt measurement of the high voltage.

Before touching any oven components or wiring, always unplug the oven from its power source and discharge the capacitor.

#### 1. High voltage transformer

1) Remove connections from the transformer terminals and check continuity.

2) Normal readings should be as follows :

Secondary winding ... Approx.  $110 \Omega \pm 10\%$

Filament winding ... Approx.  $0 \Omega$

Primary winding ... Approx.  $1 \Omega$

#### 2. High voltage capacitor

1) Check continuity of capacitor with meter on the highest OHM scale.

2) A normal capacitor will show continuity for a short time, and then indicate  $10M\Omega$  once the capacitor charged.

3) A shorted capacitor will show continuous continuity.

4) An open capacitor will show constant  $10M\Omega$ .

5) Resistance between each terminal and chassis should be infinite.

#### 3. High voltage diode

1) Isolate the diode from the circuit by disconnecting the leads.

2) With the ohmmeter set on the highest resistance scale measure the resistance across the diode terminals. Reverse the meter leads and again observe the resistance reading. Meter with 6V, 9V or higher voltage batteries should be used to check the front-back resistance of the diode, otherwise an infinite resistance may be read in both directions. A normal diode's resistance will be infinite in one direction and several hundred  $k\Omega$  in the other direction.

#### 4. Magnetron

For complete magnetron diagnosis, refer to "Measurement of the Microwave Power Output." Continuity checks can only indicate and open filament or a shorted magnetron. To diagnose for an open filament or a shorted magnetron,

1) Isolate magnetron from the circuit by disconnecting the leads.

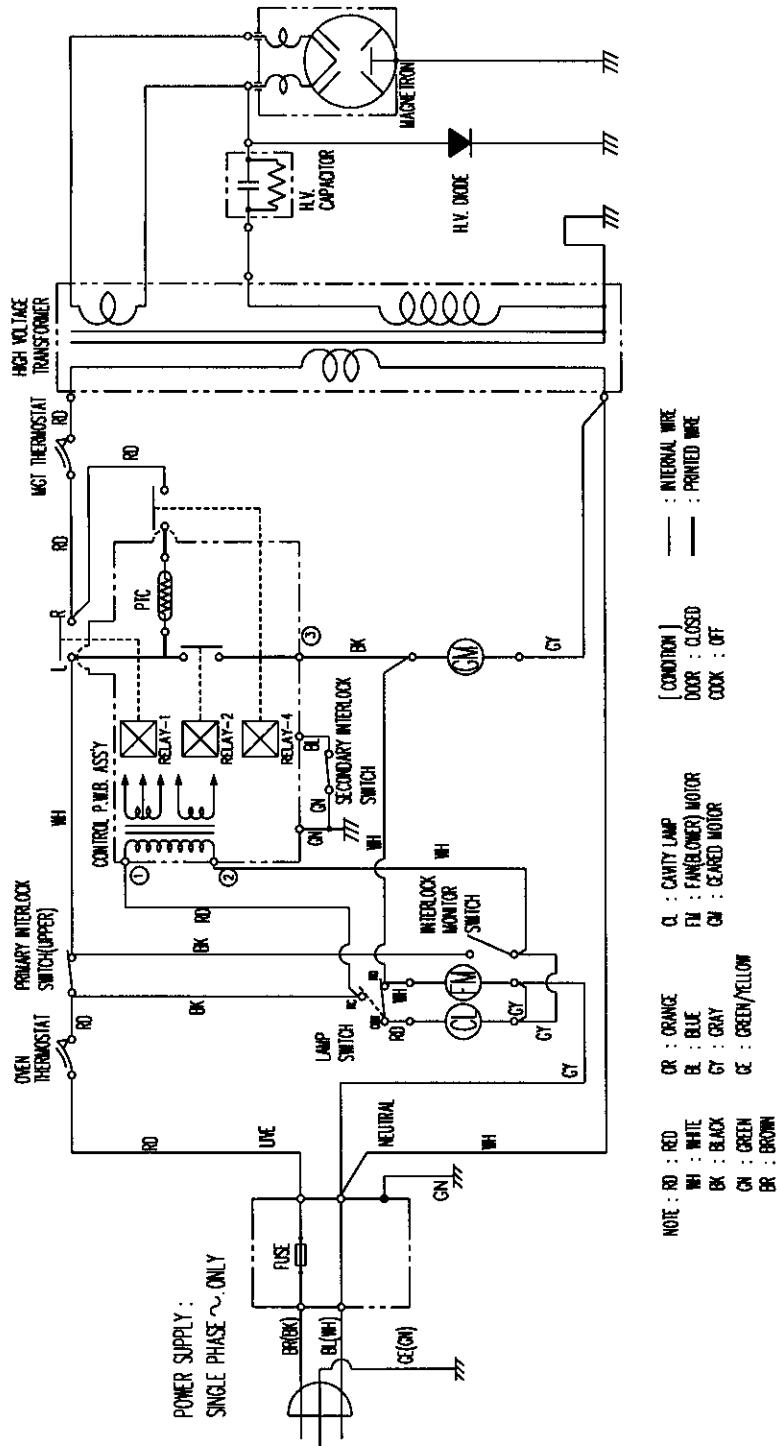
2) A continuity check across magnetron filament terminals should indicate  $0.1 \Omega$  or less.

3) A continuity check between each filament terminal and magnetron case should read open.

#### 5. Fuse

If the fuse in the primary and monitor switch circuit is blown when the door is opened, check the primary and monitor switch before replacing the blown fuse. In case the fuse is blown by an improper switch operation, replace the defective switch and fuse at the same time. Replace just the fuse if the switches operate normally.

# WIRING DIAGRAM



# PRINTED CIRCUIT BOARD

## 1. CIRCUIT CHECK PROCEDURE

### 1. Low voltage transformer check

The low voltage transformer is located on the P.C.B.

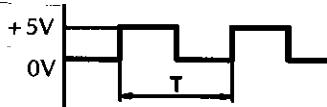
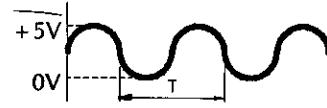
Measuring condition: Input voltage: 120 V / Frequency: 60Hz

Terminal Voltage	LOAD	NO LOAD
6 - 7	AC 12.6 V	AC 14.7 V

1. Refer to Circuit Diagram (point 4).
2. Secondary side voltage of the low voltage transformer changes in proportion to fluctuation of power source voltage.
3. The allowable tolerance of the secondary voltage is within  $\pm 5\%$  of nominal voltage.

### 2. Voltage check

- Key check point

NO	CHECK POINT	REMARK
1	IC1 PIN 63, 64	+5VDC
2	IC1 PIN 38	 T : 16.7ms(60Hz)
3	IC1 PIN 33 OR 34	 T : 250 ns(4MHz)

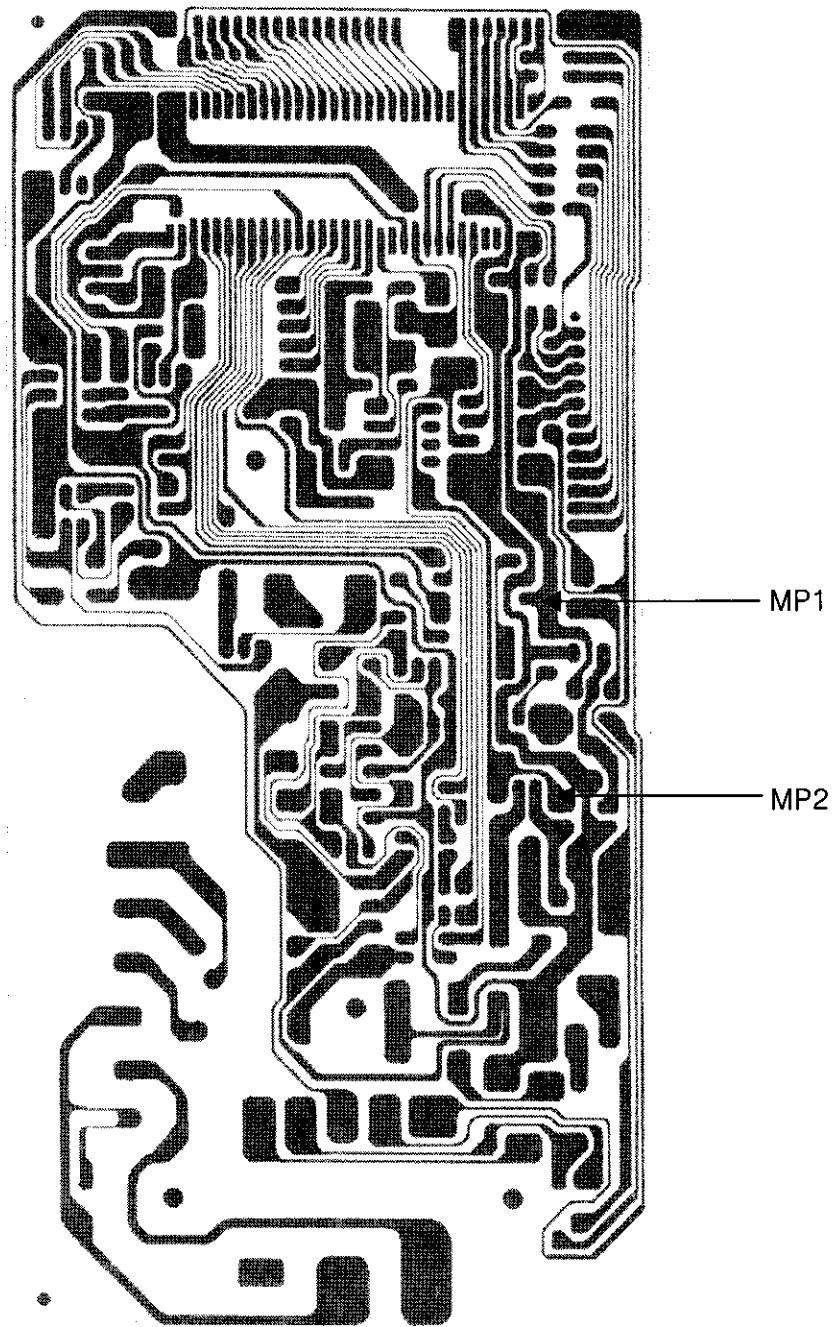
- Check method

NO	MEASURE POINT	WAVE FORM	REMEDY	REMARK
1	MP1	DC+5V $\pm 0.25$ V	Replace Q8,ZD4,EC1,D16	NO LOAD
2	MP2	DC+12V $\pm 2.0$ V	Replace Q10,ZD5,EC2,EC3,D20,R48,R49	NO LOAD

### NOTE

Each measure point must be measured with GND points.

**PRINTED CIRCUIT BOARD**



**Measure Point**

### 3. When there is no microwave oscillation

1) When touching START pad, oven lamp does not turn on.  
 Fan motor do not rotate, but cook indicator in display comes on.  
 \* Cause : **RELAY 2** does not operate. → refer to Circuit Diagram ( Point 3 )  
 - Check method

STATE	POINT	A	B
RELAY 2 ON		+5VDC	GND
RELAY 2 OFF		GND	+24VDC

2) When touching START pad, oven lamp turns on.  
 Fan motor and turntable rotate and cook indicator in display comes on.  
 \* Cause : **RELAY 1** does not operate. → refer to Circuit Diagram ( Point 2 )  
 - Check method

STATE	POINT	A	B
RELAY 1 ON		+5VDC	GND
RELAY 1 OFF		GND	+24VDC

### 4. When the door is opened during operation, the count down timer does not stop.

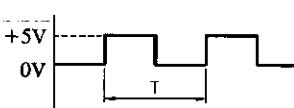
→ refer to Circuit Diagram( Point 1 )  
 - Check method

STATE	POINT	A	B
1) DOOR OPEN		OPEN	+5VDC
2) DOOR CLOSED		CLOSE	GND

CHECK NO	METHOD	REMEDY
1	Check the stage(ON,OFF) of the secondary interlock switch by resistance measurement.	Replace secondary interlock switch.

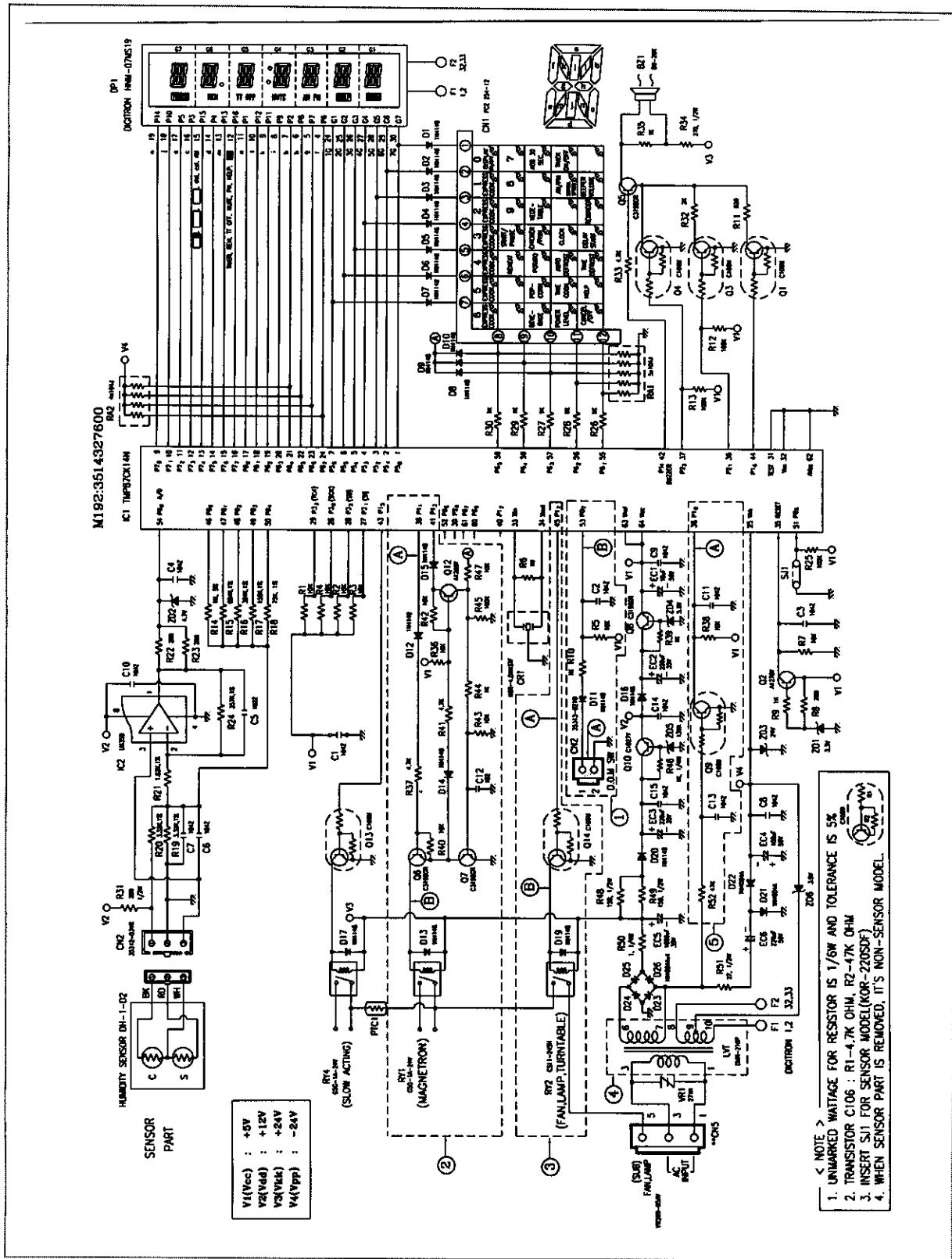
### 5. When the digital clock does not operate properly.

→ refer to Circuit Diagram( Point 5 )

POINT	WAVE FORM
A	 $T: 16.67 \text{ ms}(60\text{Hz})$

\* If clock does not keep exact time, you must check resistor R38,52,transistor Q9.

## 2. P.C.B. CIRCUIT DIAGRAM



**PRINTED CIRCUIT BOARD**

**3. P.C.B. LOCATION NO**

NO.	NAME	REF. NO.	SPECIFICATION	REF. NO.	QTY
1	BUZZER	BZ1	BM-20K	3515600100	1
2	C CERA	C1 ~ 4,6 ~ 11,13 ~ 15	50V HIKF 0.1uF Z	CCZF1H104Z	13
3	C CERA	C5,12	50V B 1000pF K	CCZB1H102K	2
4	C ELECTRO	EC1	50V RS 10uF (5X11) TP	CEXE1H100A	1
5	C ELECTRO	EC2,EC3	35V RSS 220uF (10X12.5) TP	CEXF1V221V	2
6	C ELECTRO	EC4	50V RSS 100uF (8X11.5) TP	CEXF1H101V	1
7	C ELECTRO	EC5	35V RSS 1000uF (13X25) TP	CEXF1V102V	1
8	C ELECTRO	EC6	50V RSS 220uF (10X16) TP	CEXF1H221V	1
9	CONN FILM	CN1	FCZ 254-12	441M367170	1
10	CONN WAFER	CN2	MOLEX 35312-0312 RED	30166M503R	1
11	CONN WAFER	CN3	YW396-02V	3519150520	1
12	CONN WAFER	CN4	YW396-05AV	3519150510	1
13	DIODE SWITCHIN	D1 ~ D17,D19,D20	1N4148 AUTO 52mm	DZN4148--	19
14	DIODE RECTIFIER	D21 ~ D26	1N4004A AUTO 52mm	DZN4004A--	6
15	DIODE ZENER	ZD1	UZ-3.3BSB	DZUZ3R3BSB	1
16	DIODE ZENER	ZD2	UZ-4.7BSB	DZUZ4R7BSB	1
17	DIODE ZENER	ZD3	UZ-24BSB	DZUZ24BSB-	1
18	DIODE ZENER	ZD4	UZ-5.6BSB	DZUZ5R6BSB	1
19	DIODE ZENER	ZD5	UZ-13BSA	DZUZ13BSA-	1
20	DIODE ZENER	ZD6	UZ-3.9BSB	DZUZ3R9BSB	1
21	DIGITRON	DP1	HNM-07MS19	DHNM07MS19	1
22	HOLDER VFD	DPH	NYLON 66	3513001400	1
23	IC MICOM	IC1	TMP87CK14N	13GS220S00	1
24	IC OP AMP	IC2	LM358	1CPLM358--	1
25	PCB MAIN	BOARD(98x197)	M192	3514327600	1
26	PTC	PTC1	390M (39 OHM, 120°C)	DP1390MK10	1
27	R CARBON FILM	R9,10,26 ~ 30,35,39,44	1/6 1K OHM 5%	RD-AZ102J-	10
28	R CARBON FILM	R32	1/6 2K OHM 5%	RD-AZ202J-	1
29	R CARBON FILM	R6,14	1/6 1M OHM 5%	RD-AZ105J-	2
30	R CARBON FILM	R1 ~ 5,7,36,38,40,42,43,47	1/6 10K OHM 5%	RD-AZ103J-	12
31	R CARBON FILM	R8,22,23	1/6 200 OHM 5%	RD-AZ201J-	3
32	R CARBON FILM	R11	1/6 820 OHM 5%	RD-AZ821J-	1
33	R CARBON FILM	R12,13,25,45	1/6 100K OHM 5%	RD-AZ104J-	4
34	R CARBON FILM	R33,37,41	1/6 4.7K OHM 5%	RD-AZ472J-	3
35	R CARBON FILM	R34	1/2 270 OHM 5% SMALL	RD-2Z271JS	1
36	R CARBON FILM	R46	1/4 1K OHM 5%	RD-4Z102J-	1
37	R CARBON FILM	R48,49	1/2 150 OHM 5% SMALL	RD-2Z151JS	2
38	R CARBON FILM	R31	1/2 200 OHM 5% SMALL	RD-2Z201JS	1
39	R FUSIBLE	R50	1/4 1 OHM 5%	RF-4Z109J-	1
40	R CARBON FILM	R51	1/2 27 OHM 5% SMALL	RD-2Z270JS	1

**PRINTED CIRCUIT BOARD**

NO	NAME	NUMBER	SPECIFICATION	REF. NO.	QUANTITY
41	R CARBON FILM	R52	1/6 47K OHM 5%	RD-AZ473J-	1
42	R METAL FILM	R15	1/6 604K OHM 1%	RN-AZ6043F	1
43	R METAL FILM	R16	1/6 301K OHM 1%	RN-AZ3013F	1
44	R METAL FILM	R17	1/6 150K OHM 1%	RN-AZ1503F	1
45	R METAL FILM	R18	1/6 75K OHM 1%	RN-AZ7502F	1
46	R METAL FILM	R19,R20	1/6 3.32K OHM 1%	RN-AZ3321F	2
47	R METAL FILM	R21	1/6 1.82K OHM 1%	RN-AZ1821F	1
48	R METAL FILM	R24	1/6 357K OHM 1%	RN-AZ3573F	1
49	R ARRAY	RA1	6P(5) 1/8 100K OHM 5%	RA-86X104J	1
50	R ARRAY	RA2	5P(4) 1/8 100K OHM 5%	RA-85X104J	1
51	RESONATOR CERA	CR1	CRT4.00MS	5P4R00MTS-	1
52	SW RELAY	RY1,4	G5G-1A 1C 1P DC24V	5SC0101122	2
53	SW RELAY	RY2	CS11-24SH 1C 1P	5SC0101129	1
54	TR	Q1,3,4,9,13,14	KRC-106M (AUTO)	TZRC106M-	6
55	TR	Q2,Q12	KTA-1266Y (AUTO) (1015Y)	TZTA1266Y-	2
56	TR	Q5 ~ 8	KTC-3198GR (AUTO) (1815)	TZTC3198GR	4
57	TR	Q10	KTC-1027Y	TZTC1027Y-	1
58	TRANS POWER	LVT	DMR-210P	5EPU041351	1
59	VARISTOR	VR1	SVC271D14A	DSVC271D14	1
60	WIRE COPPER	J4 ~ 6,10,11,13 ~ 15	1/0.52 TIN COATING 7.5mm	85801052GY	8
61	WIRE COPPER	J3,9	1/0.52 TIN COATING 15mm	85801052GY	2
62	WIRE COPPER	J2,7	1/0.52 TIN COATING 12.5m	85801052GY	2
63	WIRE COPPER	J1,8,SJ1	1/0.52 TIN COATING 10mm	85801052GY	3

# EXPLODED VIEW AND PARTS LIST

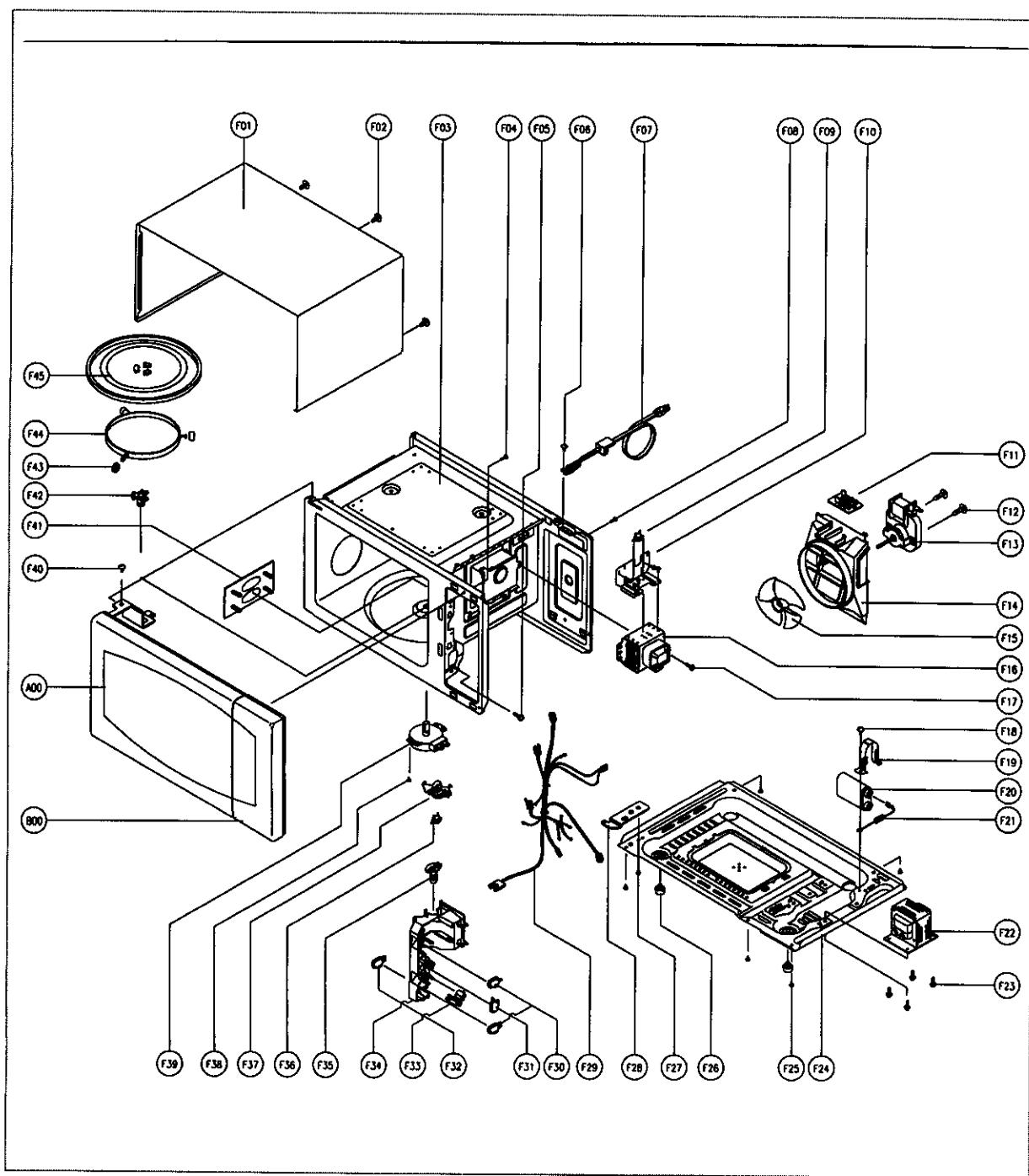
## 1. DOOR ASSEMBLY

Refer to Disassembly and assembly.

## 2. CONTROL PANEL ASSEMBLY

Refer to Disassembly and assembly.

## 3. TOTAL ASSEMBLY



**EXPLODED VIEW AND PARTS LIST**

REF. NO.	PART. CODE	DESCRIPTION	QTY
A00	3511718900	DOOR AS	KOR-220S
B00	PKCPSWAG00	CONTROL-PANEL AS	KOR-220S
F01	3510806900	CANINET	SECC T0.6
F02	3516004100	SPECIAL SCREW	T1 TRS LR4 POLE 4*10 SE MFZN
F03	3516115800	CAVITY AS	KOR-220S
	3516114800	CAVITY JOINT AS	KOR-220S
F04	7122401211	SCREW TAPPING	T2S TRS 4*12 MFZN
F05	7122401211	SCREW TAPPING	T2S TRS 4*12 MFZN
F06	7122401011	SCREW TAPPING	T1 TRS 4*10 MFZN
F07	35113U6WOL	CORD POWER AS	3X16AWG 120x120 120-RTMI
F08	7122401211	SCREW TAPPING	T2S TRS 4*12 MFZN
F09	3518904400	THERMOSTAT	OFF:120 ON:60 VN #187
F10	3515307500	SUPPORTER MAGNETRON	SECC T1.2
F11	3518607200	NOISE FILTER	DWLF-M24
F12	7122403011	SCREW TAPPING	T2S PAN 4*30 MFZN
F13	3963822700	MOTOR SHADED POLE	120V 60HZ OEM-15DWX1-B1
F14	3512514200	GUIDE WIND	PP
F15	3511800100	FAN	PP GF20
F16	3518003900	MAGNETRON	RM269JF
F17	3516004000	SPECIAL SCREW	T2 BOLT FLANGE 5x12 DARCRO
F18	7272400811	SCREW TAPTITE	TT3 TRS 4x8 MFZN
F19	3513003200	HOLDER HV CAPACITOR	SECC T0.6
F20	3518302300	CAPACITOR HV	2100VAC 1.10uF #187
F21	3518400120	DOIDE HV	HVR-1X-70B 400MA GE RED
F22	3518120000	TRANS HV	DT-R12A0-22T
F23	3516003700	SPECIAL SCREW	TT3 HEX 4x8 FLG MFZN
F24	3510314800	BASE	KOR-220S
F25	7112401011	SCREW TAPPING	T1 TRS 4x10 MFZN
F26	3512101400	FOOT	PP DASF-310
F27	7272400811	SCREW TAPTITE	TT3 TRS 4x8 MFZN
F28	3515202800	STOPPER HINGE *U AS	KOR-121M0A
F29	3512719400	HARNESS MAIN	KOR-220S
F30	4415A17352	SW MICRO	VP-533A-OF SPNO #187 200G
F31	4415A66600	SW MICRO	VP-532A-OF SPNC #187 200G
F32	4415A66910	SW MICRO	VP-531A-OF / SZM-V16
F33	3513702600	LEVER LOCK	POM
F34	3513816700	LOCK	PP
F35	3513601500	LAMP	BL 125V 25W T25 C5A H187

**EXPLODED VIEW AND PARTS LIST**

REF. NO.	PART NUMBER	ITEM NAME	DESCRIPTION	QTY
F36	3518905810	THERMOSTAT	OFF:100 ON:0 H#187 NB	1
F37	3513003410	HOLDER THERMOSTAT	PP (BK)	1
F38	7121400611	SCREW TAPPING	T2S PAN 4x6 MFZN	1
F39	3966820200	MOTOR SYNCRO	120V 2W GM-16-12F17	1
F40	7272400811	SCREW TAP TITE	TT3 TRS 4x8 MFZN	2
F41	3511406220	COVER WAVE GUIDE	PP J640A WHITE	1
F42	3517400620	COUPLER	XAREC	1
F43	3514701510	ROLLER	TEFLON	3
F44	3512522600	GUIDE ROLLER	XAREC	1
F45	441X335A10	TRAY	GLASS	1