

# SHARP SERVICE MANUAL

SX737R210APT/

## MICROWAVE OVEN



**MODEL R-210A**

In interests of user-safety the oven should be restored to its original condition and only parts identical to those specified should be used.

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## SHARP CORPORATION



# SERVICE MANUAL

## SHARP

### MICROWAVE OVEN

R-210A

#### GENERAL IMPORTANT INFORMATION

This Manual has been prepared to provide Sharp Corp. Service engineers with Operation and Service Information.

It is recommended that service engineers carefully study the entire text of this manual, so they will be qualified to render satisfactory customer service.

#### CAUTION MICROWAVE RADIATION

**DO NOT BECOME EXPOSED TO RADIATION FROM THE MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.**

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

#### WARNING

Never operate the oven until the following points are ensured.

- (A) The door is tightly closed.
- (B) The door brackets and hinges are not defective.
- (C) The door packing is not damaged.
- (D) The door is not deformed or warped.
- (E) There is not any other visible damage with the oven.

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

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

Removal of the outer wrap gives access to potential above 250V.

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

**SHARP CORPORATION**

**OSAKA, JAPAN**

PRODUCT SPECIFICATIONS

APPEARANCE VIEW

OPERATING SEQUENCE

FUNCTION OF IMPORTANT COMPONENTS

SERVICING AND TROUBLESHOOTING CHART

TEST PROCEDURE

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

MICROWAVE MEASUREMENT

WIRING DIAGRAM

PARTS LIST

## PRODUCT DESCRIPTION

### SPECIFICATION

ITEM	DESCRIPTION
Power Requirements	110 Volts 60 Hertz Single phase, 2 wire
Power Consumption	1.1 KW
Power Output	700 watts nominal of RF microwave energy (IEC-705) 600 watts nominal of RF microwave energy (2 litre water load ) Operating frequency 2450 MHz
Case Dimensions	Width 450 mm Height 295 mm including foot Depth 355 mm
Cooking Cavity Dimensions	Width 288 mm Height 195 mm Depth 319 mm
Turntable diameter	272mm
Control Complement	30 min. Single Speed Timer. Microwave Power for Variable Cooking Repetition Rate;  HIGH ..... Full power throughout the cooking time MED HIGH (MEDIUM HIGH) ..... approx. 70% of FULL Power MEDIUM ..... approx. 50% of FULL Power MED LOW/ DEFROST ..... approx. 30% of FULL Power (MEDIUM LOW/ DEFROST) LOW ..... approx. 10% of FULL Power
Set Weight (Approx.)	Approx. 13 kg

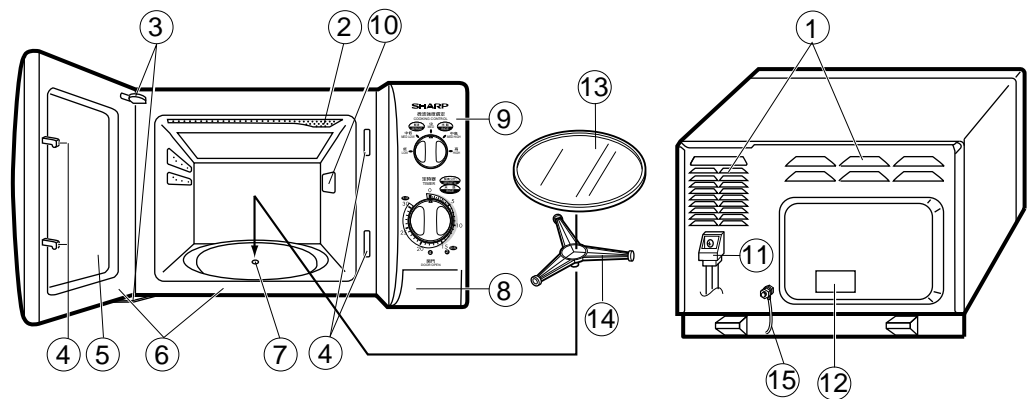
### GENERAL INFORMATION

#### WARNING

**THIS APPLIANCE MUST BE EARTHED.**

## APPEARANCE VIEW

OVEN

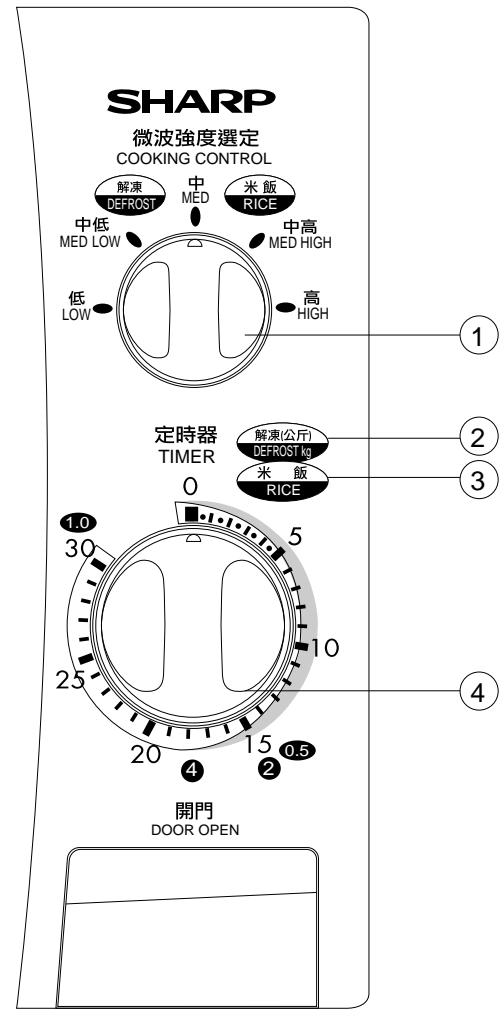


- |                         |                                |                       |
|-------------------------|--------------------------------|-----------------------|
| 1. Ventilation openings | 6. Door seals sealing surfaces | 11. Power supply cord |
| 2. Oven lamp            | 7. Coupling                    | 12. Rating label      |
| 3. Door hinges          | 8. Door open button            | 13. Turntable         |
| 4. Door safety latches  | 9. Control panel               | 14. Roller stay       |
| 5. See through door     | 10. Waveguide cover            | 15. Earth wire        |

## CONTROL PANEL

- 1 VARIABLE COOKING CONTROL  
There are five power levels. The approximate percentage of microwave power for each setting is:
 

HIGH	100%
MED HIGH (MEDIUM HIGH)	70%
MED (MEDIUM)	50%
MED LOW/ DEFROST (MEDIUM LOW/ DEFROST)	30%
LOW	10%
- 2 MEAT DEFROST GUIDE
- 3 RICE COOKING GUIDE
- 4 TIMER (0-30 minutes)  
Turn to set cooking time or weight of defrost food.



## OPERATION SEQUENCE

### OFF CONDITION

- When the timer knob is at " 0 ", the oven is OFF condition.
- Closing the oven door activates the 1st latch switch, the 2nd latch switch and monitor switch.

#### IMPORTANT:

When the oven door is closed, the contacts COM-NC of the monitor switch must be open.

**Figure O-1 on page 20**

### MICROWAVE COOKING CONDITION

#### HIGH COOKING

Set the variable cooking control to HIGH and then set the timer.

#### Function sequence

**Figure O-2 on page 20**

- Following components are energized.

Power transformer	H.V. capacitor	Timer motor
Magnetron	H.V. rectifier	Fan motor
H. V. fuse	Turntable motor	Oven lamp

- Rated voltage is supplied to the primary winding of the power transformer. The voltage is converted to about 3.3 volts A.C. output on the filament winding and high voltage of approximately 2000 volts A.C. on the secondary winding.
- The filament winding voltage (3.3 volts) heats the magnetron filament and the high voltage (2000 volts) is sent to the voltage doubling circuit, where it is doubled to negative voltage of approximately 4000 volts D.C..
- The 2450 MHz microwave energy produced in the magnetron generates a wave length of 12.24 cm. This energy is channelled through the waveguide (transport channel) into the oven cavity, where the food is placed to be cooked.
- When the cooking time is up, the timer returns to "0", the bell rings and the contacts of the timer are opened. Then following components are turned off.

Power transformer	Magnetron	Timer motor
Turntable motor	H.V. capacitor	Fan motor
H. V. fuse	H.V. rectifier	Oven lamp

- When the oven door is opened during a cooking cycle, the switches come to the following positions and they are common to the other cooking conditions too.

Switch	Contact	Condition	
		During Cooking	Oven Door Open(No cooking)
1st latch Switch	COM-NO	Closed	Opened
Monitor Switch	COM-NC	Opened	Closed
2nd latch switch	COM-NO	Closed	Opened

The circuit to the power transformer, turntable motor, timer motor, fan motor and oven lamp are cut off when the COM-NO contacts of the 2nd latch switch and 1st latch switch are made open. The timer stops to indicate how much cooking time remains.

#### 7. MONITOR SWITCH CIRCUIT

The monitor switch is mechanically controlled by the oven door, and monitors the operation of the 1st latch switch and 2nd latch switch.


7-1. When the oven door is opened during or after the cycle of a cooking program, the 1st latch switch and 2nd latch switch must open their (COM-NO) contacts first. After that the contacts (COM-NC) of the monitor switch can be closed.

7-2. When the oven door is closed. The contacts (COM-NC) of the monitor switch must be opened and the contacts (COM-NO) of the 2nd latch switch and the 1st latch switch must be closed.

7-3. When the oven door is opened and the (COM-NO) contacts of the 1st latch switch and the contacts (COM-NO) of the 2nd latch switch remain closed, the fuse 13A will blow, the monitor switch is closed and a short circuit is caused.

### MEDIUM HIGH, MEDIUM, MEDIUM LOW, LOW COOKING

When the microwave oven is preset for variable cooking power, the rated voltage is supplied to the power transformer intermittently within a 30-second time base through the vari switch. The following levels of microwave power are given.

SETTING	30 sec. ON		
HIGH		Approx. 100%	
MEDIUM HIGH	23.2 sec. ON	6.8 sec. OFF	Approx. 70%
MEDIUM	16.5 sec. ON	13.5 sec. OFF	Approx. 50%
MEDIUM LOW	9.8 sec. ON	20.2 sec. OFF	Approx. 30%
LOW	5.0 sec. ON	25 sec. OFF	Approx. 10%

Note: The ON/OFF time ratio does not exactly correspond to the percentage of microwave power, because approx. 2 seconds are needed for heating up the magnetron filament.

## FUNCTION OF IMPORTANT COMPONENTS

### DOOR OPEN MECHANISM

The door can be opened by pushing the open button on the control panel. When the open button is pushed, the switch lever on the latch hook is moved upward, operating the latch head. The latch head is moved upward, and released from the latch hook. Now, the door can be opened.

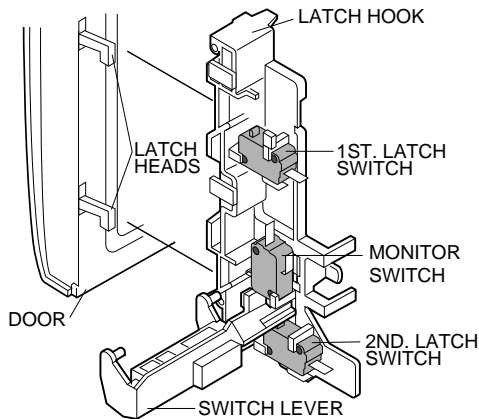


Figure D-1. Door Open Mechanism

### 1ST. LATCH SWITCH AND 2ND. LATCH SWITCH

1. When the oven door is closed, the contacts (COM-NO) must be closed.
2. When the oven door is opened, the contacts (COM-NO) must be opened.

### MONITOR SWITCH

1. When the oven door is closed, the contacts (COM-NC) must be opened.
2. When the oven door is opened, the contacts (COM-NC) must be closed.
3. If the oven door is opened and the contacts (COM-NO) of the 1st latch switch and 2nd latch switch fail to open, the fuse blows simultaneously with closing the contacts (COM-NC) of the monitor switch.

**CAUTION:** BEFORE REPLACING A FUSE TEST THE 1ST LATCH SWITCH, 2ND LATCH SWITCH AND MONITOR SWITCH FOR PROPER OPERATION. (REFER TO CHAPTER "TEST PROCEDURE".)

### FUSE

1. The fuse blows when the contacts (COM-NO) of the 1st latch switch and 2nd latch switch remain closed with the oven door open and when the monitor switch closes.
2. If the wire harness or electrical components are short-circuited, the fuse blows to prevent an electric shock or fire hazard.

### HIGH VOLTAGE FUSE

The high voltage fuse blows when the high voltage rectifier or the magnetron is shorted.

### TEMPERATURE FUSE 120°C (OVEN)

The temp. fuse located on the top of the oven cavity is designed to prevent damage to the oven if the foods in the oven catch fire due to over heating produced by improper

setting of cook time or failure of control unit. Under normal operation, the temp. fuse remains closed. However, when abnormally high temperatures are reached within the oven cavity, the temp. fuse will open at 120°C, causing the oven to shut down. The defective fuse must be replaced with a new one.

### THERMAL CUT-OUT 95°C (MAGNETRON )

The thermal cut-out located on the top of the oven cavity is designed to prevent damage to the magnetron if an over heated condition develops in the tube due to cooling fan failure, obstructed air guide, dirty or blocked air intake, etc. Under normal operation, the thermal cut-out remains closed. However, when abnormally high temperatures are reached within the magnetron, the thermal cut-out will open at 95°C, causing the oven to shut down. When the magnetron has cooled to 75°, the thermal cut-out closes and cook cycle will resume.

### NOISE FILTER

The noise filter prevents the radio frequency interference that might flow back in the power circuit.

### TURNTABLE MOTOR

The turntable motor drives the roller stay to rotate the turntable.

### FAN MOTOR

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

### TIMER MOTOR (WITH VARI-SWITCH)

#### Timer switch

1. When the timer is at "0" position, the switch of the timer are opened.
2. When the timer is turned clockwise from "0" position, the switch of the timer are closed.

#### Vari-switch

If the variable cooking control is set at HIGH, MEDIUM HIGH, MEDIUM, MEDIUM LOW or LOW cooking position, Rated voltage is supplied to the power transformer intermittently within a 30 seconds time base. The following chart shows the vari-switch operation in the various modes.

SETTING	30 sec. ON		Approx.
HIGH	30 sec. ON		100%
MEDIUM HIGH	23.2 sec. ON 6.8 sec. OFF		70%
MEDIUM	16.5 sec. ON 13.5 sec. OFF		50%
MEDIUM LOW	9.8 sec. ON 20.2 sec. OFF		30%
LOW	5.0 sec. ON 25 sec. OFF		10%

Note: The ON/OFF time ratio does not exactly correspond to the percentage of microwave power,

because approx. 2 seconds are needed for heating up the magnetron filament.

## SERVICING

### WARNING TO SERVICE PERSONNEL

Microwave ovens contain circuitry capable of producing very high voltage and current. Contact with following parts will result in electrocution.

High voltage capacitor, Power transformer, Magnetron, High voltage rectifier assembly, High voltage Fuse, High voltage harness.

#### REMEMBER TO CHECK 3D

- 1) Disconnect the supply.
- 2) Door opened, and wedged open.
- 3) Discharge high voltage capacitor.

#### WARNING AGAINST THE CHARGE OF THE HIGH-VOLTAGE CAPACITOR

The high-voltage capacitor remains charged about 60 seconds after the oven has been switched off. Wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is, of the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Sharp recommend that wherever possible fault-finding is carried out with the supply disconnected. It may in, some cases, be necessary to connect the supply after the outer case has been removed, in this event carry out 3D checks and then disconnect the leads to the primary of the power transformer. Ensure that these leads remain isolated from other components and the oven chassis. (Use insulation tape if necessary.) When the testing is completed carry out 3D checks and reconnect the leads to the primary of the power transformer.

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

#### REMEMBER TO CHECK 4R

- 1) Reconnect all leads removed from components during testing.
- 2) Replace the outer case (cabinet).
- 3) Reconnect the supply.
- 4) Run the oven. Check all functions.

Microwave ovens should not be run empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven turntable, close the door and set the power level to HIGH. And set the microwave timer for two (2) minutes. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out 3D checks and re-examine the connections to the component being tested.

## TROUBLESHOOTING GUIDE

When troubleshooting the microwave oven, it is helpful to follow the Sequence of Operation in performing the checks. Many of the possible causes of trouble will require that a specific test be performed. These tests are given a procedure letter which will be found in the "Test Procedure" section.

**IMPORTANT:** If the oven becomes inoperative because of a blown fuse 13A in the 1st. latch switch - 2nd. latch switch - monitor switch circuit, check the 1st. latch switch, 2nd. latch switch and monitor switch before replacing the fuse 13A.



### TROUBLESHOOTING CHART

TEST PROCEDURE		A	B	C	D	E	E	E	F	F	I	I	I	G	G	H							J	K			
POSSIBLE CAUSE AND DEFECTIVE PARTS		MAGNETRON	POWER TRANSFORMER	H.V. RECTIFIER ASSEMBLY	HIGH VOLTAGE CAPACITOR	1ST. LATCH SWITCH	2ND. LATCH SWITCH	MONITOR SWITCH	TEMPERATURE FUSE 120°C (OVEN)	THERMAL CUT-OUT 95°C (MG)	TIMER MOTOR	TIMER CONTACT	TIMER VARI. SWITCH	FAN MOTOR	TURNTABLE MOTOR	FUSE 13A	POWER SUPPLY CORD	SHORTED WIRE HARNESS	OPENED WIRE HARNESS	OVEN LAMP OR SOCKET	BLOCKED VENTILATION OPENING	MISADJUSTMENT SWITCH	HOME FUSE OR BREAKER	WALL OUTLET	BLOCKED COOLING FAN	NOISE FILTER	H. V. FUSE
CONDITION	PROBLEM																										
OFF CONDITION	Fuse 13A blows when power cord is plugged into wall outlet.							○							○		○									○	
	Fuse 13A blows when the door is opened.					○	○														○						
	Home fuse blows when power cord is plugged into wall outlet.															○						○					
COOKING CONDITION	Oven does not operate at all.					○	○		○	○		○			○	○		○			○	○	○		○		
	Oven goes into cook cycle but shuts down before end of cooking cycle.								○	○			○							○					○		
	Oven lamp does not light. (Fan motor rotates)																		○	○							
	Fan motor does not operate, but oven lamp lights.													○					○					○			
	Timer motor does not operate, but oven lamp lights.										○								○								
	Turntable motor does not operate, but oven lamp lights.														○				○								
	Oven seems to be operating but little or no heat is produced in oven load. (Microwave power control is set at "HIGH" position, and turntable motor operates.)	○	○	○	○														○							○	
	Oven does not operate properly in another position except "HIGH" position.										○		○														

## TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
A	<b>MAGNETRON TEST</b>
	<div style="border: 1px solid black; padding: 5px;"> <p>NEVER TOUCH ANY PART IN THE CIRCUIT WITH YOUR HAND OR AN INSULATED TOOL WHILE THE OVEN IS IN OPERATION.</p> </div>
	<p>CARRY OUT <u>3D</u> CHECKS.</p>
	<p>Isolate the magnetron from the high voltage circuit by removing all leads connected to the filament terminal.</p>
	<p>To test for an open circuit filament use an ohmmeter to make a continuity test between the magnetron filament terminals, the meter should show a reading of less than 1 ohm.</p>
	<p>To test for a short circuit filament to anode condition, connect ohmmeter between one of the filament terminals and the case of the magnetron (ground). This test should be indicated an infinite resistance. If a low or zero resistance reading is obtained then the magnetron should be replaced.</p>
	<p><b>MICROWAVE OUTPUT POWER (IEC 705)</b></p>
	<p>The following test procedure should be carried out with the microwave oven in a fully assembled condition (outer case fitted). Microwave output power from the magnetron can be measured by way of IEC 705, i.e. it can be measured by using water load how much it can be absorbed by the water load. To measure the microwave output power in the microwave oven, the relation of calorie and watt is used. When P(W) heating works for t(second), approximately <math>P \times t / 4.187</math> calorie is generated. On the other hand, if the temperature of the water with V(ml) rises <math>\Delta T</math> (<math>^{\circ}\text{C}</math>) during this microwave heating period, the calorie of the water is <math>V \times \Delta T</math>.</p>
	<div style="border: 1px solid black; padding: 5px;"> <p>The formula is as follows;  <math>P \times t / 4.187 = V \times \Delta T</math>      <math>P \text{ (W)} = 4.187 \times V \times \Delta T / t</math>  Our condition for water load is as follows:  Room temperature.....around <math>20^{\circ}\text{C}</math>      Power supply Voltage.....Rated voltage  Water load.....1000 g      Initial temperature.....<math>10 \pm 2^{\circ}\text{C}</math>      Heating time.....60 sec.  <math>P = 70 \times \Delta T</math></p> </div>
	<p>Measuring condition:</p>
	<ol style="list-style-type: none"> <li>1. Container The water container must be a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190 mm.</li> <li>2. Temperature of the oven and vessel The oven and the empty vessel are at ambient temperature prior to the start of the test.</li> <li>3. Temperature of the water The initial temperature of the water is <math>(10 \pm 2)^{\circ}\text{C}</math>.</li> <li>4. Select the initial and final water temperature so that the maximum difference between the final water temperature and the ambient temperature is <math>5^{\circ}\text{C}</math>.</li> <li>5. Select stirring devices and measuring instruments in order to minimize addition or removal of heat.</li> <li>6. The graduation of the thermometer must be scaled by <math>0.1^{\circ}\text{C}</math> at minimum and an accurate thermometer.</li> <li>7. The water load must be <math>(1000 \pm 5)</math> g.</li> <li>8. "t" is measured while the microwave generator is operating at full power. Magnetron filament heat-up time is not included.</li> </ol>
	<p>NOTE: The operation time of the microwave oven is "t + 2" sec. 2 sec. is magnetron filament heat-up time.</p>
	<p>Measuring method:</p>
	<ol style="list-style-type: none"> <li>1. Measure the initial temperature of the water before the water is added to the vessel. (Example: The initial temperature <math>T_1 = 11^{\circ}\text{C}</math>)</li> <li>2. Add the 1 litre water to the vessel.</li> <li>3. Place the load on the centre of the shelf.</li> <li>4. Operate the microwave oven at HIGH for the temperature of the water rises by a value <math>\Delta T</math> of <math>(10 \pm 2)^{\circ}\text{C}</math>.</li> <li>5. Stir the water to equalize temperature throughout the vessel.</li> <li>6. Measure the final water temperature. (Example: The final temperature <math>T_2 = 21^{\circ}\text{C}</math>)</li> <li>7. Calculate the microwave power output <u>P</u> in watts from above formula.</li> </ol>

## TEST PROCEDURES

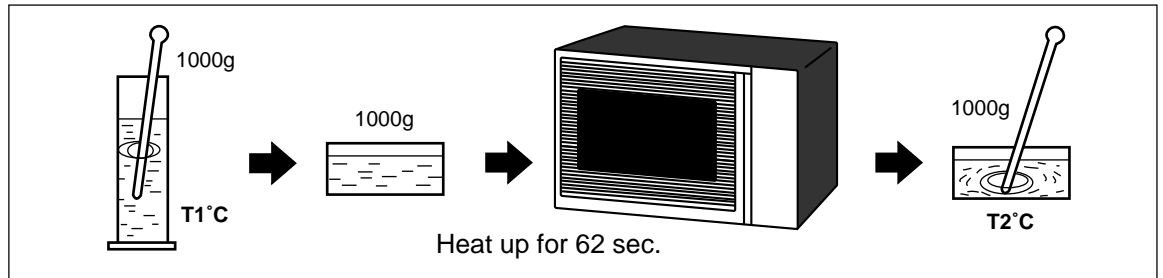
PROCEDURE  
LETTER

## COMPONENT TEST

Initial temperature ..... T1 = 11°C  
 Temperature after (60 + 2) = 62 sec. .... T2 = 21°C  
 Temperature difference Cold-Warm .....  $\Delta T1 = 10^\circ\text{C}$   
 Measured output power  
 The equation is "P = 70 x  $\Delta T$ " ..... P = 70 x 10°C = 700 Watts

**JUDGMENT:** The measured output power should be at least  $\pm 15\%$  of the rated output power.

CAUTION: 1°C CORRESPONDS TO 70 WATTS. REPEAT MEASUREMENT IF THE POWER IS INSUFFICIENT.

**MICROWAVE OUTPUT POWER (2 Litre water load)**

The following test procedure should be carried out with the microwave oven in a fully assembled condition (with outer case fitted).

Microwave output power from the magnetron can be measured by way of substitution, i.e. it can be measured by using a water load how much it can be absorbed by the water load. To measure the microwave output power in the microwave oven, the relation of calorie and watt is used.

On the other hand, if the temperature of the water with V(ml) rises  $\Delta T$  ( $^\circ\text{C}$ ) during this microwave heating period, the calorie of the water is  $V \times \Delta T$ .

The formula is as follows;

$$P \times t / 4.2 = V \times \Delta T \quad P \text{ (W)} = 4.2 \times V \times \Delta T / t$$

Our condition for water load is as follows:

Room temperature .....  $23 \pm 2^\circ\text{C}$       Power supply Voltage ..... Rated voltage

Water load. .... 2000 ml      Initial temperature .....  $23 \pm 1^\circ\text{C}$       Heating time ..... 2 min. 20 sec.

$$P = 60 \times \Delta T$$

Measuring method:

- The two water containers must be prepared.  
The water container must be one (1) litre beaker made of Pyrex glass and its diameter approximately 12cm.
- Put the one (1) litre water into each beaker (Each beaker has one litre water). The initial temperature of the water should be  $23 \pm 1^\circ\text{C}$ .
- Mark T1 on the one beaker and mark T2 on the other one. And stir the water and measure the temperature of water the thermometer and note them. The graduation of the thermometer must be scaled by  $0.1^\circ\text{C}$  at minimum and an accurate mercury thermometer is recommended.
- Place the two (2) beakers as touching each other in the centre of the oven cavity.
- Set the timer to 2 minutes and 20 seconds, start the oven at 100% power.
- The time must be measured with stopwatch or wristwatch.
- After 2 minutes and 20 seconds, stop the oven by opening the door.
- Put the two (2) beakers out of the oven cavity and measure the temperature of the water by stirring the water with thermometer and note them.

## Example

Initial temperature ..... T1 = 23°C    T2 = 24°C  
 Temperature after 2 min. 22 sec. .... T1 = 33°C    T2 = 34°C  
 Temperature difference Cold-Warm .....  $\Delta T1 = 10^\circ\text{C}$      $\Delta T2 = 10^\circ\text{C}$   
 Mean temperature rise  $\Delta T$  .....  $\Delta T = (\Delta T1 \pm \Delta T2) / 2 = (10^\circ\text{C} + 10^\circ\text{C}) / 2 = 10^\circ\text{C}$   
 Measured output power  
 The equation is  $P = 60 \times \Delta T$  ..... P = 60 x 10°C = 600 Watts

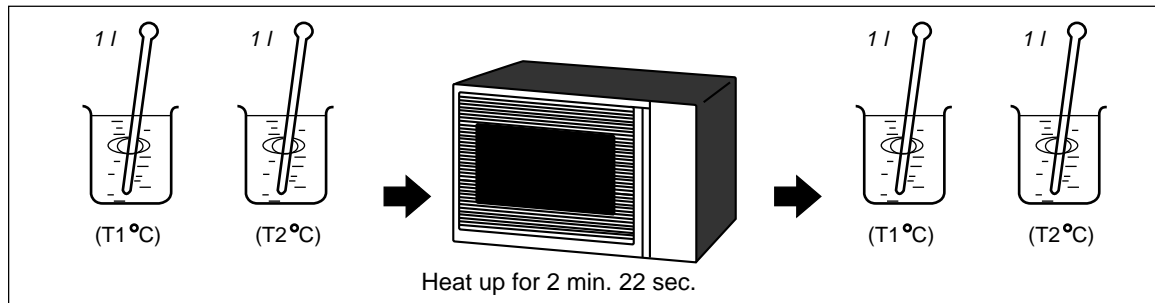
**NOTE:** The measured output power should be at least  $\pm 15\%$  of the rated output power.

## TEST PROCEDURES

PROCEDURE  
LETTER

## COMPONENT TEST

CAUTION: 1°C CORRESPONDS TO 60 WATTS. REPEAT MEASUREMENT IF THE POWER IS INSUFFICIENT.

**B** **POWER TRANSFORMER TEST**

**WARNING:** High voltages and large currents are present at the secondary winding and filament winding of the power transformer. It is very dangerous to work near this part when the oven is on. NEVER make any voltage measurements of the high-voltage circuits, including the magnetron filament.

CARRY OUT 3D CHECKS.

Disconnect the leads to the primary winding of the power transformer. Disconnect the filament and secondary winding connections from the rest of the HV circuitry. Using an ohmmeter, set on a low range, it is possible to check the continuity of all three windings. The following readings should be obtained:

- a. Primary winding ..... 0.5 ohms approximately
- b. Secondary winding ..... 107 ohms approximately
- c. Filament winding ..... less than 1 ohm

If the reading obtained are not stated as above, then the power transformer is probably faulty and should be replaced.

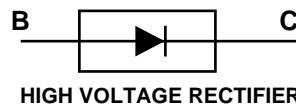
CARRY OUT 4R CHECKS.

**C** **HIGH VOLTAGE RECTIFIER TEST**

CARRY OUT 3D CHECKS.

Isolate the high voltage rectifier assembly from the HV circuit. The high voltage rectifier can be tested using an ohmmeter set to its highest range. Connect the ohmmeter across the terminal B+C of the high voltage rectifier and note the reading obtained. Reverse the meter leads and note this second reading. The normal resistance is infinite in one direction and more than 100 kΩ in the other direction.

CARRY OUT 4R CHECKS.



NOTE: FOR MEASUREMENT OF THE RESISTANCE OF THE RECTIFIER, THE BATTERIES OF THE MEASURING INSTRUMENT MUST HAVE A VOLTAGE AT LEAST 6 VOLTS, BECAUSE OTHERWISE AN INFINITE RESISTANCE MIGHT BE SHOWN IN BOTH DIRECTIONS.

**D** **HIGH VOLTAGE CAPACITOR TEST**

CARRY OUT 3D CHECKS.

- A. Isolate the high voltage capacitor from the circuit.
- B. Continuity check must be carried out with measuring instrument which is set to the highest resistance range.
- C. A normal capacitor shows continuity for a short time (kick) and then a resistance of about 10MΩ after it has been charged.
- D. A short-circuited capacitor shows continuity all the time.
- E. An open capacitor constantly shows a resistance about 10 MΩ because of its internal 10MΩ resistance.

## TEST PROCEDURES

### PROCEDURE LETTER

### COMPONENT TEST

- F. When the internal wire is opened in the high voltage capacitor shows an infinite resistance.  
G. The resistance across all the terminals and the chassis must be infinite when the capacitor is normal.

If incorrect reading are obtained, the high voltage capacitor must be replaced.

CARRY OUT 4R CHECKS.

### E SWITCH TEST

Isolate the switch to be tested and using an ohmmeter check between the terminals as described in the following table.

CARRY OUT 3D CHECKS.

Table: Terminal Connection of Switch

Plunger Operation	COM to NO	COM to NC
Released	O.C.	S.C.
Depressed	S.C.	O.C.

COM; Common terminal,  
NO; Normally open terminal  
NC; Normally close terminal  
S.C.; Short circuit  
O.C.; Open circuit

If incorrect readings are obtained, make the necessary switch adjustment or replace the switch.

CARRY OUT 4R CHECKS.

### F TEMPERATURE FUSE OR THERMAL CUT-OUT TEST

CARRY OUT 3D CHECKS.

Disconnect the leads from the terminals of the thermal cut-out or temperature fuse. Then using an ohmmeter, make a continuity test across the two terminals as described in the below.

CARRY OUT 4R CHECKS.

Table: Temperature Fuse or Thermal Cut-out Test

Parts Name	Temperature of "ON" condition (closed circuit).	Temperature of "OFF" condition (open circuit).	Indication of ohmmeter (When room temperature is approx. 20°C.)
Temp. fuse 120°C	This is not resetable type.	Above 120°C	Closed circuit
Thermal cut-out 95°C	Below 75°C	Above 95°C	Closed circuit.

If incorrect readings are obtained, replace the temperature fuse or thermal cut-out.

An open circuit thermal cut-out (MG) indicates that the magnetron has overheated, this may be due to restricted ventilation, cooling fan failure.

An open circuit temperature fuse (OVEN) indicates that the food in the oven cavity may catch fire, this may be due to overheating produced by improper setting of the cooking time or failure of the control panel.

### G MOTOR WINDING TEST

CARRY OUT 3D CHECKS.

Disconnect the leads from the motor. Using an ohmmeter, check the resistance between the two terminals as described in the table below.

Table: Resistance of Motor

Motors	Resistance
Fan motor	Approximately 60 $\Omega$
Turntable motor	Approximately 3.4 k $\Omega$

If incorrect readings are obtained, replace the motor.

CARRY OUT 4R CHECKS.

### H FUSE 13A

CARRY OUT 3D CHECKS.

If the fuse 13A is blown when the door is opened, check the 1st latch switch, 2nd latch switch, monitor switch and monitor resistor.

## TEST PROCEDURES

PROCEDURE  
LETTER

## COMPONENT TEST

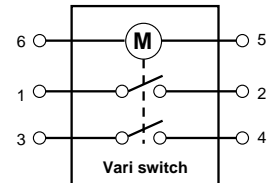
If the fuse 13A is blown by incorrect door switching replace the defective switch(es) and the fuse 13A.  
If the fuse 13A is blown, there is a shorts or grounds in electrical parts or wire harness.  
Check them and replace the defective parts or repair the wire harness.

CARRY OUT 4R CHECKS.

**CAUTION:** Only replace fuse with the correct value replacement.

**I** TIMER MOTOR (WITH VARI-SWITCH) TEST

CARRY OUT 3D CHECKS before any of the following timer tests.



Timer motor with Vari-Switch

**TIMER SWITCH- CONTACTS**

Disconnect the leads from terminals described at following table. Connect an ohmmeter across terminals described at following table.

Advance the timer and check that a short circuit reading is obtained on the meter.

Turn the timer back to the zero (0) position and check that an open circuit reading is obtained on the meter. If these readings are not obtained then replace the timer.

Disconnecting and checking terminals	1 and 2
--------------------------------------	---------

**TIMER - MOTOR**

Disconnect the leads from terminals described at following table. Connect an ohmmeter across the timer motor winding, terminals are described at following table, and check that a reading of resistance described at following table is indicated.

If this reading is not obtained then the timer is probably defective and should be replaced.

Disconnecting and checking terminals	5 and 6
Resistance of motor winding	approximately 11.3 kΩ

CARRY OUT 4R CHECKS after any of the above tests.

**J** NOISE FILTER TEST

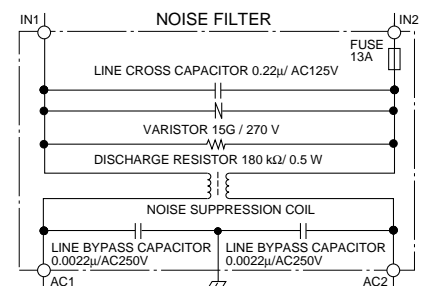
CARRY OUT 3D CHECKS.

Disconnect the leads from the terminals of the noise filter. Using an ohmmeter, check between the terminals as described in the following table.

MEASURING POINT	INDICATION OF OHMMETER
Between IN1 and IN2	Approx. 180 kΩ
Between terminal N and WHITE	Short circuit
Between terminal L and RED	Short circuit

If incorrect readings are obtained, replace the noise filter unit.

CARRY OUT 4R CHECKS.

**K** HIGH VOLTAGE FUSE TEST

CARRY OUT 3D CHECKS.

If the high voltage fuse is blown, there could be a short in the high voltage rectifier or the magnetron.  
Check them and replace the defective parts and the high voltage fuse.

CARRY OUT 4R CHECKS.

**CAUTION:** ONLY REPLACE HIGH VOLTAGE FUSE WITH THE CORRECT VALUE REPLACEMENT.

## COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

**WARNING:** Avoid possible exposure to microwave energy. Please follow the instructions below before operating the oven.

1. Disconnect oven from power supply.
2. Make sure that a definite "click" can be heard when the microwave oven door is unlatched. (Hold the door in a closed position with one hand, then push the door open button with the other, this causes the latch leads to rise, it is then possible to hear a "click" as the door switches operate.)
3. Visually check the door and cavity face plate for damage (dents, cracks, signs of arcing etc.).
1. Door does not close firmly.
2. Door hinge, support or latch hook is damaged.
3. The door gasket or seal is damaged.
4. The door is bent or warped.
5. There are defective parts in the door interlock system.
6. There are defective parts in the microwave generating and transmission assembly.
7. There is visible damage to the oven.

Carry out any remedial work that is necessary before operating the oven.

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

Do not operate the oven:

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

Please refer to 'OVEN PARTS, CABINET PARTS, CONTROL PANEL PARTS, DOOR PARTS', when carrying out any of the following removal procedures:

### WARNING FOR WIRING

**To prevent an electric shock, take the following manners.**

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

### OUTER CASE REMOVAL

To remove the outer case proceed as follows.

1. Disconnect oven from power supply.
2. Open the oven door and wedge it open.
3. Remove the screws from rear and along the side edge of case.
4. Slide the entire case back about 3cm to free it from retaining clips on the cavity face plate.
5. Lift the entire case from the oven.
6. Discharge the H.V. capacitor before carrying out any further work.
7. Do not operate the oven with the outer case removed. N.B.; Step 1, 2 and 6 form the basis of the 3D checks.

**CAUTION:** DISCHARGE HIGH VOLTAGE CAPACITOR BEFORE TOUCHING ANY OVEN COMPONENT OR WIRING.

### POWER TRANSFORMER REMOVAL

1. CARRY OUT 3D CHECKS.
2. Disconnect the wire leads (main wire harness and H.V. fuse) from power transformer.
3. Disconnect the H.V. wire of the H.V. rectifier assembly from magnetron.
4. Disconnect the wire leads from the noise filter.
5. Remove the one (1) screw holding the capacitor holder to the oven cavity back plate.
6. Disconnect the filament lead of power transformer from the magnetron.
7. Disconnect the lead of the power transformer from high voltage capacitor.
8. Remove the two (2) screws holding the transformer to bottom plate.
9. Remove the transformer.

## HIGH VOLTAGE COMPONENTS REMOVAL (HIGH VOLTAGE CAPACITOR, HIGH VOLTAGE RECTIFIER ASSEMBLY AND H.V. FUSE)

To remove the components, proceed as follows.

1. CARRY OUT 3D CHECKS.
2. Disconnect the H.V. fuse from the power transformer.
3. Disconnect the H.V. wire of the H.V. rectifier assembly from the magnetron.
4. Disconnect the wire leads from the noise filter.
5. Remove one (1) screw holding capacitor holder to oven cavity back plate.
6. Disconnect the filament lead of the power transformer from the H.V. capacitor.
7. Remove one (1) screw holding earth side terminal of high voltage rectifier assembly, and remove capacitor holder.
8. Disconnect all the leads and terminals of high voltage rectifier assembly from high voltage capacitor.

9. Disconnect the H.V. fuse from high voltage capacitor.
10. Remove the HVC cover from the high voltage capacitor.
11. Now H.V. rectifier assembly, H.V. fuse and H.V. capacitor should be free.

**CAUTION:** WHEN REPLACING HIGH VOLTAGE RECTIFIER ASSEMBLY, ENSURE THAT THE CATHODE (EARTH) CONNECTION IS SECURELY FIXED TO THE CAPACITOR HOLDER WITH AN EARTHING SCREW.

**CAUTION:** DO NOT REPLACE ONLY HIGH VOLTAGE RECTIFIER. WHEN REPLACING IT, REPLACE HIGH VOLTAGE RECTIFIER ASSEMBLY.

## MAGNETRON REPLACEMENT

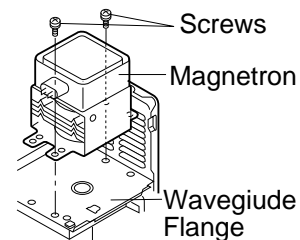
### Removal

1. CARRY OUT 3D CHECKS.
2. Disconnect the wire leads from the magnetron.
3. Carefully remove the two (2) screws holding the magnetron to the waveguide flange.
4. Lift up magnetron with care so that the magnetron antenna is not hit by any metal object around antenna.
5. Now, the magnetron is free.

### Re-install

1. Re-install the magnetron to the waveguide flange with two (2) screws diagonally as shown in Figure C-1.
2. Re-connect the wire leads to the magnetron. Refer to "PICTORIAL DIAGRAM".
3. Re-install the outer case and check that the oven is operating properly.

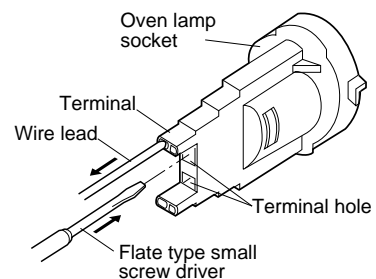
**CAUTION:** WHEN REPLACING THE MAGNETRON, BE SURE THE R.F. GASKET IS IN PLACE AND THE MAGNETRON MOUNTING SCREWS ARE TIGHTENED SECURELY.



**Figure C-1. Magnetron Replacement**

## OVEN LAMP SOCKET REMOVAL

1. CARRY OUT 3D CHECKS.
2. Pull the wire leads from the oven lamp socket by pushing the terminal hole of the oven lamp socket with the flat type small screw driver.
3. Tear the cushion from the light mount plate.
4. Bend the tab of the light mount plate holding the oven.
5. Lift up the oven lamp socket.
6. Now, the oven lamp socket is free.

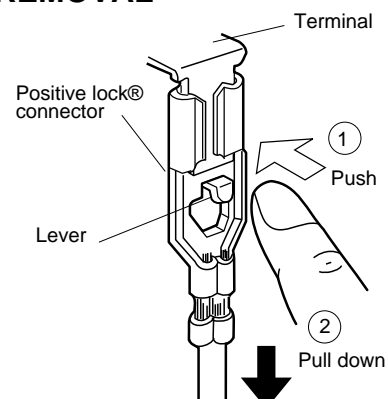


**Figure C-2. Oven lamp socket**

## POSITIVE LOCK® CONNECTOR REMOVAL

1. CARRY OUT 3D CHECKS.
2. Pushing the lever of positive lock® connector.
3. Pull out the positive lock® connector.

**CAUTION:** WHEN YOU (SERVICE ENGINEERS) CONNECT THE POSITIVE LOCK® CONNECTORS TO THE TERMINALS, CONNECT THE POSITIVE LOCK® SO THAT THE LEVER FACE YOU (SERVICE ENGINEERS).



**Figure C-3 Positive lock® connector**



## POWER SUPPLY CORD REPLACEMENT

### Removal

1. CARRY OUT 3D CHECKS.
2. Disconnect the wire leads from the power supply cord.
3. Remove the one (1) screw holding the power supply cord to the oven cavity back plate.
4. Remove the power supply cord from the oven cavity back plate.

### Re-install

1. Insert the power supply cord into the oven cavity back plate.
2. Secure the one (1) screw holding the power supply cord to the oven cavity back plate..
3. Connect the white and black wires of the main wire harness into the terminal of the power supply cord, referring to the Pictorial Diagram.

## TURNTABLE MOTOR REPLACEMENT

### Removal

1. Disconnect the oven from the power supply.
2. Remove the turntable and turntable support from the oven cavity.
3. Turn the oven over.
4. Cut the four (4) bridges holding the turntable motor cover to the bottom plate with the cutting pliers as shown in Figure C-4.

**CAUTION: DO NOT DROP THE TURNTABLE MOTOR COVER INTO THE OVEN AFTER CUTTING THE BRIDGES. BECAUSE IT WILL DAMAGE THE WIRE LEADS OF THE MOTOR AND IT IS DIFFICULT TO REMOVE IT OUT OF THE OVEN.**

5. Remove the turntable motor cover from the bottom plate.
6. Disconnect the wire leads from the turntable motor.
7. Remove the single (1) screw holding the turntable motor to the oven cavity.
8. Remove the turntable motor from the oven cavity.

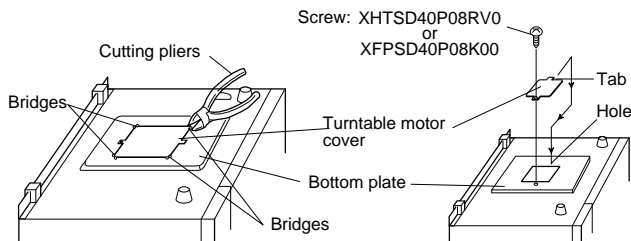


Figure C-4. Turntable Motor Cover

9. Remove the O-ring and washer from the turntable motor.
10. Now, the turntable motor is free.

### Re-install

1. Remove the any sharp edges on the turntable motor cover and the bottom plate with the cutting pliers.
2. Re-install the O-ring.
3. Apply the grease (Shinetsu silicone grease G-420 of Shinetsu Chemical Co. Ltd. or Toray Silicone grease SH-14 of Toray Silicone Co., Ltd.) to the O-ring and the base of the turntable motor shaft as shown in Figure C-6.
4. Re-install the turntable motor with the O-ring and washer to the oven cavity with the single (1) screw.
5. Re-connect the wire leads to the turntable motor.
6. Insert the tab of the turntable motor cover into the hole of the bottom plate as shown in Figure C-4.
7. Re-install the turntable motor cover to the bottom plate with one (1) screw XHTSD40P08RV0 or XFPSD40P08K00 as shown in Figure C-4.

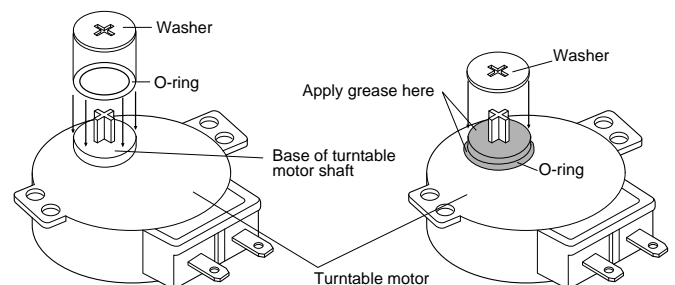


Figure C-5. Washer and O-ring Installation and Grease Applying.

## FAN MOTOR REPLACEMENT

### REMOVAL

1. CARRY OUT 3D CHECKS.
2. Disconnect the wire leads from the fan motor.
3. Remove the one (1) screw holding the chassis support to the oven cavity front plate.
4. Remove the chassis support .
5. Release the filament lead of the power transformer and the H.V. wire from the fan duct.
6. Remove the one (1) screw holding the fan duct to the waveguide flange.
7. Release the fan motor assembly from the oven cavity.
8. Remove the fan blade from the fan motor shaft according to the following procedure.
  - 1) Hold the edge of the rotor of the fan motor by using

a pair of groove joint pliers.

### CAUTION:

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

- 2) Remove the fan blade assembly from the shaft of the fan motor by pulling and rotating the fan blade with your hand.
- 3) Now, the fan blade will be free.

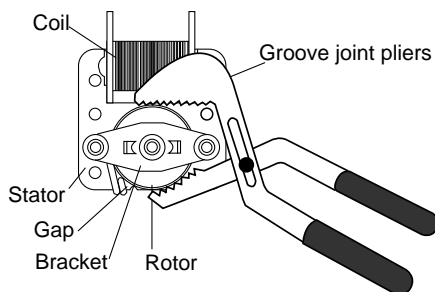
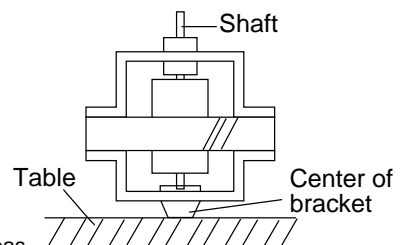
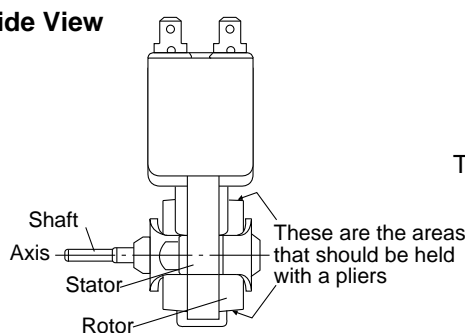
**CAUTION:**

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

9. Remove the two (2) screws holding the fan motor to the fan duct.
10. Now, the fan motor is free.

**INSTALLATION**

1. Install the fan motor to the fan duct with the two (2) screws.
2. Install the fan blade to the fan motor shaft according to the following procedure.
  - 1) Hold the centre of the bracket which supports the shaft of the fan motor on the flat table.
  - 2) Apply the screw lock tight into the hole (for shaft) of the fan blade.
  - 3) Install the fan blade to the shaft of fan motor by pushing the fan blade with a small, light weight, ball pen hammer or rubber mallet.

**Rear View****Side View****CAUTION:**

- Do not hit the fan blade strongly when installed because the bracket may be transformed.
- Make sure that the fan blade rotates smooth after installed.
- Make sure that the axis of the shaft is not slanted.

3. Install the fan motor assembly to the oven cavity by fitting the holes of the fan duct into the tabs of the oven cavity.
4. Re-install the fan duct to the waveguide flange with the one (1) screw.
5. Insert the end of the chassis support into the slit of the oven cavity rear cabinet.
6. Re-install the chassis support to the oven cavity front plate with the one (1) screw.
7. Install the filament lead and the H.V. wire into the hole of the fan duct .
8. Connect the wire leads to the fan motor, referring to the pictorial diagram.

**CONTROL PANEL ASSEMBLY AND SWITCH LEVER REMOVAL**

1. CARRY OUT 3D CHECKS.
2. Disconnect the leads from the timer motor.
3. Remove the one (1) screw holding the chassis support to the front plate of the oven cavity.
4. Remove the chassis support from the oven.
5. Lift up the control panel and release it from the oven cavity.
6. Now, the control panel assembly is free.
7. Open the door. Remove the switch lever from the front plate of the oven cavity.
8. Now the switch lever is free.

**1ST. LATCH SWITCH, 2 ND. LATCH SWITCH AND MONITOR SWITCH REMOVAL**

1. CARRY OUT 3D CHECKS.
2. Disconnect wire leads from all switches.
3. Remove the control panel assembly and switch lever from the oven cavity front flange. Referring to chapter "CONTROL PANEL ASSEMBLY AND SWITCH LEVER REMOVAL"
4. Remove two (2) screws holding latch hook to oven flange.
5. Remove latch hook assembly from oven flange.
6. Push outward on the two (2) retaining tabs holding switch in place.
7. Switch is now free.
8. and monitor switch are in lower position. The 1st. latch switch is in the upper position.
2. Re-connect wire leads to each switch. Refer to chapter "Pictorial Diagram".
3. Secure latch hook (with two (2) mounting screws) to oven flange.
4. Re-install the switch lever and the control panel assembly to the oven cavity front flange.
5. Re-connect wire leads to the timer motor. Refer to chapter "Pictorial Diagram".
6. Make sure that monitor switch is operating properly and check continuity of the monitor circuit. Refer to chapter "Test Procedure", and Adjustment Procedure below.

**Re-install**

1. Re-install each switch in its place. The 2nd. latch switch

**1ST. LATCH SWITCH, 2ND. LATCH SWITCH AND MONITOR SWITCH ADJUSTMENT**

If the 1st. latch switch, 2nd. latch switch and monitor switch do not operate properly due to a misadjustment, the

following adjustment should be made.

1. Loosen the two (2) screws holding the latch hook to the

flange of the oven front face.

2. With the door closed, adjust latch hook by moving it back and forth and up and down. In and out play of the door allowed by the upper and lower position of the latch hook should be less than 0.5mm. The horizontal position of the latch hook should be adjusted so that the monitor switch is activated with the door closed. The vertical position of the latch hook should be adjusted so that the 1st. latch switch and the 2nd. latch switch are activated with the door closed.
3. Secure the screws firmly.
4. Check the operation of all switches. If each switch has not activated with the door closed, loosen screw and adjust the latch hook position.

#### After adjustment, make sure of the following.

1. In and out play of the door remains less than 0.5mm when in the latched position. First check upper position of latch hook, pushing and pulling upper portion of door toward the oven face. Then check lower portion of the latch hook, pushing and pulling lower portion of door toward the oven face. Both results (play in the door) should be less than 0.5mm.
2. The 1st. latch switch and 2nd. latch switch interrupt the

3. circuit before the door can be opened.
3. The monitor switch contacts close when the door is opened.
4. Re-install outer case and check for microwave leakage around the door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

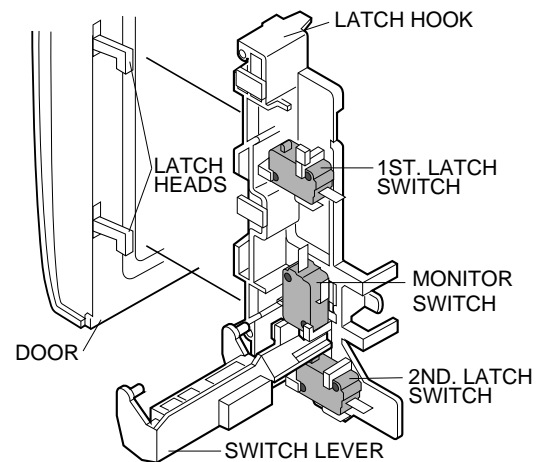


Figure C-6. Latch Switch Adjustments

## DOOR REPLACEMENT

### REMOVAL

1. Disconnect oven from power supply.
2. Push the open button and open the door slightly.
3. Insert a putty knife (thickness of about 0.5mm) into the gap between the choke cover and corner portion of door panel as shown in Figure C-7 to free engaging parts.
4. Try the principles of the lever and lift up the choke cover by inserting a putty knife in order shown in figure C-8.
5. Release choke cover from door panel.
6. Now choke cover is free.
7. Release two (2) pins of door panel from two (2) hole of upper and lower oven hinges by lifting up.
8. Now, door panel is free from oven cavity.
9. Release door panel from ten (10) tabs of door frame and remove door frame by sliding the door panel downward.
10. Now, door panel with sealer film is free.
11. Tear sealer film from door panel.
12. Now, door panel is free.
13. Slide latch head upward and remove it from door frame with releasing latch spring from door frame and latch head.
14. Now, latch head and latch spring are free.
15. Remove door screen from door frame.
16. Now, door screen is free.

### RE-INSTALL

1. Re-install door screen to door frame.
2. Re-install latch spring to the head. Re-install latch spring to the door frame. Re-install latch head to the door frame.
3. Re-install door panel to door frame by fitting ten (10) tabs of door frame to ten (10) holes of door panel.
4. Put sealer film on door panel. Refer to "Sealer Film" and figure C-9, on how to handle the new film.
5. Catch two (2) pins of door panel on two (2) hole of upper and lower oven hinges.

6. Re-install choke cover to door panel by pushing.
- Note: After any service to the door;**
- (A) Make sure that 1st. latch switch, 2nd. latch switch and monitor switch are operating properly. (Refer to chapter "Test Procedures".)
  - (B) An approved microwave survey meter should be used to assure compliance with proper microwave radiation emission limitation standards.

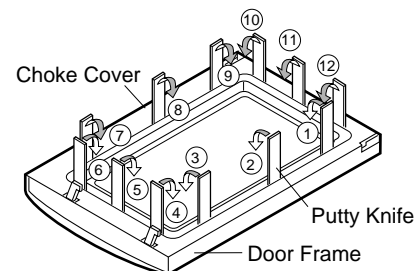


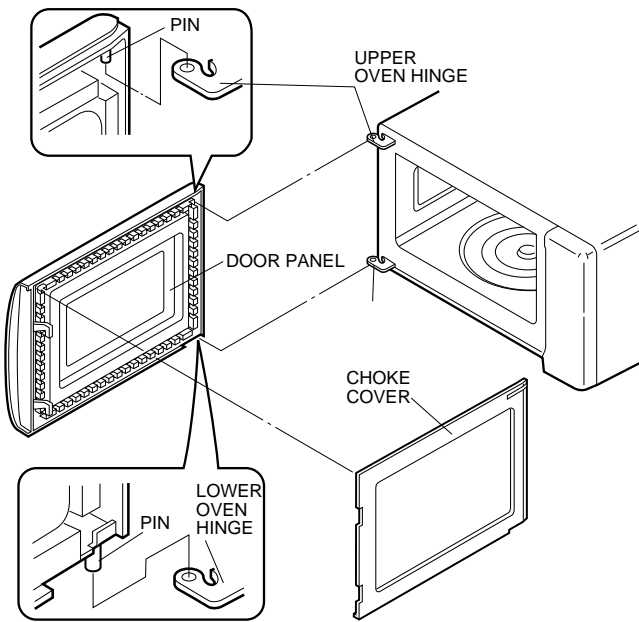
Figure C-7. Door Disassembly

#### After any service, make sure of the following :

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

**Note:** The door on a microwave oven is designed to act as an electronic seal preventing the leakage of microwave energy from oven cavity during cook cycle. This function does not require that door be air-tight, moisture (condensation)-tight or light-tight. Therefore, occasional appearance of mois-

ture, light or sensing of gentle warm air movement around oven door is not abnormal and do not of themselves indicate a leakage of microwave energy from oven cavity.

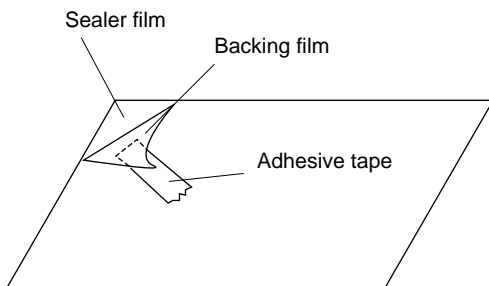


**Figure C-8. Door Replacement**

## SEALER FILM

### Installation

1. Put the adhesive tape on the backing film of the sealer film as shown in Fig. C-9.
2. Tear the backing film by pulling the adhesive tape.
3. Put the pasted side of the sealer film on the door panel.



**Figure C-9. Sealer film**

## MICROWAVE MEASUREMENT

After adjustment of door latch switches, monitor switch and door are completed individually or collectively, the following leakage test must be performed with a survey instrument and it must be confirmed that the result meets the requirements of the performance standard for microwave oven.

### REQUIREMENT

The safety switch must prevent microwave radiation emission in excess of  $5\text{mW}/\text{cm}^2$  at any point 5cm or more from external surface of the oven.

### PREPARATION FOR TESTING:

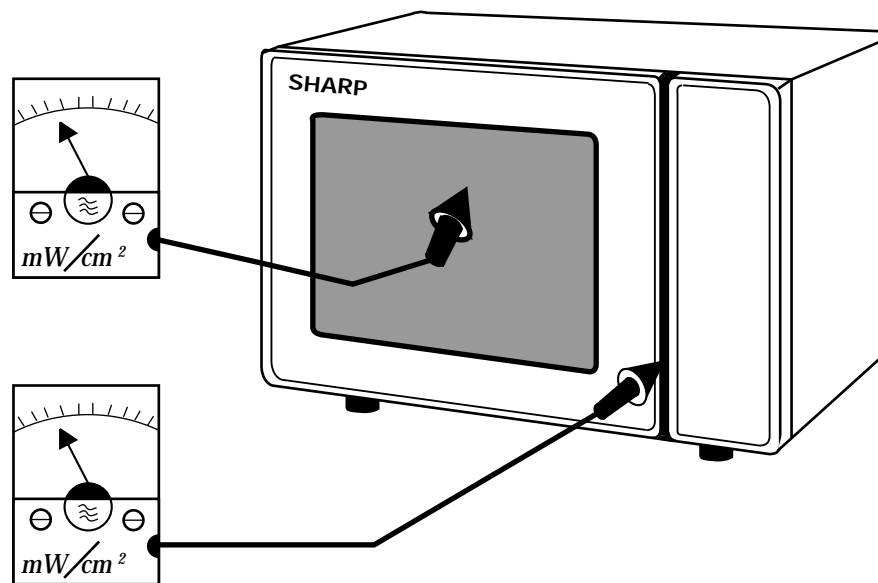
Before beginning the actual test for leakage, proceed as follows;

1. Make sure that the test instrument is operating normally as specified in its instruction booklet.  
Important:  
Survey instruments that comply with the requirement for instrumentations as prescribed by the performance standard for microwave ovens must be used for testing.

Recommended instruments are:

NARDA 8100  
NARDA 8200  
HOLADAY HI 1500  
SIMPSON 380M

2. Place the oven tray into the oven cavity.
3. Place the load of  $275 \pm 15\text{ml}$  of water initially at  $20 \pm 5^\circ\text{C}$  in the centre of the oven tray. The water container should be a low form of 600 ml beaker with inside diameter of approx. 8.5cm and made of an electrically non-conductive material such as glass or plastic.  
The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
4. Close the door and turn the oven ON with the timer set for several minutes. If the water begins to boil before the survey is completed, replace it with 275ml of cool water.
5. Move the probe slowly (not faster than  $2.5\text{cm}/\text{sec.}$ ) along the gap.
6. The microwave radiation emission should be measured at any point of 5cm or more from the external surface of the oven.



Microwave leakage measurement at 5 cm distance

**SCHEMATIC**  
 NOTE: CONDITION OF OVEN  
 1. DOOR CLOSED.  
 2. TIMER KNOB AT "0" POSITION.

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

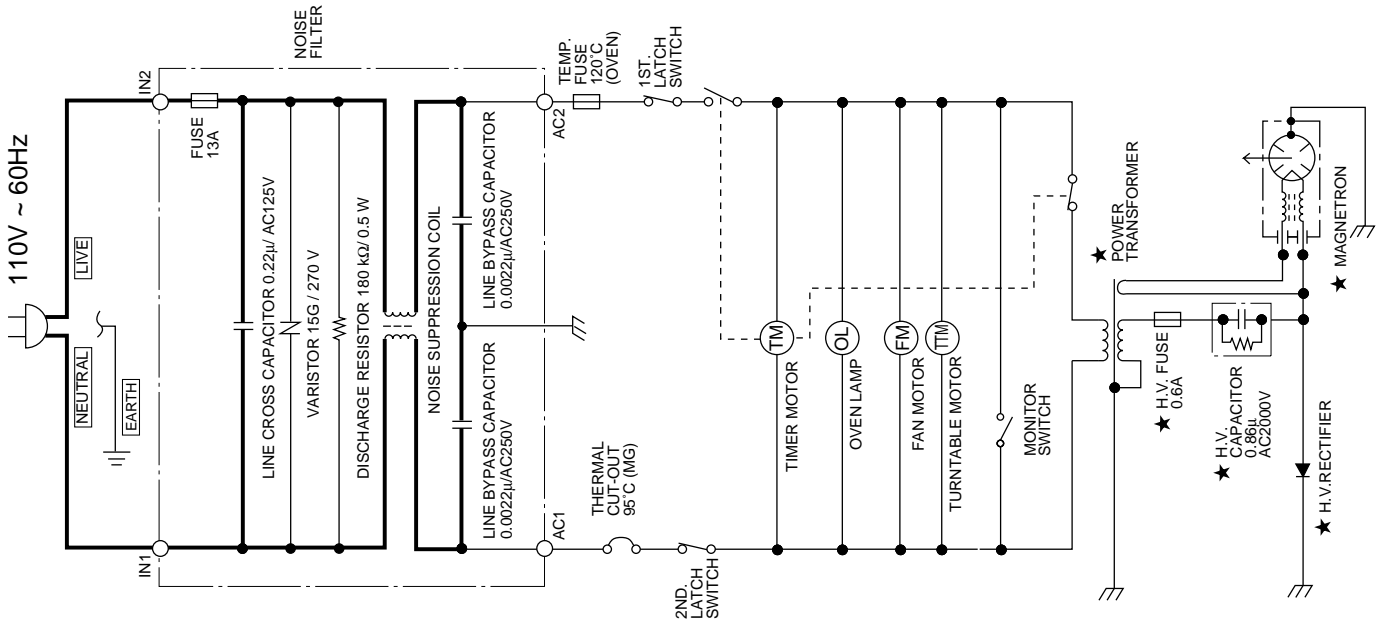


Figure O-1 Oven Schematic-OFF Condition

**SCHEMATIC**  
 NOTE: CONDITION OF OVEN  
 1. DOOR CLOSED.  
 2. VARIABLE COOKING CONTROL "HIGH"  
 3. TIMER ON

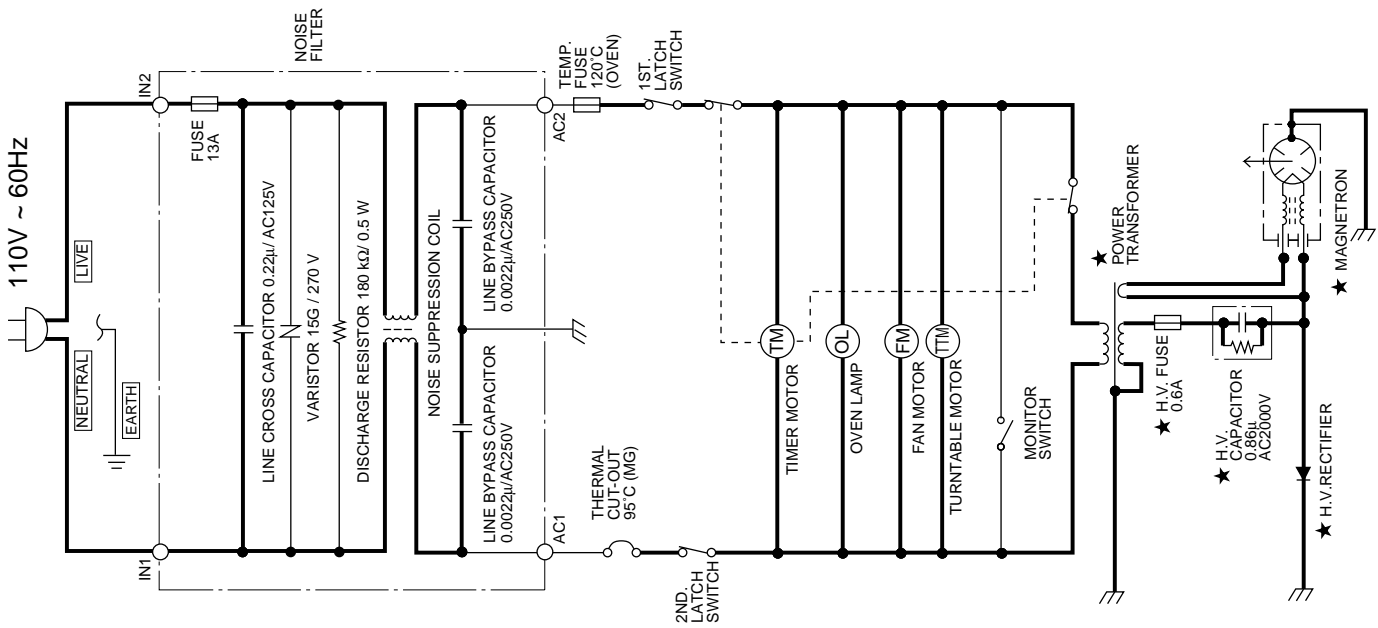


Figure O-2 Oven Schematic-ON Condition

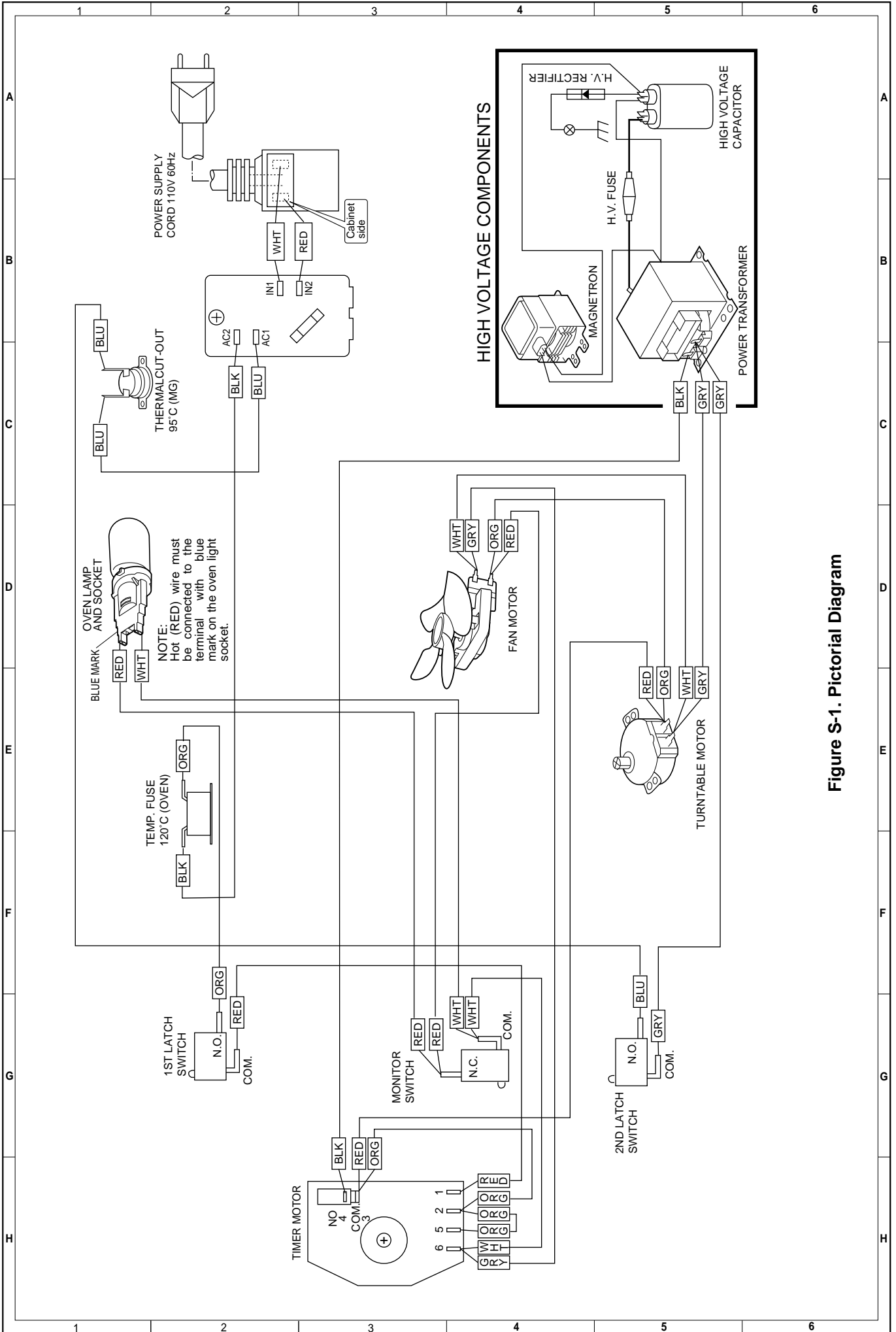


Figure S-1. Pictorial Diagram

## PARTS LIST

Note: The parts marked "Δ" may cause undue microwave exposure.

The parts marked "\*" are used in voltage more than 250V.

REF. NO.	PART NO.	DESCRIPTION	Q'TY	CODE
----------	----------	-------------	------	------

### ELECTRIC PARTS

1- 1	QSWTEA126WRE0	Timer motor 30min.	1	BD
1- 2	QSW-MA110WRE0	1st. latch switch & 2nd. latch switch	2	AK
1- 3	QSW-MA111WRE0	Monitor switch	1	AK
1- 4	QACCJA058WRE0	Power supply cord	1	AQ
1- 5	QSOCLA021WRE0	Oven lamp socket	1	AG
* 1- 6	FH-DZA047WRK0	High voltage rectifier	1	AQ
* 1- 7	RC-QZA200WRE0	High voltage capacitor	1	AV
1- 8	RMOTEA366WRE0	Fan motor	1	AX
Δ* 1- 9	RV-MZA198WRE0	Magnetron	1	BN
1-10	RLMPTA030WRE0	Oven lamp	1	AE
1-11	RMOTDA211WRE0	Turntable motor	1	AS
* 1-12	RTRN-A550WRE0	Power transformer	1	BS
1-13	RTHM-A079WRE0	Thermal cut-out 95°C	1	AL
1-14	QFS-TA038WRE0	Temperature fuse 120°C	1	AK
1-15	FPWBFA280WRK0	Noise filter	1	AT
1-15-1	QFS-GA041WRE0	Fuse 13A	1	AD
* 1-16	QFS-IA004WRE0	H.V. fuse 0.6A	1	AK

### CABINET PARTS

2- 1	GCABUA602WRP0	Outer case cabinet	1	AX
2- 2	GDAI-A269WRP0	Bottom plate	1	AS
2- 3	GLEGPA023WRE0	Foot	2	AB

### CONTROL PANEL PARTS

3- 1	HPNLCB393WRR0	Control panel	1	AW
3- 2	JBTN-B071WRF0	Open button	1	AF
3- 3	JKNBKA578WRF0	Timer knob	1	AF
3- 4	JKNBKA579WRF0	Vari knob	1	AF
3- 5	MSPRCA050WRE0	Open button spring	1	AB

### OVEN PARTS

Δ 4- 1	PHOK-A086WRF0	Latch hook	1	AQ
4- 2	LANGQA470WRW0	Light mount plate	1	AV
4- 3	PCUSUA194WRP0	Cushion	1	AC
4- 4	LBNDKA095WRP0	Capacitor holder	1	AM
4- 5	NFANJA029WRE0	Fan blade	1	AL
Δ 4- 6	PDUC-A623WRP0	Fan duct	1	AK
4- 7	FOVN-A411WRT0	Oven cavity	1	BL
4- 8	GLEGPA062WRF0	Leg	1	AK
4- 9	LANGTA318WRP0	Chassis support	1	AQ
4-10	MLEVPA206WRF0	Switch lever	1	AL
4-11	PCOVPA276WRE0	Waveguide cover	1	AM
4-12	PCUSUA461WRP0	Cushion	1	AB
4-13	PCUSUA443WRP0	Cushion	1	AE
4-14	PCOVPA334WRE0	HVC cover	1	AG
4-15	LANG-A061WRP0	Air guide	1	AP
4-16	PPACGA097WRE0	O-ring	1	AG
4-17	PCUSGA312WRP0	Cushion	1	AB
4-18	PCUSUA235WRP0	Cushion	1	AE
4-19	PCUSUA270WRP0	Cushion	1	AG
4-20	PCUSUA197WRP0	Cushion	1	AD

### DOOR PARTS

Δ 5- 1	FDORFA296WRT0	Door panel	1	AT
Δ 5- 2	GWAKPA516WRF0	Door frame	1	AY
5- 3	HPNL-A669WRR0	Door screen	1	AS
Δ 5- 4	LSTPPA154WRF0	Latch head	1	AG
5- 5	MSPTA084WRE0	Latch spring	1	AB
5- 6	PSHEPA333WRE0	Sealer film	1	AE
5- 7	XCPSD40P06000	Screw : 4mm x 6mm	4	AA
5- 8	GCOVHA377WRF0	Choke cover	1	AK

### MISCELLANEOUS

6- 1	FROLPA046WRK0	Turntable support	1	AQ
6- 2	NTNT-A034WRF0	Turntable	1	AM
6- 3	TINS-A634WRR0	Operation manual	1	AT
6- 4	FW-VZB647WRE0	Main wire harness	1	AX
6- 5	TSPCNC539WRR0	Rating label	1	AD
6- 6	TCAUHA214WRR0	K caution label	1	AC
6- 7	LHLDWA056WRE0	Cable clip	1	AC
6- 8	QW-VZA126WRE0	Earth wire	1	AE
6- 9	TLABMA558WRR0	Menu label	1	AF



**Note: The parts marked "Δ" may cause undue microwave exposure.  
The parts marked "\*" are used in voltage more than 250V.**

REF. NO.	PART NO.	DESCRIPTION	Q'TY	CODE
6-10	TLABPA032WRR0	Grounding label	1	AG

**SCREWS,NUTS AND WASHERS**

7- 1	XEPSD30P08XS0	Screw : 3 mm x 8mm	1	AA
7- 2	XFPSD40P08K00	Screw : 4mm x 8mm	8	AA
7- 3	LX-EZA042WRE0	Special screw	2	AB
7- 4	LX-WZA028WRE0	Special washer	1	AB
7- 5	XHTSD40P08RV0	Screw : 4mm x 8mm	2	AA
7- 6	XFPSD30P06000	Screw : 3mm x 6mm	1	AA
7- 7	XOTSD40P12RV0	Screw : 4mm x 12mm	11	AA
7- 8	XOTSD40P12000	Screw : 4mm x 12mm	3	AA
7- 9	XOTSE40P08000	Screw : 4mm x 8mm	4	AA
7-10	XBPBW40P10000	Screw : 4mm x 10mm	1	AB
7-11	XHTSD40P12RV0	Screw : 4mm x 12mm	1	AA
7-12	XNEBW40-32000	Nut : 4mm x 3.2mm	2	AA
7-13	XWVSD40-05000	Washer : 4mm x 0.5mm	1	AA

**HOW TO ORDER REPLACEMENT PARTS**

To have your order filled promptly and correctly, please furnish the following information.

- 1. MODEL NUMBER
- 2. REF. NO.
- 3. PART NO.
- 4. DESCRIPTION

**INFORMATION FOR PARTS CHANGE**

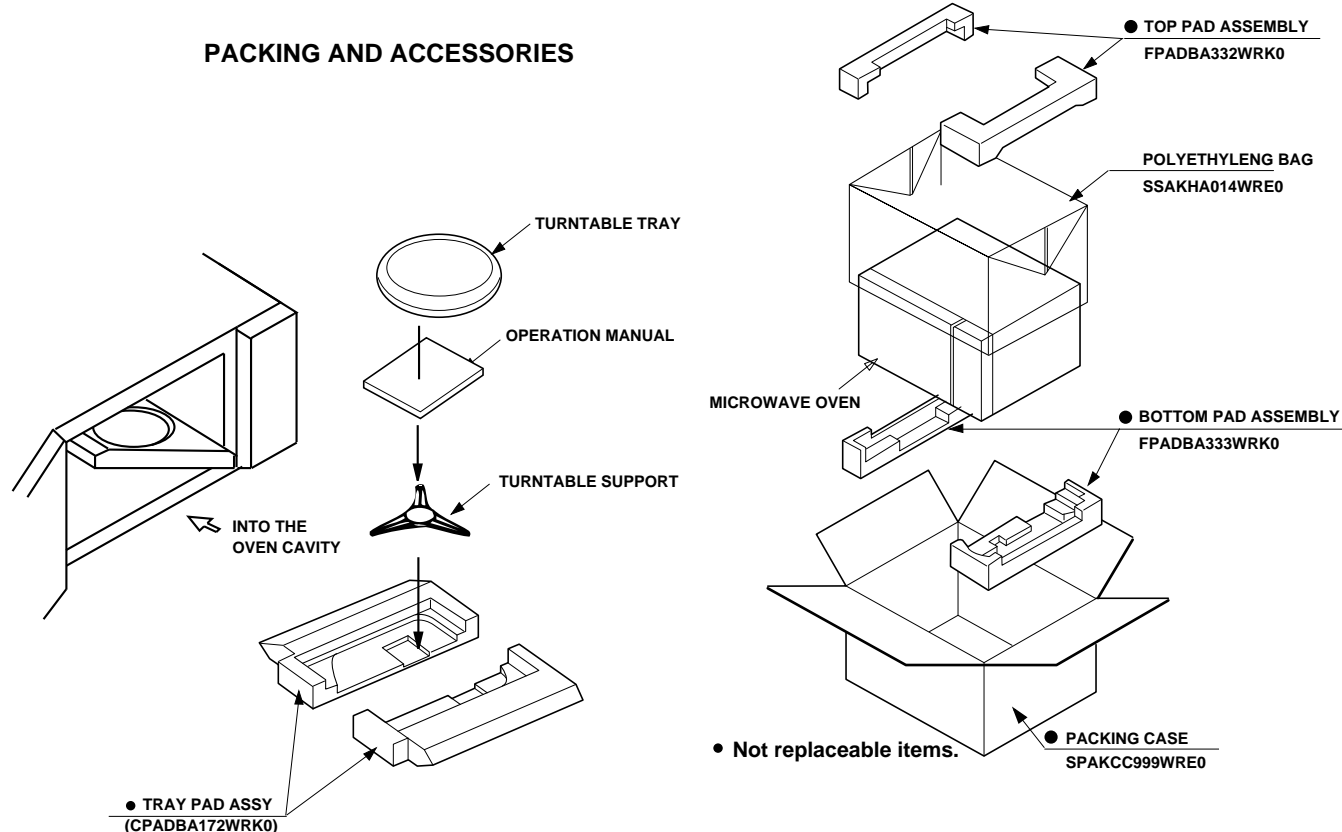
The foot will be changed as follows, and new parts will be used for products from serial number 9712xxxxx.

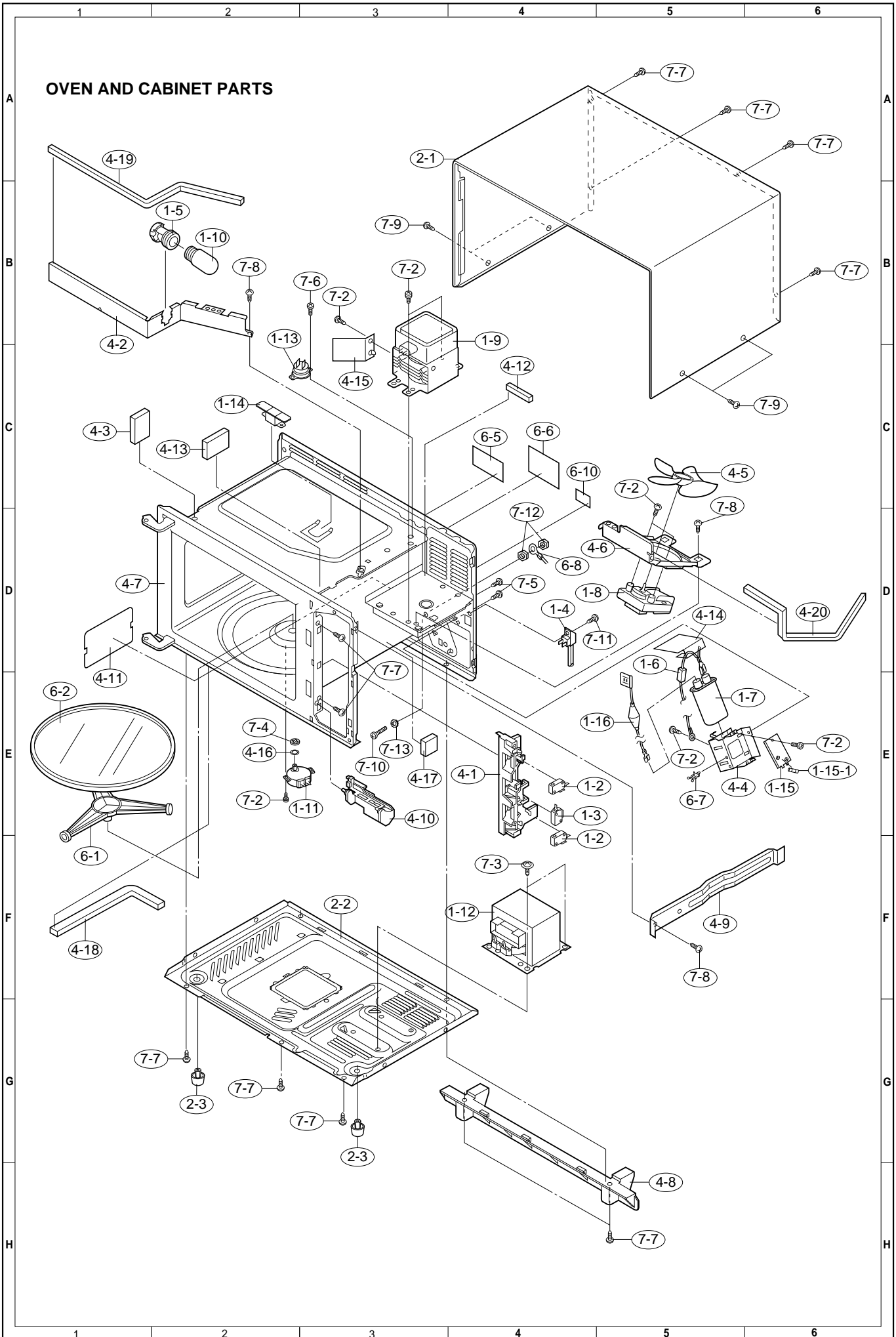
**Interchangeability**

- A. OLD ↔ NEW
- B. OLD → NEW
- C. OLD ← NEW
- D. OLD × NEW

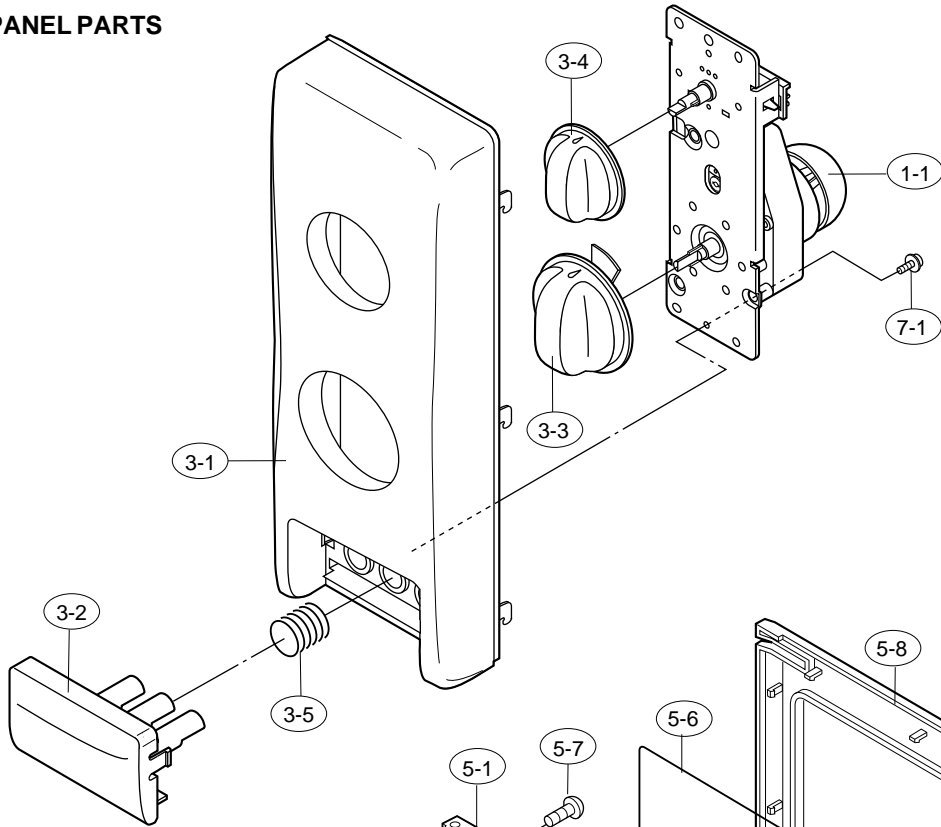
REF.NO.	DESCRIPTION	REPLACEMENT PART NO.				Interchangeability	EFFECTIVE FROM	CODE
		OLD No.	Q'ty	NEW No.	Q'ty			
2- 3	Foot	GLEGPA023WRE0	2	GLEGPA074WRE0	2	A	DEC/ '97	AC

**PACKING AND ACCESSORIES**

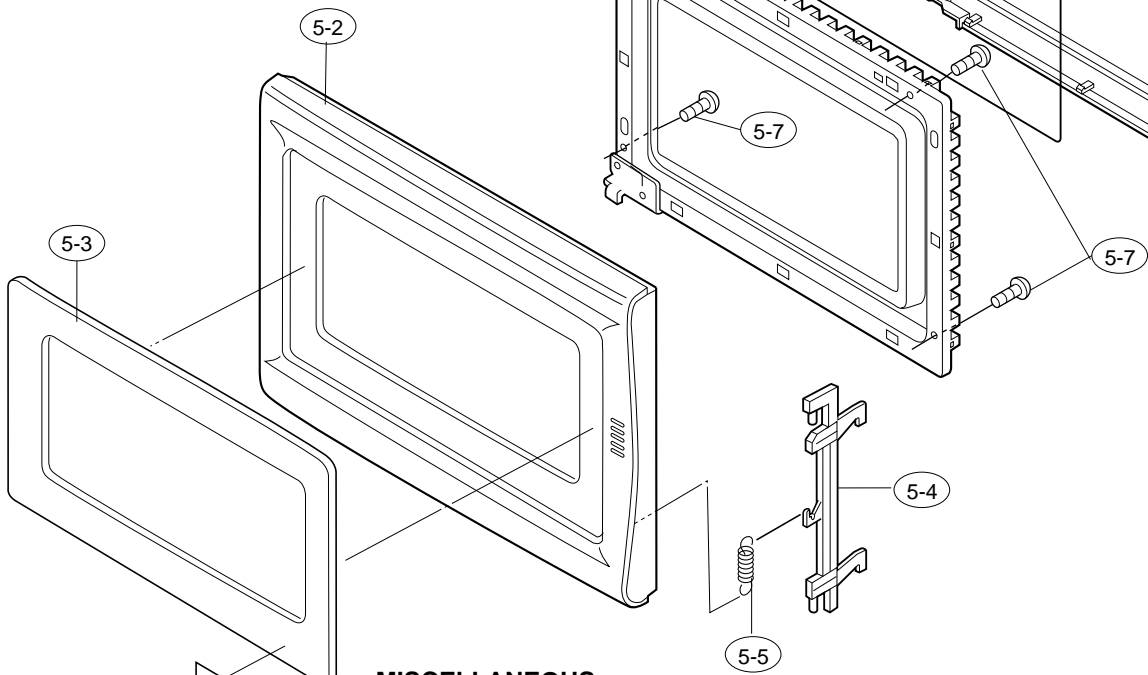




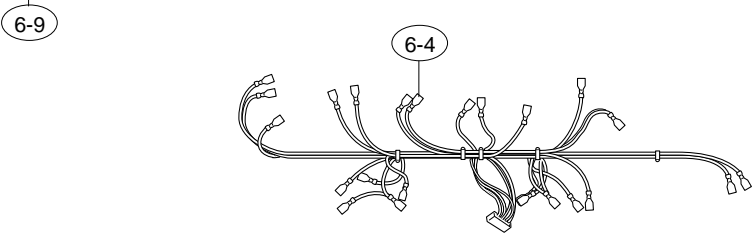
**CONTROL PANEL PARTS**



**DOOR PARTS**



**MISCELLANEOUS**



Actual wire harness may be different than illustration.

# SHARP

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