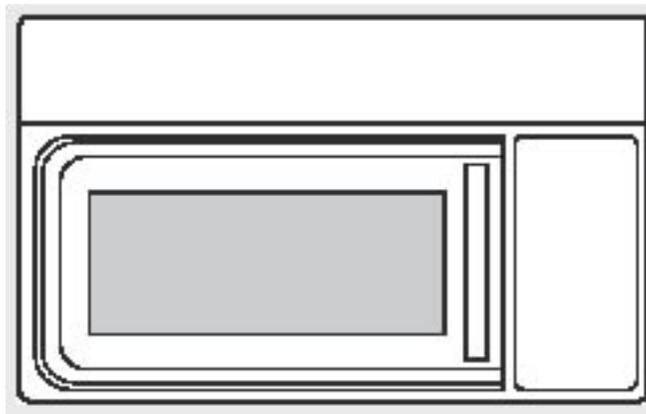
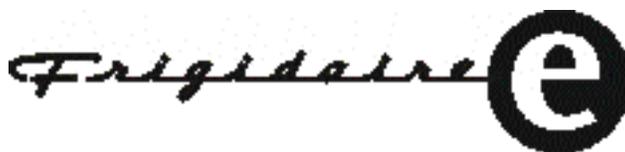




ELECTROLUX HOME PRODUCTS NORTH AMERICA

**OVER-RANGE MICROWAVE OVEN
SERVICE MANUAL
MODEL - LEVM30FE**



! ATTENTION !

This service manual is intended for use by persons having electrical and mechanical training and a level of knowledge of these subjects generally considered acceptable in the appliance repair trade. Electrolux Home Products cannot be responsible, nor assume any liability, for injury or damage of any kind arising from the use of this manual.

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

- (a) Do not operate or allow the oven to be operated with the door open.
 - (b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
 - (1) Interlock operation,
 - (2) proper door closing,
 - (3) seal and sealing surfaces (arcing, wear, and other damage),
 - (4) damage to or loosening of hinges and latches,
 - (5) evidence of dropping or abuse.
 - (c) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
 - (d) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
 - (e) A Microwave leakage check to verify compliance with the Federal performance standard should be performed on each oven prior to release to the owner.
-

1. Precaution

Follow these special safety precautions. Although the microwave oven is completely safe during ordinary use, repair work can be extremely hazardous due to possible exposure to microwave radiation, as well as potentially lethal high voltages and currents.

1-1 Safety precautions (⚠)

1. All repairs should be done in accordance with the procedures described in this manual. This product complies with Federal Performance Standard 21 CFR Subchapter J(DHHS).
2. Microwave emission check should be performed to prior to servicing if the oven is operative.
3. If the oven operates with the door open :
Instruct the user not to operate the oven and contact the manufacturer and the center for devices and radiological health immediately.
4. Notify the Central Service Center if the microwave leakage exceeds 5 mW/cm².
5. Check all grounds.
6. Do not power the MWO from a "2-prong" AC cord. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.
7. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including: nonmetallic control knobs and compartment covers.
8. Make sure that there are no cabinet openings through which people --particularly children --might insert objects and contact dangerous voltages. Examples: Lamp hole, ventilation slots.
9. Inform the manufacturer of any oven found to have emission in excess of 5 mW/cm², Make repairs to bring the unit into compliance at no cost to owner and try to determine cause. Instruct owner not to use oven until it has been brought into compliance.
10. Service technicians should remove their watches while repairing an MWO.
11. To avoid any possible radiation hazard, replace parts in accordance with the wiring diagram. Also, use only the exact replacements for the following parts: Primary and secondary interlock switches, interlock monitor switch.
12. If the fuse is blown by the Interlock Monitor Switch: Replace all of the following at the same time: Primary, door sensing switch and power relay, as well as the Interlock Monitor Switch. The correct adjustment of these switches is described elsewhere in this manual. Make sure that the fuse has the correct rating for the particular model being repaired.
13. Design Alteration Warning:
Use exact replacement parts only, i.e., only those that are specified in the drawings and parts lists of this manual. This is especially important for the Interlock switches, described above. Never alter or add to the mechanical or electrical design of the MWO. Any design changes or additions will void the manufacturer's warranty. Always unplug the unit's AC power cord from the AC power source before attempting to remove or reinstall any component or assembly.
14. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.
15. Some semiconductor ("solid state") devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs). Examples include integrated circuits and field-effect transistors.

Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground.

1-2 Special Servicing Precautions (Continued)

16. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.
17. When checking the continuity of the witches or transformer, always make sure that the power is **OFF**, and one of the lead wires is disconnected.
18. Components that are critical for safety are indicated in the circuit diagram by shading, ⚠ or ⚡ .
19. Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

1-3 Special High Voltage Precautions

1. High Voltage Warning !

Do not attempt to measure any of the high voltages --this includes the filament voltage of the magnetron. High voltage is present during any cook cycle.

Before touching any components or wiring, always unplug the oven and discharge the high voltage capacitor (See Figure 1-1)

2. The high-voltage capacitor remains charged about 30 seconds after disconnection. Short the negative terminal of the high-voltage capacitor to the oven chassis. (Use a screwdriver.)
3. High voltage is maintained within specified limits by close-tolerance, safety-related components and adjustments. If the high voltage exceeds the specified limits, check each of the special components.

High Voltage Capacitor

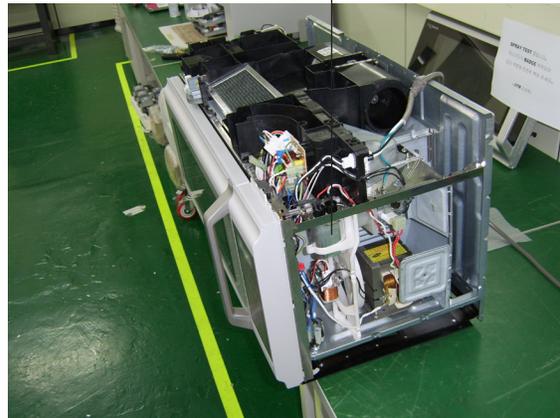


Fig. 1-1 Discharging High Voltage Capacitor

PRECAUTION

There exists HIGH VOLTAGE ELECTRICITY with high current capabilities in the circuits of the HIGH VOLTAGE TRANSFORMER secondary and filament terminals. It is extremely dangerous to work on or near these circuits with the oven energized. DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

PRECAUTION

Never touch any circuit wiring with your hand nor with uninsulated tool during operation.

PRECAUTION

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

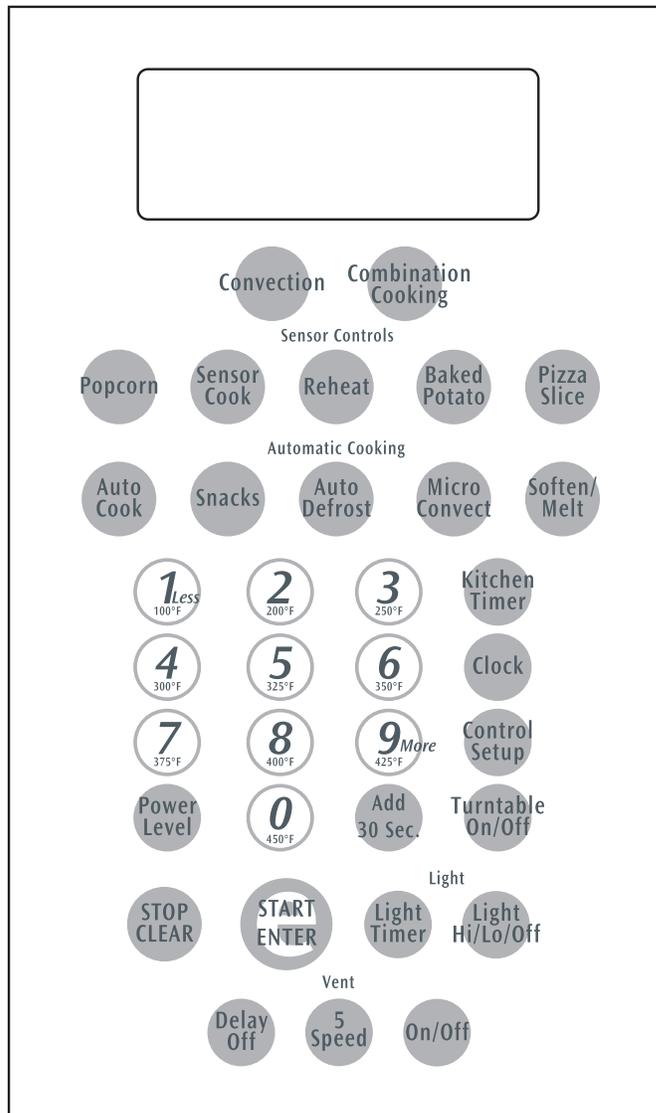
2. Specifications

2-1 Table of Specifications

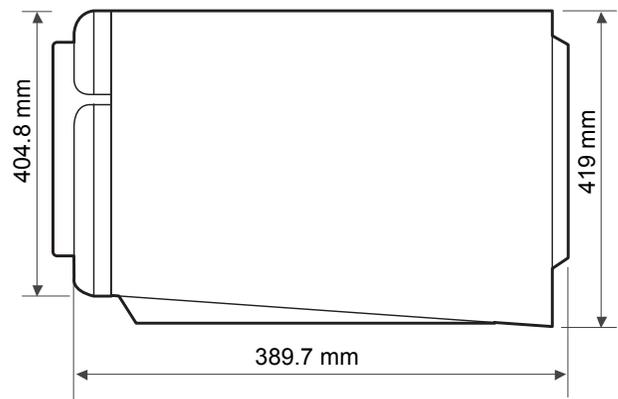
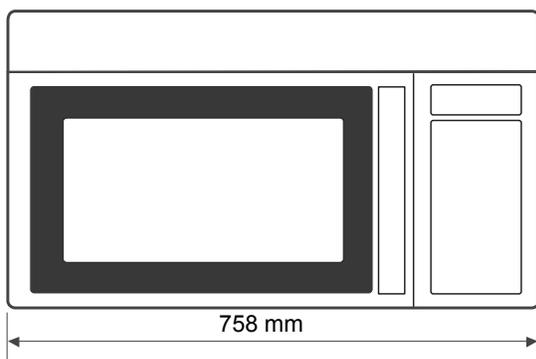
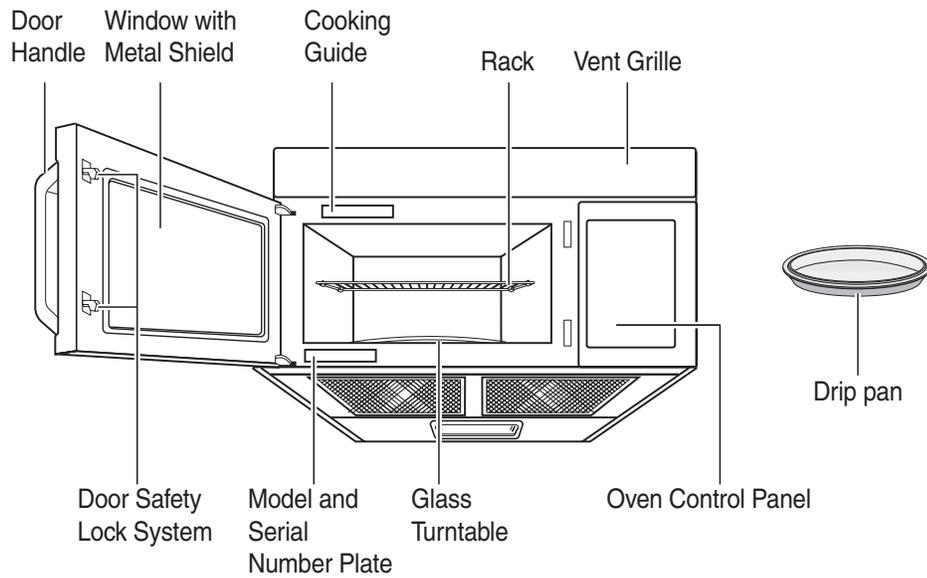
TIMER	99 MINUTES 99 SECONDS
POWER SOURCE	120V 60Hz, AC
POWER CONSUMPTION	MICROWAVE : 1,600W
OUTPUT POWER	950 Watts(IEC 705 TEST)
OPERATING FREQUENCY	2,450MHz
MAGNETRON	OM75P(10)
COOLING METHOD	COOLING FAN MOTOR
OUTSIDE DIMENSIONS	29 ^{7/8} "(W) x 16 ^{15/16} "(H) x 15 ^{7/16} "(D)
NET WEIGHT	74.74 lbs

3. Operating Instructions

3-1 Control Panel

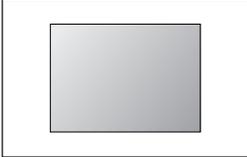
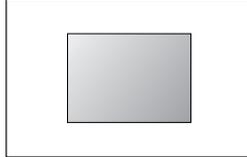
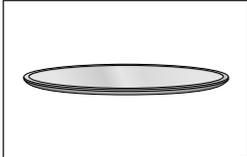
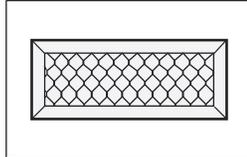
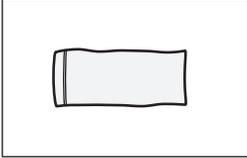
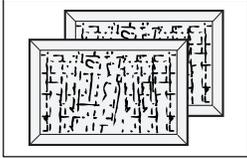
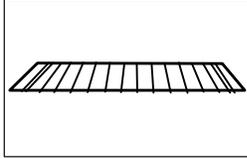
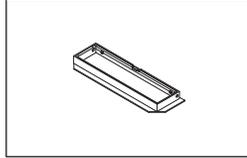


3-2 Features & External Views



3-3 Accessory

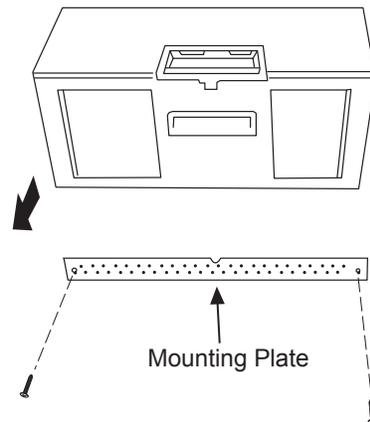
Unpack your microwave oven and check to make sure that you have all the parts shown here. If any part is missing or broken, call your dealer.

			
Registration Card	Use and Care Guide	Installation Instructions	Top Template
			
Wall Template	Glass Tray	Roller Guide Ring	Charcoal filter
			
Hardware-kit	Grease Filters	Shelf	Exhaust Adaptor
			
Drip pan			

INSTALLATION

The Microwave Oven is supported by a special bracket assembly (mounting system) supplied with the oven. The bracket assembly must be mounted to the wall with toggle bolts through the wall, and a lag screw into a wall stud. After the bracket assembly is installed, the unit can be slid over the two rails of the bracket assembly. Two bolts are run down through the cabinet bottom and into the oven case to pull the oven up against the cabinet bottom.

NOTE : For easier removal and personal safety it is recommended that two people remove this product.

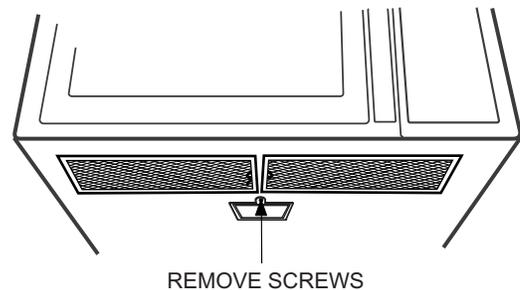


CAUTION!

The mounting surface must be capable of supporting the cabinet load, in addition to the 64 pound product, plus additional loads of up to 50 pounds or a **total weight of 114 pounds**. This product cannot be installed to cabinet arrangements such as an island or peninsula. It must be mounted to both a top cabinet and wall.

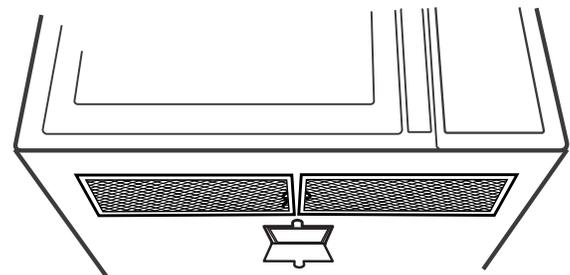
VENT BLOWER

The vent or exhaust blower is located at the top of the oven. It is shipped for recirculating exhaust but can be changed to rear exhaust or vertical (See installation instructions on how to change and/or blower section on how to remove).



COOKTOP LIGHTS

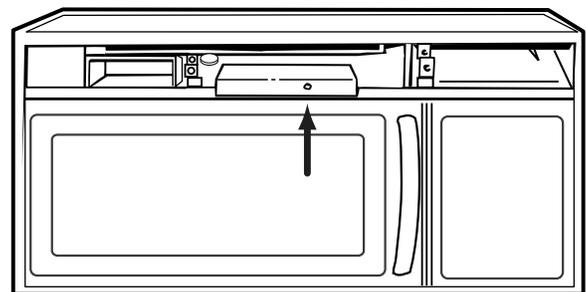
One 20-watt halogen bulb is located on the bottom. The bulb is user replaceable by removing one screw and lowering access cover. The bulb could be difficult to remove when replaced for the first time. A silicone glue is used to secure them during shipping.



OVEN LIGHT

A 20-watt halogen bulb is located in the top of the oven cavity at the front.

It is user replaceable by removing the top grill (2 screws. On the front of outer case.). The bulb is then accessible by removing a metal cover.



REUSABLE GREASE FILTERS

The metal filter trap grease released by foods on the cooktop. They also prevent flames from foods on the cooktop from damaging the inside of the microwave.

For this reason, the filters must ALWAYS be in place when the hood the vent fan is used. The grease filter should be cleaned once a month, or as needed.

REMOVING CHARCOAL FILTER

To remove the charcoal filter, disconnect power at the main fuse or circuit breaker panel or pull the plug. Remove the top grille by removing the 2 screws that hold it in place.

Slide the filter towards the front of the oven and remove it.

AUTOMATIC FAN

An automatic fan feature protects the microwave from too much heat rising from the cooktop below it. If you have turned the fan on you may find that you cannot turn it. The fan will automatically turn off when the internal parts are cool. It may stay on for 30 minutes or more after the cooktop and microwave controls are turned off.

GRILLE REMOVAL

The top full-width grille is removable for service to some components, such as : oven light, cavity T.C.O, vent motor capacitor and fuse.

TO REMOVE GRILLE :

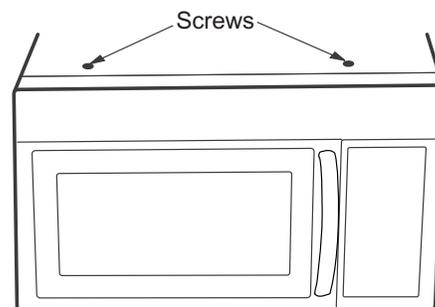
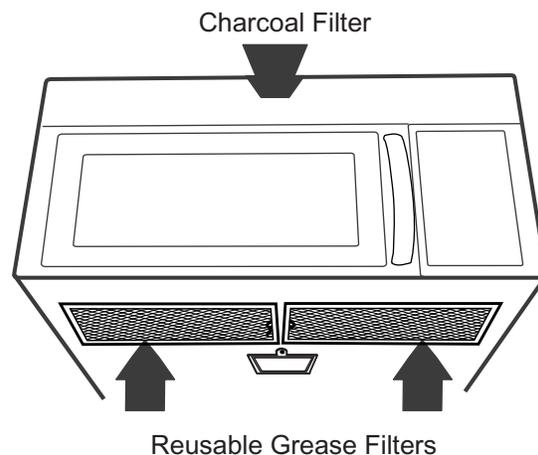
1. Disconnect oven power.
2. Remove screws (2) from grille outer case.
3. Lift off grille.

REMOVING OVEN FROM WALL (2 PEOPLE REQUIRED)

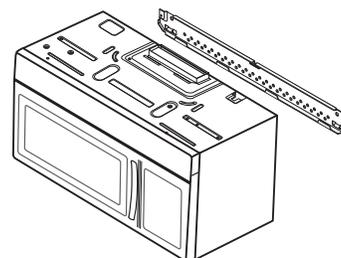
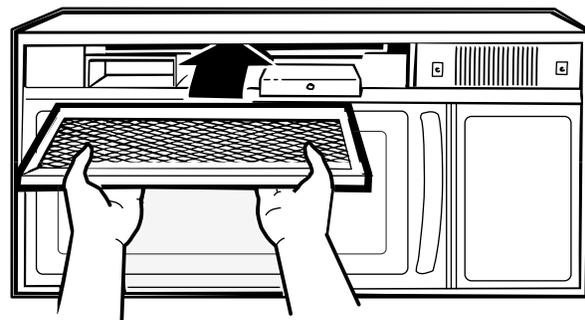
Oven is hooked on metal tabs at bottom of wall mounting plate and fastened to cabinet by (3) top cabinet bolts.

CAUTION : Oven weights 74 lbs. Requires 2 people for removal.

1. Disconnect power cord. Top vented models- disconnect duct and remove damper assembly.
2. Remove (3) top cabinet bolts.
3. Pull unit forward slowly providing adequate support to prevent dropping unit during removal of last top cabinet bolts.



Remove 2 grille screws to remove the grill



4. Disassembly and Reassembly

MAGNETRON, MOTOR ASSEMBLY, VENT BLOWER AND HIGH VOLTAGE TRANSFORMER
Oven must be removed from wall.

REMOVING OVEN FROM WALL (2 PEOPLE REQUIRED)

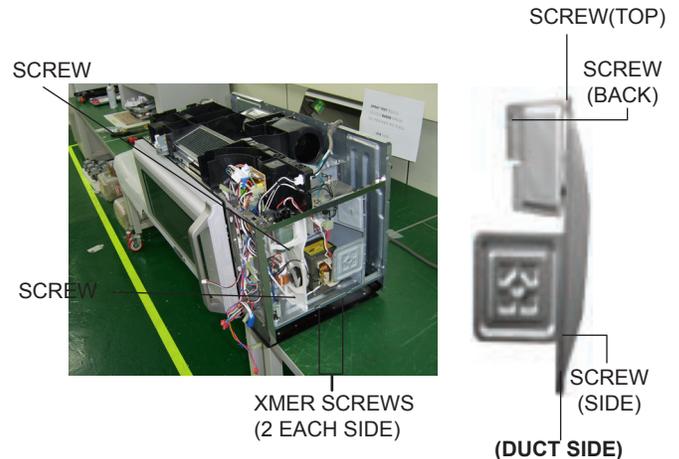
Oven is hooked on metal tabs at bottom of wall mounting plate and to cabinet by (3) top cabinet bolts.

4-1 Replacement of High Voltage Transformer and Fan Motor Assembly.

Disconnect oven power.

Remove Grille & Control Box Assembly.

1. Discharge the high voltage capacitor.
2. Disconnect all the leads.
3. Remove (2) screws from the fan motor assembly.
4. Remove (3) screws from the duct-side.
5. Remove the duct-side.
6. Take out the fan motor.
7. Remove (4) Screws from the H.V.Trans.
8. Take out the H.V.Trans.



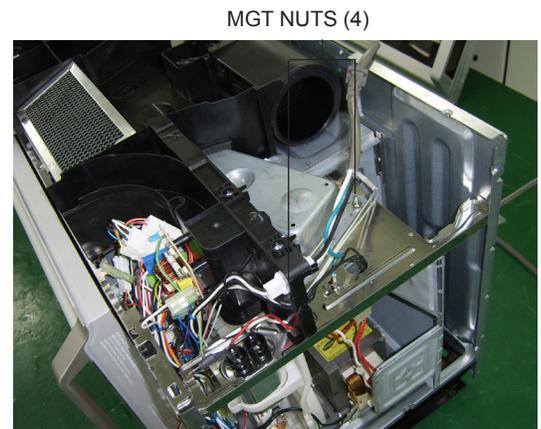
4-2 Replacement of Magnetron

Remove the magnetron including the shield case, permanent magnet, choke coils and capacitors (all of which are contained in one assembly).

1. Disconnect all lead wires from the magnetron.
2. Remove nuts (4) securing the magnetron to the wave guide.
3. Take out the magnetron very carefully.

NOTE 1: When removing the magnetron, make sure that its antenna does not hit any adjacent parts, or it may be damaged.

NOTE 2: When replacing the magnetron, be sure to remount the magnetron gasket in the correct position and make sure the gasket is in good condition.



CAUTION !

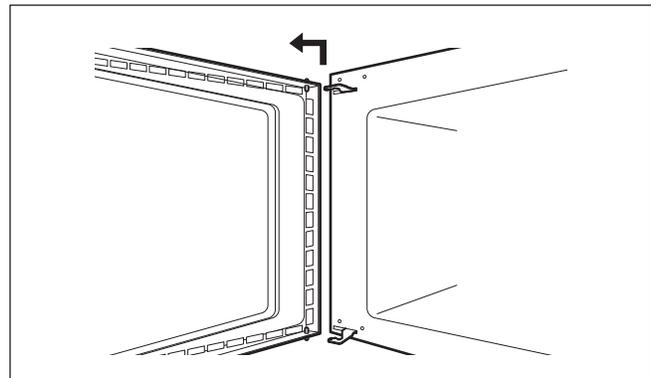
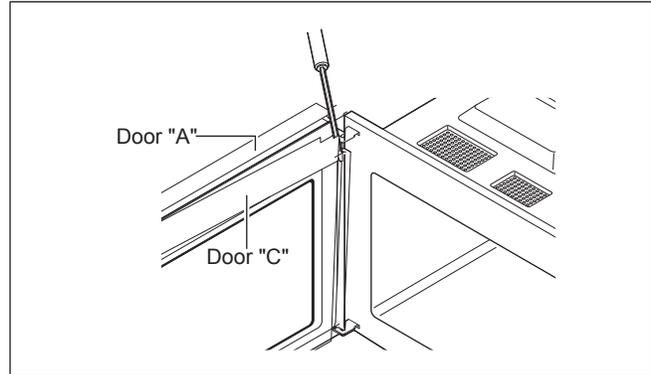
During replacement, be certain R.F. anode gasket is in place around anode stub.

PERFORM MICROWAVE LEAKAGE TEST

4-3 Replacement of Door Assembly

4-3-1 Removal of Door "C"

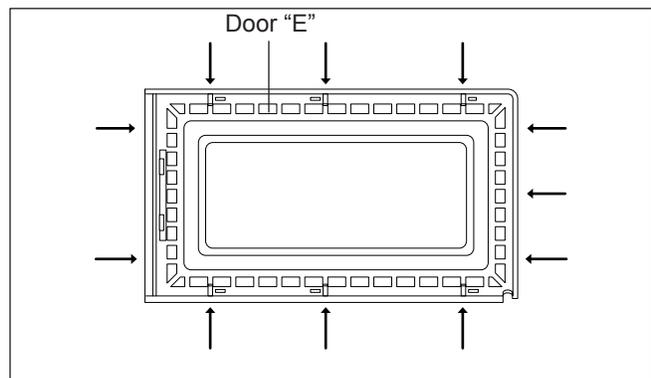
Open the door and remove the door by pulling up from hinge holes.



4-3-2 Removal of Door "E"

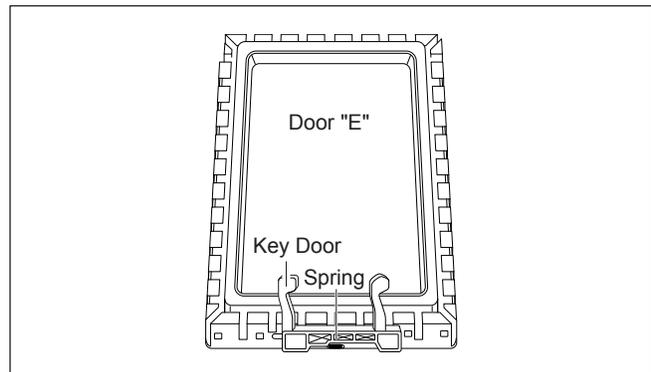
Following the procedure as shown in the figure, insert and bend a thin metal plate between Door "E" and Door "A" until you hear the 'tick' sound.

- Insertion depth of the thin metal plate should be 0.5mm or less.



4-3-3 Removal of Key Door & Spring

Remove pin hinge from Door "E".
Detach spring from Door "E" and key door.



4-3-4 Reassembly Test

After replacement of the defective component parts of the door, reassemble it and follow the instructions below for proper installation and adjustment so as to prevent an excessive microwave leakage.

1. When mounting the door to the oven, be sure to adjust the door parallel to the bottom line of the oven face plate by moving the upper hinge and lower hinge in the direction necessary for proper alignment.
2. Adjust so that the door has no play between the inner door surface and oven front surface. If the door assembly is not mounted properly, microwave energy may leak from the space between the door and oven.
3. Do the microwave leakage test.

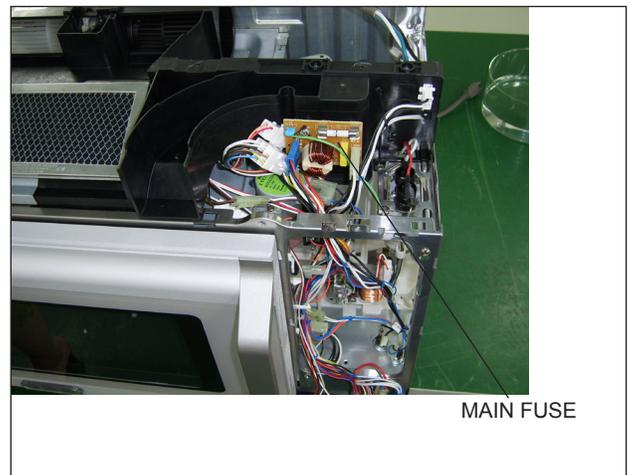
4-4 Replacement of Main Fuse

The fuse is located on the upper duct mounted to the Noise filter.

1. Disconnect power and remove grille.
2. Replace the fuse.

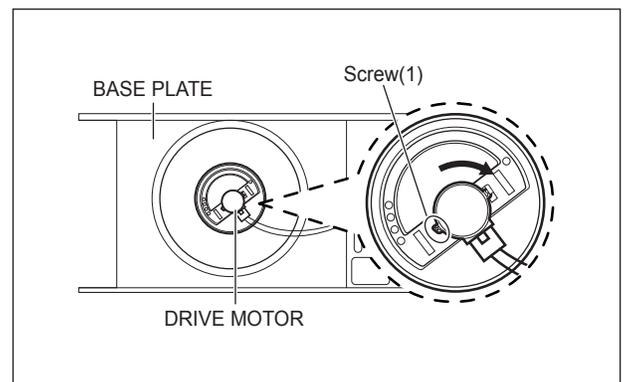
MAIN FUSE

1. When 20A fuse blows out by the operation of interlock monitor switch failure, replace the primary interlock switch, door sensing switch, interlock monitor switch and power relay.
2. When the above 3 switches operate properly, check if any other part such as the control circuit board, blower motor or high voltage transformer is defective.



4-5 Replacement of Drive Motor

1. Disconnect power.
2. Remove the three screws at the assy base bottom.
3. Remove the plastic cover (fixed with a screw) that covers the motor.
4. Remove all of the wires connected.
5. Remove a screw from the motor.
6. Turn the motor to the right and remove it.
7. After replacing the motor, you should re-install it on the accurate position of the coupler.
8. Assembling is in the reverse order to disassembling.



4-6 Replacement of stirrer motor

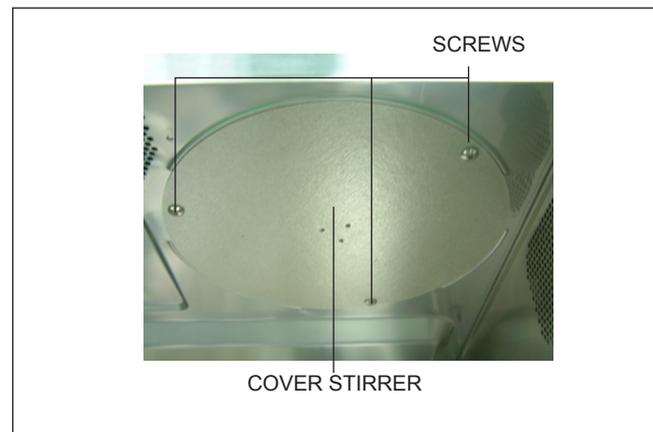
1. Disconnect power and remove grille screws(2).
2. Remove grille and the bracket duct upper screw(1).
3. Remove the bracket duct upper and disconnect the stirrer motor wire.
4. Remove stirrer motor screws(1) and lift up stirrer motor after turn left.



4-7 Removal of stirrer

The stirrer is located on the upper side of the cavity. The oven uses a top feed wave guide.

1. Disconnect power and open the door.
2. Remove the screws(3) and turn the stirrer cover left.
3. Remove stirrer cover and the stirrer will come with it.



4-8 Replacement of Control Circuit Board

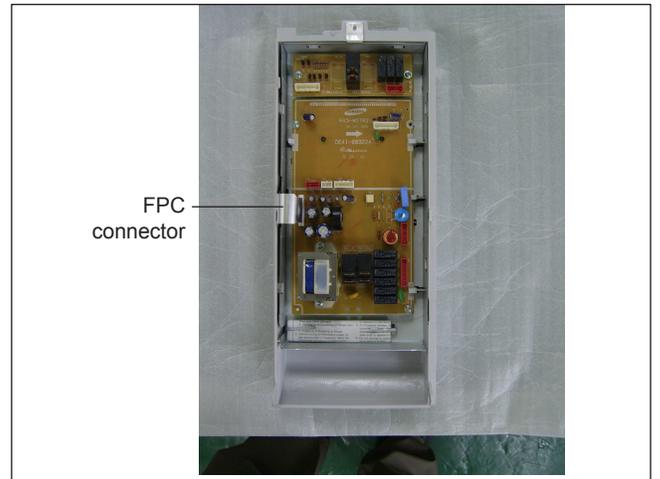
4-8-1 Removal of Control Box

1. Disconnect power and remove grille.
2. Remove a screw securing the control box assembly.
3. Be sure to ground any static electric charge in your body and never touch the control circuit.
4. Disconnect the connectors from the control circuit board.



4-8-2 Removal of P.C.B Assembly

1. Pull the lever end of the plastic fastener and remove the Flexible Printed Circuit(FPC) of membrane panel.
2. Remove screws securing the control circuit board.
3. Lift up the control circuit board from the Ass'y control box.
4. When reconnecting the FPC connector, make sure that the holes on the connector are properly engaged with the hooks on the Plastic Fastener.



5. Alignment and Adjustments

PRECAUTION

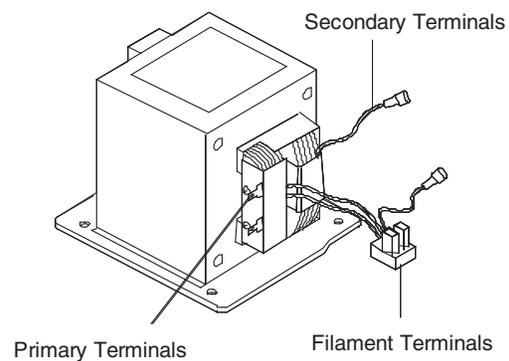
1. High voltage is present at the high voltage terminals during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components or wiring, always unplug the oven from its power source and discharge the high voltage capacitor.

5-1 High Voltage Transformer

1. Remove connectors from the transformer terminals and check continuity.
2. Normal resistance readings are as follows:

	SHV-U1650A
Secondary	120.5 Ω +2%
Filament	Shows Continuity
Primary	0.43 Ω + 2%

(Room temperature = 20°C)



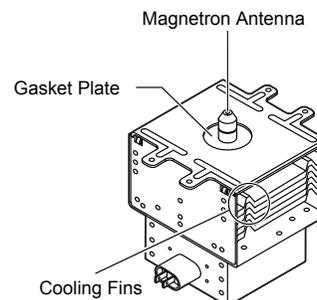
5-2 Low Voltage Transformer

1. The low voltage transformer is located on the control circuit board.
2. Remove the low voltage transformer from the PCB Ass'y and check continuity.
3. Normal resistor reading is shown in the table.

Terminals	Resistance
	SLV-1850U(P)
1~2(Input)	127.7 Ω
4~5(Output 19V)	1.8 Ω
6~7(Output 7.0V)	2.0 Ω
7~8(Output 2.7V)	4.8 Ω

5-3 Magnetron

1. Continuity checks can indicate only an open filament or a shorted magnetron. To diagnose an open filament or shorted magnetron :
2. Isolate the magnetron from the circuit by disconnecting its leads.
3. A continuity check across the magnetron filament terminals should indicate one ohm or less.
4. A continuity check between each filament terminal and magnetron case should read open.



5-4 High Voltage Capacitor

1. Check continuity of the capacitor with the meter set at the highest resistance scale.
2. Once the capacitor is charged, a normal capacitor shows continuity for a short time, and then indicates 9MΩ.
3. A shorted capacitor will show continuous continuity.
4. An open capacitor will show constant 9MΩ.
5. Resistance between each terminal and chassis should read infinite.

5-5 High Voltage Diode

1. Isolate the diode from the circuit by disconnecting its leads.
2. With the ohm-meter set at the highest resistance scale, measure across the diode terminals. Reverse the meter leads and read the resistance. A meter with 6V, 9V or higher voltage batteries should be used to check the front-to back resistance of the diode (otherwise an infinite resistance may be read in both directions). The resistance of a normal diode will be infinite in one direction and several hundred KΩ in the other direction.

5-6 Main Relay and Power Control Relay

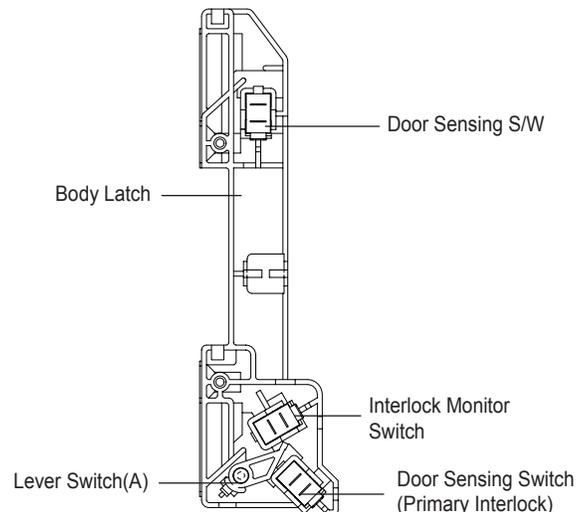
1. The relays are located on the PCB Ass'y. Isolate them from the main circuit by disconnecting the leads.
2. Operate the microwave oven with a water load in the oven. Set the power level set to high.
3. Check continuity between terminals of the relays after the start pad is pressed.

5-7 Adjustment of Primary Switch, Door Sensing Switch and Monitor Switch

PRECAUTION

For continued protection against radiation hazard, replace parts in accordance with the wiring diagram and be sure to use the correct part number for the following switches: Primary and secondary interlock switches, and the interlock monitor switch (replace all together). Then follow the adjustment procedures below. After repair and adjustment, be sure to check the continuity of all interlock switches and the interlock monitor switch.

1. When mounting Primary switch and Interlock Monitor switch to Latch Body, consult the figure.
2. No specific adjustment during installation of Primary switch and Monitor switch to the latch body is necessary.
3. When mounting the Latch Body to the oven assembly, adjust the Latch Body by moving it so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the Latch Body to the oven assembly.
4. Reconnect to Monitor switch and check the continuity of the monitor circuit and all latch switches again by following the components test procedures.
5. Confirm that the gap between the switch housing and the switch actuator is no more than 0.5mm when door is closed.
6. **Interlock Switch Replacement** - When replacing faulty switches, be sure switch mounting tabs are not bent, broken or otherwise deficient in their ability to secure the switches in place.



	Door Open	Door Closed
Primary Interlock switch	∞	0
Monitor switch(COM-NC)	0	∞
Door Sensing S/W (Secondary Interlock S/W)	∞	0

5-8 VENT EXHAUST BLOWER MOTOR

THIS COMPONENT REQUIRE REMOVAL OF MICROWAVE OVEN FROM INSTALLATION FOR SERVICING.

The blower is a two speed (HI-LO) capacitor run blower assembly located on top of the microwave oven. The blower is operated by low voltage relays located on the smart board.

The blower motor has 3 winding which can be tested for continuity from the front by removing the top grille and opening the control panel.

RUN CAPACITOR

The run capacitor is located behind the top grille above the control area. The capacitor is used for more torque and electrical phasing. Without the capacitor the blower might run but would be much slower.

TO TEST THE CAPACITOR

1. Remove grille, discharge capacitor and disconnect one capacitor lead.
2. Make appropriate capacitor check (with analog meter needle should rise then fall, cap is charging then discharging).

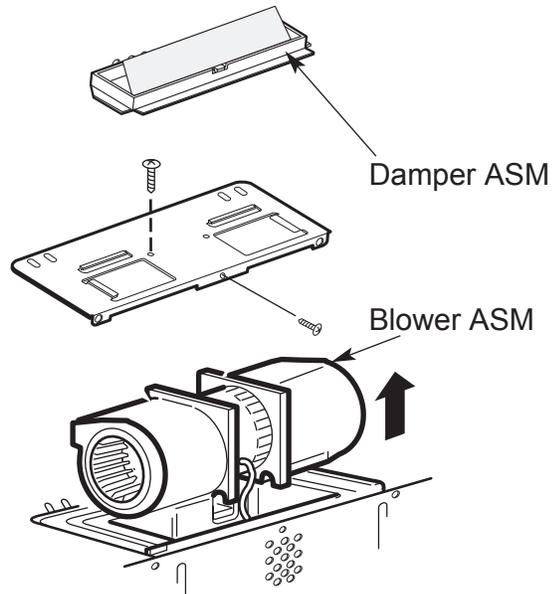
TO TEST BLOWER WINDINGS:

1. Disconnect power and remove grille.
2. Open control panel and discharge capacitor.
3. Disconnent two wires to run capacitor. Continuity test across the two wires should ve approximately 75 ohms of resistance. This test allows you to read across all three windings at the same time.

TO REMOVE VENT BLOWER

1. Remove unit from its installation.
2. Remove 5 screws securing damper and motor assembly to top and back of unit and lift off. (1 screw is located under damper.)
3. Disconnect blower plug.

NOTE: Place blower wires in routing slots to avoid pinching of wires.



5-9 THERMAL CUTOUT(TCO'S)

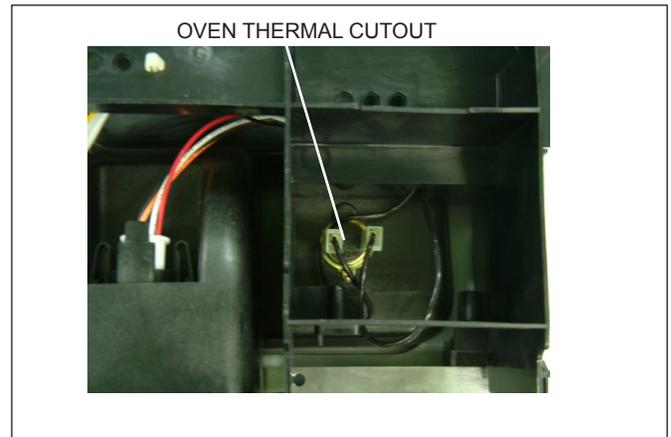
There are 4 different thermal cutouts in this unit with 4 different purposes. They are :

1. Oven thermal cutout (flame sensor), on cavity top.
2. Hood thermal cutout, inside control area on duct.
3. Bottom thermal cutout, on floor of control area.
4. Magnetron thermal cutout, on magnetron.

5-9-1 Oven Thermal Cutout (Flame sensor)

The oven thermal cutout(Cavity TCO) is located on the top side of the oven cavity beside exhaust duct with a temperature rating of 320°F(160°C)/ 140°F(60°C).

The cutout is tightly held to the top of the oven cavity by duct-upper.



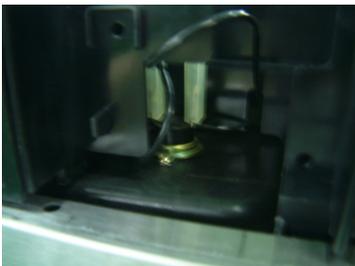
5-9-2 Replacement of Flame Sensor

Disconnect oven power. Remove Grille & Panel-outer.

1. Remove screws securing the duct upper.



2. Loft up the exhaust duct from the cavity.
3. Disconnect two wire leads.



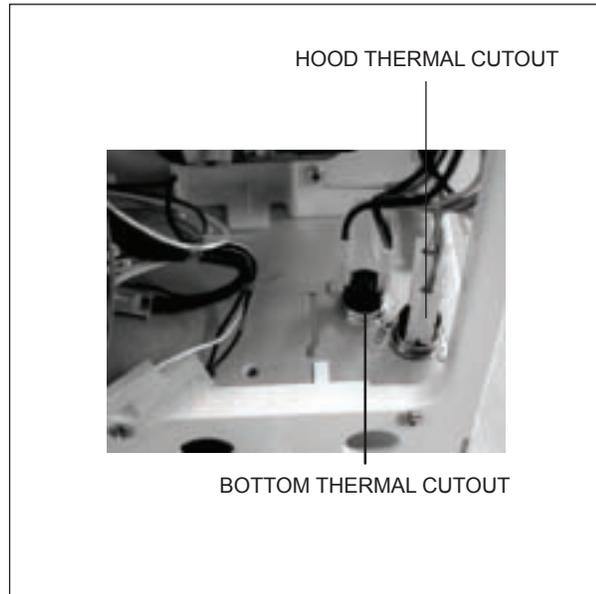
5-9-3 Hood Thermal Cutout

This cutout will protect the touch control from excessive heat by turning the vent fan on at low speed. If the surface units of the range are used for long periods of time heat will build up and could damage the microwave control. In order to prevent this a thermal cutout is installed on the duct behind the control. This cutout will close (158°F/70°C - vent fan energized) and open (104°F/40°C - vent fan de-energized) depending on temperatures it sense.

To Remove hood Thermal Cutout :

1. Disconnect power and remove grille.
2. Remove control box assembly.
3. Remove two wire leads and unscrew one screw capturing cutout on duct.

NOTE : If this cutout were to open it would be difficult to detect. The only time it functions is during an overheat condition. It will be normally open when checked with an ohmmeter.



5-9-4 Bottom Thermal Cutout

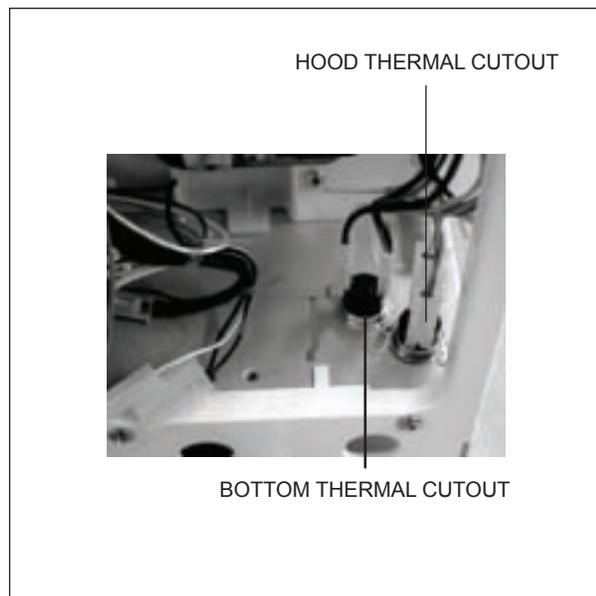
THIS COMPONENT REQUIRE REMOVAL OF MICROWAVE OVEN FROM INSTALLATION FOR SERVICING.

During a fire on the stove the heat could be intense enough to close the Hood Thermal Cutout and force the fan to run. While at moderate high temperature we do want it to run, however during a fire it is advantageous to NOT have the vent fan running. So if a fire were to start on the stove top the Bottom Thermal Cutout would open at 248°F(120°C) and remove all power to the microwave oven.

This cutout is designed to not be resettable.

To Remove Bottom Thermal Cutout :

1. Disconnect power and remove grille.
2. Remove control box assembly.
3. Remove two wire leads and unscrews one screw capturing cutout on base plate.



5-9-5 Magnetron Thermal Cutout

The magnetron thermal cutout is located above the leads to the magnetrons. It is designed to prevent damage to the magnetron if an overheated condition develops in the tube to cooling fan failure, obstructed air ducts, dirty or blocked air intake.

Under normal operation, the magnetron thermal cutout remains closed. However, when abnormally high temperatures are reached within the magnetron, the magnetron thermal cutout will open at 320°F(160°C) causing the oven to shut down. After the temperature drops to 140°F(60°C) it will reset and cooking will be able to resume.

To Remove Magnetron Thermal Cutout :

1. See 'Removing Magnetron'.

5-10 SENSOR

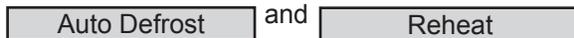
The Sensor Cooking Function uses a special gas sensor which detects both humidity(steam) and hydrocarbons(food odors) during the cooking process. Before conducting either of the sensor tests below, ensure the unit is plugged into a wall outlet for at least 5 minutes. If already plugged in, proceed. The sensor is a plug-in device located in the vent area at the top left hand corner of the cavity behind the grille.

To Service :

1. Disconnect power and remove grille.
2. Separate retainer from receptacle and unplug sensor.

SENSOR TEST (QUICK TEST)

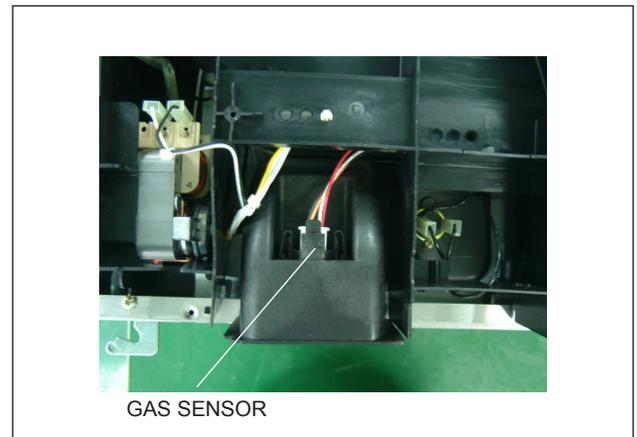
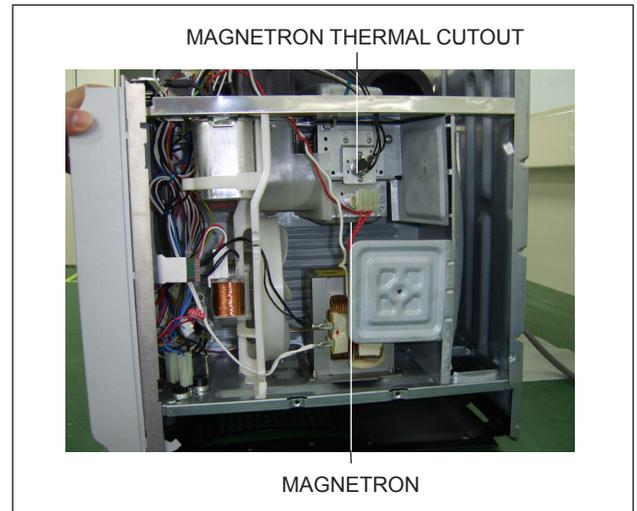
1. With 2 fingers touch and hold the following pads at the same time :



2. Observe diagnostic number in display (Numbers approximate).
 - **15-185** (Normal-verify with "detection test")
 - **213** or Higher (Sensor failed to open, sensor unplugged, wiring or smart board.)
 - Less than 6 (shorted sensor, or smart board).

NOTE : Only heater terminals (H ; Black and Red leads) can be checked with ohmmeter(30Ω).

**CAUTION : DO NOT ATTEMPT TO CHECK SENSOR TERMINALS (White and Orange leads).
♣ CAN DAMAGE SENSOR.**



5-11 Error Code

Error Code	Contents	Cause of Troubles
E-24	If overheat during cooking causes to reach 500F, it stops all modes of cooking, causes 'E-24' error, and converts to cancel mode.	SENSOR poor
E-22	'SHORT ERROR' of thermal sensor	-
E-21	'OPEN ERROR' of thermal sensor	-
E-03	If the WARM, CONVECTION, PREHEAT and BROIL do not reach over 217 of HEX value within 3 minutes, it causes 'E3' error and converts to cancel mode.	CONVECTION MOTOR OPEN CONVECTION HEATER OPEN
E-23	If the PREHEAT does not reach the preset temperature within 30 minutes, it causes 'E4' error and converts to cancel mode.	ASSY CASING poor
-SE-	KEY SHORT ERROR.	
E-11	'OPEN ERROR' of gas sensor.	
E-12	'SHORT ERROR' of gas sensor.	

5-12 Output Power of Magnetron

CAUTION
MICROWAVE RADIATION

PERSONNEL SHOULD NOT ALLOW EXPOSURE TO MICROWAVE RADIATION FROM MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.

The output power of the magnetron can be measured by performing a water temperature rise test.

Equipment needed :

* Two 1-liter cylindrical borosilicate glass vessel (Outside diameter 190 mm)

* One glass thermometer with mercury column

NOTE: Check line voltage under load. Low voltage will lower the magnetron output. Make all temperature and time tests with accurate equipment.

1. Fill the one liter glass vessel with water.
2. Stir water in glass vessel with thermometer, and record glass vessel's temperature ("T₁", 10±1°C).
3. After moving the water into another glass vessel, place it in the center of the cooking tray. Set the oven to high power and operate for 47 seconds exactly. (3 seconds included as a holding time of magnetron oscillation.)
4. When heating is finished, stir the water again with the thermometer and measure the temperature ("T₂").
5. Subtract T₁ from T₂. This will give you the water temperature rise. (ΔT)
6. The output power is obtained by the following formula;

$$\text{Output Power} = \frac{4.187 \times 1000 \times \Delta T + 0.55 \times M_c \times (T_2 - T_0)}{44}$$

47 : Heating Time (sec)

(3 seconds included as a holding time of magnetron oscillation.)

4.187 : Coefficient for Water

1000 : Water (cc)

ΔT : Temperature Rise (T₂-T₁)

T₀ : Room Temperature

M_c : Cylindrical borosilicate glass weight

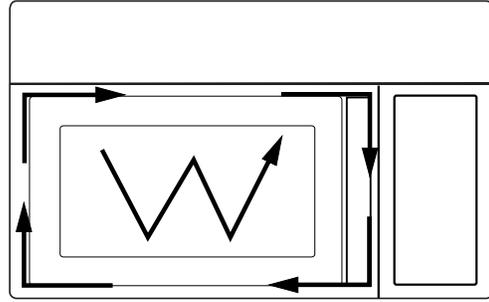
7. Normal temperature rise for this model is 9.9°C to 10.3°C at 'HIGH'.

NOTE 1: Variations or errors in the test procedure will cause a variance in the temperature rise. Additional power test should be made if temperature rise is marginal.

NOTE 2: Output power in watts is computed by multiplying the temperature rise (step 5) by a factor of 91 times the of centigrade temperature.

5-13 Procedure for Measurement of Microwave Energy Leakage

- 1) Pour 275 ± 15 cc of $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.
- 2) Start to operate the oven and measure the leakage by using a microwave energy survey meter.
- 3) Set survey meter with dual ranges to 2,450MHz.
- 4) When measuring the leakage, always use the 2 inch spacer cone with the probe. Hold the probe perpendicular to the cabinet door. Place the probe perpendicular to the cabinet door. Place the spacer cone of the probe on the door and/or cabinet door seam and move along the seam, the door viewing window and the exhaust openings moving the probe in a clockwise direction at a rate of 1 inch/sec. If the leakage testing of the cabinet door seam is taken near a corner of the door, keep the probe perpendicular to the areas making sure that the probe end at the base of the cone does not get closer than 5cm to any metal. If it gets closer than 5cm, erroneous readings may result.
- 5) Measured leakage must be less than $4\text{mW}/\text{cm}^2$, after repair or adjustment.



**Maximum allowable leakage is $5\text{mW}/\text{cm}^2$.
 $4\text{mW}/\text{cm}^2$ is used to allow for measurement and meter accuracy**

5-14 Check for Microwave Leakage

1. Remove the outer panel.
2. Pour 275 ± 15 cc of $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.
3. Start the oven at the highest power level.
4. Set survey meter dual ranges to 2,450MHz.
5. Using the survey meter and spacer cone as described above, measure near the opening of magnetron, the surface of the air guide and the surface of the wave guide as shown in the following photo.(but avoid the high voltage components.) The reading should be less than $4\text{mW}/\text{cm}^2$.



5-15 Note on Measurement

- 1) Do not exceed the limited scale.
- 2) The test probe must be held on the grip of the handle, otherwise a false reading may result when the operator's hand is between the handle and the probe.
- 3) When high leakage is suspected, do not move the probe horizontally along the oven surface; this may cause damage to the probe.
- 4) Follow the recommendation of the manufacturer of the microwave energy survey meter.

5-16 Leakage Measuring Procedure

5-15-1 Record keeping and notification after measurement

- 1) After adjustment and repair of a radiation preventing device, make a repair record for the measured values, and keep the data.
- 2) If the radiation leakage is more than $4\text{mW}/\text{cm}^2$ after determining that all parts are in good condition, functioning properly and the identical parts are replaced as listed in this manual notify that fact to ;
SERVICE CENTER

6. Troubleshooting

PRECAUTION

1. CHECK GROUNDING BEFORE CHECKING FOR TROUBLE.
2. BE CAREFUL OF THE HIGH VOLTAGE CIRCUIT.
3. DISCHARGE THE HIGH VOLTAGE CAPACITOR.
4. WHEN CHECKING THE CONTINUITY OF THE SWITCHES OR TRANSFORMER, DISCONNECT ONE LEAD WIRE FROM THESE PARTS AND THEN CHECK CONTINUITY WITHOUT THE POWER SOURCE ON. TO DO OTHERWISE MAY RESULT IN A FALSE READING OR DAMAGE TO YOUR METER.
5. DO NOT TOUCH ANY PART OF THE CIRCUIT OR THE CONTROL CIRCUIT BOARD, SINCE STATIC DISCHARGE MAY DAMAGE IT. ALWAYS TOUCH GROUND WHILE WORKING ON IT TO DISCHARGE ANY STATIC CHARGE BUILT UP.

6-1 Electrical Malfunction

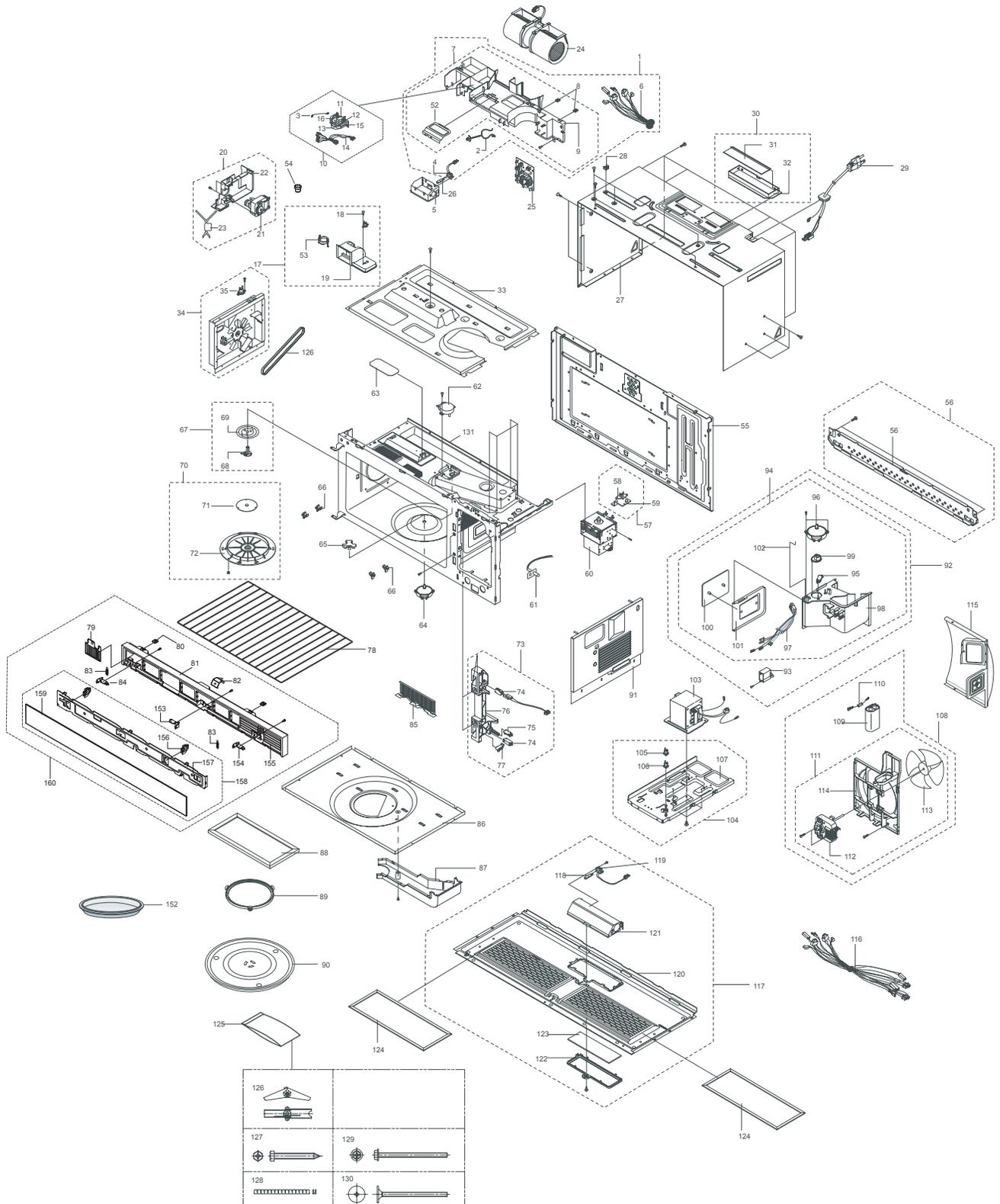
SYMPTOM	CAUSE	CORRECTIONS
Oven is dead. Fuse is OK. No display and no operation at all .	<ol style="list-style-type: none"> 1. Open or loose lead wire harness 2. Open thermal cutout (Magnetron) 3. Open low voltage transformer 4. Defective Ass'y PCB 	<p>Check fan motor when thermal cutout is defective.</p> <p>Check Ass'y PCB when LVT is defective.</p>
No display and no operation at all. Fuse is blown.	<ol style="list-style-type: none"> 1. Shorted lead wire harness 2. Defective primary latch switch (NOTE 1) 3. Defective monitor switch (NOTE1) 4. Shorted HVCapacitor 5. Shorted HVTransformer (NOTE2) <p>NOTE 1: All of these switches must be replaced at the same time. (refer to adjustment instructions) Check continuity of power relay contacts and if it has continuity, replace power relay also.</p> <p>NOTE 2: When HVTransformer is replaced, check diode and magnetron also.</p>	<p>Check adjustment of primary, interlock monitor, power relay, door sensing switch.</p>
Oven does not accept key input (Program)	<ol style="list-style-type: none"> 1. Key input is not in-Sequence 2. Open or loose connection of membrane key pad to Ass'y PCB 3. Shorted or open membrane panel 4. Defective Ass'y PCB 	<p>Refer to operation procedure.</p> <p>Replace PCB main.</p>
Timer starts countdown but no microwave oscillation. (No heat while oven lamp and fan motor turn on.)	<ol style="list-style-type: none"> 1. Off-alignment of latch switches 2. Open or loose connection of high voltage circuit especially magnetron filament circuit <p>NOTE: Large contact resistance will bring lower magnetron filament voltage and cause magnetron to lower output and/or intermittent oscillation.</p> <ol style="list-style-type: none"> 3. Defective high voltage components H.V.Transformers H.V. Capacitor H.V.Diode, H.V.Fuse Magnetron 4. Open or loose wiring of power relay 5. Defective primary latch switch 6. Defective power relay or Ass'y PCB 	<p>Adjust door and latch switches.</p> <p>Check high voltage component according to component test procedure and replace if it is defective.</p> <p>Replace PCB main.</p>

6-2 Electrical Malfunction(continued)

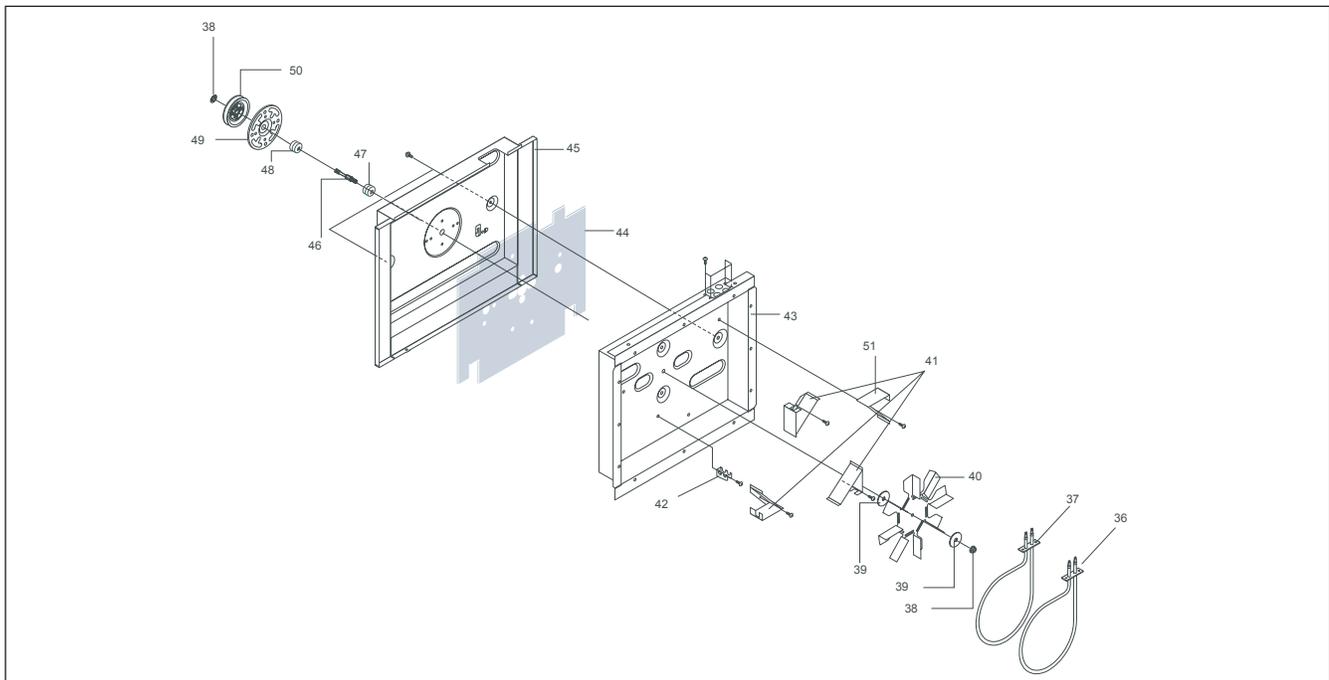
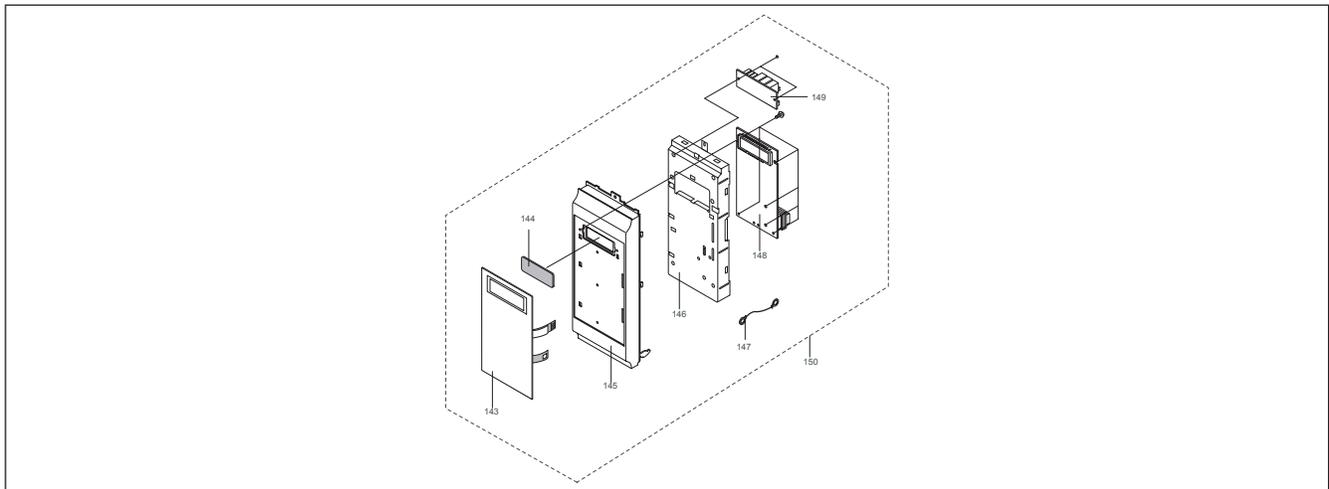
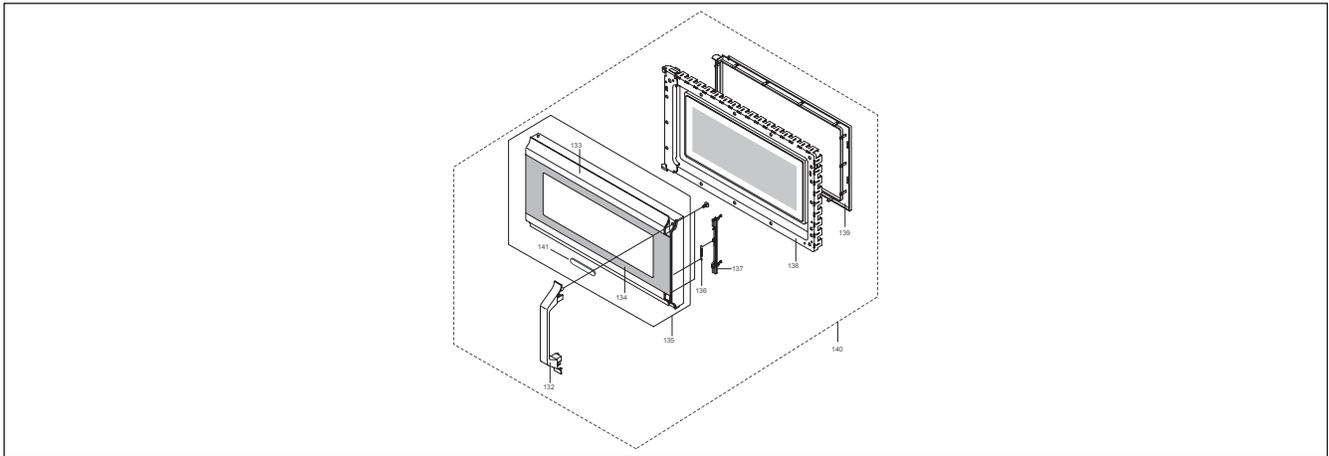
SYMPTOM	CAUSE	CORRECTIONS
Oven lamp and fan motor turn on	<ol style="list-style-type: none"> Misadjustment or loose wiring of primary latch switch Defective primary latch switch 	Adjust door and latch switches.
Oven can program but timer does not start.	<ol style="list-style-type: none"> Open or loose wiring of secondary interlock switch Off-alignment of primary interlock Defective secondary interlock S/W 	Adjust door and interlock switches.
Microwave output is low: Oven takes longer time to cook food.	<ol style="list-style-type: none"> Decrease in power source voltage. Open or loose wiring of magnetron filament circuit. (Intermittent oscillation) Aging of magnetron 	Consult electrician.
Fan motor turns on when plugged in	Loose wiring of door sensing switch	Check wire of door sensing switch.
Oven does not operate and return to the plugged in mode.	Defective Ass'y PCB	Replace PCB main.
Loud buzzing noise can be heard.	<ol style="list-style-type: none"> Loose fan and fan motor Loose screws on H.V.Transformer Shorted H.V.Diode 	Tighten screws of fan motor. Tighten screws of H.V.Transformer. Replace H.V.Diode.
Turntable motor does not rotate.	<ol style="list-style-type: none"> Open or loose wiring of turntable motor. Defective turntable motor. 	Replace turntable motor.
Oven stops operation during cooking	<ol style="list-style-type: none"> Open or loose wiring of primary interlock switch Operation of thermal cutout(Magnetron) 	Adjust door and latch switches.
Sparks	<ol style="list-style-type: none"> Metallic ware or cooking dishes touching on the oven wall. Ceramic ware trimmed with gold or silver powder also causes sparks. 	Inform the customer. Do not use any type of cookware with metallic trimming.
Uneven cooking	Uneven intensity of microwave due to its characteristics.	Wrap thinner parts of the food with aluminum foil. Use plastic wrap or cover with a lid. Stir once or twice while cooking foods such as soup, cocoa, or milk.
Noise from the turntable motor when it starts to operate.	Noise may result from the motor.	Replace turntable motor.

7. Exploded Views and Parts List

7-1 Exploded Views



7-1 Exploded Views (continued)



7-2 Main Parts List

E-view no	Description	Q'ty
1	ASSY-DUCT UPPER	1
2	CABLE CLAMP	1
3	CBF LEAD WIRE-E	1
4	SOCKET-LAMP HALOGEN	1
5	BRACKET-OVEN	1
6	ASSY-WIRE HARNESS C	1
7	ASSY-DUCT UPPER SUB	1
8	NUT-MOUNTING	2
9	DUCT-UPPER	1
10	ASSY-CAM LOUVER	1
11	SWITCH-MICRO	1
12	SWITCH-MICRO	1
13	MOTOR DRIVE	1
14	WIRE HARNESS-CAM	1
15	BRACKET-CAM PLATE	1
16	CAM-LOUVER	1
17	ASSY-DUCT EXHAUST	1
18	THERMOSTAT	1
19	DUCT-EXHAUST	1
20	ASSY-GUIDE AIR(HEATER)	1
21	MOTOR CONVECTION	1
22	GUIDE-AIR(HEATER)	1
23	PULLEY-FAN MOTOR	1
24	MOTOR VENTILATION	1
25	ASSY NOISE FILTER	1
26	LAMP-HALOGEN	1
27	PANEL-OUTER	1
28	ASSY-HOLDER NUT	1
29	ASSY POWER CORD	1
30	ASSY-HOOD DAMPER	1
31	COVER-DAMPER	1
32	DAMPER-MAIN	1
33	ASSY-COVER ADIBATIC UPPER	1
34	ASSY-CASING	1
35	THERMOSTAT	1
36	HEATER-CONVECTION	1
37	HEATER-CONVECTION	1
38	NUT-HEXAGON FLANGE	1
38	NUT-HEXAGON FLANGE	1
39	WASHER-DOOR	2
40	FAN-CONVECTION	1
41	BRACKET-AIR GUIDE	3
42	HOLDER-HEATER	1
43	BRACKET-CASING	1
44	ADIABATIC-CASING	1
45	COVER-CASING	1
46	SHAFT-FAN	1
47	SPACER-BEARING	1
48	BEARING-FAN	2

7-2 Main Parts List (continued)

No	Parts Description	Q'ty
49	HOLDER-BEARING	1
50	PULLEY-FAN CASING	1
51	BRACKET-GUIDE	1
52	BRACKET-DUCT(U)	1
53	HOLDER-SENSOR	1
54	SENSOR GAS	1
55	ASSY-PANEL BACK	1
56	PLATE-MOUNTING	1
57	ASSY-THERMOSTAT	1
58	THERMOSTAT	1
59	BRACKET-TCO	1
60	ASSY-MGT	1
61	SENSOR THERMISTOR	1
62	MOTOR SYNCHRONOUS	1
63	GLASS-OVEN LAMP	1
64	MOTOR SYNCHRONOUS	1
65	COUPLER	1
66	HOLDER-RACK	4
67	ASSY-STIRRER	1
68	HOLDER-STIRRER	1
69	BLADE-STIRRER	1
70	ASSY-COVER STIRRER	1
71	SUPPORT-STIRRER	1
72	COVER-STIRRER	1
73	ASSY BODY LATCH-OTR CON	1
74	SWITCH-MICRO	1
75	SWITCH-MICRO	2
76	LATCH-BODY	1
77	LEVER-SWITCH LOWER	1
78	RACK-WIRE	1
79	BRACKET-GRILLE	1
82	EARTH-GRILLE	1
83	SPRING-LOUVER	2
84	HINGE-GRILLE(L)	1
85	COVER-FRONT	1
86	ASSY-COVER ADIBATIC LOWER	1
87	GUIDE-AIR(BOTTOM)	1
88	FILTER-CHARCOAL	1
89	ASSY-GUIDE ROLLER	1
90	TRAY-COOKING	1
91	ASSY-COVER ADIBATIC RIGHT	1
92	ASSY-GUIDE AIR(MGT)	1
93	CAPACITOR-MOTOR	1
94	ASSY-GUIDE AIR(MGT) SUB	1
95	SWITCH-MICRO	1
96	MOTOR SYNCHRONOUS	1
97	WIRE HARNESS-B	1
98	GUIDE-AIR(MGT)	1
99	CAM-MOTOR	1
100	DAMPER-GASKET	1

7-2 Main Parts List (continued)

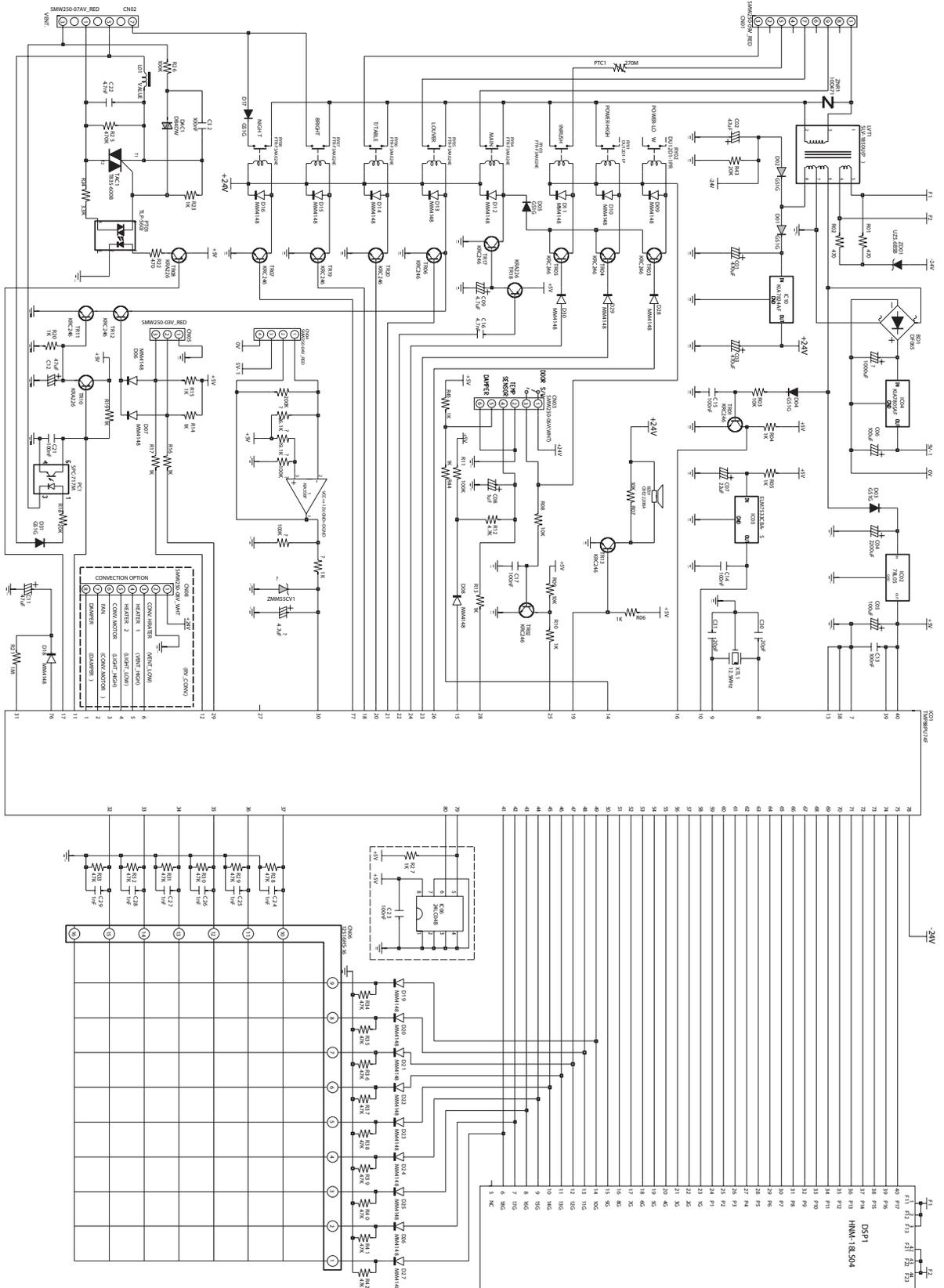
No	Parts Description	Q'ty
101	DAMPER-SWING	1
102	ROD-DAMPER	1
103	TRANS H.V	1
104	ASSY-BASE PLATE	1
105	THERMOSTAT	1
106	THERMOSTAT	1
107	BASE-PLATE	1
108	ASSY-COVER F/MOTOR	1
109	C-OIL	1
110	ASSY-HVD	1
111	ASSY-MOTOR FAN	1
112	MOTOR FAN	1
113	BLADE-FAN	1
114	COVER-MOTOR	1
115	BRACKET-REAR	1
116	ASSY-WIRE HARNESS A	1
117	ASSY-BASE BOTTOM	1
118	LAMP-HALOGEN	1
119	SOCKET-LAMP HALOGEN	1
120	BASE-BOTTOM	1
121	BRACKET-BOTTOM LAMP	1
122	COVER-GLASS COOKTOP	1
123	GLASS-COOK TOP LAMP	1
124	FILTER-AIR	2
125	ASSY-HARD WARE	1
126	BAND-RUBBER	1
126	NUT-TOGGLE	3
127	SCREW-INCH MACH	1
128	GROMMET	2
129	BOLT-TOGGLE	3
130	BOLT-FLAT	3
131	ASSY CAVITY-WELDING	1
132	ASSY-HANDLE	1
133	DOOR-A	1
134	SCREEN-DOOR(B)	1
135	ASSY DOOR-A	1
136	SPRING-ES	1
137	KEY-DOOR	1
138	ASSY DOOR-E	1
139	DOOR-C	1
140	ASSY DOOR	1
141	BADGE LOGO	1
143	SWITCH MEMBRANE	1
144	WINDOW-DISPLAY	1
145	CONTROL-PANEL	1
146	ASSY-BRACKET C/PANEL	1
147	WIRE HARNESS-E	1
148	ASSY PCB PARTS	1
149	ASSY PCB PARTS	1
150	ASSY CONTROL-BOX	1

7-2 Main Parts List (continued)

No	Parts Description	Q'ty
152	TRAY-CONVECTION	1
153	HINGE-GRILLE(M)	1
154	HINGE-GRILLE(R)	1
155	GRILLE	1
156	BRACKET-BARRIER	2
157	BRACKET-COVER GRILLE	1
158	ASSY-COVER GRILLE	1
159	COVER-GRILLE	1
160	ASSY-GRILLE	1

8. P.C.B Diagrams

8-1 P.C.B Diagrams



8-2 P.C.B Parts List

(S.N.A : SERVICE NOT AVAILABLE)

Level	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
1-2	RAS-MOTR2V-05	ASSY PCB PARTS	JMV8166BA,120V60HZ	1	SA	
1-3	0604-000258	PHOTO-COUPLER	TRIAC,-,-,DIP-5,ST	1	SNA	PT01
1-3	3501-000256	RELAY-POWER	110V,1200VA,10000MA,-,10MS,1	1	SNA	RY01
1-3	3501-000258	RELAY-POWER	24VDC,1250VA,22MA,-,9MS,5MS	1	SA	RY02
1-3	3501-001155	RELAY-MINIATURE	24VDC,200MW,3000MA,1FORM	6	SA	RY08
1-3	3708-001550	CONNECTOR-FPC/FC/PIC	16P,1.25mm,STRAIGHT	1	SNA	CN07
1-3	3711-000024	CONNECTOR-HEADER	BOX,3P,1R,2.5mm,STRAIGH	1	SNA	CN05
1-3	3711-000939	CONNECTOR-HEADER	BOX,4P,1R,2.5mm,STRAIGH	1	SNA	CN04
1-3	3711-001038	HEADER-BOARD TO CABLE	BOX,6P,1R,2.5mm,ST	1	SNA	CN03
1-3	3711-001084	HEADER-BOARD TO CABLE	BOX,8P,1R,2.5MM,ST	1	SNA	CN06
1-3	3711-001153	CONNECTOR-HEADER	BOX,9P,1R,2.5mm,STRAIGH	1	SNA	CN01
1-3	3711-004200	CONNECTOR-HEADER	BOX,4P/7P,1R,2.5MM,STRA	1	SNA	CN02
1-3	DE02-00060A	CH-ISOPROPHYL ALCOHO	ALL,MODEL,-,-,-,-,-	5	SNA	
1-3	DE26-00052A	TRANS L.V	SLV-1850U(P),120V,60HZ,AC23.0V	1	SA	LVT1
1-3	DE29-00006A	FILTER LINE	-,SSN1306500B,68MΩ,1.5KV,MI	1	SNA	L01
1-3	DE30-20016A	BUZZER	CBE2220BA,STICK,-,-,-,-,-	1	SNA	BZ01
1-3	DE61-00504A	HOLDER-DIGITRON	NEW-WAVE,PP,-,-,-,BLK,-	1	SA	
1-3	DE68-02628A	LABEL-PCB ADHESIVE	-,-,-,-,W10,L30,WHT,-	1	SNA	
1-3	DE92-01746A	ASSY PCB AUTO	-,RAS-MOTR2V-05,120V60HZ	1	SNA	
1-4	0402-001080	DIODE-RECTIFIER	GF1G,400V,1A,DO,TP	7	SNA	D21
1-4	0402-001298	DIODE-BRIDGE	DF06S,600V,1A,SMD-4,TP	1	SNA	BD1
1-4	0403-000509	DIODE-ZENER	MTZJ5.6B,5.4-5.7V,500MW,DO-3	1	SNA	ZD01
1-4	0403-001288	DIODE-ZENER	ZMM55C5V1,4.8-5.4V,500MW	1	SNA	ZD02
1-4	0504-001008	TR-DIGITAL	RN2427,PNP,200MW,2.2K/10K,SOT	3	SNA	TR16
1-4	0504-001080	TR-DIGITAL	KRC-246S	13	SNA	TR15
1-4	1201-001125	IC-OP AMP	75S01,SOP,5P,63MIL,SINGLE,100D	1	SNA	IC11
1-4	1203-001037	IC-VOLTAGE REGULATOR	78L05,SOT-89,3P,185	1	SNA	IC03
1-4	1203-002835	IC-POSI.FIXED REG.	KIA7805AF,DPAK,3P,6.6	1	SNA	IC02
1-4	1203-002836	IC-POSI.FIXED REG.	KIA7824AF,DPAK,3P,6.6	1	SNA	IC04
1-4	1203-002876	IC-VOL. DETECTOR	ELM7533CBA-S,SOT-23,3P,	1	SNA	IC05
1-4	1401-001043	THYRISTOR-TRIAC	8A,600V,-,500V/US,DPAK	1	SNA	TAC1
1-4	1401-001058	THYRISTOR-DIAC	39V	1	SNA	DAC1
1-4	1404-000230	THERMISTOR - PTC 270HM 20%		1	SNA	PTC1
1-4	1405-000001	VARISTOR	470V,1250A,14x7.5mm,TP	1	SNA	ZNR1
1-4	2001-000092	R-CARBON	470KOHM,5%,1/4W,AA,TP,2.4X6.4MM	1	SNA	R25
1-4	2001-001088	R-CARBON(S)	1KOHM,5%,1/2W,AA,TP,2.4X6.4M	1	SNA	R24
1-4	2003-002113	R-METAL OXIDE(S)	20KOHM,5%,1W,AF,TP,2.5X	1	SNA	R34
1-4	2003-002313	R-METAL OXIDE(S)	3.3KOHM,5%,1W,AA,TP,3.3	1	SNA	R26
1-4	2004-000193	R-METAL	100Kohm,1%,1/4W,AA,TP,2.4x6.4m	1	SNA	R23
1-4	2007-000033	R-CHIP	0OHM,5%,1/8W,DA,TP,3216	42	SNA	J44
1-4	2007-000277	R-CHIP	100KOHM,1%,1/10W,DA,TP,2012	2	SNA	R20
1-4	2007-000282	R-CHIP	100KOHM,5%,1/10W,DA,TP,2012	1	SNA	R21
1-4	2007-000300	R-CHIP	10Kohm,5%,1/8W,TP,2012	4	SNA	R10
1-4	2007-000468	R-CHIP	1Kohm,5%,1/8W,TP,2012	14	SNA	R33
1-4	2007-000532	R-CHIP	200KOHM,5%,1/10W,DA,TP,2012	1	SNA	R17
1-4	2007-000868	R-CHIP	4.7Kohm,1%,1/8W,TP,2012	1	SNA	R13
1-4	2007-000931	R-CHIP	470ohm,5%,1/8W,TP,2012	3	SNA	R27
1-4	2007-000941	R-CHIP	47Kohm,5%,1/8W,TP,2012	15	SNA	R51
1-4	2007-001262	R-CHIP	19.1KOHM,1%,1/10W,DA,TP,2012	1	SNA	R19
1-4	2007-007219	R-CHIP	26.1KOHM,1%,1/10W,DA,TP,2012	1	SNA	R18
1-4	2201-001013	C-CERAMIC,DISC	4.7NF,20%,400V,Y5U,TP,16X	1	SNA	C18

8-2 P.C.B Parts List

(S.N.A : SERVICE NOT AVAILABLE)

Level	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
1-4	2203-000192	C-CERAMIC,CHIP	100nF,+80-20%,50V,Y5V,TP,	5	SNA	C30
1-4	2203-000444	C-CER,CHIP	1nF,10%,50V,X7R,TP,2012,-	6	SNA	C29
1-4	2203-000889	C-CERAMIC,CHIP	4.7NF,10%,50V,X7R,TP,2012	1	SNA	C16
1-4	2301-001220	C-FILM,MPPF	100NF,10%,275V,BK,18X6X12,15	1	SNA	C17
1-4	2401-000151	C-AL	1000uF,20%,25V,GP,TP,10x20,5	1	SNA	C01
1-4	2401-000244	C-AL	100uF,20%,10V,GP,TP,6.3x7,5	2	SNA	C04
1-4	2401-000598	C-AL	1uF,20%,50V,GP,TP,4x7,5	1	SNA	C14
1-4	2401-000911	C-AL	22uF,20%,16V,GP,TP,5x7,5	1	SNA	C10
1-4	2401-001415	C-AL	470uF,20%,35V,GP,TP,10x20,5	2	SNA	C08
1-4	2401-001573	C-AL	47uF,20%,50V,GP,TP,6.3x11,2.5	2	SNA	C20
1-4	2401-002075	C-AL	4.7uF,20%,50V,GP,TP,5x11,5	1	SNA	C19
1-4	2401-003668	C-AL	2200UF,20%,16V,-,TP,12.5X20MM,5	1	SNA	C03
1-4	2404-000232	C-TA,CHIP	4.7UF,20%,10V,-,TP,3216,-	1	SNA	C15
1-4	2802-001154	RESONATOR-CERAMIC	12.5MHZ,0.5%,TP,10.0X5	1	SNA	XTL1
1-4	DE39-60001A	WIRE-SO COPPER	PI0.5,SN,T,52MM,TAPING_WI	2	SNA	J43
1-4	0604-001002	PHOTO-COUPLER	TR,100-600%,200mW,SOP-4,TP	1	SNA	PC1
1-4	DE60-60012A	PIN-EYELET	ID2.1,OD2.5,L3.0,SN,BSP,T0.25	8	SNA	
1-4	DE41-00322A	PCB-MAIN	MOTR2V,FR-1,1,-,T1.6,220X197MM,	1	SNA	
1-4	0401-000133	DIODE-SWITCHING	RLS4148,75V,150MA,LL-34,	23	SNA	D31
1-4	DE09-00513A	IC MICOM	TMP88CU74FG-CHUN,JMV9169BA,80 P	1	SNA	IC01
1-3	DE07-00077A	VF DISPLAY	VFD40-1804F,MAYTAG OTR CONV.,	1	SA	DSP1

9. Schematic Diagrams

9-1 Schematic Diagrams

