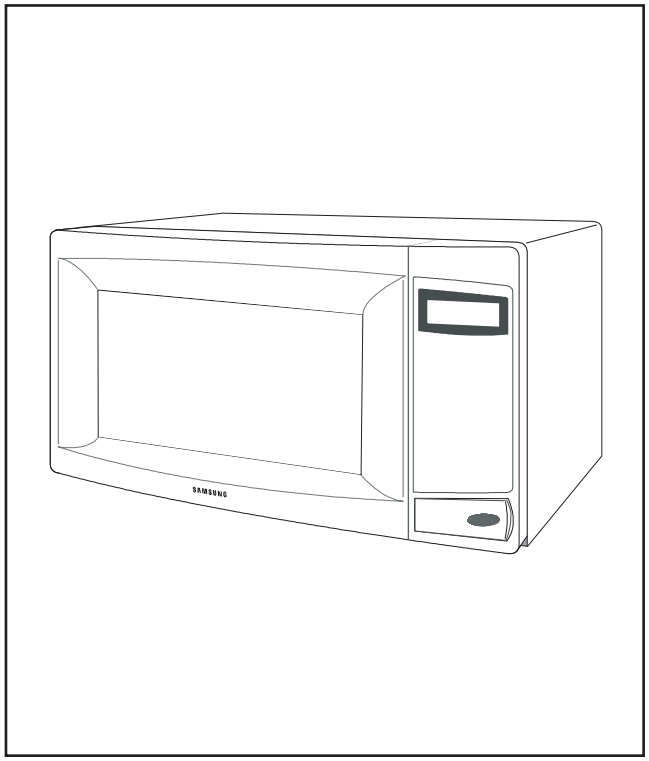
SAMSUNG

MICROWAVE OVEN

MODEL : MW1030WE

SERVICE Manual

MICROWAVE OVEN



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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/cm^2.

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/cm^2, 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.

   CENTRAL SERVICE CENTER

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.

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.

1-2 Special Servicing Precautions (Continued)

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 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.

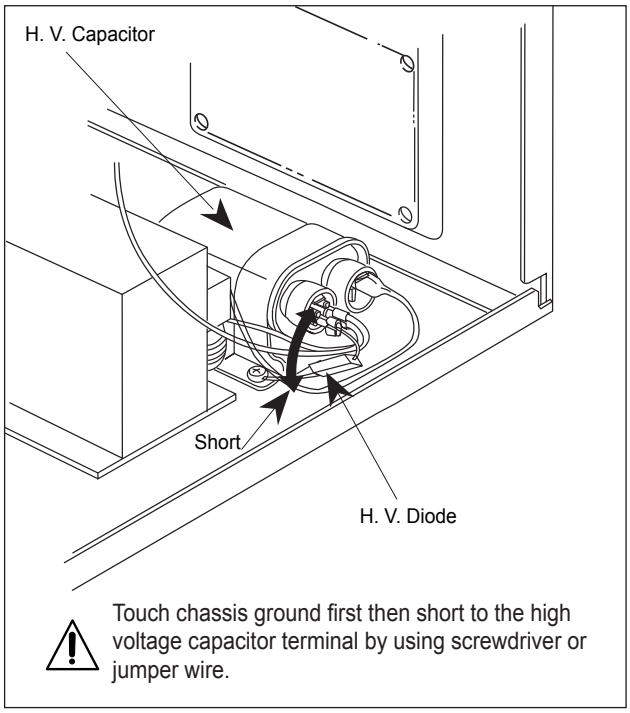


Fig. 1-1 Discharging High Voltage Capacitor

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.

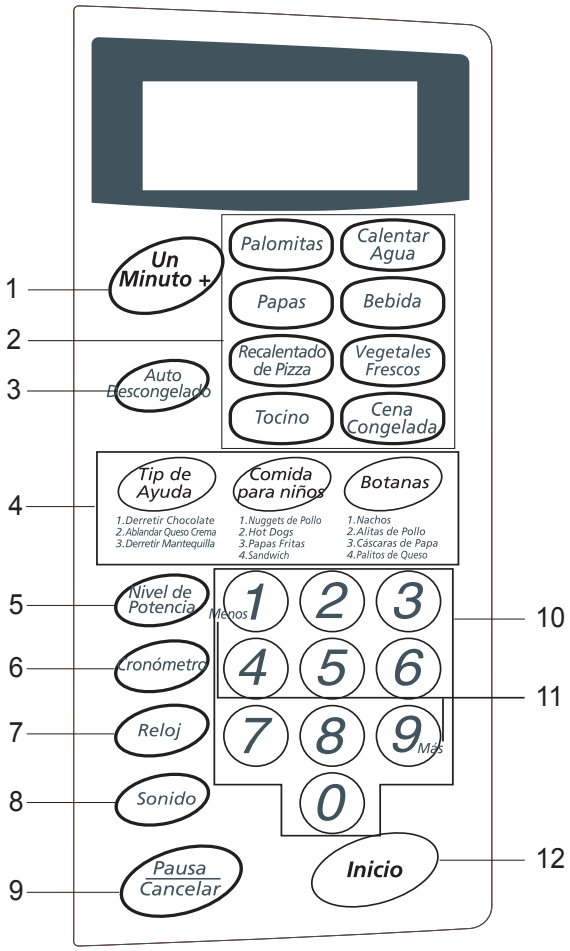
2. Specifications

2-1 Table of Specifications

TIMER	99 SECOND
POWER SOURCE	120V 60Hz, AC
POWER CONSUMPTION	MICROWAVE : 1,500W
OUTPUT POWER	1000W(10LEVEL POWER)
OPERATING FREQUENCY	2,450MHz
MAGNETRON	OM75P(31)ESS
COOLING METHOD	COOLING FAN MOTOR
OUTSIDE DIMENSIONS(mm)	517(W) x 297(H) x 379(D)
SHIPPING WEIGHT	NET 13.65kg GROSS 15.56kg

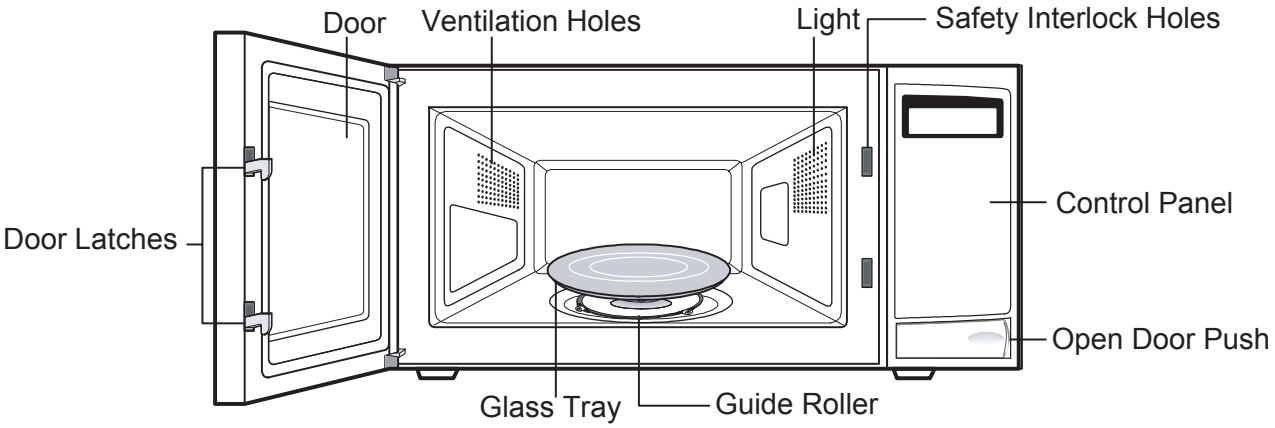
3. Operating Instructions

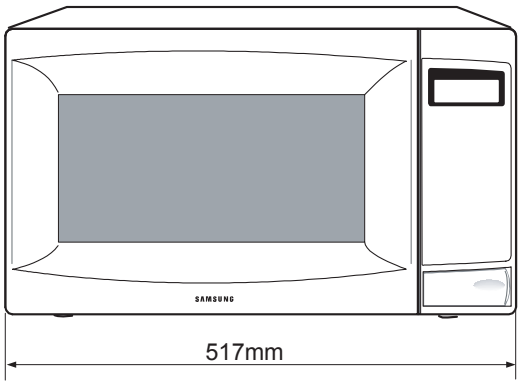
3-1 Control Panel

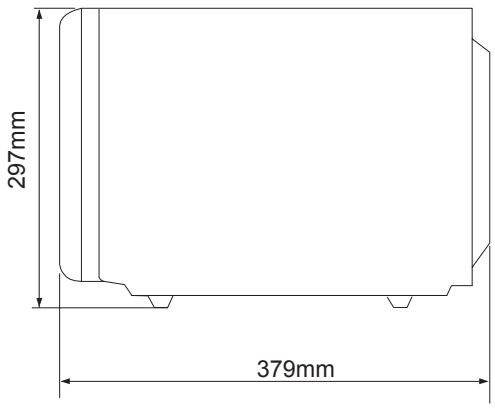


1. One Minute +
2. Sensor Cook Buttons
3. Auto Defrost
4. Auto Cook Menus
5. Power Level
6. Kitchen Timer
7. Clock
8. Sound
9. Pause/Cancel
10. Number Bottons
11. More/Less
12. Start

3-2 Features & External Views

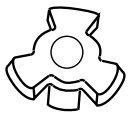
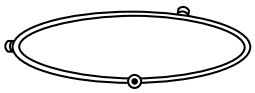
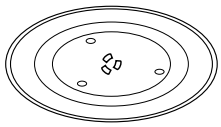






3-3 Accessory

Depending on the model that you have purchased, you are supplied with several accessories that can be used in a variety of ways.

	**1. Coupler**, already placed over the motor shaft in the base of the oven. Purpose : The coupler rotates the turntable.
	**2. Guide Roller**, to be placed in the centre of the oven. Purpose : The roller ring supports the turntable.
	**3. Glass Tray**, to be placed on the roller ring with the centre fitting to the coupler. Purpose : The turntable serves as the main cooking surface; it can be easily re moved for cleaning.

DO NOT operate the microwave oven without the roller ring and turntable.

4. Disassembly and Reassembly

4-1 Replacement of Magnetron, Motor Assembly and Lamp

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 and lamp.
2. Remove a screw securing air cover.
3. Remove the air cover.
4. Remove screws securing the magnetron to the wave guide.
5. Take out the magnetron very carefully.
6. Remove nuts from the back panel.
7. Take out the fan motor.
8. Remove the oven lamp by rotating to pull out from hole of air cover.

NOTE1: When removing the magnetron, make sure that its antenna does not hit any adjacent parts, or it may be damaged.

NOTE2: When replacing the magnetron, be sure to remount the magnetron gasket in the correct position and make sure the gasket is in good condition.

4-2 Replacement of High Voltage Transformer

1. Discharge the high voltage capacitor.
2. Disconnect all the leads.
3. Remove the mounting bolts.
4. Reconnect the leads correctly and firmly.

PRECAUTION

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

PRECAUTION

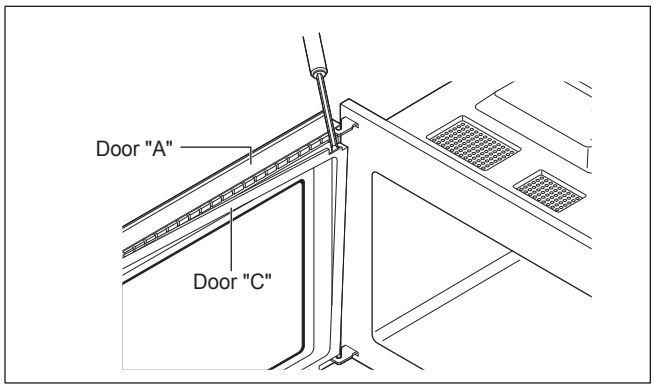
There exists HIGH VOLTAGE ELECTRICITY with high current capabilities in the circuits of the HIGH VOLTAGE TRANSFORMER secondary and filament terminals. It is extremely dangerous to work on or near these circuits with the oven energized.

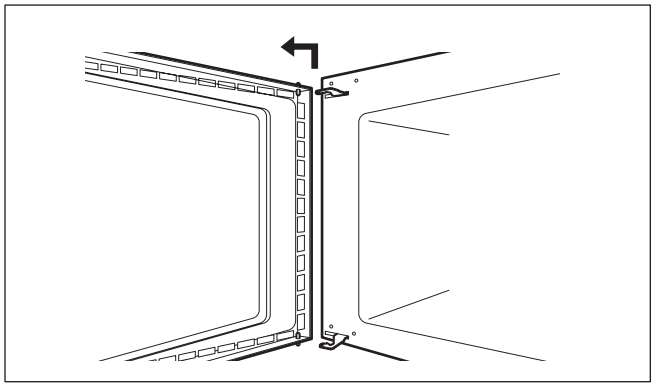
DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

4-3 Replacement of Door Assembly

4-3-1 Removal of Door “C”

Insert flat screwdriver into the gap between Door “A” and Door “C” to remove Door “C”. Be careful when handling Door “C” because it is fragile.
Then remove the door assembly.

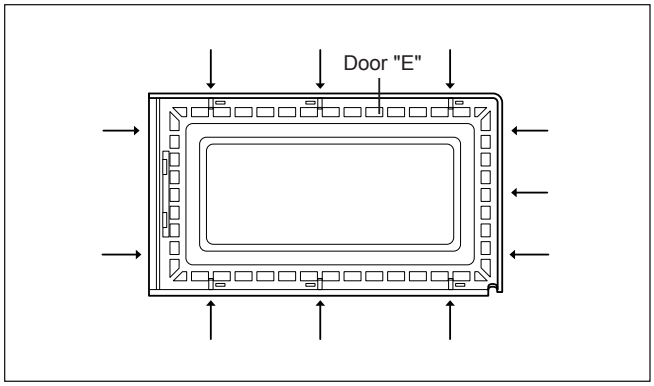




4-3-2 Removal of Door “E”

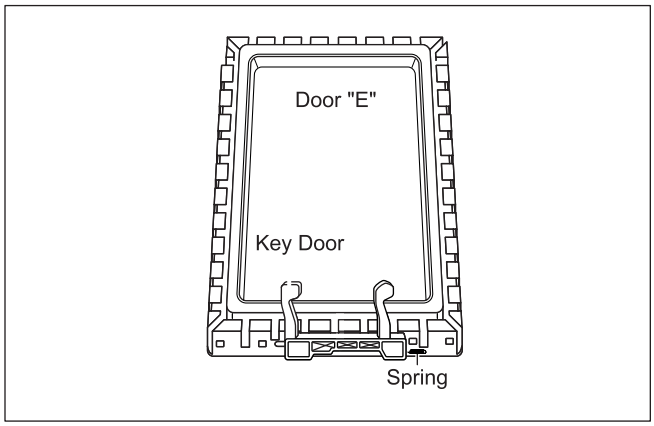
Following the procedure as shown in the figure, insert and bend a thin metal plate between Door “E” and Door “A” until you hear the ‘tick’ sound.

1. 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.

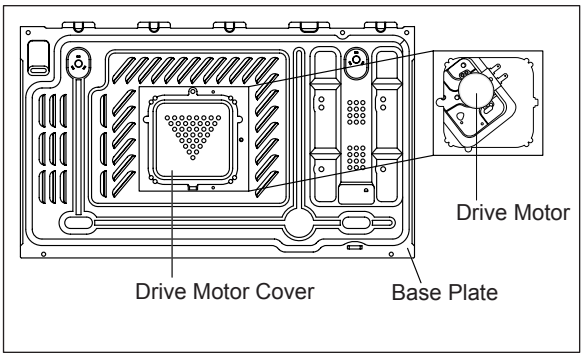
1. When mounting the door to the oven, be sure to adjust the door parallel to the bottom line of the oven face plate by moving the upper hinge and lower hinge in the direction necessary for proper alignment.
2. Adjust so that the door has no play between the inner door surface and oven front surface. 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 Fuse

1. Disconnect the oven from the power source.
2. When 20A fuse blows out by the operation of interlock monitor switch failure, replace the primary interlock switch, door sensing switch, monitor switch and power relay.
3. When the above three 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. Take out the glass tray, guide roller from oven cavity, disconnect power..
2. Remove turn table motor cover from case bottom
   CAUTION : Remove sharp edge after cover removal.
3. Disconnect leads from motor..
4. Remove the screws securing motor to bottom of over cavity and lift out the motor.
5. When replacing the motor, be sure to remount it in the correct position.
   NOTE : The shaft of motor should fit tip coupler.
6. Screw the motor to bottom of oven cavity.
7. Connect leads to the drive motor.
8. Screw the drive motor cover to the base plate with a screw driver.
   NOTE : Bring the spare screw from service center.

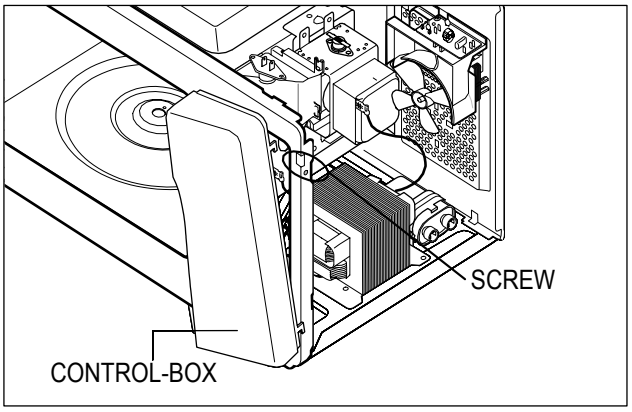


COVER FIXING SCREW :
MACHINE SCREW(6006-001170)

4-6 Replacement of Control Circuit Board

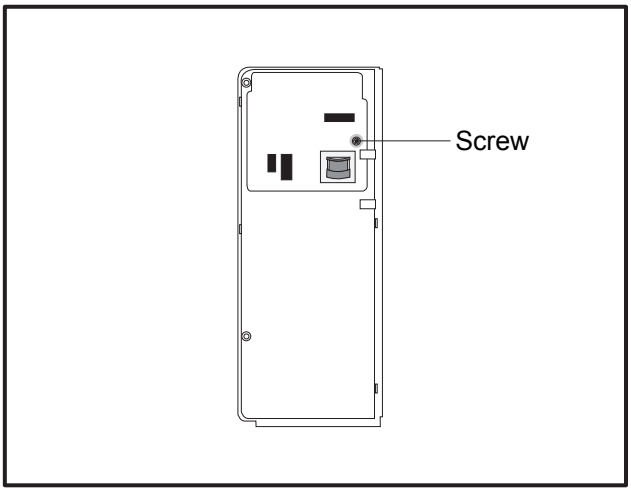
4-6-1 Removal of Control Box Assembly

1. Disconnect the connectors from the control box assembly.
2. Remove screws securing the control box assembly.
3. Remove the knobs of the control box A'ssy.
4. Remove the screw securing the timer.



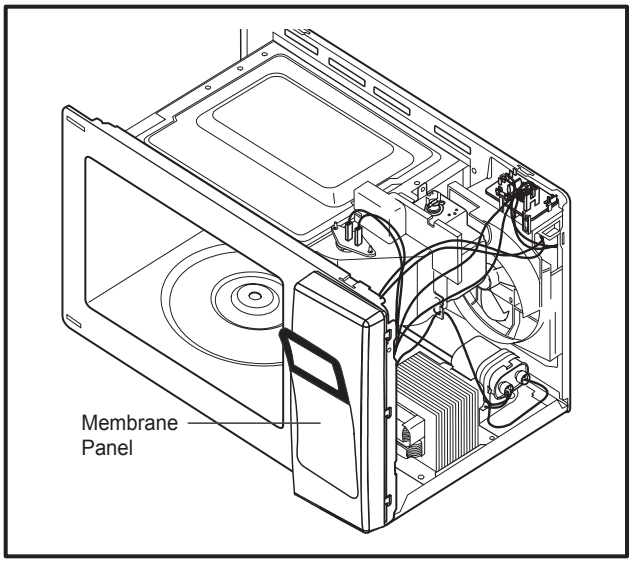
4-6-2 Removal of Ass'y P.C.B Assembly

1. Remove screws securing the control circuit board
2. Lift up the control circuit board from the Ass'y control box.



4-6-3 Removal of Window Display & Membrane Panel

1. Window display should not be disassembled as its mounting tabs will be broken. If repair work is difficult, replace with Ass'y control panel.
2. The membrane key board is attached to the escutcheon base with double faced adhesive tape. Therefore, applying hot air such as using of hair dryer is recommended for smoother removal.
3. When installing new membrane key board, make sure that the surface of escutcheon base is cleaned sufficiently so that any problems (shorted contacts or uneven surface) can be avoided.



5. Alignment and Adjustments

PRECAUTION

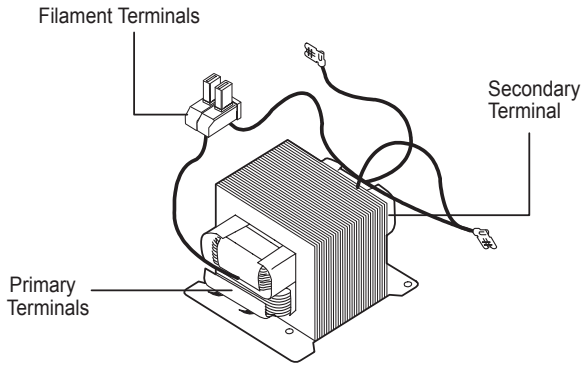
1. High voltage is present at the high voltage terminals during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components or wiring, always unplug the oven from its power source and discharge the high voltage capacitor.

5-1 High Voltage Transformer

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

Secondary	Approx. 142Ω
Filament	Approx. 0Ω
Primary	Approx. 1.7Ω

(Room temperature = 20°C)



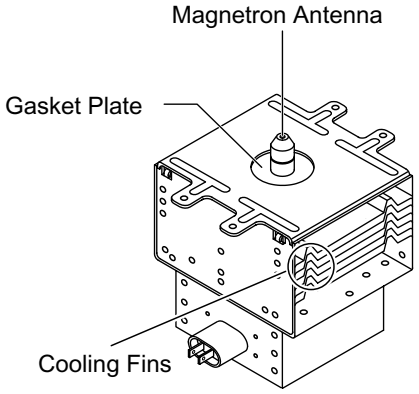
5-2 Low Voltage Transformer

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-4290U
1~2(Input)	379Ω
3~4(Output7V)	10.23Ω
5~6(Output17V)	31.91Ω

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

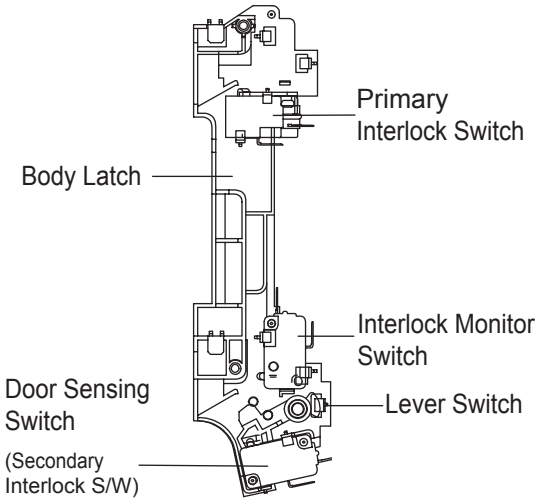
1. The relays are located on the PCB Ass'y. Isolate them from the main circuit by disconnecting the leads.
2. Operate the microwave oven with a water load in the oven. Set the power level set to high.
3. Check continuity between terminals of the relays after the start pad is pressed.

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

5-8 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 ("T_1", 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 44seconds 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 ("T_2").
5. Subtract T_1 from T_2. This will give you the water temperature rise. (ΔT)
6. The output power is obtained by the following formula;

$$\text{Output Power} = \frac{4.187 \times 1000 \times \Delta T + 0.55 \times Mc \times (T_2 - T_1)}{41}$$

44 : Heating Time (sec)
41 : Counting Time (sec)
4.187 : Coefficient for Water
1000 : Water (cc)
ΔT : Temperature Rise (T_2-T_1)
Yo : Room Temperature
Mc : Cylindrical borosilicate glass weight

7. Normal temperature rise for this model is 9°C to 11°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.

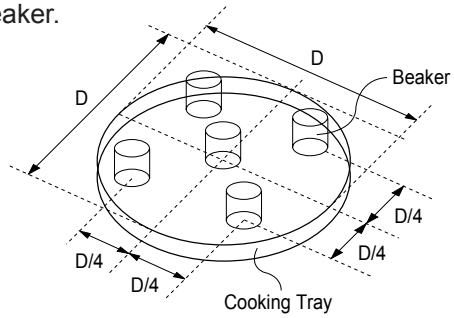
NOTE 2: Output power in watts is computed by multiplying the temperature rise (step 5) by a factor of 91 times the of centigrade temperature**.**

5-9 Microwave Heat Distribution - Heat Evenness

The microwave heat distribution can be checked indirectly by measuring the water temperature rise at certain positions in the oven:

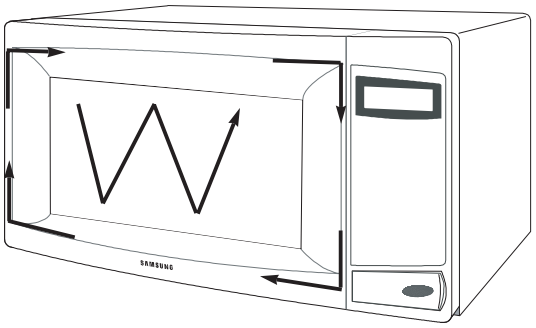
1. Prepare five beakers made of 'Pyrex', having 100 milliliters capacity each.
2. Measure exactly 100milliliters off water load with a measuring cylinder, and pour into each beaker.
3. Measure the temperature of each water load. (Readings shall be taken to the first place of decimals.)
4. Put each beaker in place on the cooking tray as illustrated in figure below. Start heating.
5. After heating for 2 minutes, measure the water temperature in each beaker.
6. Microwave heat distribution rate can be calculated as follows:

$$\text{Heat Distribution} = \frac{\text{Minimum Temperature Rise}}{\text{Maximum Temperature Rise}} \times 100(\%)$$



The result should exceed 65%.

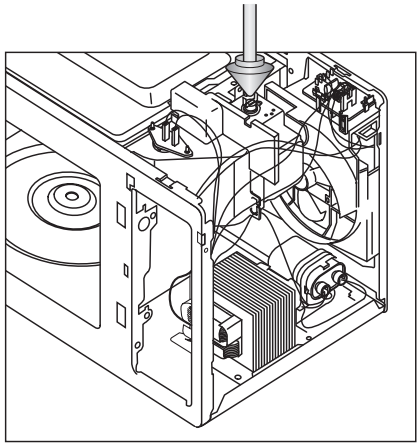
5-10 Procedure for Measurement of Microwave Energy Leakage



1. Pour 275±15cc of 20±5°C(68±9°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 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 4mW/cm^2 , after repair or adjustment.

> Maximum allowable leakage is 5mW/cm^2 .
> 4mW/cm^2 is used to allow for measurement and meter accuracy

5-11 Check for Microwave Leakage



1. Remove the outer panel.
2. Pour275±15cc of 20±5°C(68±9°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 4mW/cm^2.

5-12 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.

5-13 Leakage Measuring Procedure

5-13-1 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 4mW/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 ;

   CENTRAL SERVICE CENTER

5-13-2 At least once a year have the microwave energy survey meter checked for accuracy by its manufacturer.

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

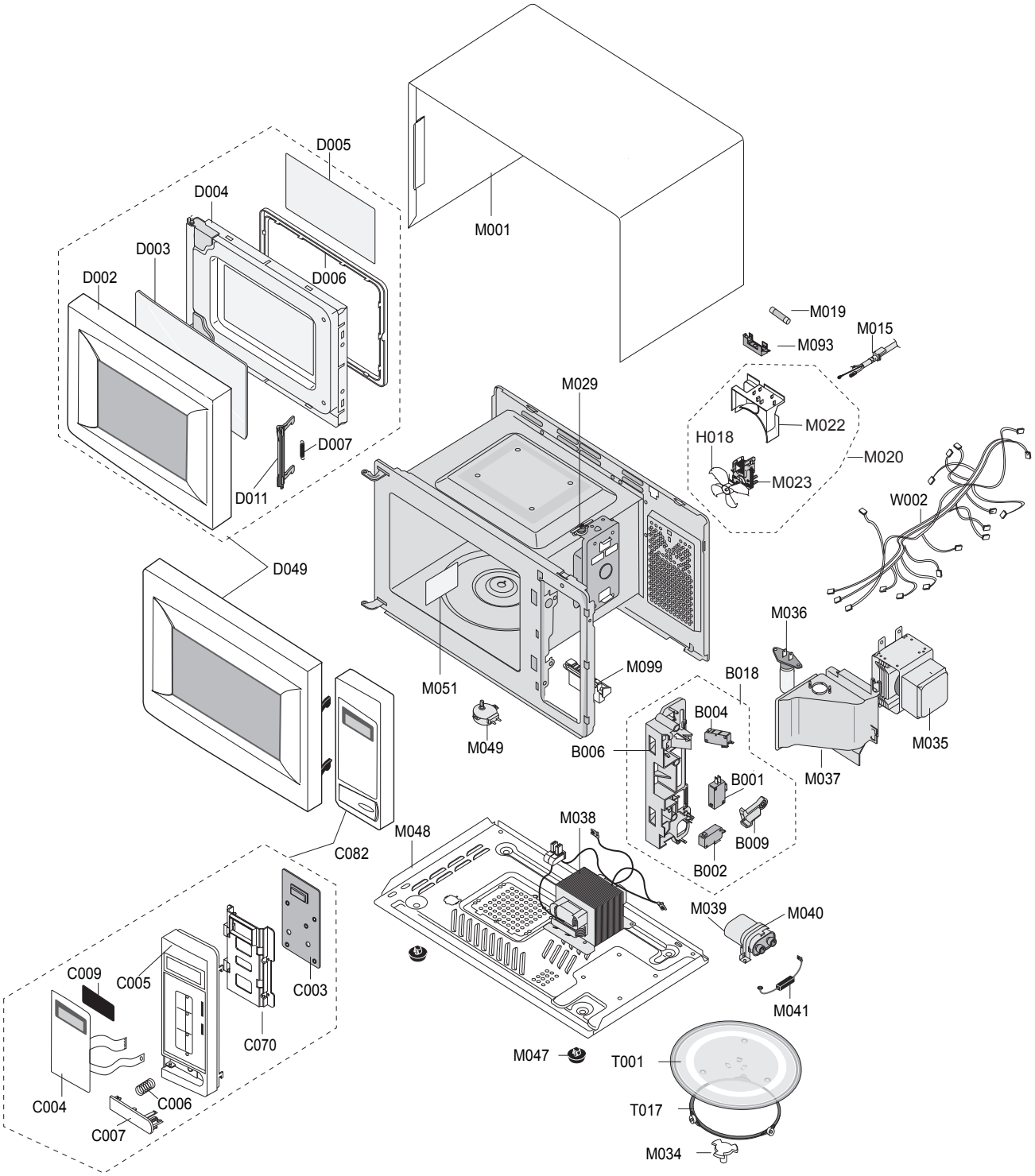
SYMPTOMS	CAUSE	CORRECTIONS
Oven is dead. Fuse is OK. No display and no operation at all..	1. Open or loose lead wire harness 2. Open thermal cutout (Magnetron) 3. Open low voltage transformer 4. Defective Ass'y PCB	Check fan motor when thermal cut-out is defective. Check Ass'y PCB when L.V.T is defective.
No display and no operation at all. Fuse is blown.	1. Shorted lead wire harness 2. Defective primary latch switch (NOTE 1) 3. Defective monitor switch (NOTE1) 4. Shorted H.V.Capacitor 5. Shorted H.V.Transformer (NOTE2)	Check adjustment of primary, interlock montor, power relay, door sensing switch.
	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. NOTE 2: When H.V.Transformer is replaced, check diode and magnetron also.	
Oven does not accept key input (Program).	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.	Refer to operation procedure. Replace PCB main.
Timer starts countdown but no microwave oscillation. (No heat while oven lamp and fan motor turn on.)	1. Off-alignment of latch switches 2. Open or loose connection of high voltage circuit especially magnetron filament circuit NOTE: Large contact resistance will bring lower magnetron filament voltage and cause magnetron to lower output and/or intermittent oscillation. 3. Defective high voltage components H.V.Transformer H.V.Capacitor H.V.Diode, Magnetron 4. Open or loose wiring of power relay 5. Defective primary latch switch 6. Defective power relay or Ass'y PCB	Replace the motor. Replace the timer.

6-1 Electrical Malfunction(continued)

SYMPTOMS	CAUSE	CORRECTIONS
Oven lamp and fan motor turn on.	1. Misadjustment or loose wiring of primary latch switch 2. Defective primary latch switch	Adjust door and latch switches.
Oven can program but timer does not start.	1. Open or loose wiring of secondary interlock switch 2. Off-alignment of primary interlock 3. Defective secondary interlock S/W	Adjust door and interlock switches.
Microwave output is low;. Oven takes longer time to cook food.	1. Decrease in power source voltage. 2. Open or loose wiring of magnetron filament circuit. (Intermittent oscillation)) 3. 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.	1. Loose fan and fan motor 2. Loose screws on H.V.Transformer 3. Shorted H.V.Diode	Tighten screws of fan motor. Tighten screws of H.V.Transformer. Replace H.V.Diode
Turntable motor does not rotate.	1. Open or loose wiring of turntable motor. 2. Defective turntable motor.	Replace turntable motor.
Oven stops operation during cooking	1. Open or loose wiring of primary interlock switch 2. Operation of thermal cutout(Magnetron)	Adjust door and latch switches.
Sparks	1. Metallic ware or cooking dishes touching on the oven wall. 2. 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



7-2 Main Parts List

(S.N.A : SERVICE NOT AVAILABLE)

Level	No.	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
1-1	M041	0402-001554	HVDIODE-RECTIFIER	HV03-12T01,12000V,0.4A	1	SA	
1-1	M039	2501-001016	C-OIL	950nF,2.1KV,BK,35x54x80,20mm	1	SA	
1-1	M019	3601-001198	FUSE-CARTRIDGE	250V,20A,SLOW-BLOW,CERAMI	1	SA	
1-1	M036	DE07-00006A	LAMP-INCANDESCENT	-,125V,-,25W,ORG,TERMI	1	SA	
1-1	M038	DE26-00097A	TRANS H.V	SHV-UT10KA,120V,60HZ,2250V,3.2	1	SA	
1-1	M049	DE31-10154A	MOTOR SYNCHRONOUS	M2HJ49ZR02,ST-16,50/60	1	SA	
1-1	M015	DE39-20146E	ASSY POWER CORD	MSP-36,-,-,-,-,-,SPT-2 3	1	SA	
1-1	M029	DE47-20032B	THERMOSTAT	PW2N,-,-,30,0,85/75,-,-,-,187	1	SA	CVT TOP (NEAR MGT)
1-1	M093	DE47-40025A	FUSE-HOLDER	KFSN-L-16,15A,NYLON#66,5G,-,	1	SA	
1-1	M048	DE61-00557A	BASE-PLATE	5TH-1.0,SGCC,T0.6,W565,L345,-	1	SA	
1-1	M047	DE61-40066A	FOOT	-,PP,-,BLK,-,-,-	1	SA	
1-1	M040	DE61-50106A	BRACKET-HVC	-,SECC,T0.8,W31,L125.8,-,-	1	SNA	
1-1	M037	DE63-00208A	COVER-AIR	5TH-1.0,PP,-,-,-,-,-,-,-	1	SA	
1-1	M051	DE63-00209A	COVER-MGT	5TH-1.0,PP,T2.0,-,-,-,-,-,-	1	SA	CVT INSIDE RIGHT
1-1	M099	DE66-90113A	LEVER-DOOR	PP(TB53-GH41),T2.5,-,-,12g,NT	1	SA	
1-1	M034	DE67-00182A	COUPLER	5TH-1.0,PPS,-,-,-,-	1	SA	
1-1	M001	DE70-00011V	PANEL-OUTER	C/STELT0.6W380.3L1085.2NC-2K	1	SA	
1-1	T001	DE74-20015G	TRAY-COOKING	-,T6,3RD 10	1	SA	
1-1	B018	DE96-00115A	ASSY BODY LATCH	MW850WA NC2000 BUTTON	1	SA	
1-2	B002	3405-001033	SWITCH-MICRO	125/250VAC 16A,200GF,SPSTNC	1	SA	
1-2	B001	3405-001034	SWITCH-MICRO	125/250VAC,16A,200GF,SPST-N	1	SA	
1-2	B004	3405-001042	SWITCH-MICRO	DC 24V,0.3A,150gf,-	1	SA	
1-2	B009	DE66-00088B	LEVER SWITCH	-,POM,-,-,-,-,-,-	1	SA	
1-2	B006	DE72-00138A	BODY-LATCH	PP WHT NC2000 0.6/0.8/1.2	1	SA	
1-1	M020	DE96-00305A	ASSY-MOTOR FAN	SMF-5THUA,120V60HZ,2450,5	1	SA	
1-2	M023	DE31-10185B	MOTOR-FAN	SMF-3RDUA1,120V60Hz,-,-,2300rp	1	SA	
1-2	H018	DE31-90057A	BLADE-FAN	PP,T1.5,-,3RD-W,-,-,-	1	SA	
1-2	M022	DE63-00210A	COVER-BLOWER	5TH-1.0,PP,T1.5,-,-,-,-,-,-	1	SA	
1-1	W002	DE96-00381A	ASSY-WIRE HARNESS A	AMC5101,120V/60HZ	1	SA	
1-1	T017	DE97-00222A	ASSY-GUIDE ROLLER	NC1.2 SPS(C832)D16.0,B	1	SA	
1-1	M035	OM75P(31)ESNL	ASSY-MGT	OM75P(31)ESNL	1	SA	

7-3 Control Parts List

(S.N.A : SERVICE NOT AVAILABLE)

Level	No.	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
1-1	D049	DE94-00080Z	ASSY DOOR	MW1030WC/XAA,PURE-WHT,120V/60H	1	SA	
1-2	D005	DE01-00118A	FILM-DOOR	MW5896W,-,-,L185,T0.15,W304,-,	1	SA	
1-2	D007	DE61-70128A	SPRING-KEY	BLUING,HSW3,PI0.6,PI0.6,D5,D5	1	SA	
1-2	D011	DE64-40006F	DOOR-KEY	POM(F20-02),-,-,12G,BLK,MW7897G	1	SA	
1-2	D006	DE64-40012A	DOOR-C	-,RESIN-PP(TB53),BLACK,-,-,-,CE94	1	SA	
1-2	D002	DE64-40317M	DOOR-A	MW1030WA,ABS(GENERAL)WHT,T2.0 NC1	1	SA	
1-2	D003	DE67-20197D	SCREEN-DOOR	MW1030WC,PET,T0.25,W210.4,L3	1	SA	
1-2	D004	DE94-00910A	ASSY DOOR-E(COATING)	MW1030WC/XAA,BLK,5T	1	SA	
1-1	C082	DE94-01247C	ASSY CONTROL-BOX	120V60HZ,MW1030WE/XAP,W	1	SA	
1-2	C004	DE34-00190Y	SWITCH MEMBRANE	MW1030WE/XAO,-,-,PET,-,1	1	SA	
1-2	C070	DE61-00665A	HOLDER-LED	ALL-0.8,PP,-,-,-,BLACK,LED-BA	1	SA	
1-2	C006	DE61-70076A	SPRING-BUTTON	-,HSWR,PI0.6,PI0.6,-,-,-,-	1	SA	
1-2	C007	DE66-20275A	BUTTON-PUSH	3RD-W S1 MW5592W,-,-,-,-,9g	1	SA	
1-2	C009	DE67-40179A	WINDOW-DISPLAY	SAN,T2.0,-,-,SMOG,-,3RD-W	1	SA	
1-2	C005	DE72-70202A	CONTROL PANEL	MWA19AW,ABS,-,-,-,140g,WHT	1	SA	
1-2	C003	RAS-D2LED3-00	ASSY PCB PARTS	AMC5080AAW,120V60HZ	1	SA	

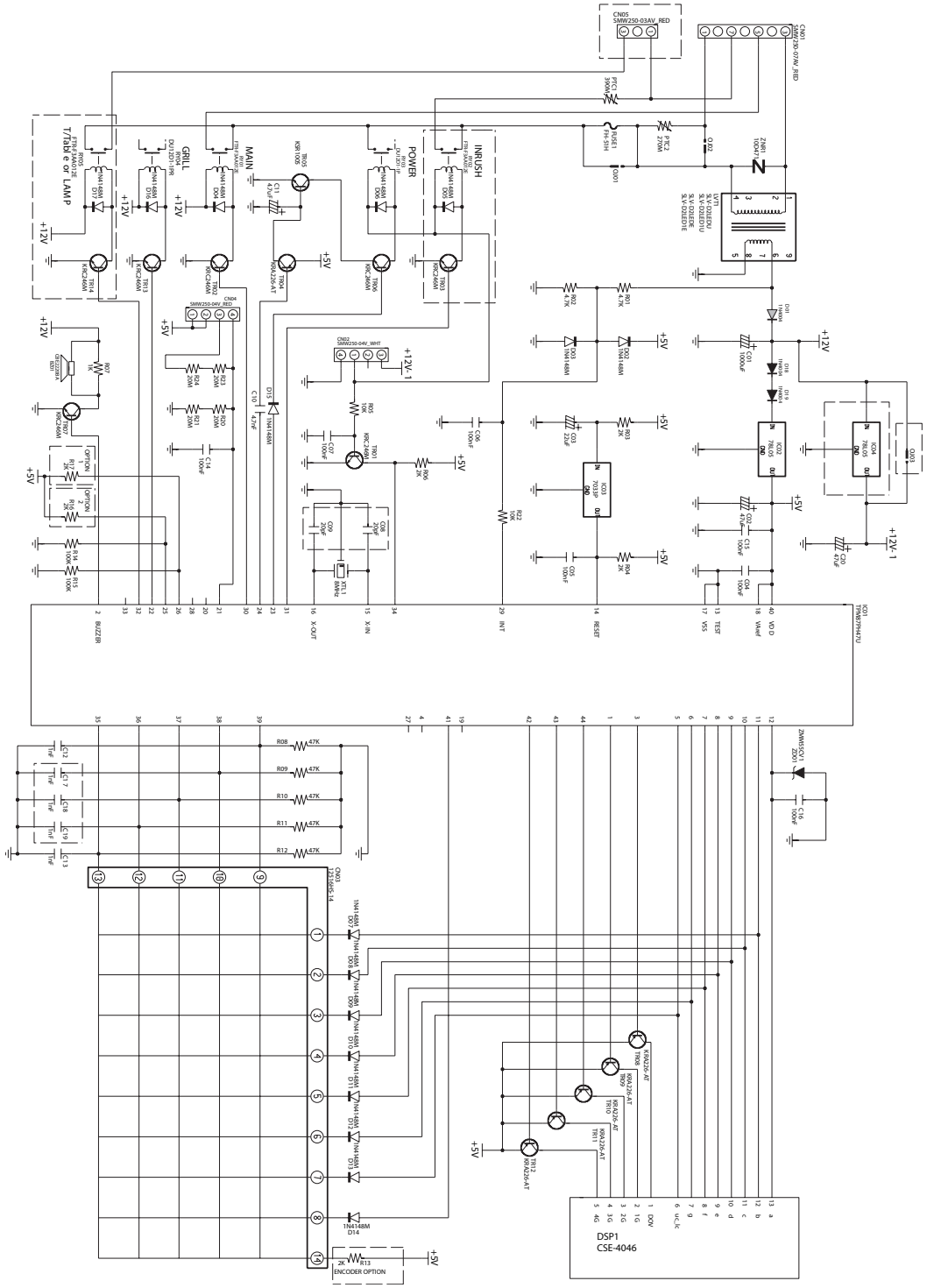
7-4 Standard Parts List

(S.N.A : SERVICE NOT AVAILABLE)

Level	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
1-1	6002-001320	SCREW-TAPPING	TH,+,2S,M4,L8,PASS,STS304,-	1	SNA	PANEL OUTER RIGHT
1-1	6006-001170	SCREW-TAPPING	TH,+,WT,TC,M4,L10,ZPC(YEL),SWRCH18A,-	1	SNA	MEM EARTH
1-1	6006-001170	SCREW-TAPPING	TH,+,WT,TC,M4,L10,ZPC(YEL),SWRCH18A,-	1	SNA	P.CORD EARTH
1-1	6006-001176	SCREW-TAPTITE	WT,PH,+,M4,L8,ZPC(YEL)	1	SNA	BKT HVC & DIODE
1-1	DE60-10051A	SCREW-TAPPING	-,-,MSWR,-,PH,M4,-,L6,-,-	1	SA	DRIVE MOTOR
1-1	DE60-10080A	SCREW-TAPPING	-,-,-,-,M5,L12,-,2S,-,-	4	SA	HVT
1-1	DE60-10080A	SCREW-TAPPING	-,-,-,-,M5,L12,-,2S,-,-	2	SA	MGT
1-1	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	3	SA	BASE PLATE
1-1	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	2	SA	BODY LATCH
1-1	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	1	SA	C.BOX
1-1	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	1	SA	COVER AIR
1-1	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	2	SA	FAN MOTOR
1-1	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	4	SA	PANEL OUTER
1-2	6002-000630	SCREW-TAPPING	PH,+,-,2S,M3,L8,ZPC(YEL),SWRCH18A,-	3	SNA	HOLDER-PCB
1-2	6002-000630	SCREW-TAPPING	PH,+,-,2S,M3,L8,ZPC(YEL),SWRCH18A,-	2	SNA	PCB
1-2	DE60-10193A	SCREW-TAPPING	-,YEL,MSWR18,FEFZY,TH,M4,-,L2	2	SA	

8 P.C.B Diagrams

8-1 P.C.B Diagrams (This Document can not be used without Samsung's authorization)



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-D2LED3-00	ASSY PCB PARTS	AMC5080AAW,120V60HZ	1	SA	
1-3	3501-000264	RELAY-POWER	12VDC,-,16000MA,-,9MS,5MS	1	SA	RY03
1-3	3501-001154	RELAY-MINIATURE	12VDC,200MW,3000MA,1FORM	1	SNA	RY01
1-3	3708-001551	CONNECTOR-FPC/FC/PIC	14P,1.25mm,STRAIGHT	1	SNA	CN03
1-3	3711-000940	CONNECTOR-HEADER	BOX,4P,1R,2.5mm,STRAIGH	1	SNA	CN02
1-3	3711-004143	CONNECTOR-HEADER	BOX,2P,1R,5mm/2.5mm,	1	SNA	CN01
1-3	DE07-00074K	LED DISPLAY	CSE-4046G-10,2&3,LED1-10,40	1	SNA	DSP1
1-3	DE26-00110A	TRANS L.V	SLV-D2LEDU,120V,60HZ,13V,0.18A	1	SNA	LVT1
1-3	DE30-20016A	BUZZER	CBE2220BA,STICK,-,-,-,-,-,-,-	1	SNA	BZ01
1-3	DE92-01538A	ASSY PCB AUTO	-,-,RAS-D2LED3-00,120V60HZ	1	SNA	
1-4	1203-001037	IC-VOLTAGE REGULATOR	78L05,SOT-89,3P,185	1	SNA	IC02
1-4	2203-000192	C-CERAMIC,CHIP	100nF,+80-20%,50V,Y5V,TP,	6	SNA	C16
1-4	DE09-00424A	IC MICOM	TMP87CH47U-5HR0,AMC5101AAB,44PI	1	SNA	IC01
1-4	2203-000444	C-CER,CHIP	1nF,10%,50V,X7R,TP,2012,-	2	SNA	C13
1-4	DE92-01650A	ASSY PCB-IMT	-,RAS-D2LED3-00,-,-,120V60H	1	SNA	
1-5	0401-001002	DIODE-SWITCHING	1N4148M,100V,200mA,DO-34	13	SNA	D15
1-5	0402-001103	DIODE-RECTIFIER	1T4,400V,1A,TS-1,TP	3	SNA	D19
1-5	0504-001044	TR-DIGITAL	KRA226M,PNP,400MW,2.2K/10K,TO	6	SNA	TR12
1-5	0504-001178	TR-DIGITAL	KRC246M,NPN,400MW,2.2K/10KOHM	5	SNA	TR07
1-5	1405-000001	VARISTOR	470V,1250A,14x7.5mm,TP	1	SA	ZNR1
1-5	2001-000273	R-CARBON	100KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SNA	R15
1-5	2001-000290	R-CARBON	10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	2	SNA	R22
1-5	2001-000429	R-CARBON	1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SNA	R07
1-5	2001-000577	R-CARBON	2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	3	SNA	R06
1-5	2001-000734	R-CARBON	4.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	2	SNA	R02
1-5	2001-000786	R-CARBON	47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	3	SNA	R12
1-5	2202-000252	C-CERAMIC,MLC-AXIAL	4.7nF,10%,50V,X7R,TP	1	SNA	C10
1-5	2401-000151	C-AL	1000uF,20%,25V,GP,TP,10x20,5	1	SNA	C01
1-5	2401-000911	C-AL	22uF,20%,16V,GP,TP,5x7,5	1	SNA	C03
1-5	2401-002075	C-AL	4.7uF,20%,50V,GP,TP,5x11,5	1	SNA	C11
1-5	2401-003107	C-AL	47uF,20%,16V,GP,TP,5x7,5	1	SNA	C02
1-5	2802-000188	RESONATOR-CERAMIC	8MHz,0.5%,TP,10.0x5.0x	1	SNA	XTL1
1-5	DE13-20009A	IC	KA7533,DIP,-,-,-,-,-	1	SNA	IC03
1-5	DE39-60001A	WIRE-SO COPPER	PI0.5,SN,T,52MM,TAPING_WI	3	SNA	OJ01
1-5	DE41-00300A	PCB-MAIN	D2LED3,FR-1,1,-,T1.6,301*252MM,	1	SNA	
1-4	2007-000941	R-CHIP	47Kohm,5%,1/8W,TP,2012	2	SNA	R09
1-4	2007-000033	R-CHIP	0OHM,5%,1/8W,DA,TP,3216	1	SNA	OJ03

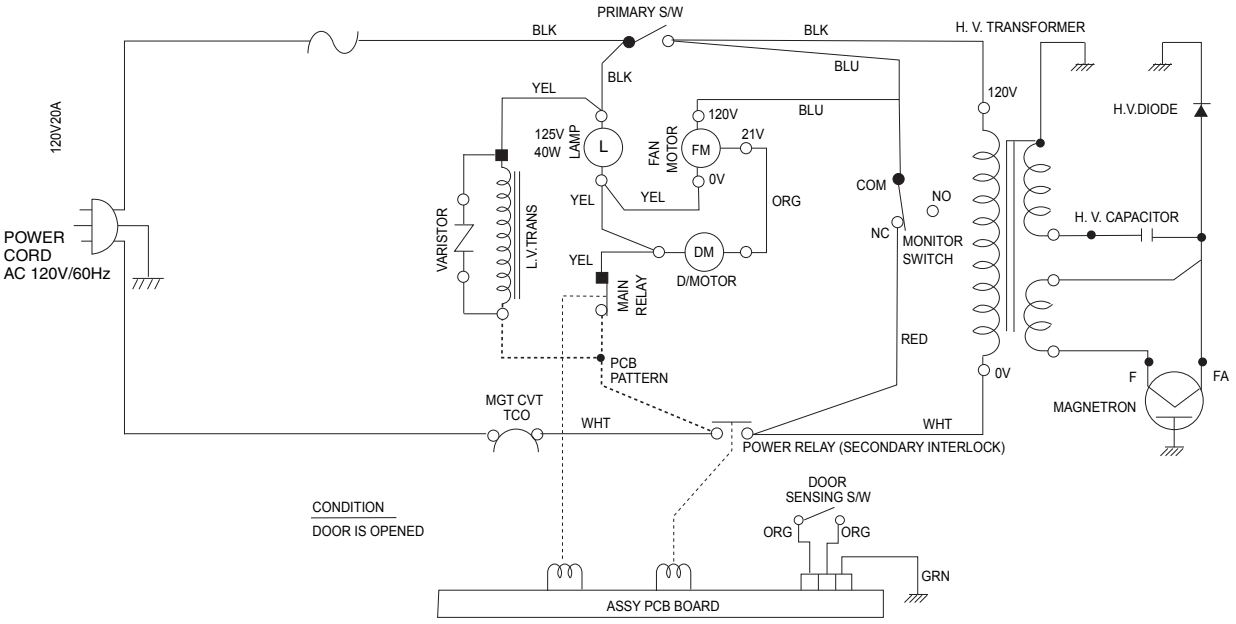
9. Schematic Diagrams

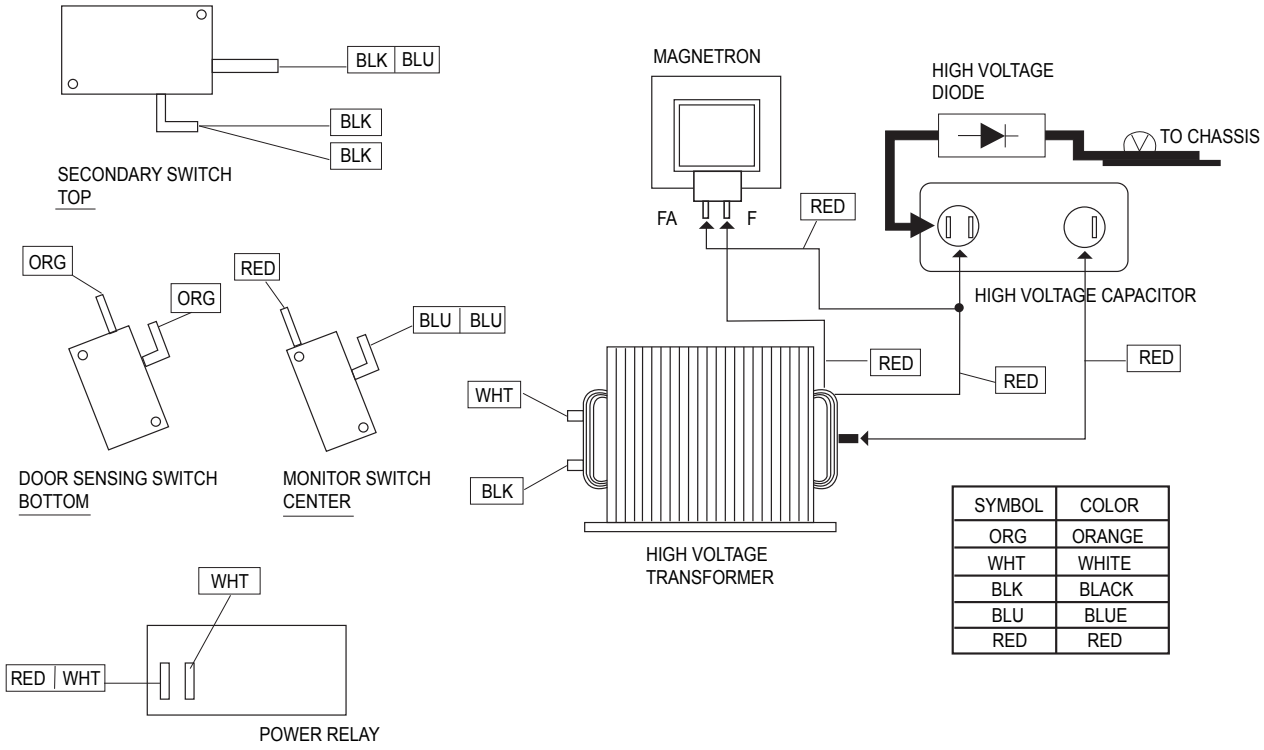
9-1 Schematic Diagrams (This Document can not be used without Samsung's authorization.)

NOTE: CIRCUIT SHOWN WITH DOOR IS OPENED POSITION.
NOTE: FOR SERVICE REPLACEMENT USE 16 GA 105°C
THERMOPLASTIC COVERED WIRE EXCEPT
FOR HIGH VOLTAGE LEADS OR AS NOTED ON SPECIAL LEADS.

WARNING

POWER MUST BE DISCONNECTED
BEFORE SERVICING THIS APPLIANCE





SYMBOL	COLOR
ORG	ORANGE
WHT	WHITE
BLK	BLACK
BLU	BLUE
RED	RED

10. Reference

10-1 Model name standard

Baoad Classification	Distin-guisher	Middle Classfication	Distin-guisher	Product Code	Full Nane
USA CMO	M	CMO (Counter-top MWO)	W	MW	USA CMO(EPOXY CAVITY)
		UTC (Under The Cabinet)	U	MU	USA UTC
		Browner, Grill	G	MG	USA GRILL
		Convection	C	MC	USA CONVECTION
		Sensor	S	MS	USA CMO SENSOR
		DC MWO	D	MD	USA DC MWO
		Hospital MWO	H	MH	USA Hospital MWO
		Ceramic Enamel	E	ME	USA CMO(CERAMIC ENAMEL)
USA RV	R	SOLO	M	RM	USA RV SOLO
		CONVECTION	C	RC	USA RV CONVECTION
		BUILT-IN	B	RB	USA RV BUILT-IN
USA Junior	SJ			SJ	USA Junior MWO
USA OTR	SM	SOLO	H	SMH	USA OTR SOLO
		CONVECTION	V	SMV	USA OTR CONVECTION
EUROPE Ep-oxy Cavity	M	SOLO	1	M1	EUROPE SOLO(EPOXY CAVITY)
		GRILL	2	M2	EUROPE GRILL(EPOXY CAVITY)
EUROPE Ce-ramic Enamel	CE	SOLO	1	CE1	EUROPE SOLO(CERAMIC ENAMEL)
		GRILL	2	CE2	EUROPE GRILL(CERAMIC ENAMEL)
EUROPE Quartz GRILL	G2			G2	EUROPE Quartz GRILL
EUROPE Power Grill	PG			PG	POWER GRILL
EUROPE Con-vection	CK			CK	EUROPE CONVECTION
	C			C	EUROPE CONVECTION
EUROPE Fully Built-In	F	SOLO	W	FW	EUROPE SOLO FULLY BUILT-IN
		GRILL	G	FG	EUROPE GRILL FULLY BUILT-IN
		CONVECTION	C	FC	EUROPE CONVECTION FULLY BUILT-IN

10-2 Customer inquiry cases and countermeasures

Symptom	Cause	Countermeasures
Air is evacuated from the oven.	• The vent of the oven is designed to be placed on the bottom of the product, and air is evacuated from the oven.	In the past, the vent was placed on the back panel of the oven. Since the oven was placed near the wall of a kitchen, the wall behind the oven was discolored. Thus, the vent of a new oven is placed on the bottom of the product, and air is evacuated from the oven.
The oven works automatically whenever the power is turned on.	• It may happen due to power failure or abnormal voltage. • It may happen when the door does not close completely.	• Connect the power plug three seconds after disconnecting the power plug. • Close the door completely => Press the Cancel button => Press the Start button.
Heating	• In many cases, it may happen when the power level is incorrectly set. • It may happen when the door does not close completely. • It may happen when the oven is out of order.	• Select HIGH by rotating the Cooking Power Control knob. - KEEP WARM: This function is used to warm the cooked food for a certain time period, not to heat the food. - MEDIUM/LOW: This function is used to cook the food slowly. • Close the door completely. => Press the Cancel button. => Press the Start button. • Contact the nearest Samsung after-sales service center.
Ground	• Ground problem may happen when the oven is placed in a humid area and the over is not grounded. • Ground is not provided by an extended electric outlet.	• If the oven is placed in a humid area, buy an electric wire in a store selling electrical products. (Electric wires for home use are also allowed) Ground the oven through the electric wire. • Buy an electric wire in a store selling electrical products. (Electric wires for home use are also allowed) Ground the oven through the electric wire.
Turn table occasionally rotates in reverse order.	• Turntable has been designed to rotate in either direction since 1994.	• In the past, the gear of the turntable was easily worn by turning it during cleaning. Now, the turntable of the oven is designed to rotate in both directions to prevent damage during cleaning. (Rotation direction is set when the oven initially operates.)
The oven sometimes beeps.	• The oven beeps every minute unless the food is in the oven after the food is cooked completely. • The oven occasionally beeps during cooking.	• Open and close the door again. (Beeping sounds indicate that the food is ready to be removed from the oven after cooking is complete.)

10-2 Customer inquiry cases and countermeasures (Continued)

Symptom	Cause	Countermeasures
Strange popping sounds are produced while fish is cooked.	• Since fish is salty and maintains its moisture, it is cooked while making a series of soft popping sounds. (The liquid may come out of the fish when the fish is cooked.)	• Food with bones such as fish (e.g. mackerel) and pork (e.g. pork chops) is cooked while making a series of soft popping sounds. Wrap the food completely so that food particles or spattered oils do not stick to the oven walls or floor.
Strange smell is produced in the oven.	• It may happen when food particles stuck to oven walls or floor. “	• Clean the inside of the oven. => Remove strange smell through the Deodorant button => If the strange smell still remains, place a piece of lemon on the turntable and operate the oven for 5 minutes by pressing the Deodorant button.(However, the smells produced from the food exposed such as herbal remedies are not removed.)
Error	• Errors are classified into the case which is out of order and the case which is not out of order.	• Clean the inside of the oven. => Remove strange smell through the Deodorant button => If the strange smell still remains, place a piece of lemon on the turntable and operate the oven for 5 minutes by pressing the Deodorant button. (However, the smells produced from the food exposed such as herbal remedies are not removed.)
Accessory		• Visit the nearest Samsung Service Center or local dealer to buy accessories. Before visiting, check the model name printed on the lower right side of the front panel of the oven.
Number does not appear on the display screen.	It happens when the power saving function is activated.	• Since the government recommends the reduction of electricity, the power saving function is performed for number display like that power cord is unplugged when the oven is not used. (Numbers are displayed when another button is pressed or when the door opens.)

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