

S/M No. : C922T9S001

Service Manual

Microwave Oven

Model: KOC-922T9S

KOC-922T9R

KOC-923T9S

KOC-923T9R

DAEWOO

✓ Caution

: In this Manual, some parts can be changed for improving, their performance without notice in the parts list. So, if you need the latest parts information, please refer to PPL(Parts Price List) in Service Information Center (<http://svc.dwe.co.kr>).

DAEWOO ELECTRONICS CORP.

<http://svc.dwe.co.kr>

Oct. 2003

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 if 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 power to the microwave oven for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
- (d) Any defective or misadjusted components in the interlock, monitor, door seal and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.

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1. SAFETY AND PRECAUTIONS

1. FOR SAFE OPERATION

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

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

(Only a trained service personnel should make repairs.)

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

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

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

DO NOT ATTEMPT TO OPERATE THIS APPLIANCE WITH THE DOOR OPEN.

The microwave oven has concealed switches to make sure the power is turned off when the door is opened.

Do not attempt to defeat them.

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

2. FOR SAFE SERVICE PROCEDURES.

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

IMPORTANT

The wire in this mains lead coloured in accordance with the following code.

Green-and-yellow	: Earth
Blue	: Neutral
Brown	: Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked with the letter E , earth symbol or coloured green-and-yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

NOTE : This oven is designed for counter-top use only.

2. SPECIFICATIONS

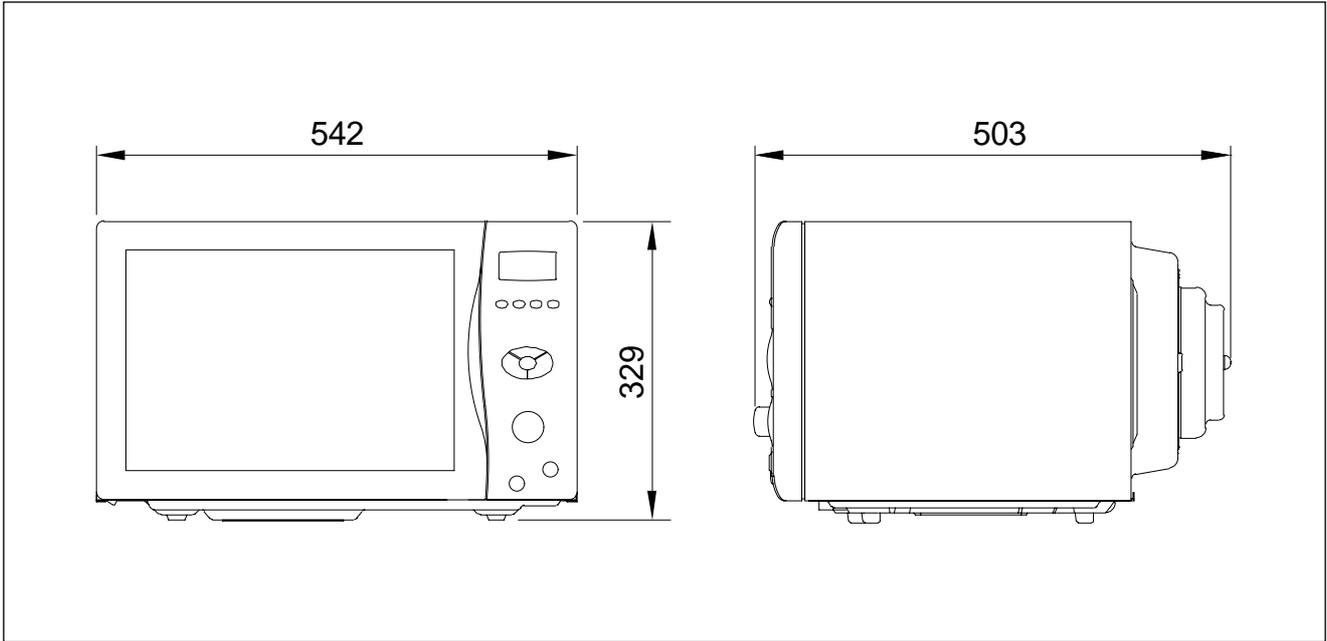
MODEL	KOC-922T9S/923T9S	
POWER SUPPLY	230V~50HZ, SINGLE PHASE WITH EARTHING	
POWER CONSUMPTION	MICROWAVE	1500W
	GRILL	1150W
	CONVECTION	2550W
	COMBINATION	3000W
MICROWAVE ENERGY OUTPUT	1000W(IEC705)	
MICROWAVE FREQUENCY	2450MHz	
OUTSIDE DIMENSIONS (W X H X D)	542X329X503mm (21.3X13.0X19.8 in.)	
CAVITY DIMENSIONS (W X H X D)	350X230X355mm (13.8X9.1X14.0 in.)	
NET WEIGHT	APPROX. 20kg (44.1 lbs.)	
TIMER	60 minutes	
FUNCTION SELECTIONS	MICROWAVE / GRILL / CONVECTION / COMBINATION	
POWER SELECTIONS	10 LEVELS	
CAVITY VOLUME	1.0 Cu. Ft	

MODEL	KOC-922T9R/923T9R	
POWER SUPPLY	230V~50HZ, SINGLE PHASE WITH EARTHING	
POWER CONSUMPTION	MICROWAVE	1500W
	GRILL	1150W
	CONVECTION	1450W
	COMBINATION	1500W
MICROWAVE ENERGY OUTPUT	1000W(IEC705)	
MICROWAVE FREQUENCY	2450MHz	
OUTSIDE DIMENSIONS (W X H X D)	542X329X503mm (21.3X13.0X19.8 in.)	
CAVITY DIMENSIONS (W X H X D)	350X230X355mm (13.8X9.1X14.0 in.)	
NET WEIGHT	APPROX. 20kg (44.1 lbs.)	
TIMER	60 minutes	
FUNCTION SELECTIONS	MICROWAVE / GRILL / CONVECTION / COMBINATION	
POWER SELECTIONS	10 LEVELS	
CAVITY VOLUME	1.0 Cu. Ft	

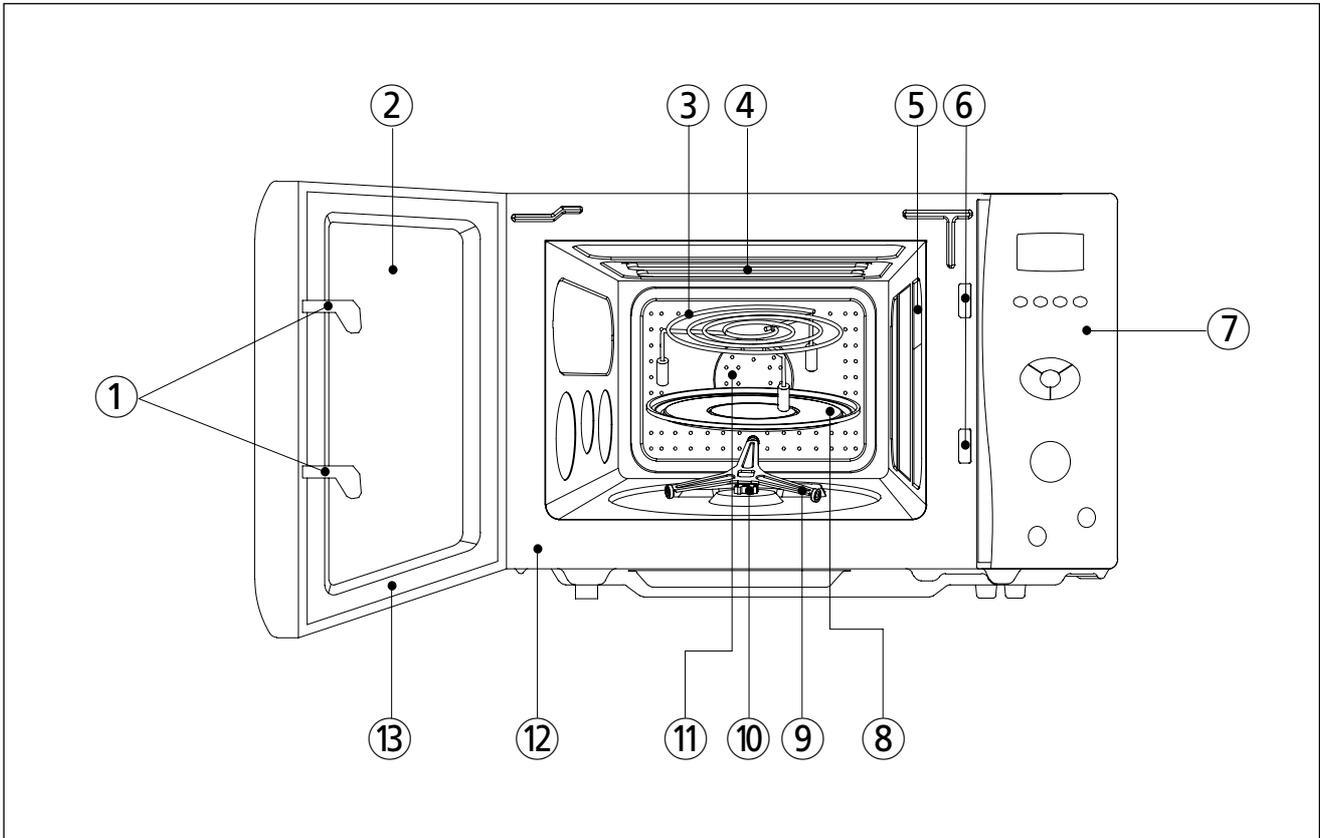
* Specifications are subject to change without notice.

3. EXTERNAL VIEW

1. OUTER DIMENSION



2. FEATURE DIAGRAM



1. DOOR HOOK

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

2. DOOR VIEWING SCREEN

Allows viewing of food. The screen is designed so that light can pass through, but not the microwave.

3. METAL RACK

4. TOP HEATER

Turns on when convection, grill and combi cooking is selected.

5. OVEN LAMP

Automatically turns on during oven operating.

6. SAFETY INTERLOCK SYSTEM

7. CONTROL PANEL

8. TURNTABLE TRAY

Rotates during cooking and ensure even distribution of Microwaves.
It can also be used as a cooking utensil.

9. ROLLER GUIDE

This must always be used for cooking together with the turntable tray.

10. COUPLER

This fits over the shaft in the center of the ovens cavity floor. This is to remain in the oven for all cooking.

11. CONVECTION OUTLET & FAN

12. OVEN FRONT PLATE

13. DOOR SEAL

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

4. INSTALLATION

1. Steady, flat location

This microwave oven should be set on a steady, flat surface.
This microwave oven is designed for counter top use only.

2. Leave space behind and side

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

3. Away from Radio and TV sets

Poor television reception and radio interference may result if the oven is located close to a TV, Radio, antenna or feeder and so on.
Position the oven as far from them as possible.

4. Away from heating appliances and water taps

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

5. Power supply

- Check your local power source. This microwave oven requires a current of approximately 15(KOC-922T9S/923T9S) 12(KOC-922T9R/923T9R) amperes, 230V, 50Hz.
- Power supply cord is about 1.2 meters long.
- The voltage used must be the same as specified on this oven. Using a higher voltage may result in a fire or other accident causing oven damage. Using low voltage will cause slow cooking. We are not responsible for damage resulting from use of this oven with a voltage of ampere fuse other than those specified.
- This appliance is supplied with cable of special type, which, if damaged, must be repaired with cable of same type.
- Such a cable can be purchased from DAEWOO and must be installed by a Qualified Person.

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

A misaligned door, broken door or a dent in cavity.
If any of the above are visible, DO NOT INSTALL, and notify dealer immediately.

7. Do not operate the oven if it is colder than room temperature.

EARTHING INSTRUCTIONS

This appliance must be earthed. In the event of an electrical short circuit, earthing reduces the risk of the electric shock by providing an escape wire for the electric current. This appliance is equipped with a cord having a earthing wire with a earthing plug. The plug must be plugged into an outlet that is properly installed and earthed.

WARNING

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

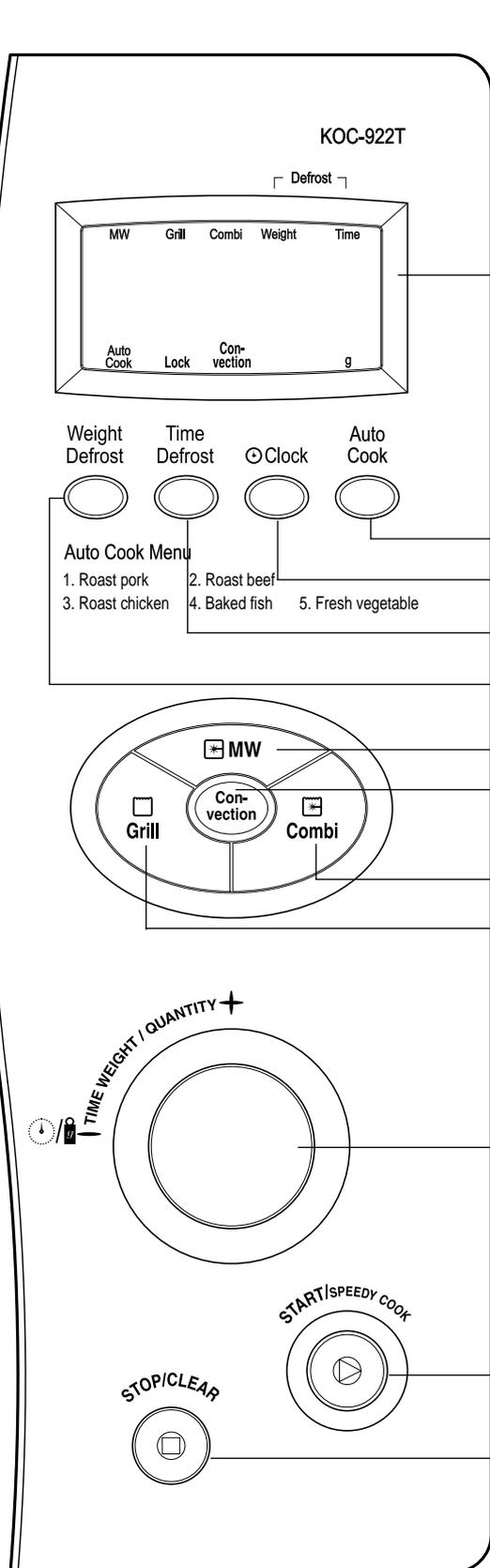
Consult a qualified electrician or serviceman if the earthing instructions are not completely understood, or if doubt exists as to whether the appliance is properly earthed, and either:

If it is necessary to use an extension cord, use only a 3-wire extension cord that has a 3-blade earthing plug, and a 3-slot receptacle that will accept the plug on the appliance.

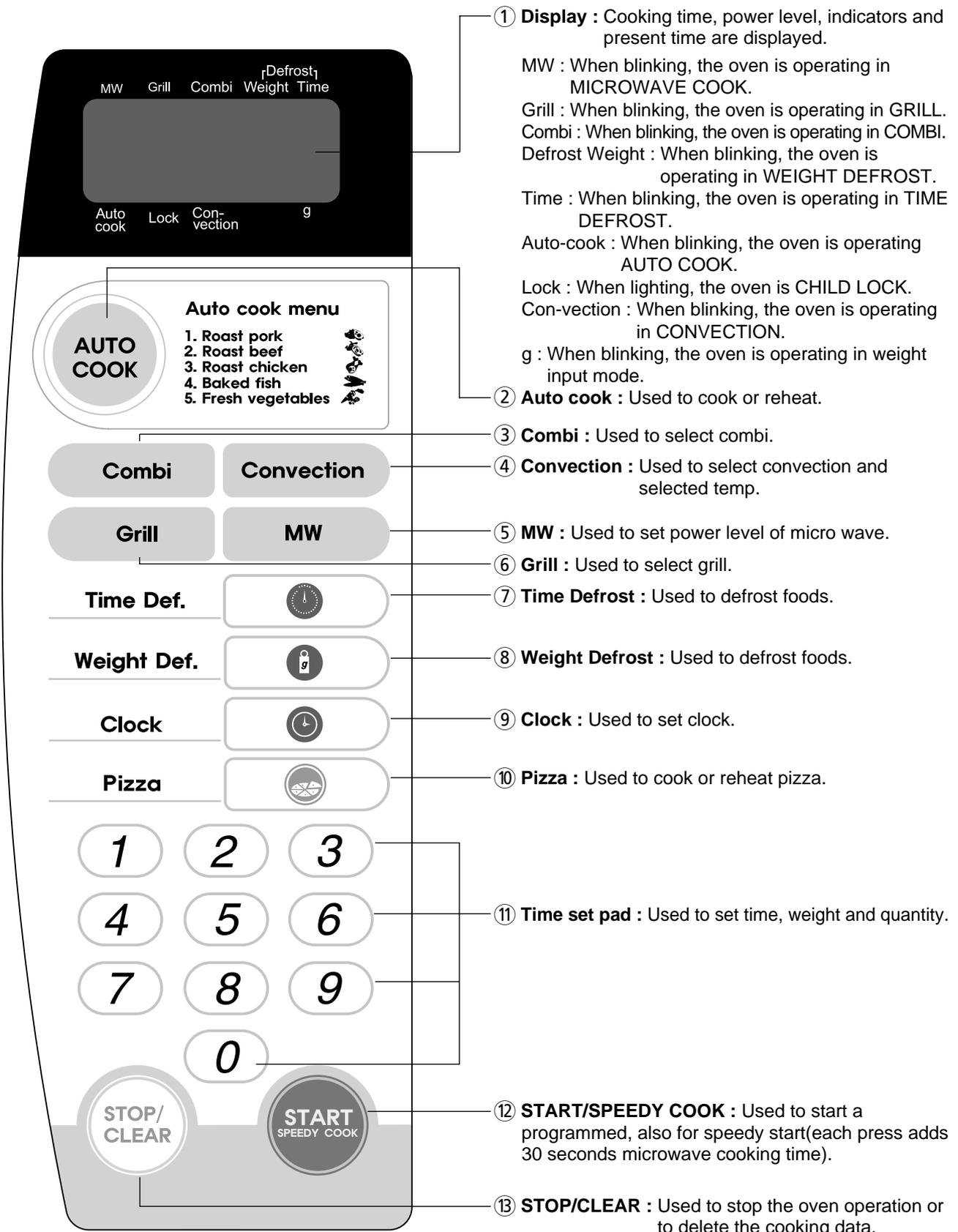
The marked rating of the extension cord should be equal to or greater than the electrical rating of the appliance, or
Do not use an extension cord.

5. CONTROL PANEL

KOC-922T9S, KOC-922T9R



- ① **Display** : Cooking time, power level, indicators and present time are displayed.
 - **MW** : When blinking, the oven is operating in MICROWAVE COOK.
 - **Grill** : When blinking, the oven is operating in GRILL.
 - **Combi** : When blinking, the oven is operating in COMBI.
 - **Defrost Weight** : When blinking, the oven is operating in WEIGHT DEFROST.
 - **Time** : When blinking, the oven is operating in TIME DEFROST.
 - **Auto-cook** : When blinking, the oven is operating in AUTO COOK.
 - **Lock** : When lighting, the oven is CHILD LOCK.
 - **Con-vection** : When blinking, the oven is operating in CONVECTION.
 - **g** : When blinking, the oven is operating in weight input mode.
- ② **Auto cook** : Used to cook or reheat.
- ③ **Clock** : Used to set clock.
- ④ **Time Defrost** : Used to defrost foods.
- ⑤ **Weight Defrost** : Used to defrost foods.
- ⑥ **MW** : Used to set power level of micro wave.
- ⑦ **Convection** : Used to select convection and selected temp.
- ⑧ **Combi** : Used to select combi.
- ⑨ **Grill** : Used to select grill.
- ⑩ **Dial knob** : Used to set time, weight and quantity.
- ⑪ **START/SPEEDY COOK** : Used to start a programmed, also for speedy start(each press adds 30 seconds microwave cooking time).
- ⑫ **STOP/CLEAR** : Used to stop the oven operation or to delete the cooking data.



6. DISASSEMBLY AND ASSEMBLY

- Cautions to be observed when trouble shooting.

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

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

(1) Check the grounding.

Do not operate on a two-wire extension cord.

The microwave oven is designed to be used while grounded.

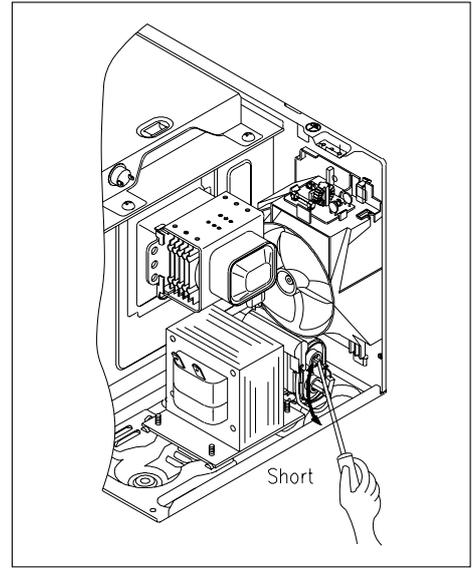
It is imperative, therefore, to make sure it is grounded properly before beginning repair work.

(2) Warning about the electric charge in the high voltage capacitor.

For about 30 seconds after the operation has stopped, electric charge remains in the high voltage capacitor.

When replacing or checking parts, short between oven chassis and the negative high terminal of the high voltage capacitor by using a properly insulated screwdriver to discharge.

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

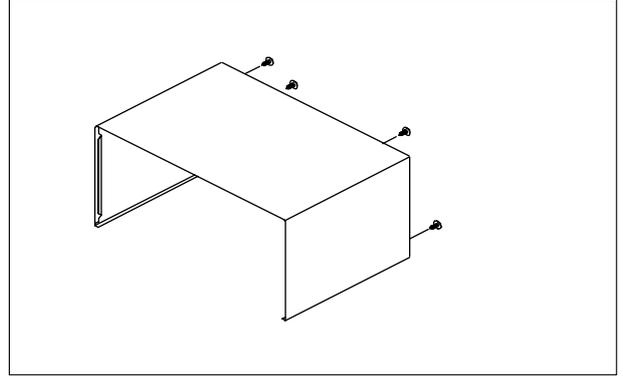


CAUTION : Service personnel should remove their watches whenever working close to or replacing the magnetron.

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

1. To remove cabinet

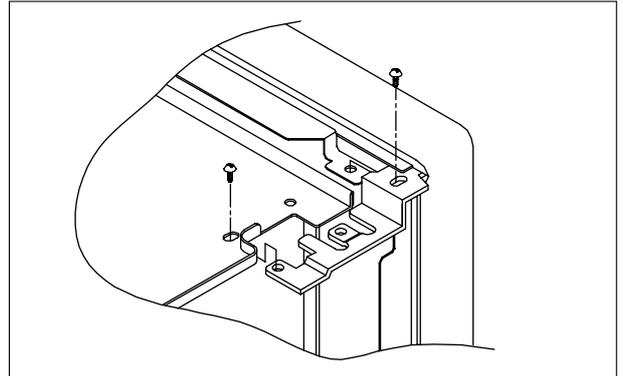
- 1) Remove four screws on cabinet back.
- 2) Push the cabinet backward.



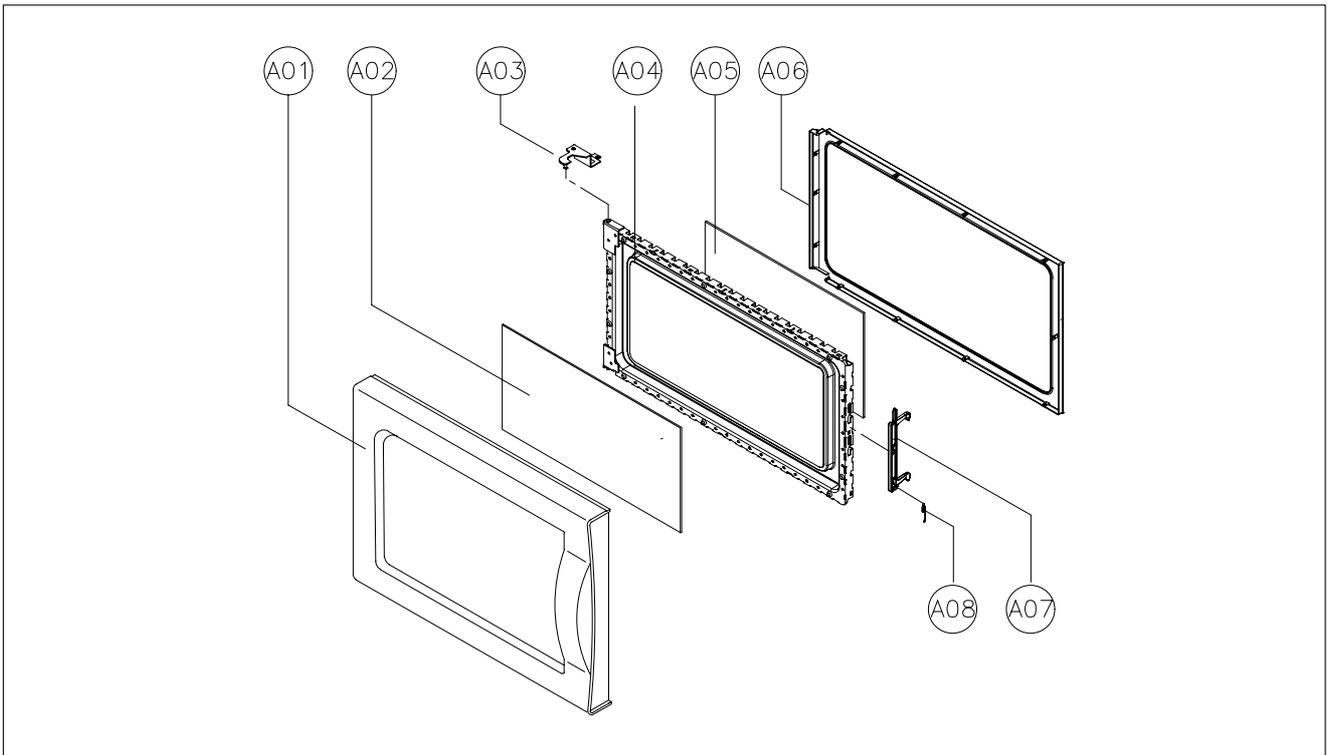
2. To remove door assembly

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

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



3. To remove door parts.

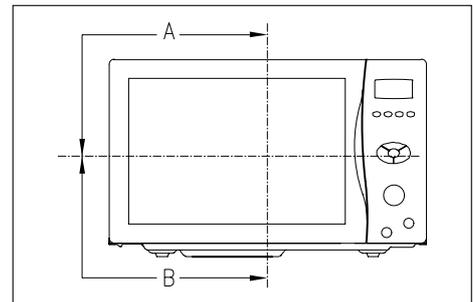


REF NO.	PART CODE	PART NAME	DESCRIPTION	Q TY	REMARK
A01	3512204830	FRAME DOOR	ABS SR-0320	1	
A02	3517007150	BARRIER-SCREEN*0	GLASS T3.2 MIRROR	1	
A03	3515304800	SUPPORTER HINGE*T	SCP-1 T2.0	1	
A04	3516602200	DOOR PLATE	SBHG-3A T0.7	1	
A05	3517007000	BARRIER-SCREEN*I	TEMP GLASS T2.0	1	
A06	3512302400	GASKET DOOR	PBT	1	
A07	3513101200	HOOK	POM	1	
A08	3515101800	SPRING HOOK	PW1	1	

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

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

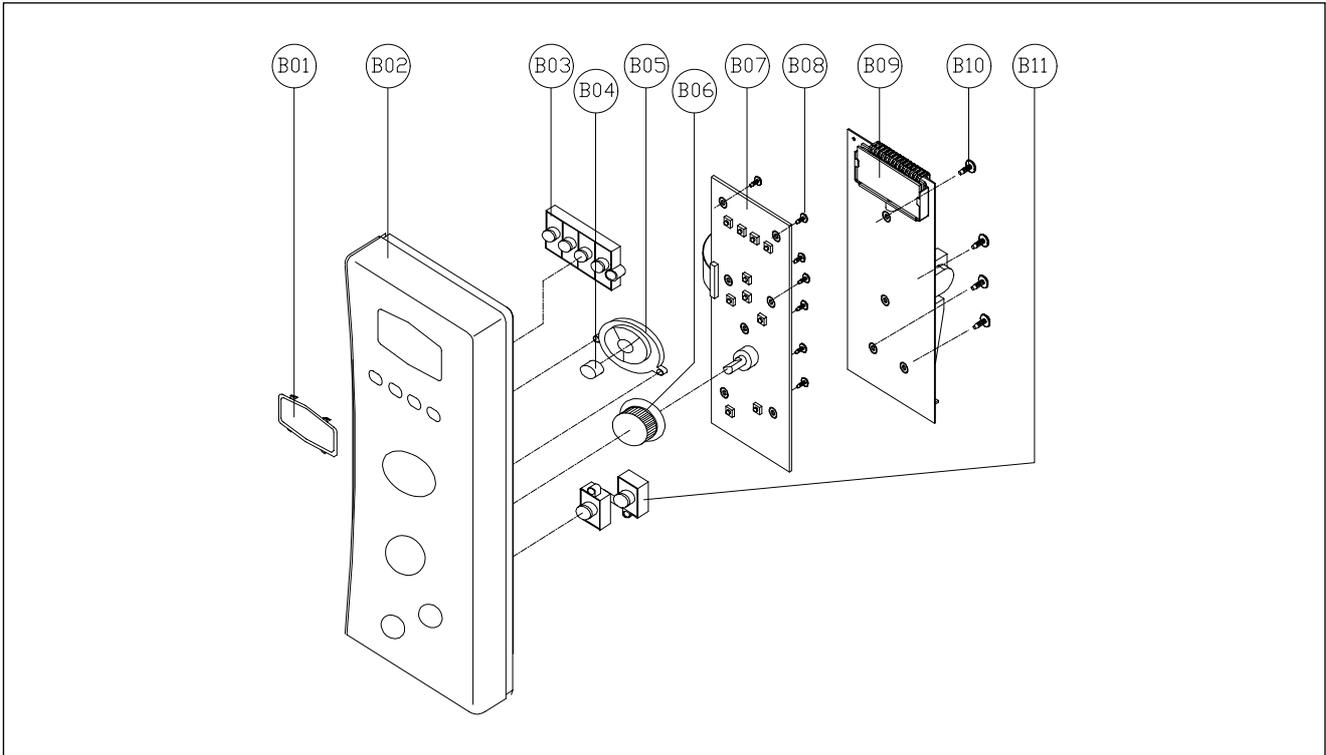
- (1) To reduce gap located on part 'A'.
 - Loosen two screws on stopper hinge top, and then push the door to contact the door seal to oven front surface.
 - Tighten two screws.
- (2) To reduce gap located on part 'B'.
 - Loosen two screws on stopper hinge under, and then push the door to contact the door seal to oven front surface.
 - Tighten two screws.



NOTE : A small gap may be acceptable if the microwave leakage does not exceed 4mW/cm².

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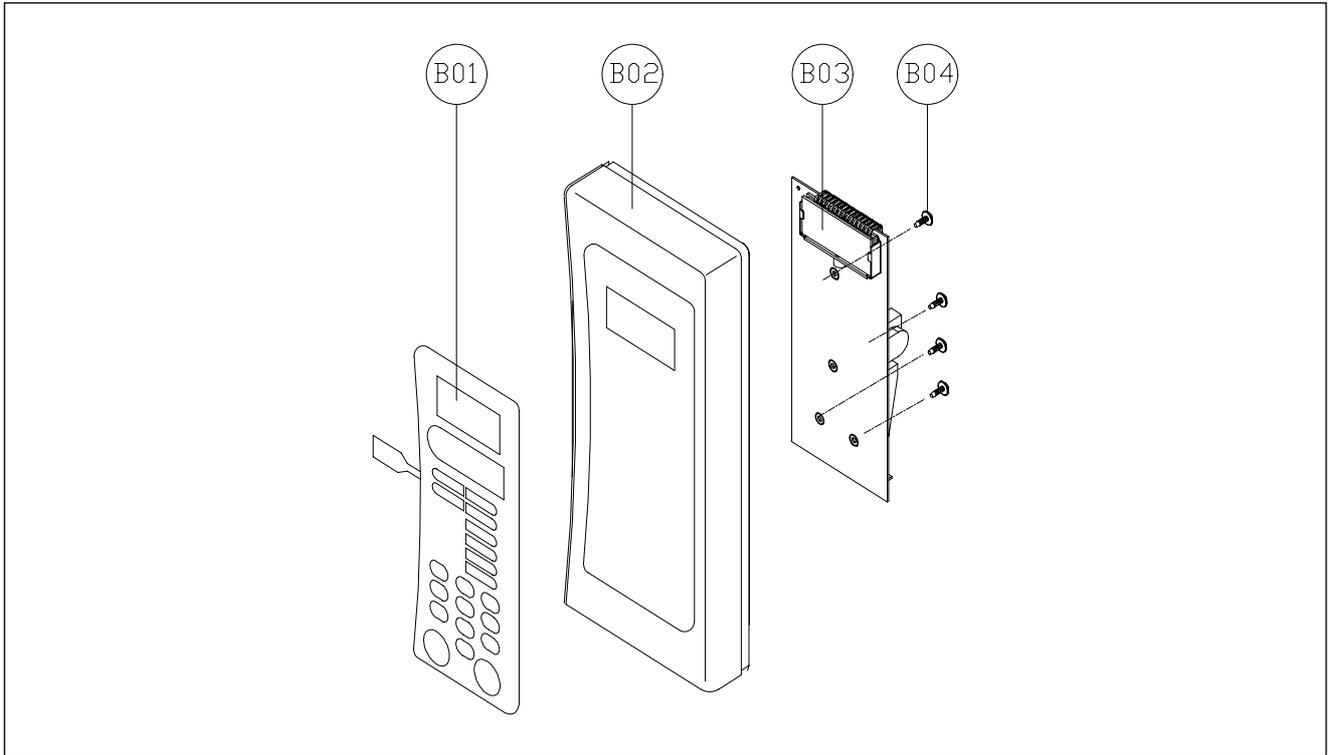
5. To remove control panel parts.



REF NO.	PART CODE	PART NAME	DESCRIPTION	Q'TY	REMARK
B01	3515501320	WINDOW DISPLAY	SAN	1	
B02	3516725230	CONTROL-PANEL	ABS SR-0320	1	
B03	3516911900	BUTTON FUNCTION-A	ABS SR-0760D SPRAY	1	
B04	3516909970	BUTTON FUNCTION-C	ABS SR-175 SG-0760D SPRAY	1	
B05	3516909960	BUTTON FUNCTION-B	ABS SR-175 SG-0760D SPRAY	1	
B06	3513406600	KNOB VOLUME	ABS SR-175 SG-0760D	1	
B07	PKMPMSYQ00	PCB MAIN MANUAL AS	KOC-922T9S	1	922T9S
	PKMPMSYQ10		KOC-922T9R		922T9R
B08	7121301011	SCREW TAPPING	T2S PAN 3X10 MFZN	7	
B09	PKBPMSYQ00	PCB BUTTON MANUAL AS	KOC-922T9S	1	
B10	7122401211	SCREW TAPPING	T2S TRS 4X12 MFZN	4	
B11	3516909980	BUTTON FUNCTION-D	ABS SG-175 SG-0760D SPRAY	1	

- (1) Remove the screw which secure the control panel, push up two snap fits and draw forward the control panel assembly.
- (2) Remove four screws(B10) which secure the PCB Main ASS'Y.
- (3) Pull out the Main PCB assembly(B09).
- (4) Remove seven screws(B08) which secure the PCB Sub ASS'Y.
- (5) Pull out the Sub PCB assembly(B07).
- (6) Pull out the Knob volume(B06) from the Sub PCB assembly.
- (7) Pull out buttons from the control panel.
- (8) Pull out Window display(B01) from the control panel.
- (9) Reverse the above steps for reassembly.

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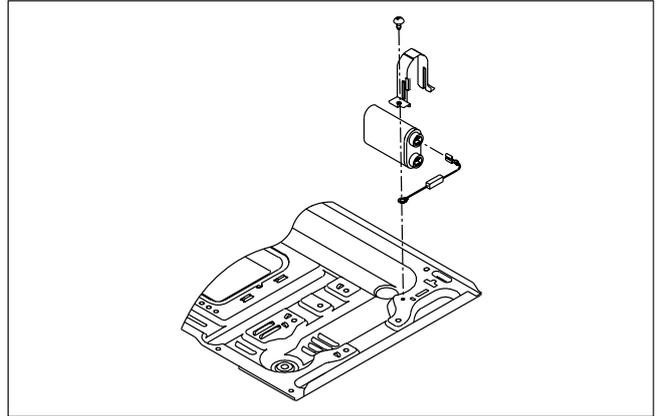


REF NO.	PART CODE	PART NAME	DESCRIPTION	Q'TY	REMARK
B01	3518524300	SWITCH MEMBRANE	KOC-923T9S	1	
B02	3516725250	CONTROL-PANEL	ABS SR-0320	1	
B03	PKMPMSAS00	PCB MAIN MANUAL AS	KOC-923T9S	1	923T9S
	PKMPMSAS10		KOC-923T9R		923T9R
B04	7122401211	SCREW TAPPING	T2S TRS 4X12 MFZN	4	

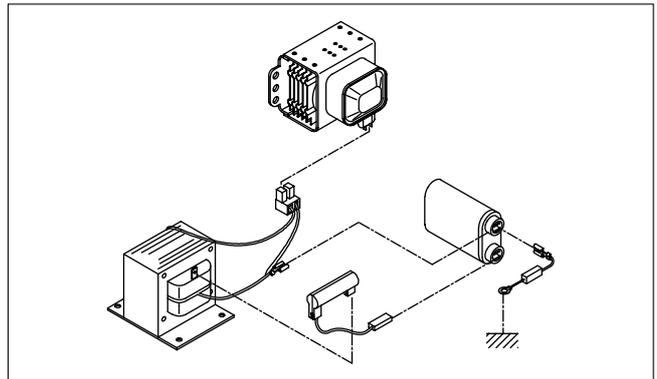
- (1) Remove the screw which secure the control panel, push up two snap fits and draw forward the control panel assembly.
- (2) Remove four screws which secure the PCB assembly to control panel.
- (3) Disconnect membrane tail from the connector of the PCB assembly.
- (4) Detach membrane from the control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

6. To remove high voltage capacitor.

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

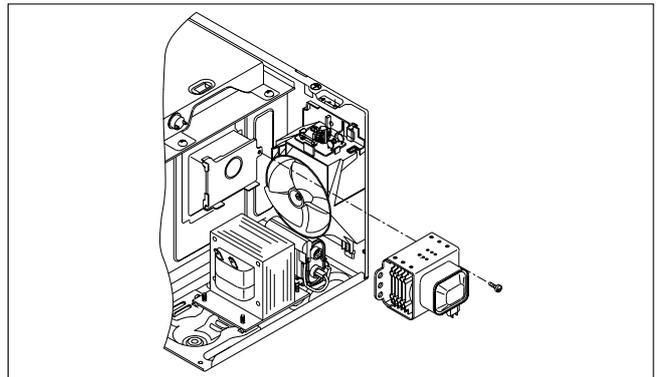


◆ High voltage circuit wiring

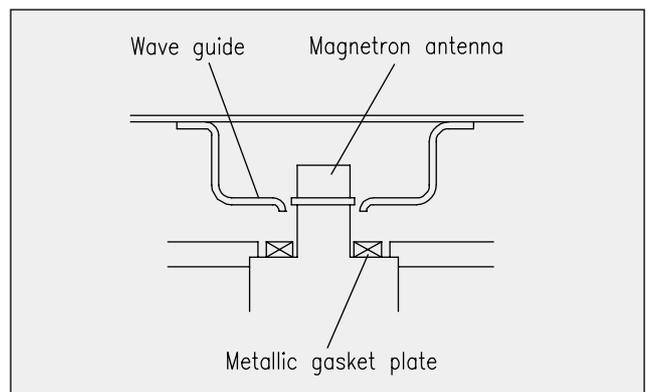
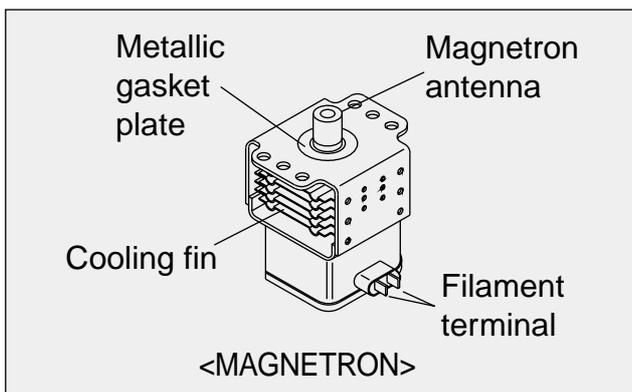


7. To remove magnetron.

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

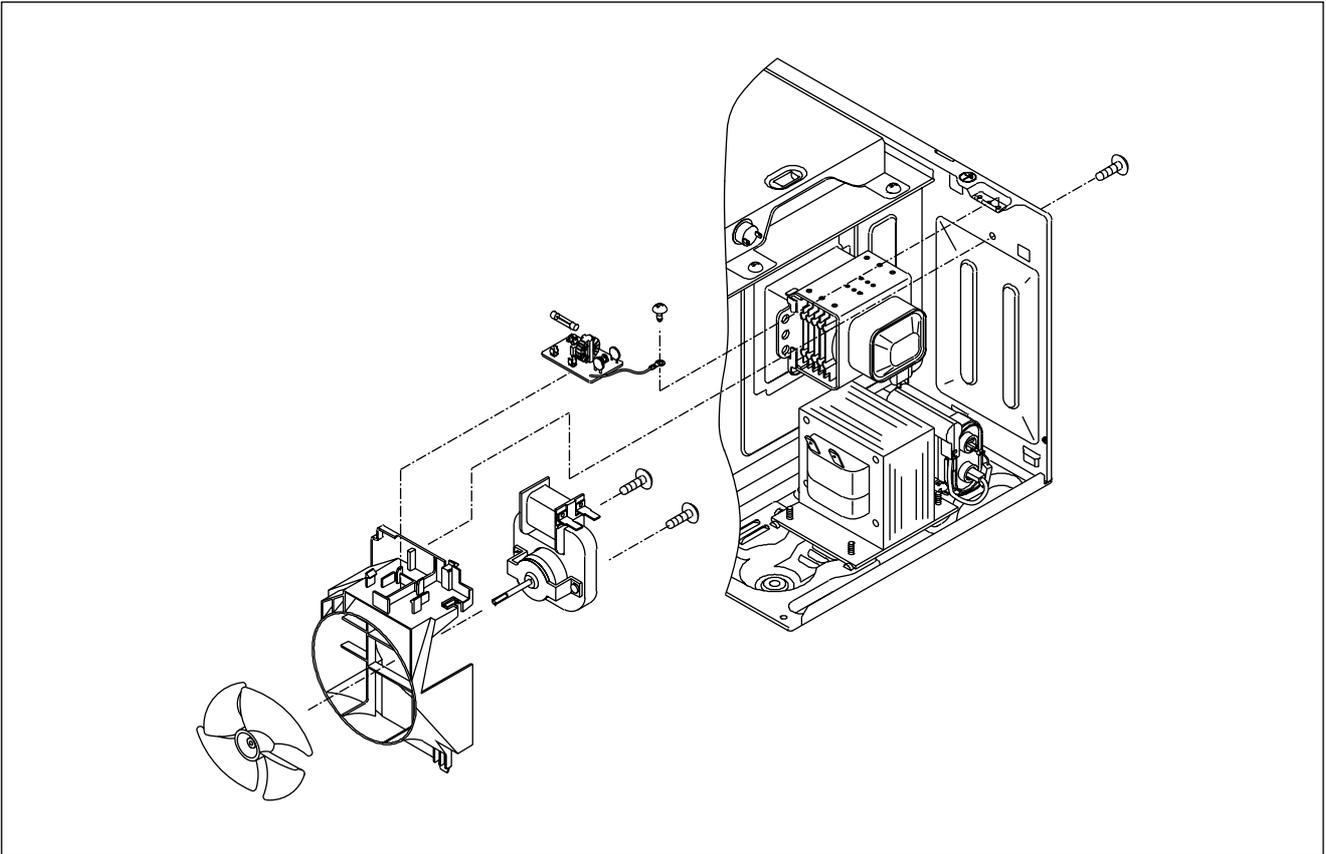


CAUTION : Never install the magnetron without the metallic gasket plate which is packed with each magnetron to prevent microwave leakage. Whenever repair work is carried out on magnetron, check the microwave leakage. It shall not exceed $4\text{mW}/\text{cm}^2$ for a fully assembled oven with door normally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



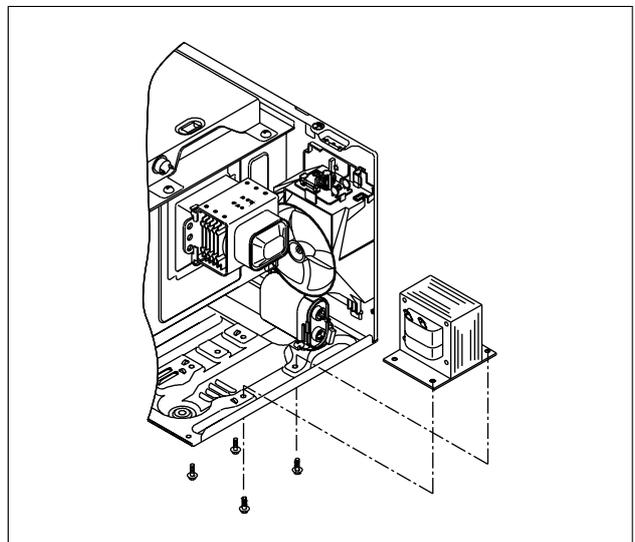
8. To remove wind guide assembly.

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



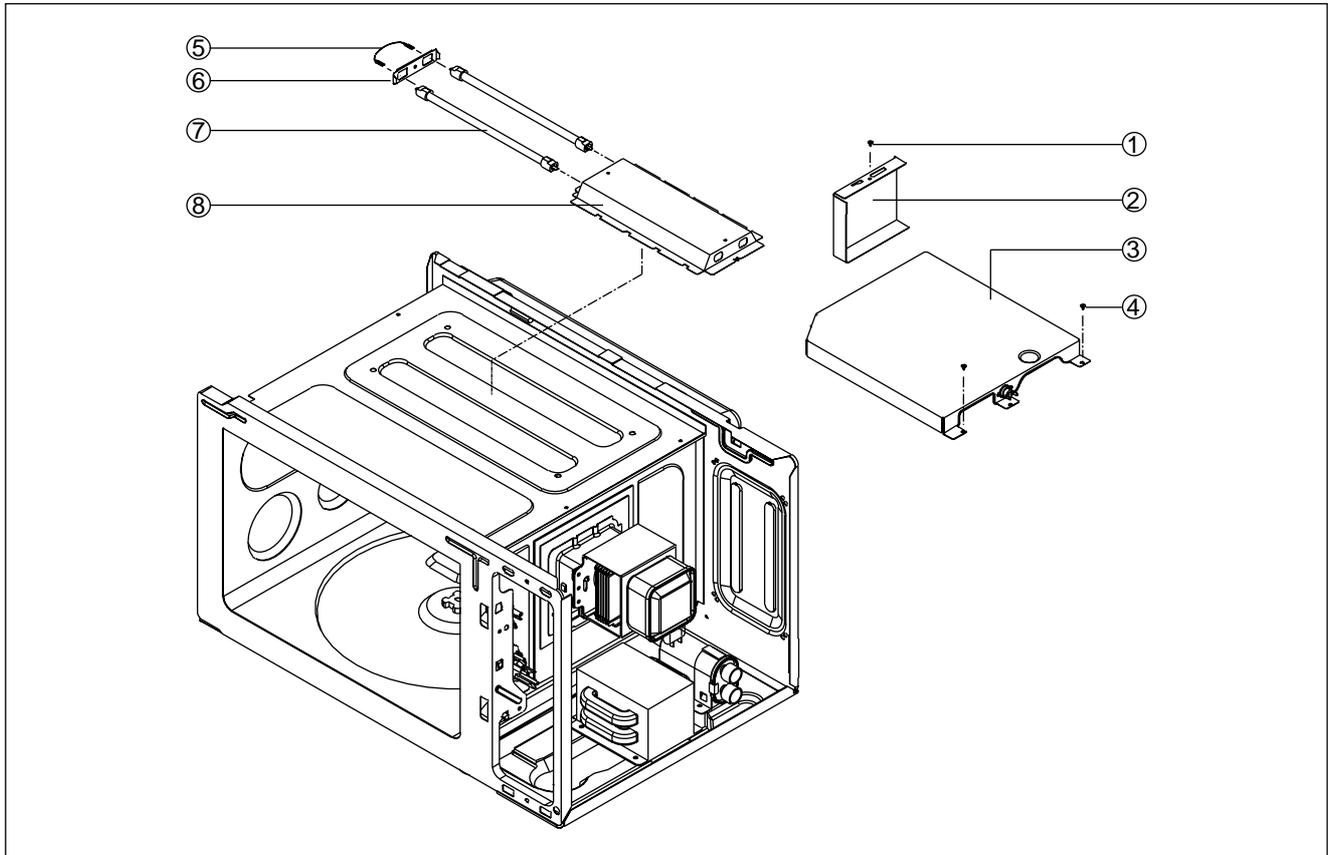
9. To remove H.V.transformer.

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



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10. To remove Top heater assembly parts.

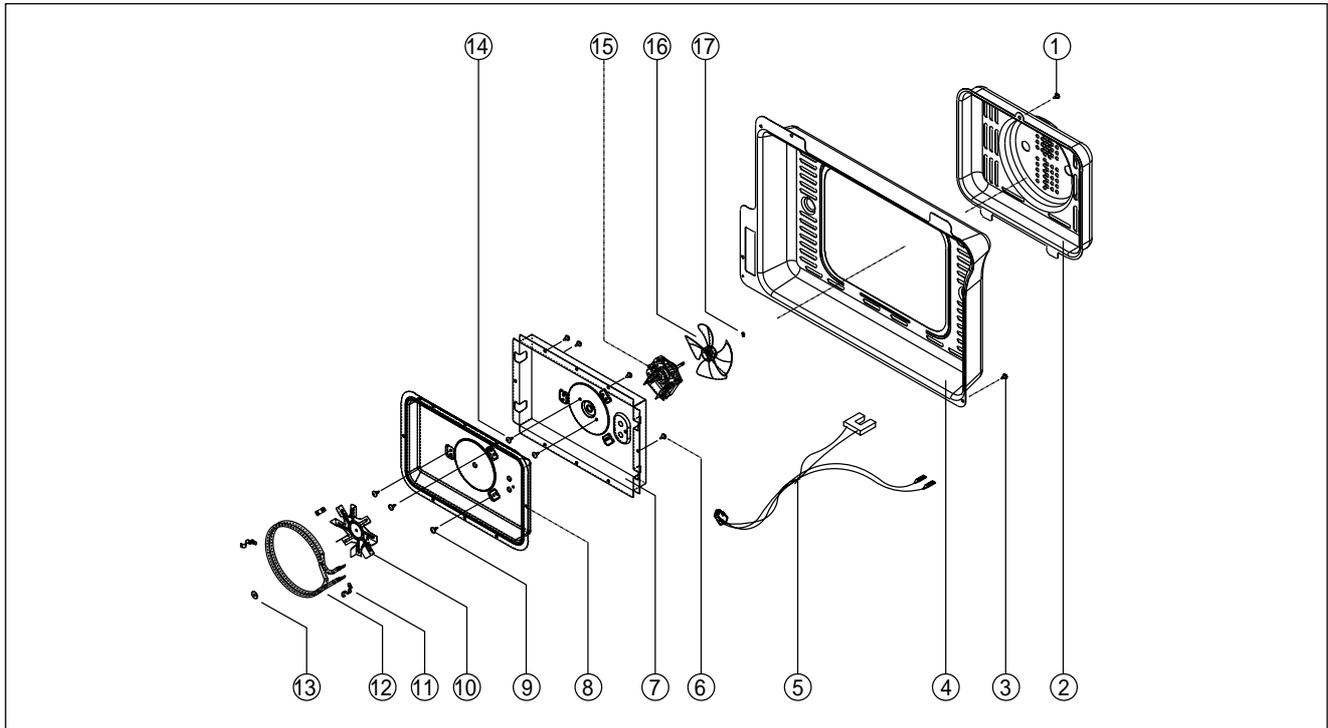


REF NO.	PART CODE	PART NAME	DESCRIPTION	Q TY	REMARK
1	7112401011	SCREW TAPPING	T1 TRS 4X10 MFZN	1	
2	3512520500	GUIDE AIR OUTLET	SA1D T0.5	1	
3	3513303000	INSULATOR HEATER*T	SECC T0.5	1	
4	7112401011	SCREW TAPPING	T1 TRS 4X10 MFZN	2	
5	3512767000	HARNESS HEATER	KOC-1B0K0S	1	
6	3510607700	BRACKET HEATER *T	SA1D T0.5	1	
7	3512803800	HEATER MIRACLON	115V 550W 270MM	2	
8	3511407600	COVER HEATER *T	STS430 T0.5	1	

- 1) Remove a screw ① and pull out Guide air outlet ②.
- 2) Remove two screws④ and pull out insulator heater *t③.
- 3) Pull out the Top heater assembly.
- 4) Pull out the Harness heater⑤.
- 5) Pull out the Braket heater*t from the Cover heater*t⑧.
- 6) Pull out the Heater miraclon⑦ from the Cover heater*t⑧.
- 7) Reverse the above steps for reassembly.

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11. To remove Rear heater assembly parts.

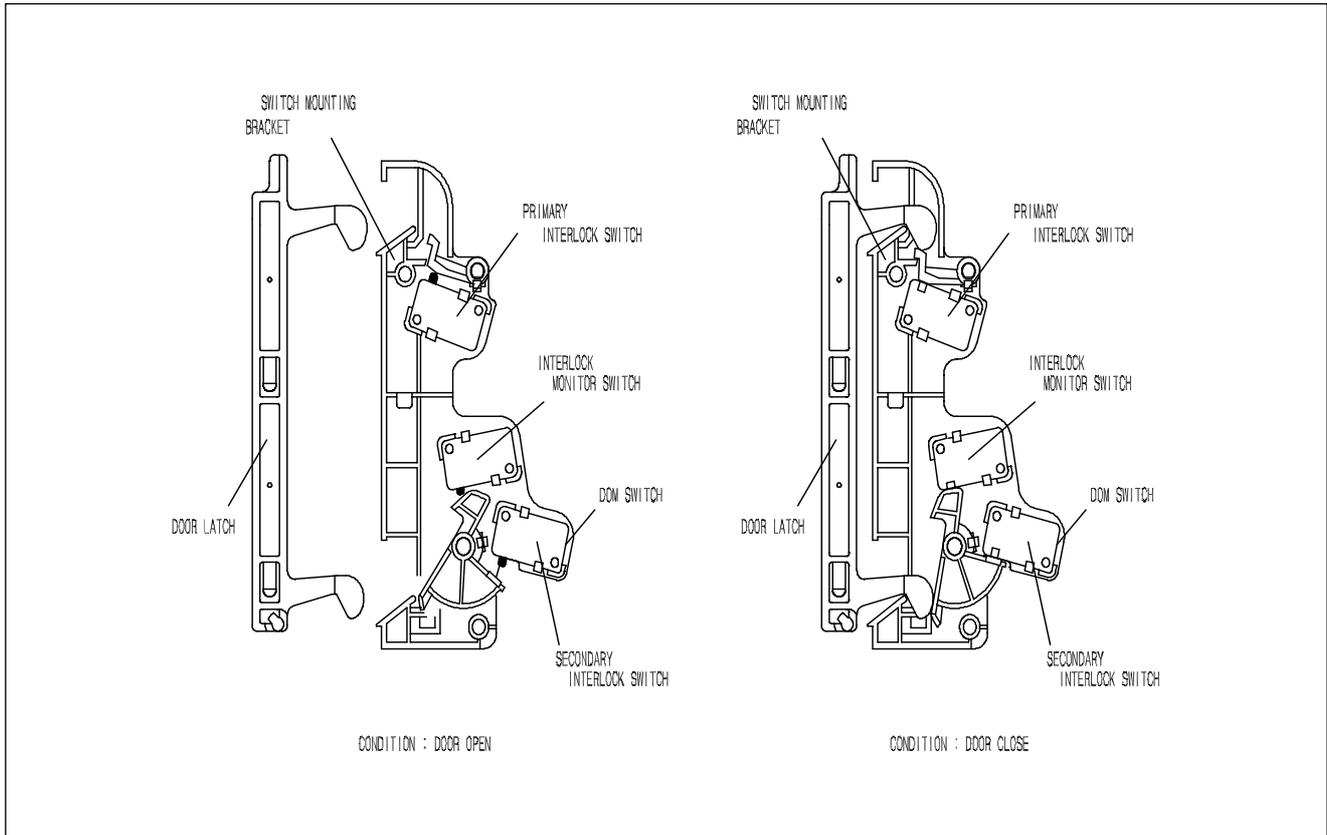


REF NO.	PART CODE	PART NAME	DESCRIPTION	Q TY	REMARK
1	3511407300	COVER MOTOR*B	SA1D-80 T0.5	1	
2	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	1	
3	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	1	
4	3511407900	COVER*B	SA1D-80 T0.5	1	
5	3512767600	HARNESS CONVECTION	KOC-924T0S	1	
6	7113400814	SCREW TAPPING	T1 BIN 4*8 MFNI	4	
7	3511409800	COVER HEATER*B	SA1D-80 T0.5	1	
8	3513303400	INSULATOR HEATER*B	SBHG-1 T0.5	1	
9	7113400814	SCREW TAPPING	T1 BIN 4*8 MFNI	3	
10	3511800700	FAN CONVECTION	SA1D-80 T0.5	1	
11	3513002300	HOLDER HEATER	SUS430 T-.5	3	
12	3512801800	HEATER	230V 1400W 1R18344	1	
13	7400104011	WASHER PLAIN	PW-1-4 MFZN	1	
14	7051400811	SCREW MACHINE	PAN 4*8 SW MFZN	2	
15	3963514300	MOTOR SHADED POLE	230V 50HZ MW10CA-T02	1	
16	3511800800	FAN	P.P GF20	1	
17	7402704600	RING C	CR-5 SK5	1	

- 1) Remove a screw ① and pull out Cover motor *B②.
- 2) Remove a screw ③ and pull out Cover *B④.
- 3) Pull out the Harness convection-B⑤.
- 4) Remove four screws ⑥ and then pull out the Rear heater assembly.
- 5) Remove a Nut⑬ and the pull out the Fan convection⑩.
- 6) Remove three screws⑨ and then separate the Cover heater *B⑦ and the Insulator heater *B⑧.
- 7) Pull out the Heater⑫ from the Cover Heater *B⑦.
- 8) Remove two screw⑭ and then separate the Insulator heater *B⑧ and Motor shaded pole⑮.
- 9) Remove the C-Ring⑰ and then pull out the Fan⑯ from Motor shaft.
- 10) Reverse the above steps for reassembly.

7. INTERLOCK MECHANISM AND ADJUSTMENT

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



(1) Primary interlock switch

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

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

(2) Secondary interlock switch and interlock monitor switch

When the door is closed, the hook pushes the lock lever downward. The lock lever presses the button of the interlock monitor switch to bring it under OFF condition and presses the button of the secondary interlock switch to bring it under ON condition.

ADJUSTMENT :

Interlock monitor switch

When the door is closed, the interlock monitor switch should be opened before other switches are closed.

When the door is opened, the interlock monitor switch should be closed after other switches are opened.

(3) Adjustment steps

- a) Loosen the one mounting screw.
- b) Adjust interlock switch assembly position.
- c) Make sure that lock lever moves smoothly after adjustment is completed.
- d) Tighten completely two mounting screws.

NOTE :

Microwave emission test should be performed after adjusting interlock mechanism.

If the microwave emission exceed $4\text{mW}/\text{cm}^2$, readjust interlock mechanism.

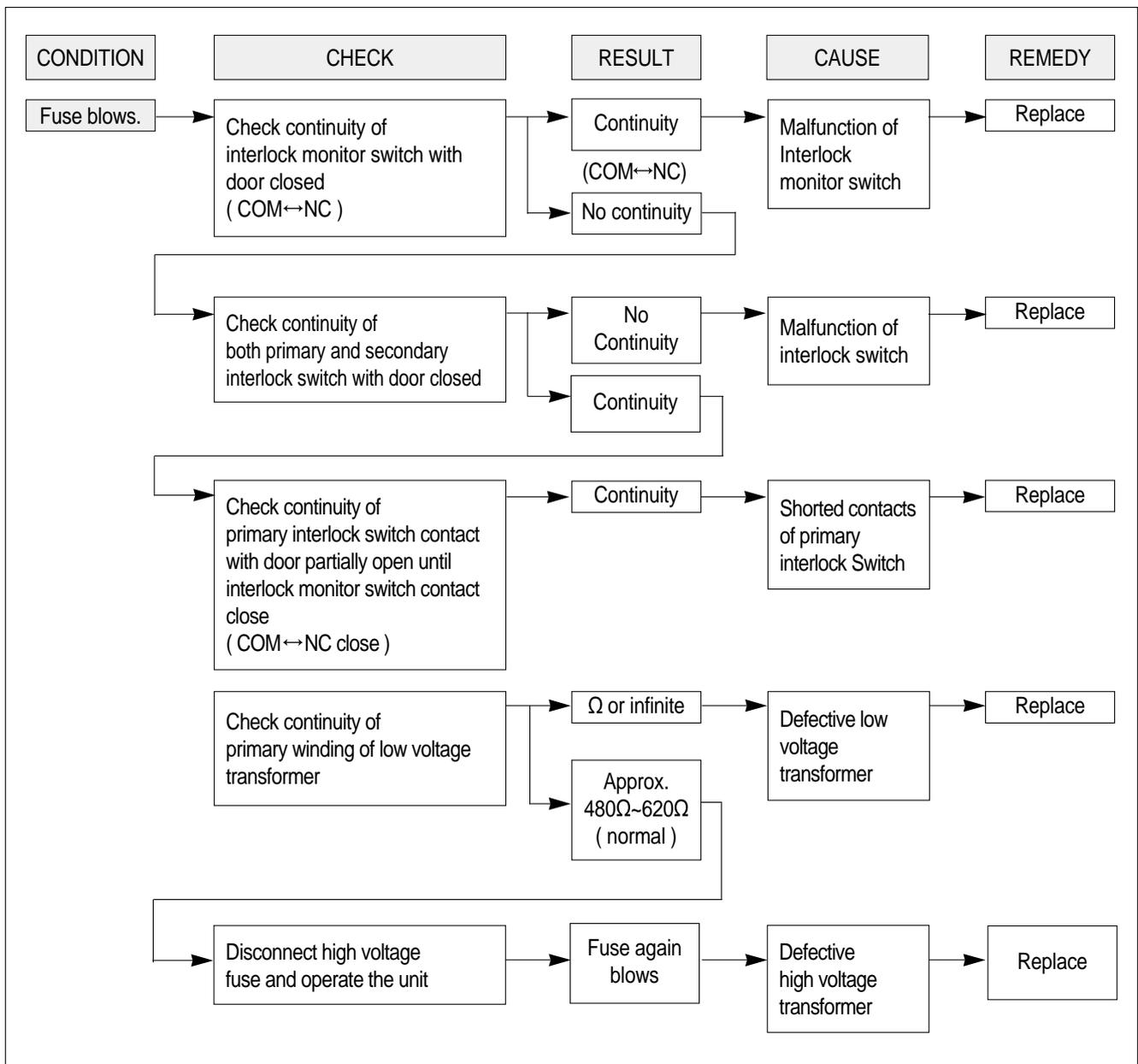
8. TROUBLE SHOOTING GUIDE

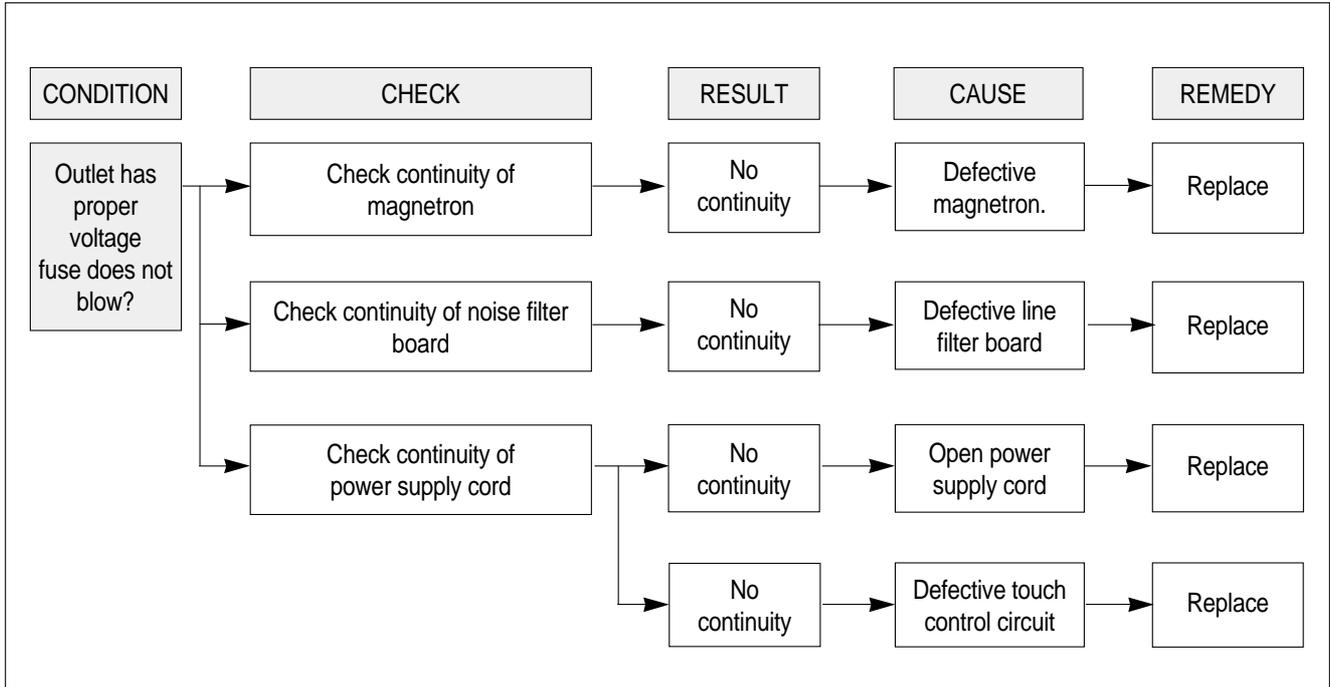
Following the procedure below to check if the oven is defective or not.

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

NOTE : When electric parts are checked, be sure the power cord is not inserted the wall outlet.
Check wire harness, wiring and connection of the terminals and power cord before check the parts listed below.

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

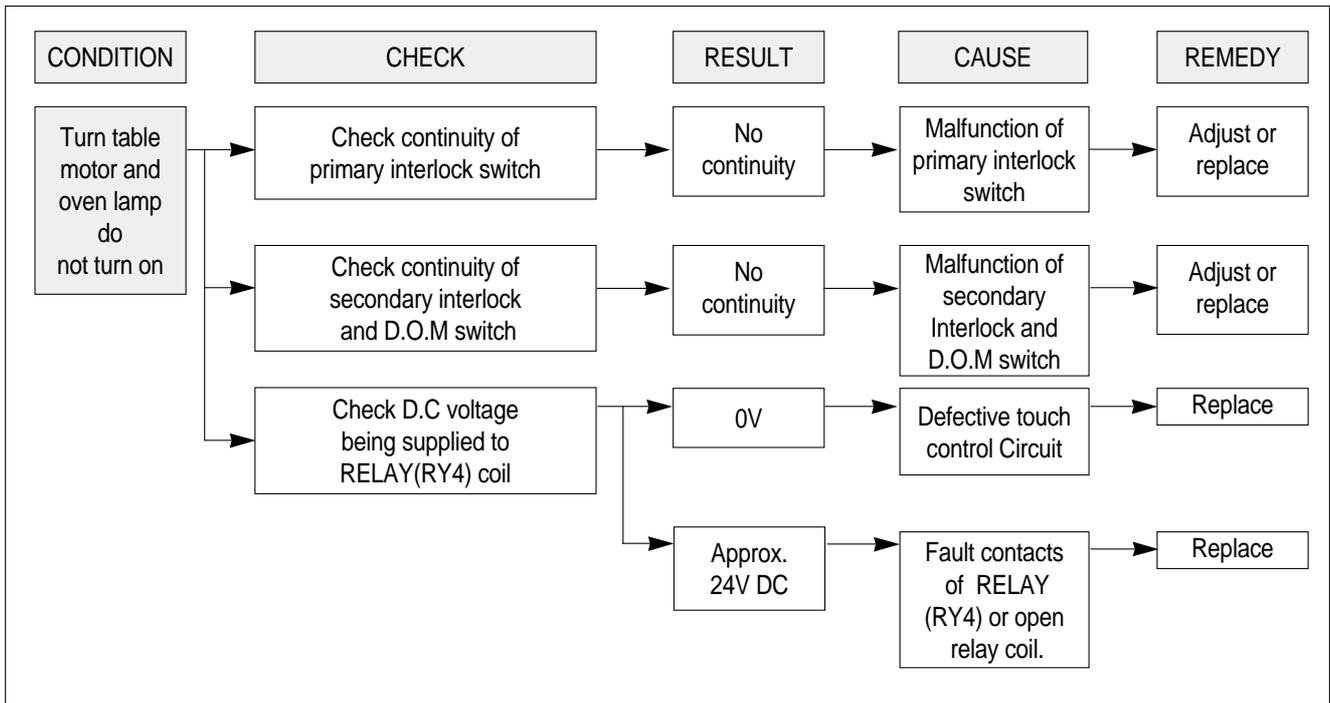




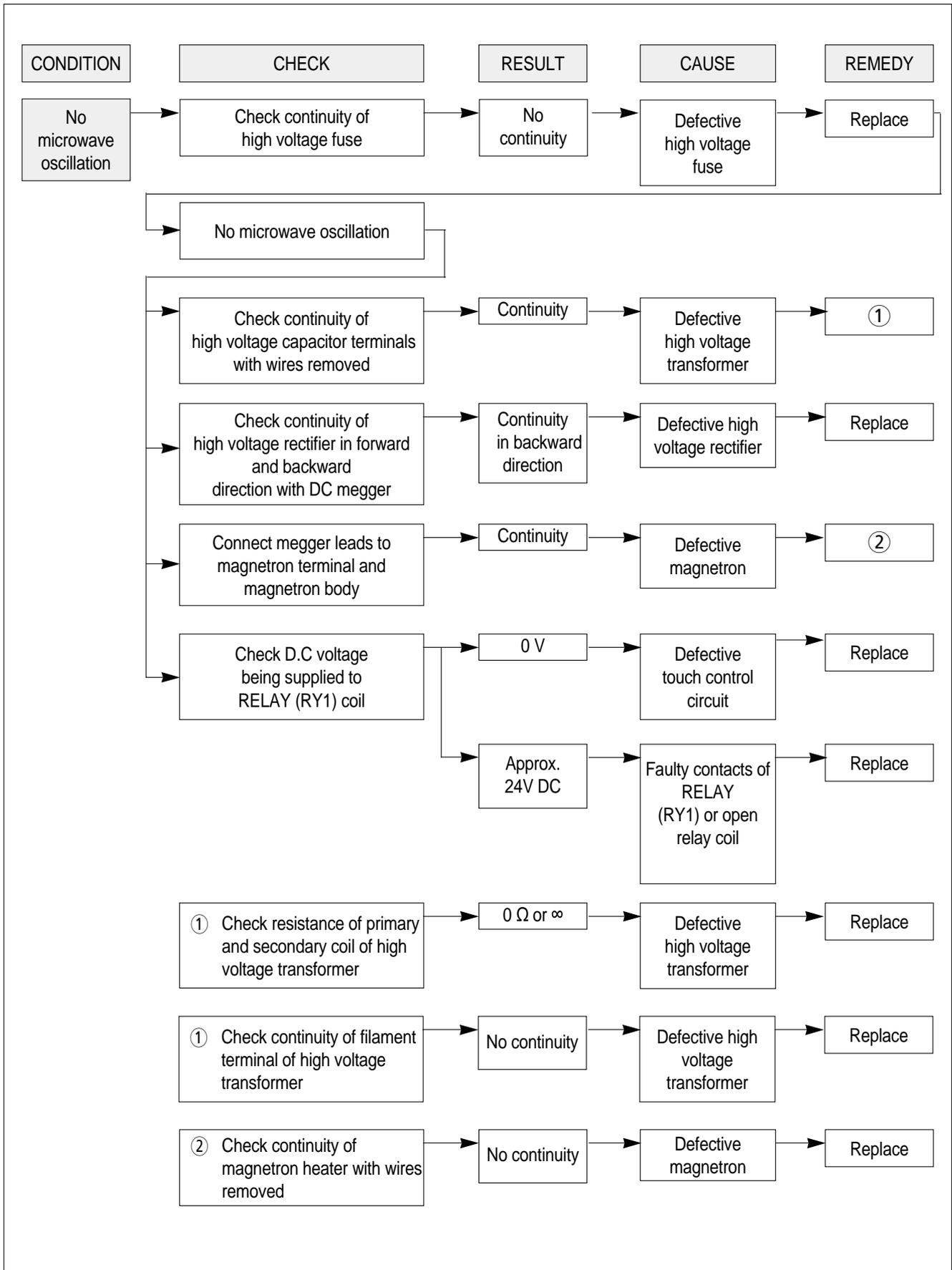
NOTE : All these switches must be replaced at the same time, please refer to (7.Interlock mechanism and adjust) for adjustment instructions

(TROUBLE 2)

Display shows all figures selected, but oven does not start cooking, even though desired program and time are set and start button is tapped.

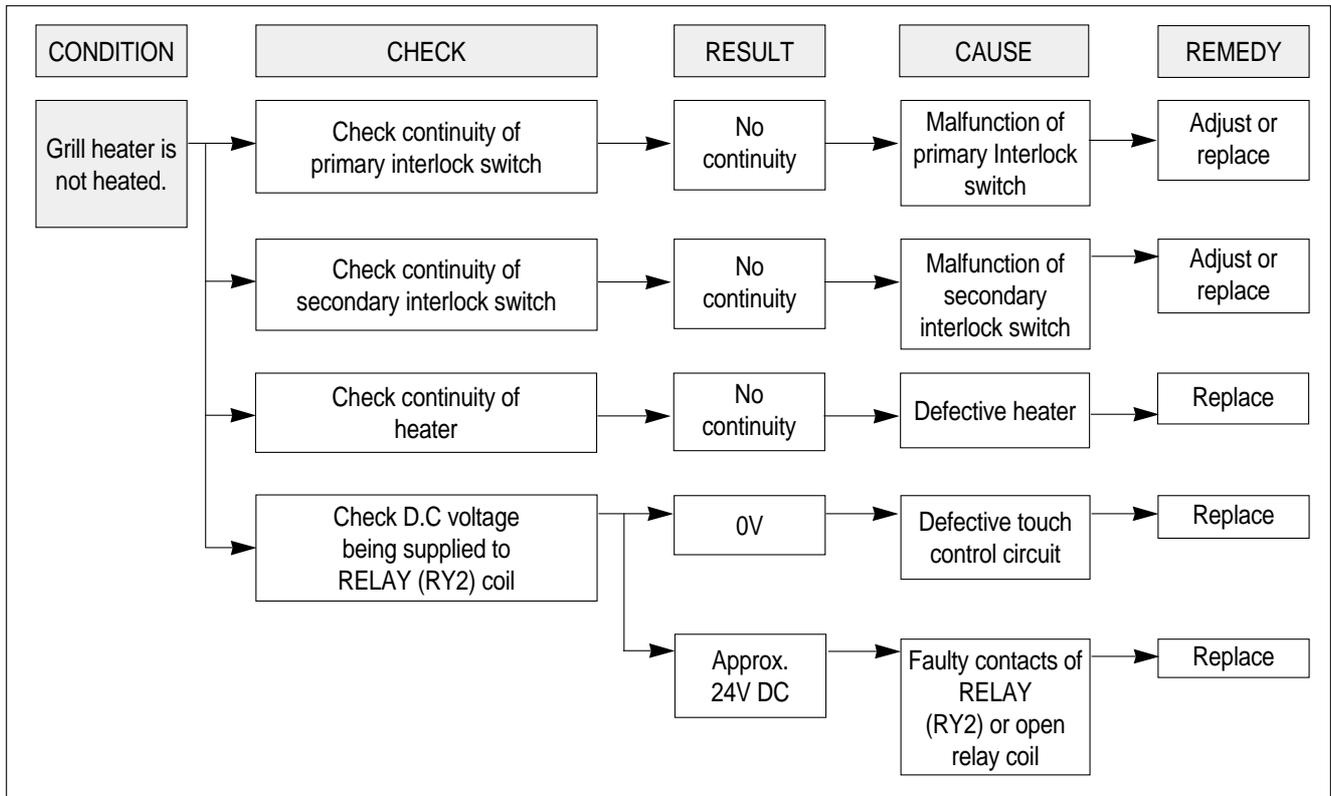


TROUBLE 3) No microwave oscillation even though fan motor rotates.



(TROUBLE 4)

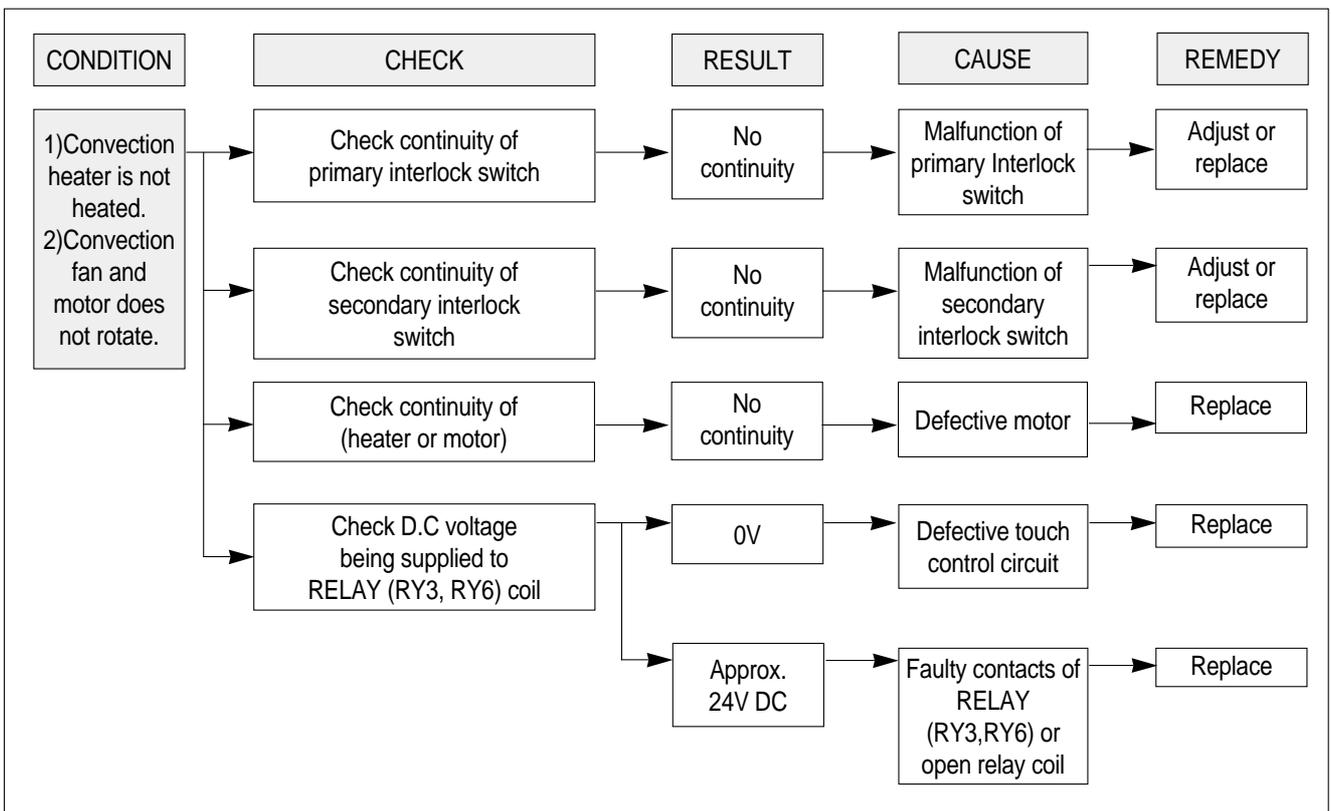
Grill heater (upper heater) is not heated; food will not become hot.



(TROUBLE 5)

1) Convection heater is not heated; food will not become hot.

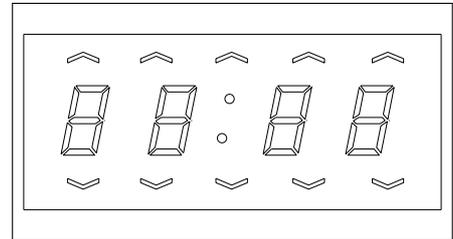
2) Convection fan motor does not rotate.



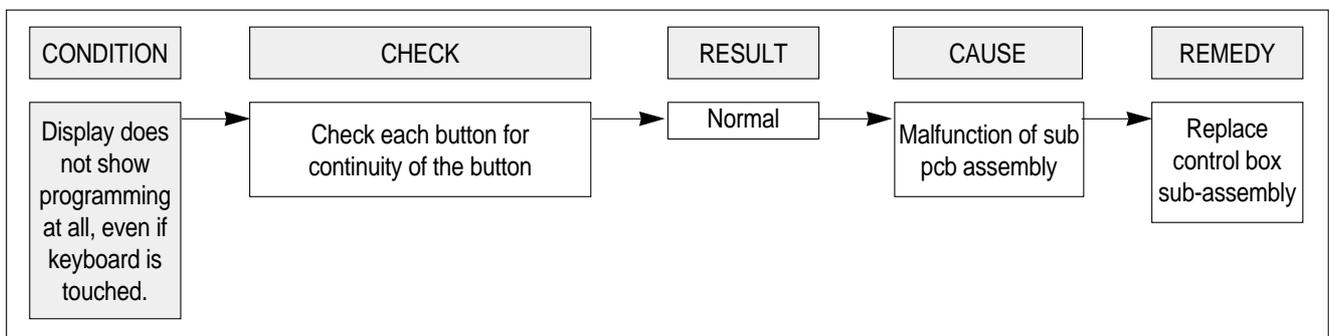
(TROUBLE 6)

The following visual conditions indicate a probable defective touch control Circuit or button P.C.B. assembly

1. Incomplete segments.
 - 1) segment missing
 - 2) partial segments missing
 - 3) digit flickering other than normal fluorescent slight flickering
2. A distinct change in the brightness of one or more numbers exists in the display
3. One or more digits in the display are not on when they should be.
4. Display does not count down or up with time cooking or clock operation.
5. Oven is programmable and cooks normally but no display shows.
6. Display obviously jumps in time while counting down.
7. Display counts down noticeably too fast while cooking.
8. Display does not show the time of day when clear button is touched.
9. Oven lamp and turn table motor do not stop although cooking is finished.

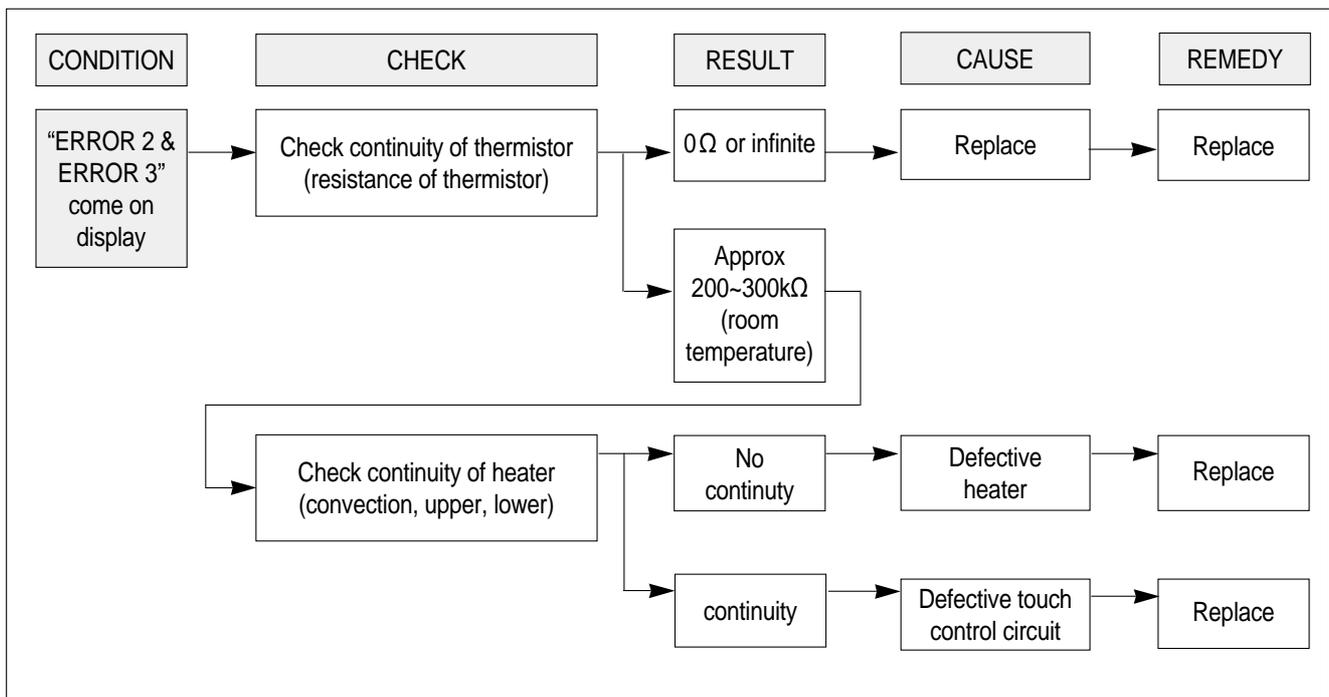


Check if the RELAY(RY4) contacts close and if they are close, replace touch control circuit.



(TROUBLE 7)

When "ERROR 2 ERROR 3" come on display.



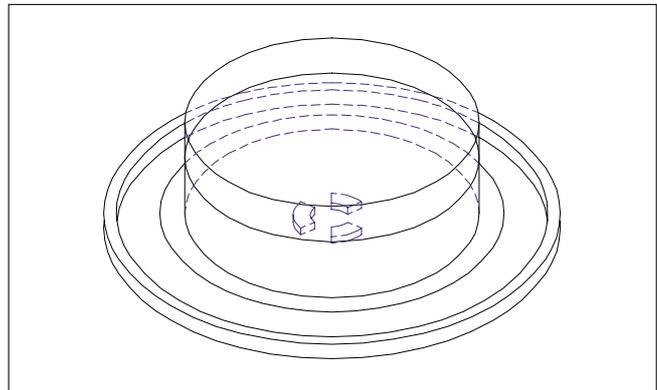
9. MEASUREMENT AND TEST

1. MEASUREMENT OF THE MICROWAVE POWER OUTPUT

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

PROCEDURE

1. A cylindrical container of borosilicate glass is used for the test. It has a maximum thickness of 3mm, an external diameter of approximately 190mm and a height of approximately 90mm.
The mass of the container is determined.
2. At the start of the test, the oven and the empty container are at ambient temperature. Water having an initial temperature of $10^{\circ}\text{C} \pm 1^{\circ}\text{C}$ is used for the test. The water temperature is measured immediately before it is poured into the container.
3. A quantity of $1000\text{g} \pm 5\text{g}$ of water is added to the container and its actual mass obtained.
The container is then immediately placed in the centre of the oven shelf, which is in its lowest normal position.
The oven is operated and the time for the water temperature to attain $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ is measured. The oven is then switched off and the final water temperature is measured within 60s.



NOTE 1 - The water stirred is before its temperature is measured.

NOTE 2 - Stirring and measuring devices are to have a low heat capacity.

4. The microwave power output is calculated from the formula

$$P = 4,187 \cdot m_w (T_2 - T_1) + 0.55 \cdot m_c(T_2 - T_0)/t$$

where

- P is the microwave power output, in watts ;
- m_w is the mass of the water, in grams ;
- m_c is the mass of the container, in grams ;
- T_0 is ambient temperature, in degrees Celsius ;
- T_1 is the initial temperature of the water, in degree Celsius ;
- T_2 is the final temperature of the water, in degrees Celsius ;
- t is the heating time, in seconds, excluding the magnetron filament heating-up time.

* The microwave power output is stated in watts, rounded off to the nearest 50W

CAUTION

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

* Heating time for power output: ($T_2 = T_0$)

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

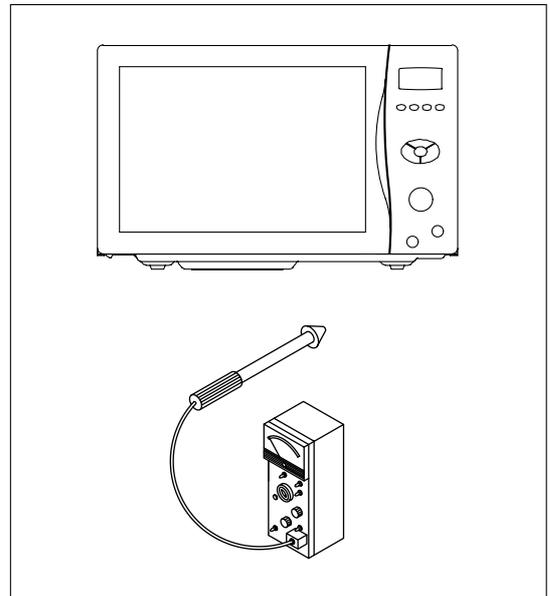
2. MICROWAVE RADIATION TEST

WARNING

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

PROCEDURE

1. Prepare Microwave Energy Survey Meter, 600cc glass beaker, and glass thermometer 100°C (212°F).
2. Pour 275cc \pm 15cc of tap water initially at 20 \pm 5°C (68 \pm 9°F) in the 600 cc glass beaker with an inside diameter of approx. 95 mm(3.5 in.).
3. Place it at the center of the tray and set it in a cavity.
4. Close the door and operate the oven.
5. Measure the leakage by using Microwave Energy Survey Meter with dual ranges, set to 2450MHz.
 - 1) Measured radiation leakage must not exceed the value prescribed below. Leakage for a fully assembled oven with door normally closed must be less than 4mW/Cm².
 - 2) When measuring the leakage, always use the 5 cm (2 in.) space cone with probe. Hold the probe perpendicular to the cabinet and door. Place the space cone of the probe on the door, cabinet, door seem, door viewing screen, the exhaust air vents and the suction air vents.
 - 3) Measuring should be in a counter-clockwise direction at a rate of 1 in./sec. If the leakage of the cabinet door seem is unknown, move the probe more slowly.
 - 4) When measuring near a corner of the door, keep the probe perpendicular to the areas making sure the probe end at the base of the cone does not get closer than 2 in. from any metal. If it does not, erroneous reading may result.



3. COMPONENT TEST PROCEDURE

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

1. High voltage transformer

- 1) Remove connections from the transformer terminals and check continuity.
- 2) Normal readings should be as follows :
 - Secondary winding ... Approx. $100\ \Omega \pm 10\%$
 - Filament winding ... Approx. $0\ \Omega$
 - Primary winding ... Approx. $1.2\ \Omega$

2. High voltage capacitor

- 1) Check continuity of capacitor with meter on the highest OHM scale.
- 2) A normal capacitor will show continuity for a short time, and then indicate $10M\Omega$ once the capacitor charged.
- 3) A shorted capacitor will show continuous continuity.
- 4) An open capacitor will show constant $10M\Omega$.
- 5) Resistance between each terminal and chassis should be infinite.

3. High voltage diode

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

4. Magnetron

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

- 1) Isolate magnetron from the circuit by disconnecting the leads.
- 2) A continuity check across magnetron filament terminals should indicate $0.1\ \Omega$ or less.
- 3) A continuity check between each filament terminal and magnetron case should read open.

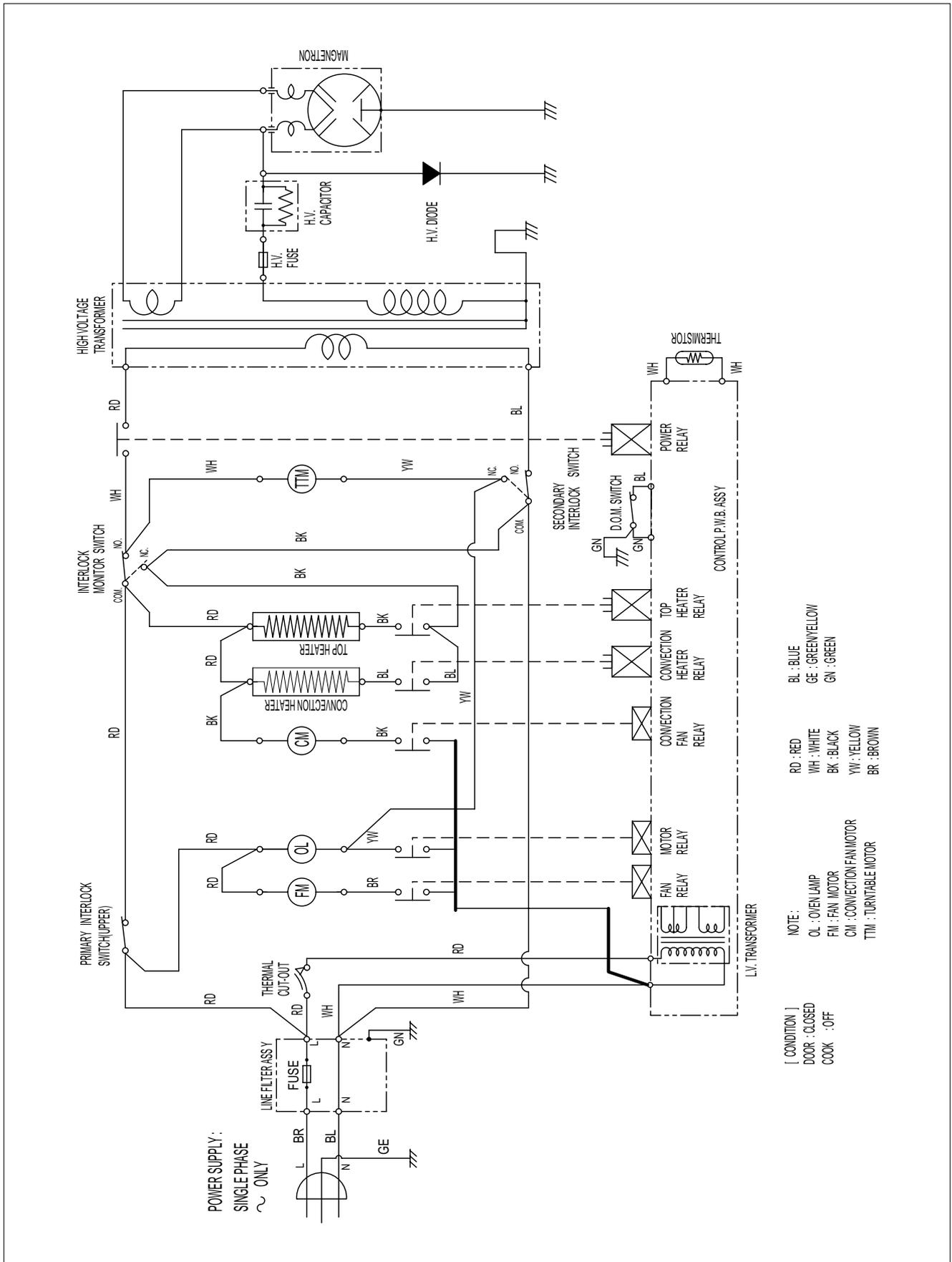
5. Fuse

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

4. COMPONENT ACTION

COOKING MODE		MAGNE- TRON	UPPER ELEMENT	LOWER ELEMENT	REAR ELEMENT	CONVEC- TION FAN
MANUAL MODE	M/W	●				
	GRILL-1		●			
	GRILL-2			●		
	GRILL-3		●	●		
	COMBI-1	●	●	●	●	●
	COMBI-2	●	●	●	●	●
	COMBI-3		●	●	●	●
	COMBI-4	●	●			
	COMBI-5	●	●	●		
	CONVECTION100~130				●	●
	CONVECTION140~150			●	●	●
	CONVECTION160~250		●	●	●	●
	ONE TOUCH	CAKE/BREAD	●	●	●	●
CRUSTY		●	●	●	●	●
AUTO MODE	ROAST BEEF	●	●	●	●	●
	ROAST CHICKEN	●	●	●	●	●
	ROAST PORK	●	●	●	●	●
	BAKED FISH	●	●	●	●	●
	BAKED POTATO	●	●	●	●	●
	BAKED POTATO	●	●	●	●	●
	ROAST POTATO	●	●	●	●	●
	FRESH VEGETABLES	●				
	FROZEN VEGETABLES	●				
	CASSEROLE	●				

10. WIRING DIAGRAM



11. EXPLODED VIEW AND PARTS LIST

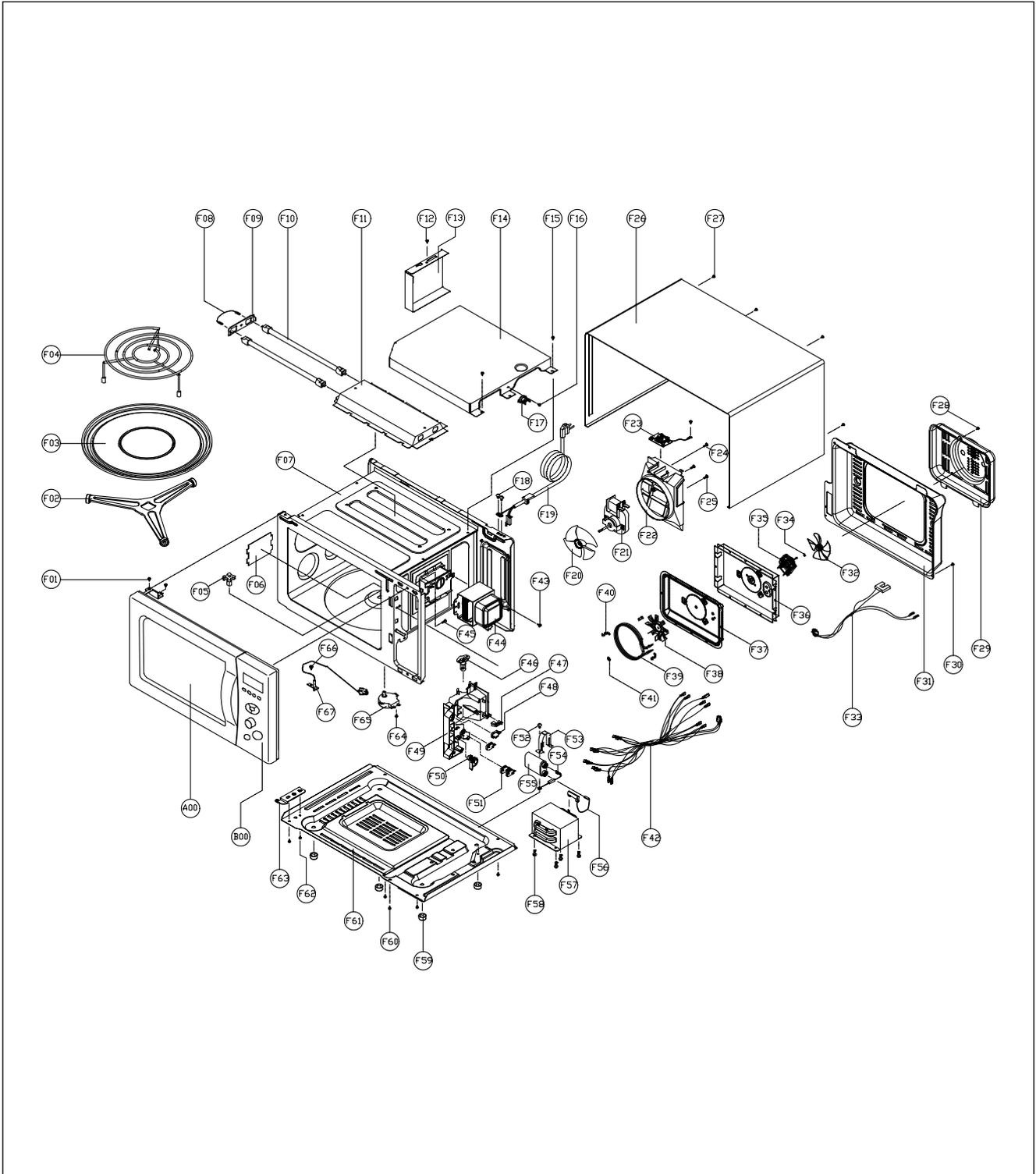
1. DOOR ASSEMBLY

Refer to 6. Disassembly and assembly.

2. CONTROL PANEL ASSEMBLY

Refer to 6. Disassembly and assembly.

3. TOTAL ASSEMBLY



✓ **Caution** : In this Manual, some parts can be changed for improving, their performance without notice in the parts list. So, if you need the latest parts information, please refer to PPL(Parts Price List) in Service Information Center (<http://svc.dwe.co.kr>).

NO	PART CODE	PART NAME	DESCRIPTION	Q'TY	NOTE
A00	3511714540	DOOR AS	KOC-922T9S	1	
B00	PKCPSWYQ00	CONTROL PANEL AS	KOC-922T9S	1	
	PKCPSWAS00		KOC-923T9S		
	PKCPSWYQ10		KOC-922T9R		
	PKCPSWAS10		KOC-923T9R		
F01	3516003700	SPECIAL SCREW	TT3 HEX 4*8 FLG MFZN	2	
F02	3512521000	GUIDE ROLLER AS	KOC-1BOKOS	1	
F03	3517205200	TRAY METAL	SPP T0.6	1	
F04	3517202611	TRAY RACK AS	KOC-961C0S 117MM	1	
F05	3517401900	COUPLER	PTFE	1	
F06	3511408300	COVER WAVE GUIDE	MICA T0.35	1	
F07	3516112320	CAVITY AS	KOC-924T0S	1	
F08	3512767000	HARNESS HEATER	KOC-1B0KOS	1	
F09	3510607700	BRACKET HEATER*T	SA1D-80 T0.5	1	
F10	3512803800	HEATER MIRACLON	115V 550W 270MM	2	
F11	3511407600	COVER HEATER*T	STS430 T0.5	1	
F12	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	1	
F13	3512520500	GUIDE AIR OUTLET	SA1D-80 T0.5	1	
F14	3513303000	INSULATOR HEATER*T	SECC T0.5	1	
F15	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	2	
F16	7121400611	SCREW TAPPING	T2S PAN 4*6 MFZN	1	
F17	3518906310	THERMOSTAT	OFF:100 ON:60 V #187	1	
F18	7112401011	SCREW TAPPING	T1 TRS 4*10 SE MFZN	2	
F19	35113A5QJ5	CORD POWER AS	3*1.5 80*80 120-RTML 1.0M	1	KOC-922T9S/923T9S
	35113A5QM5		3*1.0 80*80 120-RTML 1.4M		KOC-922T9R/923T9R
F20	3511800100	FAN	PP GF20	1	
F21	3963513010	MOTOR SHADED POLE	230V 25W MW15CA-B01	1	
F22	3512515300	GUIDE WIND	PP	1	
F23	3518605001	NOISE-FILTER	DWLF-M05	1	KOC-922T9S/923T9S
	3518605500		DWLF-M07		KOC-922T9R/923T9R
F24	7S312X40A1	SCREW SPECIAL	T1 TRS 4*10 SE MFZN	1	
F25	7121403011	SCREW TAPPING	T2S PAN 4*30 MFZN	2	
F26	3510803500	CABINET	SECC T0.6	1	
F27	7S312X40A1	SCREW SPECIAL	T1 TRS 4*10 SE MFZN	4	
F28	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	1	
F29	3511407300	COVER MOTOR*B	SA1D-80 T0.5	1	
F30	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	1	
F31	3511407900	COVER*B	SA1A-80 T0.5	1	
F32	3511800800	FAN	PP GF20	1	
F33	3512767600	HARNESS CONVECTION	KOC-924T0S	1	
F34	7402704600	RING C	CR-5 SK5	1	

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NO	PART CODE	PART NAME	DESCRIPTION	Q'TY	NOTE
F35	3963514300	MOTOR SHADED POLE	230V 50HZ MW10CA-T02	1	
F36	3513303400	INSULATOR HEATER*B	SBHG-1 T0.5	1	
F37	3511409800	COVER HEATER*B	SA1D-80 T0.5	1	
F38	3511800700	FAN CONVECTION	SA1D-80 T0.5	1	
F39	3512801800	HEATER	230V 1400W 1R18344	1	
F40	3513002300	HOLDER HEATER	SUS304 T0.5	3	
F41	7400104011	WASHER PLAIN	PW-1-4 MFZN	1	
F42	3512718320	HARNESS MAIN	KOC-924T0S	1	
F43	3516004000	SPECIAL SCREW	T2 BOLT FLANGE 5*12 DACR	1	
F44	3518002900	MAGNETRON	2M218J(F)P	1	
F45	7122401211	SCREW TAPPING	T2S TRS 4*12 MFZN	1	
F46	3513601600	LAMP	BL 240V 25W T25 C7A H187	1	
F47	3513700800	LEVER LOCK	POM	1	
F48	4415A17352	SW MICRO	VP-533A-OF SPNO #187 200	2	
F49	3513816000	LOCK	PP	1	
F50	3513702100	LEVER SW MICRO	POM, KOG-846T0S	1	
F51	4415A66910	SW MICRO	VP-531-OF/SZM-V16-FA-61	2	
F52	7S422X4081	SCREW SPECIAL	TT3 TRS 4*8 SE MFZN	1	
F53	3513003200	HOLDER HV CAPACITOR	SECC T0.6	1	
F54	3518400400	DIODE HV	HVB-1X-3AB 12KV #187	1	
F55	3518302300	CAPACITOR HV	2100VAC 1.10UE #187	1	
F56	3518701400	FUSE HV	5KV 0.7A	1	
F57	3518118910	TRANS HV	DW-N10S0-92T	1	
F58	7147401011	SCREW TAPPING	T2 FLG HEX 4*10 MFZN	4	
F59	3512101400	FOOT	DASE-310	4	
F60	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	5	
F61	3510313600	BASE	SBHG T0.8	1	
F62	7272400811	SCREW TAPTITE	TT3 TRS 4*8 MFZN	1	
F63	3515202800	STOPPER HINGE*U AS	KOR-121M0A	1	
F64	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	1	
F65	3966510200	MOTOR SYNCRO	230V 25W GM-16-24FD24	1	
F66	7112401011	SCREW TAPPING	T1 TRS 4X10 MFZN	1	
F67	3514801400	SENSOR TEMPERATURE	PTM-K312-D7	1	

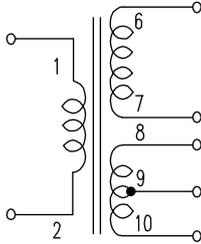
12. PRINTED CIRCUIT BOARD

CIRCUIT CHECK PROCEDURE

1. Low voltage transformer check

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

Measuring condition: Input voltage: 230V / Frequency: 50Hz



Terminal	Voltage(load)	Voltage(no load)
6-7	AC 17.0 V	AC 19.9 V
8-9	AC 1.3 V	AC 1.6 V
9-10	AC 1.3 V	AC 1.6 V

NOTE

1. Secondary side voltage of the low voltage transformer changes in proportion to fluctuation of power source voltage.
2. The allowable tolerance of the secondary voltage is within $\pm 5\%$ of nominal voltage.

2. Voltage Check

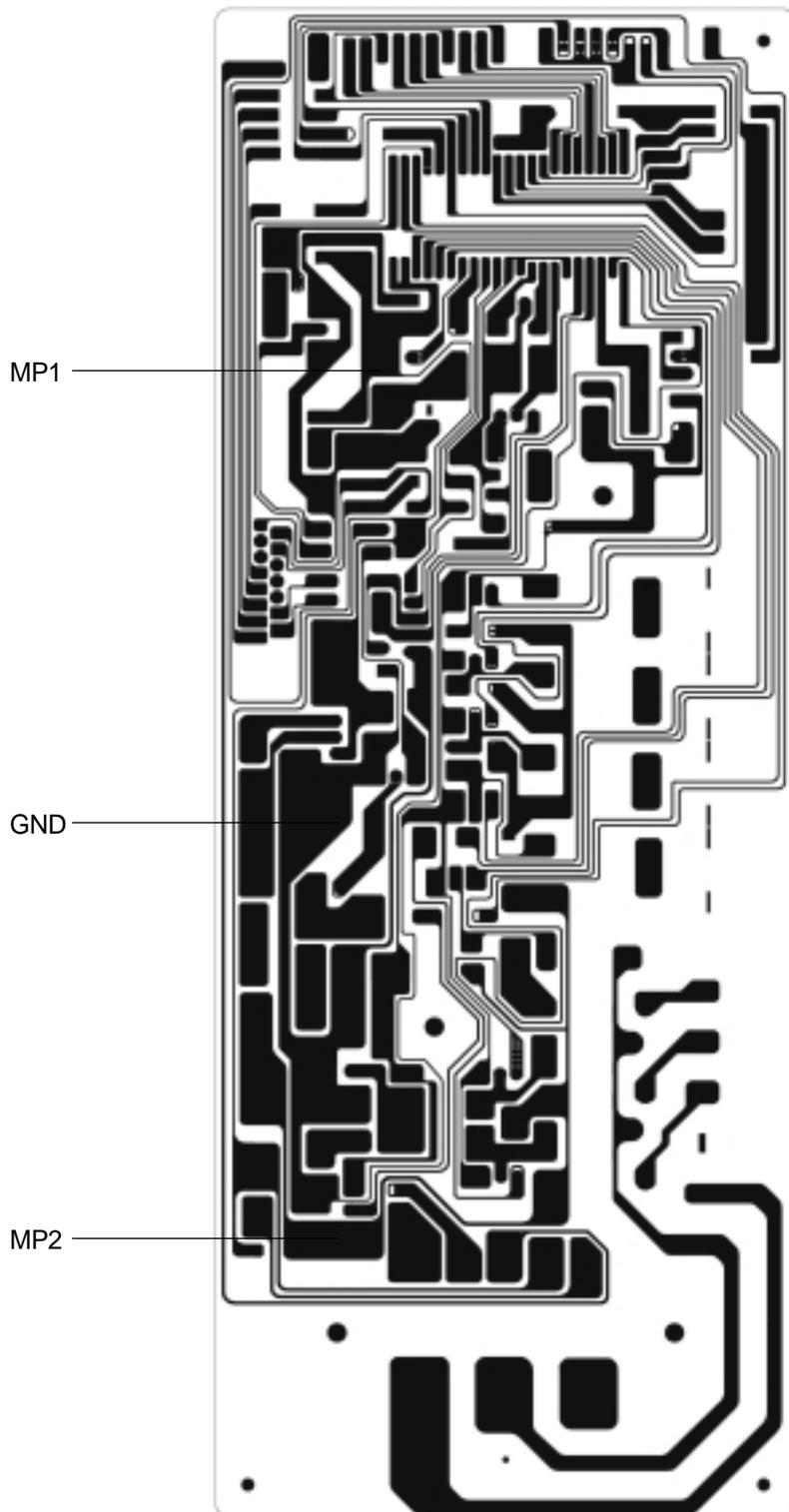
- Key check point

NO	CHECK POINT	REMARK
1	IC1 PIN 20, 21(KOC-922T9S/R) ----- IC1 PIN 26, 27(KOC-923T9S/R)	5VDC $\pm 5\%$
2	IC1 PIN 22 (KOC-922T9S/R) ----- IC1 PIN 28 (KOC-923T9S/R)	
3	IC1 PIN 8 OR 9	

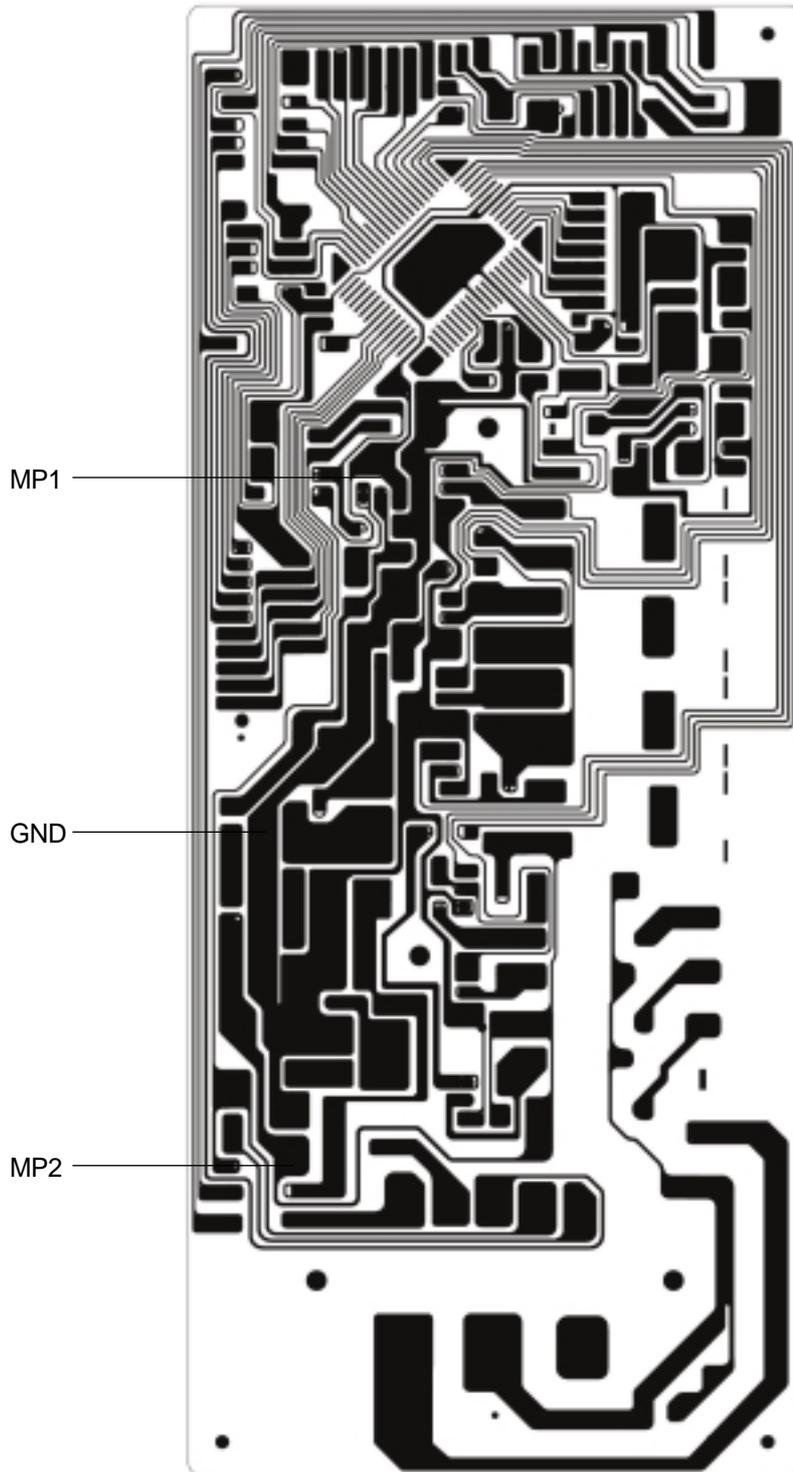
- Check method

NO	MEASURE POINT	WAVE FORM	REMEDY	REMARK
1	MP1	DC 5V $\pm 5\%$	Replace ZD2, EC1	NO LOAD
2	MP2	DC 24V $\pm 20\%$	Replace D17-D20, EC4(KOC-922T9S/R) ----- Replace D18-D21, EC4(KOC-923T9S/R)	NO LOAD

NOTE: Each measure point must be measured with GND points.



MEASURE POINT OF KOC-922T9S/R

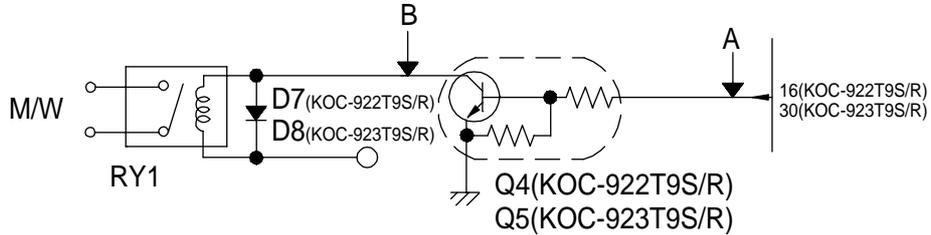


MEASURE POINT OF KOC-923T9S/R

3. Case of no microwave oscillation

1) When touching M/W button, oven lamp turns on and Fan motor and turntable rotate, and cook indicator in display comes on.

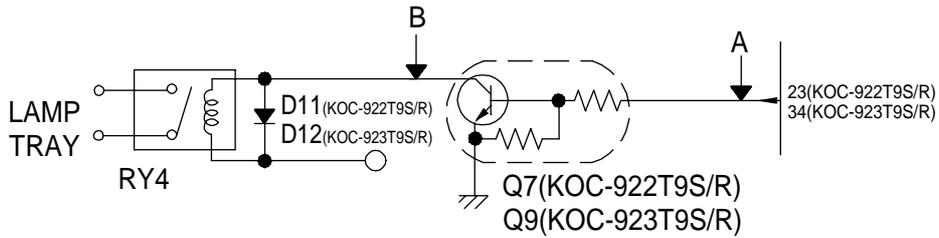
*Cause: **RELAY 1** does not operate.



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

2) When touching M/W button, oven lamp does not turn on and turntable motor does not rotate but cook indicator in display comes on.

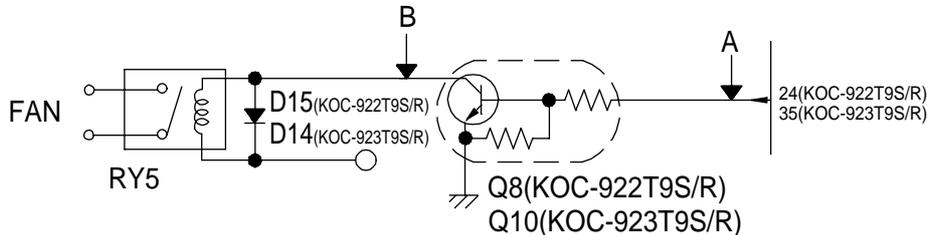
*Cause: **RELAY 1** does not operate.



STATE	POINT A	POINT B
RELAY 4 ON	+5V DC	GND
RELAY 4 OFF	GND	+24V DC

3) When touching M/W button, oven lamp turn on and turns on and fan motor does not rotate but cook indicator in display comes on.

*Cause: **RELAY 5** does not operate.

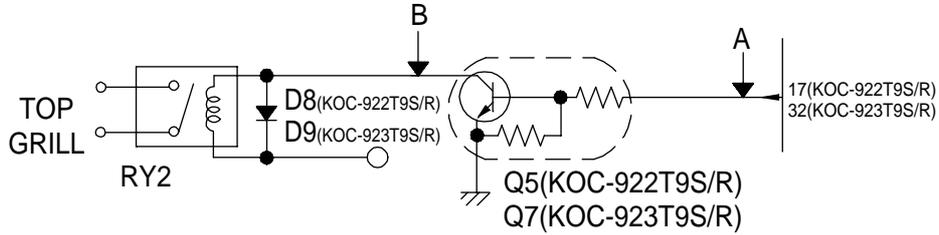


STATE	POINT A	POINT B
RELAY 5 ON	+5V DC	GND
RELAY 5 OFF	GND	+24V DC

4. Case of no heating of top grill

When touching GRILL or COMBI button, oven lamp turns on and fan motor and turntable rotate, and cook indicator in display comes on.

*Cause: **RELAY 2** does not operate.

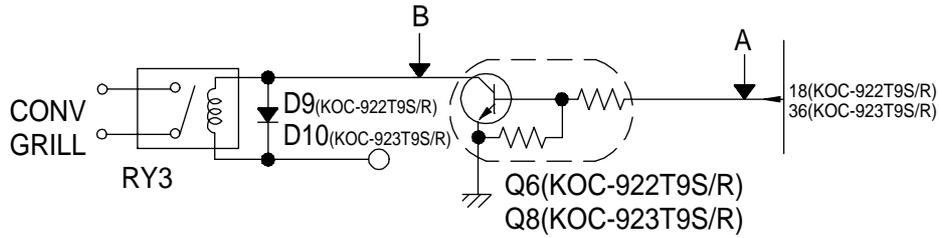


STATE	POINT A	POINT B
RELAY 2 ON	+5V DC	GND
RELAY 2 OFF	GND	+24V DC

5. Case of no heating of convection grill

When touching CONVECTION button, oven lamp turns on and Fan motor and turntable rotate and cook indicator in display comes on.

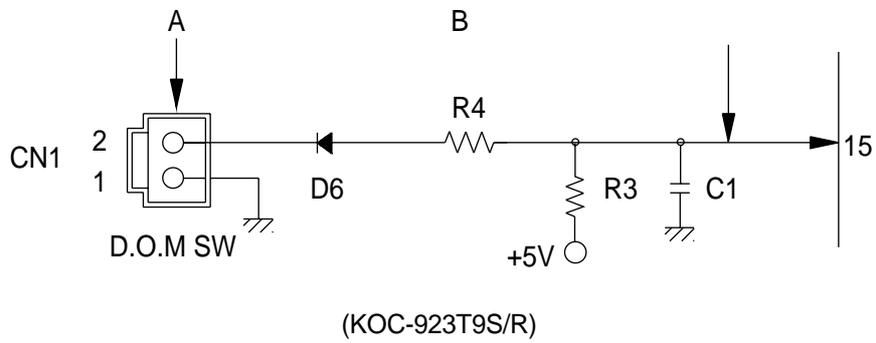
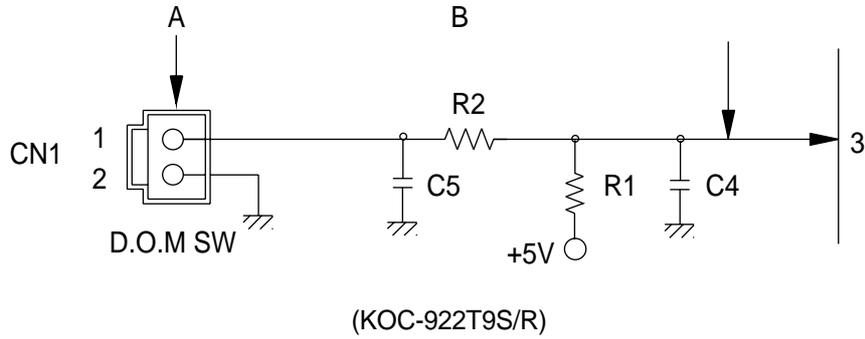
*Cause: **RELAY 3** does not operate.



STATE	POINT A	POINT B
RELAY 3 ON	+5V DC	GND
RELAY 3 OFF	GND	+24V DC

6. Case of no stopping of the count down timer

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

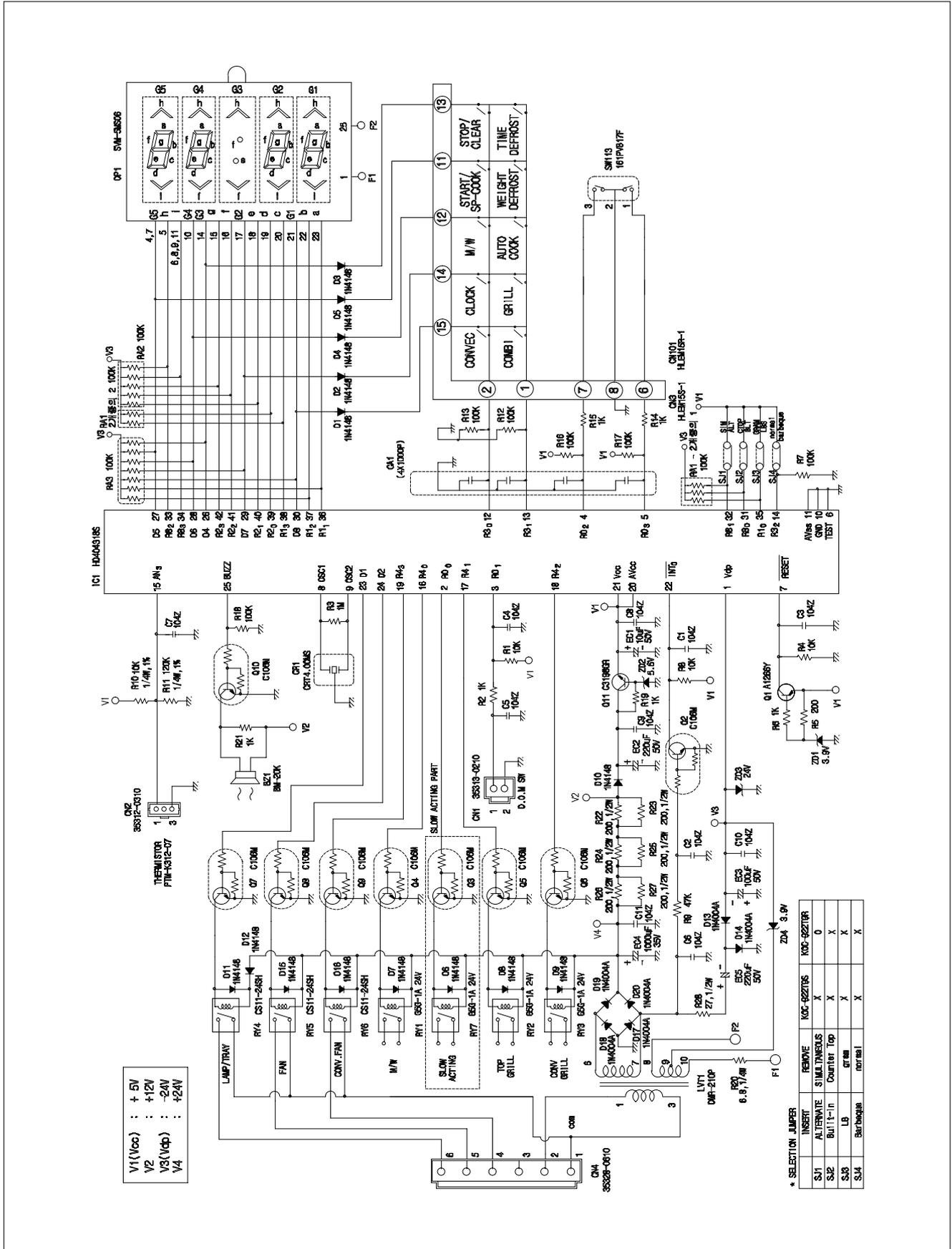


STATE \ POINT	A	B
DOOR OPEN	OPEN	+5V DC
DOOR CLOSED	CLOSE	GND

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

13. P.C.B. CIRCUIT DIAGRAM

KOC-922T9S/R



Caution : In this Service Manual, some parts can be changed for improving, their performance without notice in the parts list. So, if you need the latest parts information, please refer to PPL(Parts Price List) in Service Information Center (<http://svc.dwe.co.kr>).

PCB ASS'Y PART LIST

KOC-922T9S/R

NO	NAME	SYMBOL	SPECIFICATION	PART CODE	Q'TY	REMARK
1	BUZZER	BZ1	BM-20K	3515600100	1	
2	C ARRAY	CA1	5P(4) 102 M 50V	CN4XB-102M	1	
3	C CERA	C1~11	104 50V Z AXIAL	CCZF1H104Z	11	
4	C ELECTRO	EC1	50V RS 10uF	CEXE1H100A	1	
5	C ELECTRO	EC3	50V RSS 100uF	CEXF1H101V	1	
6	C ELECTRO	EC2,5	50V RSS 220uF	CEXF1H221V	2	
7	C ELECTRO	EC4	35V RSS 1000uF	CEXF1V102V	1	
8	CONNECTOR WAFER	CN1	35313-0210	30166M7020	1	
9	CONNECTOR WAFER	CN2	35312-0310	30166M5030	1	
10	CONNECTOR FILM	CN3	HLEM15S-1	4CW215RBD0	1	
11	CONNECTOR WAFER	CN4	35328-0610	4CW3061MX0	1	
12	DIODE	D1~5,7~12,D15,D16	1N4148	DZN4148---	13	
13	DIODE	D13,14,17~20	1N4004A	DZN4004A--	6	
14	DIODE ZENER	ZD1	UZ-3.9BSB	DZUZ3R9BSB	1	
15	DIODE ZENER	ZD2	UZ-5.6BSB	DZUZ5R6BSB	1	
16	DIODE ZENER	ZD3	UZ-24BSB	DZUZ24BSB-	1	
17	DIODE ZENER	ZD4	UZ-3.9BSB	DZUZ3R9BSB	1	
18	DISPLAY VFD	DP1	SVM-5MS06	DSVM5MS06-	1	
19	HOLDER VFD		PP	3513002000	1	
20	PCB MAIN	M244	MAIN PCB	3514323530	1	
21	R ARRAY	RA1	6P(5) 1/8 100K J	RA-86X104J	1	
22	R CARBON FILM	R28	1/2W 27 5%	RD-2Z270JS	1	
23	R CARBON FILM	R22~27	1/2W 200 5%	RD-2Z201JS	6	
24	R CARBON FILM	R20	1/4W 6.8 5%	RD-4Z689J-	1	
25	R CARBON FILM	R5	1/6W 200 5%	RD-AZ201J-	1	
26	R CARBON FILM	R2,6,14,15,19,21	1/6W 1K 5%	RD-AZ102J-	6	
27	R CARBON FILM	R1,4,8	1/6W 10K 5%	RD-AZ103J-	3	
28	R CARBON FILM	R9	1/6W 47K 5%	RD-AZ473J-	1	
29	R CARBON FILM	R7,12,13,16,17,18	1/6W 100K 5%	RD-AZ104J-	6	
30	R CARBON FILM	R3	1/6W 1M 5%	RD-AZ105J-	1	
31	R CARBON FILM	R10	1/4W 10K 1%	RN-4Z1002F	1	
32	R CARBON FILM	R11	1/4W 120K 1%	RN-4Z1203F	1	
33	RESONATOR CERA	CR1	CRT4.00MS	5P4R00MTS-	1	
34	IC MICOM	IC1	HD404318S	147S924T00	1	
35	TRANSISTOR	Q1	KTA-1266Y	TZTA1266Y-	1	
36	TRANSISTOR	Q2,Q4~10	KRC-106M	TZRC106M--	8	
37	TRANSISTOR	Q11	KTC-3198GR	TZTC3198GR	1	
38	TRANS POWER	LVT1	DMR-210FS	5EPV041410	1	
39	SW RELAY	RY1~3	G5G-1A 1C DC24V	5SC0101122	3	
40	SW RELAY	RY4~6	CS11-24SH 1C 1P	5SC0101129	3	
41	WIRE COPPER	J1,3,4,7~10,13,16,17	1/0.52 TIN COATING	85801052GY	10	7.5mm
42	WIRE COPPER	J11,12,14,15	1/0.52 TIN COATING	85801052GY	4	10mm
43	WIRE COPPER	J5,6	1/0.52 TIN COATING	85801052GY	2	12.5mm
44	WIRE FLAT	WF1	15/90 WH C	WSJ-159007	1	
45	SELECTION JUMPER	SJ1	1/0.52 TIN COATING	85801052GY	1	ONLY FOR KOC-922T9R

NO	NAME	SYMBOL	SPECIFICATION	PART CODE	Q'TY	REMARK
1	PCB SUB	M245	SUB PCB	3514323630	1	
2	CONNECTOR FILM	CN101	HLEM15R-1	4CW215RBD0	1	
3	SW TACT	SW101~108,110,111	KPT-1115AM	5S50101Z93	10	
4	SW ROTARY	SW109	SDB161PVB17F	5S10109002	1	
5	WIRE COPPER	J101~102	1/0.52 TIN COATING	85801052GY	2	7.5mm

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KOC-923T9S/R

NO	NAME	SYMBOL	SPECIFICATION	PART CODE	Q'TY	REMARK
1	BUZZER	BZ1	BM-20K	3515600100	1	
2	C ARRAY	CA1	5P(4) 102 M 50V	CN4XB-102M	1	
3	C CERA	C1~11	104 50V Z AXIAL	CCZF1H104Z	11	
4	C ELECTRO	EC1	50V RS 10uF	CEXE1H100A	1	
5	C ELECTRO	EC3	50V RSS 100uF	CEXF1H101V	1	
6	C ELECTRO	EC2,5	50V RSS 220uF	CEXF1H221V	2	
7	C ELECTRO	EC4	35V RSS 1000uF	CEXF1V102V	1	
8	CONNECTOR WAFER	CN1	35313-0210	30166M7020	1	
9	CONNECTOR WAFER	CN2	35312-0310	30166M5030	1	
10	CONNECTOR FILM	CN3	FCZ 254-11	441M367160	1	
11	CONNECTOR WAFER	CN4	35328-0610	4CW3061MX0	1	
12	DIODE	D1~5,D7~13,D16	1N4148	DZN4148---	14	
13	DIODE	D14,15,D17~D20	1N4004A	DZN4004A--	6	
14	DIODE ZENER	ZD1	UZ-3.3BSB	DZUZ3R3BSB	1	
15	DIODE ZENER	ZD2	UZ-5.6BSB	DZUZ5R6BSB	1	
16	DIODE ZENER	ZD3	UZ-24BSB	DZUZ24BSB-	1	
17	DIODE ZENER	ZD4	UZ-3.9BSB	DZUZ3R9BSB	1	
18	DISPLAY VFD	DP1	SVM-5MS06	DSVM5MS06-	1	
19	HOLDER VFD		PP	3513002000	1	
20	PCB MAIN	M248	MAIN PCB	3514323540	1	
21	R ARRAY	RA1,RA4	6P(5) 1/8 100K J	RA-86X104J	2	
22	R ARRAY	RA2,RA3	8P(7) 1/8 100K J	RA-88X104J	2	
23	R CARBON FILM	R23	1/2W 27 5%	RD-2Z270JS	1	
24	R CARBON FILM	R17~22	1/2W 200 5%	RD-2Z201JS	6	
25	R CARBON FILM	R24	1/4W 6.8 5%	RD-4Z689J-	1	
25	R CARBON FILM	R9	1/6W 200 5%	RD-AZ201J-	1	
26	R CARBON FILM	R4,8,14,16	1/6W 1K 5%	RD-AZ102J-	4	
27	R CARBON FILM	R3,7,13	1/6W 10K 5%	RD-AZ103J-	3	
28	R CARBON FILM	R12	1/6W 47K 5%	RD-AZ473J-	1	
29	R CARBON FILM	R1,2,10,15	1/6W 100K 5%	RD-AZ104J-	4	
30	R CARBON FILM	R11	1/6W 1M 5%	RD-AZ105J-	1	
31	R CARBON FILM	R5	1/4W 10K 1%	RN-4Z1002F	1	
32	R CARBON FILM	R6	1/4W 120K 1%	RN-4Z1203F	1	
33	RESONATOR CERA	CR1	CRT4.00MS	5P4R00MTS-	1	
34	IC MICOM	IC1	GMS81C2020A	150G2020A-	1	
35	TRANSISTOR	Q2	KTA-1266Y	TZTA1266Y-	1	
36	TRANSISTOR	Q1,Q5~11	KRC-106M	TZRC106M--	8	
37	TRANSISTOR	Q4	KTC-3198GR	TZTC3198GR	1	
38	TRANS POWER	LVT1	DMR-210FS	5EPV041410	1	
39	SW RELAY	RY1~3	G5G-1A 1C DC24V	5SC0101124	3	
40	SW RELAY	RY4~6	CS11-24SH 1C 1P	5SC0101129	3	
41	WIRE COPPER	J2,6,8,9,11,13	1/0.52 TIN COATING	85801052GY	6	7.5mm
42	WIRE COPPER	J3,4,5,10,12,14	1/0.52 TIN COATING	85801052GY	6	10mm
43	WIRE COPPER	J1,7	1/0.52 TIN COATING	85801052GY	1	15mm
44	SELECTION JUMPER	SJ1	1/0.53 TIN COATING	85801053GY	1	ONLY FOR KOC-923T9R

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686, AHYEON-DONG MAPO-GU SEOUL, KOREA
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