DAEWOO

# Service Manual

## Microwave Oven

**Model: KOG-84CR**

DAEWOO ELECTRONICS CO., LTD.

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

(a) Do not operate or allow the oven to be operated with the door open.

(b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary: (1) Interlock operation, (2) proper door closing, (3) seal and sealing surfaces (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.

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# PROPER USE AND SERVICE PRECAUTIONS

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

**1. For Safe Operation**

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

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

(Only a trained service personnel should make repairs.)

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

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

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

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

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

**2. Correct Installation**

1) This microwave oven weighs 18 kg(40lbs.) and must be placed on a horizontal base strong enough to support this weight.
2) The oven should be placed as far from high temperature source and vapour as possible.
3) The power supply cord is about 1.6m (5.25ft) long. Earthing is required when connecting the power source.
4) Power consumption of this oven is approximately 2.8 kw. It is suggested that the unit is operated on such power line(about 12 amperes) that can provide more power than this rating.
5) Object must not be placed on the top enclosure so as not to obstruct air flow for ventilation.

**CAUTION**

**MICROWAVE RADIATION**

PERSONNEL SHOULD NOT BE EXPOSED TO THE MICROWAVE ENERGY WHICH MAY RADIATE FROM THE MAGNETRON OR OTHER MICROWAVE GENERATING DEVICE IF IT IS IMPROPERLY USED OR CONNECTED. ALL INPUT AND OUTPUT MICROWAVE CONNECTIONS, WAVEGUIDE, FLANGES AND GASKETS MUST BE SECURE. NEVER OPERATE THE DEVICE WITHOUT A MICROWAVE ENERGY ABSORBING LOAD ATTACHED. NEVER LOOK INTO AN OPEN WAVEGUIDE OR ANTENNA WHILE THE DEVICE IS ENERGIZED

## IMPORTANT

The wires 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' or by earth symbol or 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 with terminal which is marked with the letter 'L' or coloured red.

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

# SPECIFICATIONS

| | | |
|---|---|---|
| Power Supply | | 230V~, 50Hz |
| Microwave | Power Consumption | 1450 W |
| | Output Power | 900W (IEC 705) |
| | Frequency | 2450 MHz |
| Grill power consumption | | 1400 W |
| Outside Dimensions (W X H X D) | | 501 X 319 X 389 mm (19.7 X 12.6 X 15.3 in.) |
| Cavity Dimensions (W X H X D) | | 310 X 229 X 330 mm (12.2 X 9.0X 13.0 in.) |
| Net Weight | | Approx. 18 kg (40 Ibs.) |
| Timer | | Digital times 99 min |
| Select Function | | Microwave/Grill/Combination |
| Microwave Power Level | | 5 stages |

** Specifications are subject to change without notice.*

# EXTERNAL VIEWS

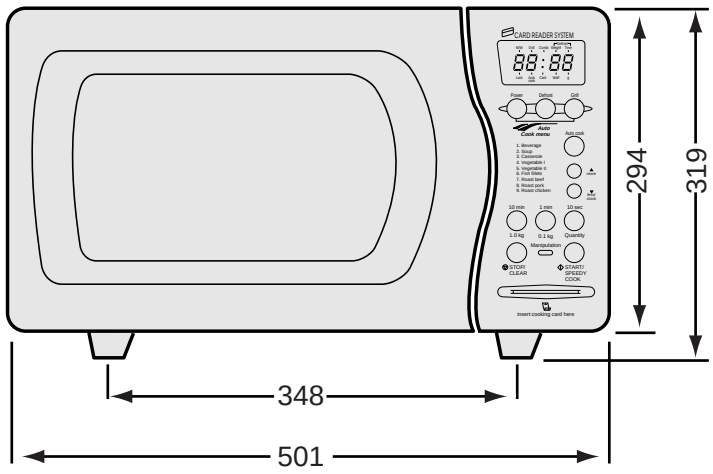



**FIG.1 FRONT VIEW**

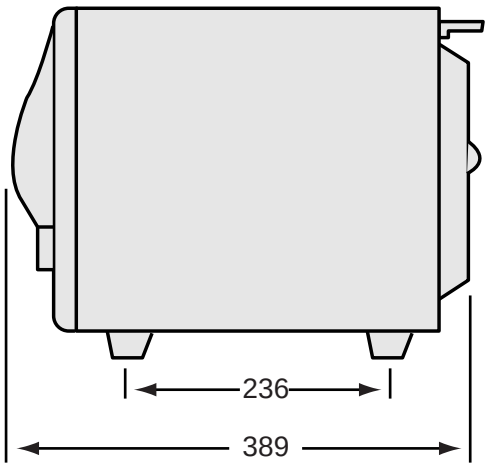
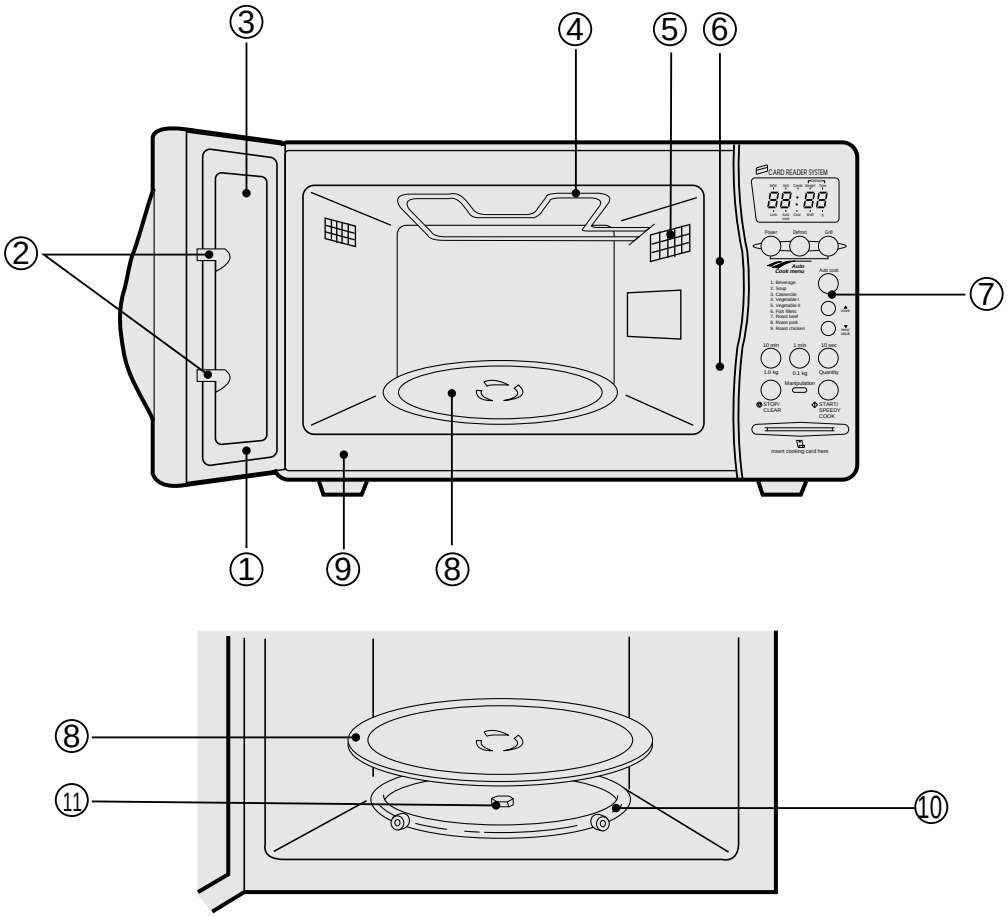



**FIG. 2 SIDE VIEW**

# NAMES AND FUNCTION OF PARTS







**① DOOR SEAL**
Door seal maintains the microwave within the oven cavity and prevents microwave leakage.

**② DOOR HOOK**
When door is closed, it will autoamtically lock shut. If door is opened while oven is operating, magnetron tube will immediately stop operating.

**③ DOOR SCREEN**
Allows viewing of food. Microwave cannot pass through perforations in screen.

**④ GRILL HEATER**
Turns on when grill and simultaneous cooking is selected.

**⑤ OVEN LAMP**
Automatically turns on during oven operating.

**⑥ SAFETY INTERLOCK SYSTEM**

**⑦ CONTROL PANEL**

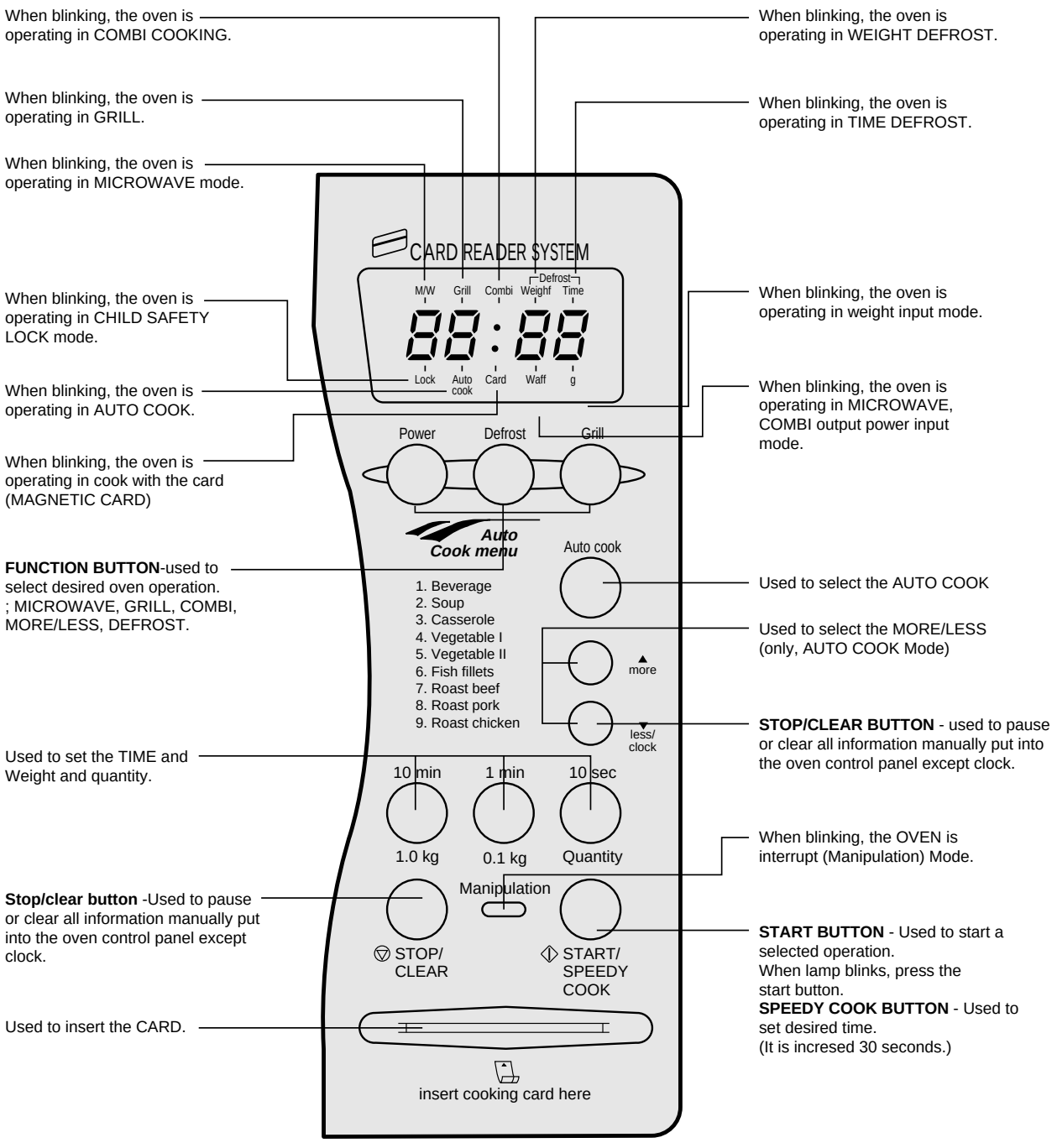
**⑧ GLASS TURN -TABLE TRAY**
Rotates during cooking and ensure even distribution of Microwaves. It can also be used as a cooking utensil.

**⑨ OVEN FRONT PLATE**

**⑩ ROLLER GUIDE**
This must be always used for cooking together with the glass turn-table tray. Use a mild detergent, water and a soft cloth to clean the roller guide.

**⑪ COUPLER**
This fits over the shaft in the center of the oven's cavity floor.
This is to remain in the oven for all cooking.

# CONTROL PANEL



# OPERATION

## TO STOP THE OVEN WHILE THE OVEN IS OPERATING

**1. Press ⓥ (STOP/CLEAR) button.**

- You can restart the oven by pressing ⓘ (START) button.
- Press ⓥ once more to erase all instruction except clock.

**2. Open the door**

- You can restart the oven by closing the door and pressing ⓘ button.

**NOTE** : Ovne stops operating when door is opened.

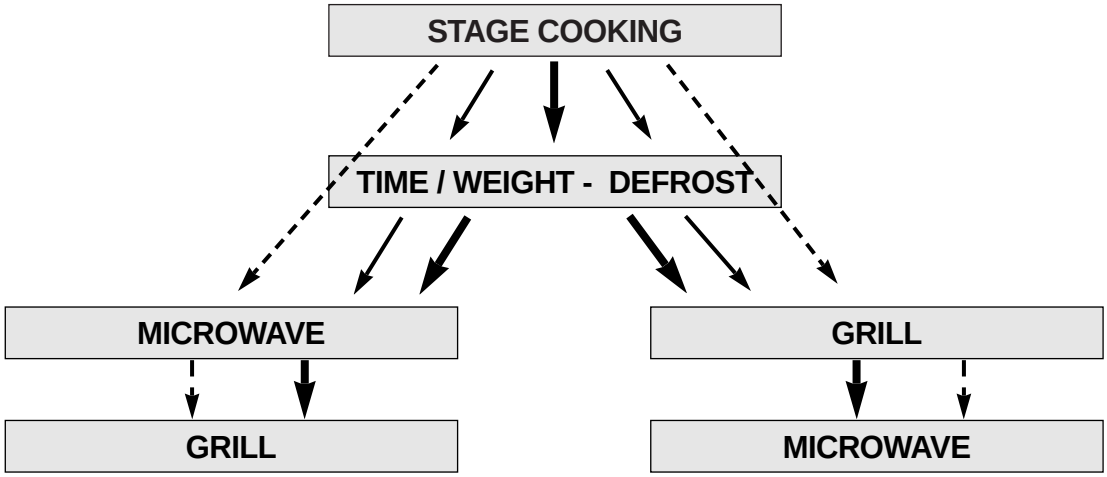
## ERASING INSTRUCTIONS

- Press ⓥ (STOP/CLEAR) button to erase all instructions you set previously.
- Opening the oven door during cooking dose not erase cooking instruction.
- If you press twice ⓥ button during operation, the cooking instruction is all erased.

# PROGRAMMING COMBINATIONS

**STAGE COMBINATIONS**

This oven has the ability to be programmed to do up to three consecutive functions. These combinations are given below and either the complete program or part of it can be used.



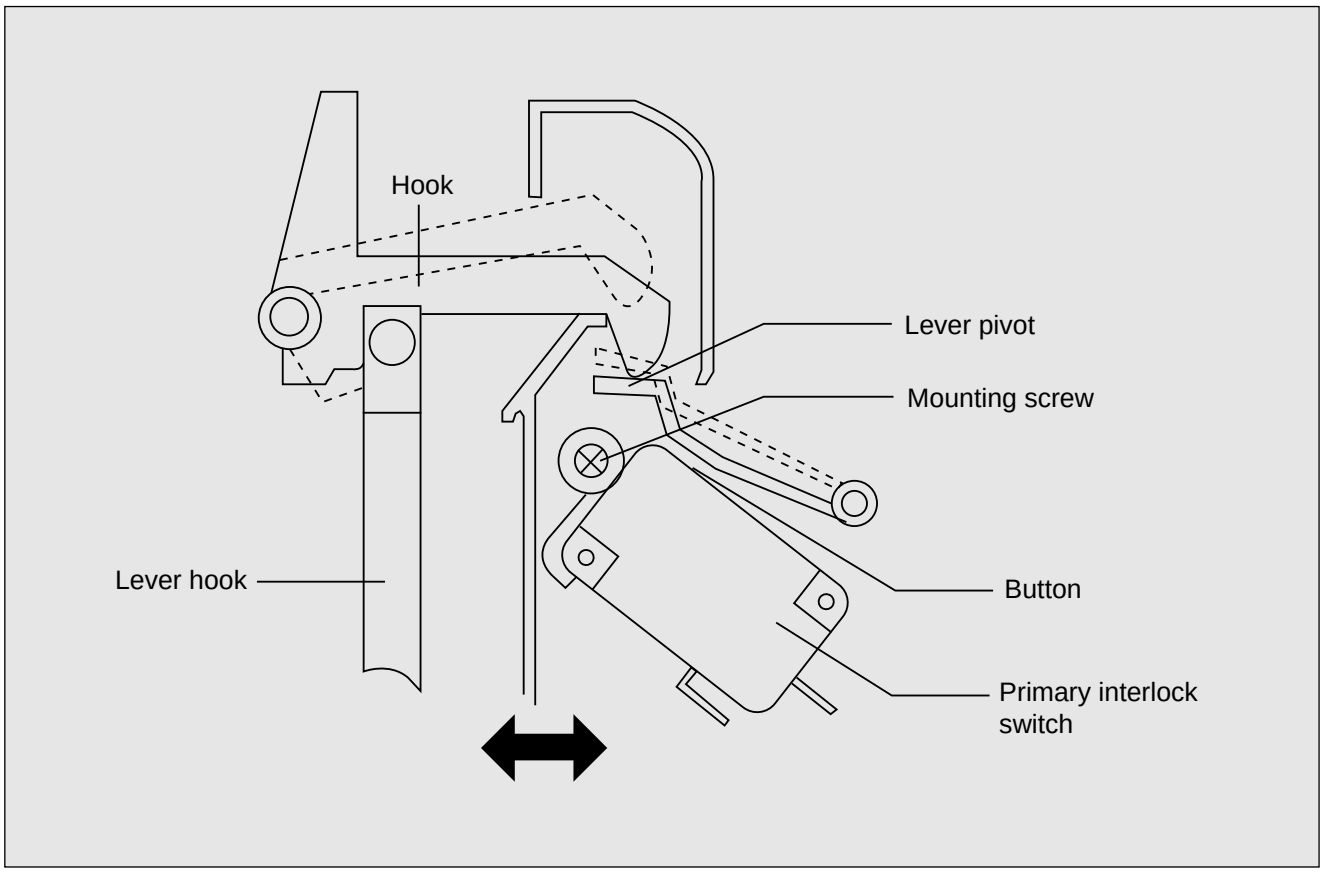

* When you set stage mode, indicator is lighted only setting.
* When you press START button, all indicators of setted functions are lighted, and indicator of operating function is blinking.

# INTERLOCK MECHANISM FUNCTIONS AND ADJUSTMENTS

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.

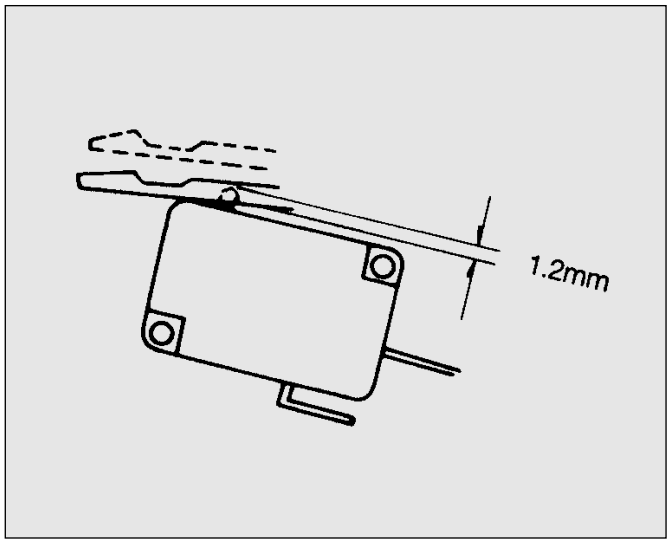
### (1) Primary interlock switch

When the door is closed, the hook will lock the oven door.
If the door is not closed properly, the oven will not operate.
When the door is closed, the hook pushes the lever downward.
The lever presses the button of the primary interlock switch to bring it under 'ON' condition.



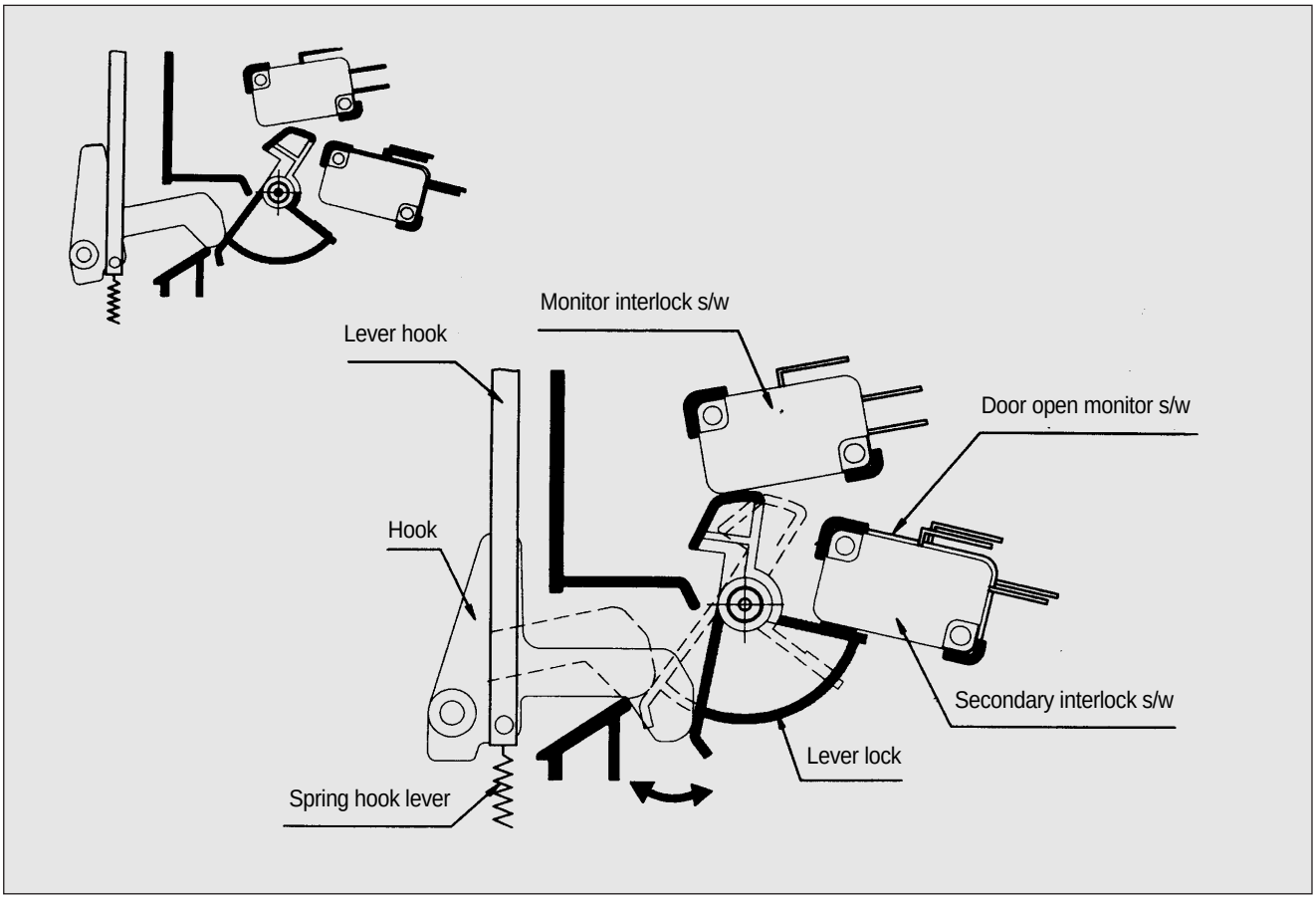

### Adjustment 1

When the door is closed, the switch button is pushed by the hook.
The movement of the switch button should exceed 1.2 mm measured at the top of the button.



## (2) Secondary interlock switch, monitor interlock switch and D.O.M switch

When the door is closed, the hook pushes the lever lock forward, and the lever presses the button of the interlock monitor switch to bring it under 'OFF' condition. Simultaneously, the lever lock presses the button on the secondary interlock switch and D.O.M switch to bring it under 'ON' condition.




## Adjustment 2

Interlock monitor switch
When the door is closed, the monitor switch should be opened before other switches closed.
When the door is opened, the monitor switch should be closed after other switches opened.

Secondary interlock switch and D.O.M switch
The movement of the switch button should exceed 1.2mm measured at the top of the button.

## Adjustment step:

a) Loosen the two mounting screws.
b) Adjust the interlock switch assembly position.
c) Confirm the gap(1.2mm) described above.
d) Make sure that the latch lever moves smoothly after adjustment is completed
e) Completely tighten the two mounting screws.

# PRECAUTIONS FOR DISASSEMBLY AND REPAIR

- 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) Warning about the electric charge in the high voltage capacitor. When inspecting and repairing the high voltage side, always short the capacitor terminals and make sure of discharge.

### 1. Check the earthing.

Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when earthed. It is imperative, therefore, to makes sure it is earthed properly before begining repair work.

### 2. Warning about the electric charge in the high voltage capacitor. (Refer to Fig. 1)

For about 30 seconds after the operation stops, 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 screw driver to discharge.

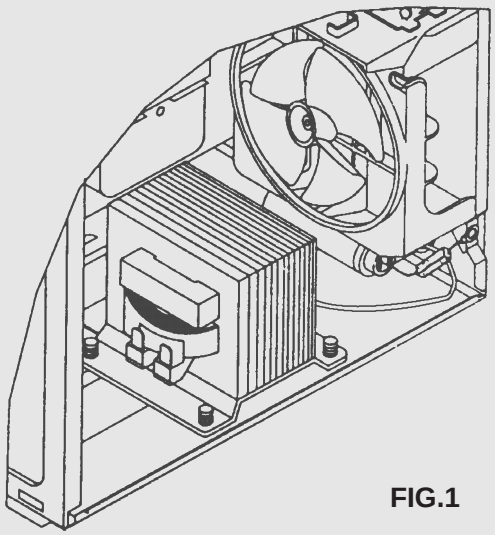


FIG.1

(4) When the fuse(normal blow type) is blown out due to the operation of the monitor switch; replace primary, secondary interlock switch and monitor switch.
Refer 18~19 page for the necessary adjustment.

(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 repairing the magnetron.

**WARNING**: When servicing the appliance, care is required when touching or replacing high potential parts due to electrical shock or exposure of microwave energy. These parts are as follows-H.V. transformer, Magnetron, H.V. Capacitor, H.V. Diode.

# DISASSEMBLY AND ASSEMBLY

## 1. To remove cabinet (Refer to Fig. 2)

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

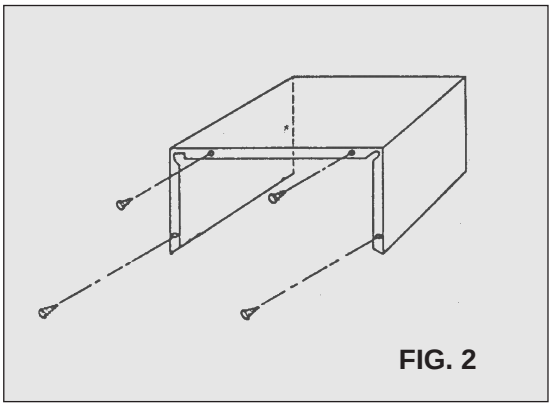
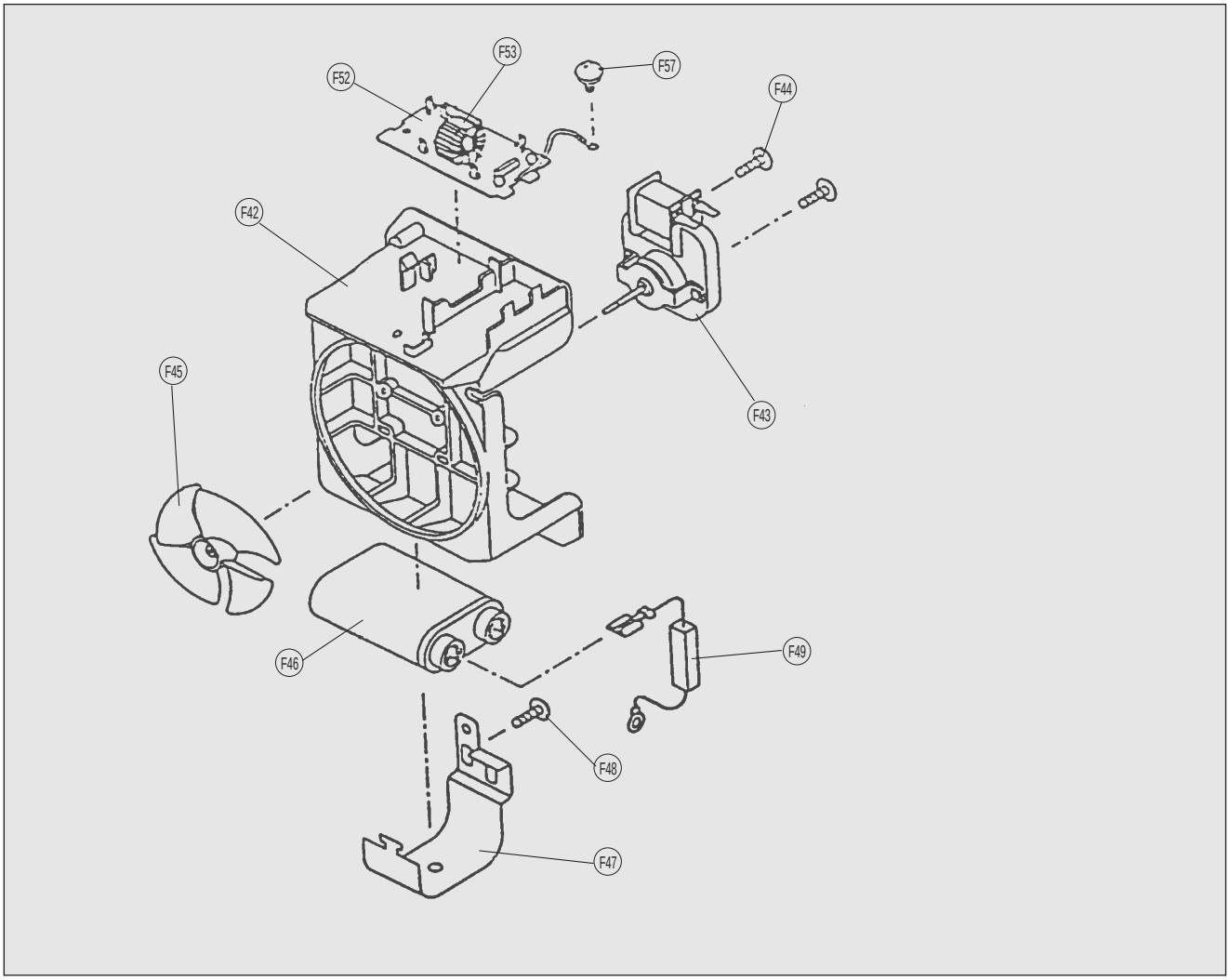


FIG. 2

## 2. To remove parts of guide wind assembly (Refer to Fig.3)

1) Release the earth screw (F57).
2) Remove the noise-filter (F52) to the guide wind (F42).
3) Pull the fan (F45) to the motor shaft.
4) Release two screws (F44) Which secure the motor shaded pole (F43).
5) Remove the motor shaded pole.
6) Release a screw (F48) Which secure the holder capacitor (F47).
7) Remove the holder capacitor and capacitor (F46) to the guide wind.
8) Remove the diode H.V (F49).
9) Reverse the above steps for reassembly.



### 3. To remove lamp (Refer to Fig. 4)

1) Remove a screw (F37) holding lamp (F36) to the guide air (F34).
2) Remove the lamp.
3) Reverse the above steps for reassembly.

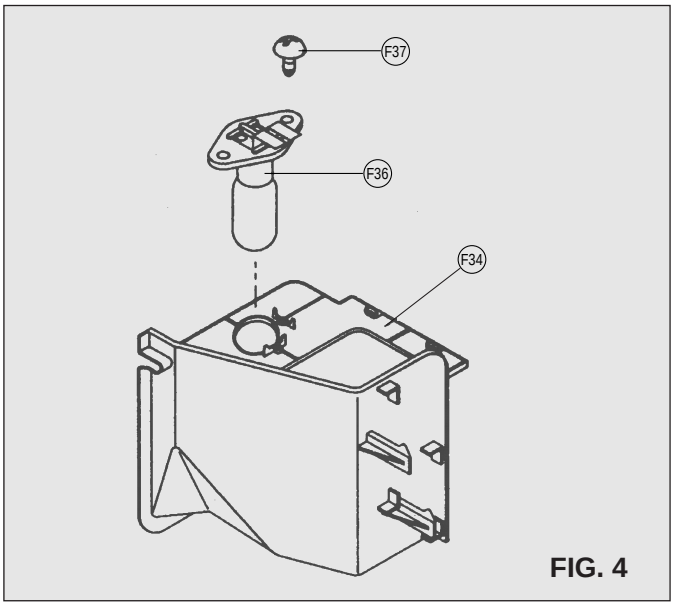


FIG. 4

### 4. To remove H.V. Transformer (Refer to Fig. 5)

1) Remove four screws (F22) which secure the H.V. Transformer bracket to the base plate.
2) Remove the H.V. Transformer (F21) .

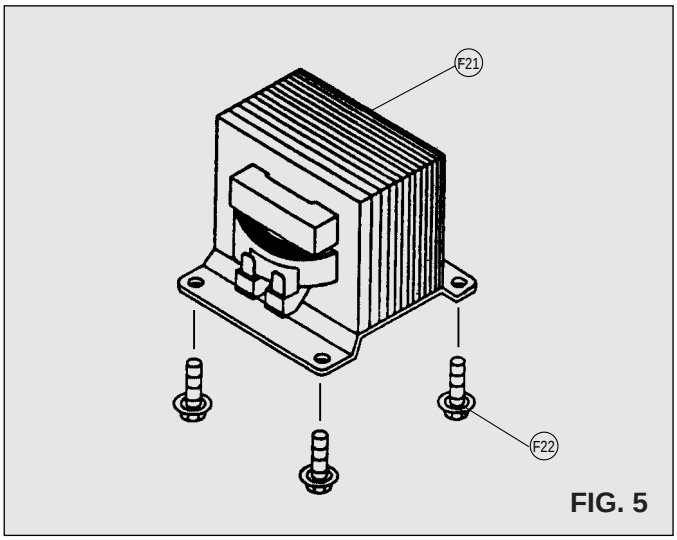
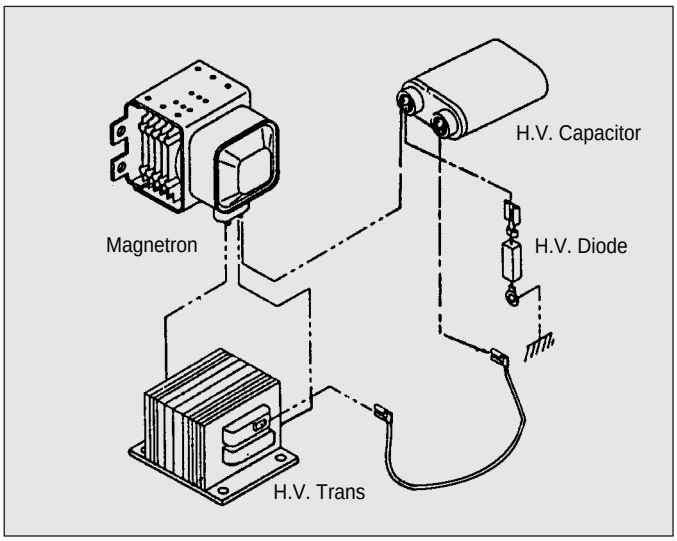


FIG. 5

High voltage circuit wiring



## 5. To remove magnetron and magnetron thermostat (Refer to Fig. 6)

1) Remove two secrews (F26) which secure the thermostat (F25).
2) Remove the thermostat.
3) Remove three screws (F24) which secure the magnetron (F23).
4) Remove the magnetron.
5) Reverse the above steps for reassembly.

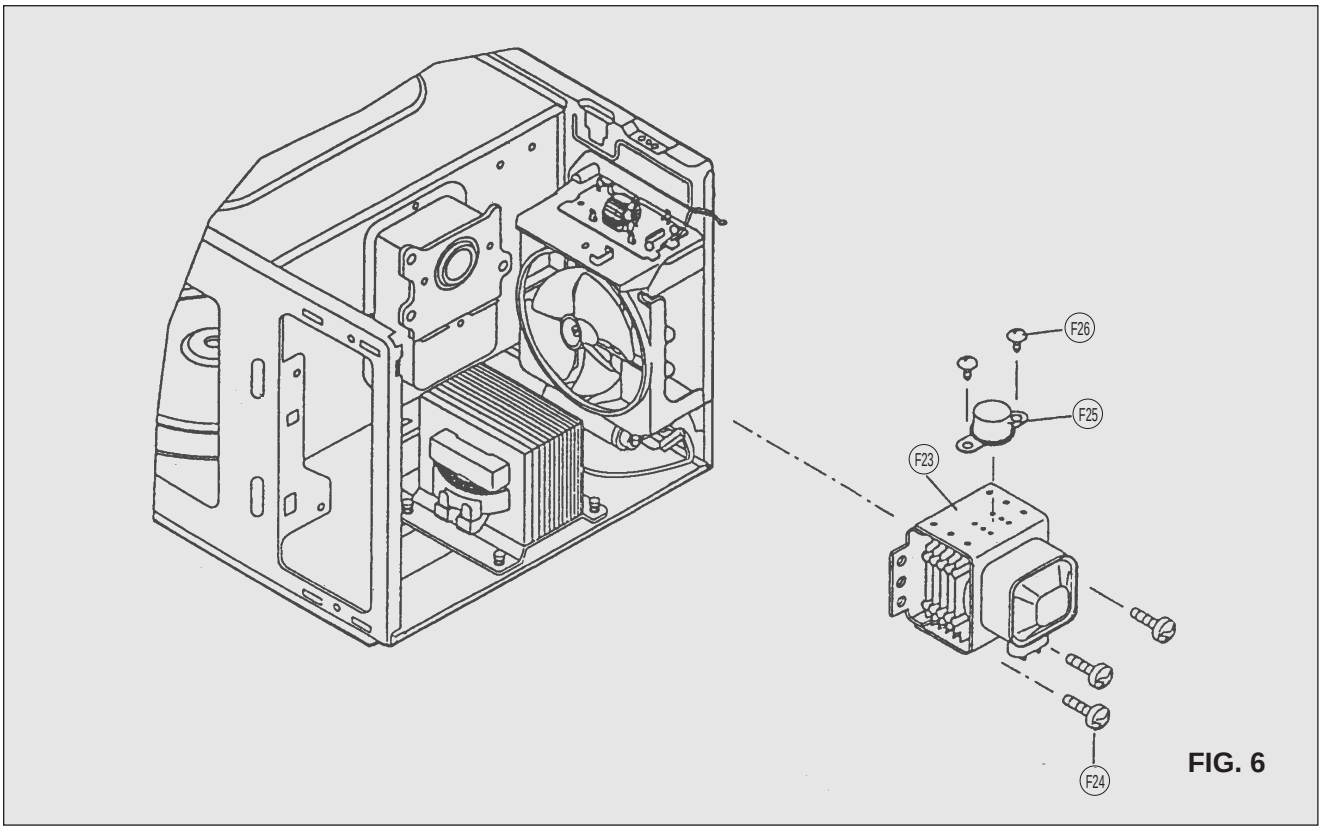
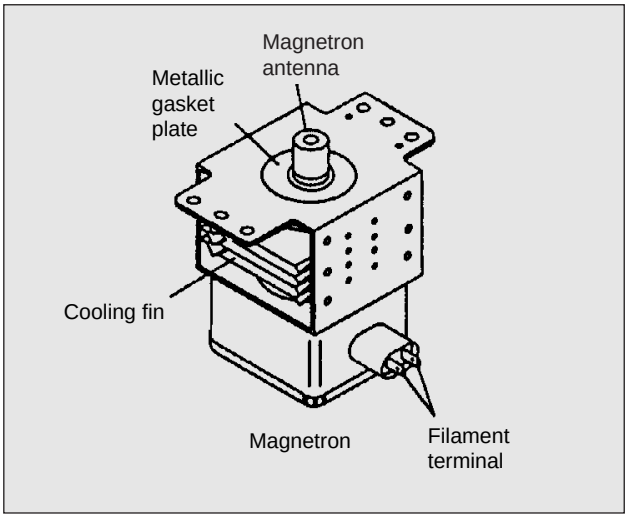
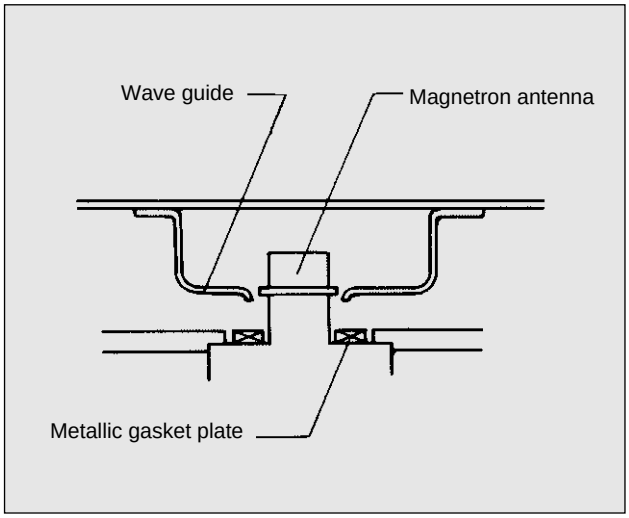



FIG. 6

**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 4mW/cm$^2$ for a fully assembled oven with door normally closed.



## 6. To remove parts of control panel assembly (Refer to Fig. 7,8)

1) Remove a screw holding control panel assembly to the oven front plate. At the same time, draw forward the control panel assembly from oven front plate.
2) Remove four screws ⑨ which secure the PCB main assembly ⑧ to control panel ①.
3) Remove seven screws ⑦ which secure the PCB sub assembly ⑥ to control panel ①.
4) Remove button function ③ ④ ⑤, window display ②, from the control panel ①.
5) Remove two screws ⑬ which secure the switch card reader assembly ⑩ ⑪ ⑫.
6) Remove two screws ⑪ which secure the switch card reader ⑩.
7) Reverse the above steps for reassembly.

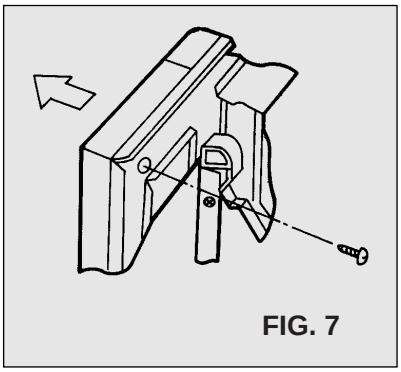


FIG. 7

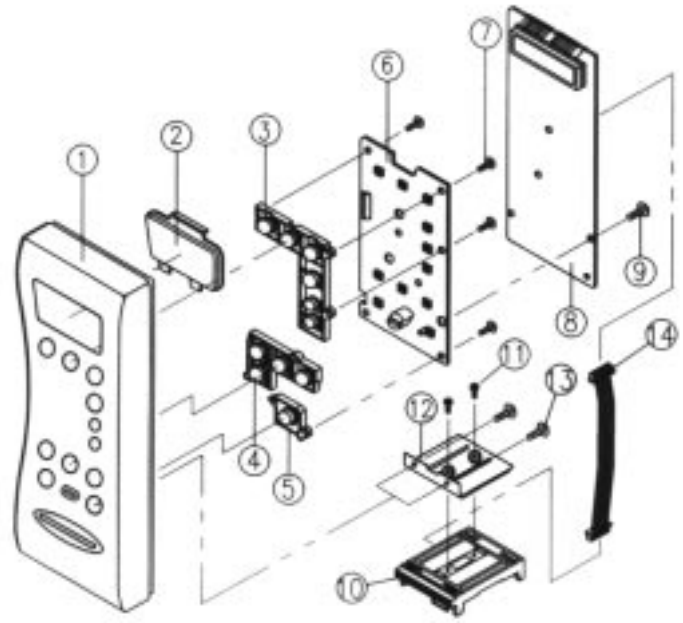



FIG. 8

| REF.NO. | PART CODE | PART NAME | DESCRIPTION | Q'TY | REMARK |
|---|---|---|---|---|---|
| 1 | 3516706670 | CONTROL-PANEL | ABS | 1 | |
| 2 | 3515500700 | WINDOW DISPLAY | PMMA | 1 | |
| 3 | 3516906600 | BUTTON FUNCTION | ABS | 1 | |
| 4 | 3516906700 | BUTTON FUNCTION | ABS | 1 | |
| 5 | 3516906500 | BUTTON FUNCTION | ABS | 1 | |
| 6 | 3514317000 | PCB SUB AS | KOG-846A0S | 1 | |
| 7 | 7621301011 | SCREW TAPPING | T2S PAN 3X10 PW MFZN | 7 | |
| 8 | 3514316900 | PCB MAIN AS | KOG-846A0S | 1 | |
| 9 | 7S341W40B1 | SCREW TAPPING | T2S PAN 4X12 PW SE MFZN | 4 | |
| 10 | 3518570700 | SWITCH CARD READER | KDR-3112B | 1 | |
| 11 | 7002300613 | SCREW MACHINE | TRS 3X6 MFCR | 1 | |
| 12 | 3510606200 | BRACKET CARD READER | SECC T0.8 | 1 | |
| 13 | 7S341W40B1 | SCREW TAPPING | T2S PAN 4X12 PW SE MFZN | 2 | |
| 14 | 3512780700 | HARNESS PCB | KOG-846A0S | 1 | |

## 7. To remove door assembly (Refer to Fig. 9)

1) Remove two bolts (F19) and two nuts (F20) which secure to hinge.
2) Remove door assembly (A00).
3) Remove door above for reassembly taking case to replace fixing glue.

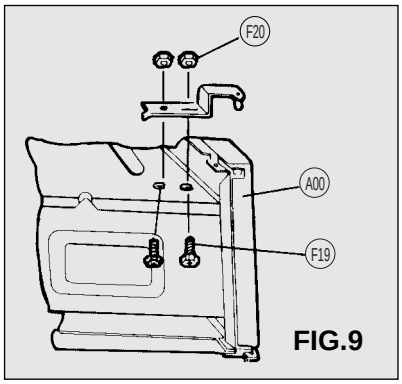


FIG.9

## 8. To remove door parts (Refer to Fig. 10)

1) Remove the frame door (A9) and barrier-screen (A8).
2) Remove the absorber microwave (A7).
3) Pull the two fixture hook (A5).
4) Remove the spring hook (A6).
5) Remove two hooks (A3), and lever hook (A4).

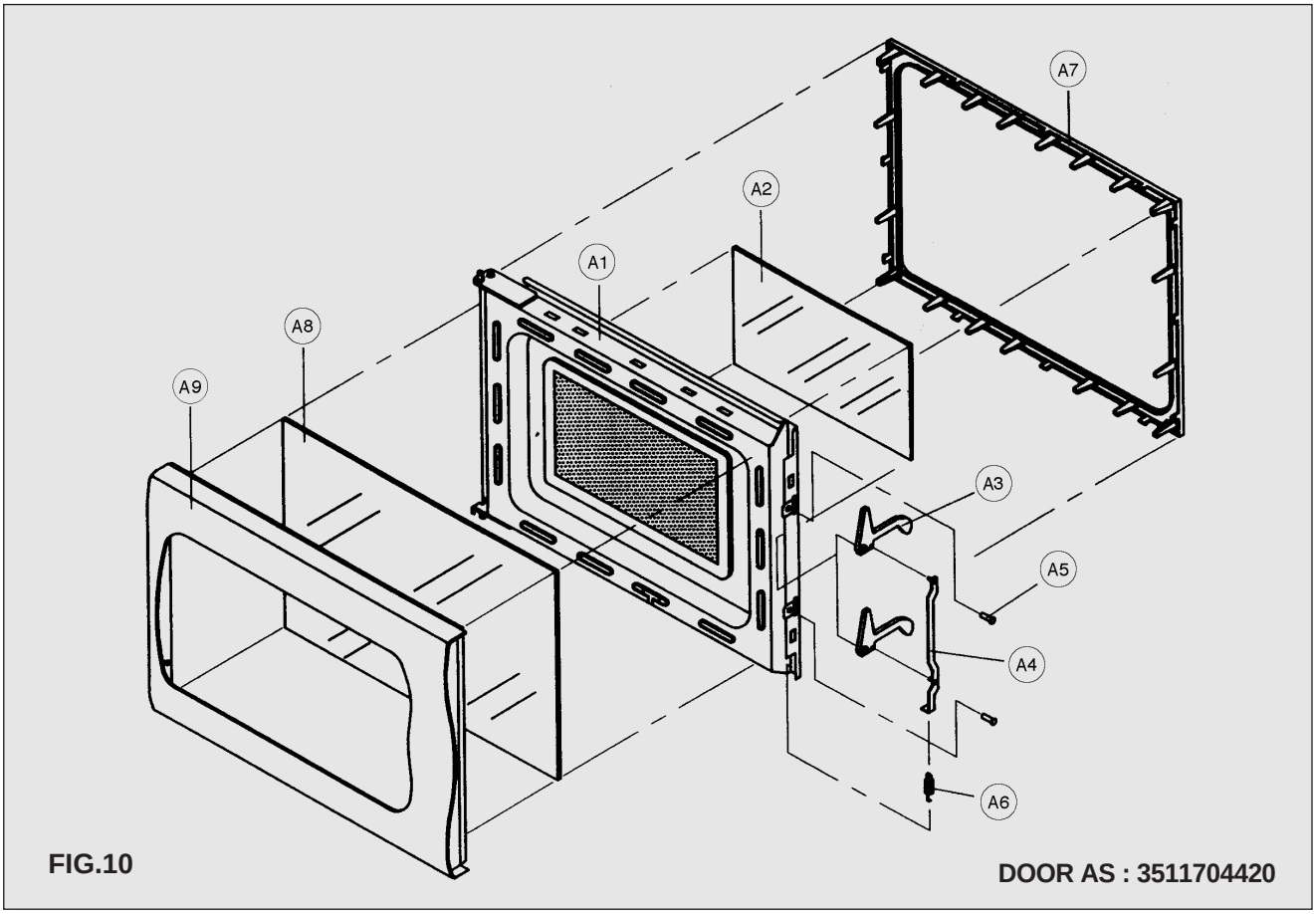
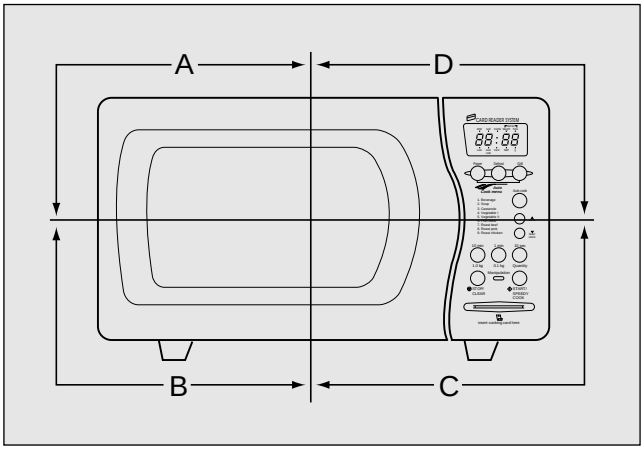


FIG.10

DOOR AS : 3511704420

| REF.NO. | PART CODE | PART NAME | DESCRIPTION | Q'TY | REMARK |
|---|---|---|---|---|---|
| A1 | 3511704600 | DOOR PAINTING AS | KOG-840KS | 1 | |
| A2 | 3517001800 | BARRIER-SCREEN *I | TEMPERED GLASS 3.2T | 1 | |
| A3 | 3513100600 | HOOK | POM | 2 | |
| A4 | 4413A44001 | LEVER HOOK AS | KOR-640 | 1 | |
| A5 | 4413A40052 | FIXTURE HOOK | SWRM3 Ø5.5XL12.5 | 2 | |
| A6 | 441G448071 | SPRING HOOK | SWPA80 | 1 | |
| A7 | 3510100300 | ABSORBER MICROWAVE | PAI+FERRITE | 1 | |
| A8 | 3517003600 | BARRIER-SCREEN *O | GLASS 3.0T | 1 | |
| A9 | 3512203000 | FRAME DOOR | ABS | 1 | |

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

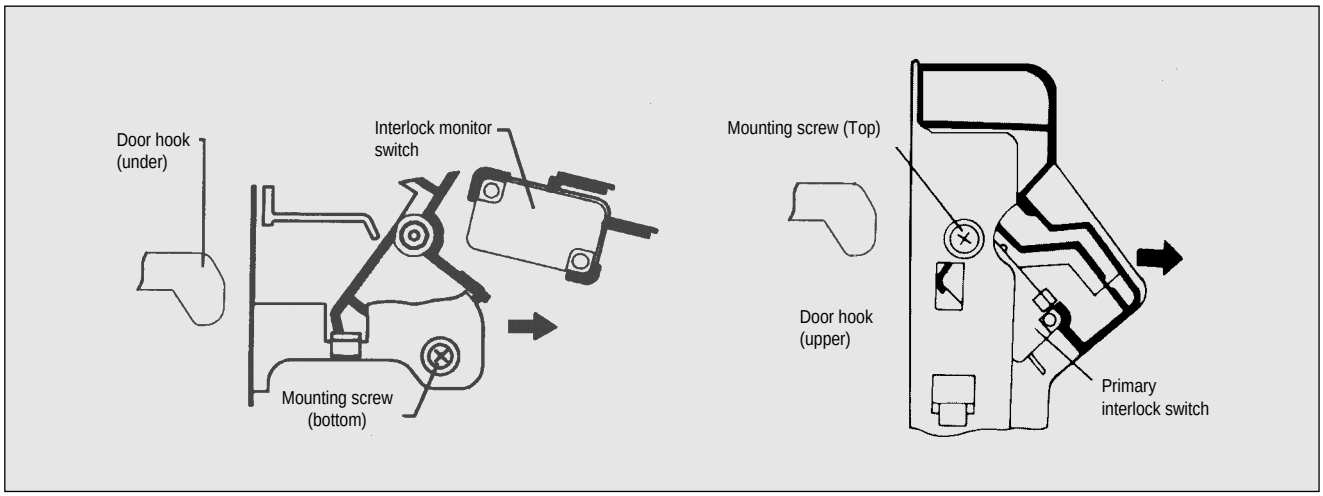



(1) To reduce gap located on part 'A'.
1) Loosen a Hex Bolt on top door hinge, then push the door to contact the door seal to oven front surface.
2) Tighten a Hex Bolt.

(2) To reduce gap located on part 'B'.
1) Loosen a Hex Bolt on bottom hingle, then push the door to contact the door seal to oven front surface.
2) Tighten a Hex Bolt.

(3) To reduce gap located on part 'C'
1) Remove the cabinet.
2) Loosen a screw on interlock switch assembly located bottom of oven body.
3) Draw the interlock switch assembly inward as possible to engage with hook on the door bottom.
4) Tighten a screw.

(4) To reduce gap located on part 'D'.
1) Remove the cabinet.
2) Loosen a screw on interlock switch assembly located top of oven body.
3) and (4) are same as step (3).




**NOTE** : Small gap may be acceptable if the microwave leakage does not exceed 1mW/cm$^2$.

**NOTE** : The door on a microwave oven is designed to act as an electronic seal preventing the leakage of microwave energy from the oven cavity during the cook cycle, This function does not require that the door be air-tight, moisture (condensation) - tight or light-tight. Therefore, the occasional appearance of moisture, light or the sensing of gentle warm air movement around the oven door is not abnormal and do not of themselves, indicate a leakage of microwave energy from the oven cavity. If such were the case, your oven could not be equipped with a vent, the very purpose of which is to exhaust the vapor-laden air from the oven cavity.

## 10. To remove tray motor (Refer to Fig. 11)

1) Cut the tray motor cover parts from the base plate (Refer to Fig 11, 12).
2) Remove the tray motor cover.
3) Remove two screws (F12) which secure the tray motor (F11) to tray motor bracket.
4) Remove the tray motor.

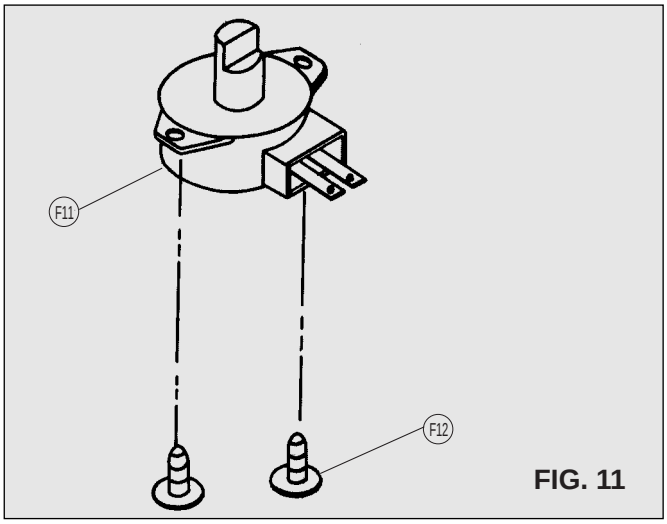



**FIG. 11**

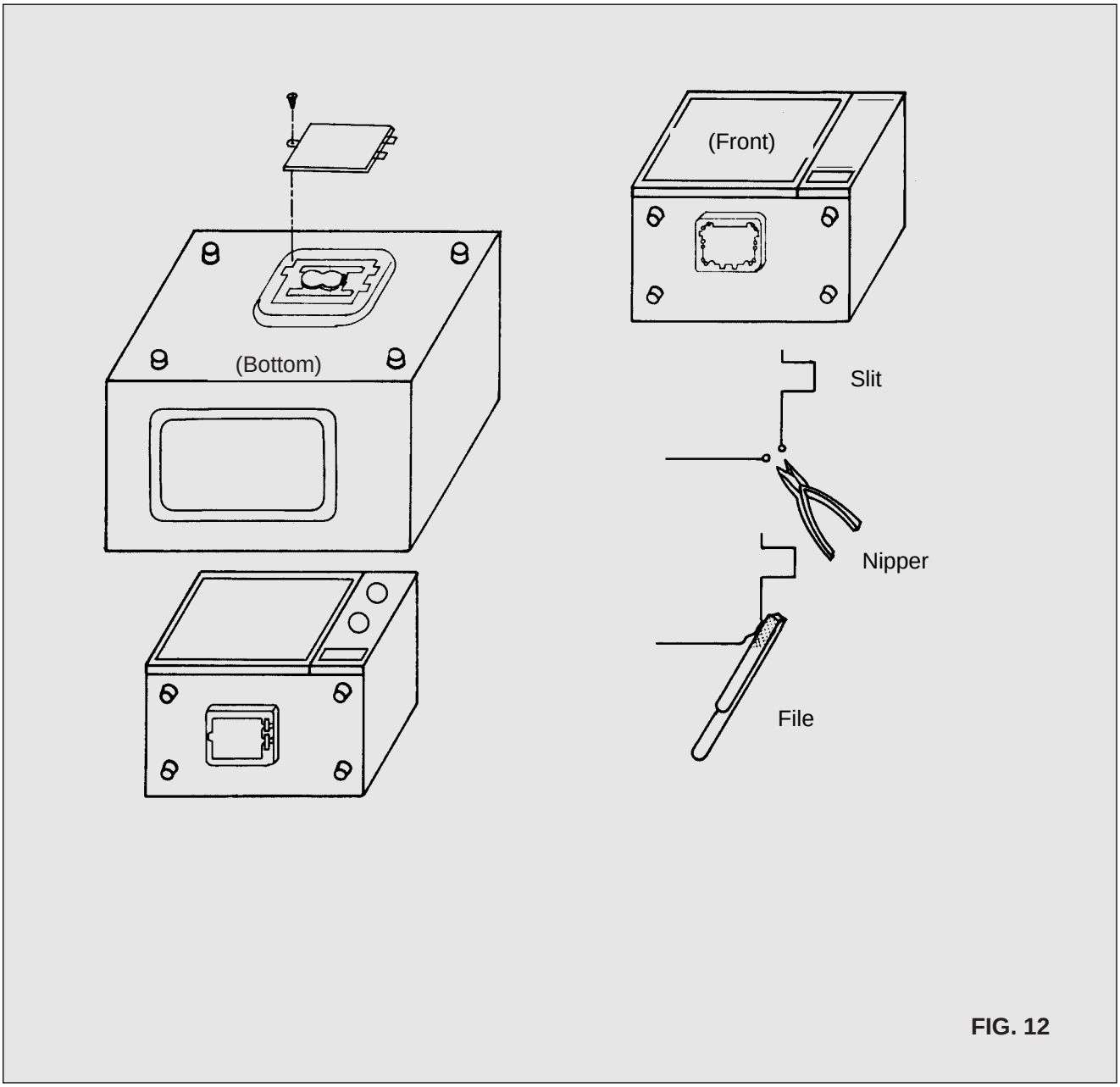
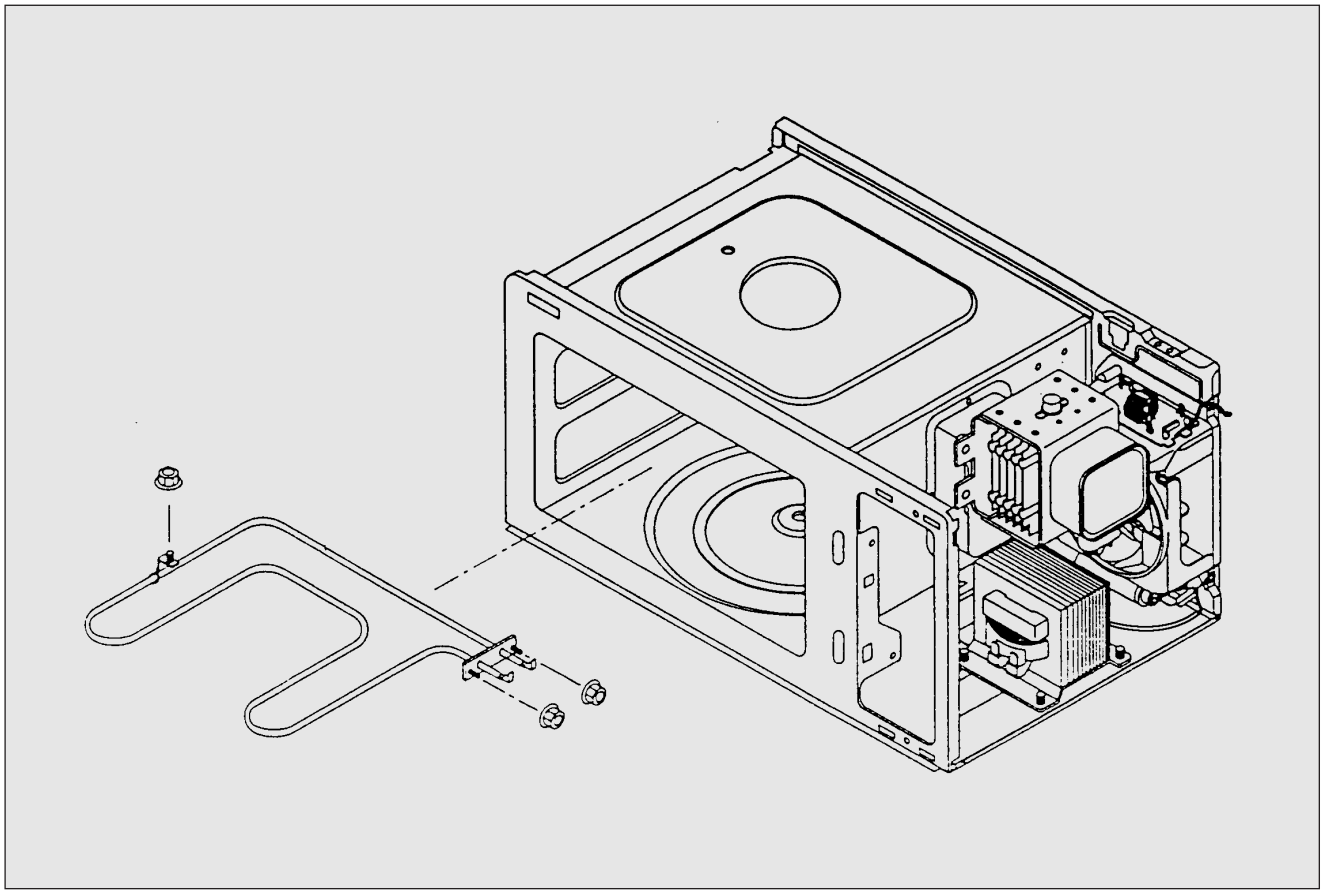



**FIG. 12**

### 11. To remove grill heater assembly (Refer to Fig. 13)

1) Release three hex nuts (F10) holding the Grill Heater Assembly (F9) to top and side plate.
2) Remove Grill heater Assembly.



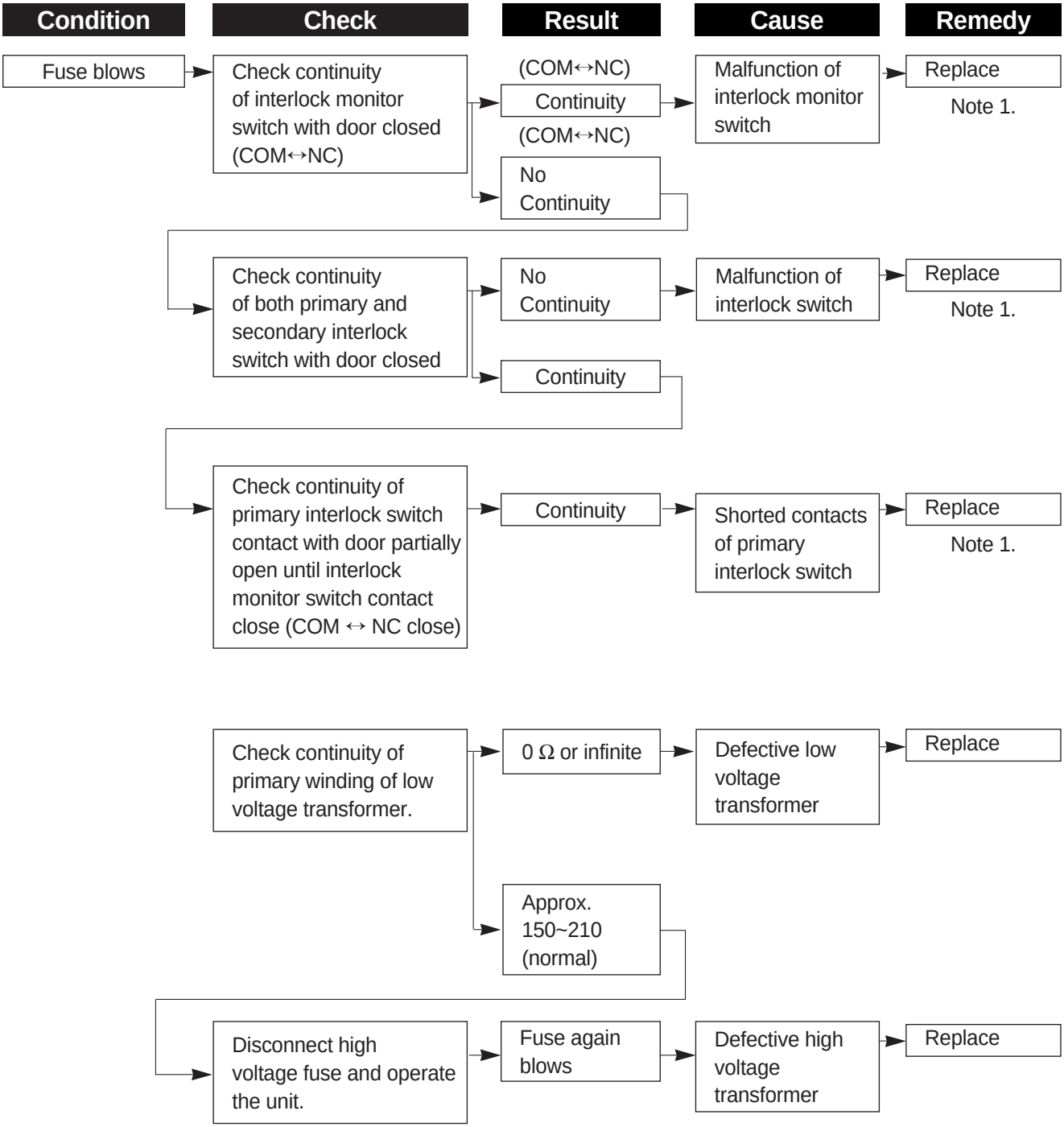
# *TROUBLE SHOOTING GUIDE*

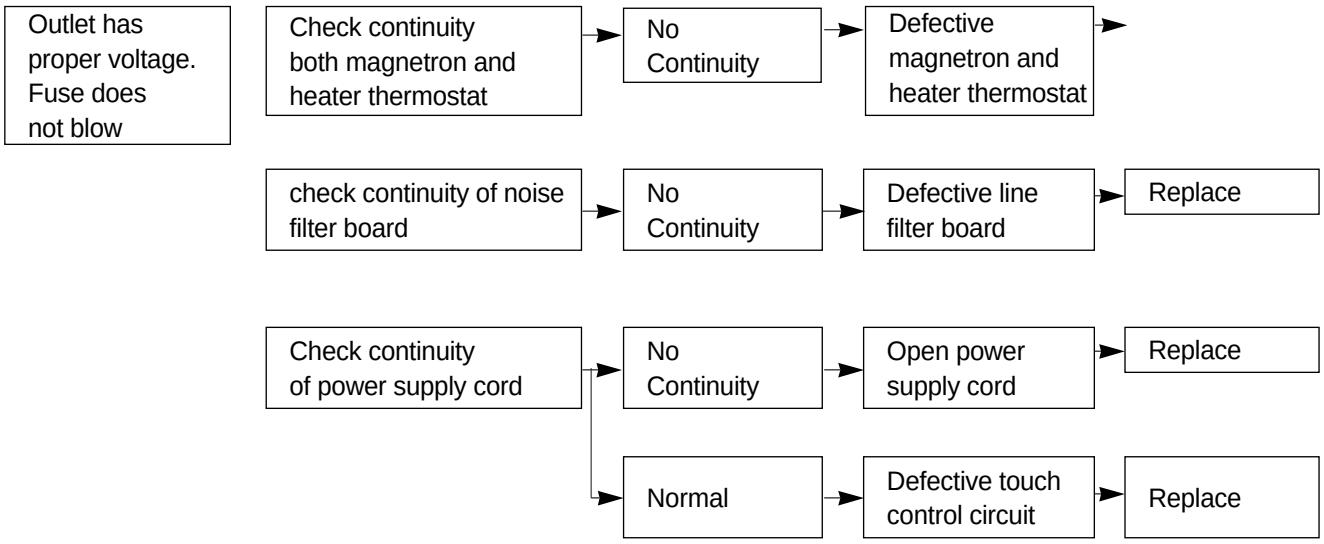
### Following the procedure below to check if the oven is defective or not.

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

**NOTE** : When electric parts are checked or replaced, 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.

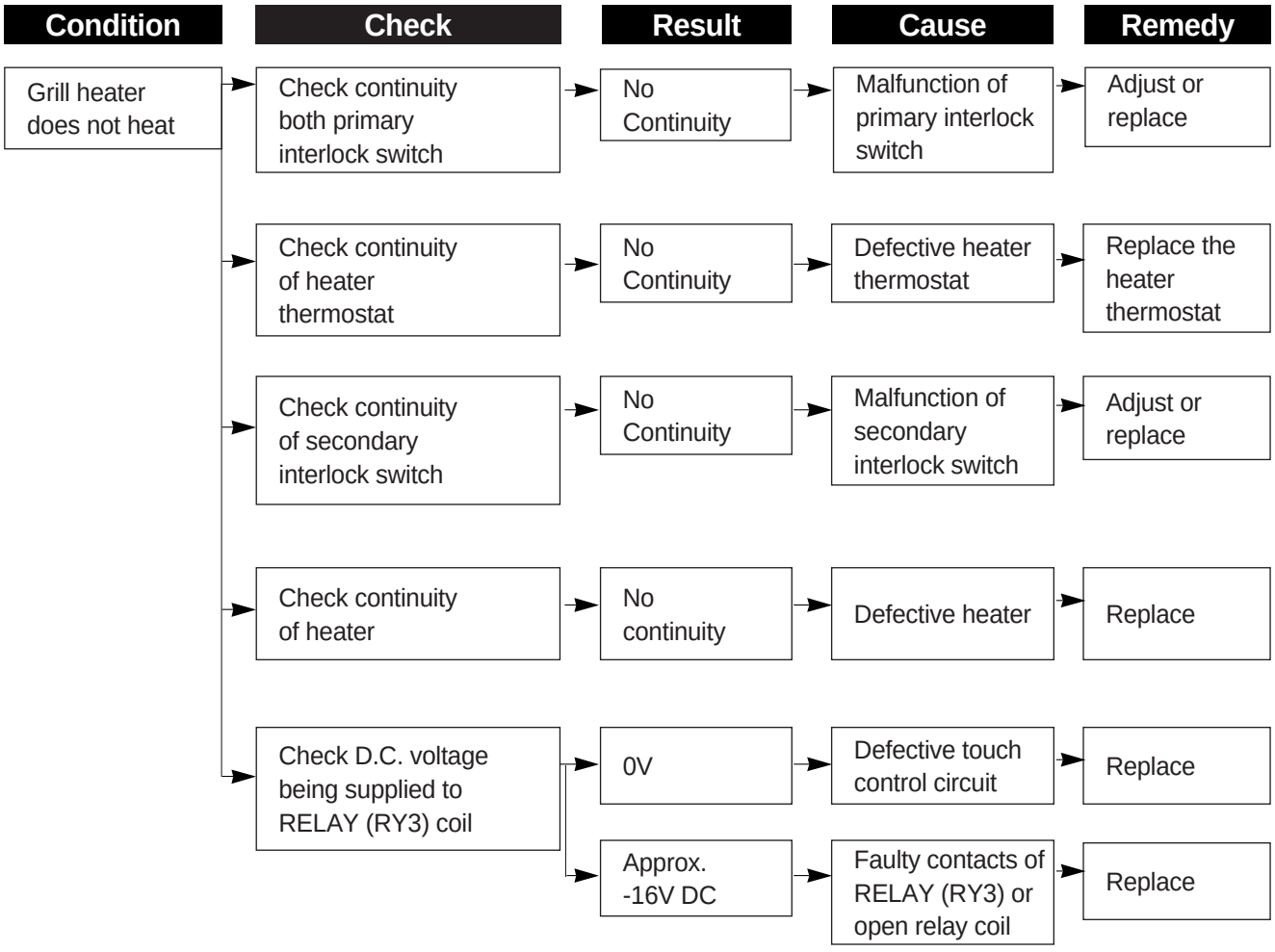
## (TROUBLE 1) Oven does not operate at all; any inputs can not be accepted



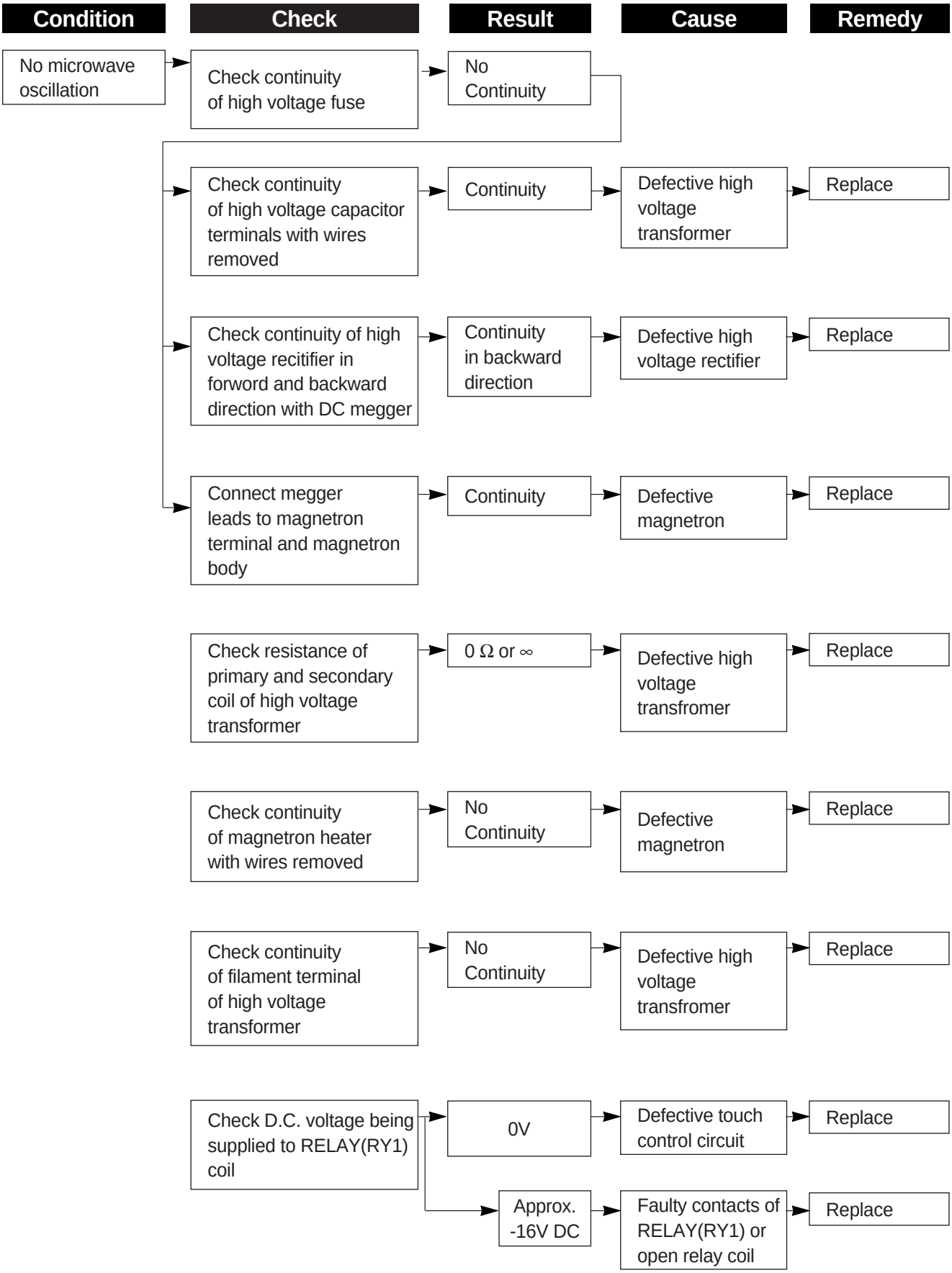



NOTE 1 : All these switches must be replaced at the same time, please refer to page 18 and 19 for adjustment instructions.

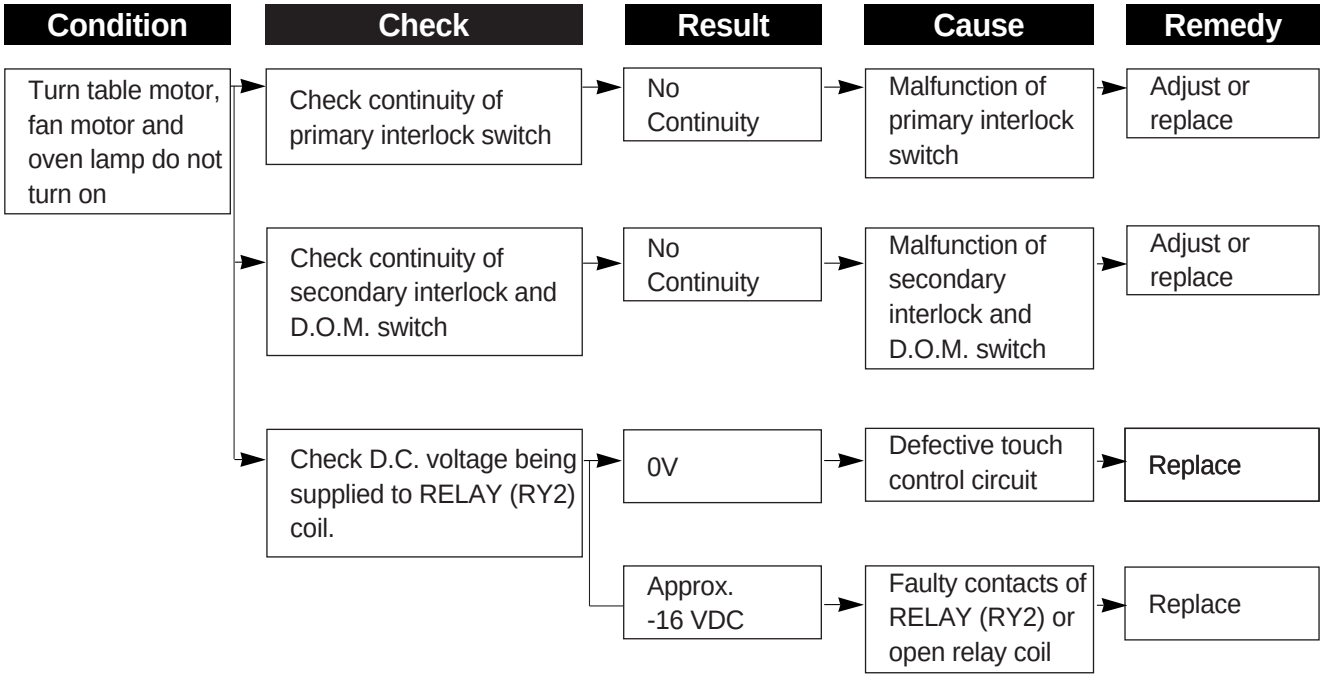
**(TROUBEL 2) Heater does not heat (Food will not become hot).**



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

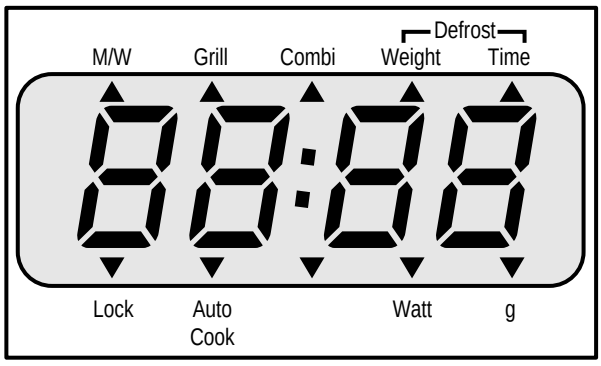


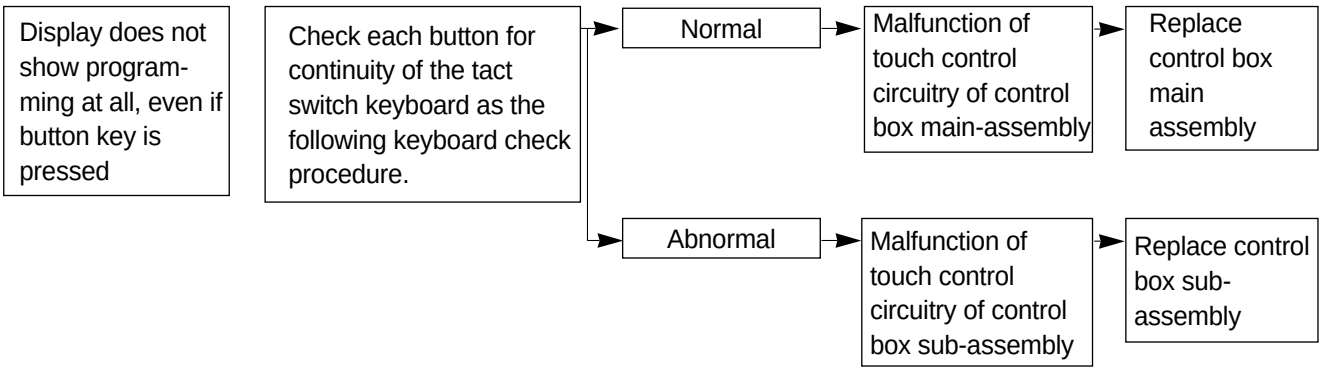
**(TROUBLE 4) Display shows all figures selected, but oven does not start cooking, even**




**(TROUBLE 5) The following visual conditions indicate a probable defective touch control circuit.**

1. Incomplete segments.
   (A) Segments missing.
   (B) Partial segments missing.
   (C) Digit flickering other than normal fluorescent slight flickering.
   (D) “0:00” does not display when power is on.
2. A distinct change in the brightness of one or more numbers is in the display.
3. One or more digits in the display are not on when they should be.
4. Display indicates a number different from one setted.(For example, when 5 setted, 3 appears in the display.)
5. Specific numbers (for example 2 or 3) do not display when the dial knob is rotated.
6. Display does not count down or up with time cooking or clock operation.
7. oven is programmable and cooks normally but no display shows.
8. Display obviously jumps in time while counting down.
9. Display counts down noticeably too fast while cooking.
10. Display can not shift from the first stage cooking to the third stage cooking while 3 phase cooking (including defrost).
11. Display does not show the time of day when clear button is pressed.
12. Oven lamp, fan motor and turn table motor do not stop although cooking is finished. Check if the RELAY (RY2) contacts close if they are close, replace touch control circuit.






NOTE : Before following the particular steps listed above in the trouble shooting guide for failure, please check for the continuity of each wire-harness between the tact switch keyboard and PCB assembly.

## *KEYBOARD CHECK PROCEDURE*

### 1. Type of encoding and key names

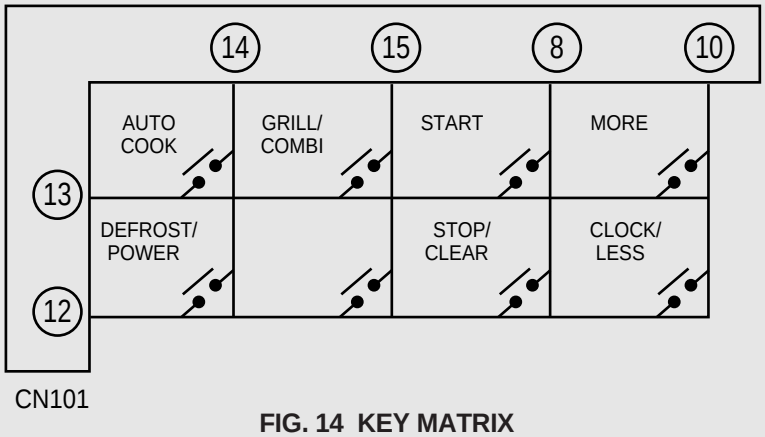



**FIG. 14 KEY MATRIX**

The tact switch keyboard consists of 7 keys whose configurations are described above.

### 2. Key check procedure

To determine if the tact switch keyboard is defective or not, check the continuity of each button contacts with a multimeter.

1) AUTO COOK button : Between 14 and 13
2) GRILL/COMBI button : Between 15 and 13
3) START button : Between 8 and 13
4) MORE button : Between 10 and 13
5) DEFROST/POWER button : Between 14 and 12
6) STOP/CLEAR button : Between 8 and 12
7) CLOCK/LESS button : Between 10 and 12

# MEASUREMENT

## 1. Microwave Output Power

### 1-1. Standard Method

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.

1) Microwave power output measurement is made with the microwave oven supplied at rated voltage and operated at its maximum microwave power setting with a load of 1,000±5cc of potable water.
2) The water is contained in a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190 mm.
3) The oven and the empty vessel are at ambient temperature prior to the start of the test. The initial temperature of the water is 10±2˚c (50±3.6˚F).
   It is measured immediately before the water is added to the vessel. After addition of the water to the vessel, the load is immediately placed on the center of the shelf which is in the lowest normal position. (Fig. 15).
4) Microwave power is switched on.
5) Heating time should be exactly 47 seconds.
   Heating time is measured while the microwave generator is operating at full power.
   The filament heat-up time magnetrons is not included.
6) The initial and final water temperatures are selected so that the maximum difference between the ambient and final water temperatures is 5K.
7) The microwave power output P in watts is calculated from the following formula:

$$P=4187X\Delta T/t$$

• $\Delta T$ is actual temeprature rise.
• T is the heating time.

The power measured should be 900W±10 %.

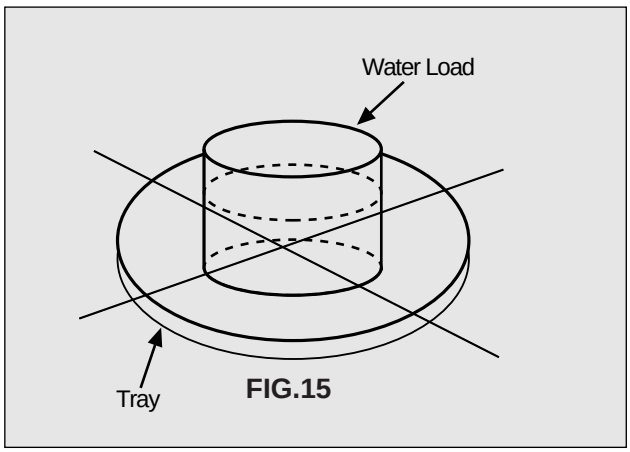



**FIG.15**

**CAUTION :**

1. Water load should be measured exactly to 1 litre.
2. Input power voltage should be exactly volts as specified.
3. Ambient temperature should be 20±2˚C (68±3.6˚F)

## 2. Electrical Continuity Check of Interlock Switch

### 2-1. Procedure

**NOTE** : Remove the power plug from the wall receptacle before testing.

## 1. Primary Interlock Switch

1) Disconnect two connectors from Primary Interlock Switch.
2) Connect the ohmeter leads between the terminals of the primary interlock switch.
3) Read the value of resistance between the terminals of the switch, when the door is opened, and when the door is closed.

## 2. Secondary Interlock Switch

1) Disconnect two connectors from secondary interlock switch.
2) Connect the ohmeter leads between the terminals of the secondary interlock switch.
3) Read the value of resistance between the terminals of the switch, when the door is opened, and when then oven door is closed.

## 3. Interlock Monitor Switch

1) Disconnect the lead wire connecting the primary interlock switch and interlock monitor switch from primary interlock switch terminal.
2) Connect the ohmeter leads between the lead wire connector disconnected as item ‘1’ and the power supply neutral plug pin.
3) Read the value of resistance between the lead wire connector and the power supply neutral plug pin, when the oven door is opened, and when the oven door is closed.

**2-2 Judgement**

The value of resistance should be applied to the value specified below.

| Door | Open | Closed |
|---|---|---|
| Primary Interlock Swtich | ∞ | |
| Secondary Interlock Switch | ∞ | 0 |
| Interlock Monitor Circuit | 0 | ∞ |

When value obtained is not acceptable, the switch should be replaced or adjusted again.

## 3. Microwave Leakage Test

**3-1. Warning**

1) DO NOT place your hands into any suspected microwave leakage field unless the safe density level is known.
2) Always start measuring of an unknown field to assure safety for operating personnel from microwave energy.
3) Slowly approach the unit under test until the radiometer reads an appreciable leakage from the unit under test.
4) Care should be taken not to place the eyes in direct line with the source of microwave energy.

**3-2 Method**

The power density of the microwave leakage emitted by the microwave oven should not exceed 1mW/cm$^2$ at any point 50mm (2 in.) or more away from the external surface of the oven as measured prior to acquisition by a purchaser and thereafter once the oven is in use, 4mW/cm$^2$ at any point 50mm(2 in.) or more away from the external surface of the oven, checks to be made around the whole of the door seal and on each of the main unit surface.

Measurements should be made with the oven operating at its maximum output and containing a load of 275±5 mililitres of tap water initially at 68±9˚F (20±5˚C) placed within the cavity at the center of the load carrying surface provided by the manufacture. The water container should be a low from 600 milliliters beaker having an inside diameter of approximately 85mm (3-11/32 in.) and made of an electrically nonconductive material such as glass or plastic.

**3-3. Procedures**

1) Prepare 600cc glass or plastic container.
2) Pour 275±15 millilitres of tap water initially at 68±9˚F(20±5˚C) in the container.
3) Place it at the centre of the tray.
4) Operate oven.
5) measure the microwave leakage using an approved microwave leakage meter after a few minutes of operation.

NOTE : The scan rate should not exceed 1 inch/sec.

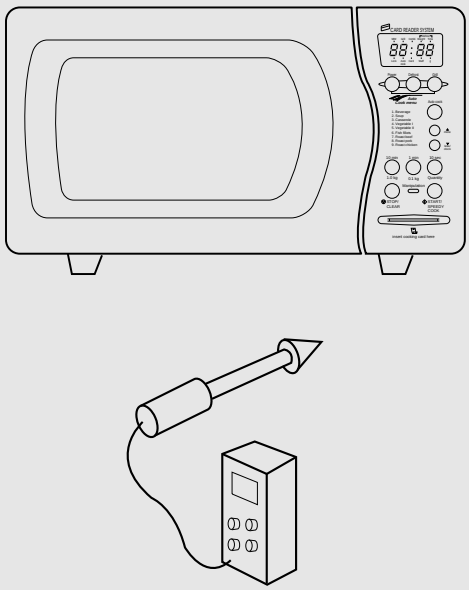


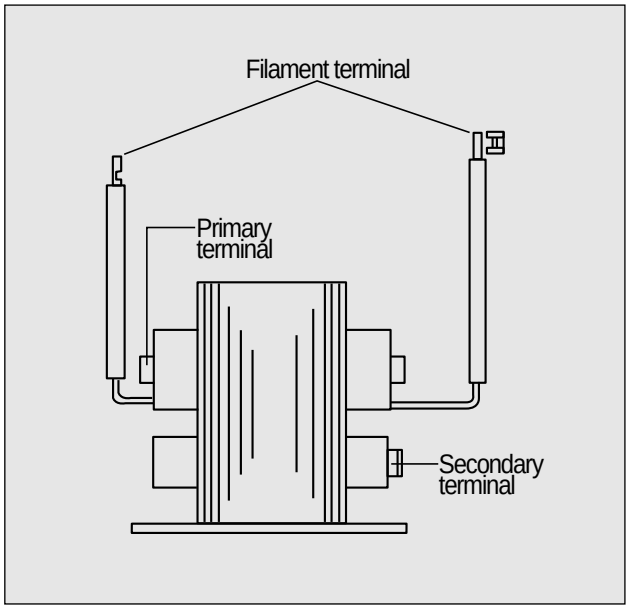
**FIG. 16**

# COMPONENT TEST PROCEDURE

1. High voltage is present at the high voltage terminal of the high voltage transformer during any cook cycle.
2. It is neither necessary not 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 capacitor (see page 20).

## 1. High voltage transformer

(A) Remove connections from the transformer terminals and check continuity.
(B) Normal readings should be as follows:
Secondary winding ..... Approx. 100Ω±10%
Filament winding ..... Approx. 0Ω
Primary winding..... Approx. 0Ω




## 2. High voltage capacitor

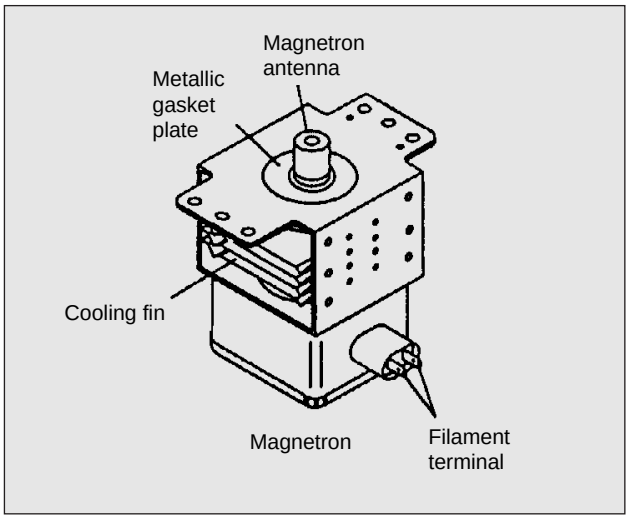
(A) Check continuity of capacitor with meter on the highest OHM scale.
(B) A normal capacitor will show continuity for a short time, and then indicate 9MΩ once the capacitor is charged.
(C) A shorted capacitor will show continuous continuity.
(D) An open capacitor will show constant 9MΩ.
(E) Resistance between each terminal and chassis should be infinite.

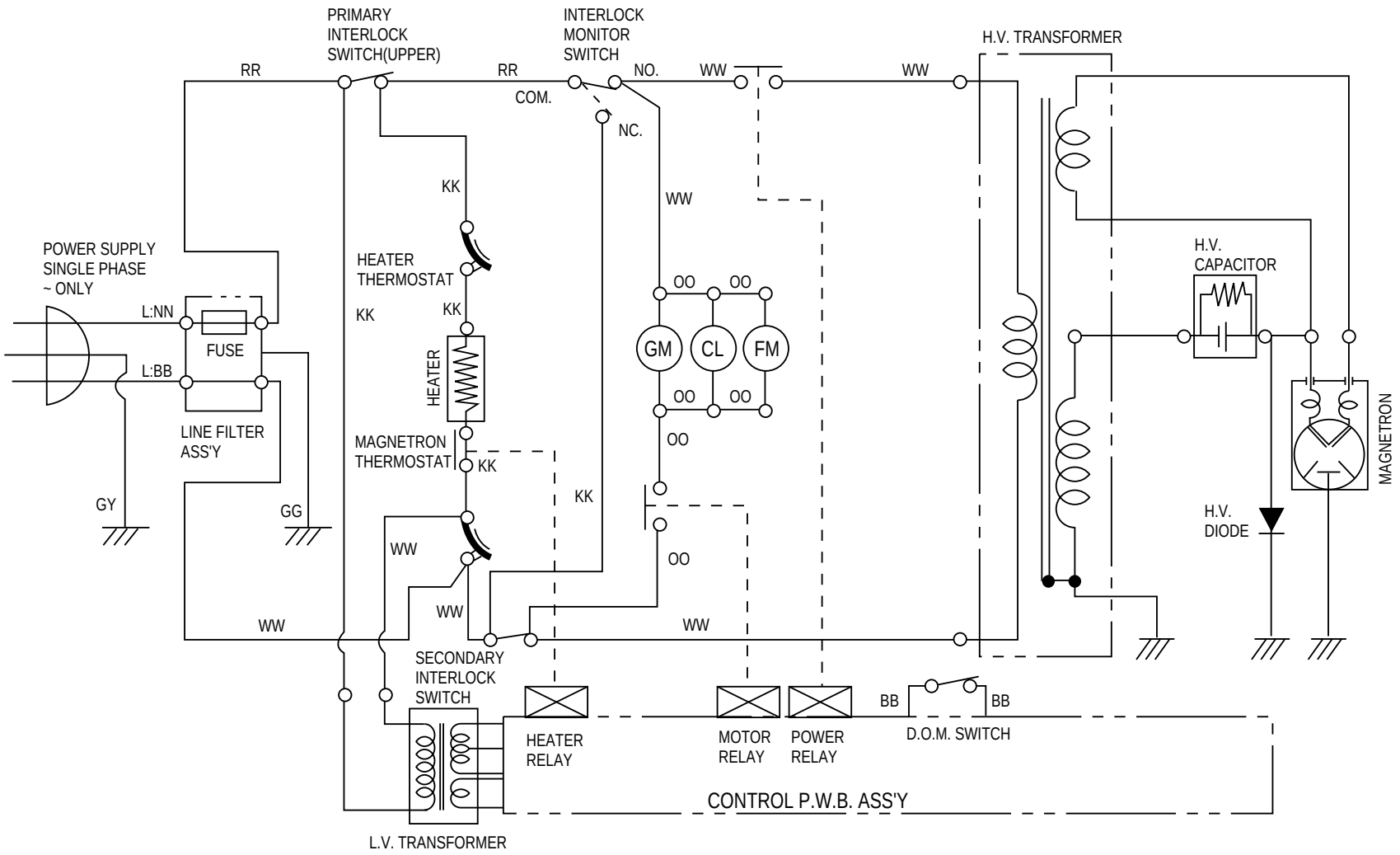
## 3. High voltage diode

The high voltage diode is located on the base near the transformer.
(A) Isolate the diode from the circuit by disconnecting the leads.
(B) 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-to-back resistance of the diode, otherwise an infinite resistance may be read in both directions. A normal diodes resistance will be infinite in one direction and several hundred KΩ in the other direction.

## 4. Magnetron

For complete magnetron diagnosis, refer to "Measurement of the Microwave Output Power".
Continuity checks can only indicate and open filament or a shorted magnetron. To diagnose for an open filament or shorted magnetron.
(A) Isolate magnetron from the circuit by disconnecting the leads.
(B) A continuity check across magnetron filament terminals should indicate one ohm or less.
(C) A continuity check between each filament terminal and magnetron case should read open.






CONDITION
1. DOOR : CLOSED
2. COOK : OFF

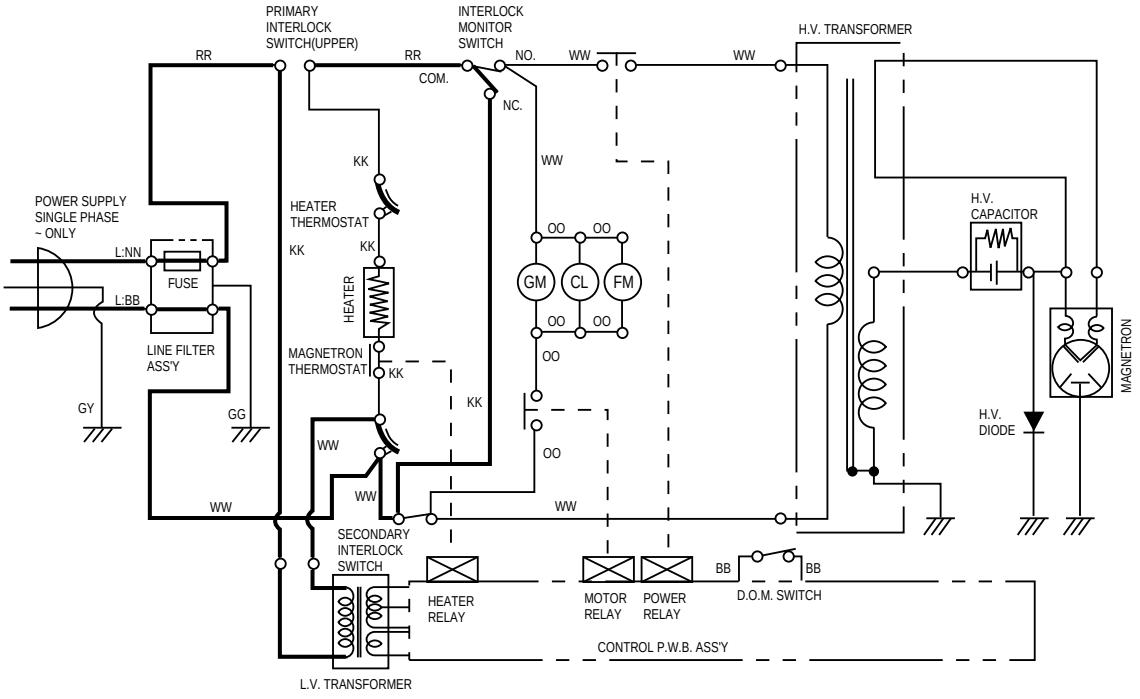
C L : C AVITY LAMP
FM : FAN MOTOR
GM : GEARED MOTOR

RR : RED
WW : WHITE
KK : BLACK
OO : ORANGE

BB : BLUE
NN : BROWN
GG : GREEN
GY : GREEN/ YELLOW

# SCHEMATIC DIAGRAMS

## IDLE



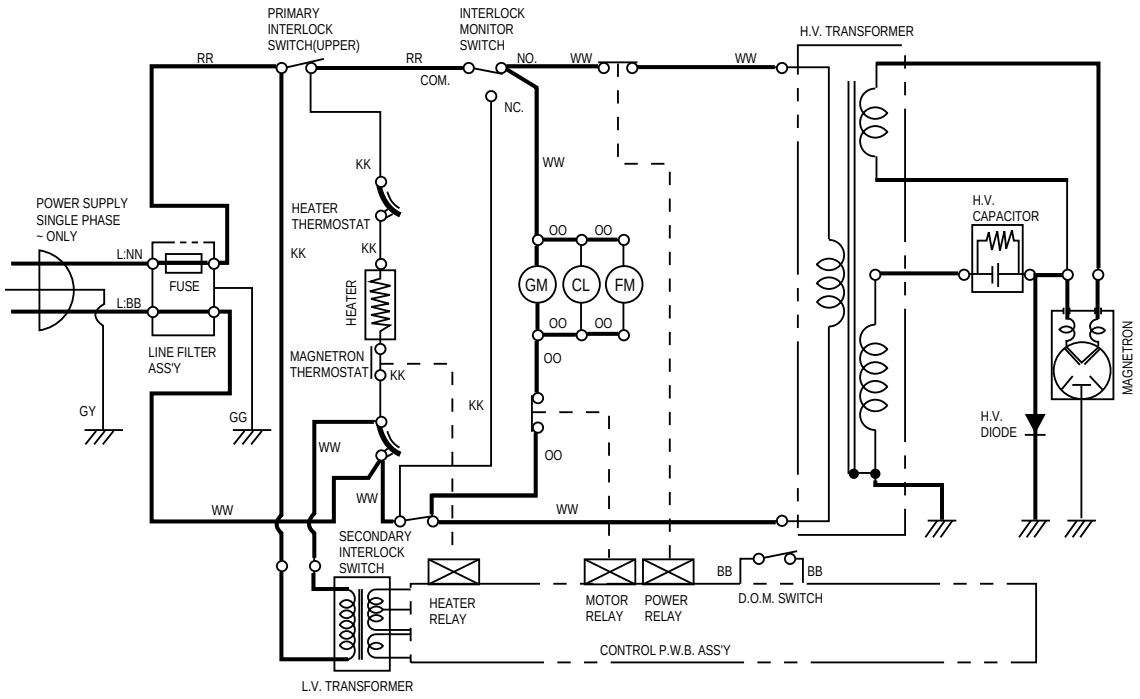

CONDITION
1. DOOR : CLOSED
2. COOK : OFF

C L : C AVITY LAMP
FM : FAN MOTOR
GM : GEARED MOTOR

RR : RED
WW : WHITE
KK : BLACK
OO : ORANGE

BB : BLUE
NN : BROWN
GG : GREEN
GY : GREEN/ YELLOW

## M/W



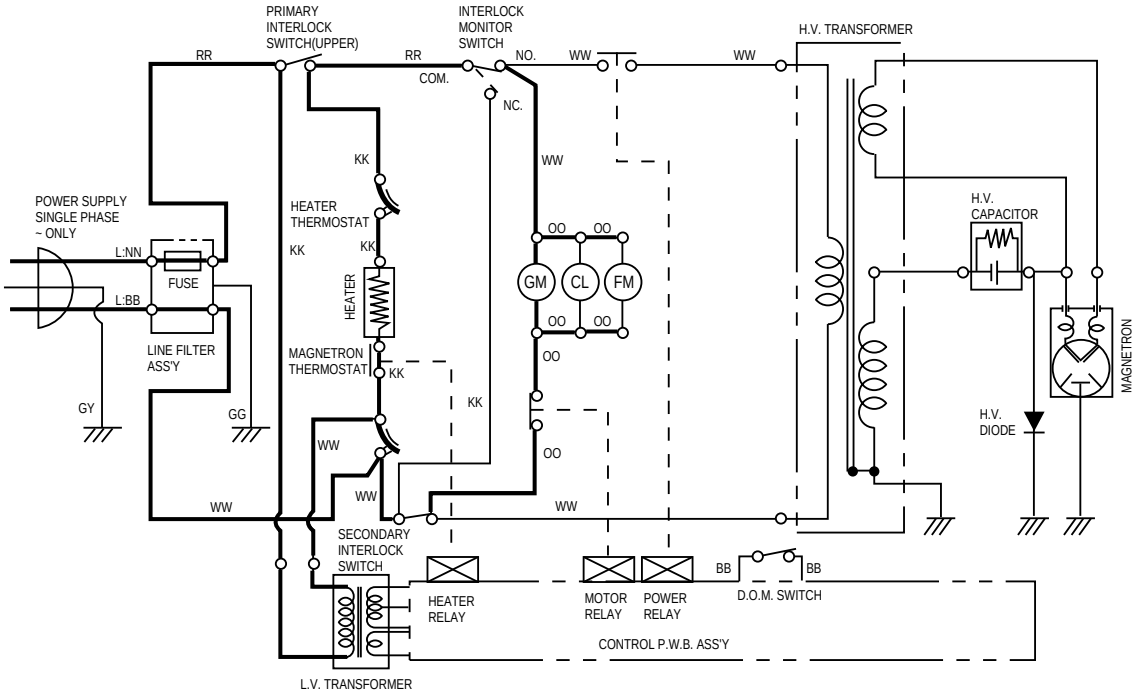

CONDITION
1. DOOR : CLOSED
2. COOK : M/W

C L : C AVITY LAMP
FM : FAN MOTOR
GM : GEARED MOTOR

RR : RED
WW : WHITE
KK : BLACK
OO : ORANGE

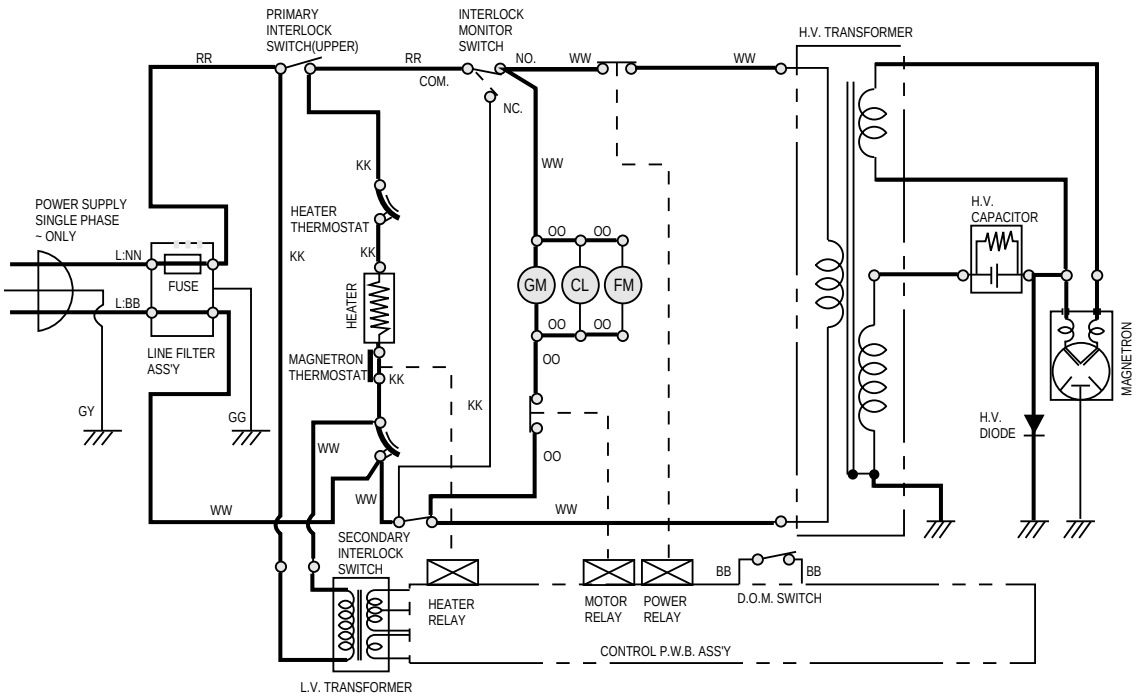
BB : BLUE
NN : BROWN
GG : GREEN
GY : GREEN / YELLOW

## GRILL



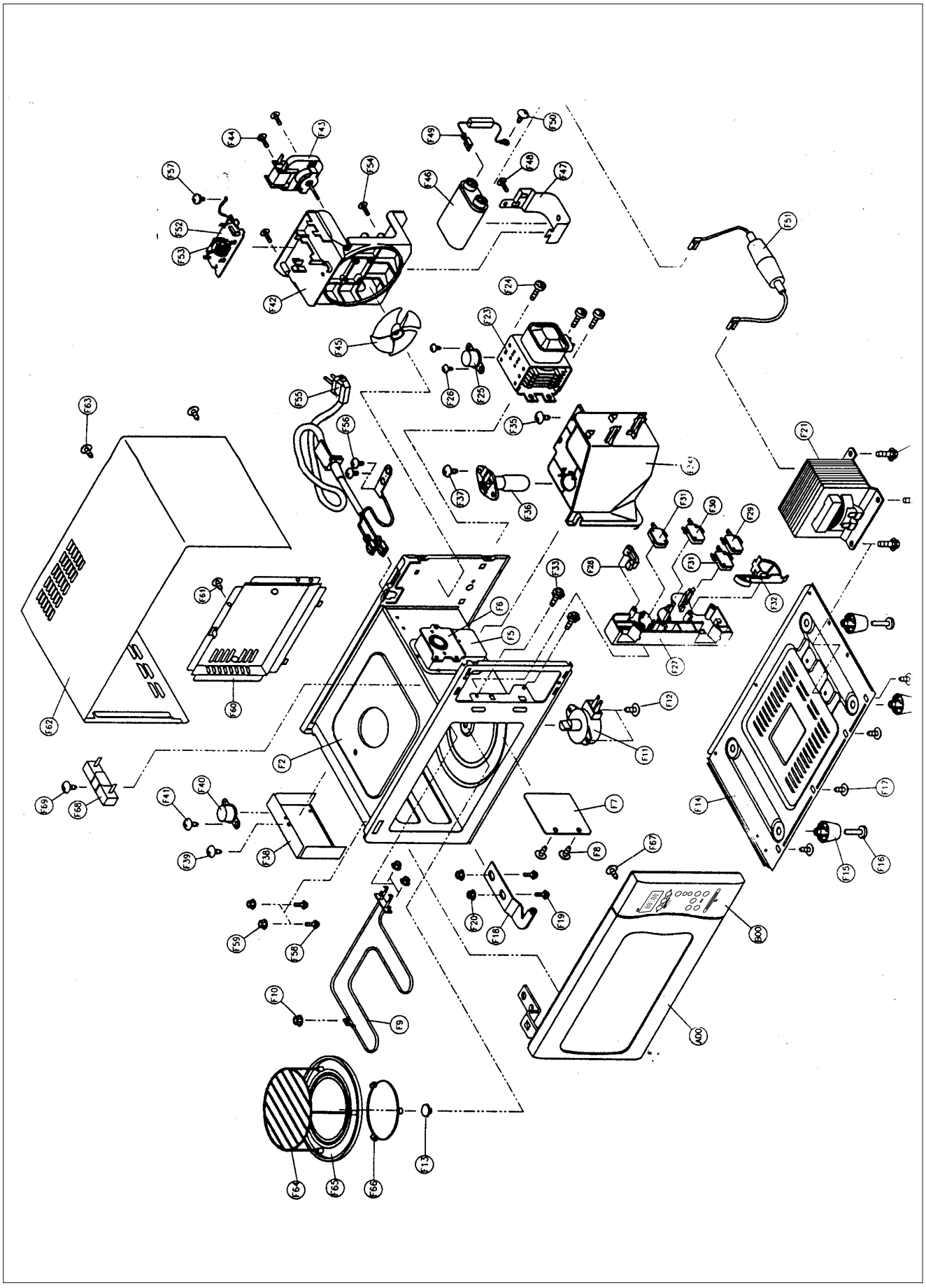

| CONDITION | C L : C AVITY LAMP | RR : RED | BB : BLUE |
|---|---|---|---|
| 1. DOOR : CLOSED | FM : FAN MOTOR | WW : WHITE | NN : BROWN |
| 2. COOK : GRILL | GM : GEARED MOTOR | KK : BLACK | GG : GREEN |
| | | OO : ORANGE | GY : GREEN/ YELLOW |

## COMBI




| CONDITION | C L : C AVITY LAMP | RR : RED | BB : BLUE |
|---|---|---|---|
| 1. DOOR : CLOSED | FM : FAN MOTOR | WW : WHITE | NN : BROWN |
| 2. COOK : COMBI | GM : GEARED MOTOR | KK : BLACK | GG : GREEN |
| | | OO : ORANGE | GY : GREEN/ YELLOW |

# EXPLODED VIEW



*** SUB : Substitutive**

| REF NO. | PART CODE | PART NAME | DESCRIPTION | Q'TY | REMARK |
|---|---|---|---|---|---|
| F2 | 3510103700 | CAVITY WELD AS | KOG-8415 ØS | 1 | |
| F5 | 3512504800 | GUIDE WAVE | SA1D-80 0.5T | 1 | |
| F6 | 3510602500 | BRACKET MAGNETRON | SECC 1.2T | 1 | |
| F7 | 3511401500 | COVER WAVE GUIDE | MICA 0.35T | 1 | |
| F8 | 7113400814 | SCREW TAPPING | T1 BIN 4X8 MFNI | 2 | |
| F9 | 3512800800 | HEATER | 1R07817 230V 1350W | 1 | |
| F10 | 7S627W50X1 | NUT HEX | FLANGE M5X0.8P MFZN | 3 | |
| F11 | 3966030500 | MOTOR SYNCRO | 220/240V 4W GM-16-24FD16 | 1 | |
| F12 | 7121400811 | SCREW TAPPING | T2S PAN 4X8 MFZN | 2 | |
| F13 | 3517400200 | COUPLER | TEFLON | 1 | |
| F14 | 3510306100 | BASE | SBHG-1 0.8T | 1 | |
| F15 | 4415B04042 | FOOT | P.P | 4 | |
| F16 | 4415B04050 | FIXTURE FOOT | P.P | 4 | |
| F17 | 7112400811 | SCREW TAPPING | T1 TRS 4X8 MFZN | 7 | |
| F18 | 3515200700 | STOPPER HINGE *U | SCP-1 3.2T | 1 | |
| F19 | 7S517W50D1 | SCREW SPECIAL | HEX 6B-1 5X16 SE MFZN | 2 | |
| F20 | 7S627W50X1 | NUT HEX | FLANGE M5X0.8P MFZN | 2 | |
| F21 | 3518109510 | TRANS HV | DH-N90N0-84T | 1 | |
| | 3518109500 | TRANS HV | JY-N90N0-84T | 1 | SUB |
| F22 | 7S327W50B1 | SCREW TAPPING | T2 FLANGE 5X12 MFZN | 4 | |
| F23 | 3518002400 | MAGNETRON | 2M218J (MF) I | 1 | |
| F24 | 7S312X4081 | SCREW TAPPING | T1 TRS 4X8 SE MFZN | 3 | |
| F25 | 3518903000 | THERMOSTAT | NT-101 H038 140/125 #187 | 1 | |
| F26 | 7279300611 | SCREW TAPPTITE | TT3 BRS 3X6 MFZN | 2 | |
| F27 | 3513804700 | LOCK | POM | 1 | |
| F28 | 3513702100 | LEVER SW MICRO | POM | 1 | |
| F29 | 4415A17352 | SW MICRO | VP-533A-0F SPNO #187 | 1 | |
| | 5S762S10G0 | SW MICRO | V16-FA-63 SPNO #187 | 1 | SUB |
| F30 | 4415A66910 | SW MICRO | VP-531A-0F | 1 | |
| | 5S762310G0 | SW MICRO | V16-FA-61 2C 3P | 1 | SUB |
| F31 | 4415A17352 | SW MICRO | VP-533A-0F SPNO #187 | 2 | |
| | 5S762S10G0 | SW MICRO | V16-FA-63 SPNO #187 | 2 | SUB |
| F32 | 3513700800 | LEVER LOCK | POM | 1 | |
| F33 | 7S342X40B1 | SCREW SPECIAL | T2S TRS 4X12 SE MFZN | 2 | |
| F34 | 3512505100 | GUIDE AIR | P.P BLACK | 1 | |
| F35 | 7112400811 | SCREW TAPPING | T1 TRS 4X8 MFZN | 1 | |
| F36 | 3513601600 | LAMP | BL T-25 240V 25W C7A #187 | 1 | |
| F37 | 7121401211 | SCREW TAPPING | T2S PAN 4X12 MFZN | 1 | |
| F38 | 3512504900 | GUIDE AIR OUTLET | SA1D-80 0.5T | 1 | |

*** SUB : Substitutive**

| NO. | PART CODE | PART NAME | DESCRIPTION | Q'TY | REMARK |
|---|---|---|---|---|---|
| F39 | 7121400811 | SCREW TAPPING | T2S PAN 4X8 MFZN | 1 | |
| F40 | 3518902800 | THERMOSTAT | 130/120 H PW-2N | 1 | |
| F41 | 7121400811 | SCREW TAPPING | T2S PAN 4X8 MFZN | 1 | |
| F42 | 3512505000 | GUIDE WIND | P.P | 1 | |
| F43 | 3963512910 | MOTOR SHADED POLE | 230V 25W MW15CA-K01 | 1 | |
| | 3963512900 | | OEM-15DWC2-A02 | | SUB |
| F44 | 7124402511 | SCREW TAPPING | T2S RND 4X25 MFZN | 2 | |
| F45 | 3511800100 | FAN | P.P+G/F | 1 | |
| F46 | 4416W67820 | CAPACITOR H.V | 2100V AC 1.1μF | 1 | |
| F47 | 3513001000 | HOLDER CAPACITOR | SECC 0.6T | 1 | |
| F48 | 7S422X4081 | SCREW SPECIAL | TT2 TRS 4X8 SE MFZN | 1 | |
| F49 | 4416V24000 | DIODE HV | HVR-1X-32B(D5.3) | 1 | |
| F50 | 7S422X4081 | SCREW SPECIAL | TT2 TRS 4X8 SE MFZN | 1 | |
| F51 | | HARNESS "B" | | 1 | OPTION |
| F52 | 3518602700 | NOISE-FILTER | DWLF-L1 | 1 | |
| F53 | 4414A25100 | FUSE | BUSSMANN MDA-15 | 1 | |
| F54 | 7621401211 | SCREW TAPPING | T2S PAN 4X12 PW MFZN | 2 | |
| F55 | 35113R5GM5 | CORD POWER AS | 3X1.5 80X80 120-RTML | 1 | |
| F56 | 7S422X4081 | SCREW SPECIAL | TT2 TRS 4X8 SE MFZN | 2 | |
| F57 | 7S422X4081 | SCREW SPECIAL | TT2 TRS 4X8 SE MFZN | 1 | |
| F58 | 7650501611 | BOLT HEX | 6B-1 5X16 HS MFZN | 2 | |
| F59 | 7S627W50X1 | NUT HEX | FLANGE M5X0.8P MFZN | 2 | |
| F60 | 3511401400 | COVER *B | SBHG-1 0.6T | 1 | |
| F61 | 7S312X4081 | SCREW TAPPING | T1 TRS 4X8 SE MFZN | 1 | |
| F62 | 3510800800 | CABINET | PCM 0.6T | 1 | |
| F63 | 7S312X4081 | SCREW TAPPING | T1 TRS 4X8 SE MFZN | 4 | |
| F64 | 3517203201 | TRAY RACK AS | KOG-8415 104MM | 1 | |
| F65 | 3517203500 | TRAY | GLASS | 1 | |
| F66 | 3512512500 | GUIDE ROLLER AS | KOG-846T PPS | 1 | |
| F67 | 7S341W40B1 | SCREW SPECIAL | T2S PAN 4X12 PW SE MFZN | 1 | |
| A00 | 3511704420 | DOOR AS | KOG-843KS | 1 | SEE DETAIL P17 |
| B00 | PKCPSWPV00 | CONTROL-PANEL AS | KOG-846T ØS | 1 | SEE DETAIL P16 |

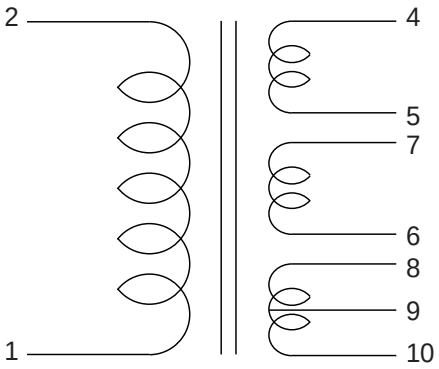
* : FOR GERMANY USE ONLY

# PRINTED WIRING BOARD

## 1. Circuit Check Procedure

**1) Low voltage transformer (DMR-101FS) check.**

The low voltage transformer is located on the P.C.B. Measuring condition : Input voltage : 220V
Frequency : 50Hz



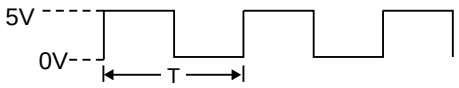

| Terminal \ Voltage | LOAD | NO LOAD |
|---|---|---|
| 4-5 | 10VAC | 15VAC |
| 6-7 | 30VAC | 45VAC |
| 8-9-10 | 2.6VAC | 4VAC |

**NOTE 1:** Secondary side voltage of the low voltage transformer changes in proportion to fluctuation of power source voltage.

**NOTE 2. :** The acceptable tolerance of the secondary voltage is within ±10% of norminal voltage

**2) Voltage check**

Key check point (MICOM PIN)

| NO. | CHECK POINT | REMARK |
|---|---|---|
| 1 | PIN 22, 1, 10 | + 5VDC |
| 2 | PIN 48 | - 27VDC |
| 3 | PIN 29 |  T: 20 ms (50 Hz) |
| 4 | PIN 24 OR 25 |  T : 250 ms |
| 5 | DP 1 PIN 1 & 25 | 2.6 VAC (DISPLAY FILAMENT VOLTAGE) |

CHECK METHOD

| NO. | MEASURE POINT Fig. 17 | WAVEFORM | REMARK |
|---|---|---|---|
| 1 | MP 1 | +5V DC | REPLACE Q7, C5 |
| 2 | MP 2 | +12V DC | REPLACE D9, D8 |
| 3 | MP 3 | -27V DC | REPLACE R17, ZD4 |

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

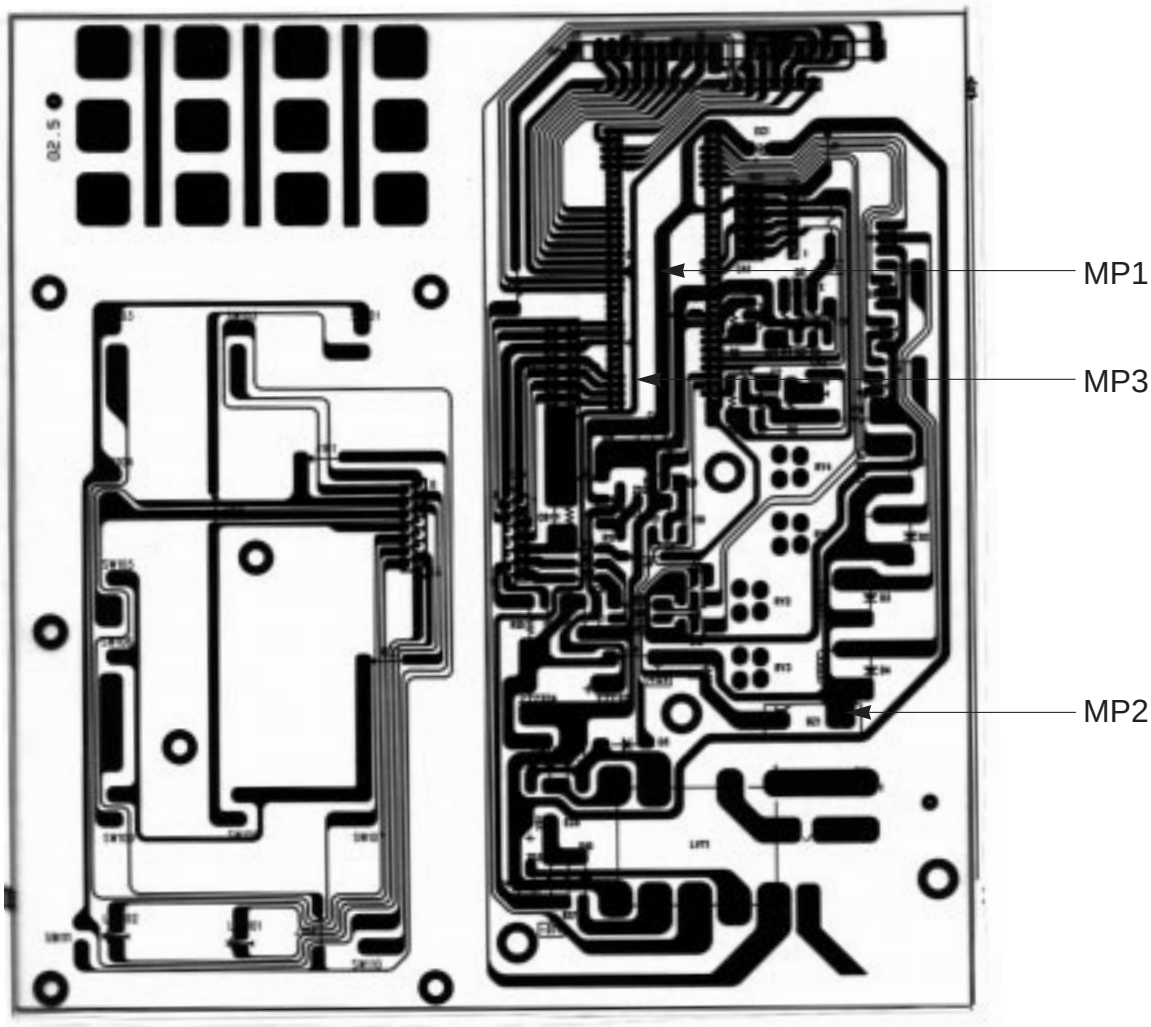
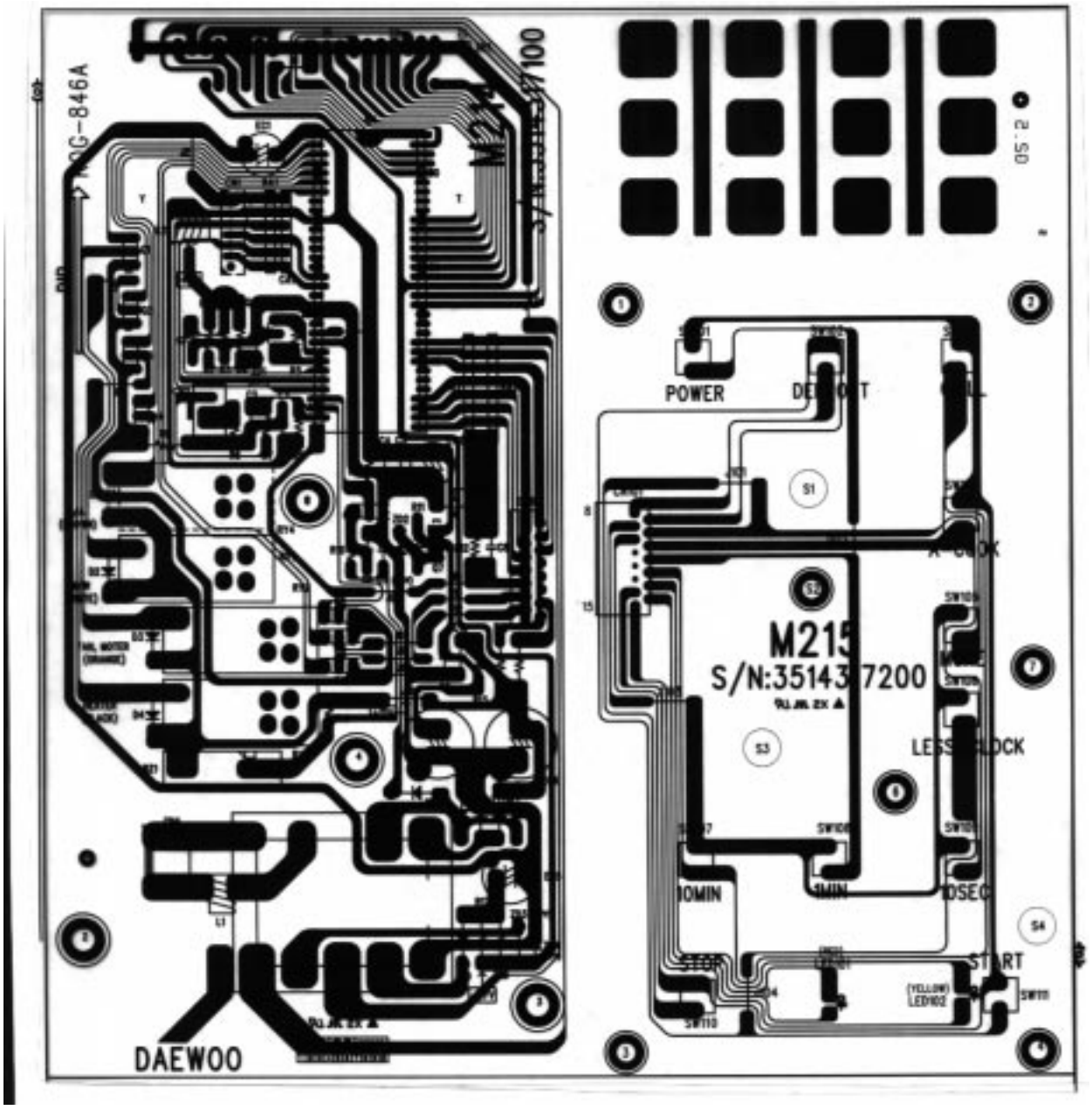



**FIG. 17 MEASUREMENT POINT**


POWER
M215
S/N:3514377200
DAEWOO

### 3) Display problems

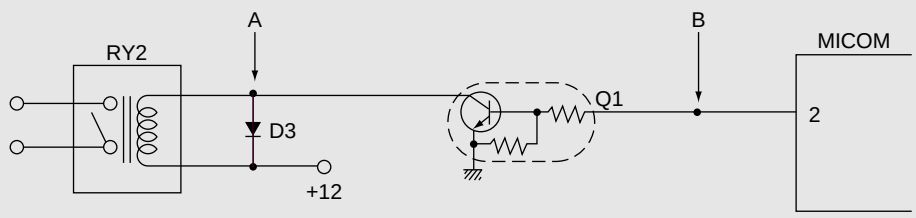
| NO. | CAUSE | MEASUREMENT | RESULT | REMEDY |
|---|---|---|---|---|
| 1 | Poor contact between P.C.B and display filament. | 1. Check the voltage of PIN 1 & PIN 25. | 2.6 VAC | Fix the PIN 1 & 25 on the P.C.B. |
| 2 | The Display has some troubles in its segment or grid. | Refer to “The display trouble shooting data” below. | | Replace P.C.B. assembly. |
| 3 | Loss of vacuum in the display. |  | White spot is generated on the display | Replace P.C.B. assembly. |

### Display trouble shooting data

| TROUBLE | DISPLAY NAME & PIN NO. | MICOM OUTPUT IN PIN NO. |
|---|---|---|
| TIME DEFROST, g do not come on | GRID 1 (G1), 21 | 64 |
| WEIGHT DEFROST, WATT do not come on. | GRID 2 (G2), 17 | 63 |
| COMBI does not come on. | GRID 3 (G3), 14 | 62 |
| GRILL, AUTO COOK do not come on. | GRID 4 (G4), 10 | 61 |
| M/W, LOCK do not come on. | GRID 5 (G5),4,7 | 60 |
| SEGMENT, “a” does not come on from G1 to G5. | SEGMENT d, 19 | 52 |
| SEGMENT, “b” does not come on from G1 to G5. | SEGMENT e, 18 | 53 |
| SEGMENT, “c” does not come on from G1 to G5. | SEGMENT f, 16 | 54 |
| SEGMENT, “d” does not come on from G1 to G5. | SEGMENT a, 23 | 49 |
| SEGMENT, “e” does not come on from G1 to G5. | SEGMENT b, 22 | 50 |
| SEGMENT, “f” does not come on from G1 to G5. | SEGMENT c, 20 | 51 |
| SEGMENT, “g” does not come on from G1 to G5. | SEGMENT g, 15 | 55 |
| DEFROST, COMBI, GRILL, M/W do not come on. | UPPER BAR h,5 | 46 |
| LOCK,AUTO COOK, WATT, g card do not come on. | LOWER BAR i,6,8,9,11 | 47 |

### 4) When there is not microwave oscillation.

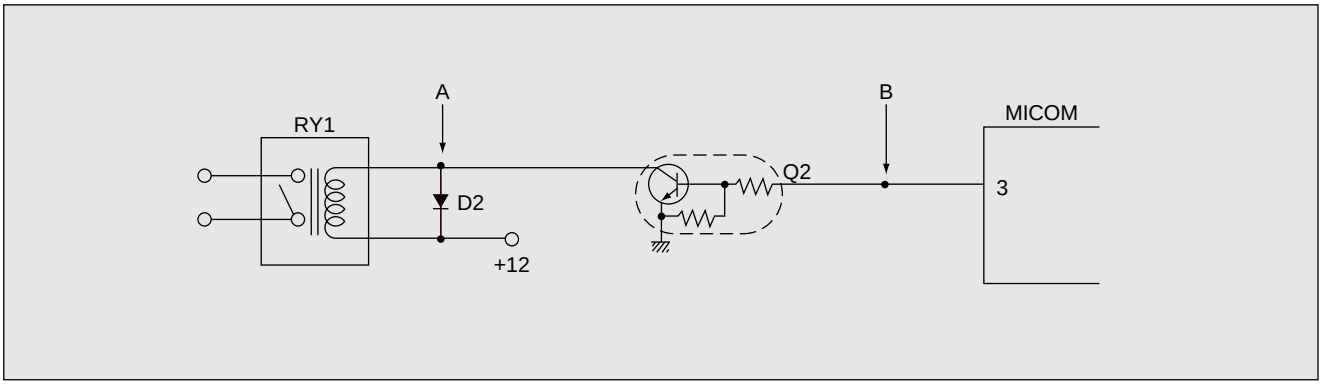
(1) When pressing “ ⏀ ” button, oven lamp does not turn on.
Fan motor and turntable motor do not rotate, but cook indicator in display comes on.
* Cause : RELAY “2” does not operate.



**CHECK METHOD**

| POINT / STAGE | A | B |
|---|---|---|
| RELAY “2” ON | GND | +5VDC |
| RELAY “2” OFF | +12VDC | GND |

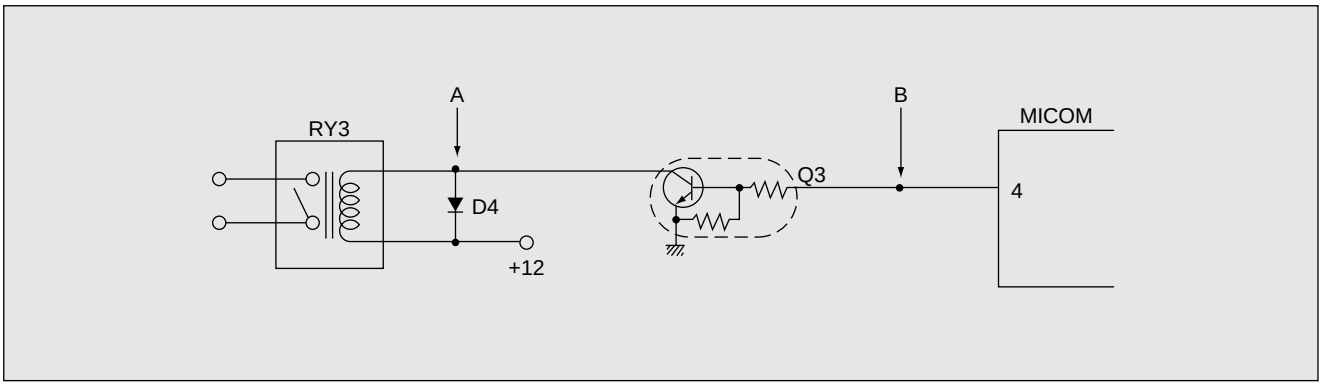
(2) When pressing “ ⏻ ” button, oven lamp turns on.
Fan motor and turntable motor rotate and cook indicator in display comes on.
* Cause : RELAY “1” does not operate.




**CHECK METHOD**

| POINT / STAGE | A | B |
|---|---|---|
| RELAY “1” ON | GND | +5VDC |
| RELAY “1” OFF | +12VDC | GND |

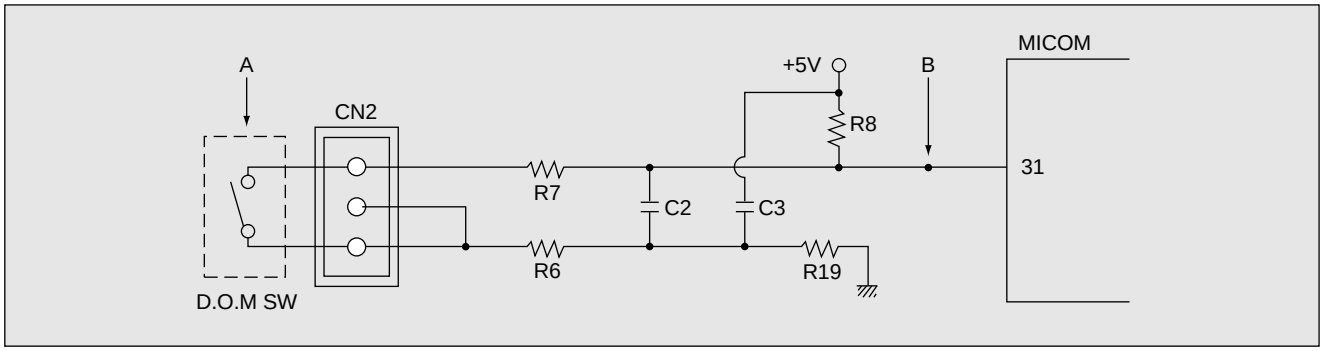
**5) When there is not Grill heat.**
When pressing “ ⏻ ” button, oven lamp turns on.
Fan motor and turntable and cook indicator in display comes on
* Cause : RELAY “3” does not operate.




**CHECK METHOD**

| POINT / STAGE | A | B |
|---|---|---|
| RELAY “3” ON | GND | +5VCD |
| RELAY “3” OFF | +12VDC | GND |

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

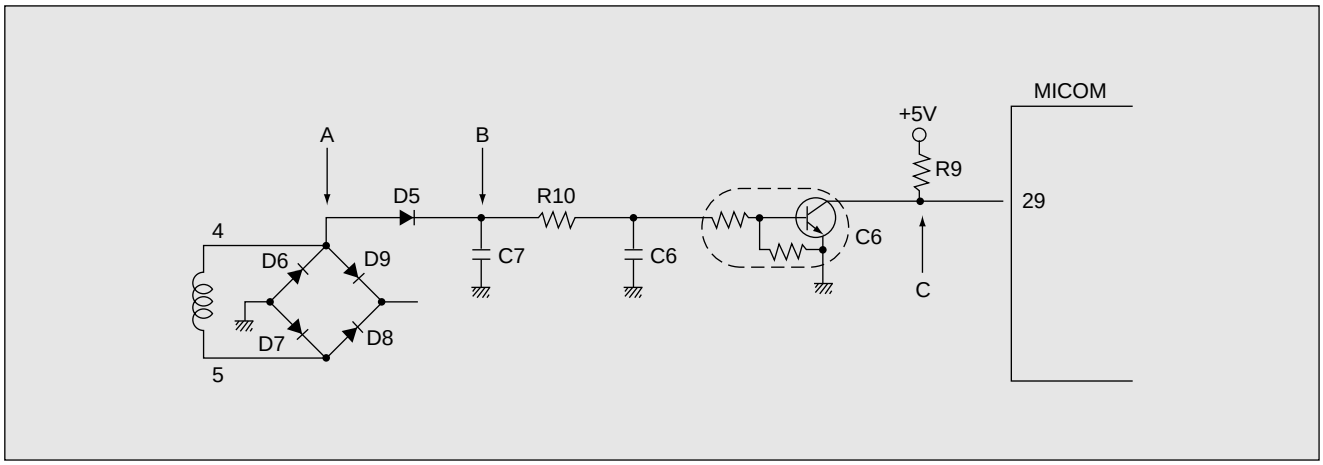


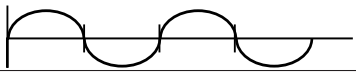
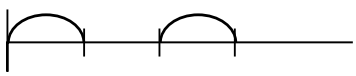
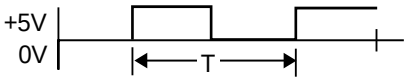

**CHECK METHOD**

| POINT / STAGE | A | B |
|---|---|---|
| 1) DOOR OPENED | OPEN | +5VDC |
| 2) DOOR CLOSED | CLOSED | GND |

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

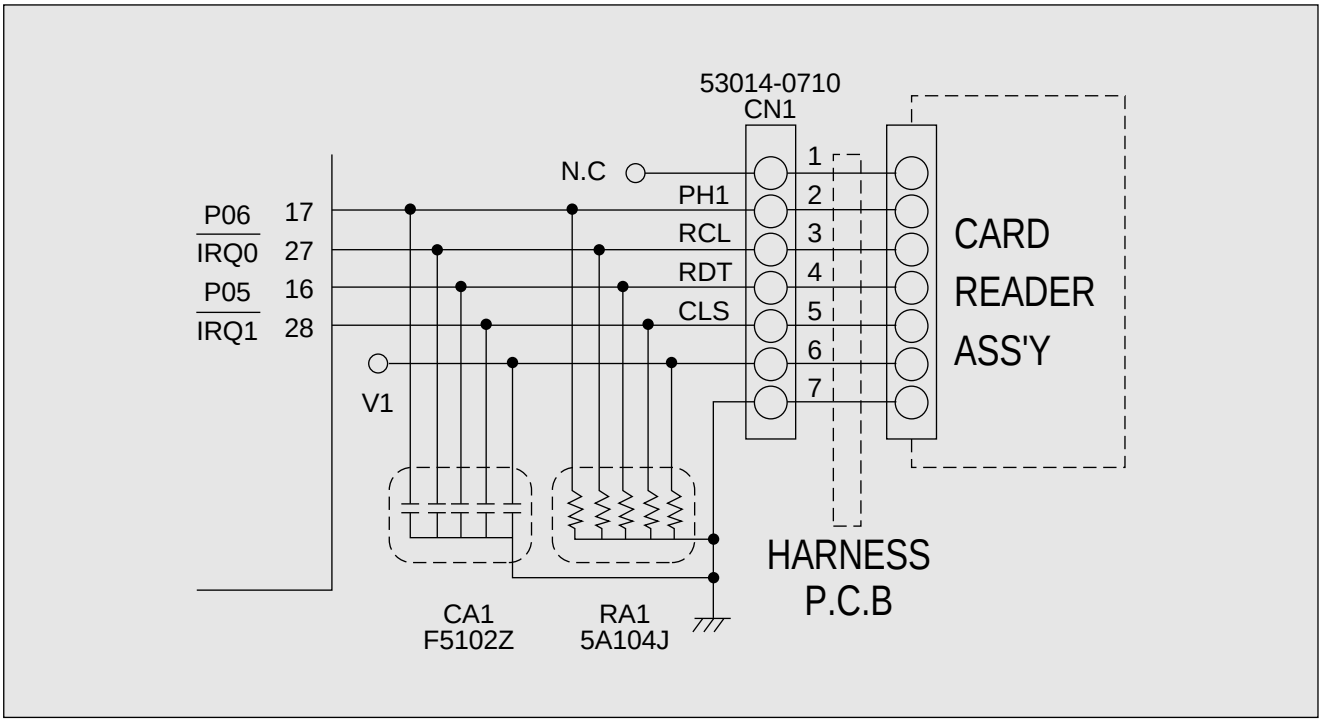
**7) When the digital clock does not oeprate properly.**

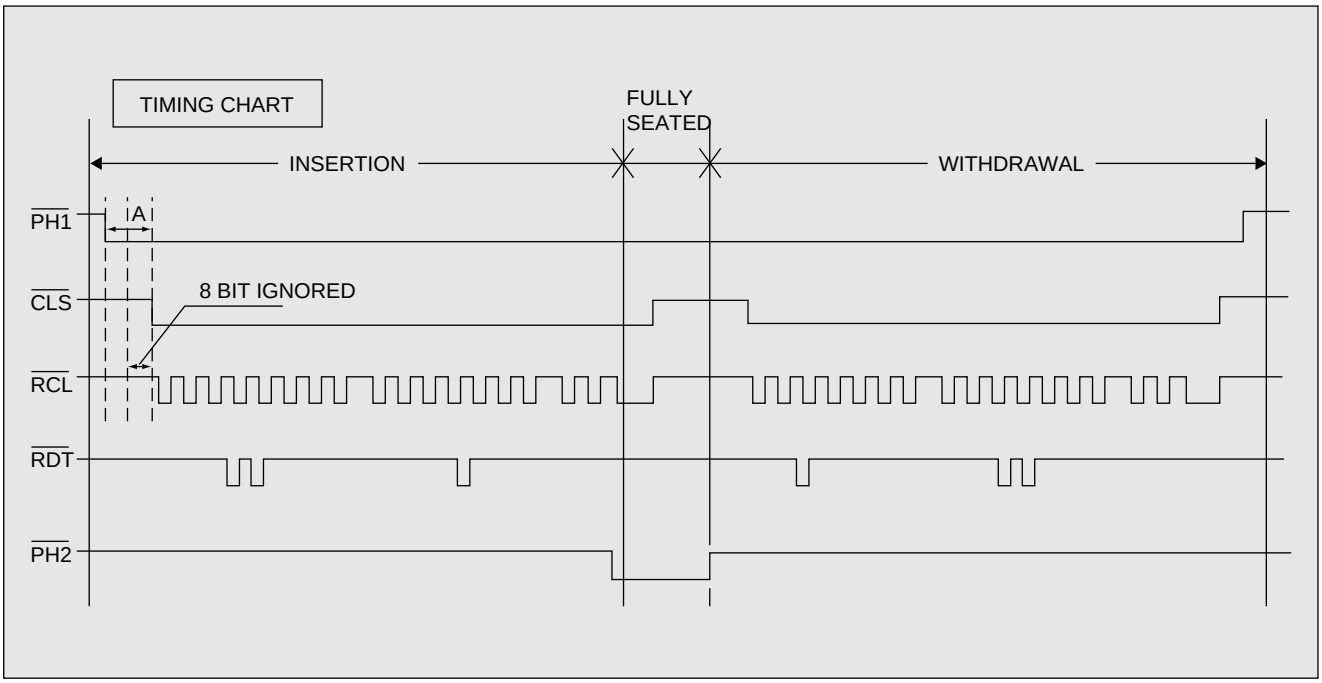



| POINT | WAVEFORM |
|---|---|
| A |  |
| B |  |
| C |   T: 20 ms (50Hz) |

If clock does not keep exact time, you must check Diode D6, transistor Q2.

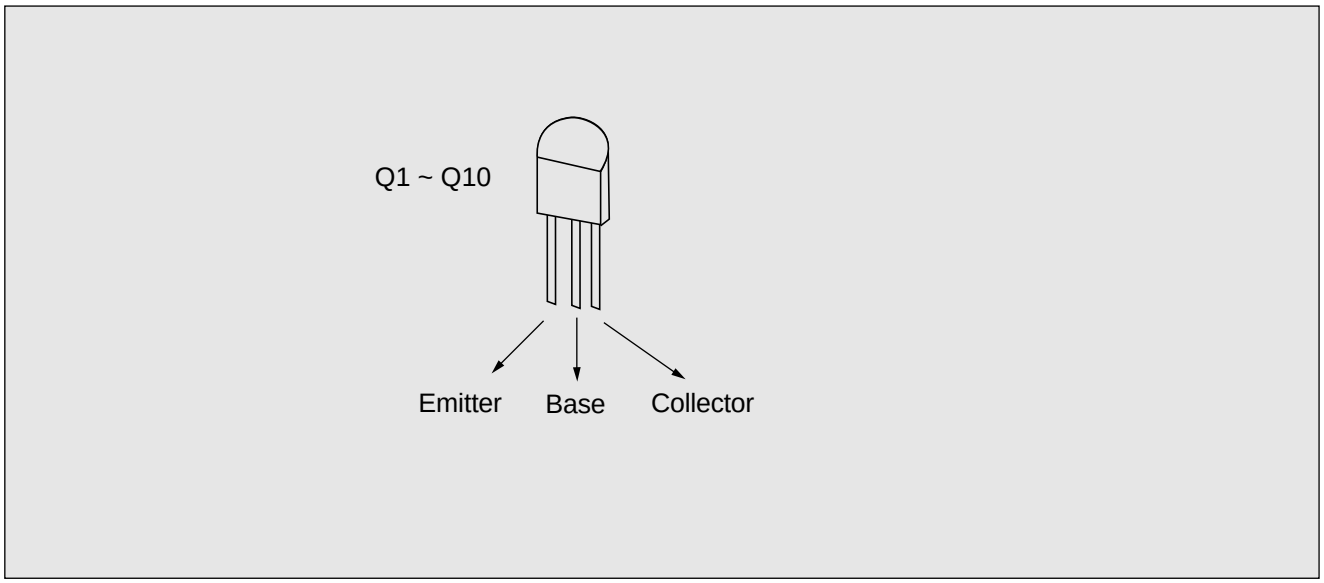
**8) When the CARD READER does not operate properly.**



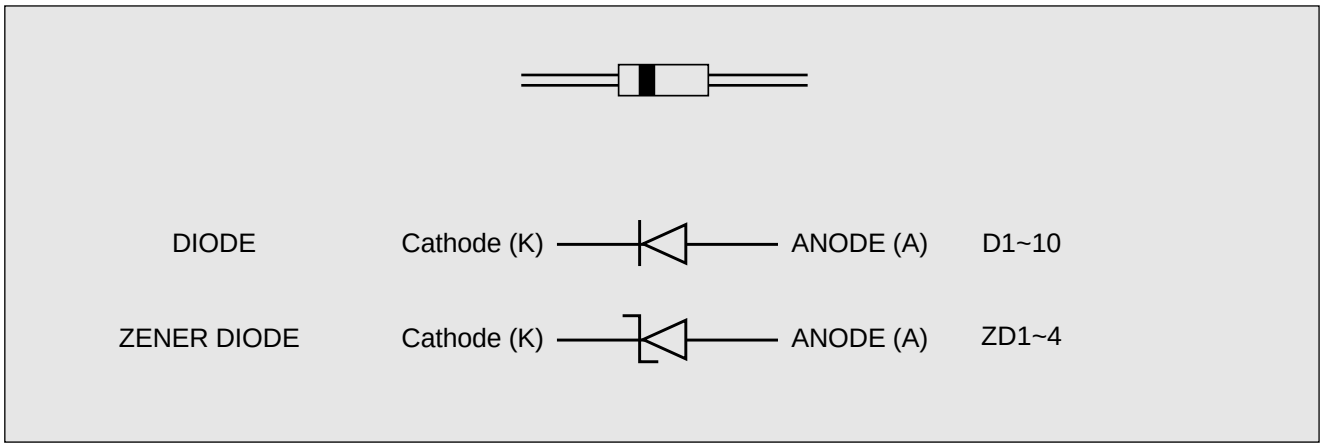




• **NOTE 1 :** The TIMING CHART is display during moving of the CARD.
• **NOTE 2 :** When the card Reader does not operate properly, Replace a card Reader.

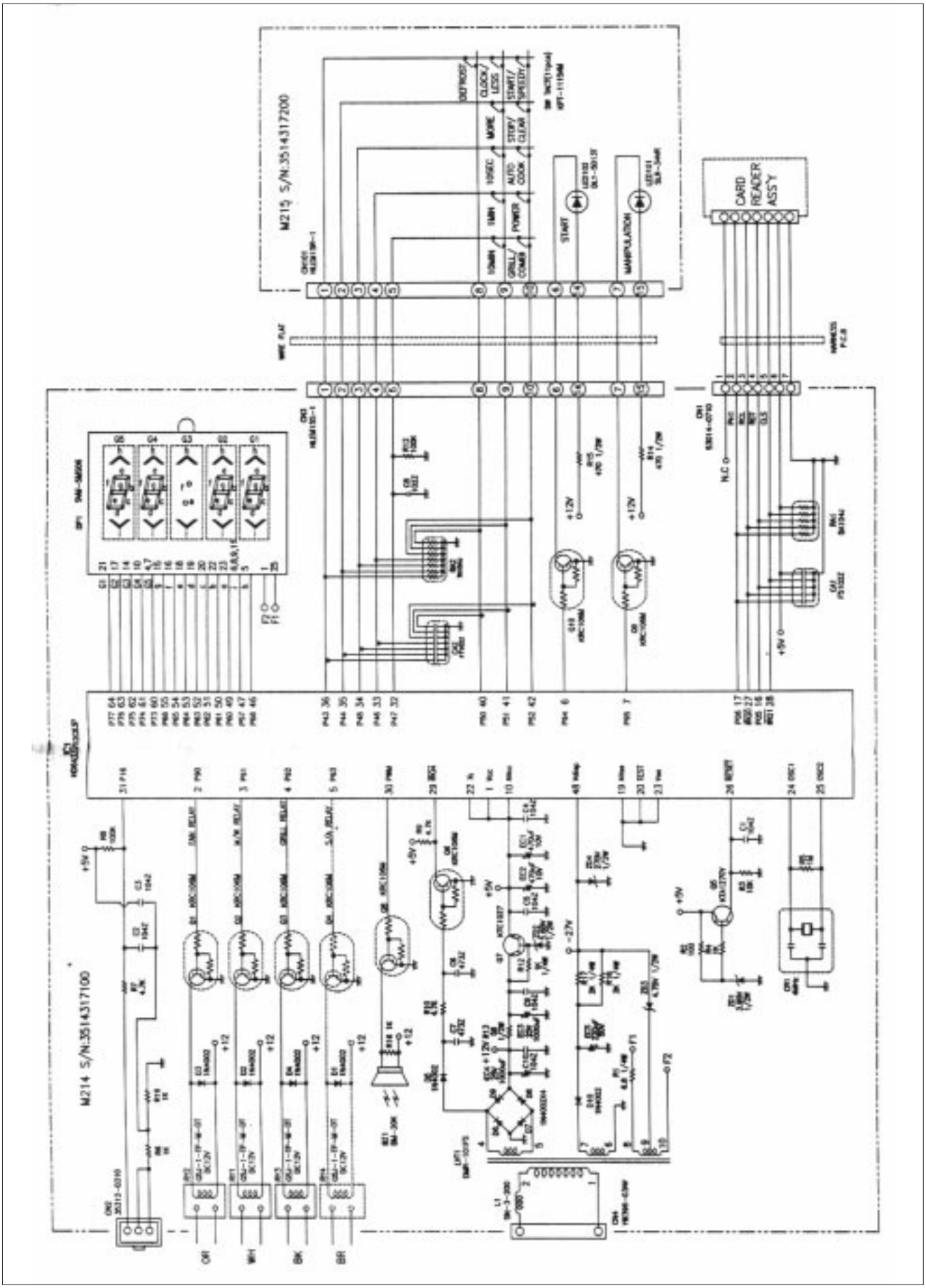
## 1) Transistor(NPN Type)




## 2) Diode and zener diode



# P.C.B. CIRCUIT DIAGRAM



# P.C.B. LOCATION NO

| REF NO. | PART CODE | PART NAME | DESCRIPTION | REMARK |
|---|---|---|---|---|
| BZ1 | 3515600100 | BUZZER | BM-20K | |
| CA1 | CN7XB-102M | C ARRAY | 8P(7) 102 M 50V | |
| CA2 | CN5XB-102M | C ARRAY | 6P(5) 102 M 50V | |
| C1~5, C9~10 | CCZF1H104Z | CAPACITOR CERA | 104 50V Z AXIAL | |
| C6, C7 | CCZF1H473Z | CAPACITOR CERA | 473 50V Z AXIAL | |
| C8 | CCZF1H102Z | CAPACITOR CERA | 102 50V Z AXIAL | |
| EC3, EC4 | CEXF1E102V | CAPACITOR ELEC | 25V RSS 1000μF | |
| EC1, EC2 | CEXF1A471V | CAPACITOR ELEC | 10V RSS 470μF | |
| EC5 | CEXF1H221V | CAPACITOR ELEC | 50V RSS 220μF | |
| CN1 | 3519105910 | CONNECTOR WAFER | 53014-0710 | |
| CN2 | 30166M5030 | CONNECTOR WAFER | 35312-0310 | |
| CN3 | 4CW215SBD0 | CONNECTOR FILM | HLEM15S-1 | |
| CN4 | 3519150500 | CONNECTOR WAFER | YW396-03AV | |
| CN101 | 4CW215RBD0 | CONNECTOR | HLEM15R-1 | PCB SUB |
| D2~D10 | DZN4002A-- | DZN4002A-- | 1N4002A | |
| ZD1 | DZTB3R9B-- | DZTZ3R9B-- | MTZ 3.9BV 1/2W | |
| ZD2 | DZTZ5R6B-- | DZTZ5R6B-- | MTZ 5.6BW 1/2W | |
| ZD3 | DZTZ4R7B-- | DZTZ4R7B-- | MTZ 4.7BW 1/2W | |
| ZD4 | DZTZ27D--- | DZTZ27D--- | MTZ 27BW 1/2W | |
| DP1 | DSVM5MS06- | DSVM5MS06- | DSVM-5MS06 | |
| HD1 | 3513000500 | 3513000500 | NYLON66 | |
| IC1 | 147SG846A0 | 147SG846A0 | HD6433712C83P | |
| LED101 | DSLR34VR-- | DSLR34VR-- | SLR-34VR | PCB SUB |
| LED102 | DLY-5013T- | DLY-5013T- | DLY-5013T | PCB SUB |
| M214 | 3514317100 | 3514317100 | 201X97 | |
| M215 | 3514317200 | 3514317200 | 153X92 | PCB SUB |
| RA1 | RA-86X104J | RA-86X104J | 6P(5) 1/8 100K J | |
| RA2 | RA-88X104J- | RD-AZ104J | 8P(7) 1/8 100K J | |
| R5 | RD-AZ105J- | REGISTER | 1/6W 1M 5% | |
| R8, R12 | RD-AZ104J- | REGISTER | 1/6W 100K 5% | |
| R3 | RD-AZ103J- | REGISTER | 1/6W 10K 5% | |
| R7, R9, R10 | RD-AZ472J- | REGISTER | 1/6W 4.7K 5% | |
| R4, R6, R16 | RD-AZ102J- | REGISTER | 1/6W 1K 5% | |

| REF NO. | PART CODE | PART NAME | DESCRIPTION | REMARK |
|---|---|---|---|---|
| R2 | RD-AZ101J- | 1/6W 100 5% | | |
| R17, R18 | RD-4Z202J- | RESISTER | 1/4W 2K 5% | |
| R11 | RD-4Z102J- | RESISTER | 1/4 1K 5% | |
| R1 | RD-4Z689J- | RESISTER | 1/4W 6.8 5% | |
| R13 | RD-2Z560JS | REGISTER | 1/2W 56 5% | |
| R14, 15 | RD-2Z471JS | RESISTER | 1/2 470 5% | |
| CR1 | 5PKBR40MKS | RESONATOR CERA | KBR-4.0MSTF | |
| RY1~RY3 | 5SC0101112 | SW RELAY | G5J-1-TP-M-DT 12V | |
| SW101~111 | 5S50101Z93 | SW TACT | KPT-1115AM | PCB SUB |
| CD1 | 3511405900 | COVER LED | PP | PCB SUB |
| Q1~3, Q6, Q8~Q10 | TZRC106M-- | TRANSISTOR | KRC-106M | |
| Q5 | TZTA1270Y- | TRANSISTOR | KTA-1270Y | |
| Q7 | TZTC1027Y- | TRANSISTOR | KTC-1027Y | |
| LVT1 | 5EPV041351 | TRANS POWER | DMR-101FS | |
| WF1 | WSJ-159007 | WIRE FLAT | 1.25X15X90XC | |
| J5, J8, J10~12, J17 | 85801052GY | WIRE COPPER | 1/0.52 TIN COATING | 7.5mm |
| J1~4, J6~7, J9, J13~16 | 85801052GY | WIRE COPPER | 1/0.52 TIN COATING | 10mm |
| J101~104 | 85801052GY | WIRE COPPER | 1/0.52 TIN COATING | PCB SUB |