

# Service Manual

## Microwave Oven

Model: KOG-637R

### ✓ 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>).

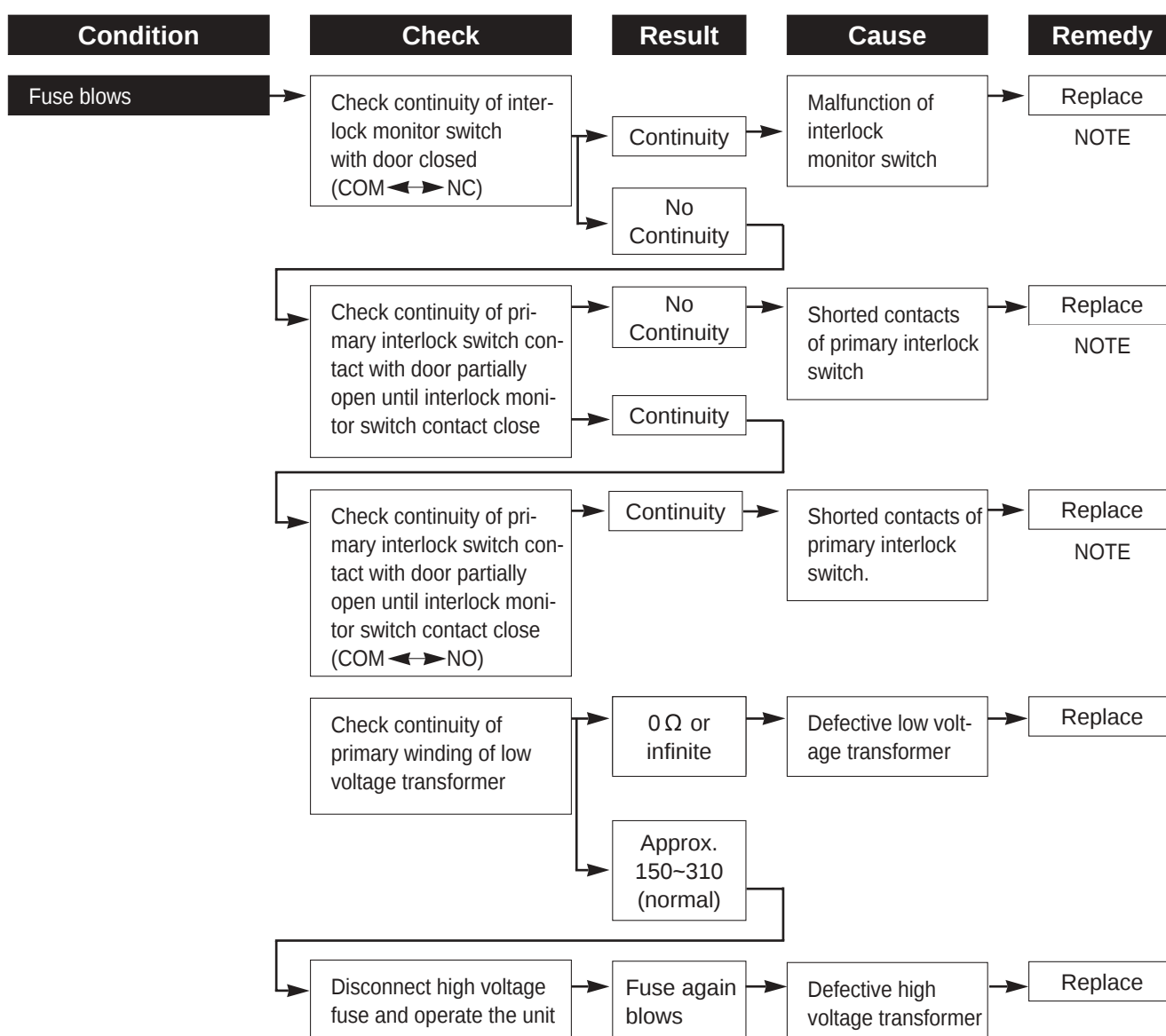
# TROUBLESHOOTING GUIDE

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 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, be sure the power cord is not inserted the wall outlet.  
Check wire harness, wiring and connected 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.



| Condition                                      | Check                                  | Result        | Cause                           | Remedy  |
|------------------------------------------------|----------------------------------------|---------------|---------------------------------|---------|
| Outlet has proper voltage. Fuse does not blow. | Check continuity of magnetron          | No Continuity | Defective magnetron             | Replace |
|                                                | Check continuity of noise filter board | No Continuity | Defective line filter board     | Replace |
|                                                | Check continuity of power supply cord  | No Continuity | Open power supply cord          | Replace |
|                                                |                                        | Normal        | Defective touch control circuit | Replace |

**NOTE :** All these switches must be replaced at the same time, please refer to Interlock Mechanism and Adjustment.

**(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 pressed.

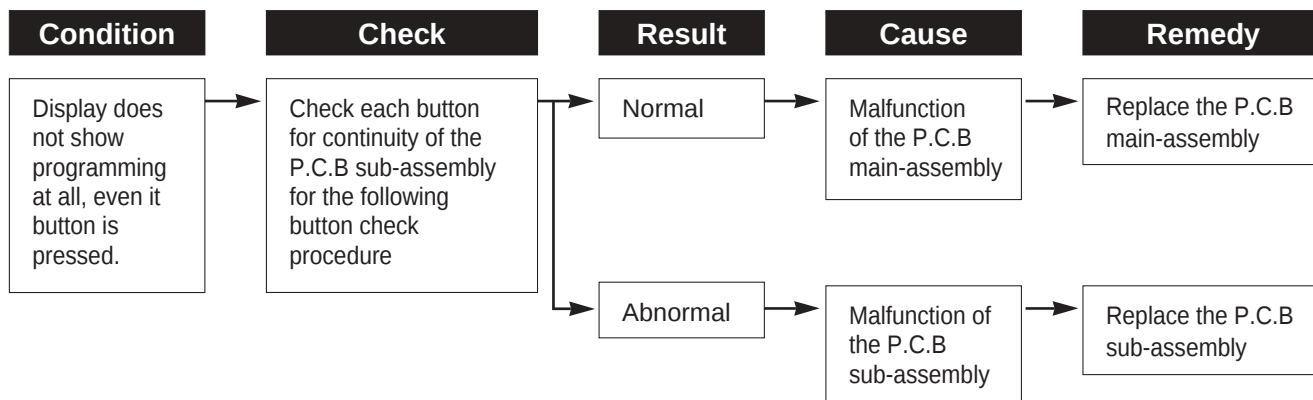
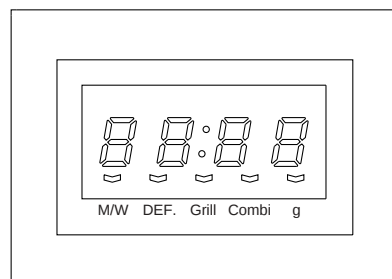
| Condition                                      | Check                                                       | Result        | Cause                                               | Remedy            |
|------------------------------------------------|-------------------------------------------------------------|---------------|-----------------------------------------------------|-------------------|
| Turn table motor, and oven lamp do not turn on | Check continuity of primary interlock switch                | No Continuity | Malfunction of primary interlock switch             | Adjust or Replace |
|                                                | Check continuity of secondary interlock and D.O.M. switches | No Continuity | Malfunction of secondary interlock and D.O.M switch | Adjust or Replace |
|                                                | Check D.C. voltage being supplied to RELAY (RY2) coil       | 0V            | Defective touch control circuit                     | Replace           |
|                                                |                                                             | Approx 15 VDC | Faulty contacts of RELAY (RY2) or open relay coil   | Replace           |

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

| Condition                | Check                                                                                   | Result                       | Cause                                             | Remedy  |
|--------------------------|-----------------------------------------------------------------------------------------|------------------------------|---------------------------------------------------|---------|
| No microwave oscillation | Check continuity of high voltage capacitor terminals with wires removed                 | Continuity                   | Defective high voltage transformer                | Replace |
|                          | Check continuity of high voltage diode in forward and backward direction with DC megger | Continuity in backward diode | Defective high voltage diode                      | Replace |
|                          | Connect megger leads to magnetron terminal and magnetron body                           | Continuity                   | Defective magnetron                               | Replace |
|                          | Check resistance of primary and secondary coil of high voltage transformer              | 0Ω or ∞                      | Defective high voltage transformer                | Replace |
|                          | Check continuity of magnetron with wires removed                                        | No Continuity                | Defective magnetron                               | Replace |
|                          | Check continuity of filament terminal of high voltage transformer                       | No Continuity                | Defective high voltage transformer                | Replace |
|                          | Check D.C. voltage being supplied to RELAY (RY1) coil                                   | 0V                           | Defective touch control circuit                   | Replace |
|                          |                                                                                         | Approx 15 VDC                | Faulty contacts of RELAY (RY1) or open relay coil | Replace |

**(TROUBLE 4)** The following visual conditions indicate a probable defective touch control circuit assembly.

1. Incomplete segments
  - (1) Segments missing
  - (2) Partial segments missing
  - (3) Digit flickering other than normal display slight flickering
  - (4) “:0” does not display when power is on.
2. Distinct changes in the display are not on when they should be.
3. One or more digits in the display are not on when they should be.
4. Display indicates a number different from one pressed.
5. Specific numbers (for example 2 or 3) will not display when the panel is pressed.
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 does not show the time of day when STOP/CLEAR button is pressed.
11. Oven lamp and turntable motor do not stop although cooking is finished. Check if the RELAY 2 contacts close.  
If they are close, replace touch control circuit.



**NOTE :** Before following the particular steps listed above in the troubleshooting guide for the button of control panel failure, please check for the continuity of each wire-harness between the P.C.B main-assembly and P.C.B. sub-assembly.

# 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

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

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.

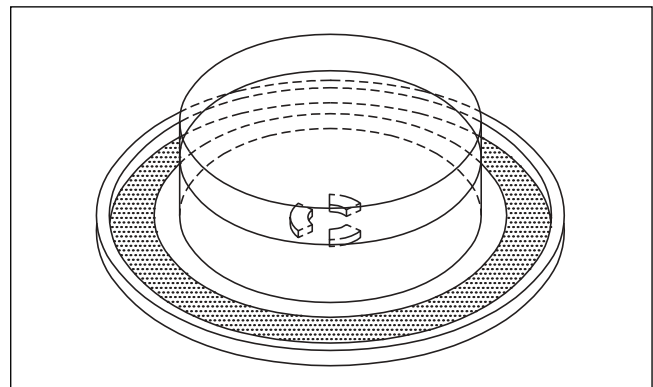
\* The microwave power output is stated in watts, rounded off to the nearest 50W

### CAUTION

1. Water load should be measured exactly to 1 liter.
2. Input power voltage should be exactly specified voltage (Refer to 2. 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 |



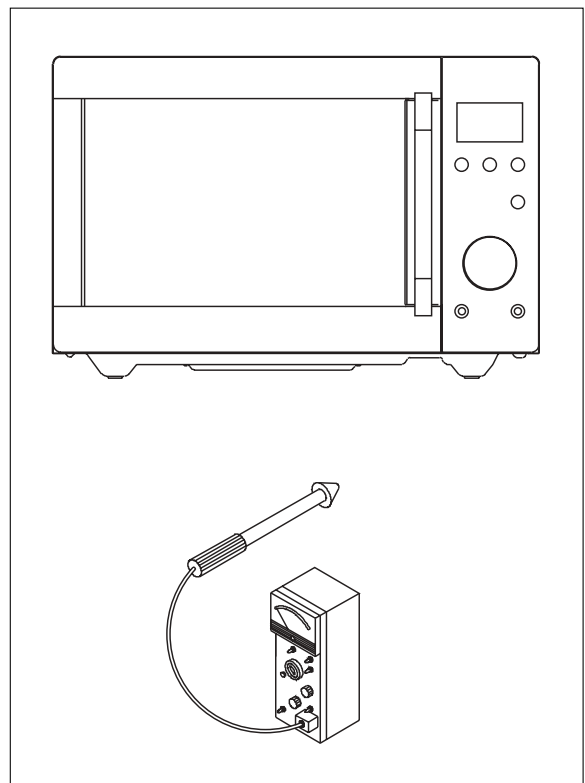
## 2. MICROWAVE RADIATION TEST

### CAUTION :

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.

### PROCEDURES

1. Prepare Microwave Energy Survey Meter, 600cc glass beaker, and glass thermometer 100°C(212°F).
2. Pour 275cc±15cc of tap water initially at 20±5°C(68±9°F) in the 600cc glass beaker with an inside diameter of approx. 95mm(3.5in.).
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/cm<sup>2</sup>.
  - 2) When measuring the leakage, always use the 5cm(2in.) 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.



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### 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 (at 20 °C):
  - Secondary winding ... Approx. 195  $\Omega$   $\pm$ 10%
  - Filament winding ... Approx. 0  $\Omega$
  - Primary winding ... Approx. 2.2  $\Omega$

#### 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

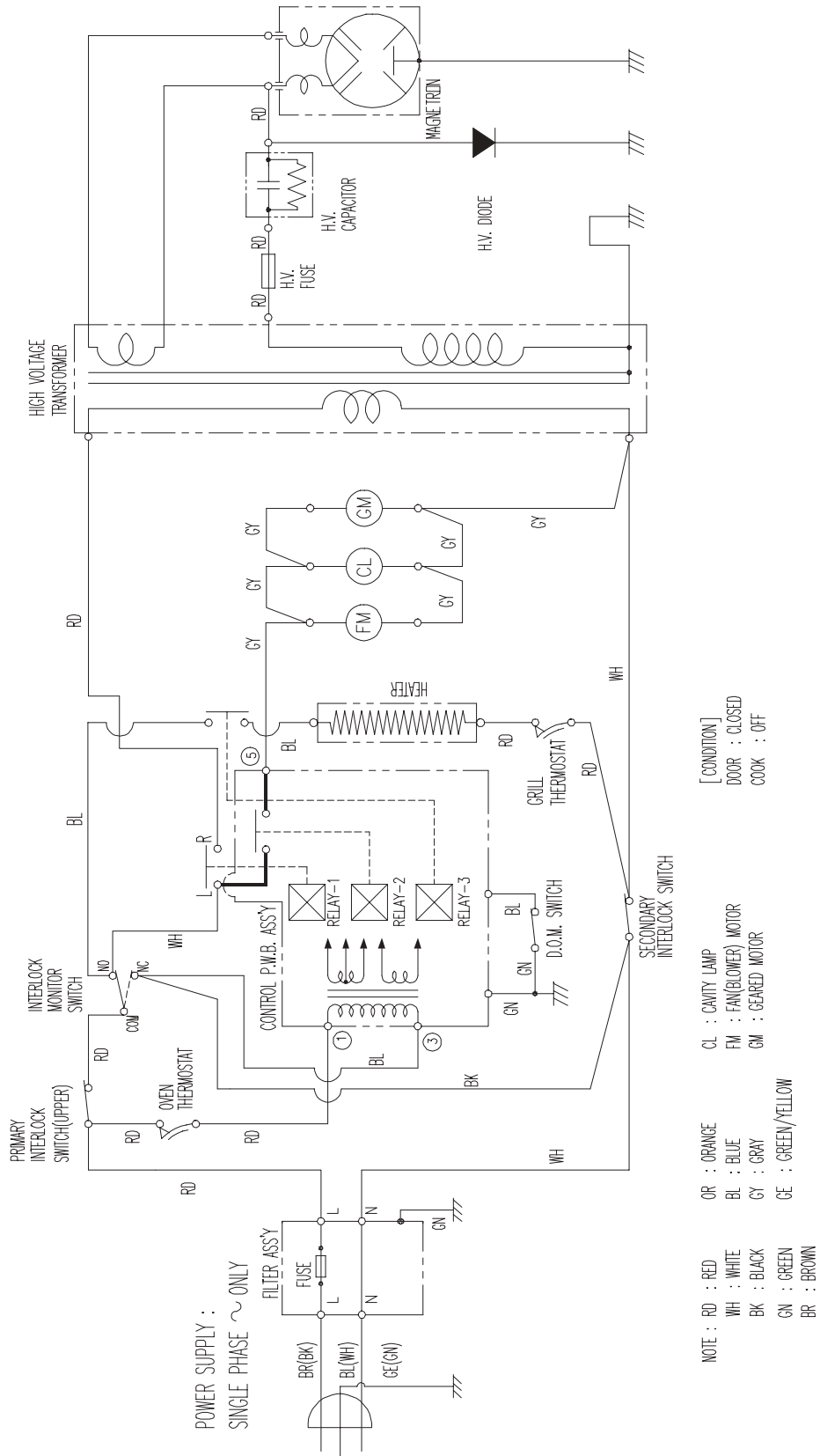
For complete magnetron diagnosis, refer to "Measurement of the Microwave Power Output." Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or a shorted magnetron,

- 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.

# WIRING DIAGRAM



# EXPLODED VIEW AND PARTS LIST

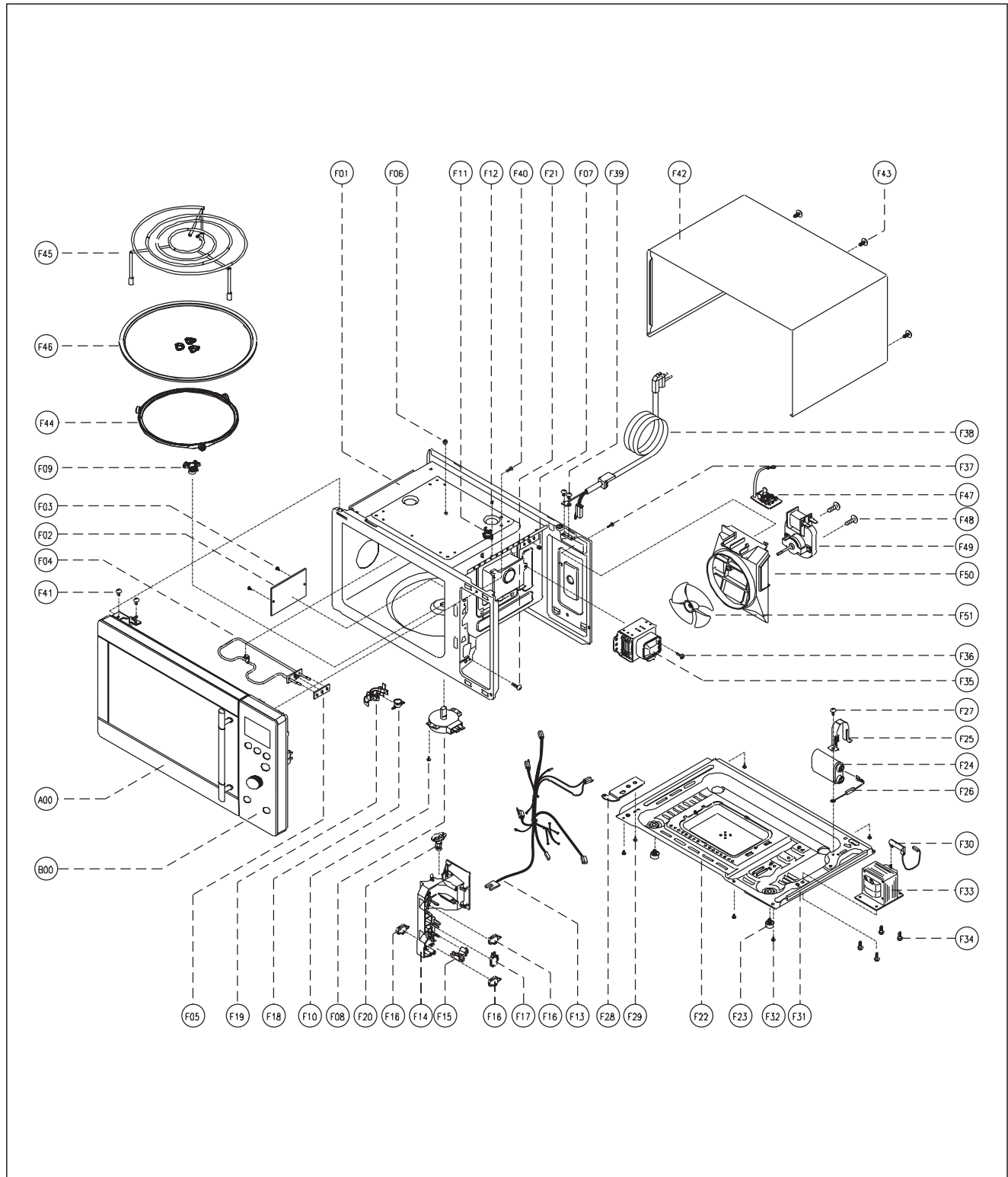
## 1. DOOR ASSEMBLY

Refer to Disassembly and assembly.

## 2. CONTROL PANEL ASSEMBLY

Refer to Disassembly and assembly.

## 3. TOTAL ASSEMBLY



| REF. NO | PART CODE     | PART NAME           | DESCRIPTION               | Q'TY                 |
|---------|---------------|---------------------|---------------------------|----------------------|
| F01     | NO DISPONIBLE | CAVITY AS           | KOG-637R5SSC              | 1                    |
| F02     | 3511405100    | COVER WAVE GUIDE    | MICA T0.35                | 1                    |
| F03     | 4078502031    | BUTTON LOCKING      | PP HONAM A353             | 2                    |
| F04     | 3512803410    | HEATER              | 230V 1000W TIANCHENG      | COMPLETO: 3513302700 |
| F05     | NO DISPONIBLE | GASKET HEATER       | SK5 T0.2                  |                      |
| F06     | NO DISPONIBLE | NUT HEX             | NUT FLANGE M5X0.8P MFZN   | 1                    |
| F07     | NO DISPONIBLE | NUT HEX             | NUT FLANGE M5X0.8P MFZN   | 1                    |
| F08     | 3966310100    | MOTOR SYNCRO        | 220V 2.5W GM-16-24FD12    | 1                    |
| F09     | 3517402130    | COUPLER             | XAREC                     | 1                    |
| F10     | NO DISPONIBLE | SCREW TAPPING       | T2S PAN 4X6 MFZN          | 1                    |
| F11     | NO DISPONIBLE | THERMOSTAT          | OFF:85 ON:75 H #187       | 1                    |
| F12     | NO DISPONIBLE | SCREW TAPPING       | T2S PAN 3X6 MFZN          | 1                    |
| F13     | NO DISPONIBLE | HARNESS MAIN        | KOG-371G0S                | 1                    |
| F14     | NO DISPONIBLE | LOCK                | POM BLACK                 | 1                    |
| F15     | NO DISPONIBLE | LEVER LOCK          | POM                       | 1                    |
| F16     | 4415A17352    | SW MICRO            | VP-533A-OF SPNO #187 200G | 3                    |
| F17     | 4415A66910    | SW MICRO            | VP-531A-OF/SZM-V16-FA-61  | 1                    |
| F18     | NO DISPONIBLE | THERMOSTAT          | OFF:75 ON:65 H #187 NB    | 1                    |
| F19     | NO DISPONIBLE | HOLDER THERMOSTAT   | PP(BK)                    | 1                    |
| F20     | 3513601600    | LAMP                | BL 240V 25W T25 C7A H187  | 1                    |
| F21     | NO DISPONIBLE | SCREW TAPPING       | T2S TRS 4X12 MFZN         | 1                    |
| F22     | NO DISPONIBLE | BASE                | SBHG T6.0                 | 1                    |
| F23     | 3512100900    | FOOT                | PP DASF-130               | 2                    |
| F24     | 3518302200    | CAPACITOR HV        | 2100VAC 0.98UF #187 75MM  | 1                    |
| F25     | NO DISPONIBLE | HOLDER HV CAPACITOR | SECC T0.5                 | 1                    |
| F26     | 3518400900    | DIODE HV AS         | HVR-1X-30B #187           | 1                    |
| F27     | NO DISPONIBLE | SCREW TAPTITE       | TT3 TRS 4X8 MFZN          | 1                    |
| F28     | NO DISPONIBLE | STOPPER HINGE *U    | SCP-1 T2.5                | 1                    |
| F29     | NO DISPONIBLE | SCREW TAPTITE       | TT3 TRS 4X8 MFZN          | 1                    |
| F30     | 3518701100    | FUSE HV             | 5KV 0.55A HV-41A55-02     | 1                    |
| F31     | NO DISPONIBLE | FOAM                | CR 10TX180X15             | 1                    |
| F32     | NO DISPONIBLE | SCREW SPECIAL       | T1 TRS 4X10 SE MFZN       | 5                    |
| F33     | 3518122310    | TRANS HV            | R1S58B(LA00)              | 1                    |
| F34     | NO DISPONIBLE | SPECIAL SCREW       | TT3 HEX 4X8 FLG MFZN      | 4                    |
| F35     | 3518002400    | MAGNETRON           | 2M218JFL 6CF              | 1                    |
| F36     | NO DISPONIBLE | SPECIAL SCREW       | T2 BOLT FLANGE 5X12 DACRO | 1                    |
| F37     | NO DISPONIBLE | SCREW TAPPING       | T2S TRS 4X12 MFZN         | 1                    |

| REF. NO | PART CODE     | PART NAME         | DESCRIPTION               | Q'TY |
|---------|---------------|-------------------|---------------------------|------|
| F38     | NO DISPONIBLE | CORD POWER AS     | 3X1.5 80X80 120-RTML 1.4M | 1    |
| F39     | NO DISPONIBLE | SCREW SPECIAL     | T1 TRS 4X10 SE MFZN       | 3    |
| B00     | 3516738100    | CONTROL-PANEL AS  | KOG-637R5S42              | 1    |
| F40     | NO DISPONIBLE | SCREW TAPPING     | T2S TRS 4X12 MFZN         | 1    |
| A00     | 3511726390    | DOOR AS           | KOR-637R5SSC              | 1    |
| F41     | NO DISPONIBLE | SCREW TAPTITE     | TT3 TRS 4X8 MFZN          | 2    |
| F42     | NO DISPONIBLE | CABINET AS        | KOR-61150S                | 1    |
| F43     | NO DISPONIBLE | SCREW SPECIAL     | T1 TRS 4X10 SE MFZN       | 3    |
| F44     | 3512510600    | GUIDE ROLLER AS   | KOR-61152S                | 1    |
| F45     | 3517204410    | TRAY RACK AS      | KOG-361Q0S 99MM           | 1    |
| F46     | 3517203610    | TRAY              | GLASS                     | 1    |
| F47     | 3518606100    | NOISE-FILTER      | DWLF-M13                  | 1    |
| F48     | NO DISPONIBLE | SCREW TAPPING     | T2S PAN 4X25 MFZN         | 2    |
| F49     | 3963512310    | MOTOR SHADED POLE | 230V 20W MW10CA-M02       | 1    |
| F50     | NO DISPONIBLE | GUIDE WIND        | PP                        | 1    |
| F51     | 3511800300    | FAN               | PP+30%GLASS               | 1    |



**DAEWOO ELECTRONICS CORP.**

1-2, Jeo-dong 1(il)-ga, Jung-gu, Seoul, Korea

C.P.O. BOX 8003 SEOUL, KOREA

TELEX: DWELEC K28177-8

CABLE: "DAEWOOELEC"

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# ABOUT THIS MANUAL

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|------------------------------------------------------------------------|---|--------------------|-----|
| 담                                                                      | 당 | 이재혁 님              |     |
| M O D E L                                                              |   | KOG-637R5SSC (S/M) |     |
| 접                                                                      | 수 | 2009.06.01         |     |
| 일                                                                      | 정 | 1 차                |     |
|                                                                        |   | 2 차                |     |
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연락처

VISION 담당 방 문 수

TEL: 730-0660 FAX: 730-3788