



# First Choice Group

SPARE PARTS DIAGRAM FOR

## Panasonic

Microwave/Combi

NE9051BBQP



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# Service Manual

Microwave Oven

***INVERTER***  
  
 SYSTEM INSIDE

**NE-9051BBPQ**



Power source :	240VAC Single Phase, 50Hz
Power requirements:	Microwave : 1300W
Output: (IEC705-88)	Microwave : 900W
Microwave Frequency	2450Mhz
Timer:	99 min 99 second
Oven cavity size	27L
Outside dimensions:	510 mm (W) X 380mm (D) x 304mm (H)
Inside dimensions	359mm (W) x 352mm (D) x 217mm (H)
Weight	11.5 Kg
Inverter power Supply	
Output Power Supply	IEC705-88 Test procedure
Specifications subject to change without notice	

**Panasonic®**

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**⚠ WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

**IMPORTANT SAFETY NOTICE**

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

**CONTENTS**

	Page		Page
1 Inverter Warning .....	3	11 Troubleshooting guide .....	17
2 Feature Chart .....	3	12 Digital Programmer Circuit Troubleshooting Guide .....	20
3 Control Panel .....	4	13 Main Parts List .....	21
4 Operation And Digital Programmer Test Procedure .....	5	14 Exploded View .....	22
5 Schematic And Wiring Diagram .....	7	15 Door Assembly .....	23
6 Description Of The Operating Sequence .....	8	16 Escutcheon Base .....	24
7 Cautions to Be Observed When Troubleshooting .....	9	17 Packing And Accessories .....	25
8 Parts Replacement Procedure .....	11	18 Key Board Matrix .....	26
9 Component Test Procedure .....	14	19 Digital programmer Circuit .....	27
10 Measurements and Adjustments .....	16	20 Digital programmer circuit parts list .....	29

# 1 Inverter Warning

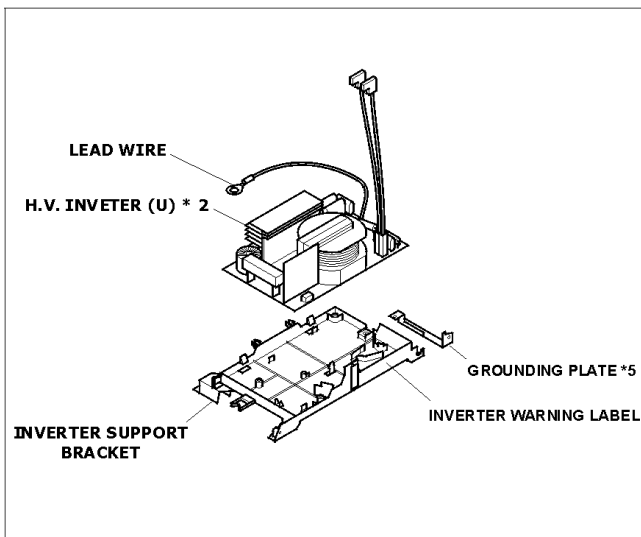
The inverter board looks like a normal printed circuit board. However, this printed circuit board supplies the magnetron tube with very high voltage and current.

## The inverter PCB:

1. Produces very high voltage and current.
2. Has an Aluminium heat sink which becomes very hot.
3. Has capacitors in the circuitry that hold a high voltage charge even when the oven is not operating.

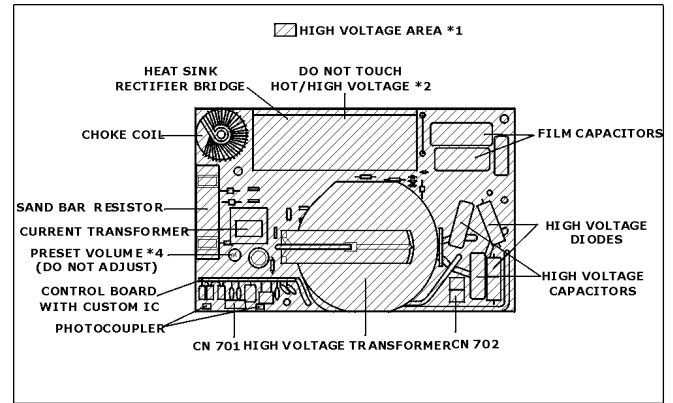
## Do not

1. Do not touch the high voltage circuitry. When replacing the board take extreme care to avoid possible electric shock.
2. Do not touch the aluminium heat sink as it is part of the high voltage circuit and becomes very hot.
3. Do not attempt to repair the inverter PCB as this can be very dangerous. Replace the high voltage, inverter circuit as a complete unit.
4. Do not adjust or tamper with the pre-set volume on the inverter board. It is very dangerous to adjust this pre-set without proper test equipment.
5. Do not operate the microwave oven when the inverter grounding plate and fixing screw is loose. It is very dangerous to operate the inverter circuit board with out a proper ground connection.



Inverter Power Supply Diagram

Figure 1



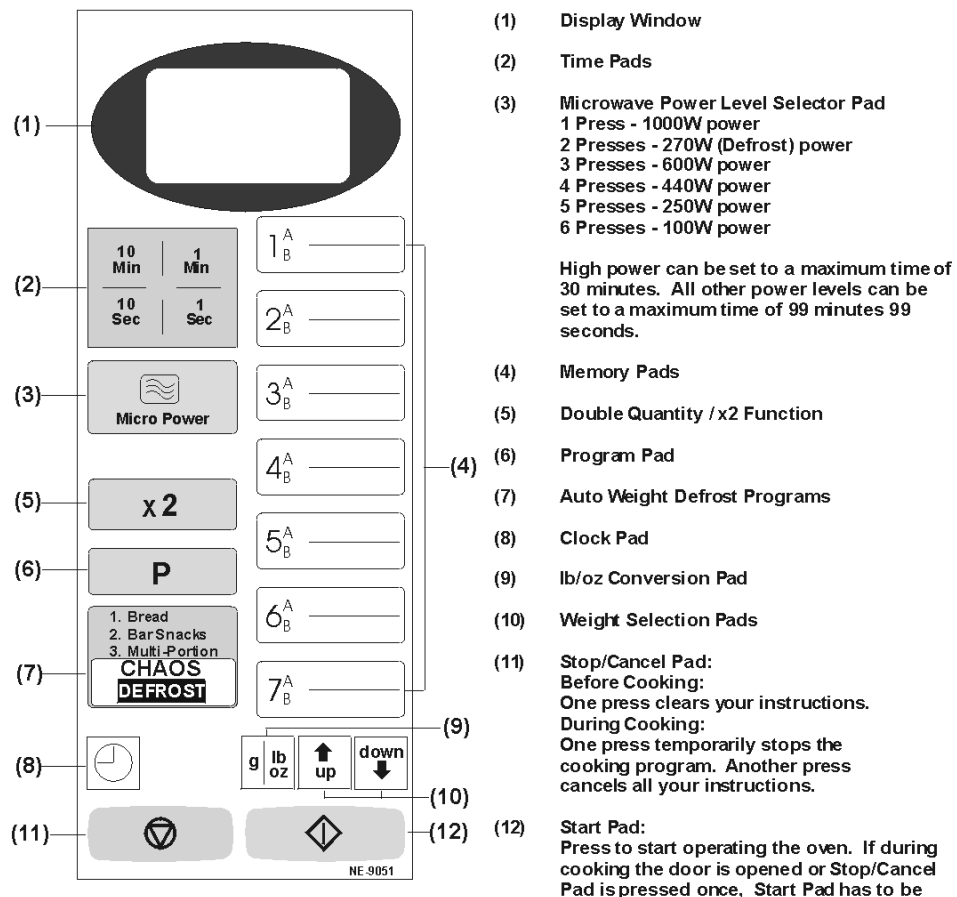
Inverter Layout

Figure 2

## 2 Feature Chart

Function	
Microwave	6
Preset Menu	7
Programmable Menu	7
Weight defrost	3
Delay/Stand	No
Repeat	Yes
Extra portion (x2)	Yes
Program Lock	Yes
Kg - lb/oz	Yes
Stage cooking	3
Clock	12h
Word prompt	English

### 3 Control Panel

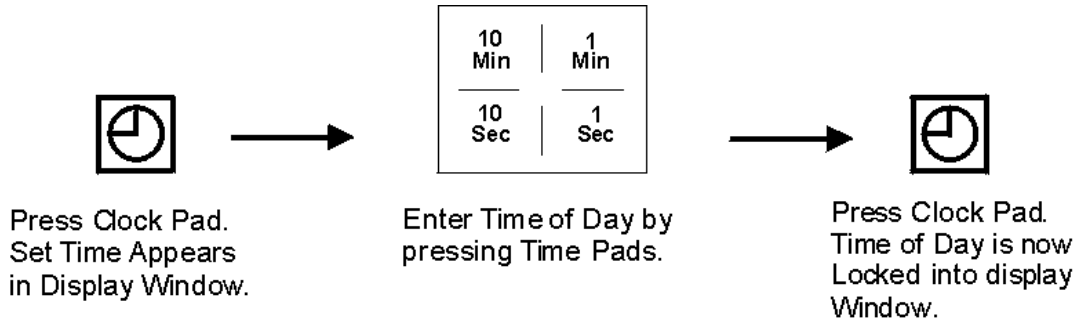


#### BEEP SOUND:

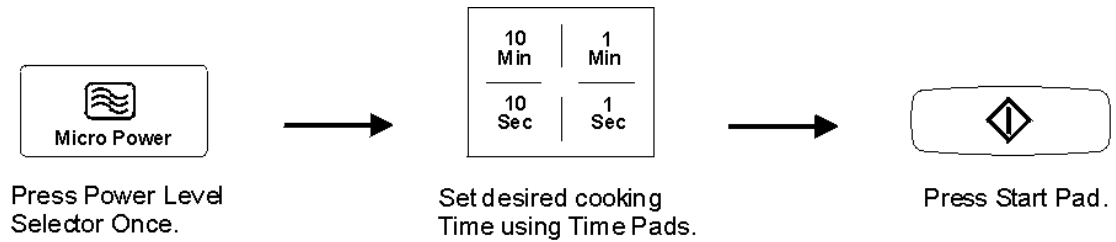
A beep sounds when a pad is pressed. If this beep does not sound, the setting is incorrect. When the oven changes from one function to another, two beeps sound. After completion of cooking, five beeps

## 4 Operation And Digital Programmer Test Procedure

### 4.1. Setting the Clock

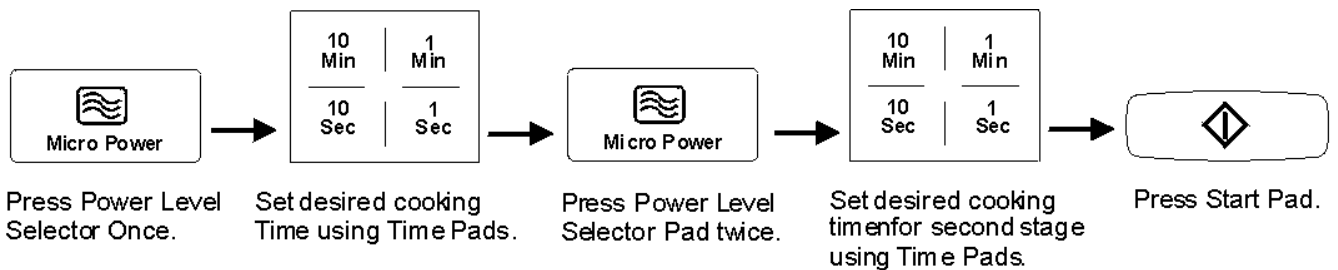


### 4.2. Single Stage Cooking

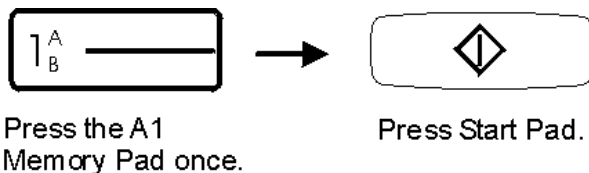


**Note:** Press Power Level, once for HIGH power, 2 Times for DEFROST, 3 Times for MEDIUM, 4 Times for LOW, 5 Times for SIMMER, 6 Times for WARM.

### 4.3. 2 or 3 Stage Cooking

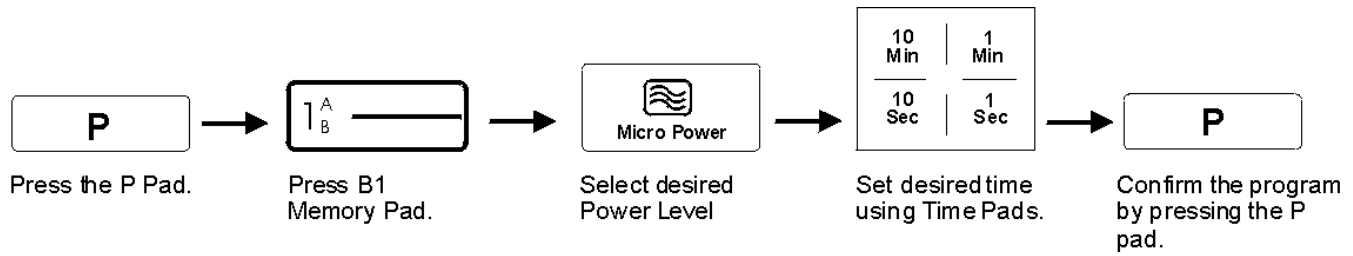


### 4.4. Function A Memory Pads

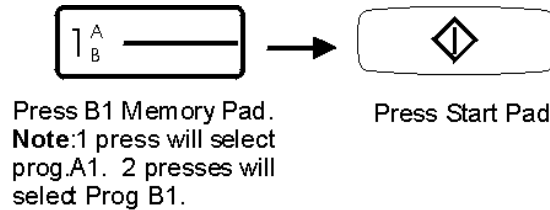


**NOTE:** Programs A1-A7 are Pre-programmed at HIGH power for following times:  
 A1-10 Seconds      A2-20 Seconds      A3-30 Seconds      A4-1 Minute  
 A5-1 Minute 30 Seconds      A6-2 Minutes      A7-2 Minutes 30 Seconds

## 4.5. Function B Memory Pads (Programming)

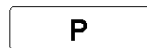


## 4.6. Function B Operation



## 4.7. Program Lock

To Lock Program B Memory Pads



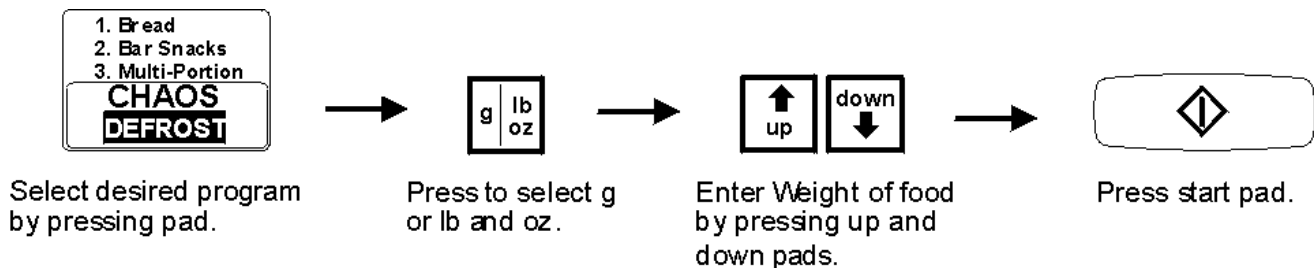
Press and hold P button for 4 seconds or more. A \* will blink twice in the display. Program Lock On will appear in display

To Unlock Program B Memory Pads

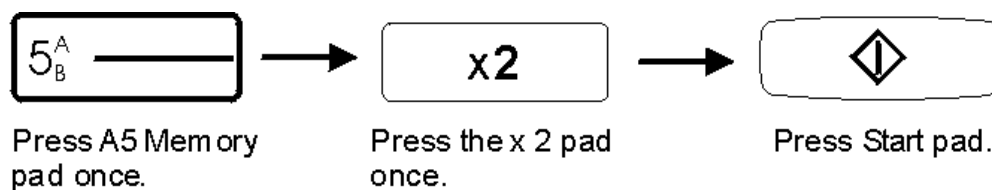


Press and hold P button for 4 seconds or more. A \* will blink twice in the display. Program Lock Off will appear in display

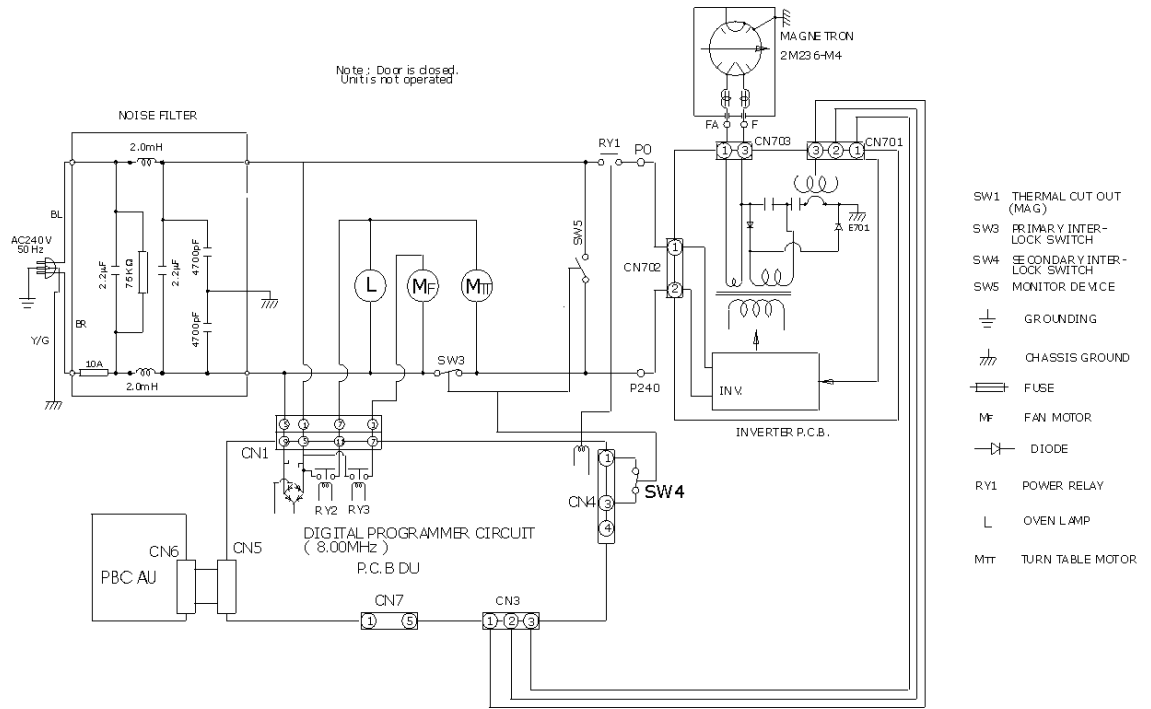
## 4.8. Auto Weight Defrost



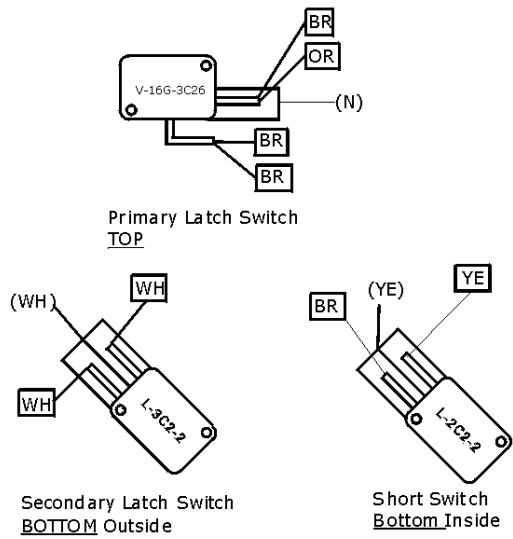
## 4.9. Double Quantity / x 2 Function



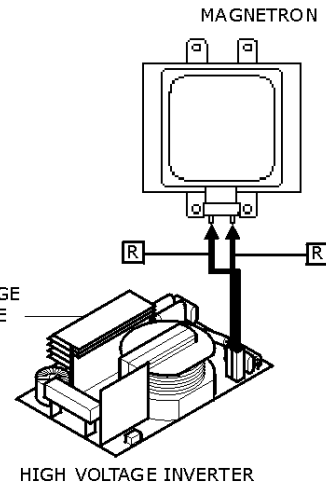
# 5 Schematic And Wiring Diagram



NOTE: \*When replacing, check the lead color as shown.  
\*Colors shown by () indicate colors of lead wire connector housing.



CAUTION: HEAT SINK (HOT/LIVE) VERY HIGH VOLTAGE AND TEMPERATURE



SYMBOL	COLOUR
BL	BLUE
BK	BLACK
BR	BROWN
WH	WHITE
YE	YELLOW
N	NATURAL
R	RED



## 6 Description Of The Operating Sequence

### 6.1. Variable power cooking control

The output power is controlled by the inverter power supply, which is controlled by signals from the digital programmer circuit (DPC). The digital programmer circuit operates relay RY1 to supply power to the inverter circuit. The outpower is controlled by the inverter control signal from the digital programmer circuit.

Variable power cooking

Setting	Output	On Time	Off Time
900W	900W	22 sec	0 sec
270W	440W	16 sec	6 sec
600W	600W	22 sec	0 sec
440W	440W	22 sec	0 sec
250W	440W	15 sec	7 sec
100W	440W	8 sec	14 sec

**NOTE 1.** The ON/OFF time ratio does not correspond with the percentage of microwave power since approximately 2 seconds are required to heat the magnetron filament.

**NOTE 2.** If the microwave cooking time is longer than 3 minutes, the cooling fan will operate for 1 minute to cool the oven and its electronic components.

### 6.2. Auto weight defrost.

When an auto control feature is selected and the start pad pressed:

1. The digital programmer circuit determines the power level and the cooking time and indicates the operating state in the display. The table shows the corresponding cooking times for each category and its respective weight.
2. When the cooking time in the display window has elapsed, the oven turns off automatically via the control signal from the digital programmer circuit.

**Note: After auto cooking if the oven temperature is over the predetermined temperature the fan motor rotates to cool the oven and its components.**

Auto Weight Defrost

Category	1st Touch Weight	Cooking Time
Bread	100g	0 Min 50 Sec
Bar Snacks	200g	3 Min 0 Sec
Multi-Portion	400g	6 Min 20 Sec

Function A Menus

Program	Power	Time
A 1	900W	10 sec
A 2	900W	20 sec
A 3	900W	30 sec
A 4	900W	1 Min
A 5	900W	1 Min 30 sec
A 6	900W	2 Min
A 7	900W	2 Min 30 sec

## 7 Cautions to Be Observed When Troubleshooting

Unlike many other appliances, the microwave oven is a high voltage, high current device. Though it is free from danger in ordinary use, extreme care should be taken during repair.

### Caution

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

### 7.1. Check the grounding

Do not operate on a two wire extension cord. The microwave oven is designed to be used when grounded. It is imperative, therefore, to ensure the appliance is properly grounded before beginning repair work.

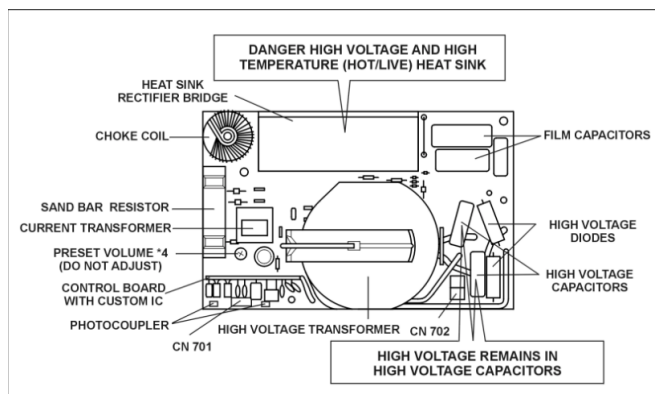
### 7.2. Inverter Warnings

#### DANGER, HIGH VOLTAGE AND HIGH TEMPERATURE (HOT/LINE) OF THE INVERTER POWER SUPPLY (U)

This high voltage inverter power supply handles very high voltage and current for the magnetron tube. Though it is free from danger in ordinary use, extreme care should be taken during repair. As you can see, it looks like a TV flyback transformer, however, the current is extremely large and is therefore, dangerous due to this high current and high voltage.

The aluminium heat sink is also energized with high voltage (HOT), so do not touch when the AC input terminal is connected. The power devices (Collector) is directly connected to the aluminium heat sink.

The aluminium heat sink may be (HOT) due to heat energy, therefore, extreme care should be taken during servicing.

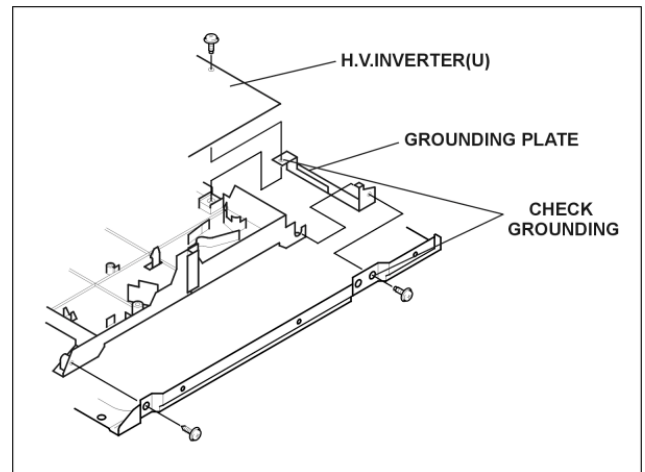


HV Inverter warning

Figure 1

#### WARNING FOR INVERTER POWER SUPPLY (U) GROUNDING

Check the high voltage inverter power supply circuit grounding. The high voltage inverter power supply circuit board must have a proper chassis ground, the inverter grounding bracket must be connected to the chassis. If the inverter board is not grounded it will expose very high voltages and cause extreme DANGER! Be sure that the inverter circuit is properly grounded via the inverter earth bracket.



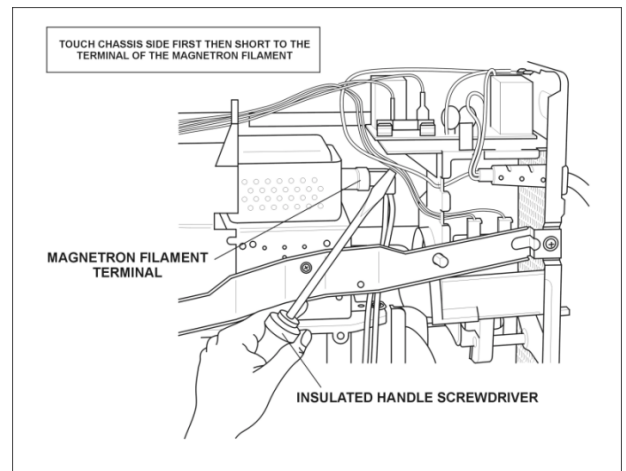
Grounding of the inverter circuit board

Figure 2

#### WARNING! DISCHARGE THE HIGH VOLTAGE CAPACITORS

For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitors in the inverter power supply circuit board.

When replacing or checking parts, remove the power plug from the outlet and short the inverter output terminal of the magnetron filament terminals to the chassis ground with an insulated handle screwdriver to discharge. Please be sure to touch the chassis ground side first and then short to the output terminals.



Discharging the high voltage capacitors

Figure 3

#### WARNING

There is high voltage present with high current capabilities in the circuits of the primary and secondary windings, choke coil and heat sink of the inverter. It is extremely dangerous to work on or near these circuits with the oven energized. DO NOT measure the voltage in the high voltage circuit including the filament voltage of the magnetron.

#### WARNING

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

### 7.3. Part Replacement.

When any part or component is to be replaced, always ensure that the power cord is removed from the wall outlet.

### 7.4. When the 10A fuse is blown due to the operation of the short switch:

#### WARNING

When the 10A 250V fuse is blown due to the operation of the short switch, the primary latch switch and short switch must be replaced. It is also important to change the power relay 1 (RY1) when the continuity test shows shorted contacts.

1. This is mandatory. Refer to “adjustments and measurements” for the location of these switches.
2. When replacing the fuse, confirm that it has the appropriate rating for these models.
3. When replacing faulty switches, be sure the mounting tabs are not bent, broken or deficient in their ability to hold the switches.

### 7.5. Avoid inserting nails, wire etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any holes or gaps, because such objects may work as an antenna and cause microwave leakage.

### 7.6. Confirm after repair

1. After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing. Microwaves might leak if screws are not properly tightened.
2. Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
3. Check for microwave energy leakage. (Refer to procedure for measuring microwave energy leakage).

#### CAUTION MICROWAVE RADIATION

DO NOT BECOME EXPOSED TO RADIATION FROM THE MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY

#### IMPORTANT NOTICE

The following components have potentials above 250V while is appliance is operated.

- Magnetron
- High voltage transformer (Located on inverter (U))
- High voltage diodes (Located on inverter (U))
- High voltage capacitors (Located on inverter (U))

Pay special attention in these areas.

When the appliance is operated with the door hinges or magnetron fixed incorrectly, the microwave leakage can reach more than  $5\text{mW}/\text{cm}^3$ . After repair or exchange, it is very important to check if the magnetron and the door hinges are correctly fixed.

### 7.7. Sharp Edges

#### Caution

Please use caution when unpacking, installing or moving the unit, as some exposed edges may be sharp to touch and cause injury if not handled with care.

## 8 Parts Replacement Procedure

### 8.1. Magnetron

1. Discharge the high voltage capacitors on the inverter circuit.
2. Remove the screw holding the air guide.
3. Remove the two screws holding the tie bar.
4. Remove the oven lamp and lead wire harness cables from the air guide A.
5. Remove the air guide A.
6. Disconnect the two high voltage leads from the magnetron.
7. Remove the four screws holding the magnetron.

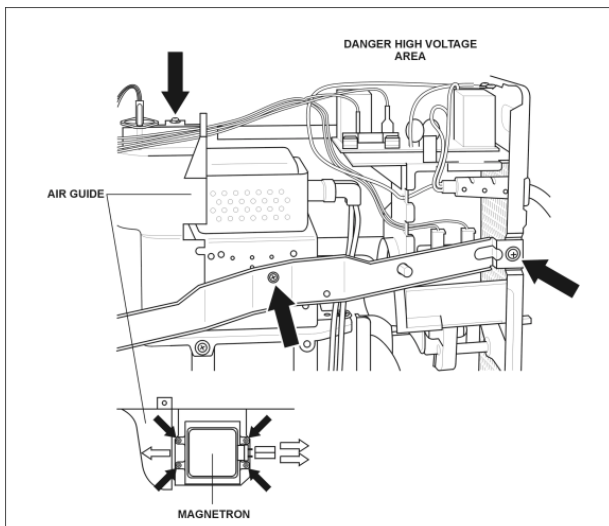
**NOTE: After replacing the magnetron, tighten the mounting screws making sure that there is no gap between the waveguide and the magnetron to prevent microwave leakage.**

#### Caution

When replacing the magnetron, ensure that the antenna gasket is in place.

#### Note

The magnetron used for this model is unique for the inverter power supply system. Make sure to use the one as listed in the parts list.



Removal of the magnetron

Figure 1

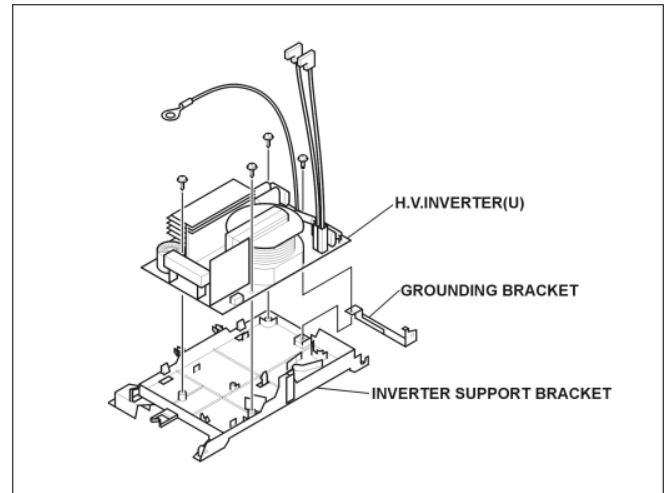
### 8.2. Inverter power supply (U)

1. Discharge the high voltage capacitors.
2. Remove two screws holding the tie bar.
3. Unplug the H.V. Lead wires from the magnetron.
4. Remove the one screw holding the earth wire to the magnetron.
5. Remove the connector CN701 and CN702 from the inverter PCB.
6. Remove the two screws holding the inverter base to the chassis (See figure 2).
7. Carefully remove the inverter PCB and support base from the oven.
8. Remove the air guide E by un-clipping the catch hooks.

9. Remove the four screws holding the PCB to the inverter support base.

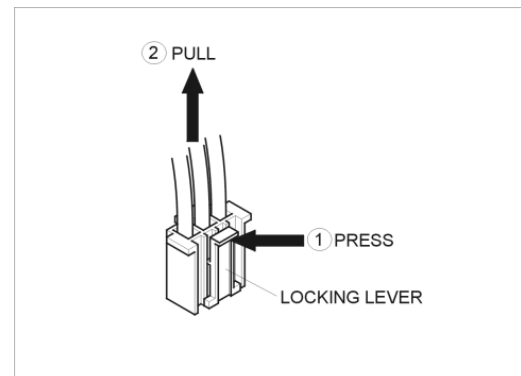
#### Caution when replacing the inverter power supply (U)

1. Make sure that grounding plate is in place.
2. Securely tighten the grounding screw through the side of the chassis (Base).
3. Securely connect the 3 lead wire connectors.
4. Make sure that the heat sink has enough space (gap) from the oven. Take care not to touch any lead wire to the aluminium heat sink because it is hot.



Removal of the inverter PCB.

Figure 2



Disconnecting the PCB lock connector.

Figure 3

### 8.3. Digital Programmer Circuit (DPC) and Escutcheon Base Assembly.

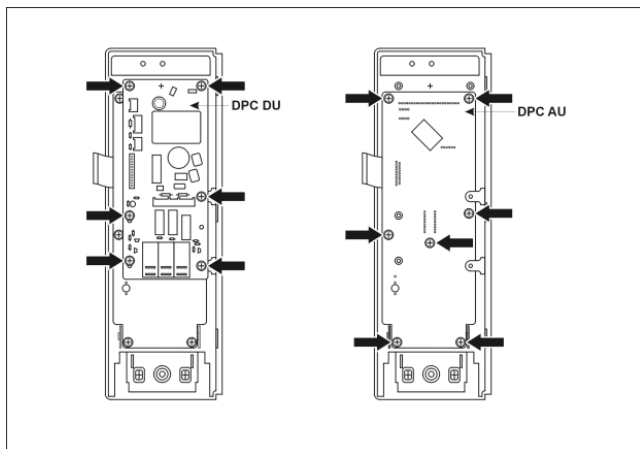
**NOTE:** Ground any static electric built up on your body before handling the DPC.

1. Disconnect all connectors from the DPC.
2. Remove the two screws holding the escutcheon base and slide the escutcheon base upward slightly. Removal is easier with the door open.
3. Release the ribbon cable.

4. Remove the six screws holding the DPC DU assembly.
5. Remove the door lever.
6. Remove the seven screws holding the DPC AU assembly.

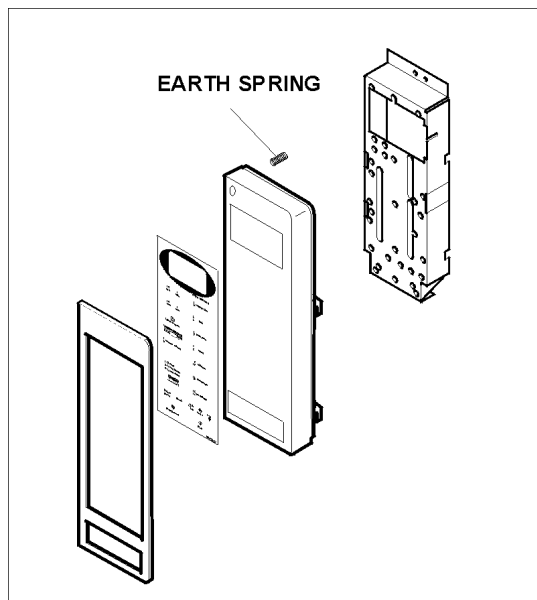
**NOTE:**

1. When replacing the stainless escutcheon assembly, ensure that the stainless fascia is earthed to the escutcheon back plate via the earth spring.



Removal of DPC AU and DPC DU

Figure 4



Grounding of the stainless fascia

Figure 6

## 8.4. Low voltage transformer and/or power relays (RY1)

**Note**

**Be sure to ground your body to discharge any static before handling the DPC.**

1. Using a solder wick or a de-soldering tool and a 30W soldering iron, carefully remove all solder from the terminal pins of the low voltage transformer and/or power relays.
2. With all of the terminal pins cleaned and separated from the DPC contacts, remove the defective transformer/power

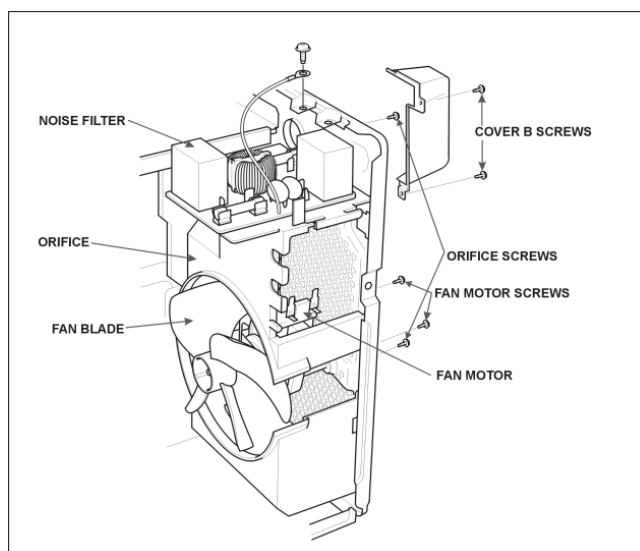
relays and install the new components making sure that the terminal pins are inserted completely. Carefully re solder all terminal contacts carefully.

**Note**

**Do not use a soldering iron or de soldering tool of more than 30 watts on DPC contacts**

## 8.5. Fan Motor

1. Remove two screws and remove the tie bar.
2. Disconnect the two lead wires from the fan motor terminals.
3. Disconnect all lead wires from the noise filter.
4. Remove the noise filter.
5. Remove the air guide by removing the two screws.
6. Remove the two screws holding the orifice assembly.
7. Remove the two screws holding the fan motor assembly.
8. Detach the orifice assembly and the fan motor assembly from the oven assembly.
9. Remove the fan blade from the fan motor by pulling outward.



Removing the fan motor.

Figure 6

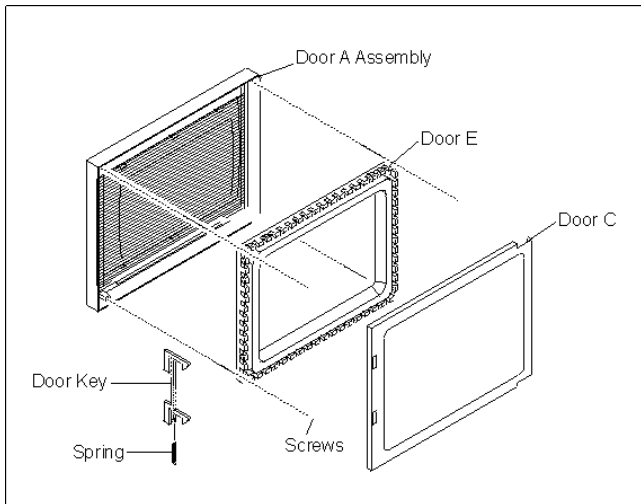
## 8.6. Door disassembly

1. Remove door C from door E by carefully pulling outward starting from the upper right hand corner using a flat blade screwdriver.
2. Remove four screws holding the door E to the door A assembly.
3. Remove the door key and spring from the door E.

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

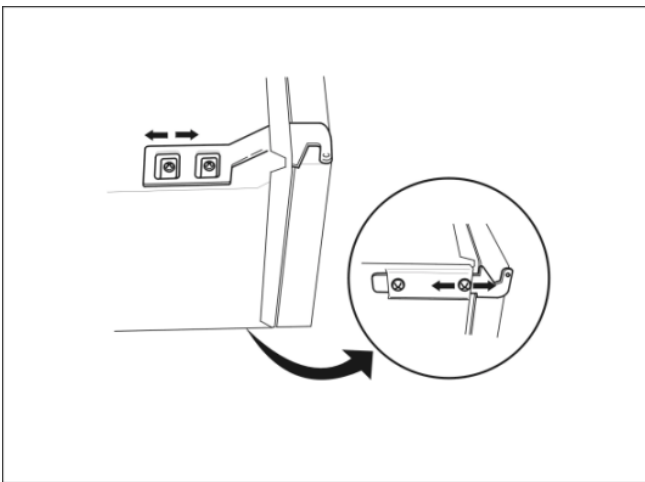
1. When mounting the door to the oven, be sure to adjust the door parallel to the bottom line of the oven face plate by moving the upper hinge in the direction necessary for proper alignment.

- Adjust so that the door has no play between the inner door surface and the oven front surface. If the door assembly is not mounted properly, microwave power may leak from the clearance between the door and oven.
- Perform the microwave leakage test.



Disassembly of the door.

Figure 7



Adjusting the door hinge.

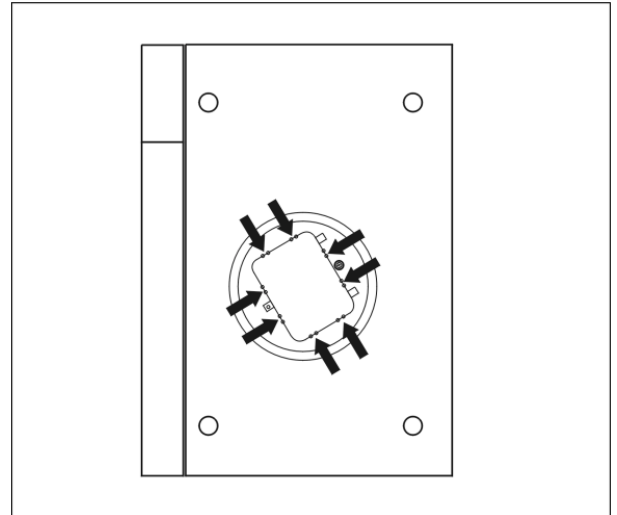
Figure 8

## 8.7. Turntable Motor

- Remove the motor cover by breaking off at the 8 spots indicated by the arrows.
- Disconnect the two lead wires connected to the turntable motor.
- Remove the turntable motor by removing the two screws.

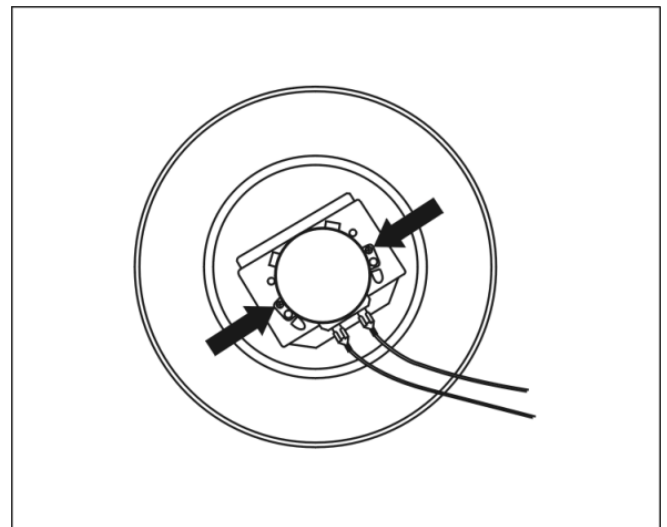
**Note:** After breaking off the motor cover, make sure that cut-off portions are properly trimmed off or bent inside so that no sharp edges are exposed.

**Note:** To secure the motor cover use a 4 x 6 screw.



Removing the turntable motor cover.

Figure 9



Removing the two screws fixing the turntable motor.

Figure 10

## 9 Component Test Procedure

### Caution

1. High voltage is present at the high voltage terminal of the inverter unit, including the aluminium heat sink.
2. It is not necessary or advisable to attempt to measure this high voltage.
3. Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the high voltage capacitors.

### 9.1. Primary Latch Switch, Secondary Latch Switch and power relay B interlocks.

1. Unplug the lead connectors to power relay B and verify the continuity of the power relay B 1-2 terminals.
2. Unplug the lead connectors to the primary latch switch and secondary latch switch.
3. Test the continuity of the switches with the door open and closed with an ohm meter on the lowest scale.

Normal continuity readings should be as followed.

	Door Open	Door Closed
Primary Latch Switch	infinite $\Omega$ (Open)	0 $\Omega$ (Close)
Secondary Latch switch	infinite $\Omega$ (Open)	0 $\Omega$ (Close)
Power relay B	infinite $\Omega$ (Open)	infinite $\Omega$ (Close)

### 9.2. Short Switch and Monitor Circuit

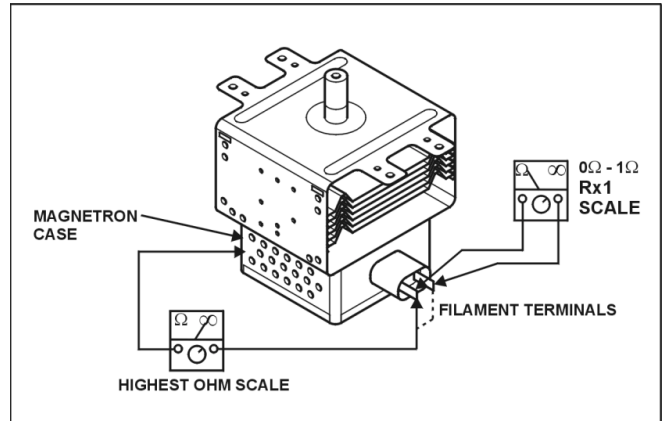
1. Unplug the lead wires from the HV inverter primary terminals.
2. Connect the test probes of the ohm meter to these leads.
3. Test the continuity of the short switch with the door open and the door closed using the lowest ohm scale.

	Door Open	Door Closed
Monitor switch	0 $\Omega$	infinte $\Omega$

### 9.3. Magnetron

Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose an open filament or shorted magnetron.

1. Isolate the magnetron from the circuit by disconnecting the HV leads.
2. A continuity check across the magnetron filament terminals should indicate one ohm or less.
3. A continuity check between each filament terminal and the magnetron case should read open.



### 9.4. Push Button Keyboard

Check the continuity between the switch terminals, by tapping an appropriate pad on the keyboard. The keypad matrix is shown on P.27.

## 9.5. Inverter Power Supply

### Caution

DO NOT try to repair this inverter power supply). Replace as a whole H.V. Inverter Unit.

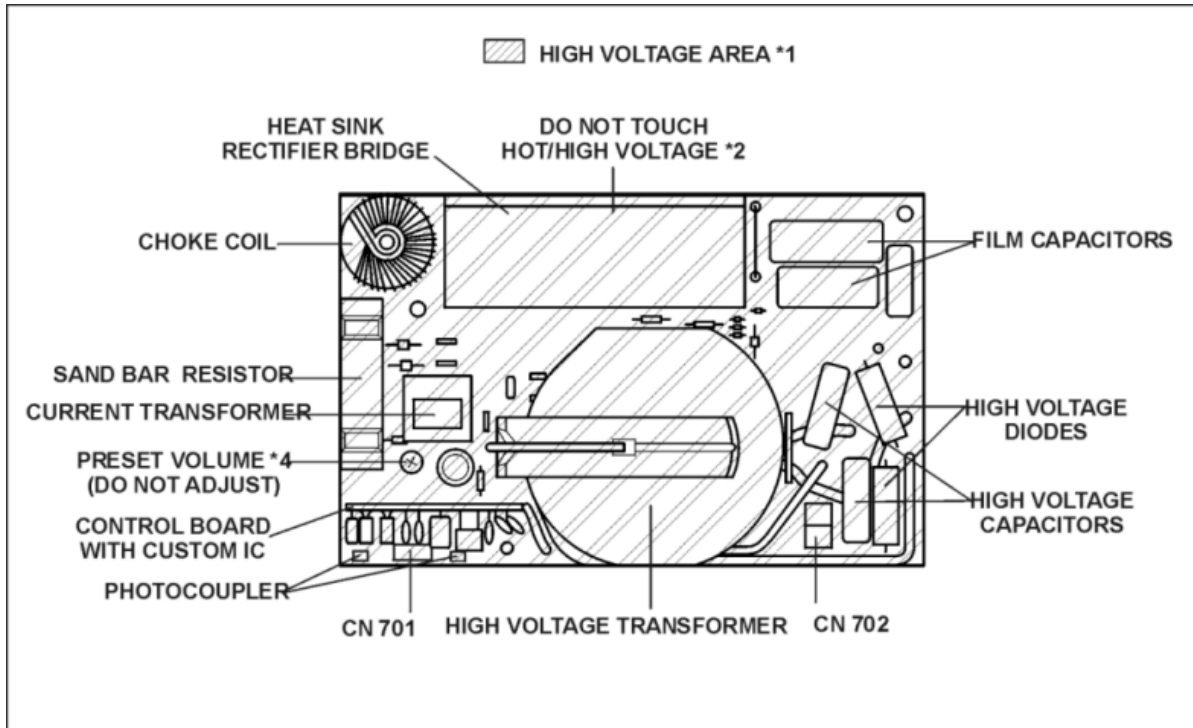


Figure 3

Inverter Power Supply Diagram

## 9.6. Inverter Power Supply Unit

### Warning

Do not attempt to make any measurements in the high voltage circuitry of the inverter or magnetron.

See troubleshooting of the inverter circuit and magnetron on P.20 to determine if the inverter power supply is still functioning.



# 10 Measurements and Adjustments

## Warning

- For continued protection against radiation hazard, replace only with identical parts.
- When the 10 amp fuse is blown due to the operation of the short switch, you must replace the primary latch switch and short switch. Then follow the installation procedures below.
- Interlock switch replacement - In replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.
- Refer to the schematic and wiring diagram to ensure proper connection.

## 10.1. Installation of primary latch switch, secondary latch switch and short switch.

1. When mounting the primary latch switch, secondary latch switch and short switch to the door hook assembly. Follow the instructions in figure 1.

NOTE: No specific adjustment during the insulation of each switch into the door hook is necessary.

2. When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of the arrow in figure 1. Ensuring the door does not have any play in it. Check for play by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.
3. Reconnect the short switch, primary switch and secondary latch switches and check the continuity of the monitor circuit and latch switches by following the component test procedures on page 17.

## 10.2. Measurement of microwave output

The output power of the magnetron can be determined by performing the IEC standard test. However, due to the complexity of the IEC test procedures, it is recommended to test the magnetron using the simple method outlined below.

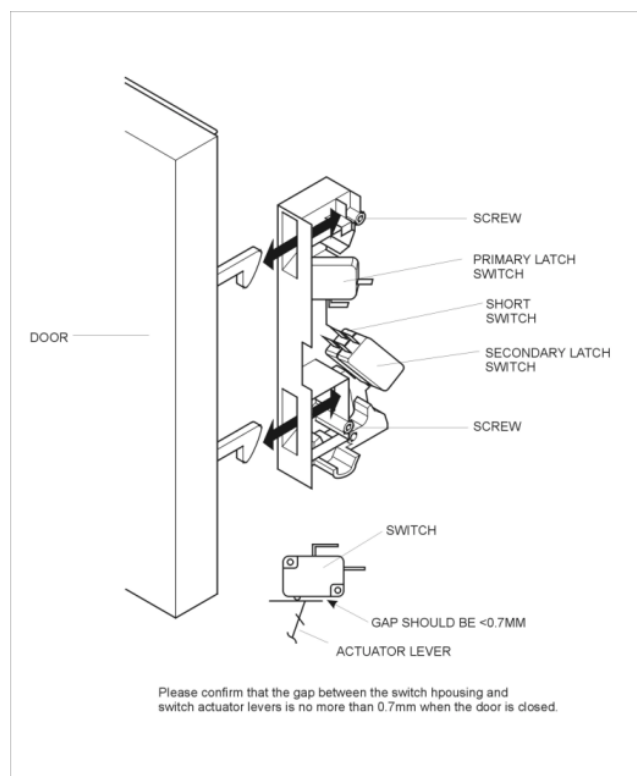
Necessary equipment:

- 1 litre beaker.
- Glass thermometer.
- Wrist watch or stop watch.

NOTE: Check the line voltage under load. Low voltage will lower the magnetron output. Take the temperature readings and heating time as accurate as possible.

1. Fill the beaker with exactly one liter of tap water. Stir the water using the thermometer and record the water's temperature (Record as T1).
2. Place the beaker on the center of the glass cook plate.
3. Operate the Microwave for 1 Minute on FULL power.
4. Stir the water again and read the temperature of the water. (Record as T2).

5. The normal temperature rise at the high power position for each model is shown in the table. (Figure 2).



Adjustment of latch switch assembly

Figure 1

RATED OUTPUT	TEMPERATURE RISE
900W	7°C

TABLE (1L - 1min test)

Figure 2.

# 11 Troubleshooting guide

## Caution

1. Do not try to repair this H.V. Inverter power supply. Replace as a whole unit. When returning the inverter unit pack in the original inverter box.
2. Do not adjust the preset volume on the H.V. Inverter. It is very dangerous to repair or adjust without sufficient test equipment, this circuit handles very high voltage and current.
3. Ensure a good ground connection before beginning any troubleshooting.
4. Be careful of the high voltage circuit and take necessary precautions when troubleshooting.
5. Discharge the high voltage capacitors on the inverter.
6. When checking the continuity of the components on the H.V. inverter circuit, disconnect one lead wire from these parts and then check the continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter. When disconnecting a plastic connector from a terminal, you must hold the plastic connector and not the lead wire, otherwise the lead wire may become open circuit.
7. Do not touch any parts of the circuitry on the digital programmer circuit, since static electric discharge may damage this control panel.

Whilst working on this board ensure that that your body is connected to ground to discharge any static charge.

8. 240 VAC is present on the digital programmer circuit. (Terminals of the power relays and the primary circuit of the low voltage transformer). When troubleshooting, be cautious of possible electric shock.

Before troubleshooting, operate the microwave oven following the correct operating procedures in the instruction manual in order to find the exact cause of any trouble, since operator error may be mistaken for the ovens malfunction.

	SYMPTOMS	CAUSE	CORRECTIONS
1.	Oven is dead. Fuse is OK. No display and no operation at all.	<ol style="list-style-type: none"> <li>1. Open or loose lead wire harness.</li> <li>2. Open low voltage transformer</li> <li>3. Defective DPC AU or DPC DU</li> </ol>	
2.	Oven does not accept key input (Program).	<ol style="list-style-type: none"> <li>1. Key input is not in sequence.</li> <li>2. Shorted push button on DPC AU.</li> <li>3. Defective DPC AU.</li> </ol>	<p>Refer to operation procedure.</p> <p>Refer to DPC troubleshooting.</p>
3.	Oven lamp and turntable motor turn on when oven is plugged in with door closed	<ol style="list-style-type: none"> <li>1. Misadjustment or loose wiring of secondary latch switch.</li> <li>2. Defective secondary latch switch</li> </ol>	Adjust door and latch switches.
4.	Timer starts countdown but no microwave oscillation. (No heat while oven lamp and fan motor turn on)	<ol style="list-style-type: none"> <li>1. Off-alignment of latch switches</li> <li>2. Open or loose connection of high voltage circuit especially magnetron filament circuit NOTE: Large contact resistance will bring lower magnetron filament voltage and cause magnetron to have lower output and/or be intermittent.</li> <li>3. Defective high voltage component H.V. Inverter <span style="border: 1px solid black; padding: 0 2px;">NEW H.V.</span> Magnetron</li> <li>4. Open or loose wiring of power relay (RY1)</li> <li>5. Defective primary latch switch.</li> <li>6. Defective power relay RY1 or DPC AU or DU.</li> </ol>	<p>Adjust door and latch switches.</p> <p>Check high voltage component according to component test procedure and replace if it is defective.</p> <p>Refer to DPC troubleshooting.</p>

Troubleshooting (No Operation)

Figure 1

	SYMPTOMS	CAUSE	CORRECTIONS
1.	No display and no operation at all. 10A Fuse is blown.	1. Shorted lead wire harness 2. Defective primary latch switch (NOTE 1) 3. Defective short switch (NOTE 1) 4. Defective Inverter power supply (U) <b>NEW H.V.</b> Refer to component test procedure	Check adjustment of primary, secondary latch switch and short switch including door.
		NOTE 1: All of these switches must be replaced at the same time. (Refer to adjustment instructions.) Check continuity of power relay B's contacts (between 1 and 2) and if it has continuity, replace power relay B also.	

#### Troubleshooting (Fuse is blown)

Figure 2

	SYMPTOMS	CAUSE	CORRECTIONS
1	Microwave output is low. Oven takes longer time to cook food.	1. Decrease in power source voltage 2. Open or loose wiring of magnetron filament circuit. (Intermittent oscillation) 3. Aging change of magnetron.	Consult electrician Refer to output test procedures by water temperature raising test.
2	Loud buzzing noise can be heard.	1. Loose fan and fan motor	
3	Turntable motor does not rotate.	1. Open or loose wiring of turntable motor 2. Defective turntable motor	
4	Oven stops operation during cooking.	1. Open or loose wiring of primary and secondary latch switch	Adjust door and latch switches.

#### Troubleshooting (Other problems)

Figure 3

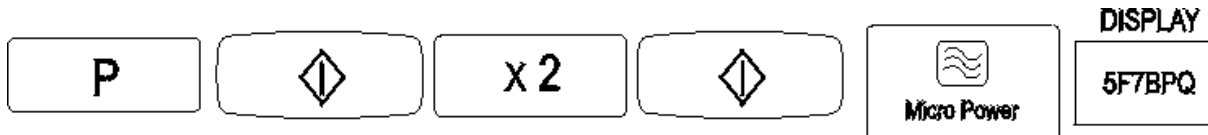
##### Troubleshooting of Inverter Circuit and Magnetron.

Oven shuts down after approximately 15 -33 seconds.

If the microwave shuts down after a short time in micropower mode, conduct the following test.

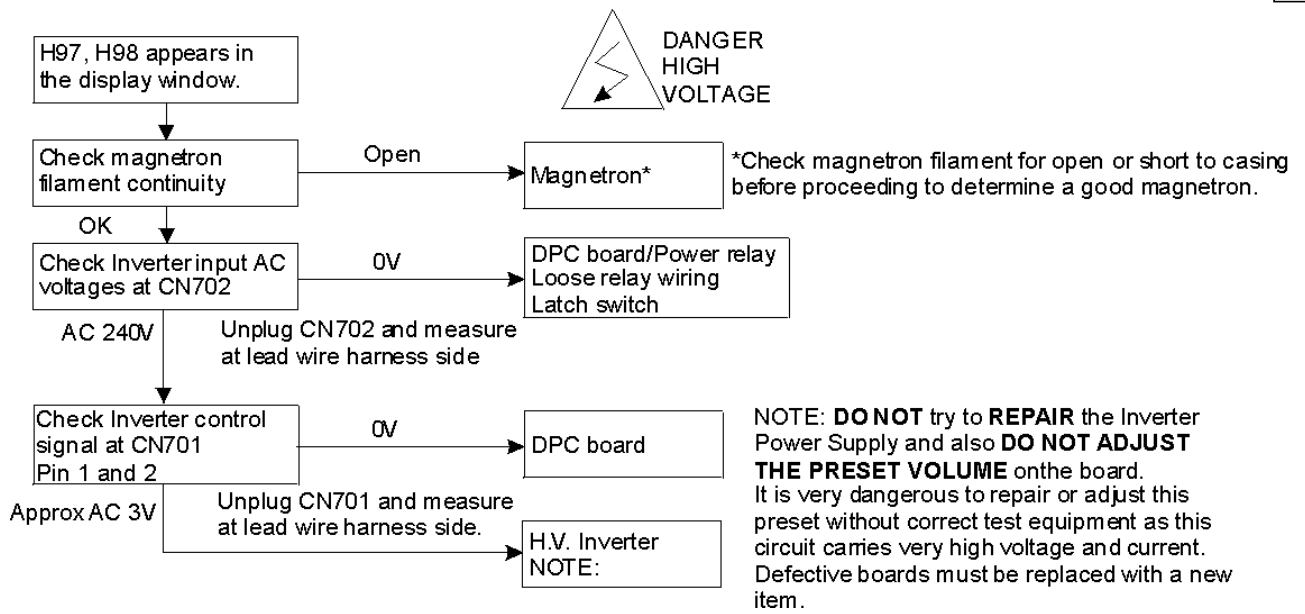
The microwave oven must be set in test mode to activate the self diagnostic failure code system.

##### SELF TEST MODE



When oven is set in test mode place water load in oven, set micropower to high and time to one minute, press start.

H97, H98 appears in display window a short time after start pad is pressed and there is no microwave oscillation.



Troubleshooting Inverter by Input out voltage

Figure 4

Alternative way to troubleshooting oven using AC Ampere meter.

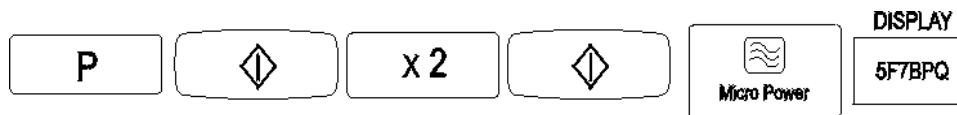
Oven shuts down after approximately 15 -33 seconds.

Troubleshooting of Inverter Circuit and Magnetron.

If the microwave shuts down after a short time in micropower mode, conduct the following test.

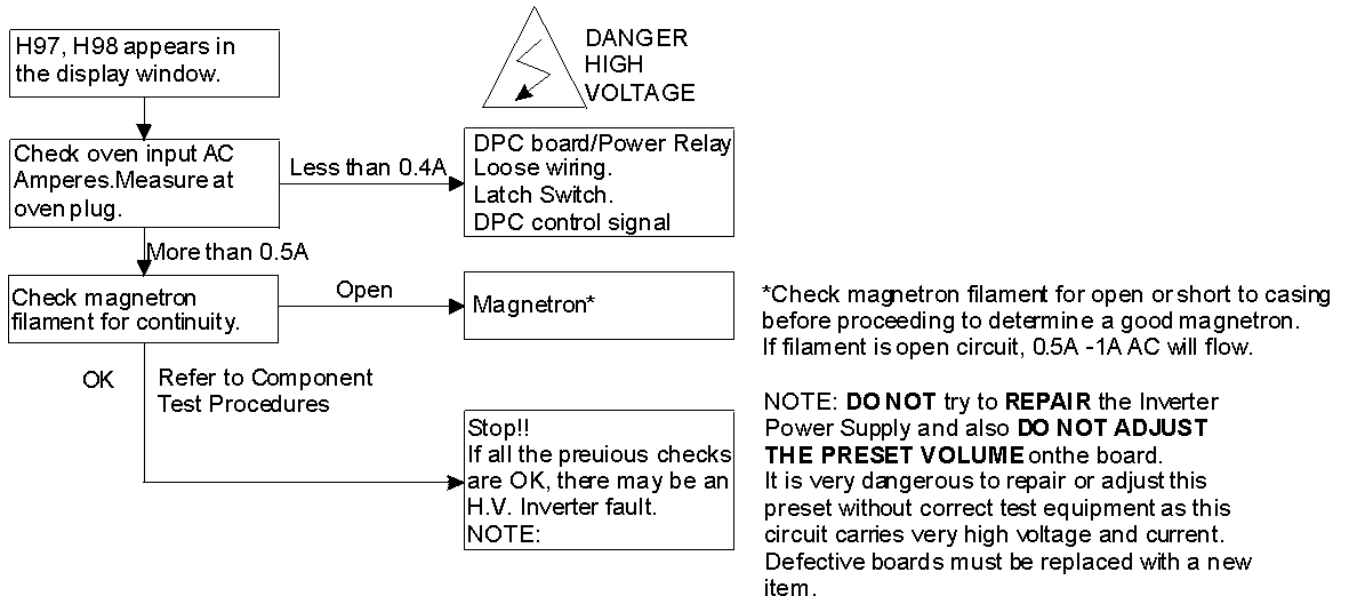
The microwave oven must be set in test mode to activate the self diagnostic failure code system.

**SELF TEST MODE**



When oven is set in test mode place water load in oven, set micropower to high and time to one minute, press start.

H97, H98 appears in display window a short time after start pad is pressed and there is no microwave oscillation.



Troubleshooting Inverter by Microwave Oven Input Current

Figure 5

# 12 Digital Programmer Circuit Troubleshooting Guide

## Trouble Related to Digital Programmer Circuit

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
No display when oven is first plugged in.	1	Fuse pattern of DPC	Normal	STEP 2
			Open (NOTE)	Shorted Circuit of ZNR, L.V.T., Oven Lamp etc. Replace DPC
Oven is dead.	2	IC10 Pin 9 (12V line)	Abnormal 0V	IC10
			Normal 12V	→ Step 3
	3	IC-1 Pin73 voltage (Emitter of Q10)	Abnormal	ZD10, Q10, Ribbon Cable
			Normal = 5V	→ Step 4
4	IC-1 pin 27 voltage (15 pin of IC220)	Abnormal	IC-220	
		Normal	→ IC-1, CX1	

### NOTE

Procedure of fuse pattern repairing is as follows:

1. When the fuse pattern (PF2) opens.

(1) Remove the jumper wire (PF3).

(2) Insert the removed jumper wire (PF3) to (PF2) position and solder it. If both (PF2) and (PF3) fuse patterns are open, please replace DPC.

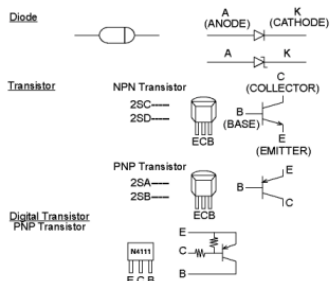
NOTE: \* At the time of these repairs, make visual inspection of the varistor for burning damage and examine the transformer with tester for the presence of layer short-circuit (check primary coil resistance).

If any abnormal condition is detected, replace the defective parts.

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
No key input	1	Push button switch	Abnormal	Push button switch
			Normal	IC-1
No beep sound	1	IC-1 pin 12, voltage	Abnormal	IC-1
			Normal	IC220, BZ310
Power relay A(RY-2) does not turn on even though the program has been set and the start pad is tapped.	1	IC-1 pin 23voltage while operation	Abnormal	IC-1
			Normal = 5V	→ Step 2
No microwave oscillation at any power setting.	1	Short circuit between pin 6 and pin 16 of IC-2	Still not turn on	RY-2
			RY-2 turns on	IC-220
Dark or unclear display	1	IC-1 pin 18 and 16 voltages while operation at high power	Abnormal	IC-1
			Normal 18--5V,16---5V	→ Step 2
Missing or lighting of unnecessary segment	1	Q221 transistor	Abnormal	IC-1
			Normal	→ Step 2
Oven shuts down on Micropower after a short time (set in test mode) (set high power 1 Min) H97/H98 appears in window and oven stops operation. Program High power for 1 minute and conduct following test quickly, unless H97/H98 appears and oven stops.	1	Replace display and check operation	Normal	DISPLAY
			Abnormal	IC-1
Unplug CN702(2 pin) connector and measure voltage between terminals	1	Replace IC-1 and check operation	Normal	IC-1
			Abnormal	DISPLAY
Unplug CN701(3 pin) connector and measure pin 1 voltage	2	Unplug CN702(2 pin) connector and measure voltage between terminals	0V	1. Latch switch 2. DPC/Power relay
			AC line voltage of 240V	→ Step 2
Unplug CN701(3 pin) connector and measure pin 1 voltage	2	Unplug CN701(3 pin) connector and measure pin 1 voltage	0V	1. DPC
			Approx. AV 3V	1. Magnetron 2. Inverter

**NEW H.V.**

### How to Check the Semiconductors Using an OHM Meter



	FORWARD	REVERSE
A-K	SMALL	∞

	FORWARD	REVERSE
B-E	SMALL	∞
B-C	SMALL	∞
C-E	∞	∞

	FORWARD	REVERSE
E-B	SMALL	∞
C-B	SMALL	∞
C-E	∞	∞

	FORWARD	REVERSE
E-B	10kΩ-30kΩ	10kΩ-30kΩ
C-B	50kΩ-80kΩ	∞
C-E	40kΩ-80kΩ	∞

How to test the semiconductors

Figure 2

# 13 Main Parts List

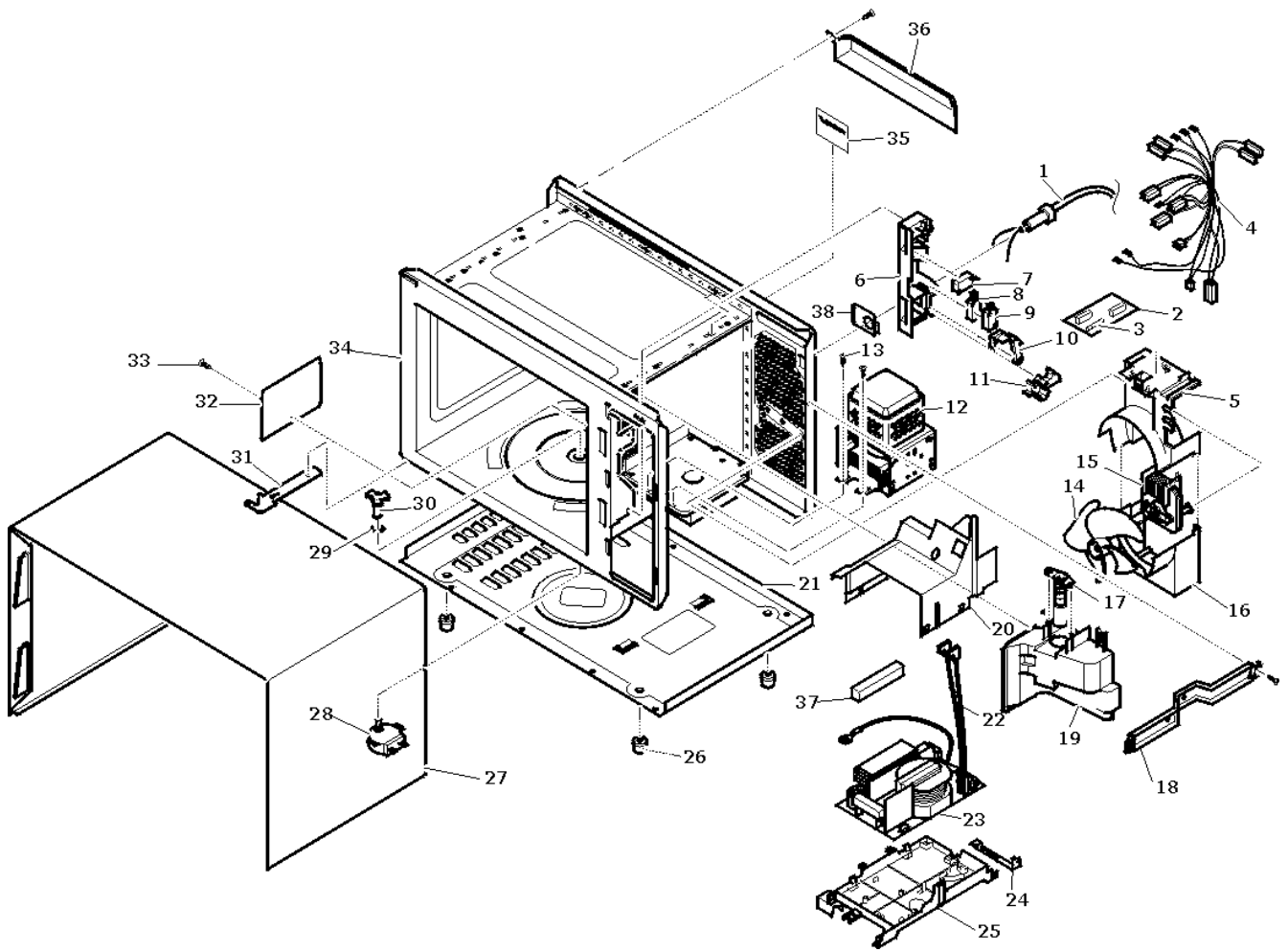
1. Part numbers are indicated on most mechanical parts. Please use these part numbers for part orders. Do not use the description of the part.

## Important safety notice

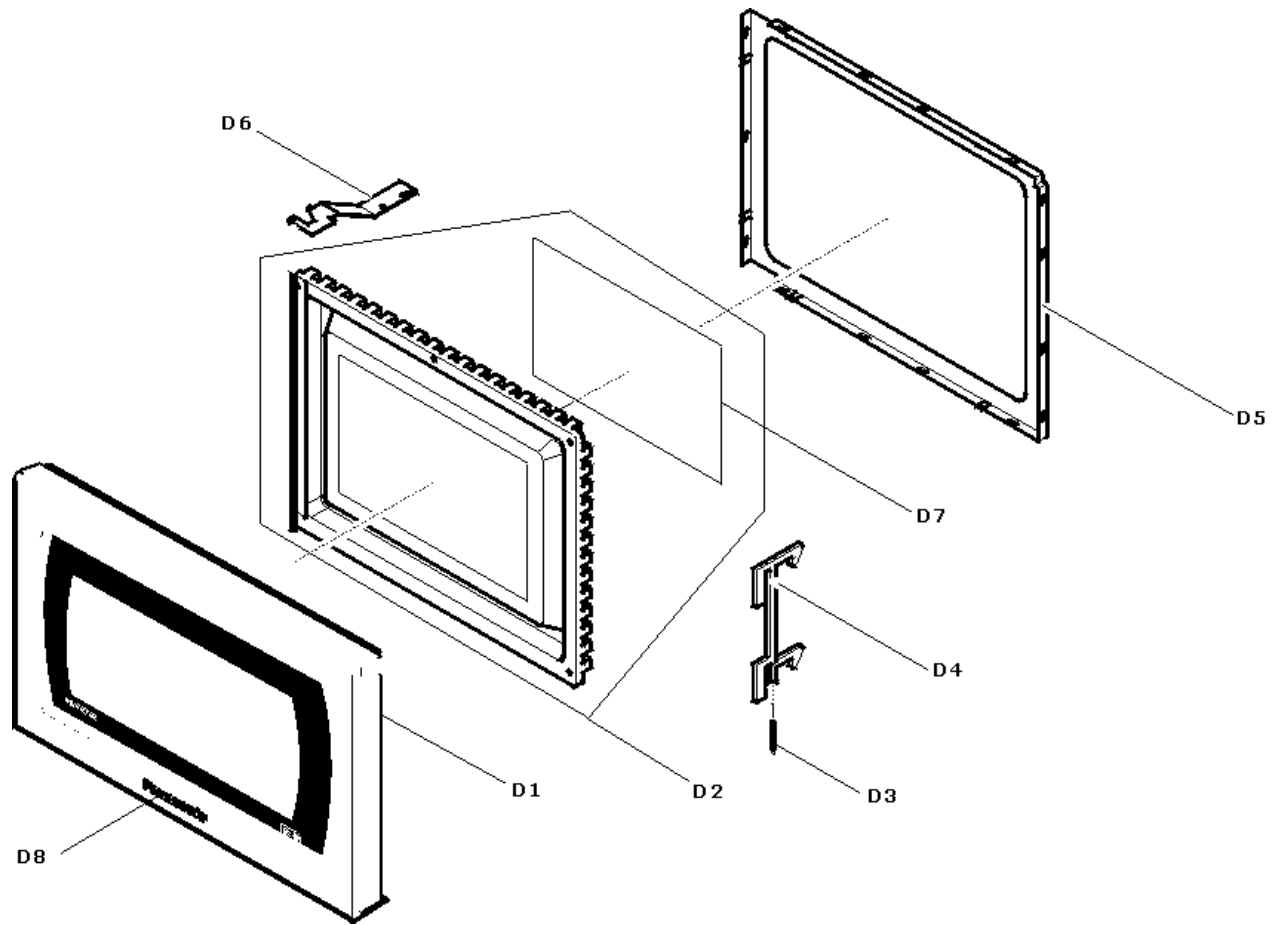
1. Components identified by  $\triangle$  mark have special characteristics important for safety. When replacing any of these components, use only the manufacturers specified parts.


Ref. No.		Part Number	Part name and description	Qty	Remarks
1	$\triangle$	E900C5F70BP	POWER SUPPLY CORD	1	
2	$\triangle$	E607X4L00BP	NOISE FILTER	1	
3	$\triangle$	E67597550GP	CERAMIC FUSE 10A	1	
4	$\triangle$	E030A5D20BP	LEADWIRE HARNESS	1	
5		E41444N30BP	UPPER ORIFICE	1	
6		E30208000BP	DOOR HOOK	1	
7	$\triangle$	E6142-1450	PRIMARY LATCH SWITCH	1	V-16G-3C26-M
8	$\triangle$	E61785180AP	SHORT SWITCH	1	L-2C2-2
9	$\triangle$	E61425180AP	SECONDARY LATCH SWITCH	1	L-3C2-2
10		E31384830AP	HOOK SPACER C	1	
11		E31374830AP	HOOK SPACER B	1	
12	$\triangle$	2M236-M42G1	MAGNETRON	1	
13		XTWANE4+12B	SCREW	4	
14		E4008-1640	FAN BLADE	1	
15	$\triangle$	E400A4760JP	FAN MOTOR	1	
16		E42094N30BP	LOWER ORIFICE	1	
17	$\triangle$	E610T5D00BP	OVEN LAMP UNIT	1	
18		E20994N30BP	REINFORCEMENT BRACK	1	
19		E40254N40GS	AIR GUIDE A	1	
20		E40474V00BP	AIR GUIDE E	1	
21		E10014N30BP	BASEPLATE	1	
22	$\triangle$	E030E4N30BP	HV LEADWIRE	1	
23	$\triangle$	E606Y4V00BP	INVERTER	1	
24		E66014V00BP	INVERTER EARTH BRACKET	1	
25		E65854V00BP	INVERTOR SUPPORT BRACKET	1	
26		E1008-1180	RUBBER FOOT	4	
27		E110D5D20SBP	OUTER PANEL	1	
28	$\triangle$	E63268960JP	TT MOTOR	1	
29		AEE2177-F80	PULLEY SHAFT WASHER	1	
30		E21315870GP	PULLY SHAFT	1	
31		E30074L00GS	BOTTOM HINGE	1	
32		E20554L00GS	COVER A	1	
33		XST4+W5V	SCREW	1	
34		E200A5D20BP	OVEN CAVITY	1	
35		E00064080BP	WARNING LABEL	1	
36		E40244N30BP	EXHAUST GUIDE	1	
37		E09230000AD	CUSHION RUBBER	1	
38		E90355F70BP	BLANKING PLATE	1	

# 14 Exploded View



# 15 Door Assembly

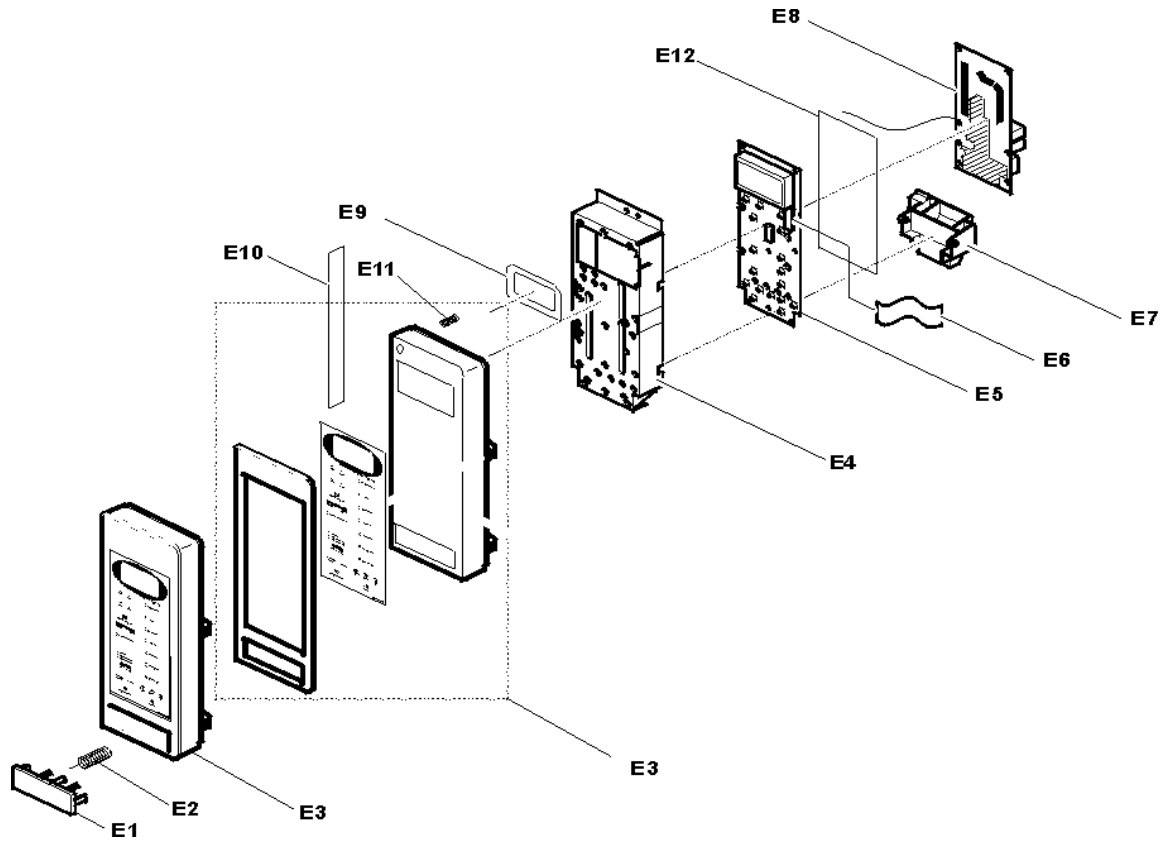


Ref. No.	Part No.	Part Name & Description	Qty	Remarks
D1	E302A4N20SGP	DOOR A ASSEMBLY	1	
D2	 E302K4N00BP	DOOR E ASSEMBLY	1	
D3	E30214000AP	DOOR KEY SPRING	1	
D4	E30184L00GS	DOOR KEY	1	
D5	E30854N30BP	DOOR C	1	
D6	E30064N30BP	UPPER HINGE	1	
D7	E31454N00BP	DOOR SCREEN A	1	
D8	E30844V00SBP	DOOR EMBLEM	1	

**NOTE:** When ordering any Door component also order door C as this part may become damaged during disassembly.



# 16 Escutcheon Base

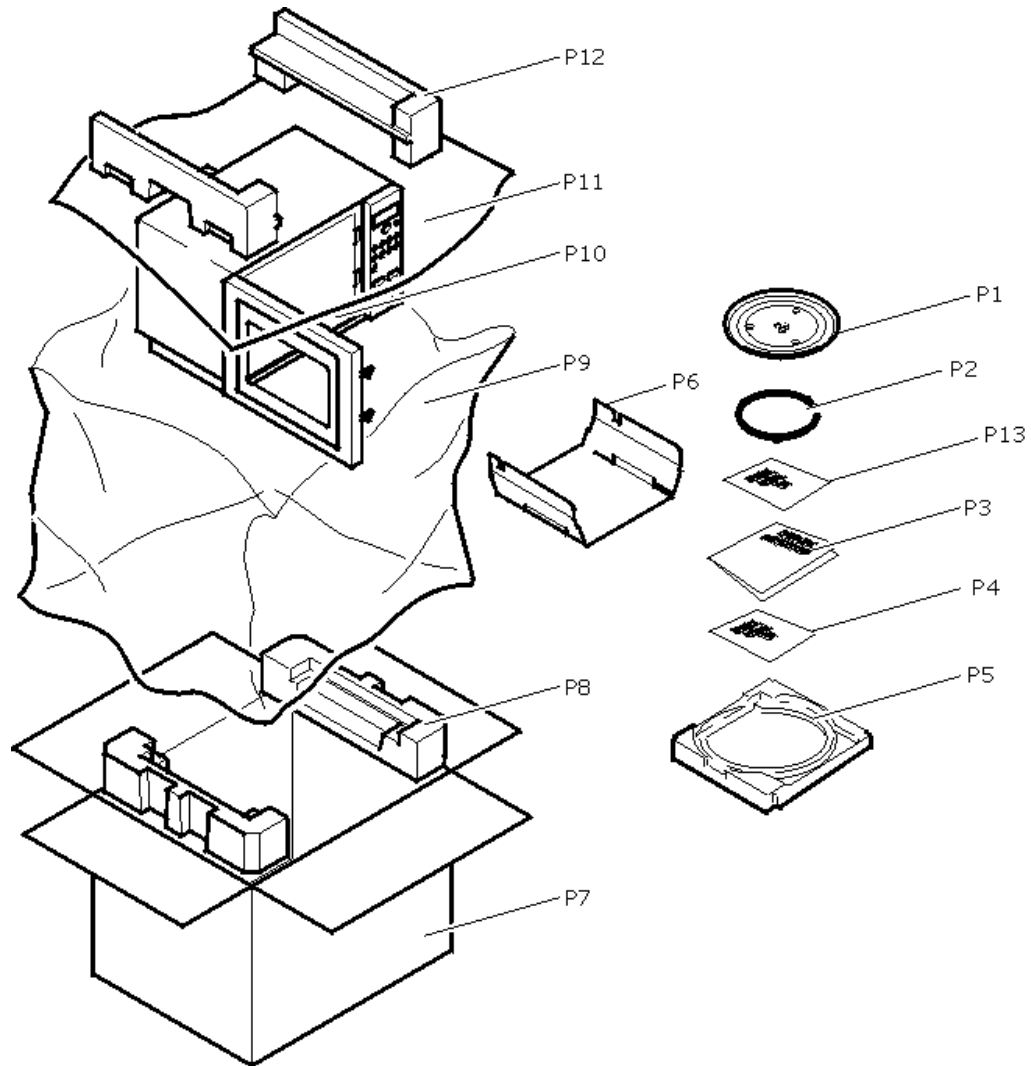


Ref. No.	Part No.	Part Name & Description	Qty	Remarks
E1	E80725D00SBP	DOOR OPENING BUTTON	1	
E2	E80378AOAG	SPRING	1	
E3	E800S5F70SBP	ESCUTCHEON BASE ASSY	1	
E4	E81274V00SBP	ESCUTCHEON BACK PLATE	1	
E5	⚠ E603L5F70BP	DPC AU	1	
E6	E66164L00GS	RIBBON CABLE	1	
E7	E82564V00SBP	DOOR OPENING LEVER	1	
E8	⚠ E603Y5D20BP	DPC DU	1	
E9	E83264L10BP	DISPLAY SHEET	1	
E10	E00075F70BP	NAME PLATE	1	
E11	E80074L00SGS	SPRING	1	
E12	E60704V00SBP	INSULATION SHEET	1	

**NOTE: Please order the escutcheon base and name plate together**

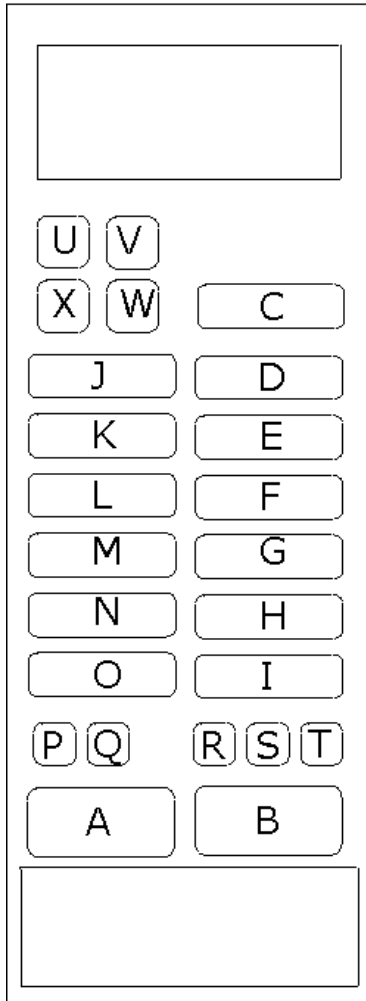
NOTE: When replacing the stainless escutcheon assembly, be sure that the fascia is earthed to the back plate via the earth spring.

# 17 Packing And Accessories

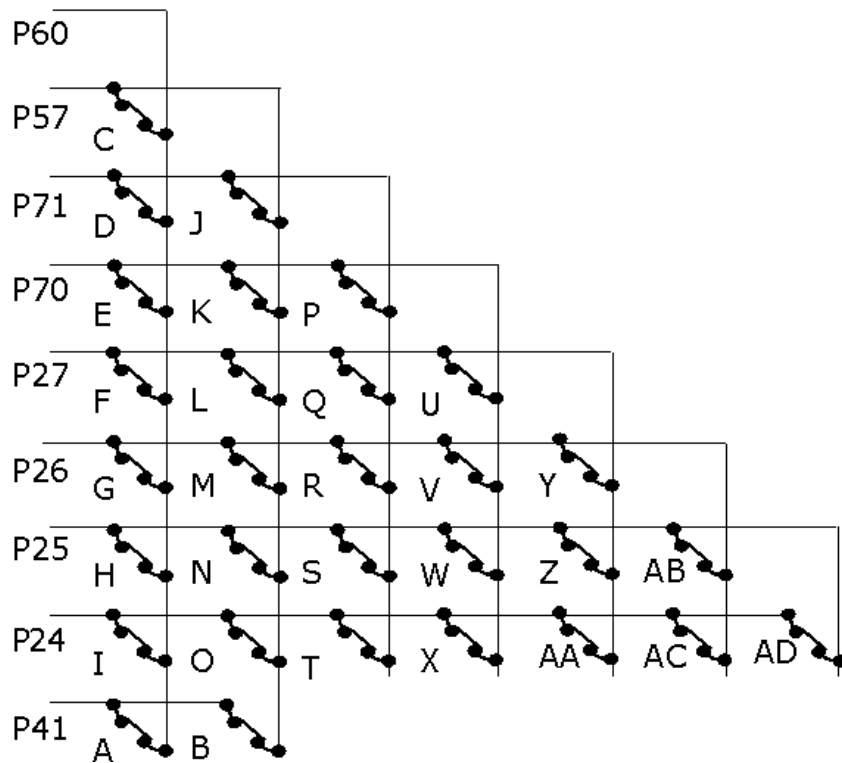


Ref. No.	Part No.	Part Name & Description	Qty	Remarks
P1	E06014N30BP	GLASS TRAY	1	
P2	E290D4N30BP	ROLLER RING UNIT	1	
P3	E00035F70BP	COOK BOOK	1	
P4	E01695F70BP	SERVICE CENTER LIST	1	
P5	E01134N30BP	TRAY STYROL	1	
P6	E01084N30BP	TRAY PACKING	1	
P7	E01025F70SBP	CARTON BOX	1	
P8	E01054N30BP	LOWER FILLER	1	
P9	E01064N70GS	VINYL BAG	1	
P10	E01076700BP	DOOR SHEET	1	
P11	E01926430GP	PROTECTOR SHEET	1	
P12	E01044N30BP	UPPER FILLER	1	
P13	E00495F70BP	OPERATING GUIDE	1	

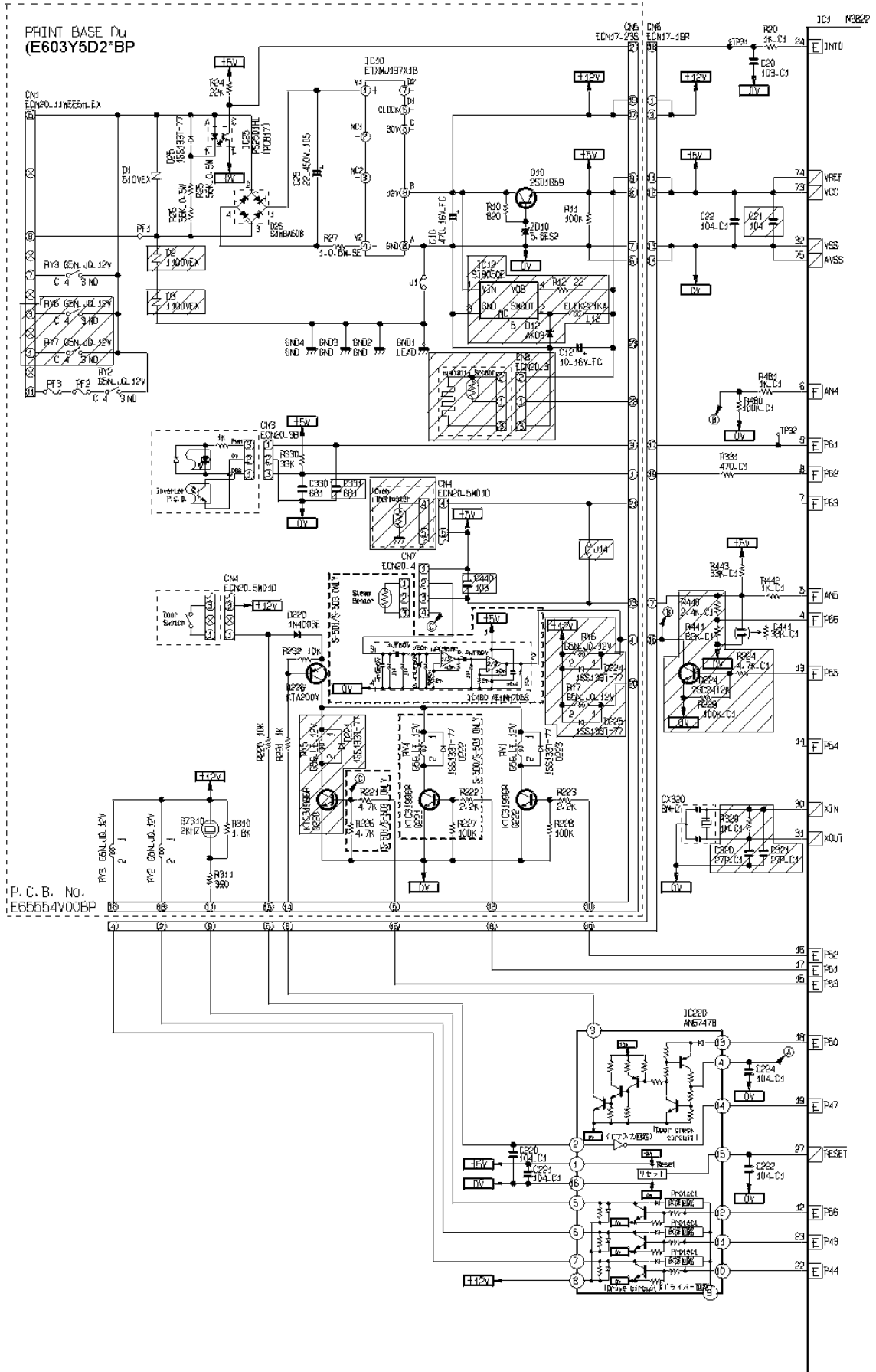
# 18 Key Board Matrix



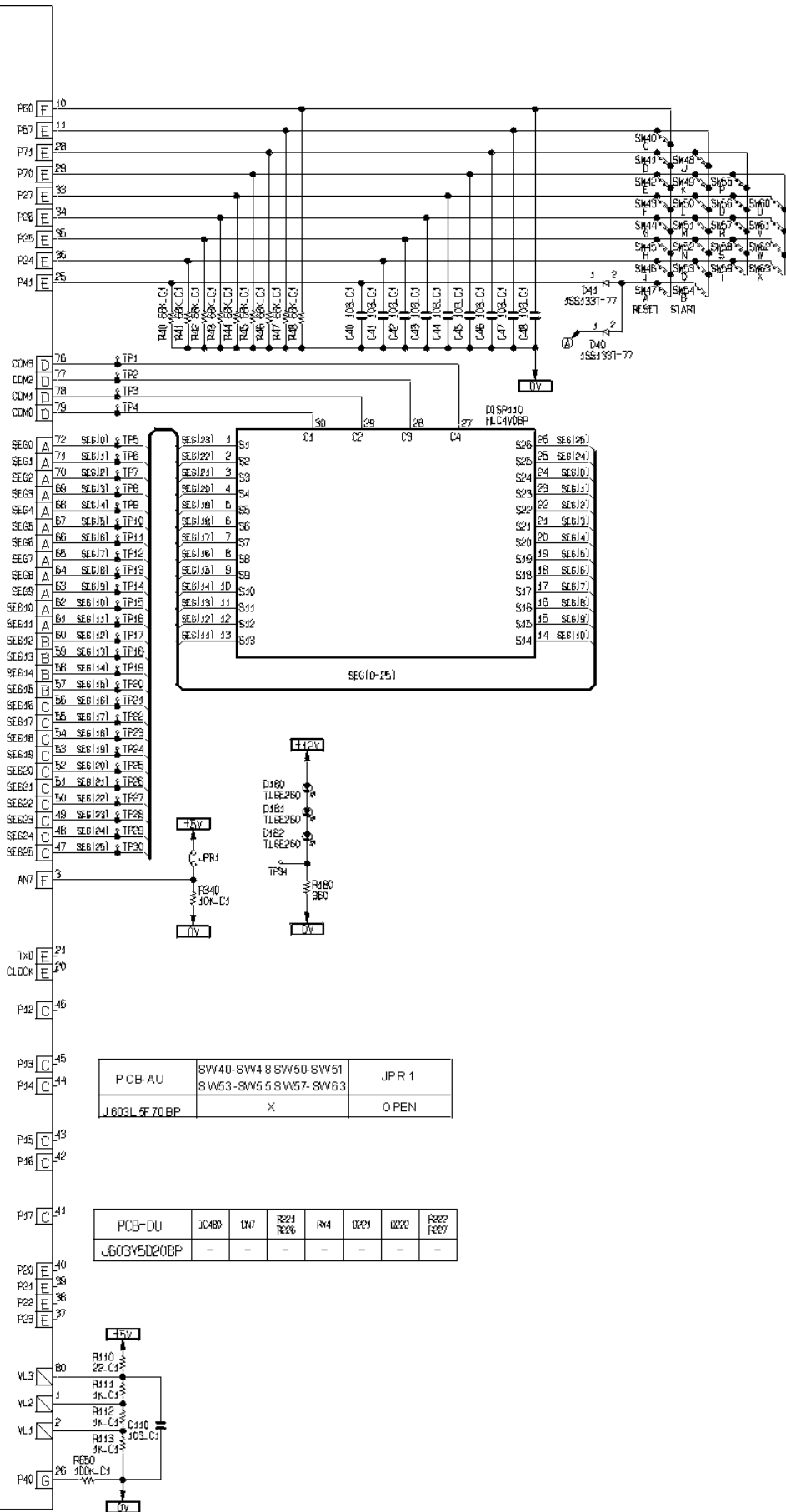
		BP
A	SW47	STOP
B	SW54	START
C	SW40	AUTO
D	SW41	AUTO
E	SW42	AUTO
F	SW43	AUTO
G	SW44	AUTO
H	SW45	AUTO
I	SW46	AUTO
J	SW48	MICRO
K	SW49	-
L	SW50	X2
M	SW51	P
N	SW52	-
O	SW53	1.Bread 2.Bar Snacks 3.Multi-Ptn
P	SW55	CLOCK
Q	SW56	-
R	SW57	LB/OZ
S	SW58	UP
T	SW59	DOWN
U	SW60	10 MIN
V	SW61	1 MIN
W	SW62	1 SEC
X	SW63	10 SEC



# 19 Digital programmer Circuit



DPC Schematic 1



DPC Schematic 2

## 20 Digital programmer circuit parts list

These components are not available separately and are only listed to assist with fault diagnosis.

### 20.1. E603L5F70BP DPC AU

Ref. No.	Part No.	Part Name & Description	Qty	Remarks
J5 J13	A64454L60UP	20mm JUMPER	2	
J23	A64454V00BP	15mm JUMPER	1	
J9 J10 J14 J22	ANE64454R0AG	5mm JUMPER	4	
J1 J4 J6 J8 J11 J12 J15 J21	ANE6445880AP	10mm JUMPER	16	
R180	ERDS2TJ361T	360R Carbon Resistor	1	
D40 D41	AESS133T-77	Diode	2	
D180 D182	AESQTLGE260T	Green LED	3	
CX320	EF0EC8004T4	Ceramic Resonator	1	
SW40-SW48 SW50-SW51 SW53-SW55 SW57-SW63	EVQ11L05R	Push Switch	21	
C110 C20 C40 - C48	AECU1F103Z50	10nF Chip Capacitor	11	
C220 C221 C222 C224 C22	AECU1F104Z25	100nF Chip Capacitor	5	
R111-113 R20 R442	AERJ3GSYJ102	1K Chip Resistor	5	
R340	AERJ3GSYJ103	10K Chip Resistor	1	
R650	AERJ3GSYJ104	100K Chip Resistor	1	
R110	AERJ3GSYJ220	22R Chip Resistor	1	
R331	AERJ3GSYJ471	470R Chip Resistor	1	
C441 R443	AERJ3GSYJ333	33K Chip Resistor	2	
R40 - R48	AERJ3GSYJ683	68K Chip Resistor	9	
IC1	AEIC8224H186	LSI M3822 (24K)	1	
	A611A4J01XN	Display Holder Unit	1	
DISP110	AEDDHL4V00BP	LCD (NEW)	1	
CN6	AEEM19FESVKN	CONNECTOR	1	
IC220	AN6747B	Custom IC	1	
JPR1	ERDS2TJ1R0T	1R0 Carbon resistor	1	
	E62604V00BP	Print Board(A)	1	

### 20.2. E603Y5D20BP DPC DU

Ref.No	Part No.	Description	Qty	Remarks
CN5	AEEM19FEBVKN	19 PIN CONNECTOR	1	
CN1	AEEMXD05507W	7 PIN CONNECTOR	1	
RY1	AEGG5G1A12	RELAY	1	12V
RY2.RY3	AEBGG5N1A12	RELAY	2	12V
D1	ERZV10D511CS	VARIATOR	1	
1C25	AEICP25011HL	OPTICAL COUPLER	1	
D26	AESTS1WBA60B	DIODE BRIDGE	1	
BZ310	EPBAH20C001	BUZZER	1	2KHz
IC10	ETXMJ197X1BG	SWITCH POWER SUPPLY	1	
CN3	E03525D00BP	3 PIN CONNECTOR	1	
CN4	AEEMMF00D04W	4 PIN CONNECTOR	1	
C25	ECA2WHG220E	CAPACITOR	1	10mF 450V
C10	EEUFC1C471B	CAPACITOR	1	470mF 16V
R27	ERX12SJ1R0E	RESISTOR	1	1W 1/4W
Q10	2SD1859TV2	POWER TRANSISTOR	1	
R220.R232	ERDS2TJ103T	RESISTOR	3	10KW 10%
R24	ERDS2TJ223T	RESISTOR	1	22K
C330	ECBT1H681KB5	CAPACITOR	1	680pF
R228.R11	ERDS2TJ104T	RESISTOR	2	100KW 5%
R310	ERDS2TJ182T	RESISTOR	1	1.8KW 5%
R10	ERDS2TJ821T	RESISTOR	1	820W
D25	AESS133T-77	DIODE	1	
ZD10	AESZMTZ5R6B	ZENERDIODE	1	
R26.R25	ERDS1FJ563T	RESISTOR	2	56KW 1/2W
D220	AESS1N4003E	DIODE	1	
R231	ERDS2TJ102T	RESISTOR	1	1K
R223	ERDS2TJ222T	RESISTOR	1	2.2K
R330	ERDS2TJ333T	RESISTOR	1	33K
R311	ERDS2TJ391T	RESISTOR	1	390
Q226	AESAKTA200Y	PNP TRANSISTOR	1	
Q222	AESCKTC3199GR	NPN TRANSISTOR	1	
C12	ECEA1CKA100B	10F CAPACITOR	1	
J1 J4 J5 J10-J13 J15	ANE64454R0AG	5mm JUMPER	9	
J2 J6 J9 PF3	ANE6445880AP	10mm JUMPER	4	
J3,J7	A64454V00BP	15mm JUMPER	2	
D223	AESS133T-77	DIODE	1	