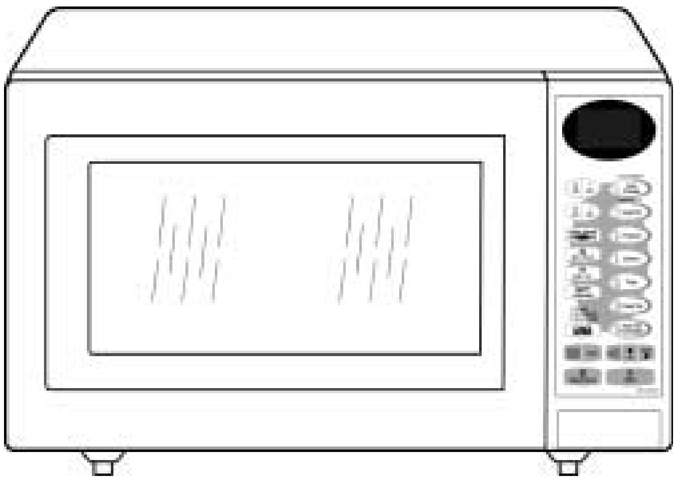
ORDER NO.SIMMC0303012C2

Service Manual

Microwave Oven



NN-V653WF NN-V653CF NN-V623MF NN-F663WF NN-F653WF NN-F623MF NN-V453WF NN-V423MF NN-T553WF NN-T523MF NN-T543WF NN-Q553WF NN-Q523MF NN-Q543WF

BPQ(U.K.)
GPG(Germany)
EPG(France, Italy, Finland, Spain, Portugal, Greece, Poland, Holland)

Specifications: (For Grill Models)

Specifications \ Models		V653WF/CF BPQ V623MF BPQ	V653WF/CF GPG V623MF GPG	V453WF BPQ	V453WF GPG V423MF GPG	F663WF EPG F623MF EPG	F653WF EPG
Power Source:		230V AC Single Phase,50Hz-- For GPG,EPG Models. 230V-240V AC Single Phase,50Hz--------------------------------------- For BPQ Models.					
Power Requirement:	Microwave	1260W	1260W	1160W	1160W	1260W	1260W
	Heater	1350W	1350W	1150W	1150W	1350W	1350W
Output:	Microwave(IEC60705)	1000W	1000W	1000W	1000W	1000W	1000W
	Heater	1300W	1300W	1100W	1100W	1300W	1300W
Microwave Frequency:		2450MHz					
Timer:		99min.99sec				30min.(HIGH POWER)/99min.	
Outside Dimensions:		510mm(D) x 380mm(W) x 304mm(H)					
Oven Cavity Dimensions:		359mm(D) x 352mm(W) x 217mm(H)					
Weight:		12.5kg					
PbF		This product with PbF					
Output power: IEC60705 Test Procedure							
Specifications subject to change without notice.							

Specification: (For Solo Models)

	T553WF BPQ	T523MF BPQ	T543WF BPQ	Q553WF EPG	Q523MF EPG	Q543WF EPG
Power Source:	230V AC Single Phase,50Hz-- For GPG,EPG Models. 230V-240V AC Single Phase,50Hz--------------------------------------- For BPQ Models.					
Power Requirement:	1260W	1260W	1160W	1260W	1260W	1160W
Output(IEC60705)	1000W	1000W	1000W	1000W	1000W	1000W
Microwave Frequency:	2450MHz					
Timer:	99min.99sec				30min.(HIGH POWER)/99min.	
Outside Dimensions:	510mm(D) x 380mm(W) x 304mm(H)					
Oven Cavity Dimensions:	359mm(D) x 352mm(W) x 217mm(H)					
Weight:	11.5kg					
PbF	This product with PbF					
Output power: IEC60705 Test Procedure						
Specifications subject to change without notice.						

⚠ 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.

WARNING

1. This product should be serviced only by trained, qualified personnel.
2. Check for radiation leakage before and after every servicing according to the “procedure for measuring radiation leakage.”
3. If the unit cannot be repaired on site, advise the customer not to use until unit is repaired.
4. There are special components used in the microwave oven which are important for safety. These parts are marked with a ⚠ on the replacement parts list. It is essential that these critical parts be replaced only with the manufacture’s specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the orginal design.

This service manual covers products for following markets.
When troubleshooting or replacing parts, please refer to the country identifications shown below for your applicable product specification.

BPQ .... For U.K.

GPG .... For Germany

EPG .... For France, Italy, Finland, Spain
Portugal, Greece, Poland, Holland

CAUTION

About lead free solder (PbF)

Distinction of PbF PCB: PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.

Caution:
- Pb free solder has a higher melting point than standard solder; Typically the melting point is 30 - 40˚C higher. Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 370 ± 10˚C.
- Pb free solder will tend to splash when heated too high (about 600˚C).

DANGER OF HIGH VOLTAGE AND HIGH TEMPERATURE (HOT/LIVE) OF THE INVERTER POWER SUPPLY (U)

INVERTER WARNING

This Inverter board looks like a regular PCB. However, this PCB drives the magnetron tube with extremely high voltage and high current. **NEW H.V.**

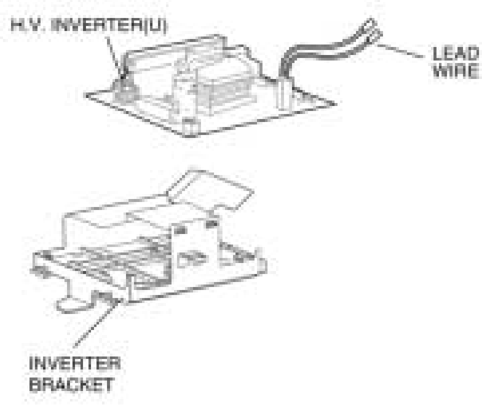
IT HAS:

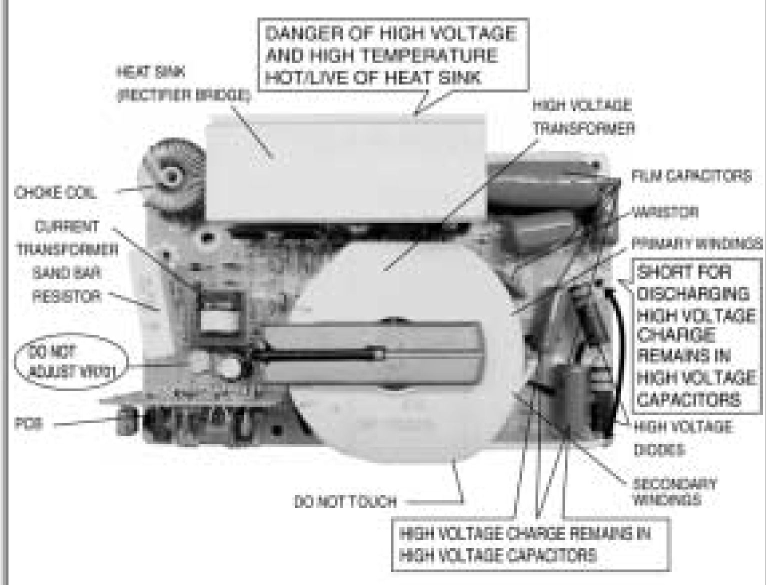
1. **Very high voltage and high current circuits.**
   It functions the same as the high voltage transformer and high voltage capacitor in ordinary microwave ovens.
2. **Aluminum heat sink is energized with very high voltages and high heat energy.**
3. **Very high voltage may remain in circuitry even when oven is off. High voltage charge may remain in the capacitors on the board.**

DO NOT:

* 1. **Do not touch circuitry because it has very hot (high voltage) circuitry. Even when replacing board, extreme care should be taken to avoid possible electric shock hazards. High voltage charge may remain in circuit.**
* 2. **Do not touch aluminum heat sink because it is energized with very high voltage and also is very hot in high heat energy.**
* 3. **Do not try to adjust or tamper with preset control on the Inverter board because it is very dangerous to adjust without proper test equipment.**
* 4. **Do not test oven while Inverter grounding plate or screws are loose. It is very dangerous to operate H.V. Inverter Circuit (U) with loose mounting screws or if improperly grounded.**
* 5. **Do not try to repair Inverter PCB because it is very dangerous to repair. Replace as a complete High Voltage Inverter Circuit unit.**

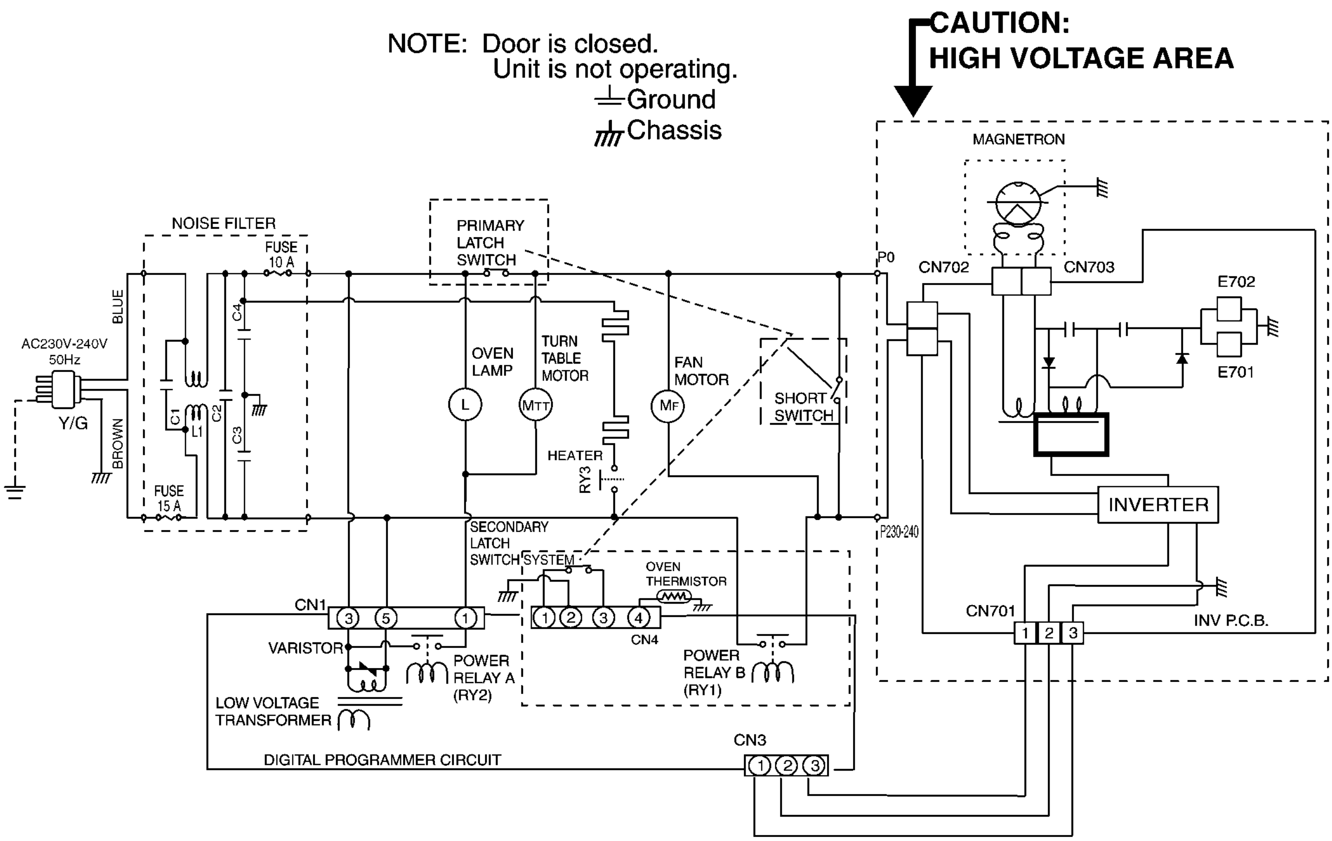
INVERTER POWER SUPPLY





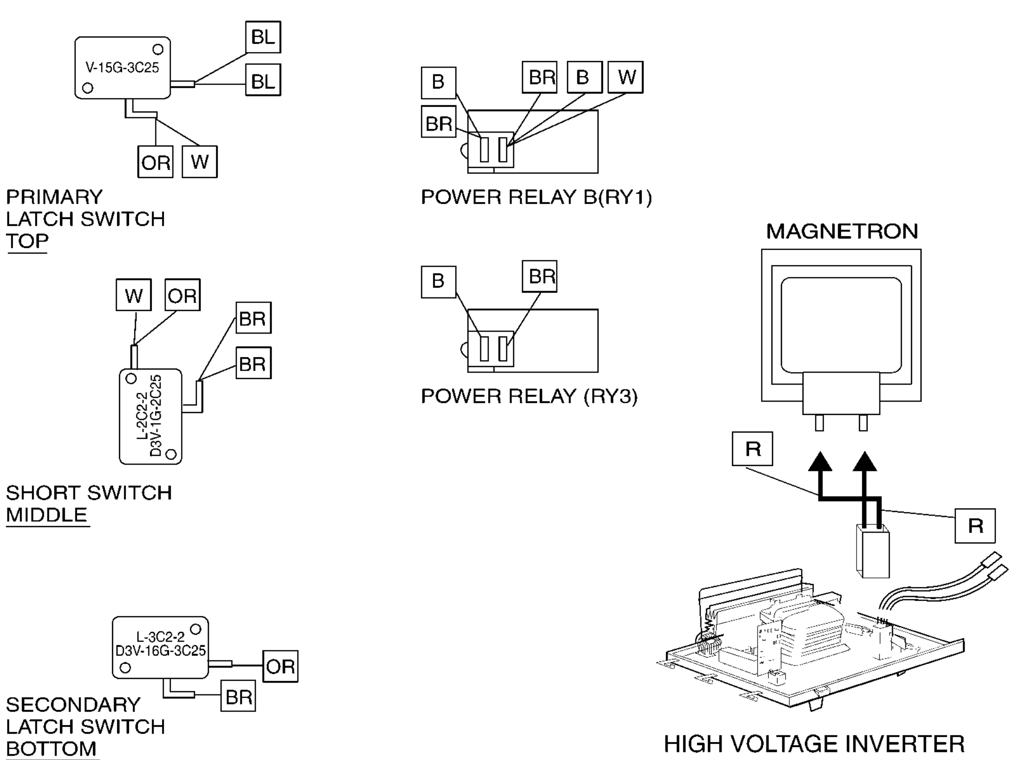
Panasonic®

1 SCHEMATIC DIAGRAM (FOR GRILL MODELS)



WIRING DIAGRAM

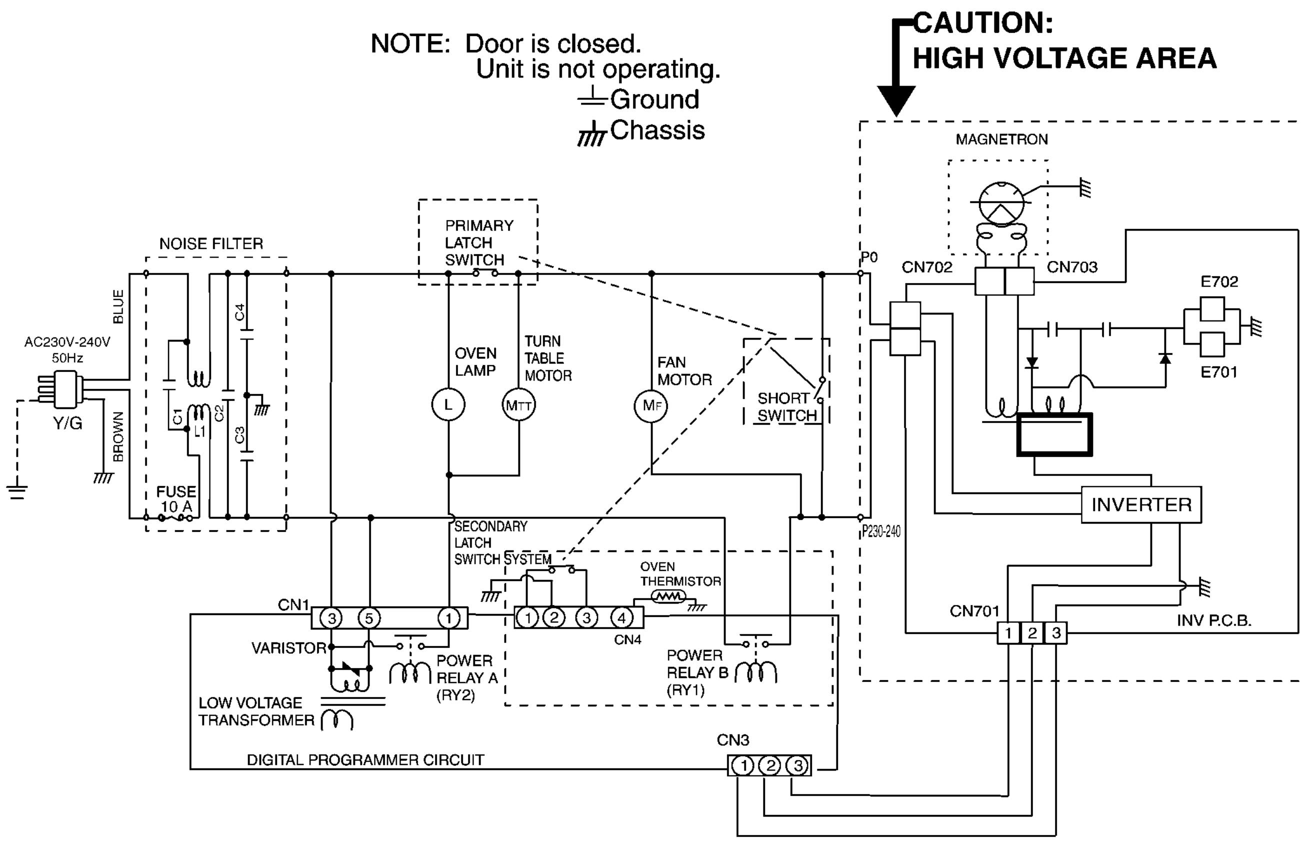
NOTE: * When replacing, check the lead wire color as shown.
***Colors shown by ( ) indicate colors of lead wire connector housing.**



SYMBOL	COLOR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

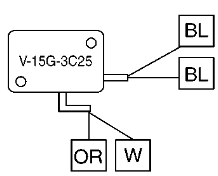
(S-5R2)
(S-5R5)
(S-5R6)
(S-5R7)
(S-5R8)

2 SCHEMATIC DIAGRAM (FOR SOLO MODELS)

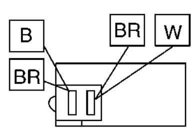


WIRING DIAGRAM

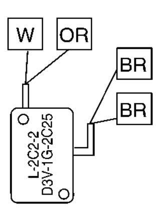
NOTE: * When replacing, check the lead wire color as shown.
***Colors shown by ( ) indicate colors of lead wire connector housing.**



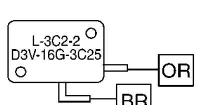
PRIMARY
LATCH SWITCH
TOP



POWER RELAY B(RY1)

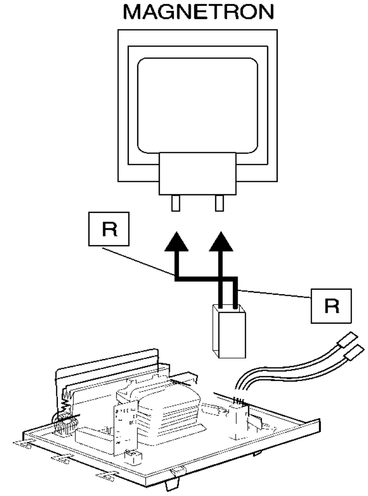


SHORT SWITCH
MIDDLE



SECONDARY
LATCH SWITCH
BOTTOM

MAGNETRON



HIGH VOLTAGE INVERTER

SYMBOL	COLOR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

(S-5Q3)
(S-5Q5)
(S-5Q7)
(S-5Q8)
(S-5Q9)
(S-6A0)

3 DESCRIPTION OF OPERATING SEQUENCE

3.1. Variable power cooking control

High Voltage Inverter Power supply (U) controls output power by the signal from Digital Programmer Circuit (DPC). Power relay stays ON for P4 to P10 and For P1 to P3, both inverter drive signal and power relay to control output power.

NOTE:

The ON/OFF time ratio does not correspond with the percentage of microwave power since approximately 2 seconds are required for heating of magnetron filament.

Variable Power Cooking

POWER SETTING		OUTPUT POWER(%) APPROX.	ON-OFF TIME OF POWER RELAY (RY1)	
			ON(SEC)	OFF(SEC)
HIGH	P10	100%	22	0
	P9	90%	22	0
	P8	80%	22	0
MEDIUM-HIGH	P7	70%	22	0
MEDIUM	P6	60%	22	0
	P5	50%	22	0
	P4	40%	22	0
MEDIUM-LOW	P3	30%	22	0
	P2	20%	15	7
	P1	10%	8	14
DEFROST	P3	30%	22	0

3.2. Inverter power supply circuit NEW H.V.

This Inverter Power Supply Circuit supplies 4,000V DC to the magnetron tube from the line voltage, 230-240V 50Hz AC input. functions as the H.V. transformer, the H.V.capacitor and H.V.Diode.

1. The AC input voltage 230-240V 50Hz is rectified to DC voltage immediately.
2. DC voltage will be supplied to the switching devices called IGBT. These devices will be switched ON-OFF by the 20 to 40 kHz PWM. (pulse width modulation) signal from the microcomputer in the DPC.
3. This drives the High voltage transformer to increase up to 2,000V AC and approximately 3V AC by means of transformer.
4. Then the half-wave doubler voltage rectifier circuit, consisting of the H.V. diodes and Capacitors, generates the necessary 4,000V DC needed for the magnetron.
5. Output power of the magnetron tube is always monitored by the signal output from the current transformer built into the inverter circuit.
6. Then this signal will be fed back to the microcomputer in the DPC to determine operating conditions and output necessary to control PWM signal to the inverter Power Supply to control output power.

3.3. Inverter turbo defrost

When this Auto Control feature is selected and the Start Pad is tapped:

1. The digital programer circuit determines the power level and cooking time to complete cooking and indicates the operating state in the display window. Table shows the corresponding cooking times for respective serving by categories.
2. When cooking time the display window has elapsed, the oven turns off automatically by a control signal from the digital programmer circuit.

4 CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

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

Caution

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

4.1. Check the grounding

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

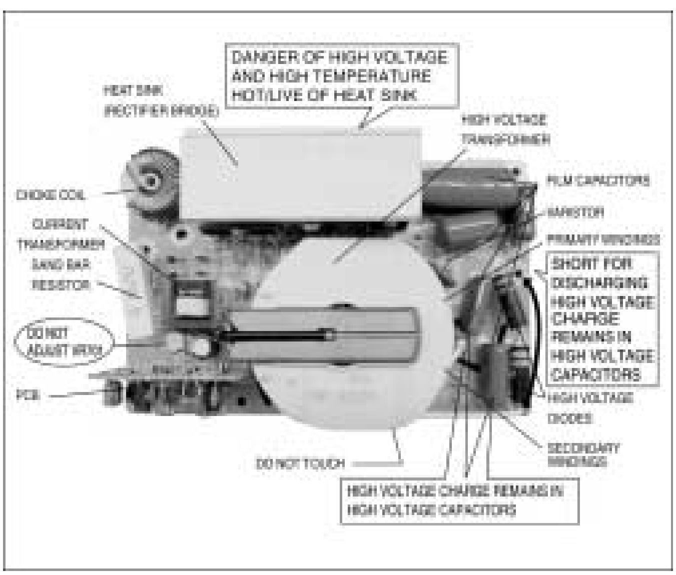
4.2. Inverter warnings

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.

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

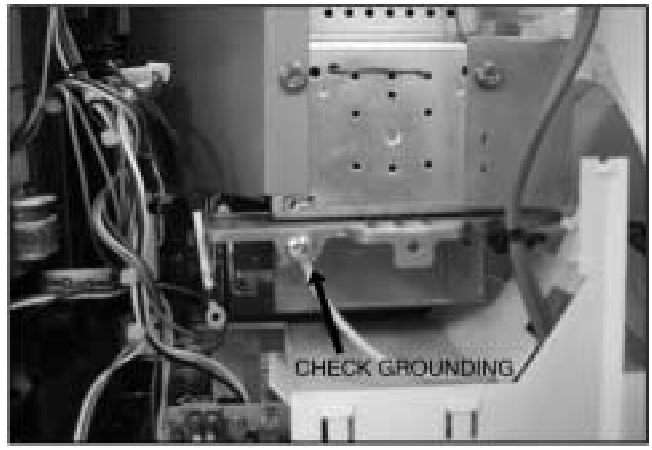
The aluminum heat sink may be HOT due to heat energy, therefore, extreme care should be taken during servicing.



H.V. Inverter warning

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 the user to very high voltages and cause extreme DANGER! Be sure that the inverter circuit is properly grounded via the inverter earth bracket.

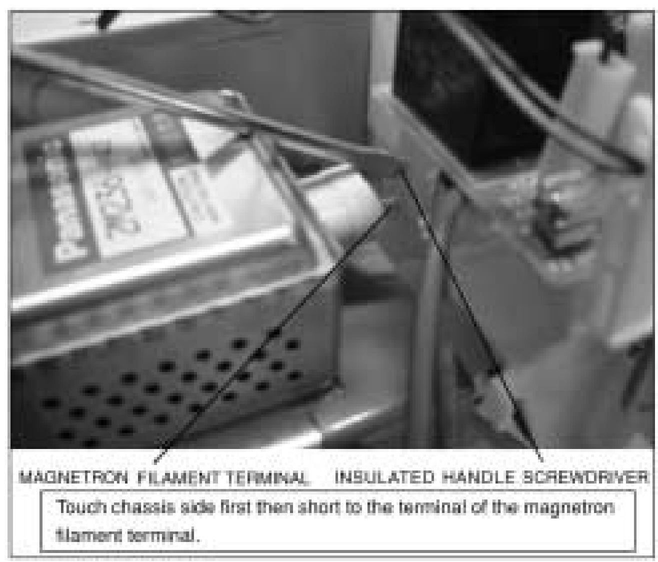


Grounding of the inverter circuit board

WARNING! DISCHARGE THE HIGH VOLATGE 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

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 or with an insulated tool during operation.

4.3. Part replacement.

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

4.4. 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 interlock monitor switch, replace all of the components (primary latch switch, secondary latch switch, short switch and power relay B (RY1)).

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.

4.5. 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.

4.6. 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

USE CAUTION NOT TO BECOME EXPOSED TO RADIATION FROM THE MICROWAVE MAGNETRON OR OTHER PARTS CONDUCTING MICROWAVE ENERGY

IMPORTANT NOTICE

The following components have potentials above 2000V while the 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 to these areas.

When the appliance is operated with the door hinges or magnetron fixed incorrectly, the microwave leakage can exceed more than 5mW/cm^2. After repair or exchange, it is very important to check if the magnetron and the door hinges are correctly installed.

4.7. Sharp edges

Caution

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

5 DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

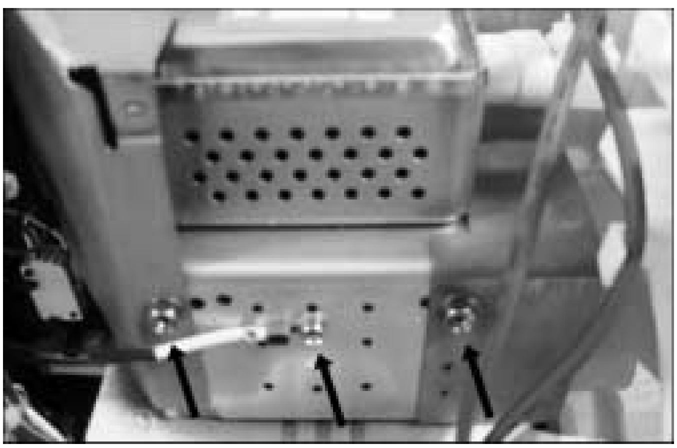
5.1. Magnetron

1. Discharge high voltage charge.
2. Remove 1 screw holding air guide A.
3. Remove 1 screw holding air guide F.
4. Remove 1 screw holding themistor.
5. Disconnect 2 high voltage lead wires from magnetron filament terminals.
6. Remove 4 screws holding the magnetron.

NOTE:

After replacement of the magnetron, tighten mounting screws properly making sure there is no gap between the waveguide and the magnetron to prevent microwave leakage.

CAUTION
When replacing the magnetron, be sure the antenna gasket is in place.



5.2. Digital programmer circuit (D.P.C) and membrane key board.

NOTE:

Before handing the D.P.C ensure that your body is connected to ground to discharge any electric charge.

1. Disconnect all connectors from D.P.C.
2. Remove 1 screw holding escutcheon base and slide the escutcheon base upward slightly.
3. Remove 1 screw holding D.P.C.
4. Release lock of connector CN6 by pushing both levels to inside and pull them upward, and remove flat cable of membrane keyboard.
5. Separate D.P.C board from tabs on the escutcheon base and remove D.P.C board.

   To replace membrane key board
6. Push the upper part of key board (display window portion) from back of escutcheon base and peel off escutcheon sheet and membrane key board completely from escutcheon base.

NOTE:

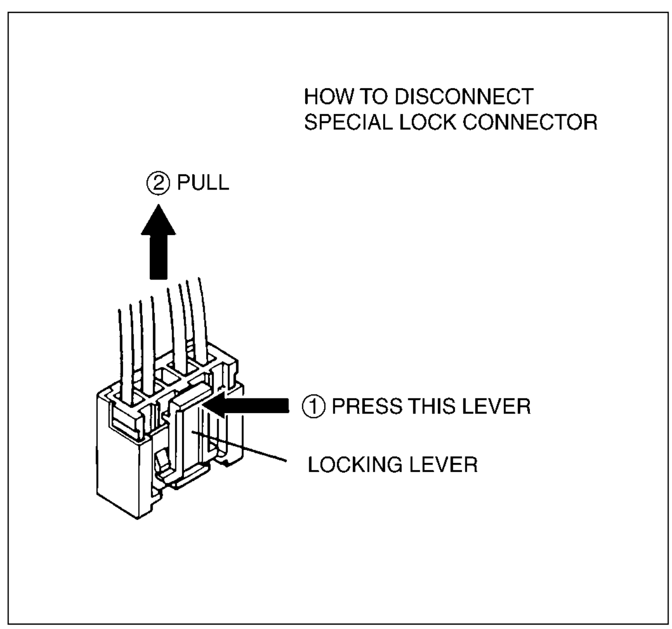
1. The membrane key board is attached to the escutcheon base with double faced adhesive tape. Therefore, applying hot air such as using a hair dryer is recommended for smoother removal.

2. When installing new membrane key board, make sure that the surface of escutcheon base is cleaned sufficiently so that any problems (shorted contacts or uneven surface) can be avoided.

3. Alignment position of membrane key board is as follows;

Membrane key board: Right and upper edges

Escutcheon sheet: Right and upper edges



5.3. Low voltage transformer and/ or power relays (RY1, RY2)

NOTE:

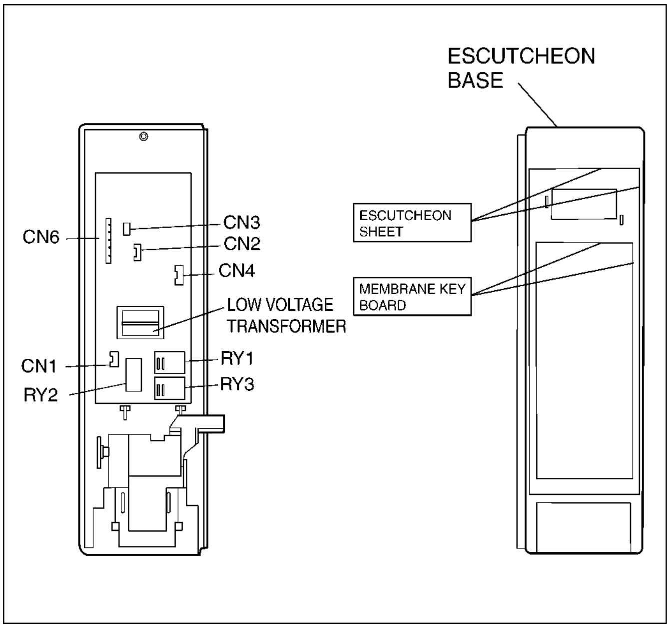
Be sure to ground any static electric charge built up on your body before handling the DPC.

(A) Using solder wick or a desoldering tool and 30W soldering iron, carefully remove all solder from the terminal pins of the low voltage transformer and/or power relays.

NOTE:

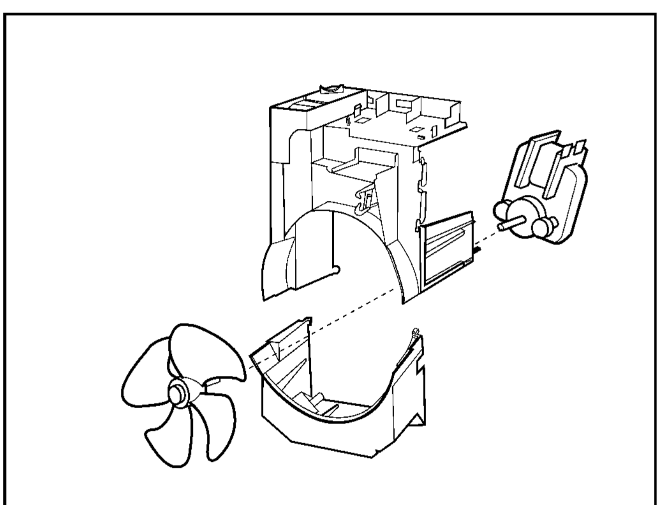
Do not use a soldering iron or desoldering tool of more than 30 watts on DPC contacts.

(B) With all the terminal pins cleaned and separated from DPC contacts, remove the defective transformer/power relays making sure all terminal pins are inserted completely. Resolder all terminal contacts carefully.



5.4. Fan motor

1. Disconnect 2 lead wires from fan motor terminals.
2. Remove 1 screw located on oven attaching orifice assembly.
3. Remove orifice from oven assembly.
4. Remove 2 screws holding fan motor to oven assembly.
5. Remove fan blade from the fan motor shaft by pulling it straight out.



5.5. Door assembly

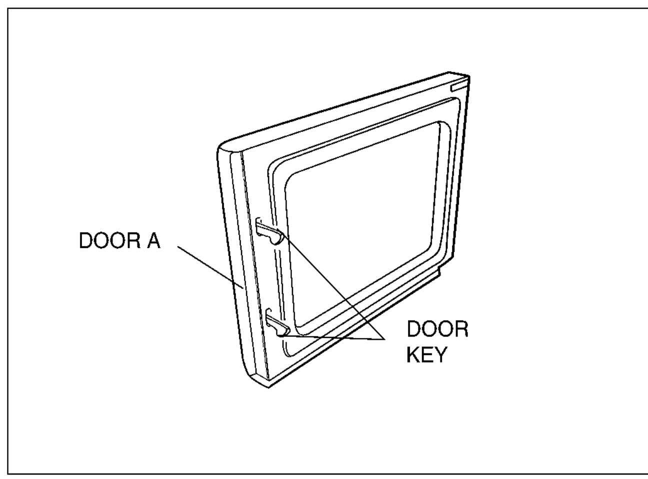
1. Remove door C from door E by carefully pulling outward starting from upper right hand corner using a flat blade screwdriver.
2. Separate door E from tabs on door A and remove door A.
3. Open Door E at the opening angle of approximately 10°**(Note: The door cannot be removed if the opening angle is greater than 10°)**.
4. Remove the door E from its hinges by pushing the door E upward and out.
5. Remove door screen B from door A.
6. Remove door key and door key spring.
7. Place the door's lower hinge pin into the bottom hinge hole.
8. Use your left index finger to support the door's lower hinge pin while guiding the door's upper hinge pin into the top hinge hole.
9. Lower your finger to seat the door onto the hinges.
10. Replace other components.

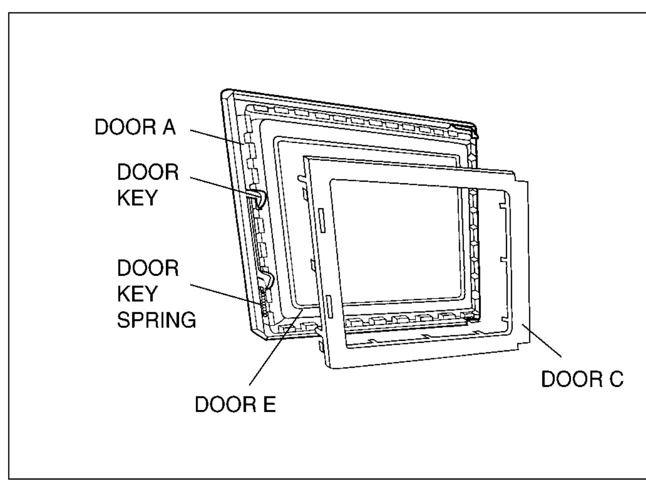
NOTE:

Door alignment is crucial. If door is misaligned, apply pressure until alignment is achieved.

NOTE:

After replacement of the defective component parts of the door, reassemble, install, and perform microwave leakage test.





5.6. Turntable motor

1. Remove the motor cover by cutting at the locations indi-

cated by the arrows with a cutter.

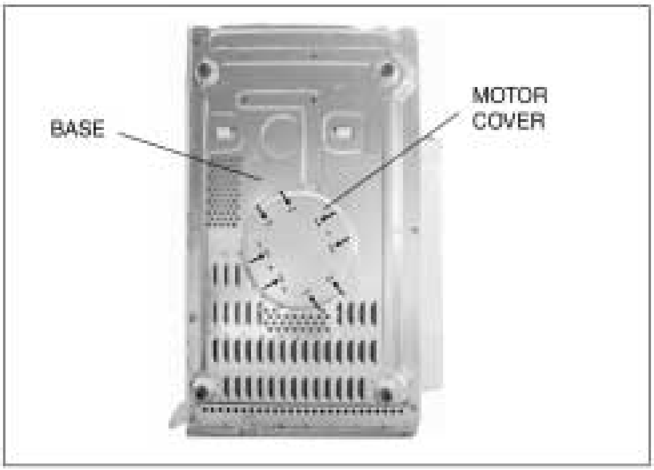
NOTE:

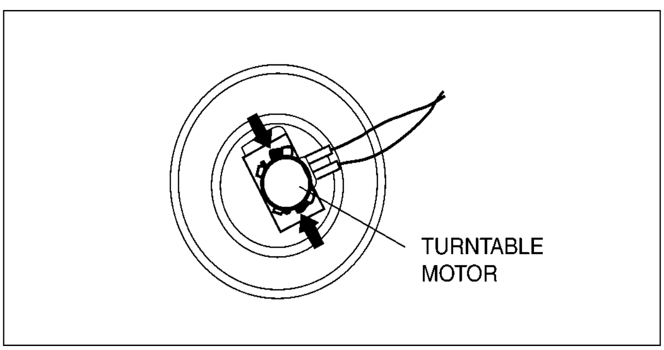
After removing the motor cover, be sure that cut portions are properly trimmed or bent to the inside so that no sharp edges will be exposed to outside.

2. Disconnect 2 lead wires connected to the turntable motor.
3. Remove the turntable motor by removing screw.

NOTE:

After replacing the new turntable motor and reconnecting the two lead wires, reinstall the motor cover by rotating it 180°, tucking the tabs into the base in the 2 provided slots, then screw the single tab to the base using a 4mm X 6mm screw (not provided).



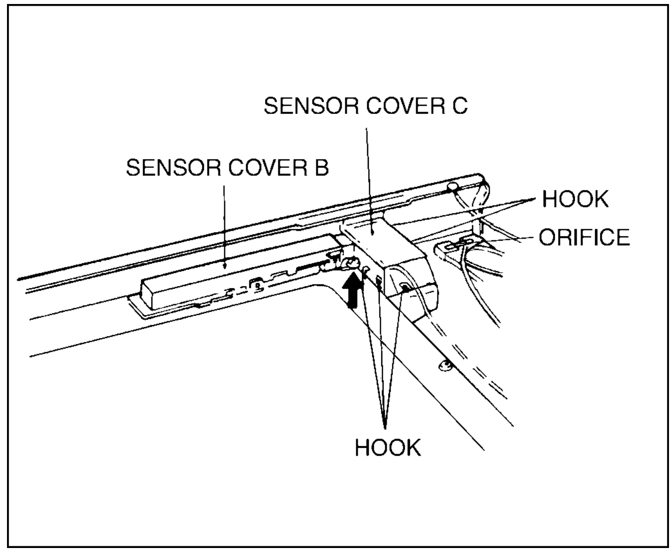


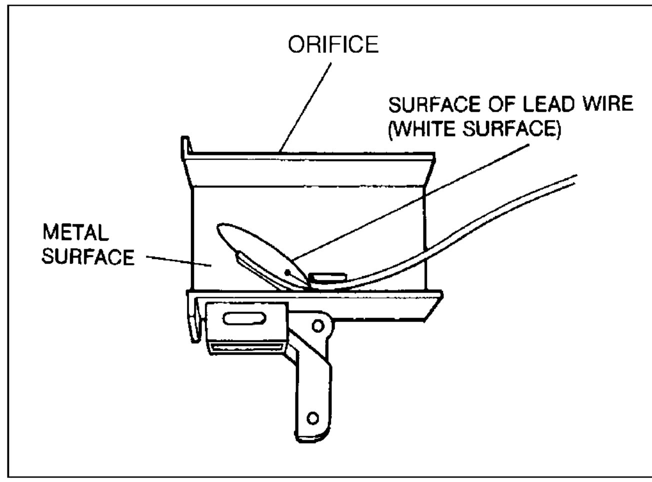
5.7. Steam sensor

1. Disconnect connector CN2 from digital programmer circuit board.
2. Disengage catch hooks on sensor cover c from orifice.
3. Remove steam sensor from orifice.

NOTE:

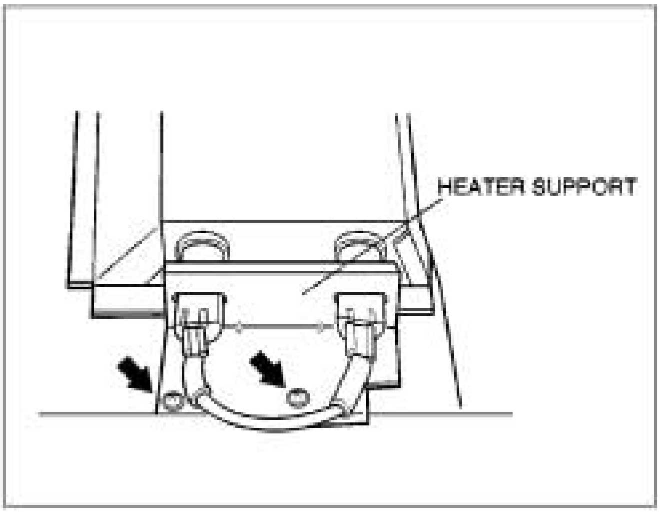
When installing the steam sensor, make sure that the direction of steam sensor is as shown in figure.

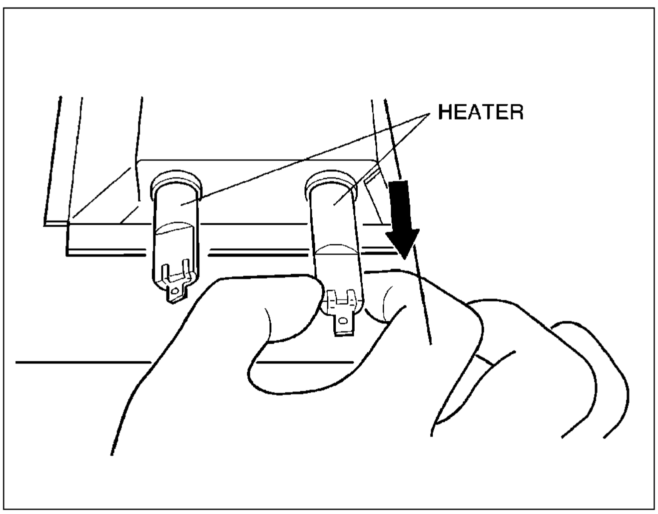




5.8. Quartz heater(For Brown Models)

1. Disconnect lead wires from heater terminals.
2. Remove 2 screws holding heater supports.
3. Remove the heater by pulling it out.





5.9. Inverter power supply

CAUTIONS

1.Always leave the grounding plate in place.

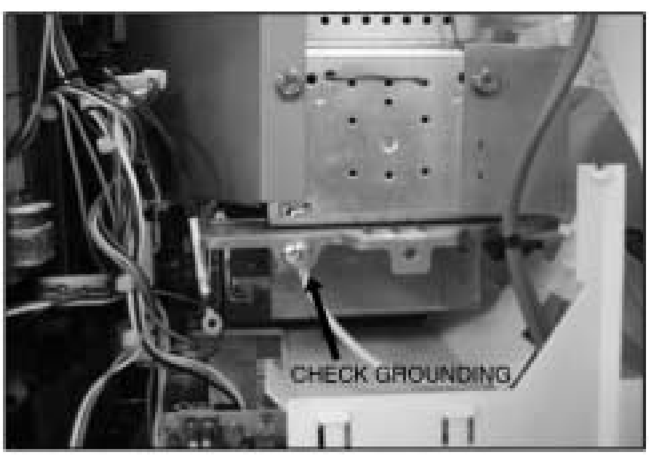
2.Always securely tighten the ground screw through the bottom of the chassis (base).

3.Securely connect 3 lead wire connectors.

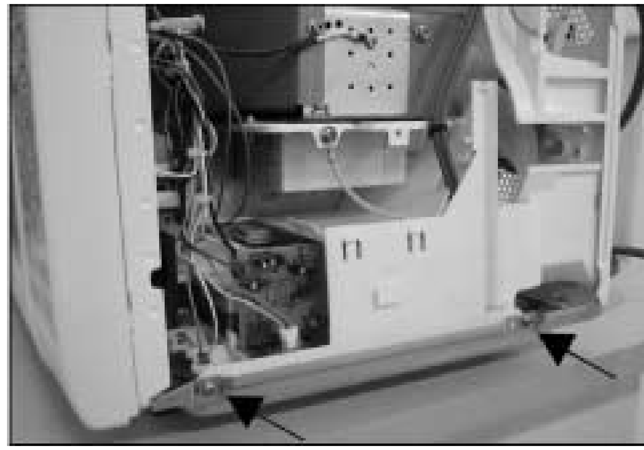
4.Make sure the heat sink has enough space (gap) from the oven. Take special care not to touch any lead wire to the aluminum heat sink because it is hot.

1. Remove cabinet outer panel.

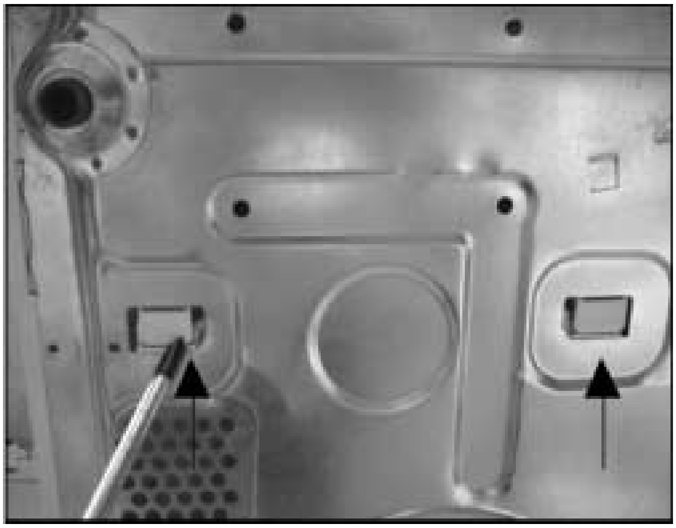
2. Remove the the H.V.lead wire from magnetron terminals.
3. Disconnect 2 connectors from CN701 & CN702 on H.V.Inverter(U).
4. Remove 1 screw holding grounding lead wire.



5. Remove 2 screws holding Inverter bracket to the base.



6. Slide 2 locking tabs of Inverter bracket at the bottom of the base in direction of arrows.



7. Remove 2 screws holding H.V.Inverter to Inverter bracket.

6 COMPONENT TEST PROCEDURE

CAUTION **NEW. H.V.**

1. High voltage is present at the high voltage terminal of the High Voltage Inverter (U) including aluminum heat sink during any cook cycle.

2. It is neither necessary nor advisable to attempt measurement of the high voltage.

3. Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the high voltage capacitors.

6.1. Primary latch switch (Secondary latch switch and power relay B) interlocks.

1. Unplug the lead connectors to Power Relay B and verify continuity of the power relay B 1-2 terminals.
2. Unplug lead connectors to Primary Latch Switch and Secondary Latch Switch.
3. Test the continuity of switches at door opened and closed positions with ohm meter (low scale).
   Normal continuity readings should be as follows.

	Door Closed	Door Opened
Primary Latch Switch	0 Ω (close)	∞ Ω (open)
Secondary Latch Switch	0 Ω (close)	∞ Ω (open)
Power Relay B	∞ Ω (open)	∞ Ω (open)

6.2. Short switch & monitor

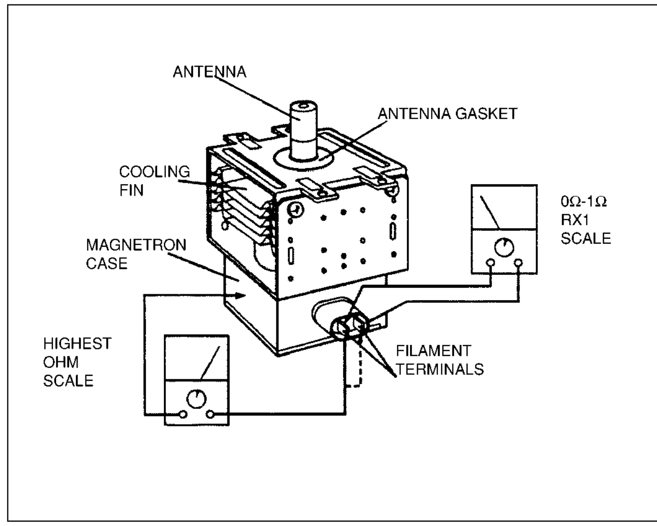
1. Unplug lead wires from Inverter Power Supply (U) primary terminals.
2. Connect test probes of ohm meter to the disconnected leads which were connected to Inverter Power Supply (U).
3. Test the continuity of short switch with door opened and closed positions using lowest scale of the ohm meter.
   Normal continuity readings should be as follows.

Door Opened	Door Closed
0 Ω	∞ Ω

6.3. Magnetron

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

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

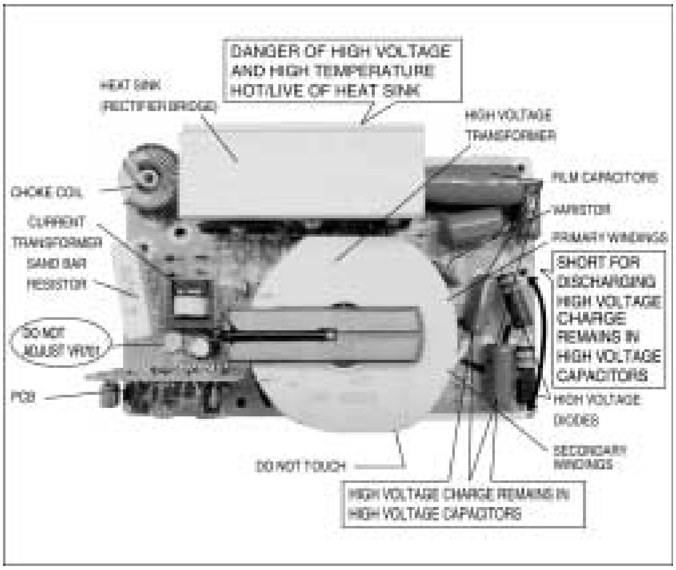


6.4. Membrane key board (Membrane switch assembly)

Check continuity between switch terminals, by tapping an appropriate pad on the key board. The contacts assignment of the respective pads on the key board is as shown in digital programmer circuit.

6.5. Inverter power supply (U)

DO NOT try to REPAIR H.V. Inverter power supply (U).Replace complete H.V. Inverter(U) Unit.



DANGER HIGH VOLTAGE

Test if failure codes of H97 or H98 appear by doing the following procedure. It is recommended to use an AC line input current Ampere meter for testing.

Test1

1. Program DPC.
   a. Tap Clock Keypad
   b. Tap Timer Keypad
   c. Tap Start Keypad
   d. Tap Micro Power Keypad
2. Place 1 liter of water load into oven cavity.
3. Unplug 2 pin H.V. lead wire connector CN703 from magnetron tube.
4. Program oven at High power for 1 minute and press start.
   a. After approximately 23 seconds, oven stops.
   b. During oven operation, input current is approximately 0.5 to 1A. If both a and b are OK, proceed to test 2.

	INPUT AMPERE	FAILURE CODE
Unplug CN703	0.5 to 1A	Oven stops in 23 seconds after started.

Test2

Continued from Test 1

1. Unplug 3 pin connector CN701. CN703 remains unplugged.
2. Program oven at High power for 1 minute and press start.
   a. After approximately 3 seconds, oven stops.
   b. During oven operation, input current is approximately 0.4A.

	INPUT AMPERE	FAILURE CODE
Unplug CN701	<0.4A	Oven stops in 3 seconds after started.

If both a and b check OK, the Inverter Power Supply (U) can be determined to be OK.

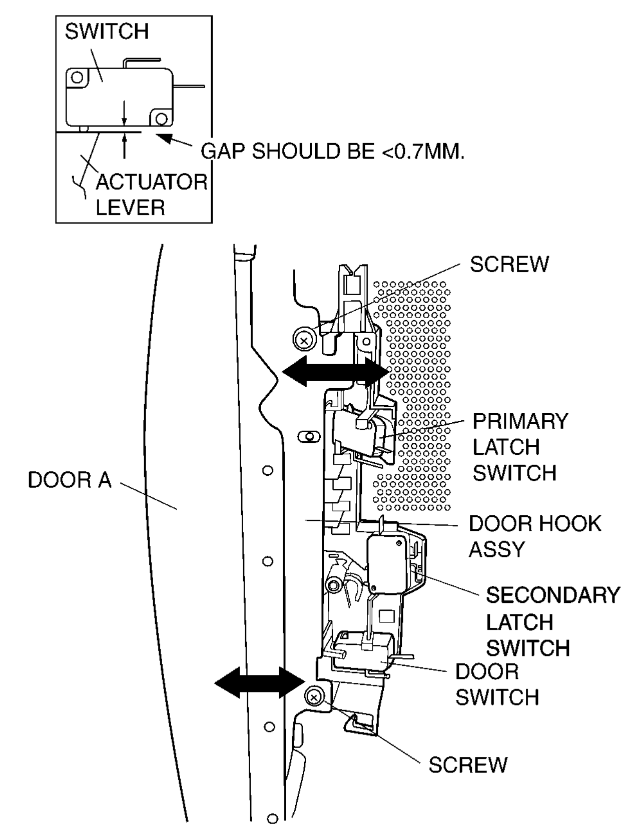
7 MEASUREMENTS AND ADJUSTMENTS

7.1. Adjustment of primary latch switch, secondary latch switch and short switch.

1. Mount the Primary latch switch, the Secondary latch switch and the short switch to the door hook assembly as shown in ILL.

   NOTE:

   No specific individual adjustment during installation of the Primary latch switch, Secondary latch switch or short switch to the door hook are required.
2. When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of the arrows in the illustration, so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.
3. Reconnect the short switch and check the continuity of the monitor circuit and all latch switches again by following the component test procedures on P.18.



7.2. Measurement of microwave output

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

Necessary Equipment:

*1 liter beaker *Glass thermometer

*Wrist watch or stopwatch

NOTE:

Check the line voltage under load.Low voltage will lower the magnetron output. Take the temperature readings and heating time as accurately 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. (recorded as T1).
2. Place the beaker on the center of glass tray.
   Set the oven for High power and heat it for exactly one minute.
3. Stir the water again and read the temperature of the water. (recorded as T2).
4. The normal temperature rise at High power level for each model, is as shown in table.

TABLE (1L-1min.test)

RATED OUTPUT	TEMPERATURE RISE
1000W(IEC705-88)	Min.8.6°C

8 PROCEDURE FOR MEASURING MICROWAVE ENERGY LEAKAGE

WARNING
Check for radiation leakage after every servicing. Should the leakage be more than 2 mW/cm^2. After repairing or replacing any radiation safety device, keep a written record for future reference, the leakage reading must be recorded on the service repair ticket while in the customer's home.

8.1. Equipment

- Electromagnatic radiation monitor
- Glass thermometer 212 °F or 100 °C
- 600cc glass beaker

8.2. Procedure for measuring radiation leakage

Note before measuring.

- Do not exceed meter full scale deflection. Leakage monitor should initially be set to the highest scale.
- To prevent false readings the test probe should be held by the grip portion of the handle only and moved along the shaded area in Figure no faster than 1 inch/sec (2.5cm/sec).
- Leakage with the outer panel removed ...... less than 5mW/cm^2.
- Leakage for a fully assembled oven with door normally closed ...... less than 2mW/cm ^{2}.
- Leakage for a fully assembled oven [Before the latch switch (primary) is interrupted] while pulling the door ...... less than 2mW/cm ^{2}.

1. Pour 275 ± 15cc (9ozs ± 1/2oz) of 20°C ± 5°C (68 ± 9°F) water in a beaker which is graduated to 600cc, and place in the center of the oven.
2. Set the radiation monitor to 2450MHz and use it following the manufacturer's recommended test procedure to assure correct results.
3. When measuring the leakage, always use the 2 inch (5cm) spacer supplied with the probe.
4. Tap the start pad or set the timer and with the magnetron oscillating, measure the leakage by holding the probe perpendicular to the surface being measured.

8.2.1. Measurement with the outer panel removed.

Whenever you replace the magnetron, measure for radiation leakage before the outer panel is installed and after all necessary components are replaced or adjusted. Special care should be taken in measuring around the magnetron.

WARNING
Avoid contacting any high voltage parts.

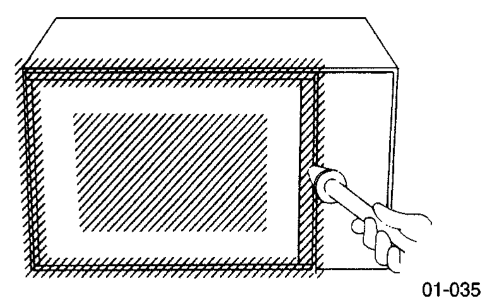
8.2.2. Measurements with a fully assembled oven.

After all components, including outer panel are fully assembled, measure for radiation leakage around the door periphery, the door viewing window, the exhaust opening and air inlet openings.

8.3. Record keeping and notification after measurement

1. After any adjustment or repair to a microwave oven, a leakage reading must be taken. Record this leakage reading on the repair ticket even if it is zero.
   A copy of this repair ticket and the microwave leakage reading should be kept by repair facility.

8.4. At least once a year, have the radiation monitor checked for calibration by its manufacturer.



MOVE PROBE ALONG SHADED AREA(//////)AROUND EXHAUST OPENINGS(as shown)AND AROUND AIR INLET OPENING

9 TROUBLESHOOTING GUIDE

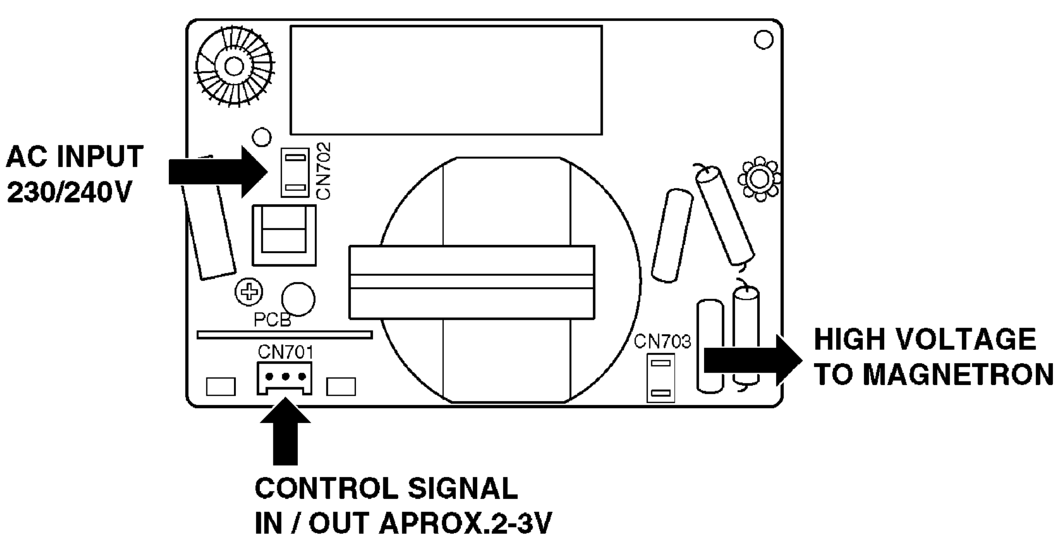
DANGER HIGH VOLTAGES

1. **DO NOT RE-ADJUST PRESET CONTROL on the H.V.Inverter (U).** It is very dangerous to repair or adjust without sufficient test equipment because this circuit handles very large current and high voltage. Operating a misaligned inverter circuit is dangerous.
2. Ensure proper grounding before checking for trouble.
3. Be careful of the high voltage circuitry, taking necessary precautions when troubleshooting.
4. Discharge high voltage remains in the H.V.Inverter (U).
5. When checking the continuity of the switches or the H.V.Inverter, disconnect one lead wire from these parts and then check 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 instead of the lead wire and then disconnect it, otherwise lead wire may be open or the connector cannot be removed.
6. Do not touch any parts of the circuitry on the digital programmer circuit, since static electric discharge may damage this control panel. Always touch yourself to ground while working on this panel to discharge any static charge in your body.
7. 230-240V AC is present on the digital programmer circuit (Terminals of power relay's and primary circuit of Digital Programmer Circuit). When troubleshooting, be cautious of possible electrical shock hazard.

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 oven's malfunction.

9.1. (Trouble) Oven stops operation during cooking

	SYMPTOM	CAUSE	CORRECTIONS
1.	**Oven stops in 3 seconds** after pressing start pad	No 230-240V AC is supplied to H.V.Inverter (U) CN702 terminals	1. Latch Switch 2. Power relay RY-1 3. Loose lead wire connector CN701, CN702
	Oven stops in 23 seconds after pressing start pad	H.V.Inverter (U) operates by the control signals from DPC but magnetron is not oscillating	1. Magnetron 2. Loose lead wire connector CN703
	Oven stops in 10 seconds after pressing start pad (Auto sensor cooking)	Steam sensor circuit does not function	1. Steam sensor 2. DPC 3. Loose wiring connector CN2
2.	No display and no operation at all. Fuse is blown.	Most probably loose connection of connectors or door latch mechanism is not adjusted properly	1. Allign door, Door Latch Switches 2. Loose wiring connectors

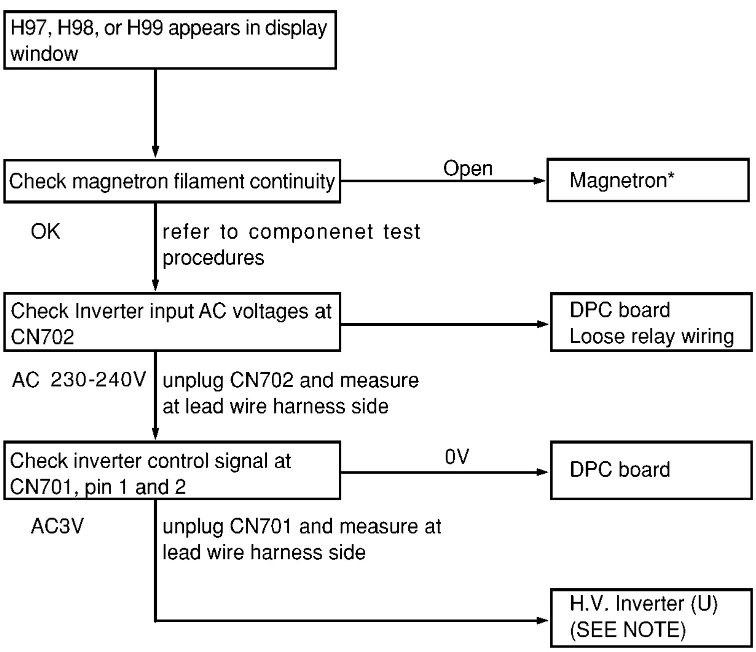


	SYMPTOM	CAUSE	CORRECTIONS
1.	Oven is dead. Fuse is OK. No display and no operation at all.	1. Open or loose lead wire harness 2. Open thermal cutout 3. Open low voltage transformer 4. Defective DPC	Check fan motor if thermal cutout is defective.
2.	No display and no operation at all. Fuse is blown.	1. Shorted lead wire harness 2. Defective primary latch switch (NOTE 1) 3. Defective short switch (NOTE 1) 4. Defective Inverter Power Supply (U)	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. Check continuity of power relay B (RY-1)'s contacts (between 1 and 2) and if it has continuity, replace power relay B (RY-1) also.	
3.	Oven does not accept key input(Program)	1. Key input is not in sequence 2. Open or loose connection of membrane key pad to DPC (Flat cable) 3. Shorted or open membrane key board 4. Defective DPC	Refer to operation procedure. Refer to DPC troubleshooting.
4.	Fan motor turns on when oven is plugged in with door closed.	1. Misadjustment or loose wiring of secondary latch switch 2. Defective secondary latch switch	Adjust door and latch switches.
5.	Timer starts count down but no microwave oscillation. (No heat while oven lamp and fan motor turn on)	1. Off-alignment of latch switches 2. Open or loose connection of high voltage circuit especially magnetron filament circuit NOTE: Large contact resistance will bring lower magnetron filament voltage and cause magnetron to have lower output and/or have intermittent. 3. Defective high voltage component H.V. Inverter Power Supply (u) Magnetron 4. Open or loose wiring of power relay B (RY-1) 5. Defective primary latch switch 6. Defective DPC or power relay B (RY-1)	Adjust door and latch switches. Check high voltage component according to component test procedure and replace if it is defective. Refer to DPC troubleshooting
6.	Oven can program but timer does not start countdown.	1. Open or loose wiring of secondary latch switch 2. Off-alignment of secondary latch switch 3. Defective secondary latch switch	
7.	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
8.	Fan motor turns on and turntable rotates when door is opened.	1. Shorted primary latch switch	
9.	Oven does not operate and return to plugged in mode as soon as start pad is pressed.	1. Defective DPC	Check tighten screws on escutcheon base bracket, D.P.C. board.
10.	Loud buzzing noise can be heard.	1. Loose fan and fan motor	
11.	Turntable motor does not rotate.	1. Open or loose wiring of turntable motor 2. Defective turntable motor	

	SYMPTOM	CAUSE	CORRECTIONS
12.	Oven stops operation during cooking.	1. Open or loose wiring of primary and secondary latch switch 2. Operation of thermal cutout	Adjust door and latch switches.
13.	Oven returns to plugged in mode after 10 seconds elapses on the Auto sensor cooking mode.	1. Open or loose wiring of sensor terminal from DPC 2. Open steam sensor 3. Defective DPC	

9.2. Troubleshooting of inverter circuit (U) and magnetron NEW H.V.

This oven is programmed with a self diagnostics failure code system which will help for troubleshooting. H97, H98, and H99 are the provided failure codes to indicate magnetron and inverter circuit problem areas. This section explains failure codes of H97, H98, and H99. First, you must program the DPC by pressing Clock , Timer , Start , Micro Power. Program unit for operation. H97, H98, H99 appears in display window a short time after start key is pressed and there is no microwave oscillation.



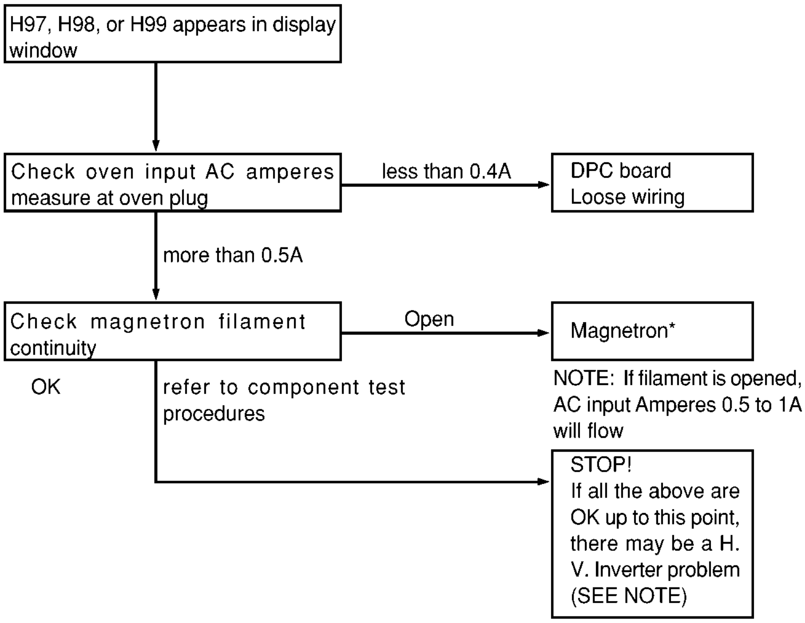
NOTE: DO NOT try to repair this Inverter Power Supply (U) and also DO NOT RE-ADJUST PRESET CONTROL on the board. It is very dangerous to repair or adjust without sufficient test equipment because this circuit handles very high voltage and very large current. Off alignment of inverter board operation is dangerous. Operating a misaligned Inverter circuit is dangerous due to the very high voltage and current that is produced by this board. Defective boards must be replaced with a new one.

* Check magnetron filament for open or short to casing before proceeding to determine a good magnetron.

NOTE: After check, unplug unit to reset to normal operation mode.

Alternate way to troubleshoot oven with AC Ampere meter used

H97, H98, H99 appears in display window a short time after start key is pressed and no microwave oscillation with AC Ampere meter used for troubleshooting



NOTE: After check, unplug unit to reset to normal operation mode.

NOTE: DO NOT try to repair this Inverter Power Supply (U) and also DO NOT

RE-ADJUST PRESET CONTROL on the board. It is very dangerous to repair or adjust without sufficient test equipment because this circuit handles very high voltage and very large current. Off alignment of inverter board operation is dangerous. Operating a misaligned Inverter circuit is dangerous due to the very high voltage and current that is produced by this board. Defective boards must be replaced with a new one.

* Check magnetron filament for open or short to casing before proceeding to determine a good magnetron.

9.3. Digital programmer circuit troubleshooting guide

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
No display when oven is first plugged in. Oven is dead.	1	Fuse pattern of DPC	Normal	STEP 2
			Open (NOTE)	Shorted Circuit of ZNR,L.V.T., Oven Lamp etc.Replace DPC
	2	Low voltage transformer (LVT) secondary voltage	Abnormal 0V	LVT
			Normal	→ Step 3
	3	IC-1 pin 16 voltage	Abnormal	ZD11, Q11
		(Emitter of Q11)	Normal = 5V	Display

<table>
<tr><th>SYMPTOM</th><th>STEP</th><th>CHECK</th><th>RESULT</th><th>CAUSE/CORRECTIONS</th></tr>
<tr><td colspan="5">NOTE

Procedure of fuse pattern repairing is as follows:

1. When the fuse pattern (PF2) opens.

(1) Remove the jumper wire (PF1).

(2) Insert the removed jumper wire (PF1) to “(PF2)” position and solder it. If both “PF1” and “PF2” fuse patterns are open, replace DPC.

2. When the fuse pattern (PF4) opens.

(1) Remove the jumper wire (PF3).

(2) Insert the removed jumper wire (PF3) to “(PF4)” position and solder it. If both “PF3” and “PF4” fuse patterns are open, 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.</td></tr>
<tr><td rowspan="2">No key input</td><td rowspan="2">1</td><td rowspan="2">Membrane switch continuity</td><td>Abnormal</td><td>Membrane switch</td></tr>
<tr><td>Normal</td><td>IC-1</td></tr>
<tr><td rowspan="2">No beep sound</td><td rowspan="2">1</td><td rowspan="2">IC-1 pin 29 voltage</td><td>Abnormal</td><td>IC-1</td></tr>
<tr><td>Normal</td><td>BZ, Q224</td></tr>
<tr><td rowspan="4">Power relay A(RY-2) does not turn on even though the program has been set and the start pad is tapped</td><td rowspan="2">1</td><td rowspan="2">IC-1 pin 9 voltage while operation</td><td>Abnormal</td><td>IC-1</td></tr>
<tr><td>Normal = 5V</td><td>→ Step 2</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Short circuit between collector and Emitter of Q223.</td><td>Still does not turn on</td><td>RY-2</td></tr>
<tr><td>RY-2 turns on</td><td>Q223</td></tr>
<tr><td rowspan="4">No microwave oscillation at any power setting</td><td rowspan="2">1</td><td rowspan="2">IC-1 pin 7 and pin 34 voltages while operation at high power</td><td>Abnormal</td><td>IC-1</td></tr>
<tr><td>Normal
7---5V</td><td>→ Step 2</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Q220 transistor</td><td>Abnormal</td><td>Q220</td></tr>
<tr><td>Normal</td><td>RY-1</td></tr>
<tr><td rowspan="2">Dark or unclear display</td><td rowspan="2">1</td><td rowspan="2">Replace display and check operation</td><td>Normal</td><td>DISPLAY</td></tr>
<tr><td>Abnormal</td><td>IC-1</td></tr>
<tr><td rowspan="2">Missing or lighting of incorrect segment</td><td rowspan="2">1</td><td rowspan="2">Replace IC-1 and check operation</td><td>Normal</td><td>IC-1</td></tr>
<tr><td>Abnormal</td><td>DISPLAY</td></tr>
<tr><td rowspan="4">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.
<u>NEW H.V.</u></td><td rowspan="2">1</td><td rowspan="2">Unplug CN702(2 pin) connector and measure voltage between terminals</td><td>0V</td><td>1. Latch Switch

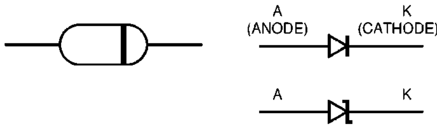
2. DPC/Power Relay</td></tr>
<tr><td>AC line voltage of 230-240V</td><td>→ Step 2</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Unplug CN701(3 pin) connector and measure pin 1 voltage</td><td>0V</td><td>DPC</td></tr>
<tr><td>Approx. AC 3V</td><td>Magnetron</td></tr>
</table>

<table>
<tr><th colspan="5">CONTINUED FOR SENSOR MODELS</th></tr>
<tr><td rowspan="2">Auto sensor cooking does not operate normally.

(Steam Sensor cooking does not detect steam from foods.)</td><td rowspan="2">1</td><td rowspan="2">Steam sensor terminal voltage by using high impedance tester (20k Ω/ V),while breathing on metal surface of sensor</td><td>Abnormal = 0V</td><td>Steam sensor</td></tr>
<tr><td>Normal>10-30mV</td><td>IC-1</td></tr>
</table>

9.4. How to check the semiconductors using an OHM meter

Diode



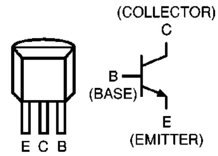
	FORWARD	REVERSE
A-K	SMALL	∞

Transistor

NPN Transistor

2SC·······

2SD·······

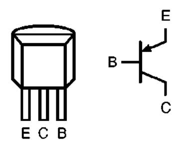


	FORWARD	REVERSE
B-E	SMALL	∞
B-C	SMALL	∞
C-E	∞	∞

PNP Transistor

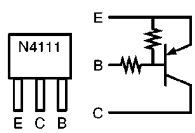
2SA·······

2SB·······



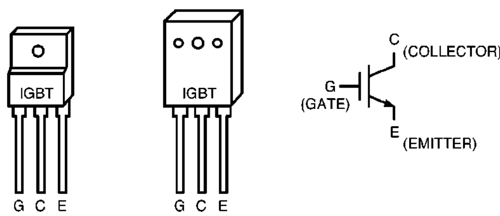
	FORWARD	REVERSE
B-E	SMALL	∞
C-B	SMALL	∞
C-E	∞	∞

Digital Transistor
PNP Transistor



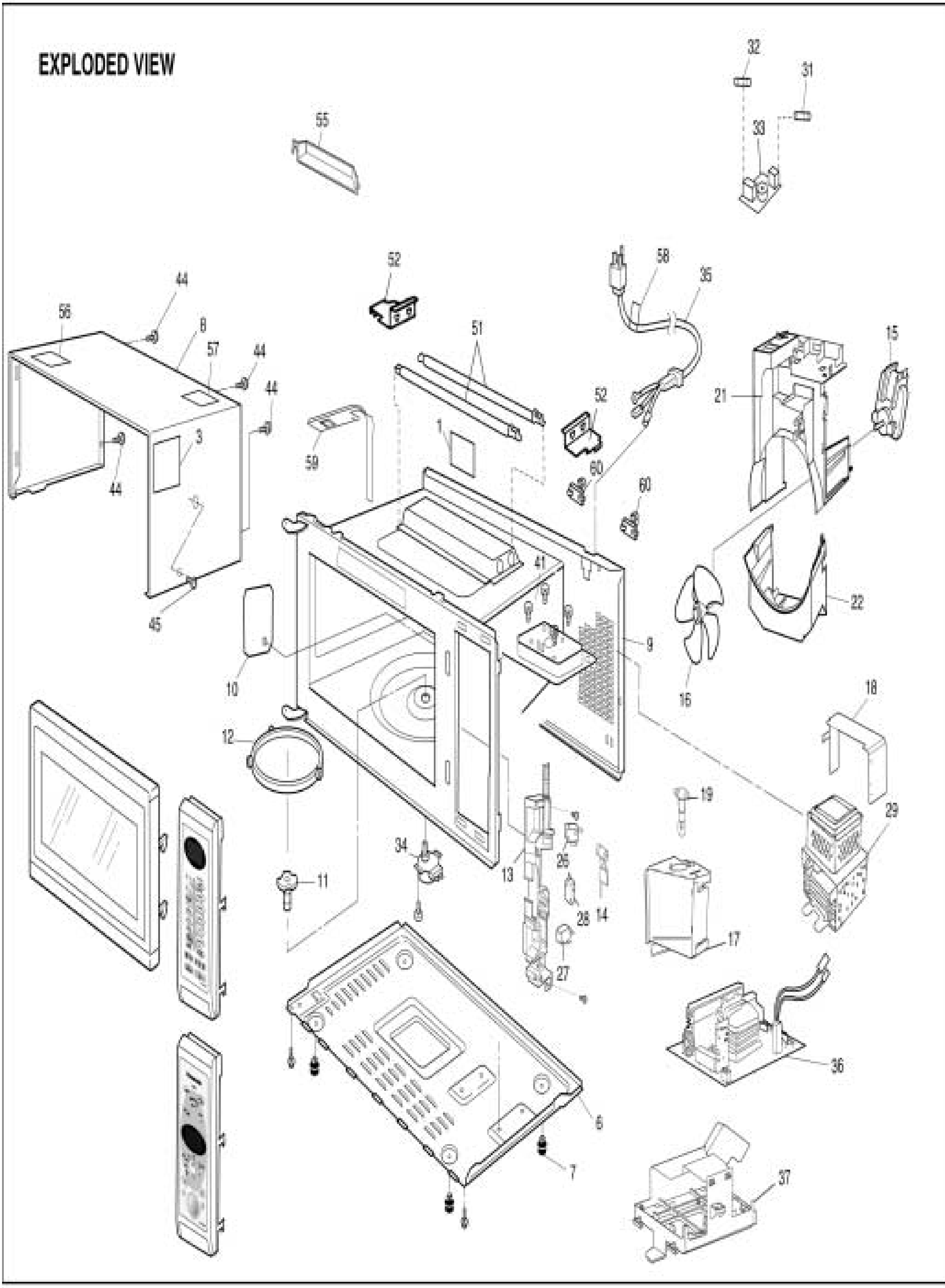
	FORWARD	REVERSE
E-B	10kΩ ~ 30kΩ	10kΩ ~ 30kΩ
C-B	50kΩ ~ 90kΩ	∞
C-E	40kΩ ~ 80kΩ	∞

IGBT
(INSULATED GATE BIPOLAR TRANSISTOR)



	FORWARD	REVERSE
E-C	SMALL	∞
E-G	∞	∞
C-G	∞	∞

10 EXPLODED VIEW AND PARTS LIST



11 PARTS LIST

NOTE:

1. When ordering replacement part(s), please use part number(s) shown in this part list.
   Do not use description of the part.
2. Important safety notice:
   Components identified by (!) mark have special characteristics important for safety.
   When replacing any of these components, use only manufacture's specified parts.

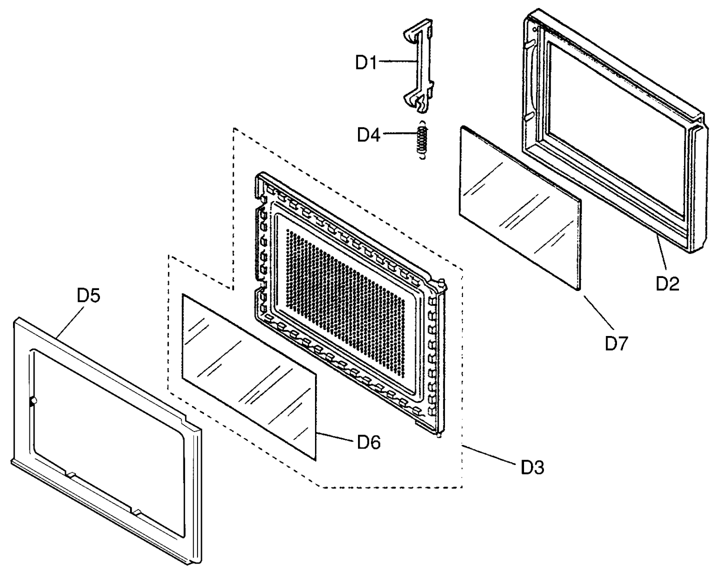
NOTE:

Please order all parts from MELUK in U.K.

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
		F00064080BP	CAUTION LABEL	1	BPQ
1		F00069000EP	CAUTION LABEL	1	GPG, EPG
		F04905R80HEP	ENERGY LABEL	1	F663WF EPG
3		F04905R80SEP	ENERGY LABEL	1	F623MF EPG
3		F04905R70HEP	ENERGY LABEL	1	F653WF EPG
3		F04906A00HEP	ENERGY LABEL	1	Q553WF EPG
3		F04905Q90SEP	ENERGY LABEL	1	Q523MF EPG
3		F04905Q50HEP	ENERGY LABEL	1	Q543WF EPG
		F10015Q00AP	BASE	1	
		F10084T00AP	RUBBER FOOT	4	
		F110D5R00HAP	CABINET BODY	1	V***WF, F***WF
8		F110D5R00SAP	CABINET BODY	1	V***MF, F***MF
8		F110D5R00CBP	CABINET BODY	1	V***CF
8		F110D5Q00SAP	CABINET BODY	1	T***MF, Q***MF
8		F110D5Q00HAP	CABINET BODY	1	T***WF, Q***WF
	(!)	F200A5R60BP	OVEN	1	V653 BPQ/GPG, V623 BPQ/GPG, F663 EPG, F653 EPG, F623 EPG
9	(!)	F200A5R20BP	OVEN	1	V453WF, V423MF
9	(!)	F200A5Q70BP	OVEN	1	T553WF BPQ, T523MF BPQ, Q553WF EPG, Q523MF EPG
9	(!)	F200A5Q30BP	OVEN	1	T543WF BPQ, Q543WF EPG
		F20555Q00BP	COVER	1	
		F21314Y00XN	PULLY SHAFT	1	
		F290D5Q00AP	ROLLER RING (U)	1	
	(!) ;	F30205Q00AP	DOOR HOOK	1	
		F31365Q00AP	HOOK LEVER A	1	
		F400A5U00XN	FAN MOTOR	1	
		F40085G10XN	FAN BLADE	1	
		F40255Q00AP	AIR GUIDE A	1	
		F40425Q00AP	AIR GUIDE F	1	
		F612E5G10XN	INCANDESCENT LAMP (U)	1	(20W/240V)
		F41445Q00AP	UPPER ORIFICE	1	
		F42095Q00AP	LOWER ORIFICE	1	
	(!)	J61415G10XN	MICRO SWITCH	1	V-15G-3C25 (PRIMARY LATCH SWITCH)
	(!)	F61415U30XN	MICRO SWITCH	1	KW3-0D-A(474) (SECONDARY LATCH SWITCH)
	(!)	F61785U30XN	MICRO SWITCH	1	KW3-0T-A(375) (SHORT SWITCH)
	(!)	2M236-M42G	MAGNETRON	1	
	(!)	A62304210BP	FUSE	1	(10A)
	(!)	B62304000AP	FUSE	1	V*** BPQ, V*** GPG, F***EPG (15A)
		J607X4L00BP	NOISE FILTER (U)	1	T*** BPQ, Q*** EPG
33		J607X5R60BP	NOISE FILTER (U)	1	V*** BPQ, V*** GPG, F*** EPG
		F63265U30XN	TURNTABLE MOTOR	1	
	(!)	F900C5G50BP	AC CORD W/PLUG	1	T*** BPQ
35	(!)	F900C5G10TN	AC CORD W/PLUG	1	Q*** EPG
35	(!)	F900C5R00BP	AC CORD W/PLUG	1	V*** BPQ
35	(!)	F900C5R00EP	AC CORD W/PLUG	1	V*** GPG, F*** EPG
		F606Y4V00BP	H.V.INVERTER (U)	1	
		F65855R00BP	INVERTER BRACKET	1	
		XTWFA4+12T	SCREW	4	FOR MAGNETRON
		XTWFA4+12D	SCREW	4	FOR CABINET BODY
		XTCAFA4+12AFS	SCREW	1	V***MF, F***MF, T***MF, Q***MF (FOR CABINET BODY SIDE)

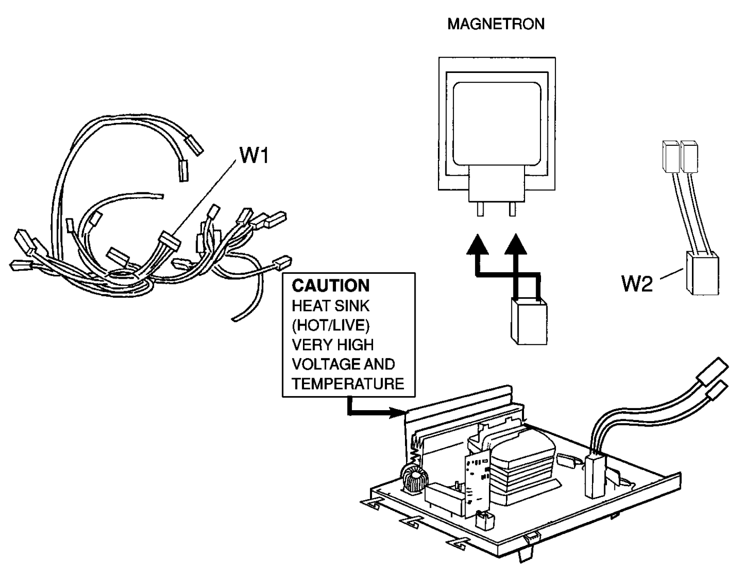
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
45		XTCAFA4+12AFW	SCREW	1	V***WF, F***WF, T***WF, Q***WF (FOR CABINET BODY SIDE)
45		XTCAFA4+12AFC	SCREW	1	V***CF (FOR CABINET BODY SIDE)
		F630G5R20BP	HEATER (AU)	2	V653WF/CF BPQ, V623MF BPQ (650W, 120V)
51		F630G5R20GP	HEATER (AU)	2	V653WF/CF GPG, V623MF GPG, F*** EPG (650W, 120V)
51		F630G5R00BP	HEATER (AU)	2	V453WF BPQ (550W, 120V)
51		F630G5U00XN	HEATER (AU)	2	V453WF GPG, V423MF GPG (550W, 120V)
		F64605R00BP	HEATER MOUNTING PLATE	2	V*** BPQ, V*** GPG, F*** EPG
		F40245R00BP	EXHAUST GUIDE A	1	V*** BPQ, V*** GPG, F*** EPG
		F01505R00BP	NO TOUCHING LABEL	1	V***MF/WF BPQ
56		F01505R20BP	NO TOUCHING LABEL	1	V***CF BPQ
		F01505R00GP	NO TOUCHING LABEL	1	V***WF/MF GPG
57		F01505R20GP	NO TOUCHING LABEL	1	V***CF GPG
57		F01505R00EP	NO TOUCHING LABEL	1	F***WF/MF EPG
		F02395G50BP	AC CORD CAUTION LABEL	1	BPQ
		F62865Q00BP	HEAT SHIELD	1	
		F11404J60XN	STOPPER	2	

12 DOOR ASSEMBLY



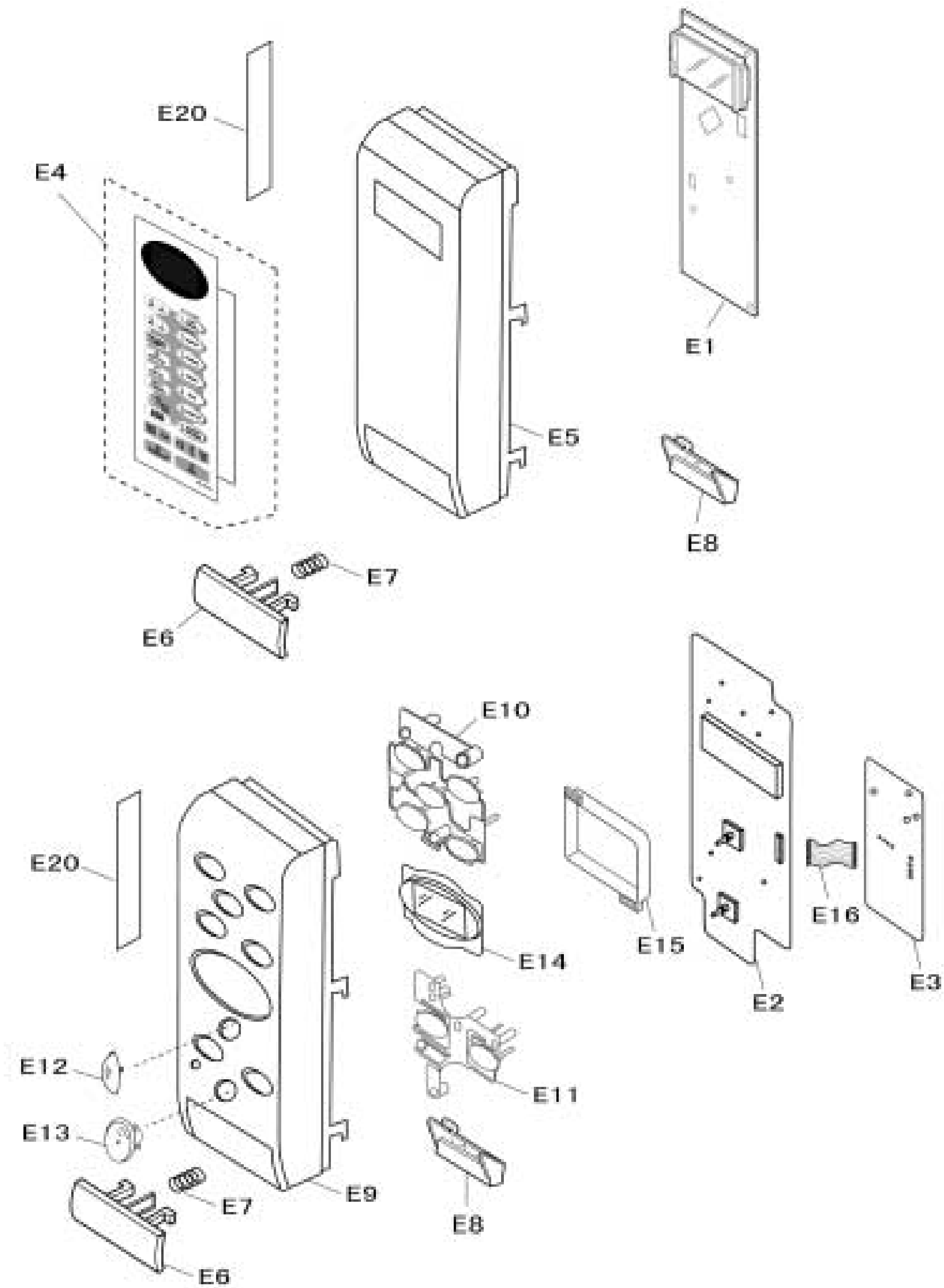
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
		F30185Q00AP	DOOR KEY A	1	
	(!)	F30015Q00HBP	DOOR A	1	T***WF, Q***WF, V***WF, F***WF
D2	(!)	F30015Q00SBP	DOOR A	1	T***MF, Q***MF, V***MF, F***MF
D2	(!)	F30015Q00CBP	DOOR A	1	V***CF
	(!)	F301P5R00AP	DOOR E (U)	1	V*** BPQ, V*** GPG, F*** EPG
D3	(!)	F302K5Q00AP	DOOR E (U)	1	T*** BPQ, Q*** EPG
		F30215G10XN	DOOR KEY SPRING	1	
	(!)	F30855Q00AP	DOOR C	1	
		F31454T00AP	DOOR SCREEN A	1	T*** BPQ, Q*** EPG
		F31465R00BP	DOOR SCREEN B	1	V*** BPQ
D7		F31465R00EP	DOOR SCREEN B	1	V*** GPG, F*** EPG
D7		F31465Q00BP	DOOR SCREEN B	1	T*** BPQ
D7		F31465Q00EP	DOOR SCREEN B	1	Q*** EPG

13 WIRING MATERIALS



Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
		F030A5R00BP	LEAD WIRE HARNESS	1	V*** BPQ, V*** GPG, F*** EPG
W1		F030A5Q00BP	LEAD WIRE HARNESS	1	T*** BPQ, Q*** EPG
		F030E5Q00AP	H.V.LEAD WIRE	1	

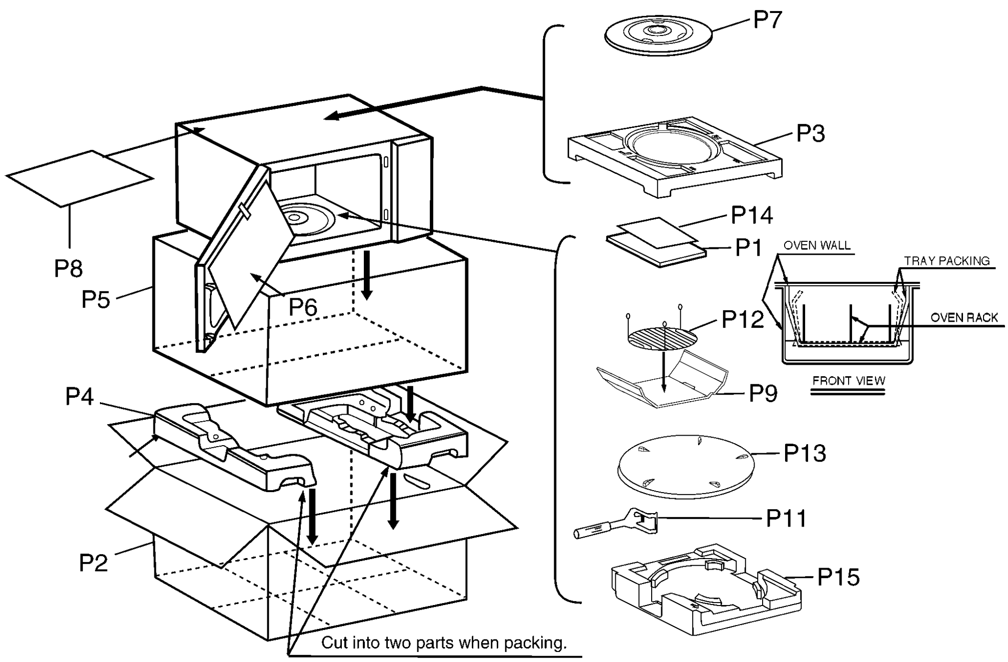
14 ESCUTCHEON BASE ASSEMBLY



Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
		F603L5R60BP	D.P.CIRCUIT (AU)	1	V653WF/CF BPQ, V623MF BPQ
E1		F603L5R60GP	D.P.CIRCUIT (AU)	1	V653WF/CF GPG, V623MF GPG
E1		F603L5R20BP	D.P.CIRCUIT (AU)	1	V453WF BPQ
E1		F603L5R20GP	D.P.CIRCUIT (AU)	1	V453WF GPG, V423MF GPG
E1		F603L5Q70BP	D.P.CIRCUIT (AU)	1	T553WF BPQ, T523MF BPQ
E1		F603L5Q30BP	D.P.CIRCUIT (AU)	1	T543WF BPQ
		F608E5R80EP	D.P.CIRCUIT (ABU)	1	F663WF EPG, F623MF EPG
E2		F608E5R70EP	D.P.CIRCUIT (ABU)	1	F653WF EPG
E2		F608E5Q90EP	D.P.CIRCUIT (ABU)	1	Q553WF EPG, Q523MF EPG
E2		F608E5Q50EP	D.P.CIRCUIT (ABU)	1	Q543WF EPG
		F603Y5R80EP	D.P.CIRCUIT (DU)	1	F663WF EPG, F653WF EPG, F623MF EPG
E3		F603Y5Q90EP	D.P.CIRCUIT (DU)	1	Q553WF EPG, Q523MF EPG, Q543WF EPG
		F630Y5R60HBP	MEMBRANE SWITCH (U)	1	V653WF BPQ
E4		F630Y5R60CBP	MEMBRANE SWITCH (U)	1	V653CF BPQ
E4		F630Y5R60SBP	MEMBRANE SWITCH (U)	1	V623MF BPQ

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
E4		F630Y5R60HGP	MEMBRANE SWITCH (U)	1	V653WF GPG
E4		F630Y5R60CGP	MEMBRANE SWITCH (U)	1	V653CF GPG
E4		F630Y5R60SGP	MEMBRANE SWITCH (U)	1	V623MF GPG
E4		F630Y5R20HBP	MEMBRANE SWITCH (U)	1	V453WF BPQ
E4		F630Y5R20HGP	MEMBRANE SWITCH (U)	1	V453WF GPG
E4		F630Y5R20SGP	MEMBRANE SWITCH (U)	1	V423MF GPG
E4		F630Y5Q80HBP	MEMBRANE SWITCH (U)	1	T553WF BPQ
E4		F630Y5Q70SBP	MEMBRANE SWITCH (U)	1	T523MF BPQ
E4		F630Y5Q30HBP	MEMBRANE SWITCH (U)	1	T543WF BPQ
		F80345Q00HBP	ESCUTCHEON BASE	1	V653WF BPQ, V653WF GPG, V453WF BPQ, V453WF GPG, T553WF BPQ, T543WF BPQ
E5		F80345Q00SBP	ESCUTCHEON BASE	1	V623MF BPQ, V623MF GPG, V423MF GPG, T523MF BPQ
E5		F80345Q00CBP	ESCUTCHEON BASE	1	V653CF BPQ, V653CF GPG
		F80725Q00HAP	DOOR OPENING BUTTON	1	V***WF, F***WF, T***WF, Q***WF
E6		F80725Q00SAP	DOOR OPENING BUTTON	1	V***MF, F***MF, T***MF, Q***MF
E6		F80725Q00CBP	DOOR OPENING BUTTON	1	V***CF
		F80375K00AP	COOK BUTTON SPRING	1	
		F82565Q00AP	DOOR OPENING LEVEL	1	
		F80345R80HEP	ESCUTCHEON BASE	1	F663WF EPG
E9		F80345R70HEP	ESCUTCHEON BASE	1	F653WF EPG
E9		F80345R80SEP	ESCUTCHEON BASE	1	F623MF EPG
E9		F80346A00HEP	ESCUTCHEON BASE	1	Q553WF EPG
E9		F80345Q90SEP	ESCUTCHEON BASE	1	Q523MF EPG
E9		F80345Q50HEP	ESCUTCHEON BASE	1	Q543WF EPG
		F80245R80HEP	BUTTON A	1	F663WF EPG, F653WF EPG
E10		F80245R80SEP	BUTTON A	1	F623MF EPG
E10		F80245Q50HEP	BUTTON A	1	Q553WF EPG, Q543WF EPG
E10		F80245Q50BEP	BUTTON A	1	Q523MF EPG
		F83875Q50HEP	BUTTON B	1	F663WF EPG, F653WF EPG, Q553WF EPG, Q543WF EPG
E11		F83875Q50BEP	BUTTON B	1	F623MF EPG, Q523MF EPG
		F80205Q50HEP	KNOB A	1	F663WF EPG, F653WF EPG, Q553WF EPG, Q543WF EPG
E12		F80205Q50SEP	KNOB A	1	F623MF EPG, Q523MF EPG
		F83925Q50HEP	KNOB B	1	F663WF EPG, F653WF EPG, Q553WF EPG, Q543WF EPG
E13		F83925R80SEP	KNOB B	1	F623MF EPG, Q523MF EPG
		F81895Q50HEP	DISPLAY WINDOW	1	F663WF EPG, F653WF EPG, F623MF EPG, Q553WF EPG, Q543WF EPG, Q523MF EPG
		F80165Q50EP	DISPLAY FRAME	1	F663WF EPG, F653WF EPG, F623MF EPG, Q553WF EPG, Q543WF EPG, Q523MF EPG
		F66165Q00EP	FLAT CABLE	1	F663WF EPG, F653WF EPG, F623MF EPG, Q553WF EPG, Q543WF EPG, Q523MF EPG
		F00075R70HBP	NAME PLATE	1	V653WF BPQ
E20		F00075R70CBP	NAME PLATE	1	V653CF BPQ
E20		F00075R60SBP	NAME PLATE	1	V623MF BPQ
E20		F00075R60HGP	NAME PLATE	1	V653WF GPG
E20		F00075R60CGP	NAME PLATE	1	V653CF GPG
E20		F00075R60SGP	NAME PLATE	1	V623MF GPG
E20		F00075R80HEP	NAME PLATE	1	F663WF EPG
E20		F00075R70HEP	NAME PLATE	1	F653WF EPG
E20		F00075R80SEP	NAME PLATE	1	F623MF EPG
E20		F00075R20HBP	NAME PLATE	1	V453WF BPQ
E20		F00075R20HGP	NAME PLATE	1	V453WF GPG
E20		F00075R20SGP	NAME PLATE	1	V423MF GPG
E20		F00075Q80HBP	NAME PLATE	1	T553WF BPQ
E20		F00075Q70SBP	NAME PLATE	1	T523MF BPQ
E20		F00076A00HEP	NAME PLATE	1	Q553WF EPG
E20		F00075Q90SEP	NAME PLATE	1	Q523MF EPG
E20		F00075Q30HBP	NAME PLATE	1	T543WF BPQ
E20		F00075Q50HEP	NAME PLATE	1	Q543WF EPG

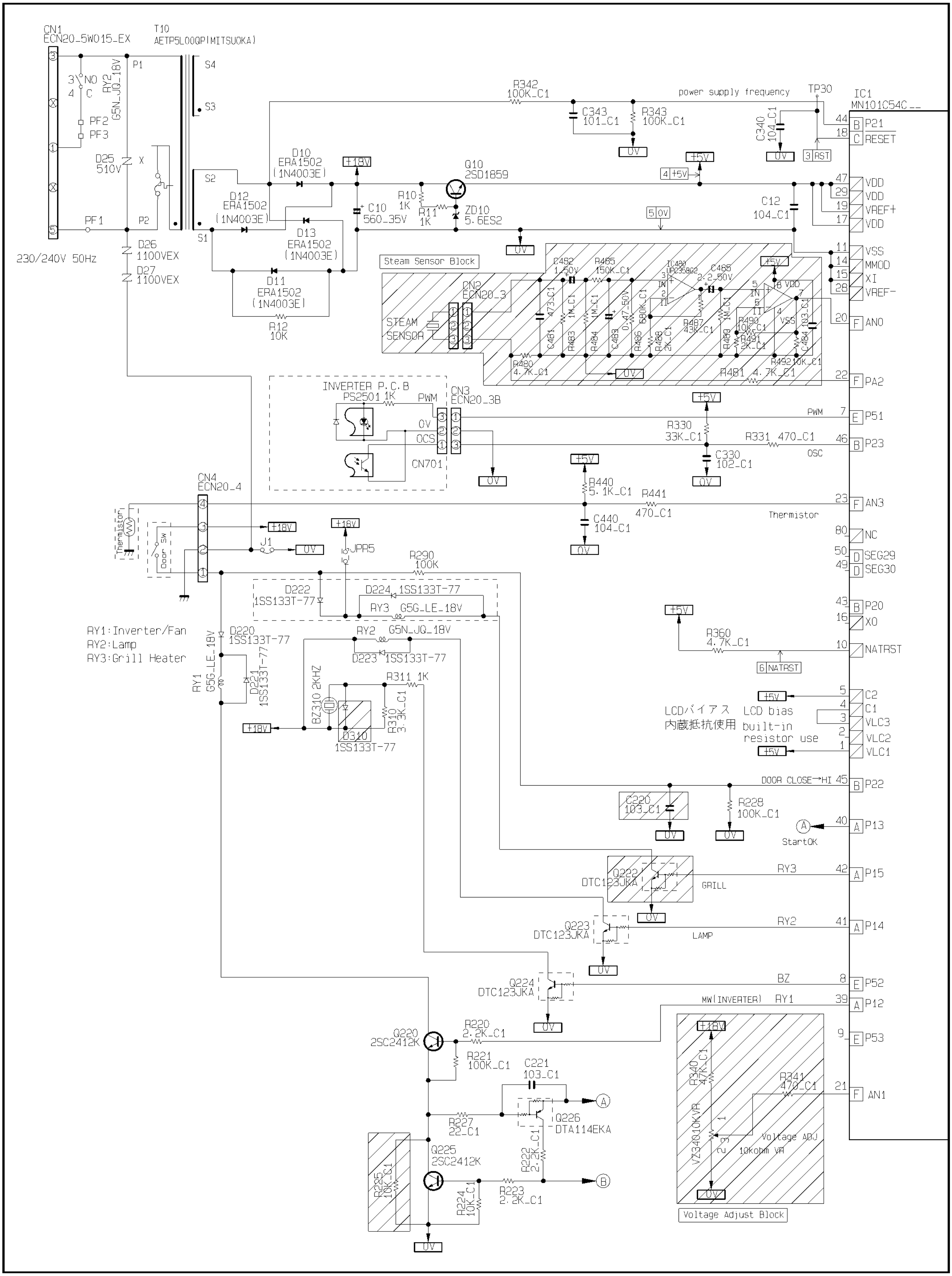
15 PACKING AND ACCESORIES

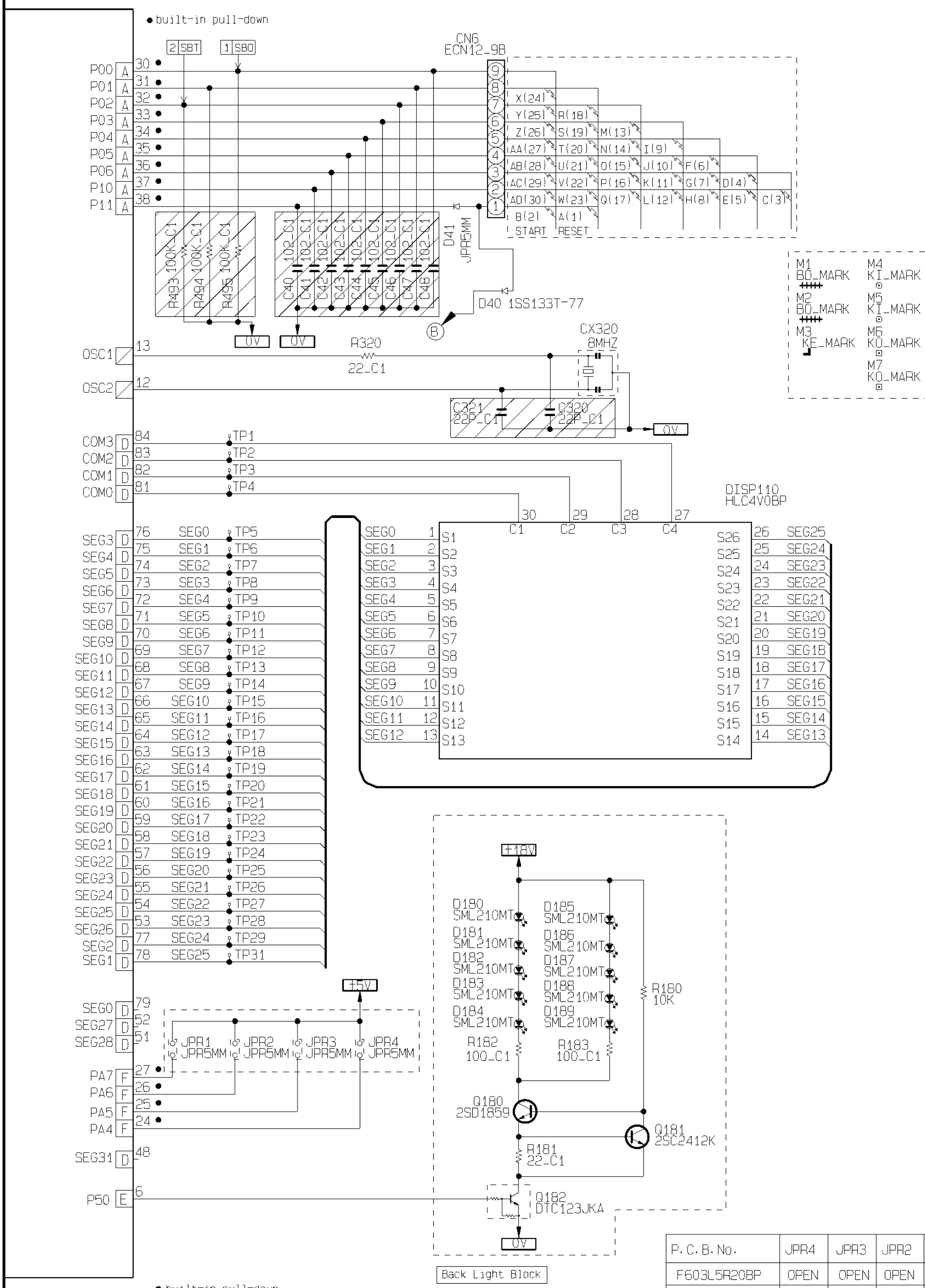


Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
		F00035R20BP	INSTRUCTION MANUAL	1	V*** BPQ
P1		F00035R20GP	INSTRUCTION MANUAL	1	V*** GPG
P1		F00035Q50EP	INSTRUCTION MANUAL	1	F*** EPG, Q*** EPG
P1		F00035Q30BP	INSTRUCTION MANUAL	1	T*** BPQ
		F01025R70HBP	PACKING CASE, PAPER	1	V653WF BPQ
P2		F01025R70CBP	PACKING CASE, PAPER	1	V653CF BPQ
P2		F01025R60SBP	PACKING CASE, PAPER	1	V623MF BPQ
P2		F01025R60HGP	PACKING CASE, PAPER	1	V653WF GPG
P2		F01025R60CGP	PACKING CASE, PAPER	1	V653CF GPG
P2		F01025R60SGP	PACKING CASE, PAPER	1	V623MF GPG
P2		F01025R80HEP	PACKING CASE, PAPER	1	F663WF EPG
P2		F01025R70HEP	PACKING CASE, PAPER	1	F653WF EPG
P2		F01025R80SEP	PACKING CASE, PAPER	1	F623MF EPG
P2		F01025R20HBP	PACKING CASE, PAPER	1	V453WF BPQ
P2		F01025R20HGP	PACKING CASE, PAPER	1	V453WF GPG
P2		F01025R20SGP	PACKING CASE, PAPER	1	V423MF GPG
P2		F01025Q80HBP	PACKING CASE, PAPER	1	T553WF BPQ
P2		F01025Q70SBP	PACKING CASE, PAPER	1	T523MF BPQ
P2		F01026A00HEP	PACKING CASE, PAPER	1	Q553WF EPG
P2		F01025Q90SEP	PACKING CASE, PAPER	1	Q523MF EPG
P2		F01025Q30HBP	PACKING CASE, PAPER	1	T543WF BPQ
P2		F01025Q50HEP	PACKING CASE, PAPER	1	Q543WF EPG
		F01045Q00AP	UPPER FILLER	1	
		F01055Q00AP	LOWER FILLER	1	
		F01068100XN	P.E.BAG	1	
		F01078100XN	DOOR SHEET	1	
		F06015Q00AP	COOKING TRAY	1	
		F01924T00AP	SHEET	1	V***MF, V***CF, F***MF, T***MF, Q***MF
		F01085R00AP	RACK PACKING	1	V*** BPQ, V*** GPG, F653WF EPG
P9		F01085R00BP	RACK PACKING	1	F663WF EPG, F623MF EPG
		F10855R00BP	PIZZA PAN HANDLE	1	F663WF EPG, F623MF EPG
		F060V5R00BP	OVEN RACK	1	V*** BPQ
P12		F060V5U00XN	OVEN RACK	1	V*** GPG, F*** EPG
		F46065R00BP	PIZZA PAN	1	F663WF EPG, F623MF EPG
		F01695M70BP	SERVICE CENTER LIST	1	
		F01135R00AP	PIZZA PAN FOAM	1	F663WF EPG, F623MF EPG

16 DIGITAL PROGRAMMER CIRCUIT (BPQ & GPG MODELS)

SCHEMATIC DIAGRAM

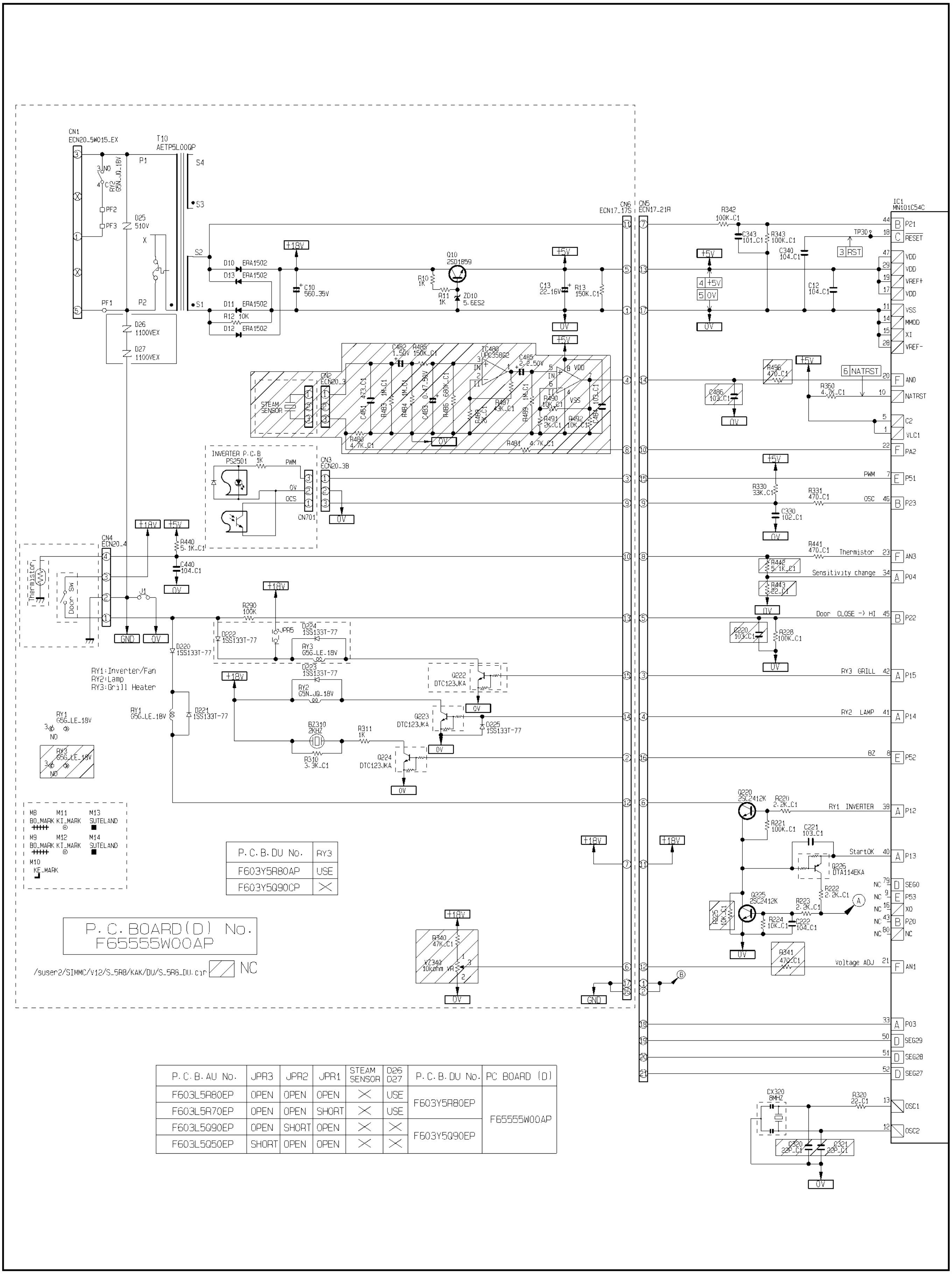




P. C. B. No.	JPR4	JPR3	JPR2	JPR1	STEAM SENSOR	RY3	C440
F603L5R20BP	OPEN	OPEN	OPEN	SHORT	—	USE	5.1K
F603L5R20GP	OPEN	OPEN	SHORT	OPEN	—	USE	5.1K
F603L5R60BP	OPEN	SHORT	OPEN	OPEN	—	USE	0.1μ
F603L5R60GP	SHORT	OPEN	OPEN	OPEN	—	USE	0.1μ
F603L5Q70BP	OPEN	OPEN	OPEN	OPEN	—	—	0.1μ
F603L5Q30BP	OPEN	OPEN	SHORT	SHORT	—	—	0.1μ

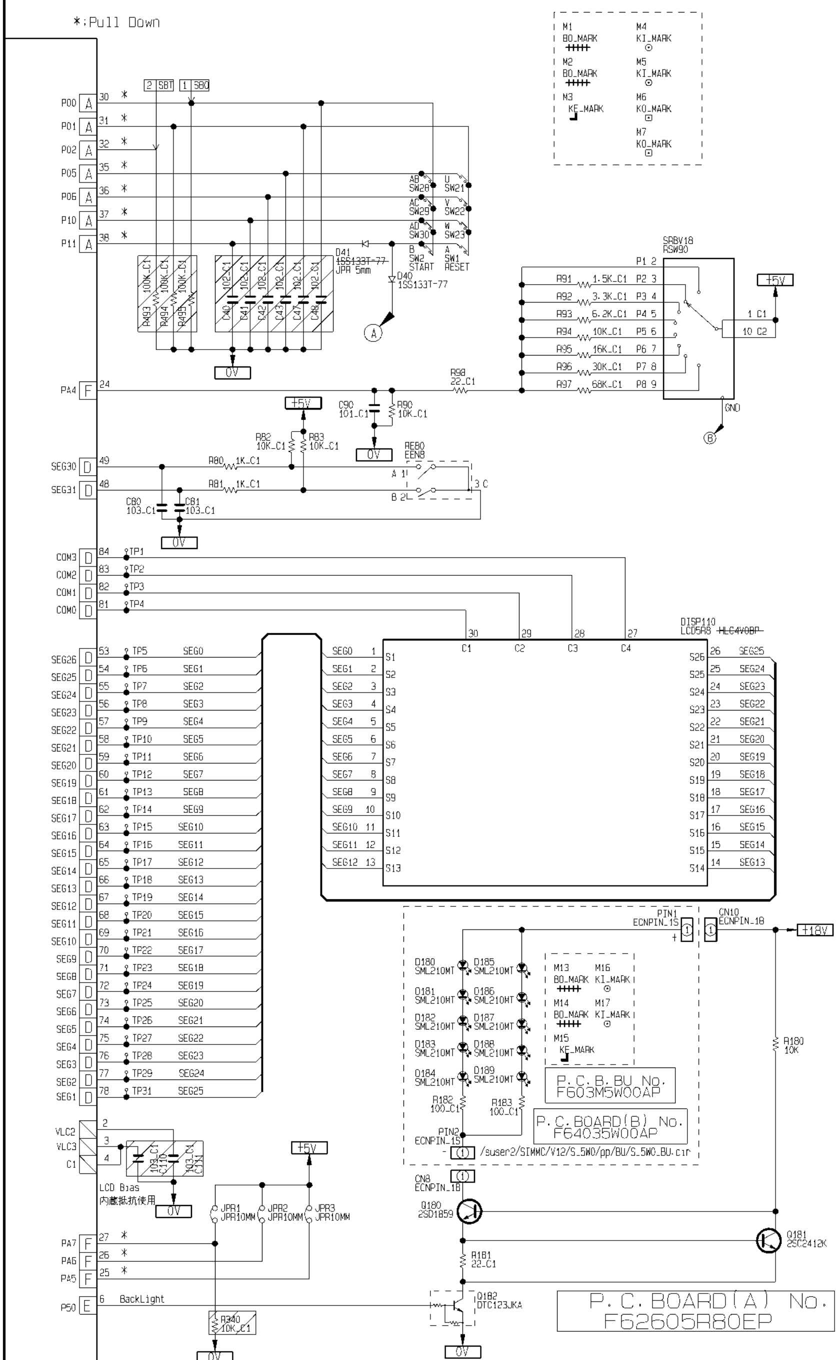
17 DIGITAL PROGRAMMER CIRCUIT (EPG MODELS)

SCHEMATIC DIAGRAM



P.C.B.DU No.	RY3
F603Y5R80AP	USE
F603Y5Q90CP	×

P.C.B.AU No.	JPR3	JPR2	JPR1	STEAM SENSOR	D26 D27	P.C.B.DU No.	PC BOARD (D)
F603L5R80EP	OPEN	OPEN	OPEN	×	USE	F603Y5R80EP	F65555W00AP
F603L5R70EP	OPEN	OPEN	SHORT	×	USE		
F603L5Q90EP	OPEN	SHORT	OPEN	×	×	F603Y5Q90EP	
F603L5Q50EP	SHORT	OPEN	OPEN	×	×		



*:Pull Down
SRBV18
RSW90
DISP110
LCD5A8
P. C. B. BU No.
F603M5W00AP
P. C. BOARD(B) No.
F64035W00AP
/suser2/SIMMC/V12/S_5W0/pp/BU/S_5W0_BU.cir
LCD Bias
内蔵抵抗使用
BackLight
P. C. BOARD(A) No.
F62605R80EP

18 DIGITAL PROGRAMMER CIRCUIT (BPQ & GPG MODELS)

PARTS LIST

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
BZ310		AEFBAT2001	BUZZER	1	2.0KHz
C221		AECUU06F103Z	CHIP CAPACITOR	1	0.01μF/50V
C343		AECUU06C101J	CHIP CAPACITOR	1	100PF/50V
C12, C340, C440		AECUT06F104Z	CHIP CAPACITOR	3	0.1μF/25V
C330		AECUU06R102K	CHIP CAPACITOR	1	1000PF/50V
C10		AECETK1V561B	AL CHEM CAPACITOR	1	560μF/35V
CN1		AEEMXH01505W	CONNECTOR	1	5 Pin
CN3		F03524U00AP	CONNECTOR	1	
CN4		AEEMXH00F04W	CONNECTOR	1	4 Pin
CN6		AEEM09FDZBTM	CONNECTOR	1	9 Pin
CX320		AEFOS800MG06	CERAMIC RESONATOR	1	8.0MHz
DISP110		AEDDHJ4V00BP	LCD	1	
DISP1 HOLDER		F66175E40XN	LCD HOLDER	1	
		F67525E40XN	DIFFUSION SHEET	1	
D10-D13		AESSRCT1A6-E	DIODE	4	
D40, D220-D224		AESS133T-77	DIODE	6	
D25		AERZ511NS10D	VARSITOR	1	
D26, D27		AERZ102KD10A	VARSITOR	2	
D180-D189		AESQPY1112H	CHIP-LED	10	
IC1		MN101C54CEJ	L.S.I	1	
Q226		AESA14EKE	CHIP DIGI-TRANSISTOR	1	
Q182, Q222, Q223, Q224		AESC23JKE	CHIP DIGI-TRANSISTOR	4	
Q10, Q180		2SD1859TV2Q	TRANSISTOR	2	
Q181, Q220, Q225		2SC2412KT146	CHIP TRANSISTOR	3	
R182, R183		AERJ06J101R	CHIP RESISTOR	2	100Ω, 1/16W, 5%
R224		AERJ06J103R	CHIP RESISTOR	1	10K, 1/16W, 5%
R221, R228, R342, R343		AERJ06J104R	CHIP RESISTOR	4	100K, 1/16W, 5%
R181R320, R227		AERJ06J220R	CHIP RESISTOR	3	22Ω, 1/16W, 5%
R220, R222, R223		AERJ06J222R	CHIP RESISTOR	3	2.2K, 1/16W, 5%
R310		AERJ06J332R	CHIP RESISTOR	1	3.3K, 1/16W, 5%
R330		AERJ06J333R	CHIP RESISTOR	1	33K, 1/16W, 5%
R331, R441		AERJ06J471R	CHIP RESISTOR	2	470Ω, 1/16W, 5%
R360		AERJ06J472R	CHIP RESISTOR	1	4.7K, 1/16W, 5%
R440		AERJ06J512R	CHIP RESISTOR	1	5.1K, 1/16W, 5%
R10, R11, R311		AERDS2TJ102T	CARBON RESISTOR	3	1K, 1/4W, 5%
R12, R180		AERDS2TJ103T	CARBON RESISTOR	2	10K, 1/4W, 5%
R290		AERDS2TJ104T	CARBON RESISTOR	1	100K, 1/4W, 5%
RY1, RY3		AEGG5G1A18	POWER RELAY	2	
RY2		AEBJQ1A18	POWER RELAY	1	
T10		AETP5L00QP	LOW VOLTAGE TRANSFORMER	1	
ZD10		AESZMTZJ5R6B	ZENER DIODE	1	

19 DIGITAL PROGRAMMER CIRCUIT (EPG MODELS)

PARTS LIST

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
BZ310		AEFBAT2001	BUZZER	1	2.0KHz
C80, C81, C221		AECUU06F103Z	CHIP CAPACITOR	3	0.01µF/50V
C90, C343		AECUU06C101J	CHIP CAPACITOR	2	100PF/50V
C12, C222, C340, C440		AECUT06F104Z	CHIP CAPACITOR	4	0.1µF/25V
C330		AECUU06R102K	CHIP CAPACITOR	1	1000PF/50V
C10		AECETK1V561B	AL CHEM CAPACITOR	1	560µF/35V
C13		AECETS1C220B	AL CHEM CAPACITOR	1	22µF/16V
CN1		AEEMXH01505W	CONNECTOR	1	5 Pin
CN3		F03524U00AP	CONNECTOR	1	
CN4		AEEMXH00F04W	CONNECTOR	1	4 Pin
CN5		AEEM17F9604S	CONNECTOR	1	17 Pin
CN6		AEEM17F9604S	CONNECTOR	1	17 Pin
CX320		AEFOS800MG06	CERAMIC RESONATOR	1	8.0MHz
DISP110		AEDDHJ5R80EP	LCD	1	
DISP1 HOLDER		F66175W00AP	LCD HOLDER	1	
		F67525E40XN	DIFFUSION SHEET	1	
D10-D13		AESSRCT1A6-E	DIODE	4	
D40, D220-D225		AESS133T-77	DIODE	7	
D25		AERZ511NS10D	VARSITOR	1	
D26, D27		AERZ102KD10A	VARSITOR	2	
D180-D189		AESQPY1112H	CHIP-LED	10	
PIN1, PIN2		AEPINIPS-1E7		2	
IC1		MN101C54CEK	L.S.I	1	
Q226		AESA14EKE	CHIP DIGI-TRANSISTOR	1	
Q182, Q222, Q223, Q224		AESC23JKE	CHIP DIGI-TRANSISTOR	4	
Q10, Q180		2SD1859TV2Q	TRANSISTOR	2	
Q181, Q220, Q225		2SC2412KT146	CHIP TRANSISTOR	3	
SW1, SW2, SW21-SW23, SW28-SW30		EVQ11L05R	SLIGHT TOUCH SWITCH	8	
RSW90		AEVQSR172	REVOLVING SWITCH	1	
RE80		AEVQECR1611E	REVOLVING ENCODER	1	
R182, R183		AERJ06J101R	CHIP RESISTOR	2	100Ω, 1/16W, 5%
R80, R81		AERJ06J102R	CHIP RESISTOR	2	1K, 1/16W, 5%
R82, R83, R90, R94, R224		AERJ06J103R	CHIP RESISTOR	5	10K, 1/16W, 5%
R221, R228, R342, R343		AERJ06J104R	CHIP RESISTOR	4	100K, 1/16W, 5%
R91		AERJ06J152R	CHIP RESISTOR	1	1.5K, 1/16W, 5%
R13		AERJ06J154R	CHIP RESISTOR	1	150K, 1/16W, 5%
R95		AERJ06J163R	CHIP RESISTOR	1	16K, 1/16W, 5%
R98, R181, R320		AERJ06J220R	CHIP RESISTOR	3	22Ω, 1/16W, 5%
R220, R222, R223		AERJ06J222R	CHIP RESISTOR	3	2.2K, 1/16W, 5%
R96		AERJ06J303R	CHIP RESISTOR	1	30K, 1/16W, 5%
R92, R310		AERJ06J332R	CHIP RESISTOR	2	3.3K, 1/16W, 5%
R330		AERJ06J333R	CHIP RESISTOR	1	33K, 1/16W, 5%
R331, R441		AERJ06J471R	CHIP RESISTOR	2	470Ω, 1/16W, 5%
R360		AERJ06J472R	CHIP RESISTOR	1	4.7K, 1/16W, 5%
R440		AERJ06J512R	CHIP RESISTOR	1	5.1K, 1/16W, 5%
R93		AERJ06J622R	CHIP RESISTOR	1	6.2K, 1/16W, 5%
R97		AERJ06J683R	CHIP RESISTOR	1	68K, 1/16W, 5%
R10, R11, R311		AERDS2TJ102T	CARBON RESISTOR	3	1K, 1/4W, 5%
R12, R180		AERDS2TJ103T	CARBON RESISTOR	2	10K, 1/4W, 5%
R290		AERDS2TJ104T	CARBON RESISTOR	1	100K, 1/4W, 5%
RY1, RY3		AEGG5G1A18	POWER RELAY	2	
RY2		AEBJQ1A18	POWER RELAY	1	
T10		AETP5L00QP	LOW VOLTAGE TRANSFORMER	1	
ZD10		AESZMTZJ5R6B	ZENER DIODE	1	

03/03
S-5R2, S-5R5
S-5R6, S-5R7
S-5R8, S-5Q3
S-5Q5, S-5Q7
S-5Q8, S-5Q9
S-6A0
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