

12/2008

Mod:NEC1475

Production code:NEC1475

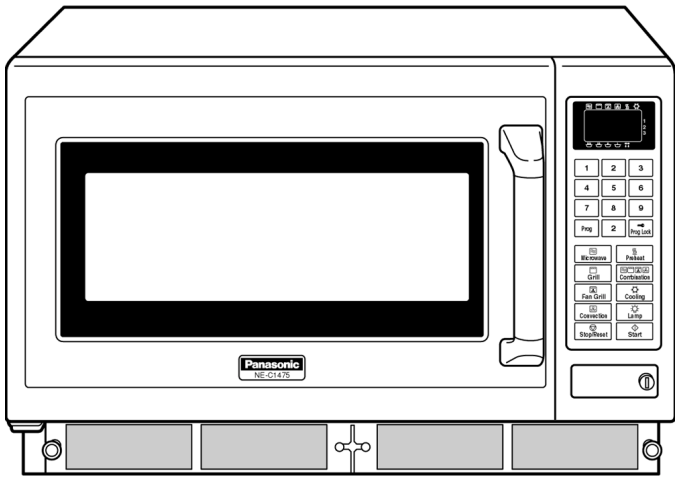


Service Manual

Microwave Oven

NE-C1275

NE-C1475



Specifications

Power Source :	230 - 240 V AC Single Phase 50Hz
Power Requirement :	NE-C1275 / NE-C1475 2,000 / 2,350WMicrowave 1,850 / 1,950WGrill 1,950 / 1,950WConvection
Output :	1,150 / 1,350WFull Microwave Power (IEC-705) 1,800 / 1,840WGrill 1,800 / 1,800WConvection
Microwave Frequency :	2,450 MHz
Outside Dimensions :	600 mm (W) × 484 mm (D) × 383 mm (H)
Oven Cavity Dimensions :	406 mm (W) × 336 mm (D) × 217 mm (H)
Weight :	42 kg
PbF	The Product with PbF
Specification 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

* This product should be serviced only by trained, qualified personnel.
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 UK EUG...For CONTINENTAL EUROPE

CAUTION

About lead free solder (PbF)

Distinction of PbF PCB :

PCB (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 50 - 70°F (30 - 40°C) higher.

Please use a high temperature solder iron and set it to 700 ±20°F (370 ±10°C).

Pb free solder will tend to splash when heated too high (about 1100°F / 600°C).

CONTENTS

	Page		Page
1 CONTROL PANEL	3	10 TROUBLESHOOTING GUIDE	21
2 OPERATION PROCEDURE	4	11 EXPLODED VIEW AND PARTS LIST	26
3 SCHEMATIC DIAGRAM	9	12 PARTS LIST	28
4 WIRING DIAGRAM	10	13 DOOR ASSEMBLY	31
5 DESCRIPTION OF OPERATING SEQUENCE	11	14 ESCUTCHEON BASE ASSEMBLY	32
6 CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING	14	15 PACKING AND ACCESSORIES	33
7 DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE	15	16 WIRING MATERIAL	34
8 COMPONENT TEST PROCEDURE	18	17 DIGITAL PROGRAMMER CIRCUIT	35
9 MEASUREMENTS AND ADJUSTMENTS	20	18 DIGITAL PROGRAMMER CIRCUIT	37

1 CONTROL PANEL

2 OPERATION PROCEDURE

1. Multi-stage (Sequential) Heating

The oven can be Programmed with up to 3 different functions to operate in sequence. These can be MICROWAVE, CONVECTION or COMBINATION programs.

2. Oven Lamp

The oven lamp switches off when the door is closed. If you want to check the food, press the LAMP pad, it will then illuminate for 10 seconds. The oven lamp turns on whenever the door is opened.

1. Microwave cooking for single stage

OPERATION	※ DISPLAY
1. Plug the power supply cord into wall outlet.	
2. Open the door and place a water load in the oven and close the door.	0
3. Press MICROWAVE pad once to set High power.	 0 
4. Set the desired time by tapping 1, 0, 0. Max time you can set: High/Medium 15 mins Low/Simmer/Defrost/Stand 60 mins	 1 0 0  
5. Press START pad.	 5 9  
6. When the time is up, you hear 3 beeps sound.	
7. Open the door and take the water load out. The display goes back to previously setting time.	 1 0 0  
8. Close the door. 1 minute later, display will return blank.	

2. Convection cooking

OPERATION	※ DISPLAY
1. Open the door and place a food in the oven and close the door.	0
2. Press CONVECTION pad to set 200°C.	 2 0 0 C 
3. Set the desired time by tapping 1, 5, 0, 0.	 1 5 0 0 
4. Press START pad.	 1 4 5 9 
5. When the time is up, you hear 3 beeps sound.	
6. Open the door and take food out. The display goes back to previously setting time.	 1 5 0 0 
7. Close the door. 1 minute later, display will return blank.	

NOTE : For 2nd and 3rd stage cooking, enter heating program, between steps 3 and 4 above.

3. Grill cooking

OPERATION	※ DISPLAY
1. Open the door and place a food in the oven and close the door.	
2. Press GRILL LOW pad twice to set Grill Low.	
3. Set the desired time by tapping 5, 0, 0.	
4. Press START pad.	
5. When the time is up, you hear 3 beeps sound.	
6. Open the door and take food out. The display goes back to previously setting time.	
7. Close the door. 1 minute later, display will return blank.	

NOTE : For 2nd and 3rd stage cooking, enter heating program, between steps 3 and 4 above.

4. Combination cooking

OPERATION	※ DISPLAY
1. Open the door and place a food in the oven and close the door.	
2. Press CONVECTION pad to set 200°C.	
3. Press MICROWAVE pad 3 times to set Low power.	
4. Set the desired time by turning the timer dial.	
5. Press START pad.	
6. When the time is up, you hear 3 beeps sound.	
7. Open the door and take food out. The display goes back to previously setting time.	
8. Close the door. 1 minute later, display will return blank.	

NOTE : For 2nd and 3rd stage cooking, enter heating program, between steps 4 and 5 above.

5. Setting the Memory Program

OPERATION	※ DISPLAY
1. Open the door.	0
2. Press PROG pad for more than 2 seconds. “P” flashers in the display.	
3. Press “1 and 2” key to set program number such as “12”.	12
4. Press MICROWAVE pad once to High power.	 0 
5. Set the cooking time by tapping number Pad.	 100 
6. Press PROG pad.	 100 ▶ ¹
7. After 3 seconds display returns to “0”.	0

NOTE : Program can be memorized up to 99.

6. Memory Program Cooking

OPERATION	※ DISPLAY
1. Open the door and place food in the oven and close door.	0
2. Press Two digit number EX : 12 for Microwave High power 1minute.	 100 ▶ ¹
3. Press START pad.	 59 

7. Setting the Program Lock

OPERATION	※ DISPLAY
1. Open the door.	0
2. Press LOCK pad and hold until “PL” appears in the display.	P L
3. After 3 seconds, display returns to “0”.	0

NOTE : When program lock is activated in ONE TOUCH mode i.e. Press required memory program number and oven immediately starts.

8. To Release the Program Lock

OPERATION	※ DISPLAY
1. Open the door.	0
2. Press LOCK pad and hold until “P” appears in the display.	P
3. After 3 seconds, display returns to “0”.	0

9. Preheat

OPERATION	※ DISPLAY
1. Press PREHEAT pad.	
2. Press START pad. Preheat temperature will be displayed and you may adjust it.	
3. Once oven has reached preheat temperature, "P" flashes. If not used, oven will automatically switch off after 1 hour.	

10. Cooling

OPERATION	※ DISPLAY
1. Press COOLING pad.	
2. Press START pad.	
3. When finish cooling, the display goes to blank. The oven will cool in 3-30 minutes depending on temprature (70°C).	

11. To Select Beep Tone Level

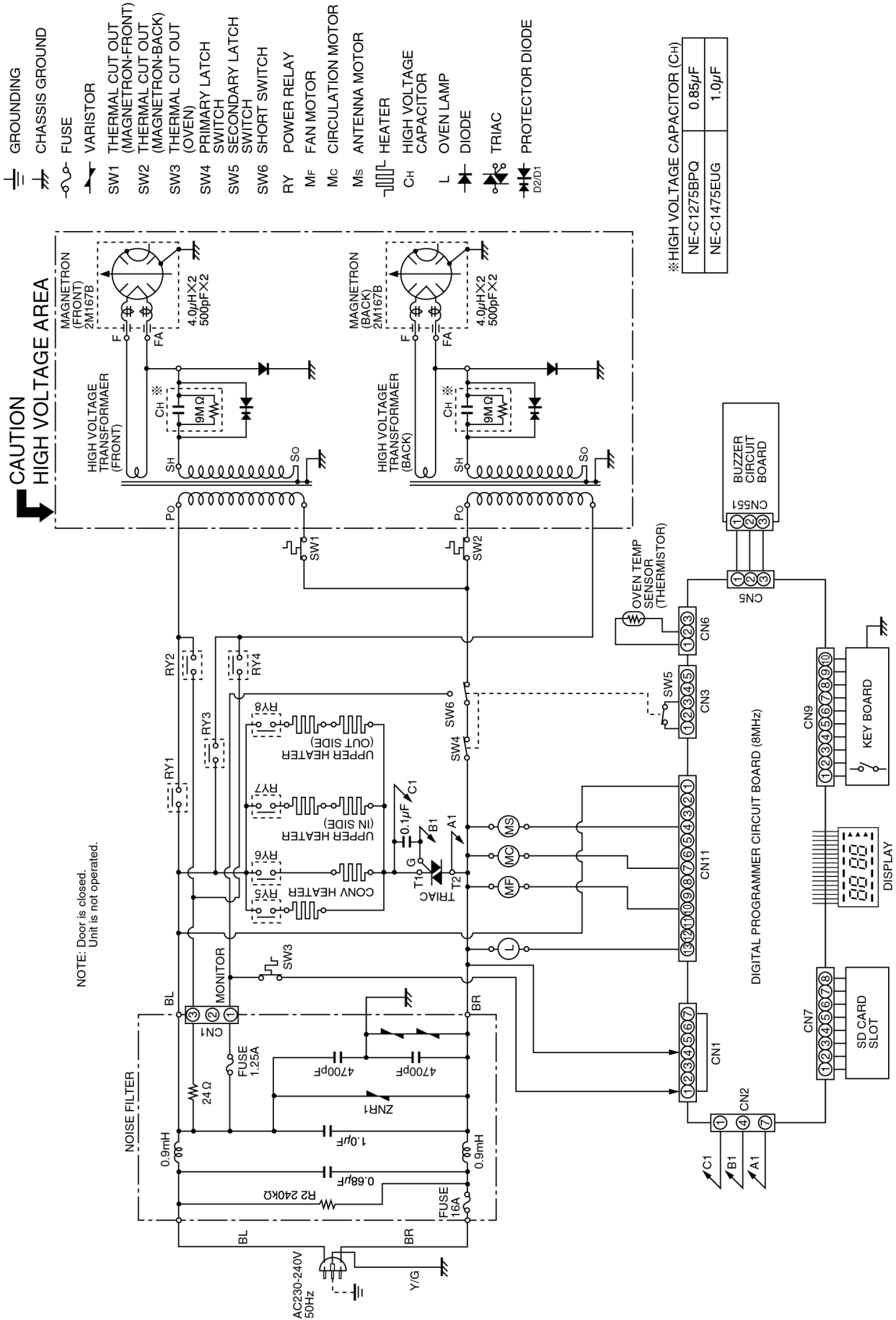
OPERATION	※ DISPLAY
1. Open the door.	
2. Press PROG pad for 2 seconds.	
3. Press START pad to chose sound level. e.g.; twice for Middle	
4. Press PROG pad.	
5. After 3 seconds, display returns to "0".	

12. To Read the Cycle Count

OPERATION	※ DISPLAY
1. Open the door.	0
2-1. While pressing START pad, press MICROWAVE pad. The display shows the total number of heating cycles at 1/100 times.	12 50 (means 125000 Times)
2-2. While pressing START pad, press 5 pad. The display shows the total hour of heating time at 1/100 hour.	25 (means 2500 Hours)
2-3. While pressing START pad, press 6 pad. The display shows the total number of microwave cycles at 1/100 times.	3 45 (means 34500 Times)
2-4. While pressing START pad, press 7 pad. The display shows the total hour of microwave time at 1/100 hour.	15 (means 1500 Hours)
3. After 3 seconds, display returns to "0".	0

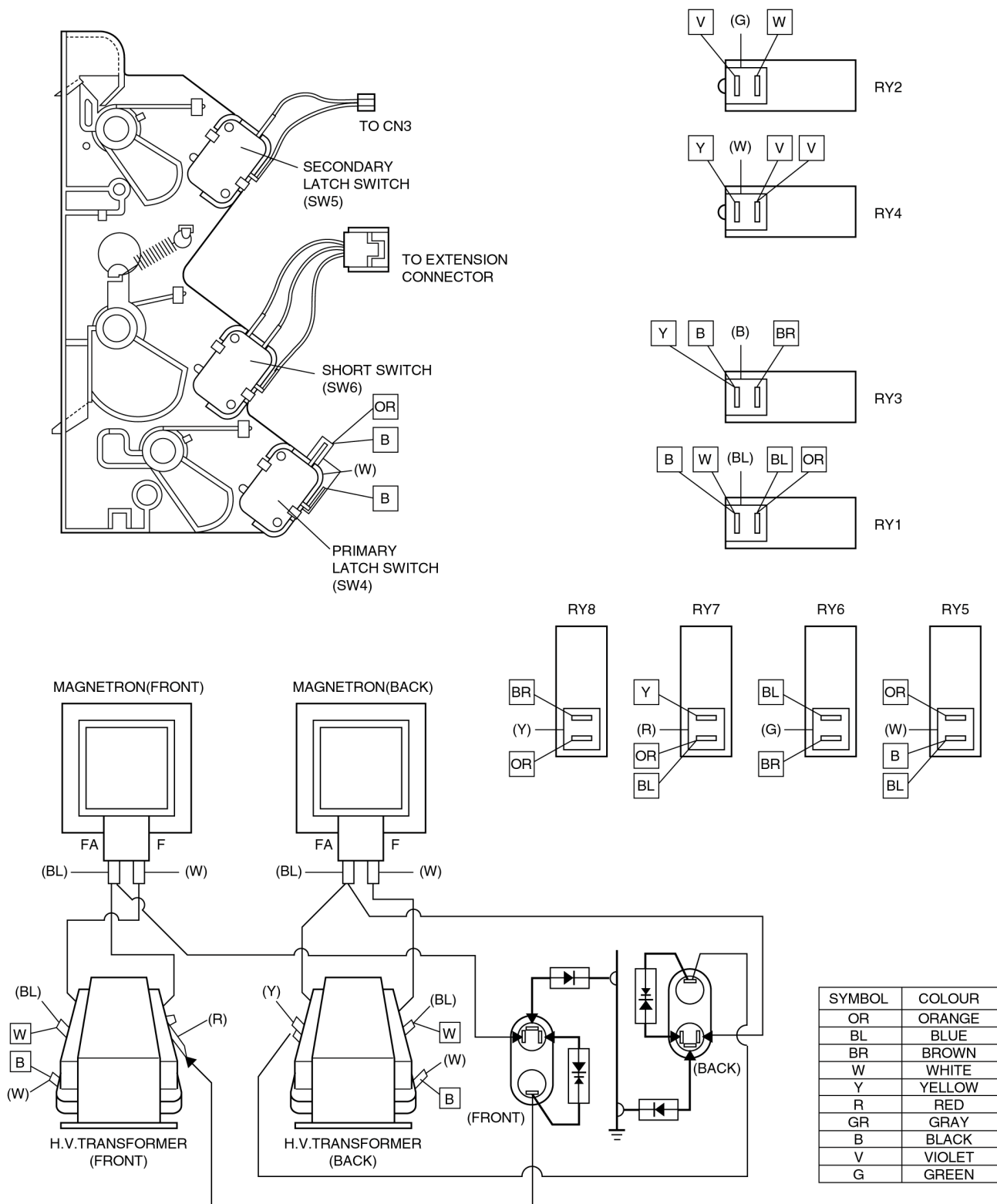
NOTE : When total number of heating cycle/hour exceed 9999, the count will return to "0".

3 SCHEMATIC DIAGRAM



4 WIRING DIAGRAM

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



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5 DESCRIPTION OF OPERATING SEQUENCE

5.1. Variable power cooking control

The coil of power relays are energized intermittently by the digital programmer circuit, when the oven is set at any power selection except for High power position. The digital programmer circuit controls the ON-OFF time of power relays contacts in order to vary the output power of the microwave oven.

The relation between indications on the control panel and the

output of the microwave oven is as shown in table.

NOTE 1:

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.

NOTE 2:

ON-OFF time of power relays are changed by digital programmer circuit when remaining cooking time or selected cooking time are within 1 minutes 30 seconds at MED, LOW, SIMMER and Defrost cooking mode.

POWER	POWER RELAY	ON-OFF TIMING OF POWER RELAY
HIGH	RY 1 (FRONT)	ON OFF
	RY 3 (BACK)	ON OFF
MEDIUM	RY 1 (FRONT)	ON OFF
	RY 3 (BACK)	ON OFF
LOW	RY 1 (FRONT)	ON OFF
	RY 3 (BACK)	ON OFF
SIMMER	RY 1 (FRONT)	ON OFF
	RY 3 (BACK)	ON OFF
DEFROST		P1 P2
	RY 1 (FRONT)	ON OFF
	RY 3 (BACK)	ON OFF
	RY 1 (FRONT)	ON OFF
	RY 3 (BACK)	ON OFF
		P1
		P2

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5.2. Convection cooking control

The digital programmer circuit controls the ON-OFF time of upper and convection heater in order to control the oven cavity temperature, see table and figure.

1. The digital programmer circuit generates the power relays control signals at a specific timing as shown in table.
2. When the oven reaches the selected temperature, the digital programmer circuit senses the temperature through oven temp sensor and stops supplying 12V DC to the power relays resulting in turn off of upper and convection heaters. After the heaters have been turned off, the oven temperature will continue to increase a while then decrease as shown in figure.
3. When the oven temperature drops below selected temperature, the digital programmer circuit senses the oven temperature and starts supplying 12V DC to the coils of

power relays alternately again.

NOTE 1:

When convection is selected with temperature setting of 100-250°C, off period of both heaters is also programmed while oven temperature is lower than selected temperature, as shown in figure.

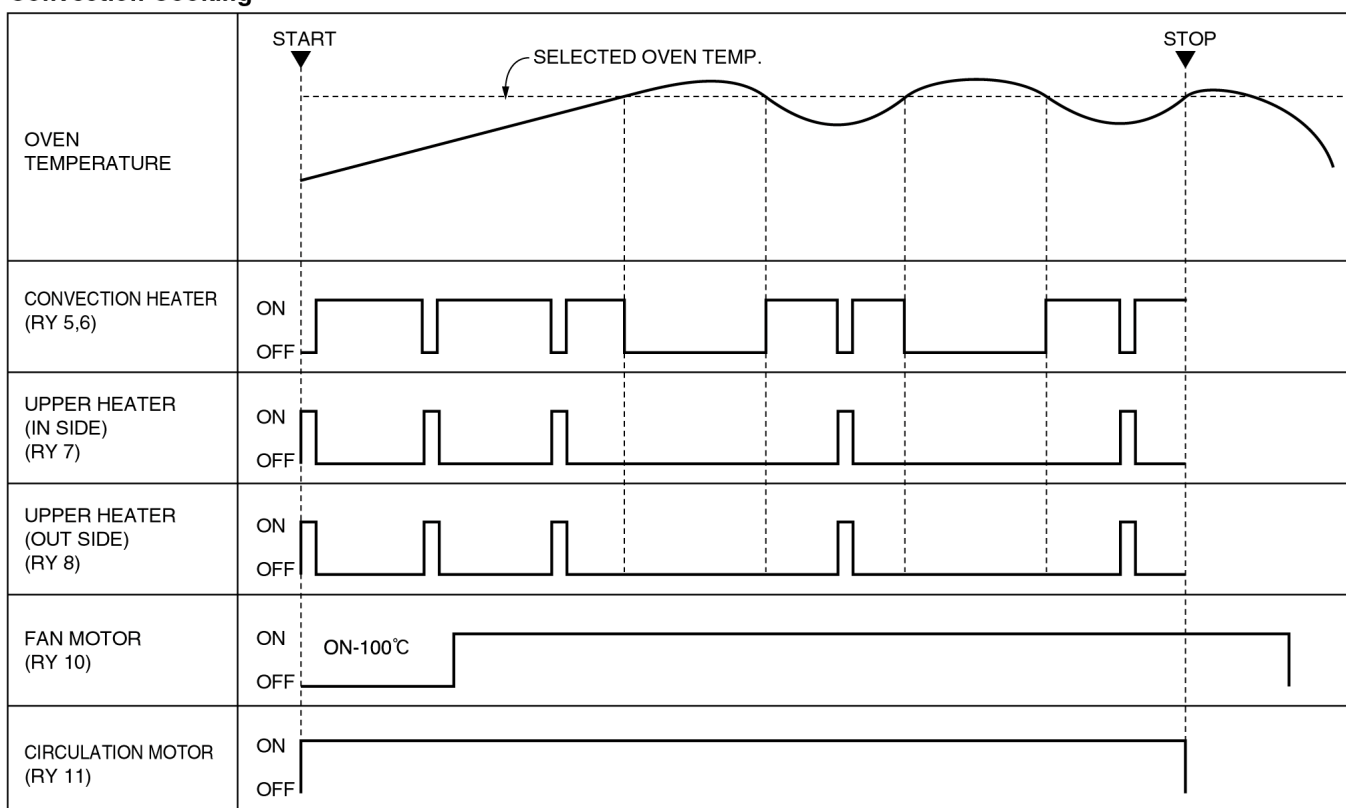
NOTE 2:

After convection process, if oven temperature is higher than predetermined temperature, fan motor rotates for 5 minutes at maximum time to cool the electric components and oven.

Heater ON-OFF Time for Convection Cooking

Selected oven Temperature	UPPER HEATER (IN-SIDE)		UPPER HEATER (OUT-SIDE)		CONVECTION HEATER	
	ON	OFF	ON	OFF	ON	OFF
100°C ~ 250°C	5	61	5	61	61	5

Convection Cooking



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5.3. Grill cooking control

1. The digital programmer circuit generates the power relays control signals at a specific timing as shown in figure.
2. When the oven temperature reaches the predetermined temperature, the digital programmer circuit stops supplying power relays control signals resulting in both upper to turn off.
3. When the oven temperature drops below the predetermined temperature, the digital programmer circuit generates power relays control signals again at the timing predetermined.

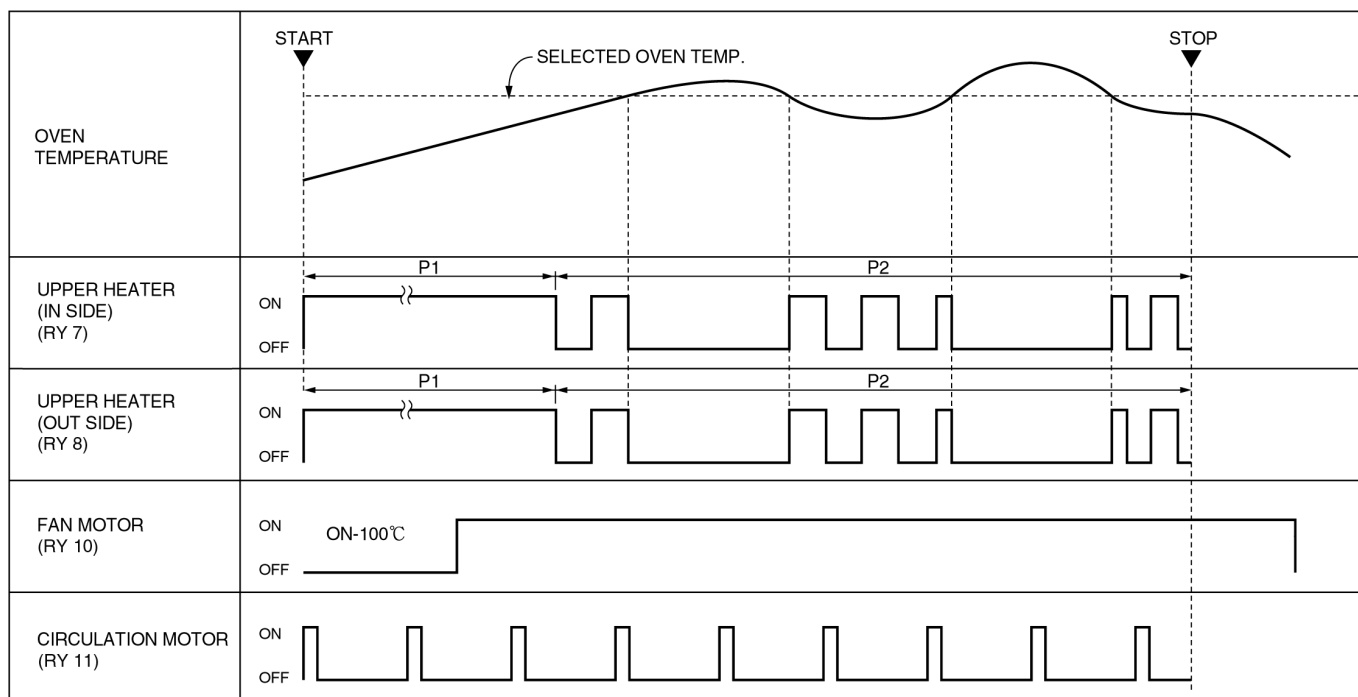
NOTE 1:

After grill process, if oven temperature is higher than

predetermined temperature, fan motor rotates for 5 minutes at maximum time to cool the electric components and oven.

		UPPER HEATER (IN-SIDE) (RY 7)		UPPER HEATER (OUT-SIDE) (RY 8)	
		ON	OFF	ON	OFF
HI	P1	66	0	66	0
	P2	33	33	33	33
LOW	P1	54	12	54	12
	P2	33	33	33	33

Grill Cooking (Category 1)



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5.4. Combination cooking control

Combination cooking is accomplished by operating the microwave and heater mode alternately during one combination cooking cycle.

There are 2 combination mode:

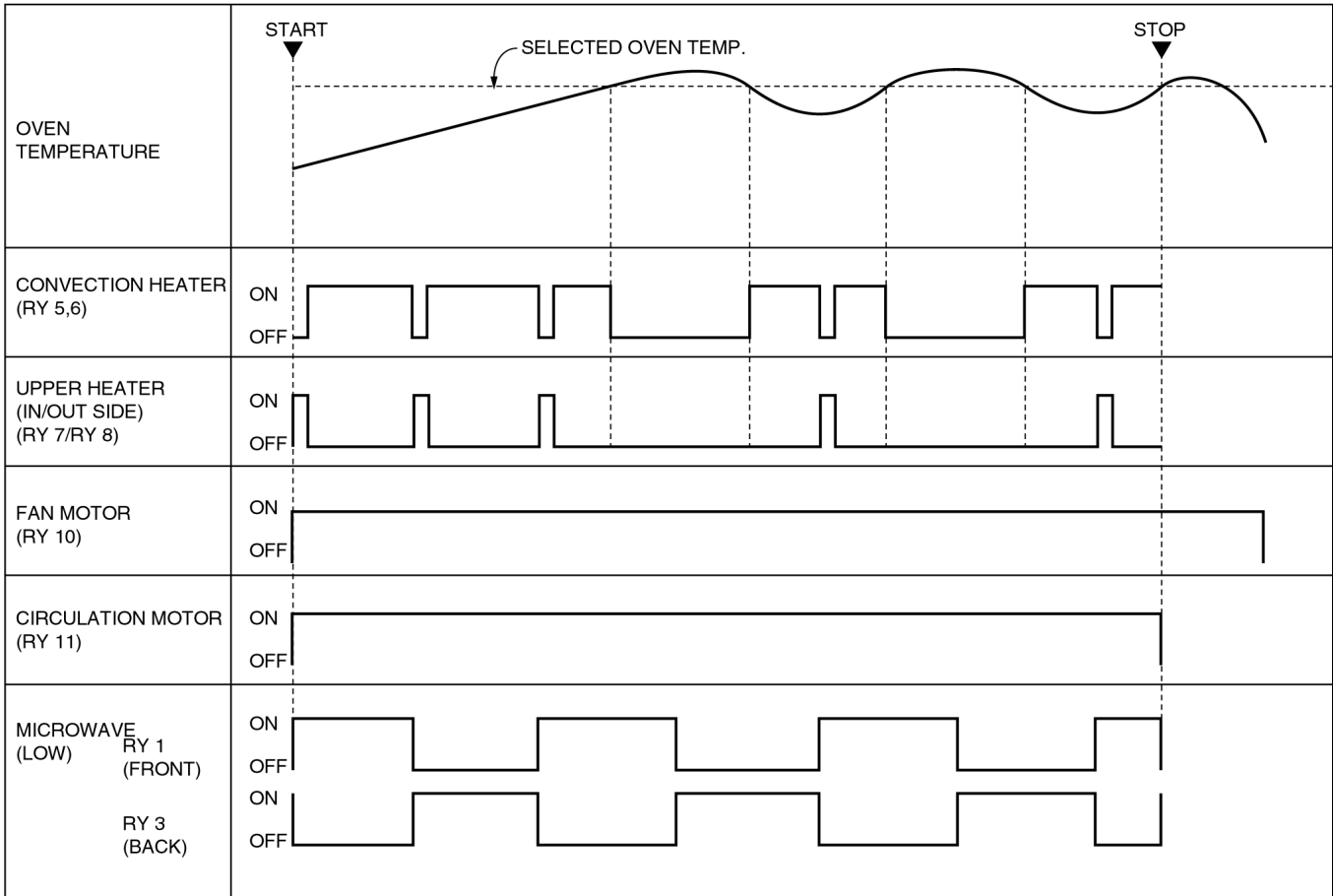
1. Grill combination (Grill + Microwave)
2. Convection combination (Convection + Microwave)
 1. The digital programmer circuit generates the power relays control signals at a specific timing as shown in figure.
 2. When the oven temperature reaches the predetermined temperature, the digital programmer circuit stops supplying power relays control signals resulting in heaters to turn off. During this, digital programmer circuit continues supplying

power relay 1, 3 control signal so that microwave activity continue at predetermined duty ratio as shown in figure. The microwave activity continue to cycle until entire cooking programme is completed.

3. When the oven temperature drops below the selected temperature, the digital programmer circuit generates power relays control signals again at the timing predetermined.

NOTE 1:

After combination process, if oven temperature is higher than predetermind temperature, fan motor rotates for 5 minutes at maximum time to cool the electric components and oven.

Combination (Convection + Microwave)

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6 CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is a high voltage, high current apparatus.

Although it is safe to operate, extreme care should be taken during repair.

CAUTION

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

6.1. Check the earthing/grounding

Do not operate on a 2 wire extension cord. The microwave oven is designed to be used in a completely earthed/grounded condition. It is imperative, therefore, to make sure it is properly earthed/grounded before beginning repair work.

6.2. Warning about the electric charge in the high voltage capacitor.

For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitor. When replacing or checking parts, remove the power plug from the outlet and short the terminal of the high voltage capacitor (terminal of lead wire from diode) to chassis ground with an insulated handle screwdriver or insulated jumper lead wire to discharge.

WARNING

There is high-voltage present, with high-current capabilities in the circuits of the high voltage winding and filament winding of the high voltage transformer. 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 filament voltage of magnetron.

WARNING

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

6.3. If the door lock, the door switch, the door seal or the door develops a malfunction, be sure not to operate the oven until complete repairs are made.

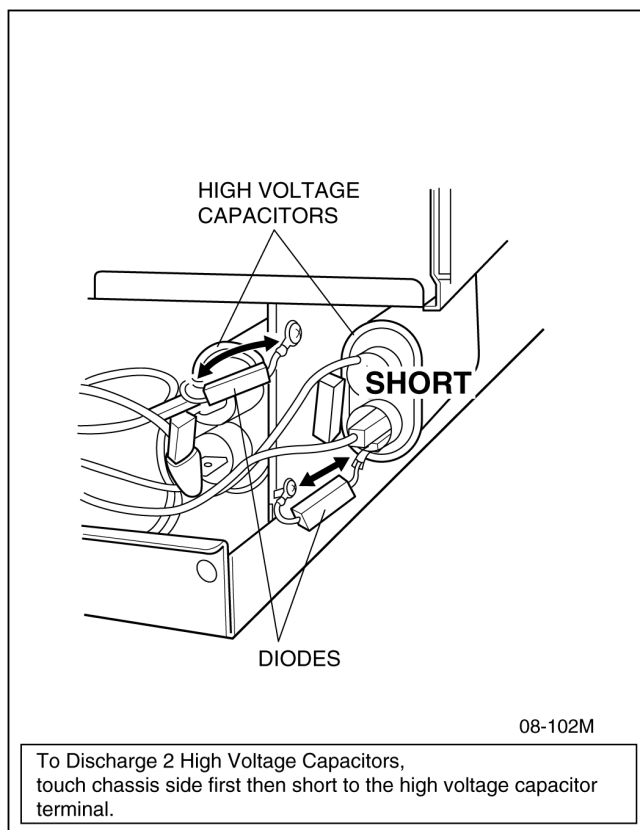
If the oven is operated with any of these parts in imperfect condition, hazardous microwave leakage might occur.

WARNING

Never operate the oven until the following are confirmed:

- (A) The door is tightly closed.
- (B) There is no broken hinge or door arm.
- (C) The door seal is not damaged.
- (D) The door is not bent or warped.
- (E) There is no other visible damage.

6.4. When parts must be replaced, remove the power plug from the outlet.

**Important Note**

1. High voltage (above 250 volts) exists at following parts during oven operation.
 - Magnetron
 - High Voltage Transformer
 - High Voltage Diode
 - High Voltage Capacitor
2. If the microwave oven is operated with incorrect installed door hinge or magnetron, it can cause microwave leakage of over 5mW/square centimeter. Hence it is absolutely necessary to check if magnetron and door hinge are correctly and safely installed after repairs or replacement.

6.5. Confirm after repair

1. After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing. Microwave 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.

6.6. Avoid inserting nails, wire, etc. through holes in unit during operation.

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

**CAUTION
MICROWAVE RADIATION**

Personnel should not be exposed to the microwave energy which may radiate from the magnetron or other microwave generating device if it is improperly used or connected. All input and output microwave connections waveguides, flanges, and gasket must be secure. Never operate the device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while the device is energized.

CAUTION

High voltage parts may become uncovered when outer cabinet is removed.

7 DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

7.1. Magnetron (Front and Back)

1. Discharge the high voltage capacitors.
2. Remove 5 screws holding air guides.
3. Disconnect magnetron, lead wire connectors and grounding lead.
4. Loosen wire harness and lift up air guide.
5. Remove 4 screws holding each magnetron.
6. Remove 2 screws holding thermal cutout.

NOTE:

To prevent microwave leakage, tighten mounting screws making sure there is no gap between the waveguide and the magnetron.

CAUTION

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

7.2. Digital programmer circuit (DPC)

1. Remove 1 screw holding grounding strip tab of membrane switch.
2. Remove 2 screws holding escutcheon base and slide the escutcheon base upward slightly with door opened.
3. Disconnect all connectors from DPC.
4. Remove 3 screws holding DPC.

To replace membrane key board

1. Bend escutcheon A catch hooks straighten and separate escutcheon A and base.
2. Push the upper part of key board (display window) from back of escutcheon base and peel off membrane key board.

NOTE 1:

The membrane key board is attached to the escutcheon base with double faced adhesive tape. Therefore, applying hot air from A hair dryer is recommended for smoother removal.

NOTE 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.

NOTE 3:

Alignment position of membrane key board is as follows (see figure);

Membrane key board: Right and lower edges

7.3. Power relays

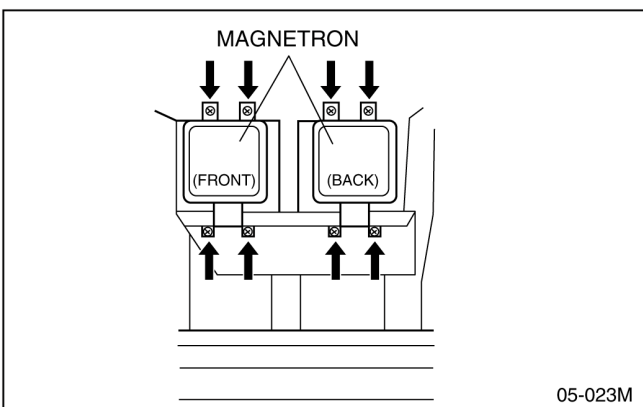
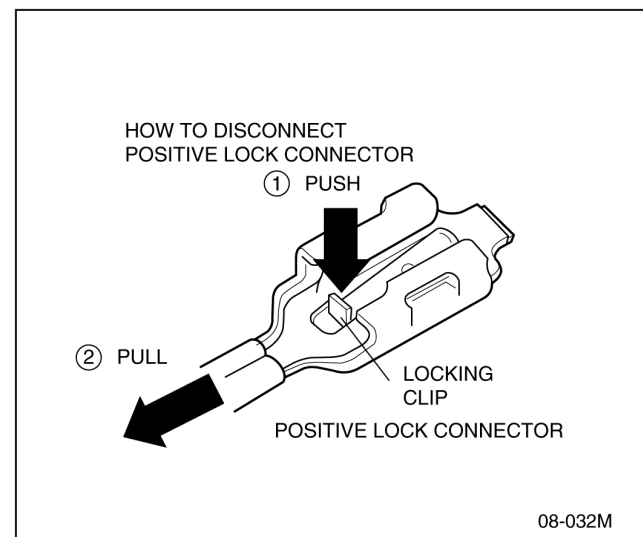
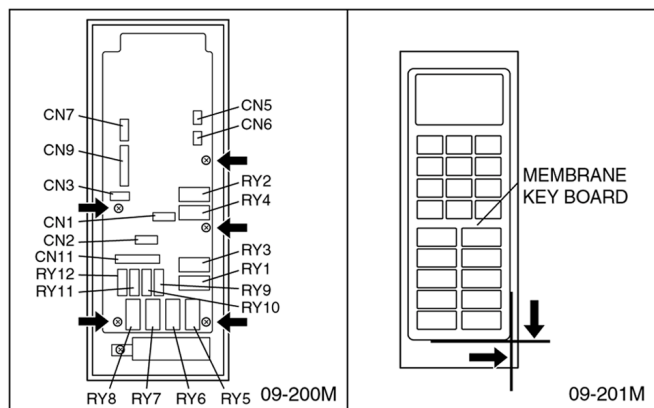
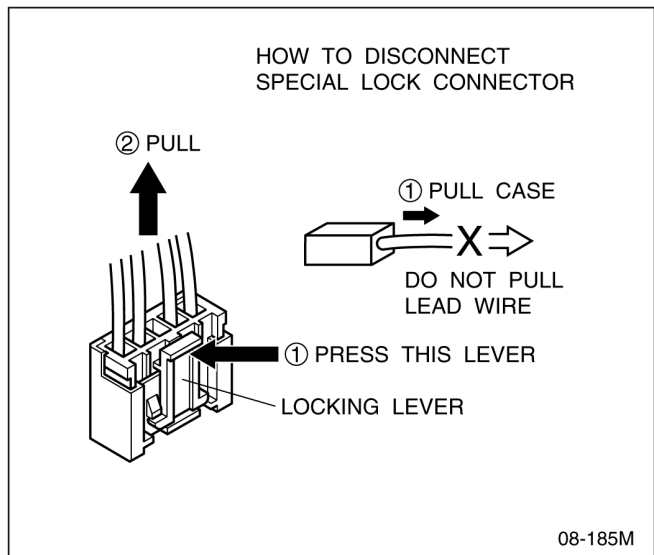
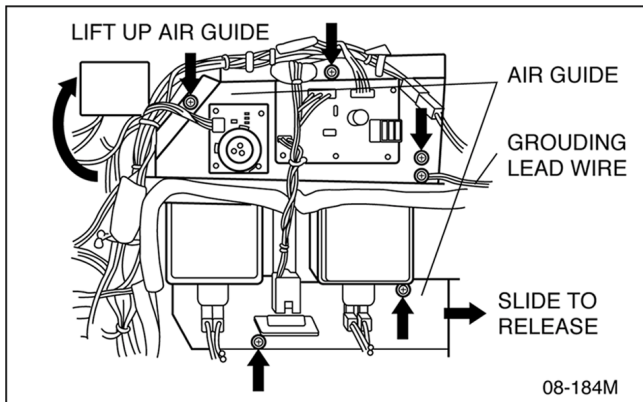
NOTE:

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

NOTE:

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

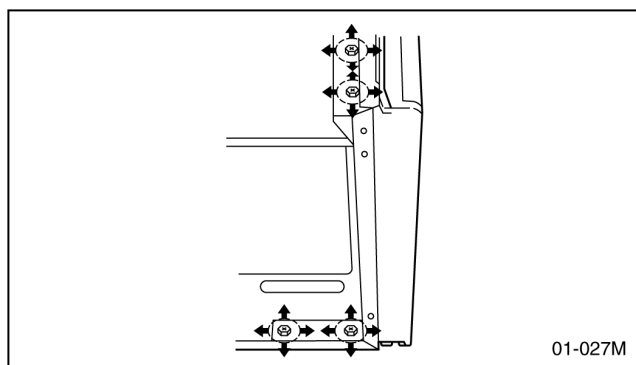
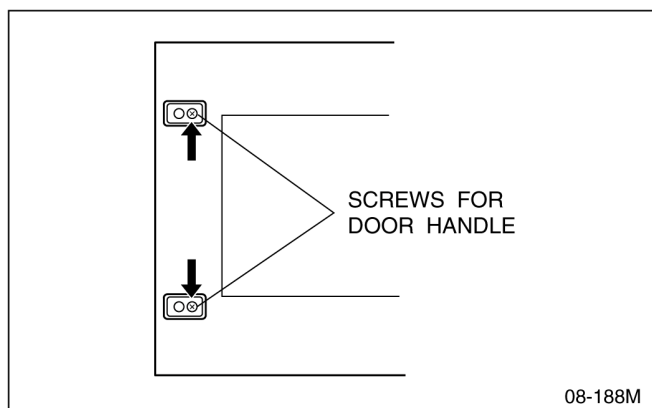
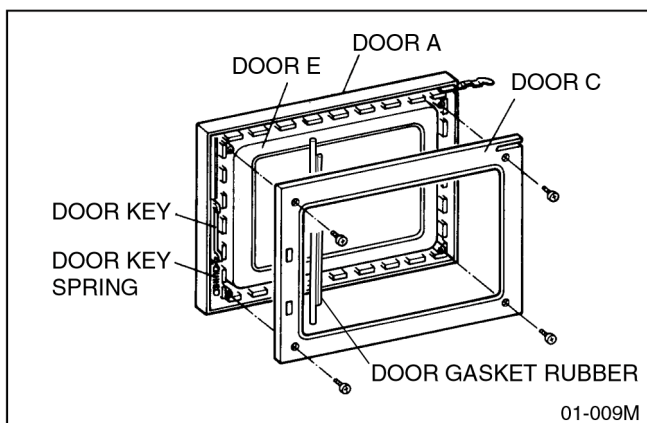
1. Using solder wick or a desoldering tool and 30W soldering iron, carefully remove all solder from the terminal pins of the power relays.
2. With all the terminal pins cleaned and separated from DPC contacts, remove the defective power relay(s) and install new power relay(s) making sure all terminal pins are inserted completely. Resolder all terminal contacts carefully.



7.4. Door assembly

1. Remove 2 screws holding the upper hinge to the oven.
2. Open the door and while pulling the door toward you, work the upper hinge out through the hole in the oven.
3. Remove 4 screws holding the door C.
4. Remove the door C by carefully pulling outward starting from the upper right hand corner.
5. Remove 2 screws holding door E.

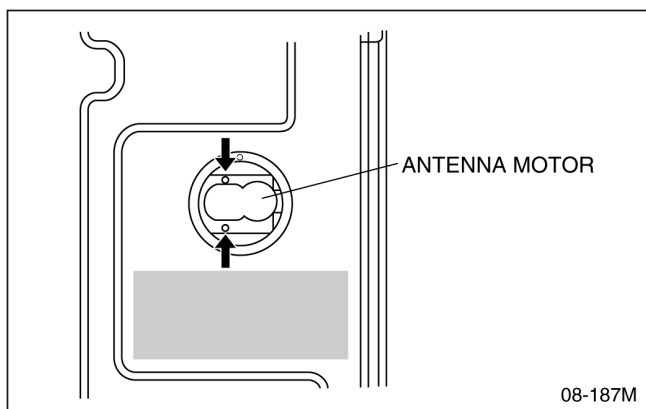
6. Separate the door A from door E by carefully freeing catch hooks on door A while pulling outward.
7. Remove the door key spring and the door key.
8. Remove 2 screws holding door handle.
9. When mounting the door to the oven, be sure to adjust the door parallel to the bottom line of the oven face plate by moving the upper hinge and lower hinge in the direction necessary for proper alignment.
Also adjust so that the door has no play between the inner door surface and oven frame. If the door is not mounted properly, microwave energy may leak from the clearance between the door and the oven.



7.5. Antenna motor

1. To remove the antenna motor, carefully place the unit on its left side.
2. Remove 2 screws holding motor cover.
3. Remove 2 screws holding antenna motor.

4. Disconnect motor lead wire.

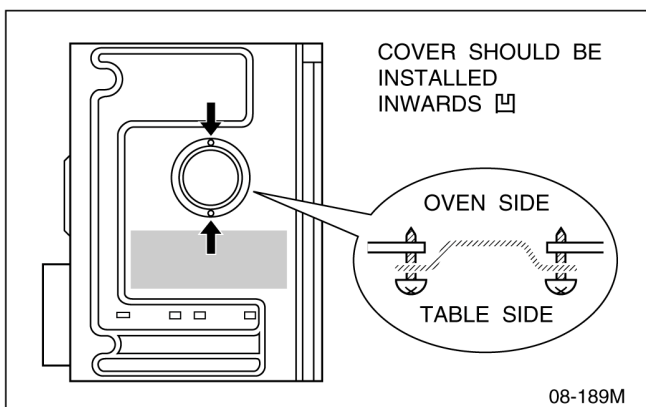
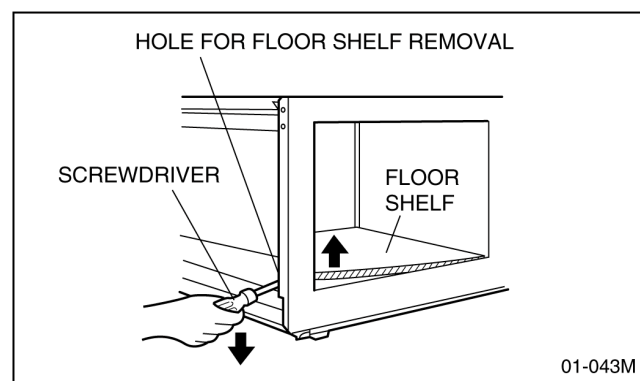


7.6. Floor shelf and/or moving antenna

1. Insert a philips type screwdriver or equivalent approx. 2" (5cm) in shaft length in the hole of left side oven wall as shown in Figure.
2. Carefully lift up the floor shelf by using the screwdriver until the floor shelf is lifted up over the level of oven opening front.
3. Remove the floor shelf by lifting it up from oven front.
To replace moving antenna.
4. Remove the moving antenna by simply lifting it up off the stirrer motor shaft.

NOTE:

When replacing the moving antenna, make sure the plastic stirrer spacers are correctly in place.



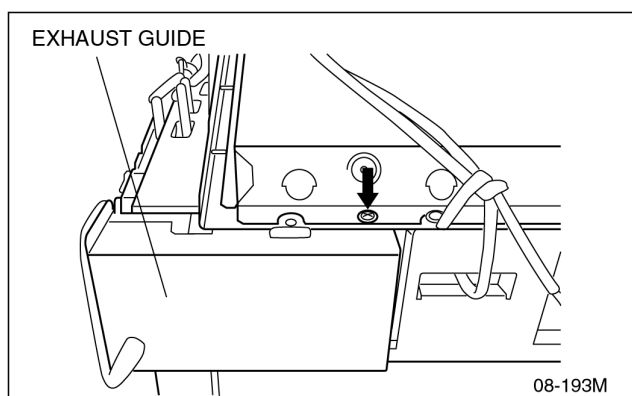
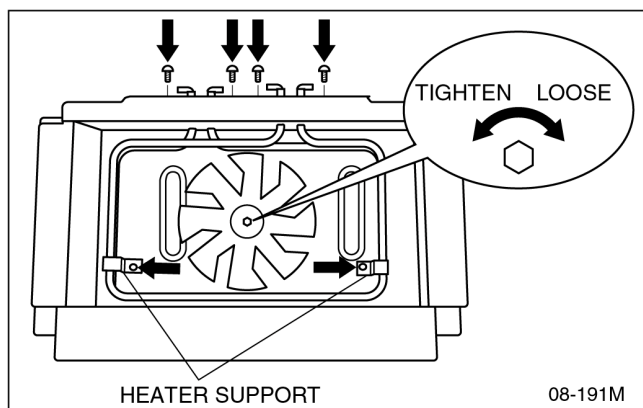
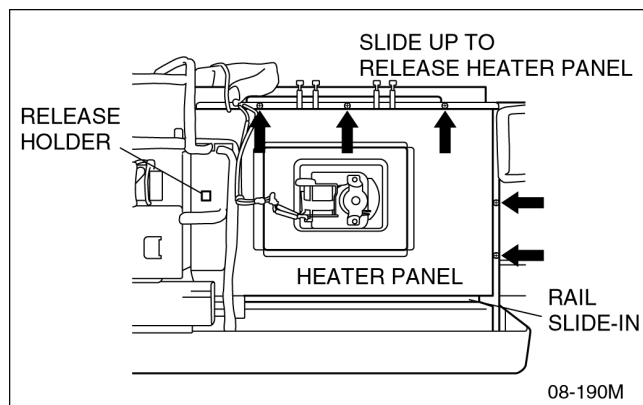
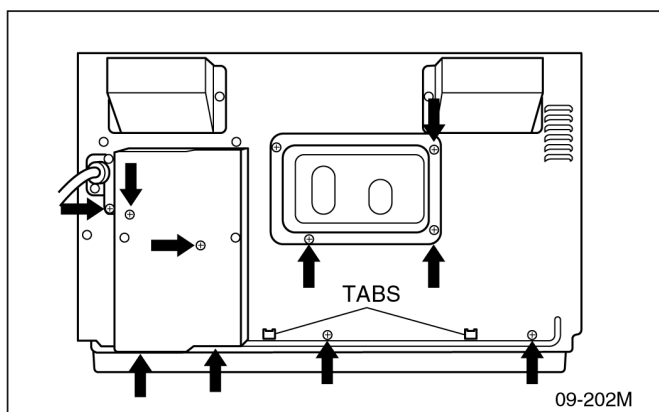
7.7. Convection Heater

1. Remove 10 screws holding back panel.
2. Disconnect heater and circulation fan motor lead wire connector.
3. Remove a screw holding exhaust guide.
4. Remove 5 screws holding heater panel.
5. Slide up heater panel unit to release from oven cavity.
6. Remove 6 screws holding heater support and heater.

NOTE:

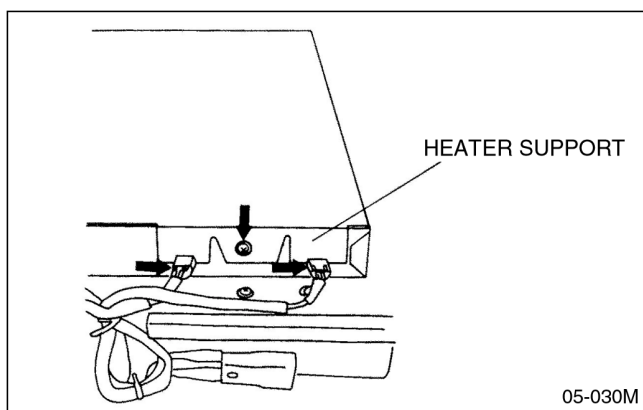
After oven has been used the internal surface of the cavity may become permanently dark.

Please note this condition is normal and it does not affect ovens performance.



7.8. Upper Heater

1. Disconnect upper heater lead wire connector.
2. Remove 1 screw holding heater support.
3. Remove the heater by pulling it out.



8 COMPONENT TEST PROCEDURE

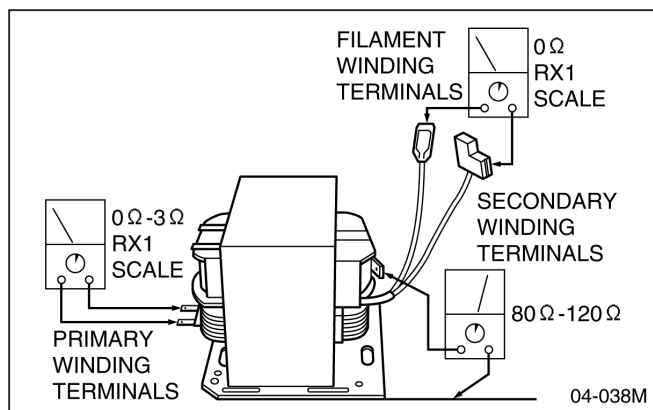
CAUTION

1. High voltage is present at the high voltage terminal of the high voltage transformer 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 capacitor.

2. Normal (cold) resistance readings should be as follows:
Secondary winding - Approx. 80Ω ~ 120Ω
Filament winding - Approx. 0Ω
Primary winding (0V - 240V). Approx. 0Ω ~ 3Ω

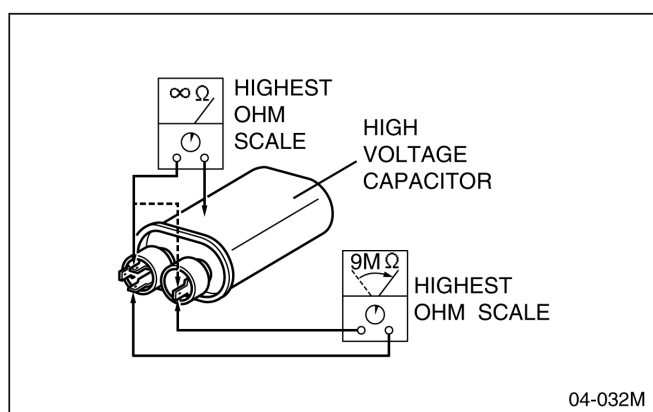
8.1. High voltage transformer

1. Remove connections from the transformer terminals and check continuity.



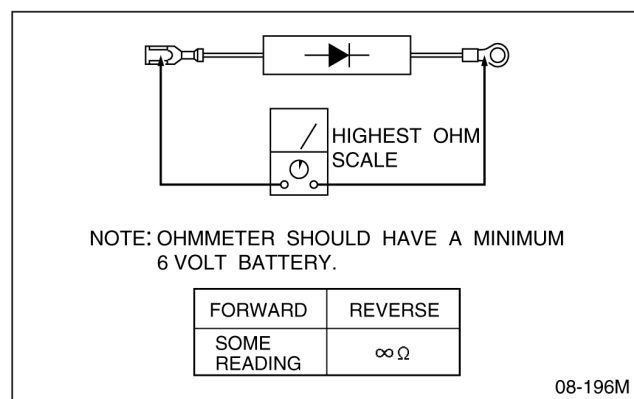
8.2. High voltage capacitor

1. Check continuity of capacitor with ohmmeter on highest OHM scale.
2. A normal capacitor will show continuity for a short time, and then indicate $9M\Omega$ once the capacitor is charged.
3. A shorted capacitor will show continuous continuity.
4. An open capacitor will show constant $9M\Omega$. (Due to internal $9M\Omega$ resistor)
5. Resistance between each terminal and chassis should be infinite.



8.3. Diode

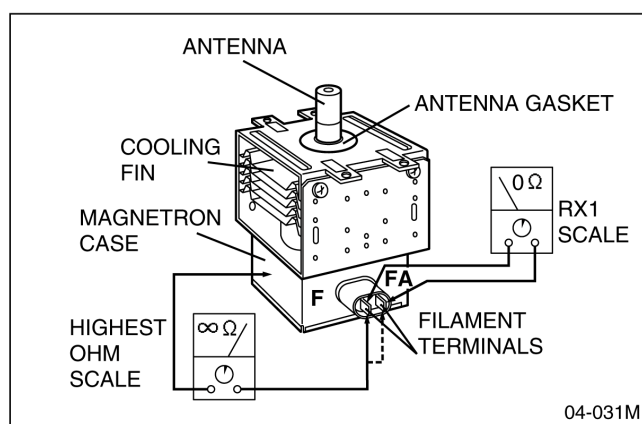
1. Isolate the diode assembly from the circuit by disconnecting the leads.
2. With the ohmmeter set on the highest resistance scale, measure the resistance across the diode terminals. Reverse the meter leads and again observe the resistance reading. A meter with 6V, 9V or higher voltage batteries should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



8.4. Magnetron

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

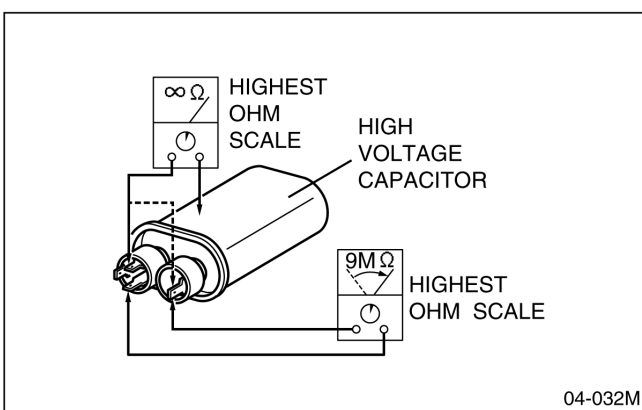
1. Isolate magnetron from the circuit by disconnecting the leads.
2. A continuity check across magnetron filament terminals should indicate one ohm or less.
3. A continuity check between each filament terminal and magnetron case should read open.



8.5. Membrane key board (Membrane switch assembly)

Check continuity between switch terminals, by pressing an appropriate pad on the key board.

The contacts assignment of the respective pads on the key board is as shown in the schematic diagram of DPC.



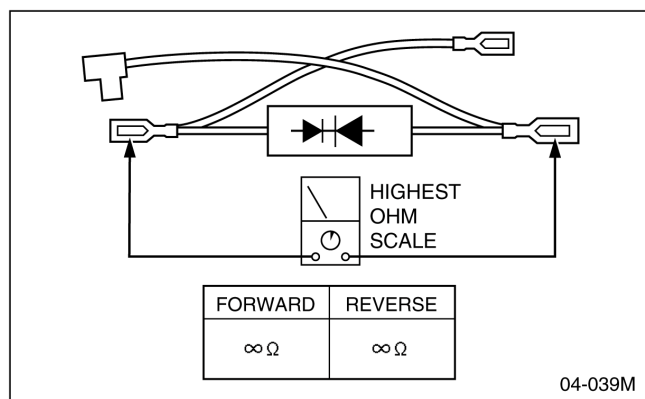
8.6. Protector diode

1. Isolate the protector diode assembly from the circuit by disconnecting its leads.
2. With the ohmmeter set on the highest resistance scale, measure the resistance across the protector diode terminals.

Reverse the meter leads and again observe the resistance reading.

A normal protector diode's resistance will be infinite in both directions.

It is faulty if it shows continuity in one or both directions.



8.7. To test the oven temp sensor thermistor

This sensor monitors the heat produced by the heater circuit and maintains the oven temperature the user has selected. Normal room temperature, especially in a kitchen can vary anywhere from 10°C to 32°C. The reading across the oven sensor thermistor should be within 100K ohm to 500K ohm when reading in an area within the 10°C to 32°C room temperature range.

If the resistance reading is out of the range stated here, the sensor is defective and must be replaced with sensor unit.

NOTE 1:

When measuring resistance disconnect the 4-pin connector (CN4) from the DPC otherwise a false reading may be indicated.

NOTE 2:

If checking an oven sensor thermistor just after the microwave oven has been operating, the sensor of course won't be room temperature. In this case the sensor must be removed and allowed to cool down to the 50°F/10°C to 90°F/32°C range.

9 MEASUREMENTS AND ADJUSTMENTS

9.1. Adjustment of Primary latch switch, Secondary latch switch and short switch

1. When mounting Primary latch switch, Secondary latch switch and short switch to door hook assembly, mount the Primary latch switch, the Secondary latch switch and the short switch to the door hook assembly as shown in Figure.
2. When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of arrow in Figure 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.

heating time, should be as accurate as possible.

Output power performance test procedure.

1. Fill the beaker with exactly one litre of tap water.
Stir the water using the thermometer and note the temperature. (Record as T1)
2. Place the beaker in the center of cook plate.
Set the oven for High power and heat for exactly one minute.
3. After completion of the heating cycle, stir the water again with the thermometer and note the temperature. (Record as T2).

The normal temperature rise (T2-T1), for these models should be more than following chart indicated using the High power selection with the oven operating at the specified line voltage.

9.2. Measurement of microwave output

The output power of the magnetron can be determined by performing IEC standard test procedures. However, it is possible to test the magnetron by following procedure outlined below.

Necessary equipment:

1 litre beaker

Glass thermometer

Wrist watch or stopwatch

NOTE:

Check the line voltage under load to ensure it meets specifications. Low voltage condition will cause a reduction in magnetron output. Temperature readings and

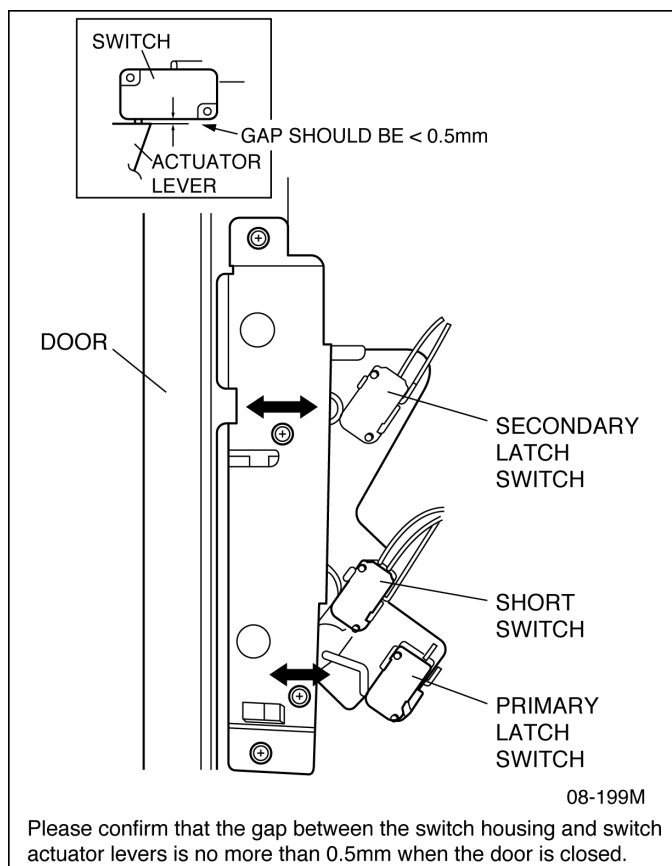


TABLE (1 litre-1min. test)

RATED OUTPUT	TEMPERATURE RISE
1100W (IEC-705)	Min 9.4°C
1300W (IEC-705)	Min 11.1°C

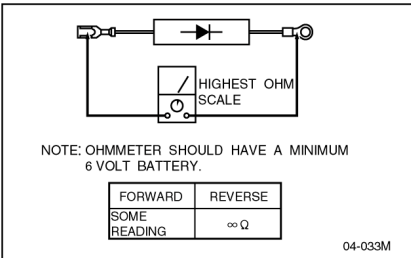
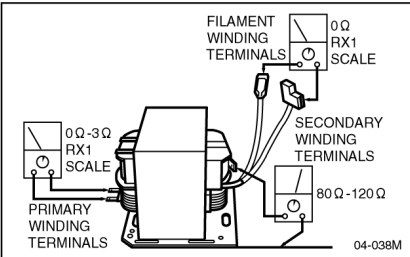
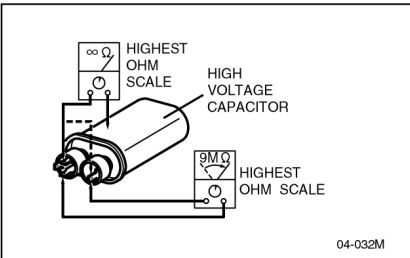
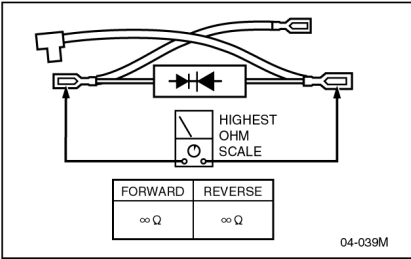
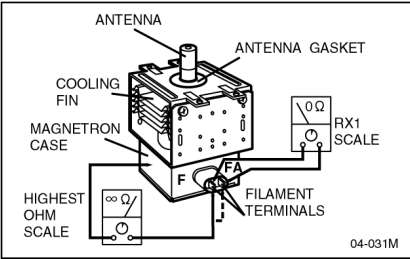
10 TROUBLESHOOTING GUIDE

CAUTION

1. Check grounding before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge high voltage capacitor.
4. When checking the continuity of the switches or the high voltage transformer, 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.
5. 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.
6. A 230/240V AC is present at the shaded area of the digital programmer circuit (Terminals of power relays and switching power supply circuit). When troubleshooting, be cautious of possible electrical shock hazard.

First of all operate the microwave oven following the correct operating procedures described in order to find the exact cause of any trouble.

[TROUBLE 1] Oven is dead

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS				
1.16A fuse is blown.	1	Primary latch switch and short switch	Abnormal	Replace and adjust latch switch and door				
			Normal	→ STEP 2				
	2	Check high voltage components assumed defective side circuit. H.V.Transformor H.V.Capacitor H.V.Diode Magnetron Protector diode	Component check procedure:					
	 NOTE: OHMMETER SHOULD HAVE A MINIMUM 6 VOLT BATTERY. <table><tr><td>FORWARD</td><td>REVERSE</td></tr><tr><td>SOME READING</td><td>∞ Ω</td></tr></table> 04-033M			FORWARD	REVERSE	SOME READING	∞ Ω	 04-038M
FORWARD	REVERSE							
SOME READING	∞ Ω							
 HIGHEST OHM SCALE HIGH VOLTAGE CAPACITOR 9M Ω HIGHEST OHM SCALE 04-032M								
 HIGHEST OHM SCALE <table><tr><td>FORWARD</td><td>REVERSE</td></tr><tr><td>∞ Ω</td><td>∞ Ω</td></tr></table> 04-039M			FORWARD	REVERSE	∞ Ω	∞ Ω	 ANTENNA ANTENNA GASKET COOLING FIN MAGNETRON CASE FILAMENT TERMINALS 0 Ω RX1 SCALE HIGHEST OHM SCALE 04-031M	
FORWARD	REVERSE							
∞ Ω	∞ Ω							
NOTE: Be sure to replace protector diode together with those H.V.Components. In this case, only D2 of protector diode may be shorted due to faulty H.V.Component. Therefore, if protector diode is not replaced together, high voltage transformer will be damaged (over heated).								

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
Oven is dead. Fuse are OK.	1	Thermal cutout (Oven/SW3)	Open	Replace
			Normal	Check DPC Open or loose lead wire harness

[TROUBLE 2] Oven start cooking but lower microwave output power

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
Low microwave output power. Defective Front or Back magnetron circuit.	1	Heat 1 litter of water for exactly one minute at HIGH power and check temperature rise	Greater than 9.4°C	Customer education
			Less than 9.4°C	Front or Back side magnetron circuit is faulty → STEP 2
	2	Thermal cutout SW1 (Front) and SW2 (Back) (Magnetron)	Abnormal	Replace and check fan motor operation
			Normal	→ STEP 3
	3	Power relay operation (RY1 and RY3)	Abnormal	Defective relay or DPC
			Normal	→ STEP 4
	4	Check operation by following procedure 1. Disconnect Back side of magnetron thermal cutout 2. Operate oven at High power for Front magnetron circuit only	Heated water	Defective Back side magnetron circuit → STEP 5
			No heat	Defective Front side magnetron circuit → STEP 5
	5	Open or loose connection of high voltage circuit especially magnetron filament circuit NOTE: Large contact resistance will bring lower magnetron filament voltage and causing magnetron to lower output and/or intermittent oscillation.	Abnormal	Repair loose connection
			No heat	→ STEP 6
	6	Check high voltage component for assumed defective front or back side circuit H.V.Transformer H.V.Capacitor H.V.Diode Magnetron		Check high voltage component according to component test procedure and replace if it is defective.

[TROUBLE 3] Oven does not start cooking

SYMPTOM	CAUSE	CORRECTIONS
1. Oven does not accept key input (Program).	1. Key input is not in-sequence	Refer to operation procedure.
	2. Open or loose connection of membrane key pad to DPC (Flat cable)	
	3. Open membrane key board	
	4. Defective DPC	
2. Oven lamp turn on when oven is plugged in with door closed. Oven can program but not start.	1. Misalignment or loose wiring of secondary latch switch	Adjust door and latch switches.
	2. Defective secondary latch switch	
3. Timer starts count down but no microwave oscillation.	1. Off-alignment of latch switches	Adjust door and latch switches.
	2. Defective Primary latch switch	
	3. Defective short switch	
	4. Defective DPC	

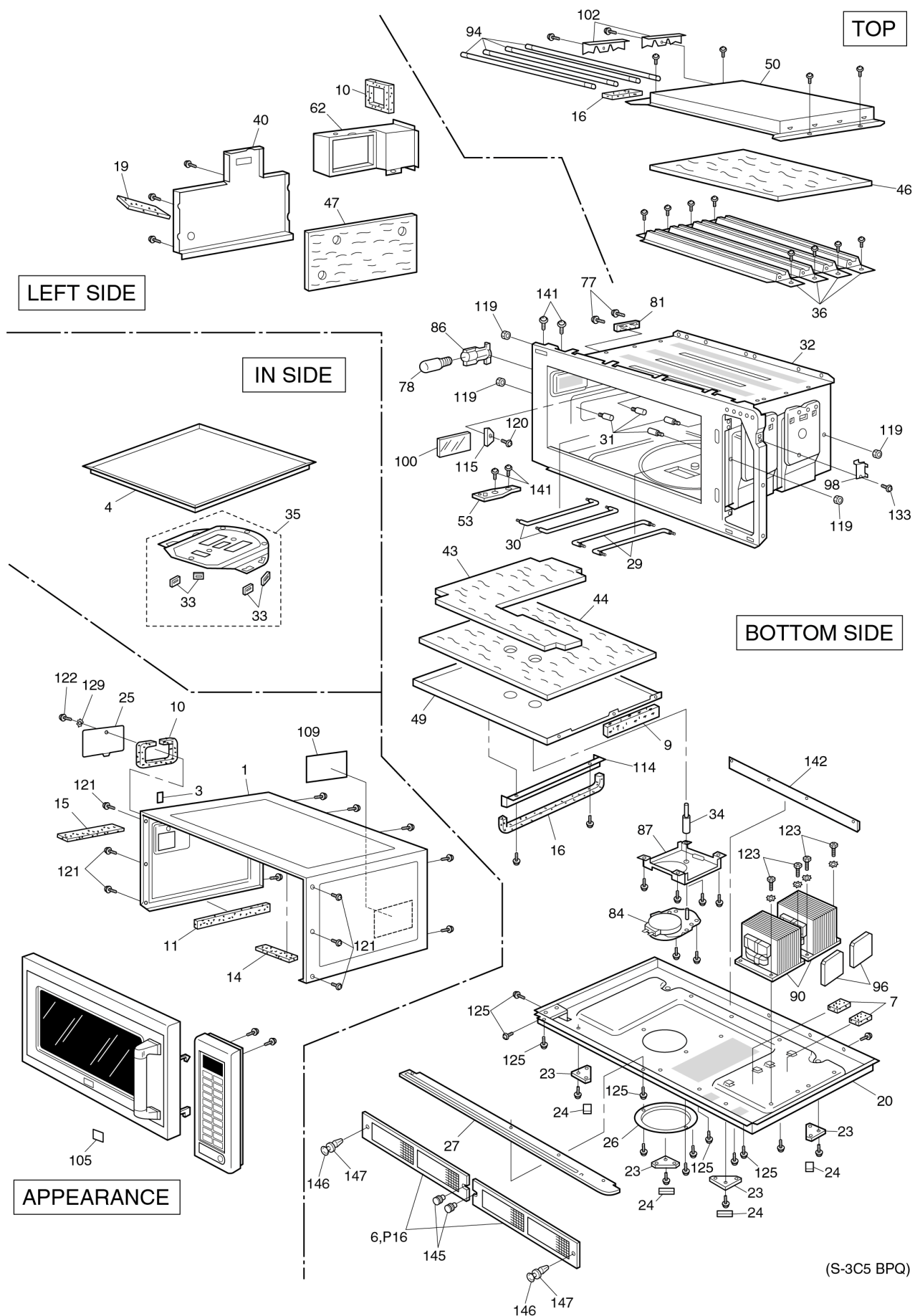
[TROUBLE 4] Other trouble

SYMPTOM	CAUSE	CORRECTIONS
1. F 01 appears in the display with continuous beep sounds.	1. Burning food in the oven cavity due to over cook	It is appeared when exhaust temperature is too high.
2. F 30 appears in the display.	1. Open or shorted oven temp sensor 2. Open or loose oven temp sensor connector 3. Defective DPC	It is appeared 1 minute after start pad is pressed.
3. F 09 appears in the display.	1. Wrong power supply frequency	Use only specified power supply frequency.
4. F 44 appears in the display.	1. Shorted membrane switch 2. Defective DPC	It is appeared when membrane switch is shorted for more than 2 minutes.
5. No beep sound.	1. Check beep sound level 2. Defective buzzer 3. Open or loose connection 4. Defective DPC	If beep sound level is set at 0 change it level.
6. F 00 appears in display.	EEPROM error.	IC-380
7. F 06 appears in display.	Memory card traffic error.	
8. F 35 appears in display.	Oven is not heated up min 80°C w/in 10minutes.	
9. U 16 appears in display.	SD Card is locked.	
10. U 17 appears in display.	No memory or faulty SD Card.	
11. U 19 appears in display.	No SD Card installed.	

[TROUBLE 5] Trouble related to Digital programmer circuit

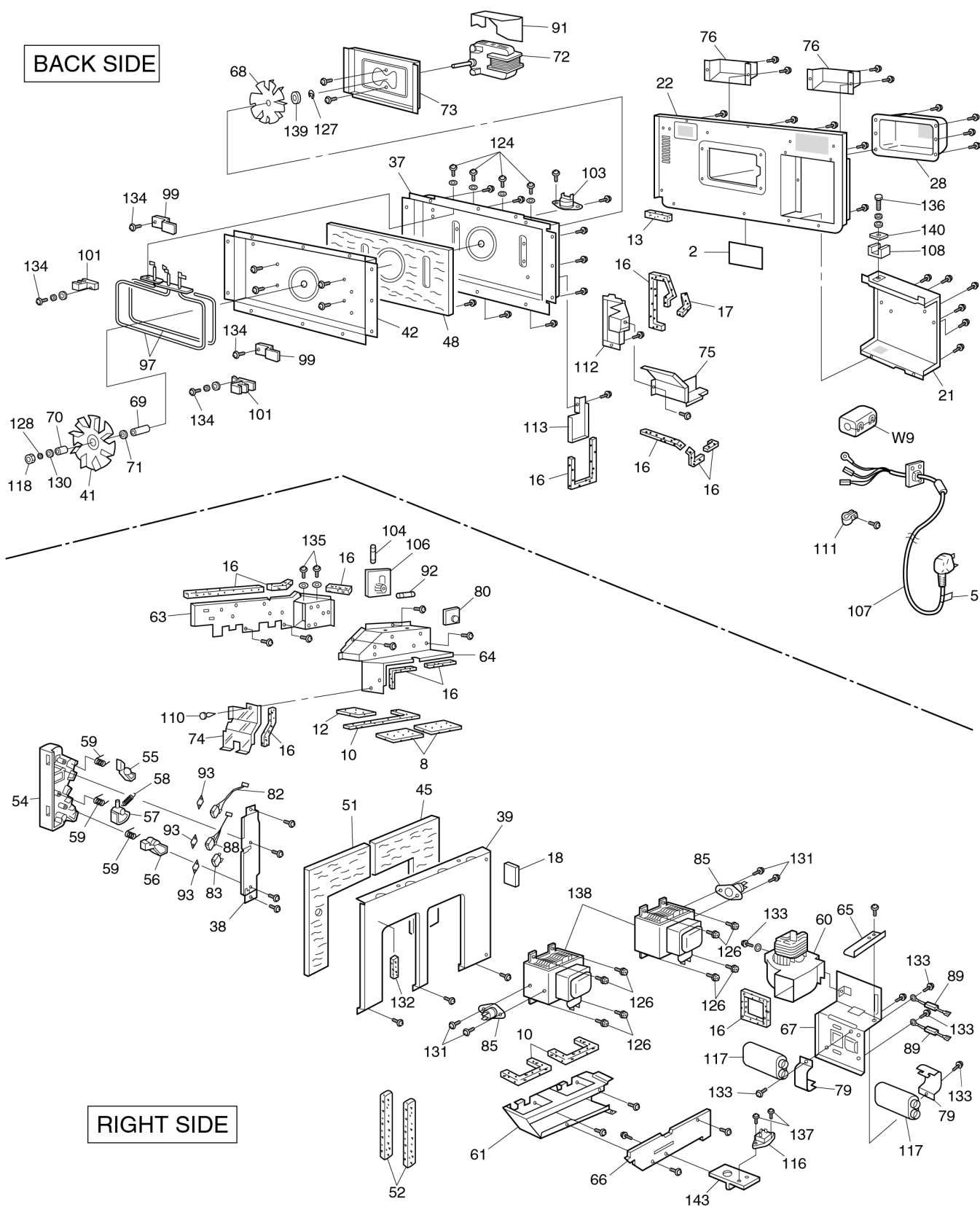
SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
No display when oven is first plugged in and door is open.	1	+12V Line voltage	Abnormal (0V)	R25,IC-25
			Normal (+12V)	→ STEP 2
	2	+3.3V Line voltage	Abnormal	IC-10
			Normal (+3.3V)	→ STEP 3
	3	IC1 Vdd voltage	Abnormal	IC-10
			Normal (+3.3V)	IC-310
No key input.	1	Membrane switch continuity	Abnormal	Membrane switch
			Normal	IC1
Microwave power relay (RY1) does not turn on. (Front side magnetron circuit)	1	IC1 pin 55 voltage (at High power operation)	Abnormal	IC1
			Normal 55...3.3V	→ STEP 2
	2	Q220 transistor	Abnormal	Q220
			Normal	IC2, Q313,RY-1
Microwave power relay (RY3) does not turn on. (Back side magnetron circuit)	1	IC1 pin 56 voltage (at High power operation)	Abnormal	IC1
			Normal 56...3.3V	→ STEP 2
	2	Q222 transistor	Abnormal	Q222
			Normal	IC2, RY3
Triac does not turn on.	1	IC1 pin 50 voltage	Abnormal	IC1
			Normal (3.3V)	→ STEP 2
	2	Shorted Q228 E-C and start heater mode operation	Turn on	Q228
			No turn on	IC230, Triac

11 EXPLODED VIEW AND PARTS LIST



(S-3C5 BPQ)

BACK SIDE



RIGHT SIDE

(S-3C5 BPQ)

12 PARTS LIST

NOTE:

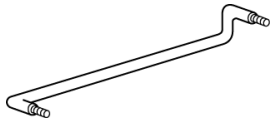
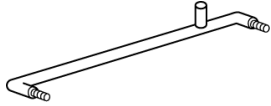
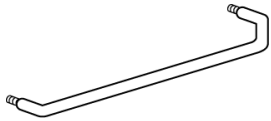
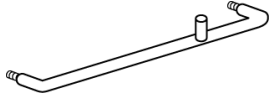
When ordering replacement(s), please use part number(s) shown in this parts list.

Do not use description the part.

Important safety notice:

Components identified by $\triangle$ mark have special characteristics important for safety.

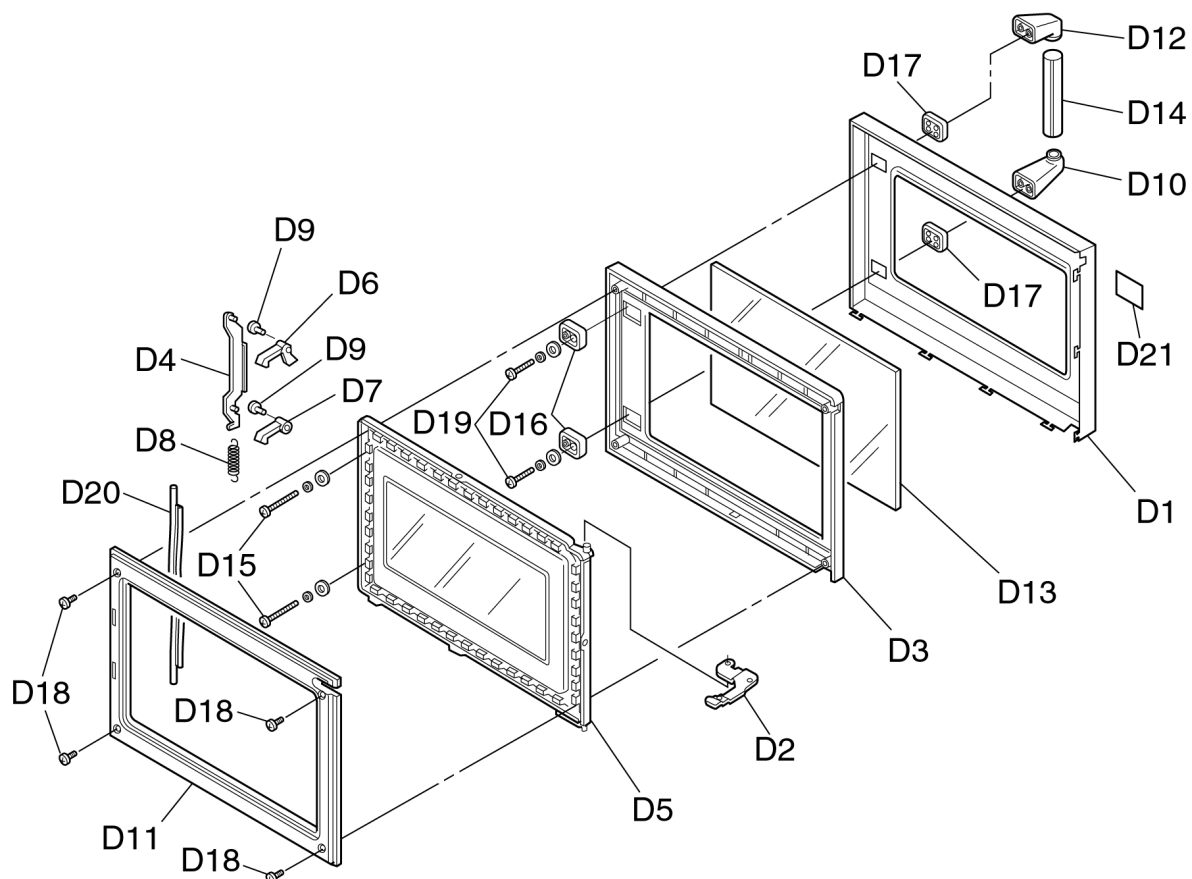
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.	Part No.	Part Name & Description	Pcs/set	Remarks
1	A100D3840AP	CABINET BODY	1	
2	A00064080BP	CAUTION LABEL	1	NE-C1275BPQ
3	ANE0072L20AP	OVEN LAMP CAUTION LABEL	1	
3	ANE0072Z70GP	OVEN LAMP CAUTION LABEL	1	
4	A010T3C50BP	SHELF	1	
5	ANE02396000BP	CORD LABEL	1	
6	A400B3840AP	FILTOR	2	
7	ANE0911000CC	CUSHION RUBBER B	2	
8	ANE0911000DF	CUSHION RUBBER B	2	
9	ANE0928000AS	CUSHION RUBBER B	1	
10	ANE000Z000AA	CUSHION RUBBER C	7	
11	ANE000Z000AD	CUSHION RUBBER C	1	
12	ANE0922000EF	CUSHION RUBBER C	1	
13	ANE0922000EH	CUSHION RUBBER C	1	
14	ANE0922000FJ	CUSHION RUBBER C	1	
15	ANE0922000JQ	CUSHION RUBBER C	1	
16	ANE000Z000AB	CUSHION RUBBER C	8	
17	ANE0924000AJ	CUSHION RUBBER C	1	
18	ANE0926000CE	CUSHION RUBBER	2	
19	ANE0927000BK	CUSHION RUBBER	1	
20	A100A-3B40	BASE	1	
21	A100L3230BP	BACK PANEL COVER	1	
22	A100Q3230BP	BACK PANEL	1	
23	A1007-3280	RUBBER FOOT A	4	
24	A1008-3280	RUBBER FOOT	4	
25	A10263030GP	OVEN LAMP COVER (U)	1	
26	ANE10288U0AP	ANTENNA MOTOR COVER	1	
27	A10473230BP	LOWER SASH	1	
28	A1183-3810	BACK PANEL	1	
29	A18073C50BP	RAIL(RIGHT) NEW	2	
29	A33013C50BPS	RAIL(RIGHT) OLD	2	
30	A18083C50BP	RAIL(LEFT) NEW	2	
30	A33023C50BPS	RAIL(LEFT) OLD	2	
31	A18593C50BP	SHELF SUPPORT	4	
32	A200A3C50BP	OVEN CAVITY	1	
33	A20194210AQ	ANTENNA STOPPER	4	
34	A202J3230BP	ANTENNA SHAFT	1	
35	A202K3230BP	ANTENNA (U)	1	
36	A202L3881BP	REFLECTION PLATE	4	
37	A203M3230BP	CIRCULATION FAN CASE	1	
38	A20853230BP	DOOR HOOK MOUNTING A	1	
39	A22363230BP	RIGHT HEATER PANEL	1	
40	A22373230BP	LEFT HEATER PANEL	1	
41	A22392020AP	CIRCULATION FAN	1	
42	A22413230BP	BACK HEATER PANEL	1	
43	A22423230BP	ADIABATIC MATERIAL A	1	
44	A22433230BP	ADIABATIC MATERIALB	1	

Ref. No.	Part No.	Part Name & Description	Pcs/set	Remarks
45	A22583230BP	ADIABATIC MATERIAL C	1	
46	A22593230BP	ADIABATIC MATERIAL D	1	
47	A22603230BP	ADIABATIC MATERIAL E	1	
48	A22613230BP	ADIABATIC MATERIAL F	1	
49	A22773230BP	LOWER HEATER PANEL	1	
50	A22783230BP	UPPER HEATER PANEL	1	
51	A23793230BP	ADIABATIC MATERIAL G	1	
52	A23853230BP	ADIABATIC MATERIAL H	2	
53	A301L3230BP	HINGE	1	
54	A30203230GP	DOOR HOOK	1	
55	A3136-3470	HOOK SPACER A	1	
56	A3137-3850	HOOK SPACER B	1	
57	A3138-3470	HOOK SPACERC	1	
58	ANE32398U0AP	LEVER SPRING A	1	
59	ANE32628U0AP	LEVER SPRING B	3	
60	A400A3230BP	FAN MOTOR	1	△ (85W)
61	A400E3230BP	AIR GUIDE A	1	
62	A400K3230BP	EXHAUST GUIDE	1	
63	A400T3230BP	AIR GUIDE D	1	
64	A402A3230BP	AIR GUIDE E	1	
65	A40213230BP	FAN CASE COVER	1	
66	A40313230BP	AIR GUIDE C	1	
67	A41573230BP	FAN BRACKET A	1	
68	A41592020AP	FAN	1	
69	A41613230BP	FAN SPACER A	1	
70	A41622020AP	FAN SPACER B	1	
71	A41632020AP	FAN SPACER C	1	
72	A41793230BP	HEATER FAN MOTOR	1	34W
73	A41806000BP	HEATER FAN MOTOR BRACKET	1	
74	A42123230BP	AIR GUIDE I	1	
75	A42563230BP	AIR GUIDE J	1	
76	A441Y3230BP	EXHAUST COVER	2	
77	XTWANE3+10EX	SCREW	4	3×10 THERMISTOR
78	ANE6030Q50GN	INCANDESCENT LAMP	1	
79	A60373230BP	CAPACITOR BRACKET	2	
80	A605S3030GP	PC BOARD H (U)	1	
81	A605Y3880BP	OVEN TEMP SENSOR	1	
82	A610A3230BP	SAFETY SWITCH A	1	△ (V-16G-3E6)
83	A61413230BP	LATCH SWITCH A	1	△ (V-15G-3C26)
84	ANE61448V0AP	ANTENNA MOTOR	1	△ (3W)
85	A61455850GP	THERMAL CUTOUT	2	△ FOR MAGNETRON
86	A61523230BP	SOCKET	1	△
87	A61983230BP	MOTOR BRACKET	1	
88	A620X3230BP	CHANGE-OVER SWITCH	1	△ (V-15G-1E5-M)
89	A6202-3X2	DIODE.SI, 0.35A	2	
90	J621B3C50BP	H.V.TRANSFORMER	2	△ 1.4kVA NE-C1275BPQ
90	J621B3C60EU	H.V.TRANSFORMER	2	△ 1.4kVA NE-C1475EUG
91	A62193230BP	INSULATION COVER	1	
92	ANE6230P10GN	FUSE	1	△ 16A
93	A62383230GP	SPACER	3	
94	A630G3C50BP	HEATER A (U)	4	△ NE-C1275BPQ
94	A630G3C60EU	HEATER A (U)	4	△ NE-C1475EUG
96	A63023230BP	INSULATION COVER B	2	for HVT
97	A631U3C50BP	HEATER E	2	
98	A6408-2050	WASHER	1	
99	A64173230BP	HEATER SUPPORT A	2	
100	A6437-1600	GLASS PLATE	1	
101	A64643230BP	HEATER SUPPORT B	2	
102	A65533230BP	HEATER BRACKET	2	
103	A6145-1E30	THERMAL CUTOUT B	1	△ CIRCULATION FAN CASE
104	A65953170GP	FUSE B	1	△ 1.25A
105	A05423230BP	CAUTION LABEL	1	
106	A692Y3C60EU	NOISE FILTER	1	△
107	A901A3230BP	AC CORD W/PLDG	1	△ NE-C1275 BPQ
107	A901A3230GP	AC CORD W/PLDG		△ NE-C1475 EUG
108	XWNAME65GV	SPACER	1	NE-C1457 EUG
109	A31454740AP	DOOR SCREEN A		CABINET
110	ANE9080-730	CLIP	1	(YELLOW)
111	ANE9107A20GN	CORD HOLDER	1	
112	A97213230BP	BRACKET A	1	
113	A97223230BP	BRACKET B	1	
114	A97233230BP	BRACKET C	1	
115	A98243230BP	GLASS PLATE BRACKET	1	
116	AESMTG35C60	TRIAC	1	600V 30A

Ref. No.	Part No.	Part Name & Description	Pcs/set	Remarks
117	MS212854KW91	H.V.CAPACITOR	2	△ NE-C1275 BPQ 0.85MF
117	MS212105KW91	H.V.CAPACITOR	2	△ NE-C1475 EUG 1.0MF
118	XNG4EVSL	NUT, COUNTER CLOCKWISE	1	HEATER FAN MOTOR M4 SUS
119	XNW5EFN	NUT	5	SHELF SUPPORT SPACER
120	XST4+6VS	SCREW	1	(4×6) LAMP GLASS PLATE
121	XTC4+10BC	SCREW	6	(4×10) CABINET BODY
122	XTC4+10FC	SCREW	1	(4×10) OVEN LAMP COVER
123	XTEA5+E10FJ	SCREW	4	(5×10) H.V. TRANSFORMER
124	XTTANE4+B10S	SCREW	4	(4×10) CIRCULATION FAN CASE
125	XTT4+12BVKJ	SCREW (BLACK)	6	(4×12) BASE
126	XTWANE4+10RUJ	SCREW	8	(4×10) MAGNETRON
127	XUEANE32KP	RING	1	HEATER FAN MOTOR
128	XWA4BV	WASHER	1	HEATER FAN MOTOR
129	XWC4BPN	WASHER	1	OVEN LAMP COVER
130	XWG4BV	WASHER	1	HEATER FAN MOTOR
131	XTEANE3+6BJ	SCREW	4	3×6 THERMAL CUTOFF
132	A2387-3810	ADIABATIC MATERIAL J	1	
133	XYCA4+EE8J	SCREW	6	(4×8) CAPACITOR BRACKET FAN MOTOR DIODE WASHER
134	XYC4+F16XN	SCREW	4	(4×16) HEATER SUPPORT
135	XYD4+EE12FJ	SCREW	2	(4×12) EARTH
136	XYE6+F20FJ	SCREW	1	(6×20) EARTH
137	XYN4+J10FN	SCREW	2	(4×10) TRIAC
138	2M167B-M14J1	MAGNETRON	2	△
139	A41636000BP	FAN SPACER C	1	
140	A66623170GP	EARTH SPACER	1	NE-C1475 EUG
141	XSWA5+10UJ	SCREW	4	(5×10) HINGE
142	A20343840AP	OVEN BRACKET	1	
143	A62443230BP	HEAT SINK	1	
144	ANE092E000BK	CUSHION RUBBER	1	
145	ANE90828U0AP	CLIP	2	
146	A40923030GP	FILTER HANDLE	2	
147	ANE42408U0AP	FILTER HANDLE B	2	

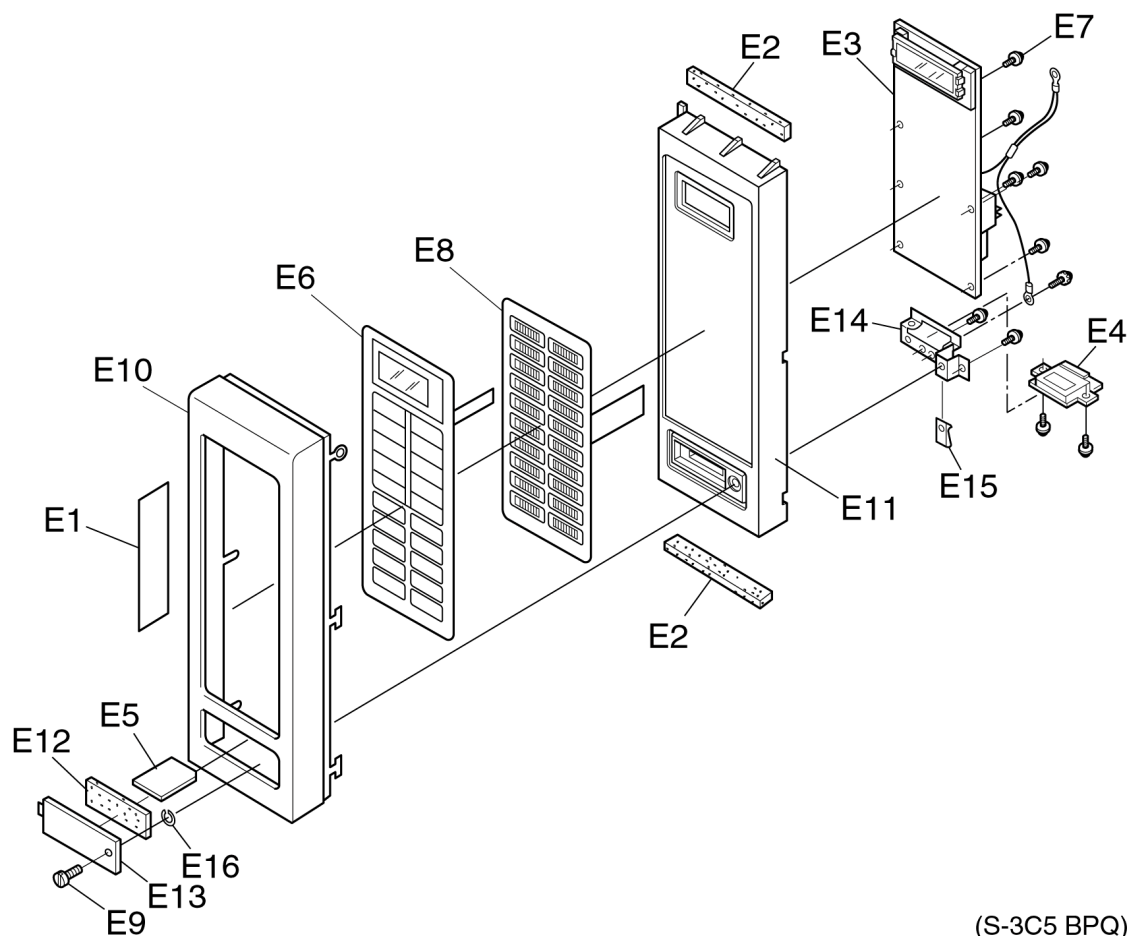
13 DOOR ASSEMBLY



(S-3C5 BPQ)

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
D1	A300A3230BP	DOOR B	1	
D2	A300B3230BP	UPPER HINGE	1	
D3	A30013C50BP	DOOR A (U)	1	
D4	A301H-3850	DOOR KEY LEVER B	1	
D5	A302K3230BP	DOOR E (U)	1	W/DOOR SCREEN A
D6	A30183230BP	DOOR KEY A	1	
D7	A30193230BP	DOOR KEY B	1	
D8	ANE30218U0AP	DOOR KEY SPRING	1	
D9	ANE30562Q0AP	HANDLE PIN	2	
D10	ANE3070P60AP	HANDLE PEICE A	1	
D11	A30853C50BP	DOOR C	1	
D12	ANE3134P60AP	HANDLE PIECE B	1	
D13	A31463230BP	DOOR SCREEN B (U)	1	
D14	A31473230BP	HANDLE PIECE C	1	
D15	XYN4+J30FN	SCREW	2	4×30
D16	A32133230BP	DOOR HANDLE SPACER	2	
D17	A32163230BP	HANDLE SPACER	2	
D18	XTBANE4+12FKJ	SCREW	4	4×12 BLACK
D19	XYN4+F25FN	SCREW	2	4×25
D20	A33343C50BP	DOOR GASKET RUBBER	1	
D21	A31863C50BP	DOOR PANEL	1	NE-C1275 BPQ
D21	A31863C60EU	DOOR PANEL	1	NE-C1475 EUG

14 ESCUTCHEON BASE ASSEMBLY

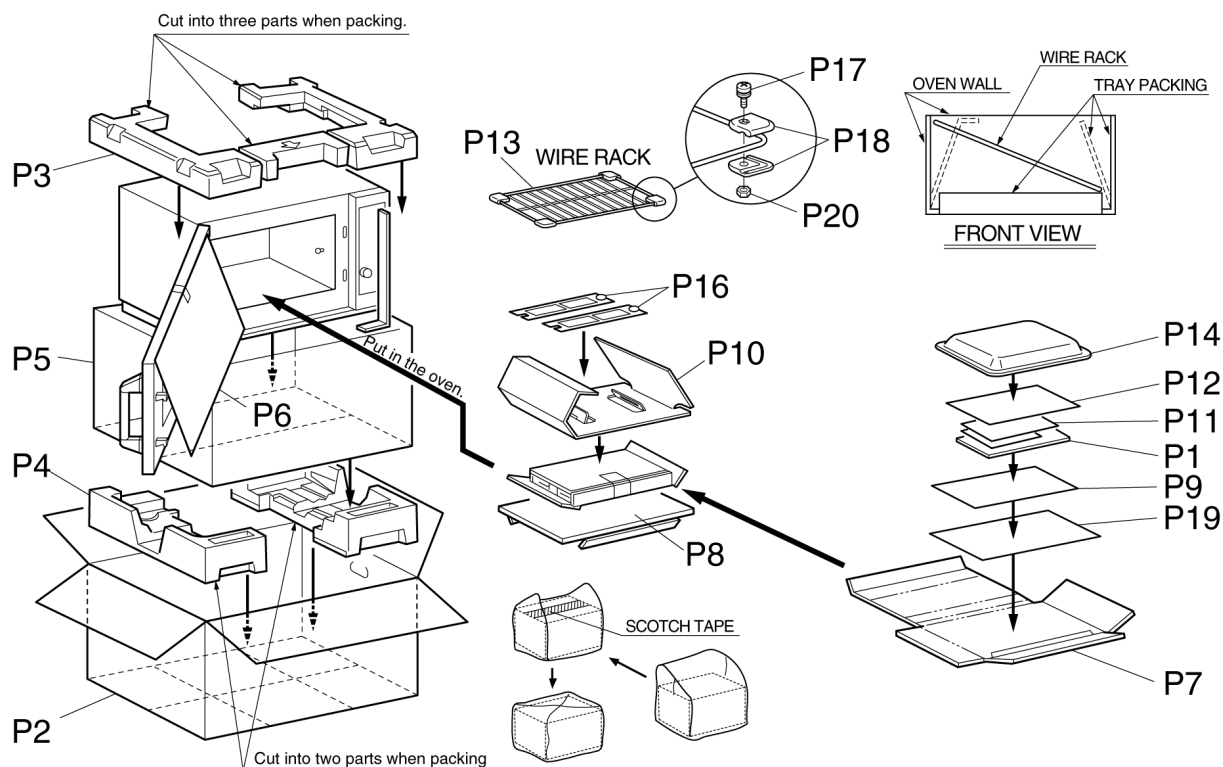


(S-3C5 BPQ)

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
E1	A01573C50BP	NAME LABEL	1	NE-C1275BPQ
E1	A01573C60EU	NAME LABEL	1	NE-C1475EUG
E2	ANE0962000AH	CUSHION RUBBER D	2	
E3	A603L3C50BP	D.P.CIRCUIT (U)	1	⚠ NE-1275 BPQ RTL(W/COMPONENT)
E3	A603L3C50EU	D.P.CIRCUIT (U)	1	⚠ NE-1475 EUG RTL(W/COMPONENT)
E4	A605Q3C50BP	PC BOARD F (U)	1	SD CARD SLOT
E5	RP-SD016BCS0	SD MEMORY CARD	1	W/MEMORY WROTE
E6	A83373C50BP	ESCUTCHEON SHEET	1	
E7	XTW3+10BJ	SCREW	8	3×8
E8	A64793C50BP	MEMBRANE SWITCH	1	⚠
E9	A4898-3B40	SCREW	1	SD SLOT COVER
E10	A800N-3B40	ESCUTCHEON A	1	NOTE 1
E11	A80343C50BP	ESCUTCHEON BASE	1	
E12	ANE0962000DE	CUSHION RUBBER D	1	
E13	A80023C50BP	ESCUTCHEON B	1	SD SLOT COVER
E14	A8032-3B40	SD BRACKET	1	
E15	A8265-3B40	PUSH LOCK	1	
E16	A6408-3280	WASHER	1	

NOTE 1: Please order name label together.

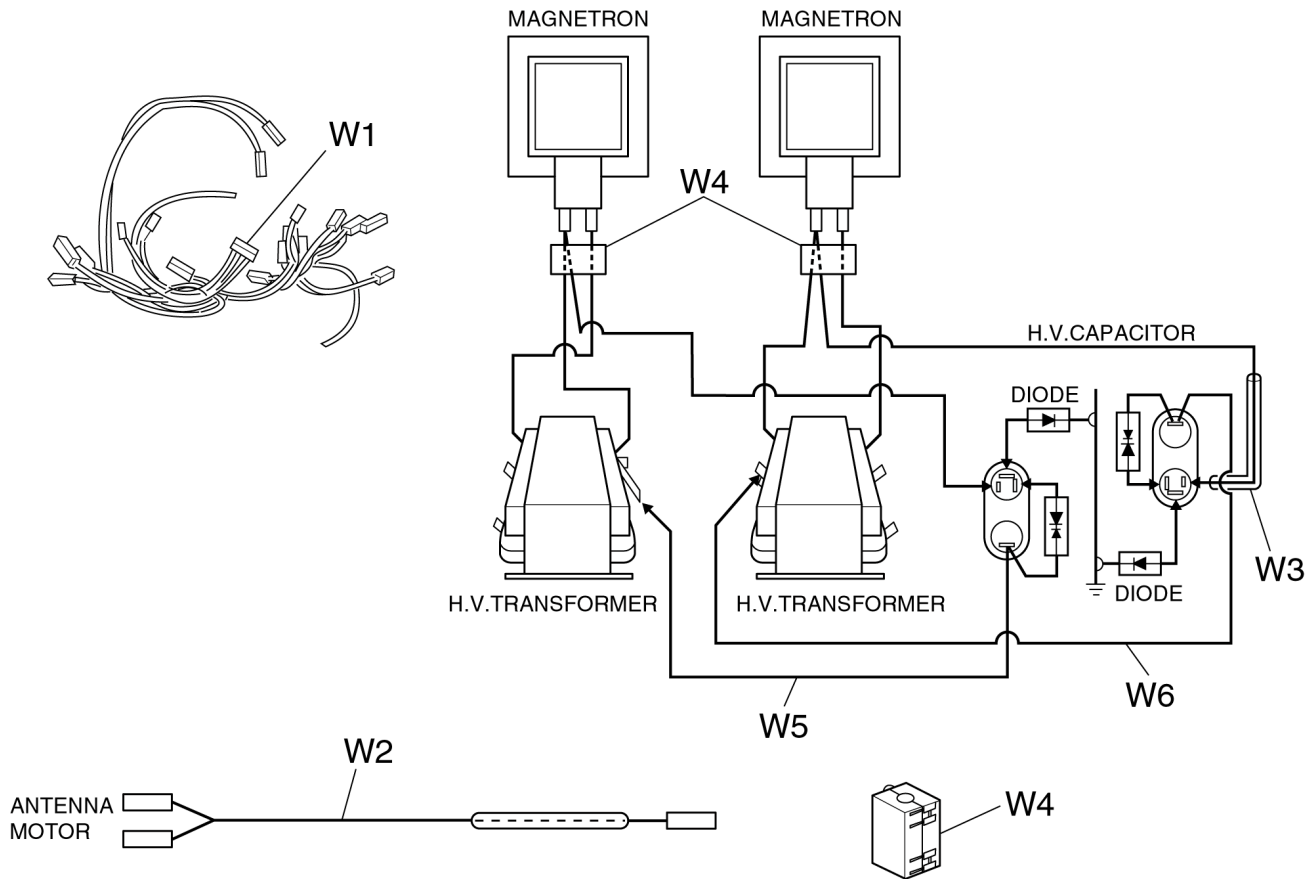
15 PACKING AND ACCESSORIES



(S-3C5 BPQ)

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
P1	A00033C50BP	INSTRUCTION BOOK	1	NE-C1275BPQ
P1	A00033C60EU	INSTRUCTION BOOK	1	NE-C1475EUG
P2	A01023C50BP	PACKING CASE, PAPER	1	NE-C1275BPQ
P2	A01023C60EU	PACKING CASE, PAPER	1	NE-C1475EUG
P3	A01043840AP	UPPER FILLER	1	
P4	A01053840AP	LOWER FILLER	1	
P5	A01065130AP	VINYL COVER	1	
P6	ANE0107580AP	DOOR SHEET	1	
P7	A01083C50BP	TRAY PACKING A	1	
P8	A01173230BP	TRAY PACKING B	1	
P9	A01453230BP	DOOR SHEET B	1	
P10	A01173C50BP	TRAY PACKING B	1	
P11	A04243C60EU	INSTRUCTION BOOK B	1	NE-C1475EUG
P12	A04203C50BP	OPERATING GUIDE	1	NE-C1275BPQ
P12	A04203C60EU	OPERATING GUIDE	1	NE-C1475EUG
P13	A06023C50BPS	WIRE RACK SHELF (U)	1	
P14	A06033230GP	CERAMIC INSULATING TRAY	1	△
P15	A02843560BP	NUMBER LABEL	1	
P16	A400B3840AP	FILTER	2	
P17	XYN4+C10V	SCREW	4	FOR WIRE RACK 4×10 STAINLESS
P18	A06433C50BP	WIRE RACK FOOT	8	
P19	ANE01072Q10AP	DOOR SHEET	1	
P20	XNG4V	NUT	4	M4 STAINLESS

16 WIRING MATERIAL



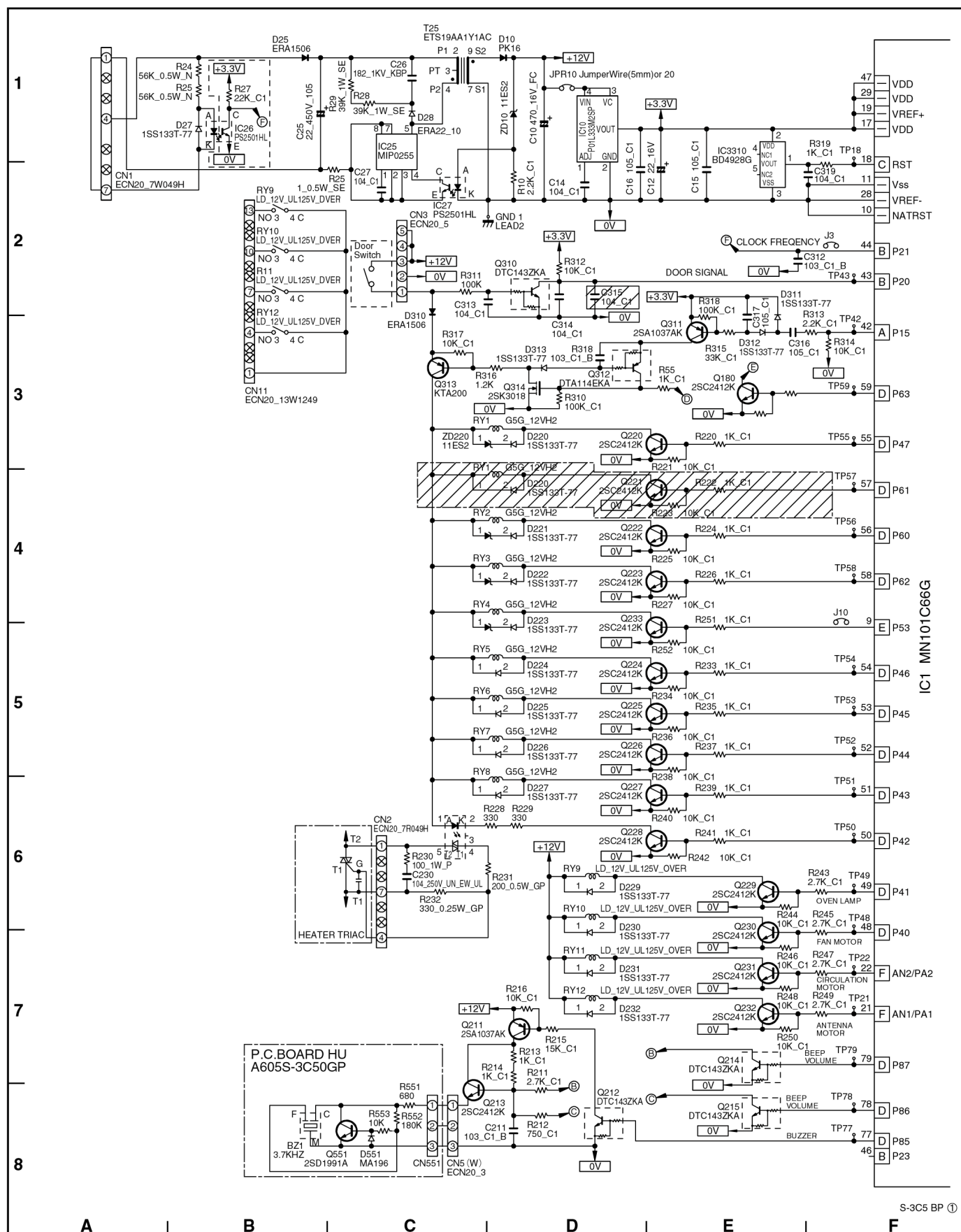
(S-3C5 BPQ)

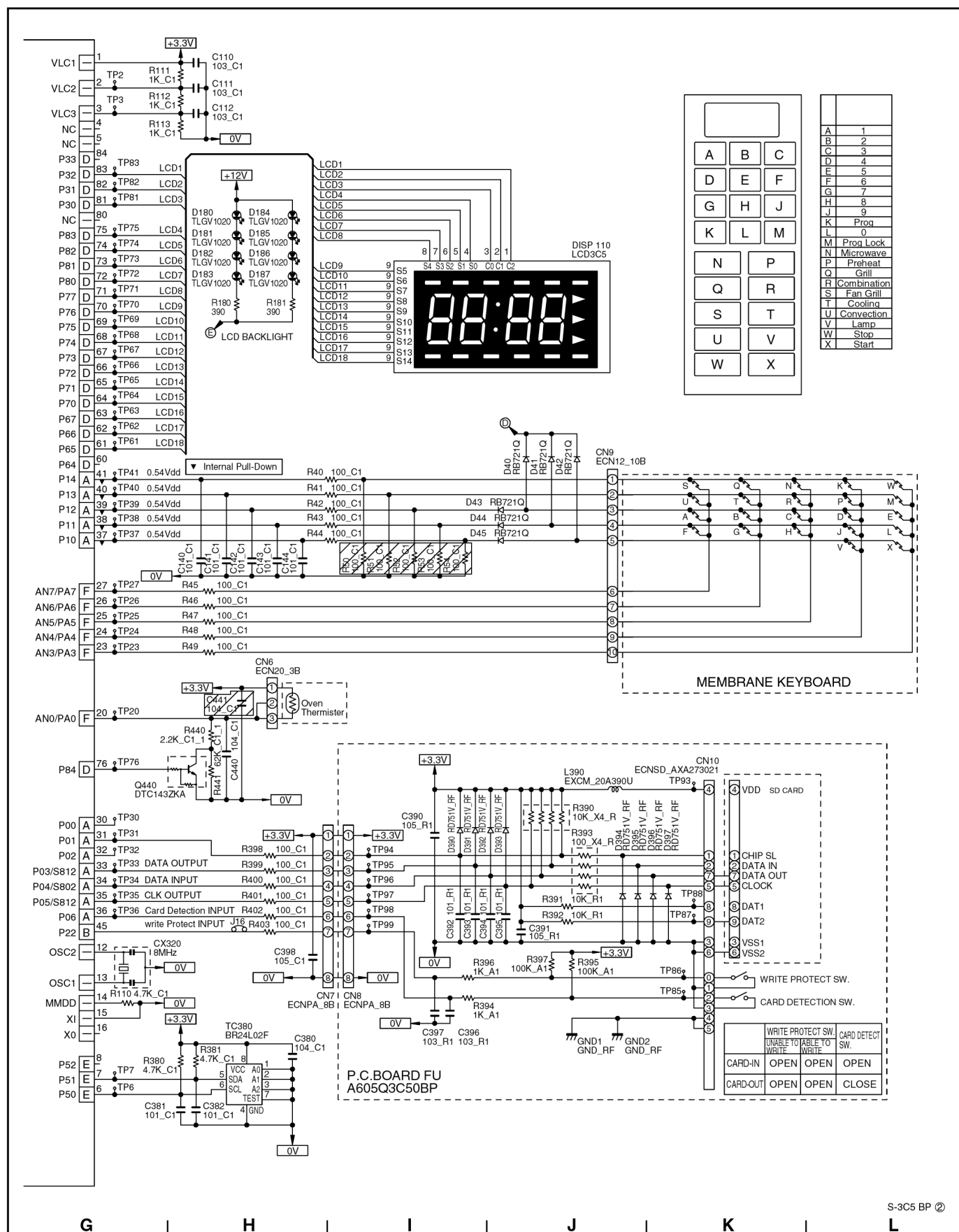
Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
W1	A030A3C50BP	LEAD WIRE HARNESS	1	
W2	A03603C50BP	LEAD WIRE	1	
W3	A61393230BP	INSULATION TUBE	1	
W4	A50966520UP	FERRITE CORE	2	
W5	A606V3230BP	PROTECTOR DIODE A	1	
W6	A606W3230BP	PROTECTOR DIODE B	1	

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
REF.NO.80 P.C.BOARD H BUZZER PCB A605S3030GP				
BZ	EFBRL37C20	BUZZER	1	3.7KHZ
CN551	K1KA03B00171	CONNECTOR	1	3 PIN RED AEEMMB00703R
D551	MA2C19600E	DIODE.SI, 0.1A	1	MA196-(TA5)
Q551	2SD06390Q	TRANSISTOR, SI, 0.6W	1	2SD639-PQRS
R551	ERDS2TJ681T	CARBON FILM RESISTOR	1	680Ω, 1/4W 5%
R552	ERDS2TJ184T	CARBON FILM RESISTOR	1	180KΩ, 1/4W 5%
R553	ERDS2TJ103T	CARBON FILM RESISTOR	1	10KΩ, 1/4W 5%
REF.NO.106 NOISE FILTER (U) A692Y3C60EU				
C1	ECQU2A105MLA	POLYESTER CAPACITOR	1	1.0MF 250V
C2, 3	ECQU2A472MLA	POLYESTER CAPACITOR	2	△ 0.0047MF 250V
C4	ECQU2A684MLA	POLYESTER CAPACITOR	1	0.68MF 250V
CN1	K1KA03A00299	CONNECTOR	1	3 PIN AEEMMD00703W
F2	A62316000GP	FUSE HOLDER	2	
F1	A62316010BP	FUSE HOLDER	2	
L1	G0B901N00002	FILTOR COIL	1	A621A-1810
R1	ERF15ZXJ240	RESISTOR	1	24Ω, 15W, 5%
ZNR1	ERZV10D511CS	VARISTOR	1	
ZNR2.3	ERZV10D112C1	VARISTOR	2	
R2	ERDS1FJ244P	RESISTOR	1	240KΩ, 1/2W, 5%

17 DIGITAL PROGRAMMER CIRCUIT

SCHEMATIC DIAGRAM





18 DIGITAL PROGRAMMER CIRCUIT

PARTS LIST

Ref. No.	Part No.	Description	Pcs/Set	Remarks
DISP110	A66173C50BP	Display holder	1	
D27, D220, D222, D223, D224, D225, D226, D227, D229, D230, D231, D232, D233, D311, D312, D313	B0AACK000004	Diode, Si 0.1A	16	AEES133T-77
ZD10, ZD220, ZD221, ZD222, ZD223	B0BA01000049	Zenner Diode	5	MTZJ11BT77
D28	B0EAEV000001	Diode Si, 0.5A	1	ERA2210
D26, D310	B0EAKR000018	Diode Si, 1A	2	ERA1506
D40, D41, D42, D43, D44, D45	B0JAAE000001	Diode, Si, 0.1A	6	RB721Q
R24, R26	ERDS1FJ563T	Carbon Film Resistor	2	56K, 1/2W, 5%
R311	ERDS2TJ104T	Carbon Film Resistor	1	100K Ω , 1/4W, 5%
R316	ERDS2TJ122T	Carbon Film Resistor	1	1.2K Ω , 1/4W, 5%
R228, R229	ERDS2TJ331T	Carbon Film Resistor	2	330 Ω , 1/4W, 5%
R180, R181	ERDS2TJ471T	Carbon Film Resistor	2	470 Ω , 1/4W, 5%
Q313	BIACGF000004	Transistor, Si, 0.6W	1	KTA200-Y-AT/P
C12	ECEA1CKA220B	Electric Capacitor, Al	1	22MF/16V
C26	ECKN3A222KBP	Ceramic Capacitor	1	0.0022MF/1KV
C10	EEUFC1C471B	Electric Capacitor, Al	1	470MF/16V/FC
CX320	EF0EC8004T4	Resonator	1	8000A
R28, R29	ERG1SJ393E	Metal Oxide Resistor	2	39K Ω , 1W, 5%
R25	ERX12SJ1R0E	Metal Oxide Resistor	1	1 Ω , 1/2W, 5%
CN6	K1KA03A00387	Connector	1	Red 3 pin, AEEMMF00703R
CN5	K1KA03AA0086	Connector	1	White 3 pin, B03B-XASS-1-T(LF) (SN)
CN3	K1KA05A00237	Connector	1	White 5 pin, AEEMMF01F05W
Q180, Q213, Q220, Q222, Q223, Q224, Q225, Q226, Q227, Q228, Q229, Q230, Q231, Q232, Q233	BIABCF000010	Chip Transistor, Si, 0.2W	15	2SC2412KT146
Q211, Q311	BIADCF000001	Chip Transistor, Si, 0.2W	2	2SA1037AKT
Q314	B1CBGD000001	Chip Transistor, Si, 0.2W	1	2SK3018T106
Q214, Q215, Q212, Q310, Q440	B1GBCFGN0001	Chip Transistor, Si, 0.3W	5	AESC43ZKE
Q312	B1GDCFJJ0002	Chip Transistor, Si, 0.3W	1	AESA14EKE
D180, D181, D182, D183, D184, D185, D186, D187	B3ABB0000239	Chip LED	8	TLGV1022 (T14MAT5, F)
IC10	C0CBCBD00043	IC	1	PQ1L333M2SPQ
IC310	C0EBE0000447	IC	1	BD4928G, AEICBD4928G
IC380	C3EBDC000063	IC	1	BR24L02F-WE2
R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R398, R399, R400, R401, R402, R403	D0GB101JA002	Chip Resistor	16	100 Ω , 1/16W, 5%, AERJ3GSYJ101
R55, R111, R112, R113, R213, R214, R220, R224, R226, R251, R319	D0GB102JA002	Chip Resistor	11	1K, 1/16W, 5%, AERJ3GSYJ102
R183, R216, R221, R225, R227, R234, R236, R238, R240, R242, R244, R246, R248, R250, R252, R312, R314, R317	D0GB103JA002	Chip Resistor	18	10K, 1/16W, 5%, AERJ3GSYJ103
R310, R318	D0GB104JA002	Chip Resistor	2	100K Ω , 1/16W, 5%, AERJ3GSYJ104
R215	D0GB153JA002	Chip Resistor	1	15K, 1/16W, 5%, AERJ3GSYJ153

R10, R182, R313, R381	D0GB222JA002	Chip Resistor	4	2.2K, 1/16W, 5%, AERJ3GSYJ222
R27	D0GB223JA002	Chip Resistor	1	22K, 1/16, 5%, AERJ3GSYJ223
R211, R233, R235, R237, R239, R241, R243, R245, R247, R249	D0GB272JA002	Chip Resistor	10	2.7K Ω , 1/16W5%, AERJ3GSYJ272
R315	D0GB333JA002	Chip Resistor	1	33K, 1/16W, 5%, AERJ3GSYJ333
R110, R380	D0GB472JA002	Chip Resistor	2	4.7K, 1/16W, 5%, AERJ3GSYJ472
R212	D0GB751JA002	Chip Resistor	1	750 Ω , 1/16W, 5%, AERJ3GSYJ751
R440	D1BB2201A001	Chip Resistor	1	2.2K Ω , 1/16W, 1%, AERJ3EKF2201
R441	D1BB8202A001	Chip Resistor	1	82K Ω , 1/16W1%, AERJ3EKF8202
C15, C16, C316, C317, C398	F1H1A105A019	Chip Capacitor	5	1MF/10V, AECU1F105Z10
C14, C27, C313, C314, C319, C380, C440	F1H1E104A030	Chip Capacitor	7	0.1MF/25V, AECU1F104Z25
C40, C41, C42, C43, C44, C381, C382	F1H1H1010005	Chip Capacitor	7	0.0001MF/50V, AECU1C101J50
C110, C111, C112, C211, C312, C318	F1H1H103A220	Chip Capacitor	6	0.01MF/50V, AECU1F103Z50
IC1	MN101C66GDB1	LSI	1	MEC/MN101C66G
DISP110	A67523C50BP	Display sheet	1	
D10	B0JAMK000017	Diode, Si, 1.5A	1	AESSRK19
IC26, IC27	B3PAA0000387	IC	2	AEICP25011HL
IC230	B3PAC0000128	Photo Coupler IC	1	TLP665J(D4, S)
C25	ECA2WHG220E	Electric Capacitor, Al	1	22MF/450V/105C
C230	ECQU2A104MNA	MP Capacitor	1	0.1MF, 250V
R230	ERG1SJ101P	Metal Oxide Resistor	1	100 Ω , 1W 5%
R231	ERQ12AJ201P	Fuse Resistor	1	200 Ω , 1/2W, 5%
R232	ERQ14AJ331P	Fuse Resistor	1	330 Ω , 1/4W, 5%
T25	ETS19AA2B1AC	Switching Transasformer	1	MACO
CN1	K1KA03AA0134	Connector	1	White 7(3) pin, B3(7.5)B-XASK-1-A(LF) (SN)
CN2	K1KA03AA0135	Connector	1	Red 7(3) pin, B3(7.5)B-XARK-1-A(LF) (SN)
CN11	K1KA05AA0134	Connector	1	White 13(5) pin, B5(7.5)B-XASK-1-A(LF) (SN)
CN7	K1KA08AA0201	Connector	1	White 8 pin, B08B-PASK-1(LF) (SN)
CN9	K1MN10AA0040	Connector	1	10FDZ-BT-M(S) (LF) (SN)
RY9, RY10, RY11, RY12	K6B1AGA00119	Relay	4	ALD112A04J
RY1, RY2, RY3, RY4	K6B1AGA00140	Relay	4	G5G-1A
RY5, RY6, RY7, RY8	K6B1AGA00212	Relay	4	ALE73B12
DISP110	L5AAAFD00029	LCD Display	1	CG2020-TTNC
IC25	MIP0255SPSCF	IC	1	MIP0255SPSCF