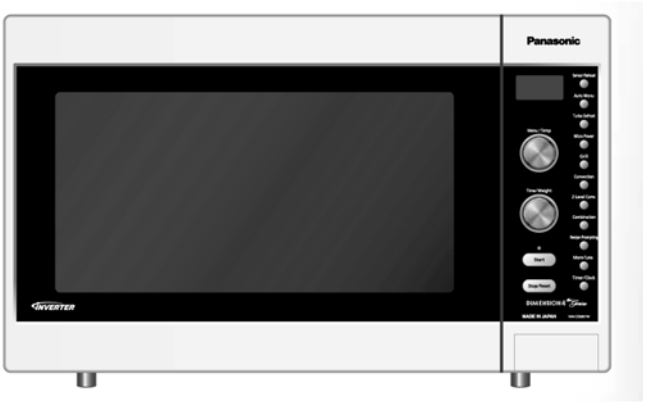
ORDER NO. MOD0710292C3

Service Manual

Microwave Oven

Model No. NN-CD987W

Model No. NN-CD997S



⚠ WARNING

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

IMPORTANT SAFETY NOTICE

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

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Panasonic

1 Warning

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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.

YPQ ····· For Singapore
KPQ ····· For Kuwait, Doha Qatar, Oman, Bahrain, Pakistan
MPQ ····· For Malaysia
QPQ ····· For Australia
HPE ····· For Hong Kong
KTE ····· For U.A.E
PTE ····· For Iran
YTE ····· For other country
JPG ····· For New Zealand
STM ····· For Saudi Arabia

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

INVERTER WARNING

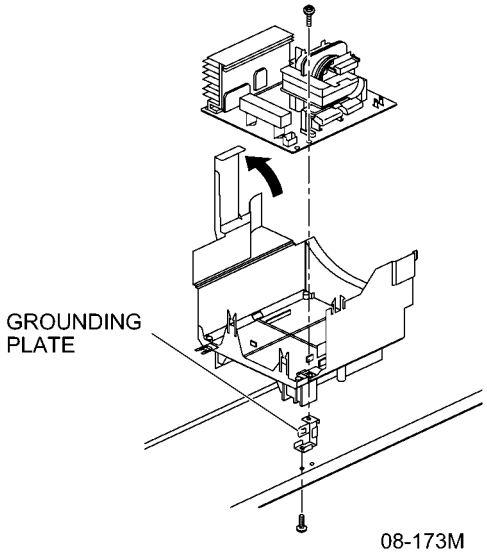
NEW H.V.

DANGER HIGH VOLTAGE

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

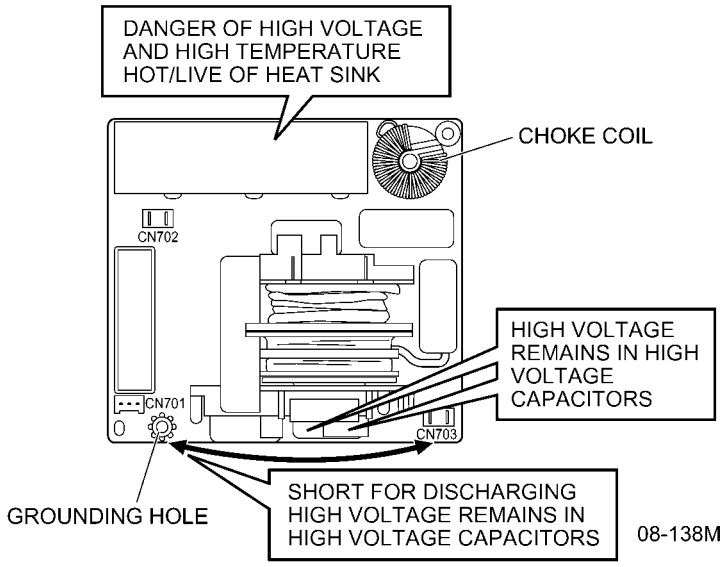
IT HAS: 1. Very high voltage and high current circuit.
It functions the same as the high voltage transformer and high voltage capacitor in ordinary microwave ovens.
2. Aluminum heat sink is very hot in high voltages and heat energy.
3. Very high voltage may remain in circuitry even when oven is off. High voltages 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 may remain in circuit.
∗2. Do not touch aluminum heat sink because it is very hot in high voltage and also very hot in high heat energy.
∗3. Do not try to adjust or tamper preset volume on the Inverter board because it is very dangerous to adjust without proper test equipment.
∗4. Do not test oven while Inverter grounding strip or screws are loose. It is very dangerous to operate the H.V.Inverter Circuit (U) with loose mounting screws or if imporperly grounded.



08-173M

INVERTER POWER SUPPLY DIAGRAM



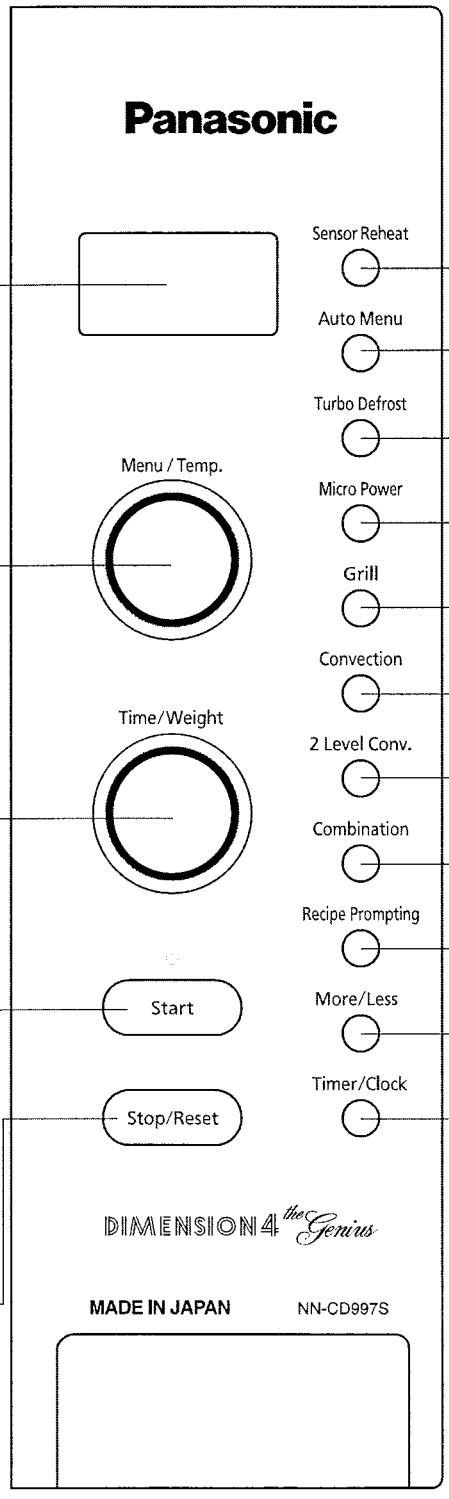
08-138M

2 Specifications

Power Source:		240 V AC Single Phase, 50 Hz ····· For QPQ, MPQ models 230 - 240 V AC Single Phase, 50 Hz ···· For YPQ model 230 V AC Single Phase, 50 Hz ····· For JPG model 220 V AC Single Phase, 50 Hz ····· For HPE, PTE, KPQ, YTE, ZPE models 220 V AC Single Phase, 50/60 Hz ·····For STM model
Power Requirement:	Microwave	1,220 W / 1,250 W
	Heater	1,800 W ··· Convection 1,300 W ··· Grill
Output:	Microwave	1,000 W: Full Power (IEC 705)
	Heater	1,800 W ··· Convection 1,250 W ··· Grill 2,800 W ··· Convection (PTE only)
Microwave Frequency:		2,450 MHz
Timer:		30 min. / 90 min. / 9 hours
Outside Dimensions:		376 mm (H) X 626 mm (W) X 501 mm (D)
Oven Cavity Dimensions:		242 mm (H) X 412 mm (W) X 426 mm (D)
Weight:		Approx. 22 kg
Specifications subject to change without notice.		

3 Location of Controls and Components

3.1. CONTROL PANEL



Display Window

Sensor Reheat Pad

Auto Menu Pad

Turbo Defrost Pad

Micro (Microwave) Power Pad

Grill Pad

Convection Pad

2 Level Conv. (convection) Pad

Combination Pad

Recipe Prompting Pad

More / Less Pad

Timer/Clock Pad

Menu / Temp. (Temperature) Select Dial

Time / Weight Dial

Start Pad
One tap allows oven to begin functioning. If door is opened or STOP/RESET pad is tapped once during oven operation, START pad must again be pressed to restart oven.

Stop/Reset Pad
Before cooking:
One tap clears your instructions.
During cooking:
One tap temporarily stops the cooking process. Another tap cancels all your instructions and time of day appears in display window.

• QPQ model

4 Test Mode

4.1. COMPONENT TEST PROCEDURE

DANGER 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 capacitor.

4.1.1. Primary Latch Switch, Secondary (Secondary Latch Switch and Power Relay 1) Interlocks.

1. Unplug the lead connectors to Power Relay 1 and verify continuity of the power relay 1 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.

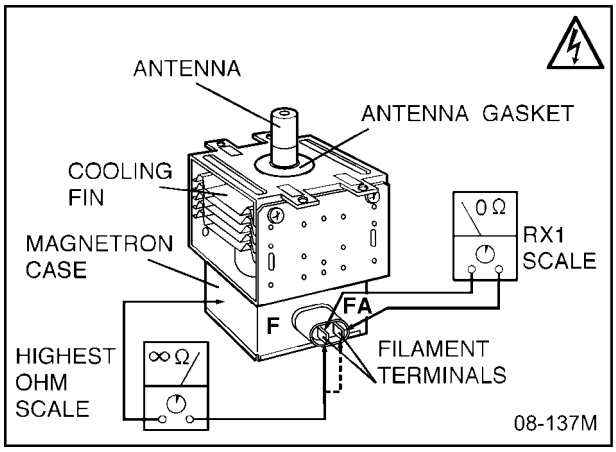
	Door Opened	Door Closed
Primary Latch Switch	∞ Ω (open)	0 Ω (close)
Secondary Latch Switch	∞ Ω (open)	0 Ω (close)
Power Relay 1	∞ Ω (open)	∞ Ω (open)

4.1.2. Short Switch / Monitor Circuit

1. Unplug lead wires from H. V. Inverter primary terminals.
2. Connect test probes of ohm meter to the disconnected leads which were connected to H. V. Inverter.
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



4.1.3. Magnetron (NEW H.V.)

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.

NOTE

Magnetron used for this model is unique type for inverter power supply system. Make sure to use the one as listed in the part list.

4.1.4. Inverter Power Supply (U) (NEW H.V.)

DANGER HIGH VOLTAGE

Test 1

1. Place 1 liter of water load into oven cavity.
2. Unplug 2 pin H. V. lead wire connector magnetron tube.
3. Program oven at High power for 1 minute and
   a. After approx. 38 seconds, oven stops and shows "H98".
   b. During oven operation, input current is approx 1.0A . If input current is OK, please proceed test 2.

	INPUT AMPARE	SYMPTOM
Unplug CN703	0.5 to 1A	Oven stops in 38 seconds after started.

Test 2

Continued from Test 1

1. Unplug 3 pin connector, CN701 CN703 remaisn unplug.
2. Set oven at High power for 1 minute and start.
   a. After approx. 3 seconds, oven stops.
   b. During oven operation, input current should be less than 0.4A.

	INPUT AMPARE	SYMPTOM
Unplug CN701	less than 0.4A	Oven stops in 3 seconds after started.

If both 1 and 2 are OK, the Inverter Power Supply (U) can be determined OK.

4.1.5. Steam Sensor and Digital Programmer Circuit

In order to determine if the steam sensor function of the digital programmer circuit is in working order or not, do the following test.

1. Place a water load (150 cc) in the oven.
2. Tap Sensor Reheat pad.
3. Tap Start Pad.
4. Steam Sensor detects steam about 1 to 4 minutes after the Start Pad is tapped.
5. T1 time cooking automatically switches to remaining time cooking (T2).
6. The remaining cooking time (T2) appears in display window. If the following cooking time appears, Steam Sensor function is normal.

T1 TIME	T2 TIME (Remaining cooking time)
1 Min. ~ 4 Min.	12 Sec. ~ 48 Sec.

4.1.6. Oven temp sensor thermistor

This sensor monitors the heat produced by the heater circuit and maintains the oven temperature the user had selected. The reading across the oven sensor thermistor should be sensor within 100K ohm to 300K ohm when reading in an area with the 10℃ to 30℃ room temperature range.
If the resistance reading is out of the range stated here, the sensor is detective and must be replaced.

NOTE 1: When measuring resistance disconnect the 3-pin connector (CN6) from the DPC otherwise a false reading may be indicated.

NOTE 2: If checking an oven sensor thermistor just after he 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 10℃ to 30℃ range.

4.2. MEASUREMENTS AND ADJUSTMENTS

4.2.1. 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 table.

   NOTE: No specific adjustment during installation of Primary latch switch, Secondary latch switch and short switch to the door hook is necessary.

2. When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of arrow in table 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 components test procedures.

4.2.2. 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.

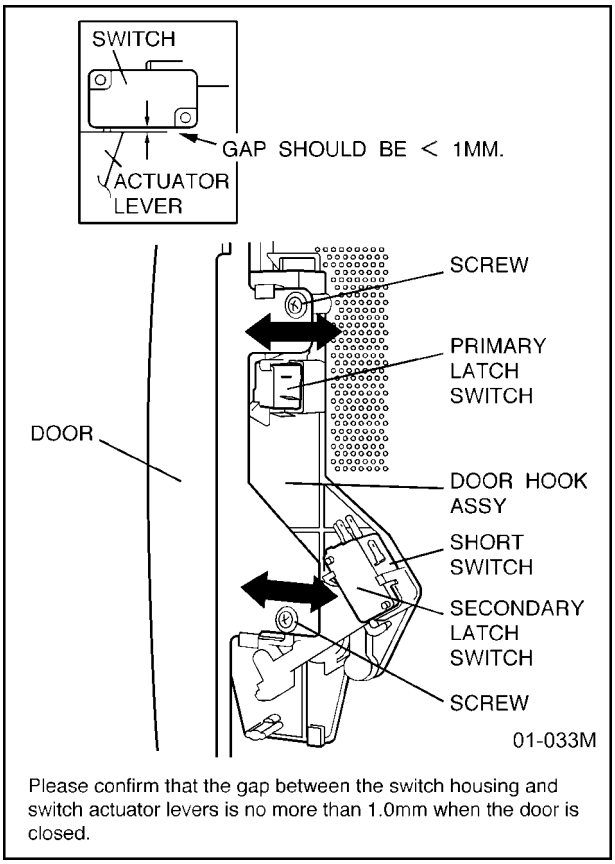
Necessary Equipment:

*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 accurate as possible.

1. Fill the beaker with exactly one liter of tap water. Stir the water using the thermometer and record the beaker's temperature (recorded as T1).
2. Place the beaker on the center of glass cook plate. Set the oven for High power and heat it for exactly one minute.
3. Stir the water again and read the temperature of the beaker again (recorded as T2).
4. The normal temperature rise at High power position for each models is as shown in table.



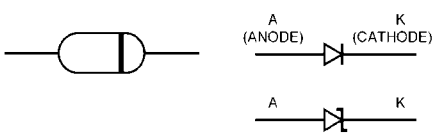
Please confirm that the gap between the switch housing and switch actuator levers is no more than 1.0mm when the door is closed.

TABLE (1 ℓ -1 min. test)

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

4.3. HOW TO CHECK THE SEMICONDUCTORS USING AN OHM METER

Diode



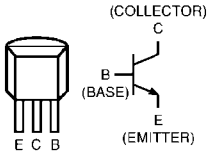
	FORWARD	REVERSE
A-K	SMALL	∞

Transistor

NPN Transistor

2SC·····

2SD·····

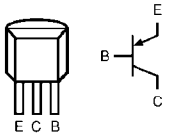


	FORWARD	REVERSE
B-E	SMALL	∞
B-C	SMALL	∞
C-E	∞	∞

PNP Transistor

2SA·····

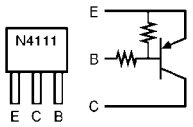
2SB·····



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

Digital Transistor

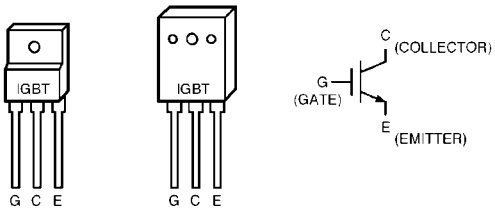
PNP Transistor



	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	∞	∞

5 Service Mode

5.1. OPERATION AND DIGITAL PROGRAMMER CIRCUIT TEST PROCEDURE

1. To Set Clock

OPERATION	SCROLL DISPLAY
1. Plug the power supply cord into wall outlet.	WELCOME TO INVERTER COOKING
2. Press [Timer / Clock] pad twice.	1 --SET TIME
3. Enter time of day (TOD) by Turning Time/Weight Knob.	11:25 --PRESS TIMER/CLOCK
4. Press [Timer / Clock] pad. TOD has now been resistered into the digital programmer circuit and will count up by minutes.	11:25

2. Time Cooking for Two Stage

OPERATION	SCROLL DISPLAY
1. Place a water load in the oven.	
2. Press [Micro Power] button once to set High power. (1st stage)	HIGH --SET TIME
3. Set for 10 seconds by Turning time knob.	10 SEC --PRESS START HIGH
4. Press [Micro Power] button 4 times to set Medium power. (2nd stage)	MEDIUM --SET TIME
5. Set for 1 minute by Turning time knob.	1 00 MIN SEC --PRESS START MEDIUM
6. Press [Start] button.	10 SEC MICRO
7. When 1st stage cooking time has elapsed, oven automatically switches to 2nd stage cooking.	1 00 MIN SEC MICRO
8. When 2nd stage cooking time has elapsed, oven beeps 5 times and shuts off.	ENJOY YOUR MEAL Time of day or colon appears in the display.

3. Turbo Defrost

OPERATION	SCROLL DISPLAY
1. Press [Turbo Defrost] pad.	TURBO DEFROST --SET WEIGHT
2. Set the weight for 3 kg by Turning weight knob.	3.0kg --PRESS START
3. Press [Start] button.	46 01 MIN SEC MICRO

4. Convection Cooking with Preheat

OPERATION	SCROLL DISPLAY
1. Press [Convection] button. 1-2. Set 110°C by Turning temp knob.	--PRESS START 110C
2. Press [Start] button.	P CONV
3. When preheating is completed, oven beeps 3 times.	--PREHEAT END-- CONV
4. After completion of preheating, be sure to open the door.	--SET TIME 110C
5. Close the door and set convection cooking time for 2 minutes.	2 00 MIN SEC --PRESS START 110C
6. Press [Start] button.	2 00 MIN SEC CONV

6 Troubleshooting Guide

6.1. CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

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

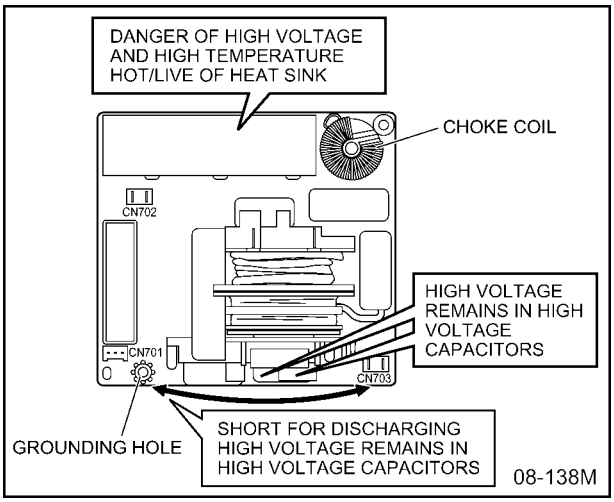
CAUTION
Servicemen should remove their watches whenever working close to or replacing the magnetron.

6.1.1. Check the grounding

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

6.1.2. Inverter Warnings (NEW H.V.)

DANGER OF HIGH VOLTAGE AND HIGH TEMPERATURE (HOT/LIVE) OF THE INVERTER POWER SUPPLY (U)
This High Voltage Inverter Power Supply circuit handles very high voltage and very high current for the magnetron tube. Though it is free from danger in ordinary use, extreme care should be taken during repair. As you can see, it looks like a TV flyback transformer, however the current is extremely large and so danger exists by its high current and high voltages.
The aluminum heat sink is also energized with high voltage (HOT), so do not touch when AC input terminal is connected to the power line because one of the IGBT switching power devices (Collector) is directly connected to the Aluminum heat sink.
The Aluminum heat sink may be HOT by heat energy; therefore, extreme care should be taken during servicing and replacing.

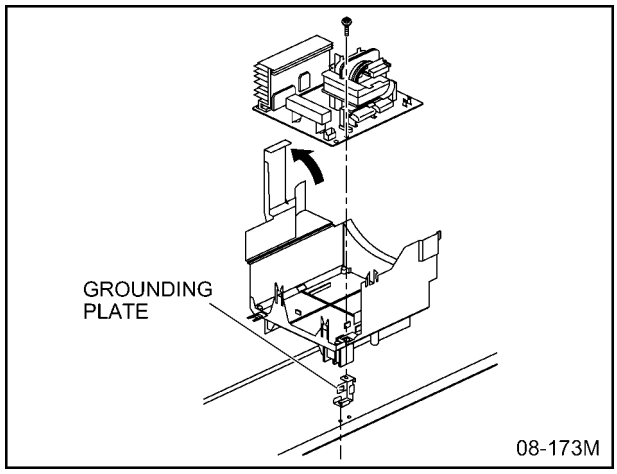


WARNING OF DISCHARGING HIGH VOLTAGE CAPACITORS
Warning about the electric charge in the high voltage capacitors. For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitors in the inverter power supply circuit board.
When replacing or checking parts, remove the power plug from the outlet and remove air guide cover then short the Inverter high voltage diode terminal to the chassis ground with an insulated handle screwdriver to discharge. Please make sure to touch chassis ground side first then short to the output terminals.

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 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.

WARNING OF INVERTER POWER SUPPLY (U) GROUNDING
Check the High Voltage Inverter Power Supply circuit grounding. This High Voltage Inverter Power Supply circuit board must have a proper chassis ground by the grounding bracket to the chassis ground; otherwise, this H.V.Inverter circuit board will expose very high voltage and cause extreme DANGER! Be sure to have proper grounding by the grounding plate and screws.



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

6.1.4. When the 10A/15A 250V fuse is blown due to the operation of short switch:

WARNING

When the 10A/15A 250V. fuse is blown due to the operation of short switch, you must replace Primary latch switch and short switch. Also replace power relay 1 (RY1) when the continuity check reads shorted contacts (1-2).

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

6.1.5. 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 other holes gaps, because such objects may work as an antenna and cause microwave leakage.

6.1.6. 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.

CAUTION
MICROWAVE RADIATION

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

IMPORTANT NOTICE

1. The following components have potentials above 250V while the appliance is operated.
   * Magnetron
   * Heat sink of H.V.INVERTER (U)
   * High voltage transformer (H.V.INVERTER (U))
   * High voltage diode (H.V.INVERTER (U))
   * High voltage capacitors (H.V.INVERTER (U))

   Pay special attention on these portions.
2. When the appliance is operated with the door hinge or magnetron fixed incorrectly, the microwave leakage can reach more than 5mW/cm². After repair or exchange, it is very important to check if magnetron and the door hinge is correctly fixed.

6.2. TROUBLESHOOTING GUIDE (NEW H.V.)

DANGER HIGH VOLTAGES

1. **DO NOT RE-ADJUST PRESET VOLUME 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 with very high voltage. Off alignment of inverter board operation will be 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. 220/230/240V 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.

(Trouble 1) Oven stops operation during cooking

	SYMPTOM	CAUSE	CORRECTIONS
1.	Oven stops in 3 seconds after pressing start pad	No 220 / 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 CN702
	Oven stops in 38 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 CN701, CN703
	Oven stops in 19 seconds after pressing start pad (Auto sensor cooking)	Steam sensor circuit is not functions	1. Steam sensor 2. DPC 3. Loose wiring connector CN2
	Oven stops in 60 seconds after pressing start pad	Oven temperature sensor circuit is not functions	1. Oven temp. sensor 2. Loose wiring CN6
2.	Oven stops in random time after pressing start pad	Most probably loose connection of connectors or door latch mechanizm is not adjusted properly	1. Allign door, Door Latch Switches 2. Loose wiring connectors

(Trouble 2) Other troubles

	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. Defective DPC	Check fan motor when 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) NEW H.V. ⚠ 4. Defective H.V.Inverter power supply (U) Refer to component test procedure	Check adjustment of primary, secondary latch switch and short switch including door. Refer to inverter PCB Troubleshooting
		NOTE 1: All of these switches must be replaced at the same time. (Refer to adjustment instructions.) Check continuity of power relay 1's contacts (between 1 and 2) and if it has continuity, replace power relay 1 also.	
3.	Oven does not accept key input (Program).	1. Key input is not insequence 2. Faulty key switch 3. Open/Short flat cable 4. Defective DPC	Refer to operation procedure. Refer to DPC troubleshooting.
4.	Oven lamp and fan motor turn 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 countdown 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 be intermittent. 3. Defective high voltage component NEW H.V. ⚠ H.V.Inverter (U) Magnetron 4. Open or loose wiring of power relay 1 5. Defective primary latch switch 6. Defective power relay 1 or DPC	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	Adjust door and latch switches.
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.	Turntable motor turns on when door is opened.	1. Shorted primary latch switch	
9.	Loud buzzing noise can be heard.	1. Loose fan and fan motor	
10.	Turntable motor does not rotate.	1. Open or loose wiring of turntable motor 2. Defective turntable motor	
11.	Grill heater dose not turn on.	1. Defective heater 2. Defective power relay 4 (RY4) 3. Defective DPC	
12.	Convection heater not turn on.	1. Defective heater 2. Defective TRIAC D224 / IC-221 3. Defective DPC	

(Trouble 3) Trouble related Digital programmer circuit

STMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
No display when oven is first plugged in	1	Fuse resistor R25 1Ω	Normal	STEP 2
			Open	Shorted circuit of IC-25
	2	IC-10 (Output terminal)	Abnormal	IC-10
			Normal ≒ 5V	→ IC-1, CX320, DISPLAY
No key input	1	Key switch continuity	Abnormal	Key switch
			Normal	IC-1
No beep sound	1	IC-1 pin 38 voltage	Abnormal	IC-1
			Normal	BZ, IC-220
Power relay A (RY-1) does not turn on even though the program has been set and the start pad is tapped	1	IC-1 pin 42 voltage while operation	Abnormal	IC-1
			Normal ≒ 5V	→ Step 2
	2	Short circuit between pin 8 and pin 15 of IC-220	Still not turn on	RY-2
			RY-2 turns on	IC-220
No microwave oscillation at any power setting	1	Q220 transistor	Abnormal	Q220
			Normal	IC-220, RY-1
Dark or unclear display	1	Replace display and check operation	Normal	DISPLAY
			Abnormal	IC-1
Missing or lighting of unnecessary segment	1	Replace IC-1 and check operation	Normal	IC-1
			Abnormal	DISPLAY

(Trouble 4) Inverter circuit

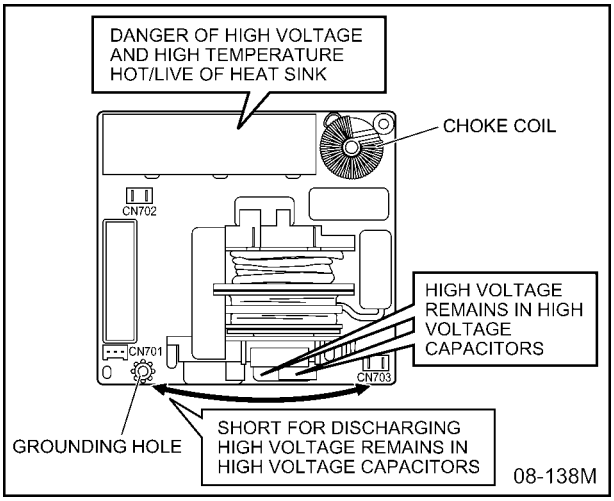
Inverter PCB Repair Procedures

Warning for High Voltages!

1. Unplug oven when removing outer cabinet
2. Never touch inverter PCB with oven plugged in **inverter PCB handling over 7,000V and it is very danger!**
3. Heat sink is alsoenergized with High Voltages!
4. Discharge high voltage before touching circuitry
5. When testing inverter PCB, completely install it into oven, put outer cabinet and make proper ground.

1. Discharge high voltage before touching Inverter PCB.

1. Unplug oven and leave it for more than 30 seconds before removing outer cabinet.
2. Use insulated lead wire to short across D701 Anode D702 Cathode or short across magnetron filamen terminals to the chassis ground. Please refer to following illust.



2. Remove inverter PCB from oven before troubleshooting.

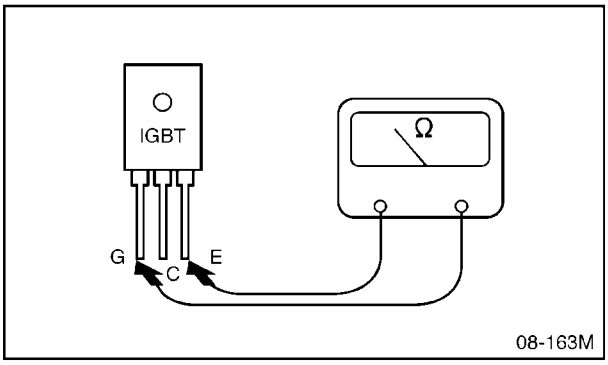
Refer to related service manual for inverter PCB removal.

1. Visual check:
   a. PCB board: Any crack on board, burnt printed copper foil pattern? Any cockroach, bugs excrements, any mark of wet?
   b. Components: Any damaged components? Any burnt, broken or missing?

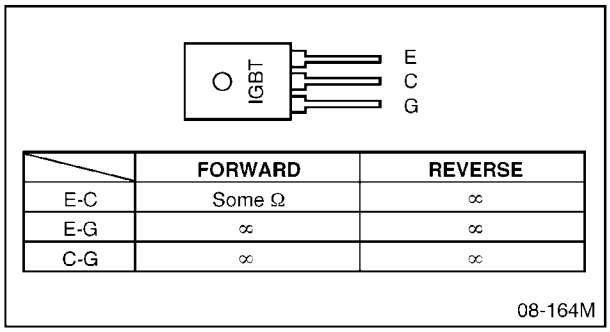
3. Check component by circuit tester.

Make sure remove inverter PCB when continuity check
Do not test component when inverter PCB is installed

How to check semi conductor IGBT

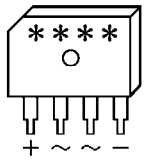


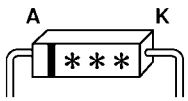
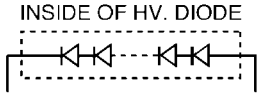
1. How to check power transistors (Q701, Q702). To measure, suck a solder from its legs completely unless faulse reading may observe and mislead a troubleshooting. Measure across pins between E-C, E-G, C-G, E-black lead, C-red lead of tester should be infinite and may have some reading in reverse, it is normal. Refer to attached table for normal reading.
2. DB701 Diode Bridge
3. C704, C705 High voltage Capacitors. D702 and C705, D701 and C704 are parallel connected therefore, remove component to measure when diode is shorted.
4. D701, D702 High voltage Diodes



	FORWARD	REVERSE
E-C	Some Ω	∞
E-G	∞	∞
C-G	∞	∞

08-164M

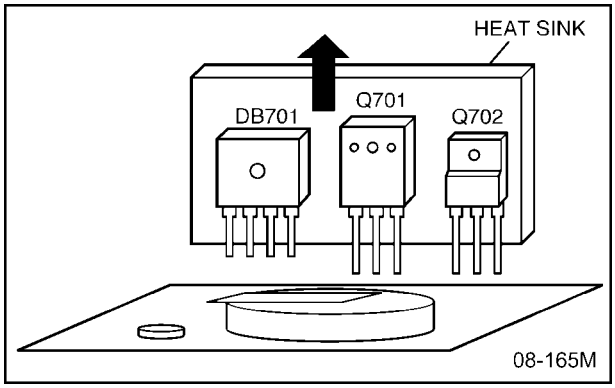
		FORWARD	REVERSE
	~ − +	Some Ω	∞
	~ − −	Some Ω	∞
	~ − ~	∞	∞
	+ − −	Some Ω	∞

BETWEEN TERMINALS	FORWARD	REVERSE
A-K  	∞ infinite Circuit tester employed lower voltage battery Several k ohm to several hundred k ohm will be observed Circuit tester shold employed more than 9V battery	∞ infinite It does not matter by internal battery voltage

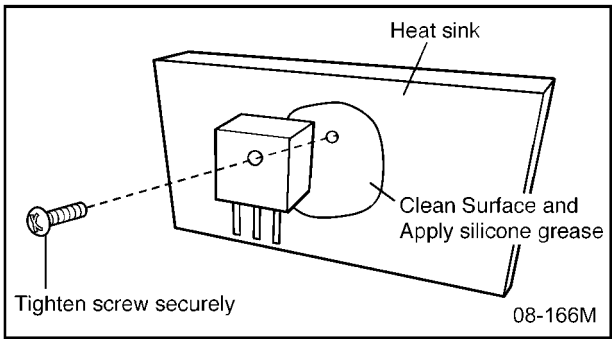
How to replace power transistors Q701, Q702 and Bridge Diode DB701.

1. To remove Q701, Q702 and DB701 unsolder their legs first, next remove a screw that holding the heatsink onto the PCB then dtach the heatsink as shown below.

   Service Hints: For easy solder removal, use one soldering iron to heat a solder and use solder sucker iron to suck solder.
2. Make sure to replace both Q701 and Q702 at a time with the same maker.
3. Make sure to apply heat conduction grease between transistor and heat sink.
4. NO DUST SHOULD CAUGHT between heat sink and power transistor unless if causes looseness of heat conduction and insufficient cooling to blow components.



Apply silicone grease



5. Screw must be tighten securely.

6. Install the heatsink onto the PCB by a screw and make sure to apply extra solder between legs and PCB pattern so that it's able to flow 15A or more main current.

7. Apply extra solder onto Q701 and Q702 legs and printed foil pattern to be able to hold main large current of more than 15A.

Service hint:

For easy removal of solder, apply some solder first than suck it all.

8. How to test repaired Inverter PCB.

WARNING:

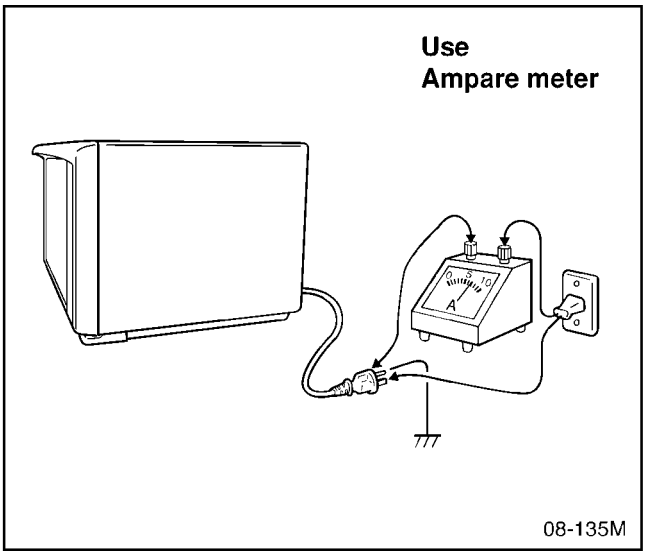
1. Do not test Inverter PCB with using any extention cable Open gounding of inverter PCB is so DANGER.
2. Make sure to check no Bridge solder nor cold solder joint.

1. Install Inverter PCB into oven with screws securely, plug in CN701, CN702 and CN703.
2. Insert AC plug through the Amper meter with specified voltage.

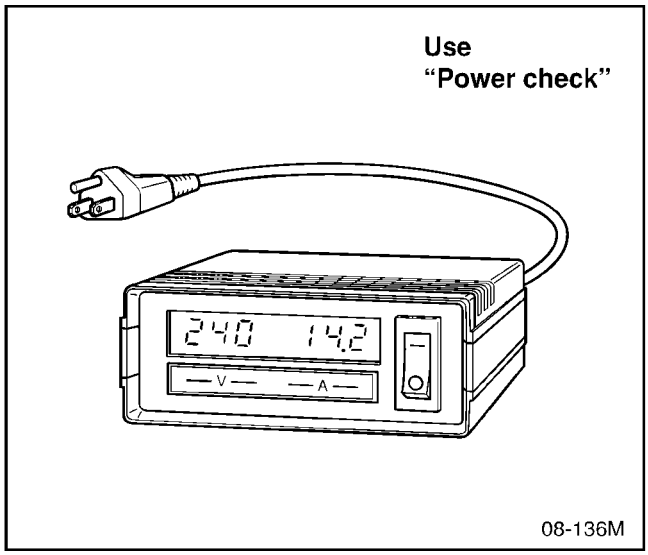
   NOTE: Current will be changed by the input AC voltage.
3. Operate the oven at High power setting for 1 minute.
4. Read input current which should be within oven specification.

   NOTE: Input current will be decreased after a certain cooking period.
5. Adjustment is not necessary when replacing transistors

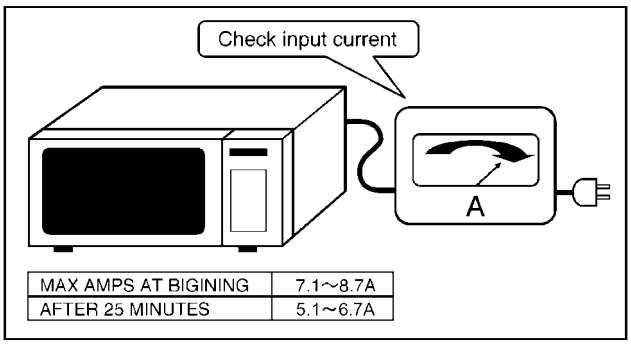
   You may adjust the preset volume control VR701 to meet the specified input current when Transformer is replaced.



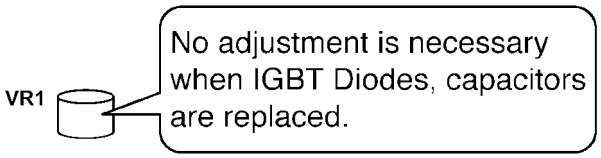
OR



How to test oven



MAX AMPS AT BIGINING	7.1~8.7A
AFTER 25 MINUTES	5.1~6.7A



Preset Volume control

NOTE: WHEN TRANSFORMERS OR IC WAS REPLACED MAKE SURE ADJUST VOLUME FOR PROPER INPUT AMPARES.

7 Disassembly and Assembly Instructions

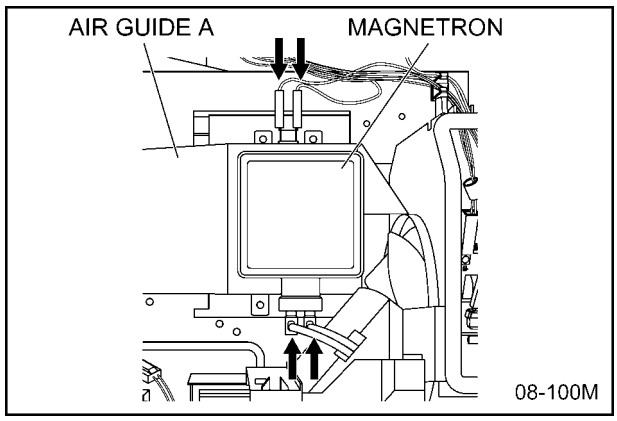
7.1. DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

7.1.1. Magnetron

1. Discharge the high voltage capacitor.
2. Remove 2 screws holding magnetron thermal cutout bracket.
3. Disconnect 2 high voltage lead wires from magnetron filament terminals.
4. 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.



7.1.2. Digital programmer circuit (DPC) and membrane key board.

NOTE: Be sure to ground any static electric charge built up On your body, before handling the DPC.

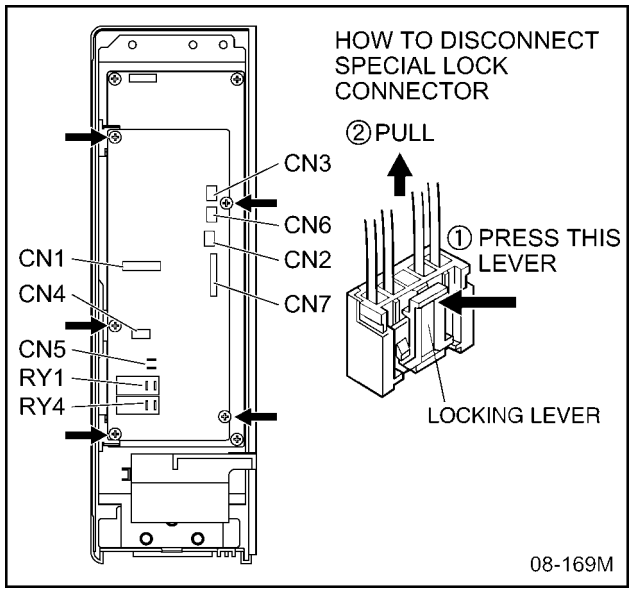
1. Disconnect all connectors from D.P.C.
2. Remove 3 screws holding escutcheon base and slide the escutcheon base upward slightly.
3. Remove flat cable of CN7.
4. Remove 5 screws holding DPC.

To replace switch PCB.

5. Remove 2 knobs.
6. Remove 8 screws.

To replace buttons

1. Remove escutcheon bracket from escutcheon base by freeing 6 catch hooks on the escutcheon base.
2. Replace whole button assembly.



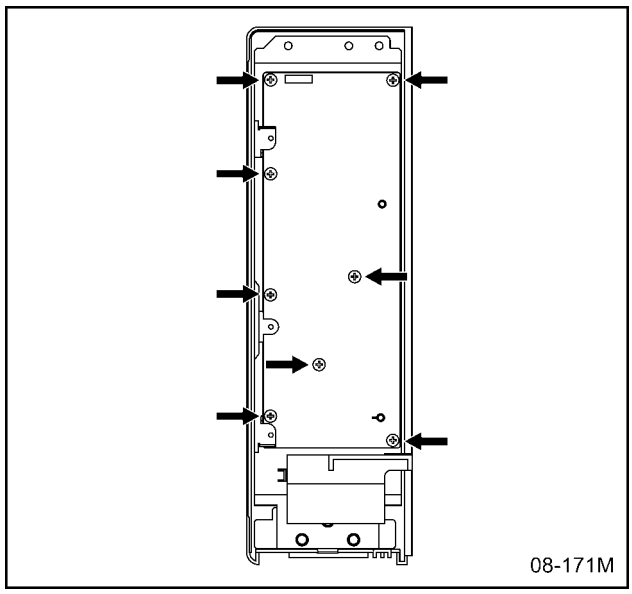
7.1.3. Switching transformer and/or power relays

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

1. Using solder wick or a desoldering tool and 30W soldering iron, carefully remove all solder from the terminal pins of the switching transformer and/or power relays.

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

2. With all the terminal pins cleaned and separated from DPC contacts, remove the defective transformer/power relays and install new transformer/power relays making sure terminal pins are inserted completely. Resolder all termin contacts carefully.

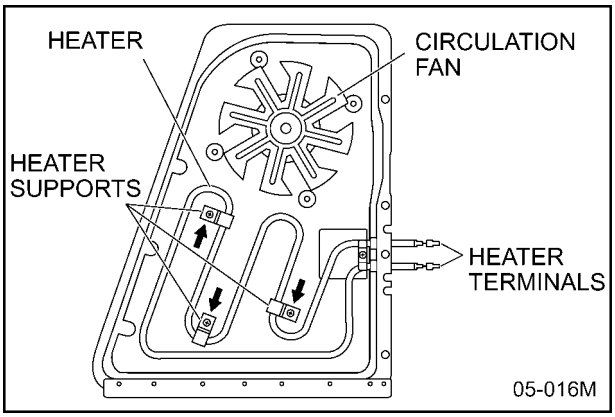


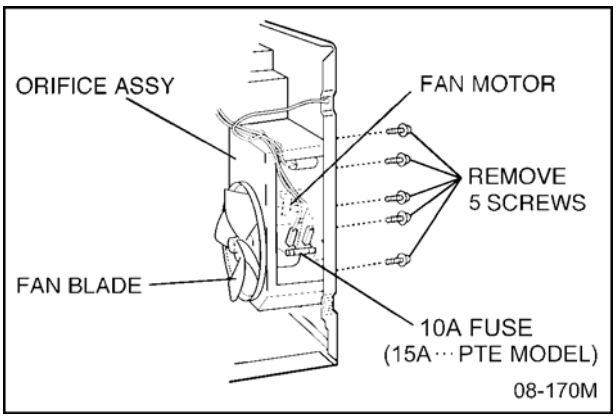
7.1.4. Fan motor

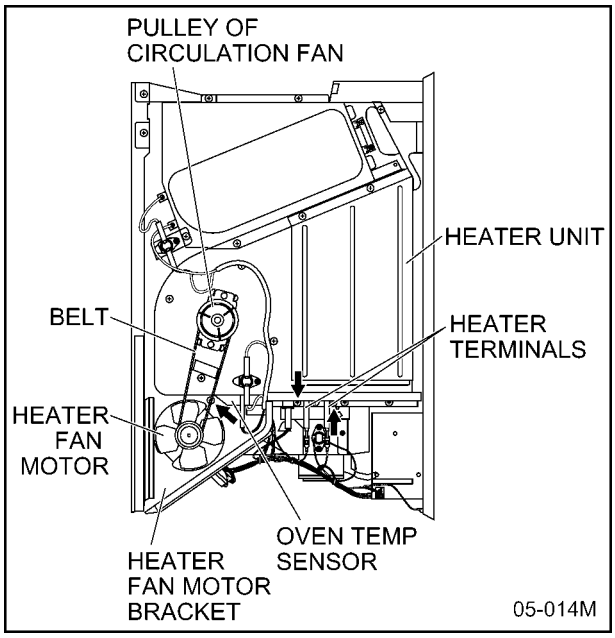
1. Disconnect 2 lead wires from fan motor terminals.
2. Disconnect 2 lead wires from fuse holder terminals. (some models)
3. Remove 5 screws holding fan motor and orifice assy and detach the orifice assy with fan motor from oven assy.
4. Remove fan blade from the fan motor shaft by pulling it straight out.
5. Separate the fan motor from the orifice assy by freeing 2 catch hooks on the orifice assy.

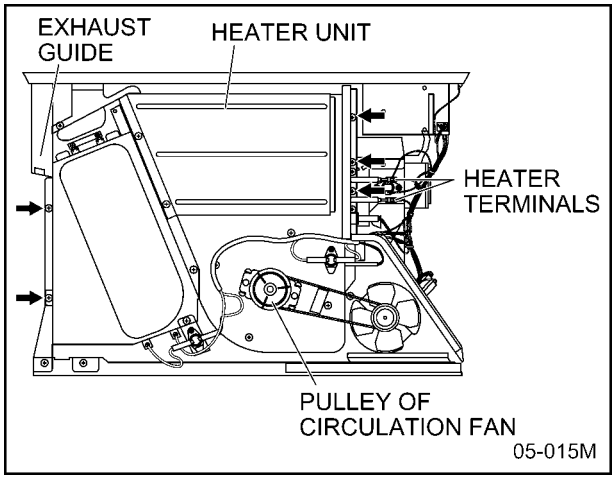
7.1.5. Heater

1. Remove lead wires from lead wire holders.
2. Remove belt from pulleys of circulation fan.
3. Remove 2 screws holding heater fan motor bracket.
4. Remove 2 screws holding oven temp sensor.
5. Disconnect 2 lead wires from heater terminals.
6. Remove 4 screws holding the both sides of heater unit and slide and lift it up carefully.
7. Remove 3 screws holding heater supports and detach the heater.



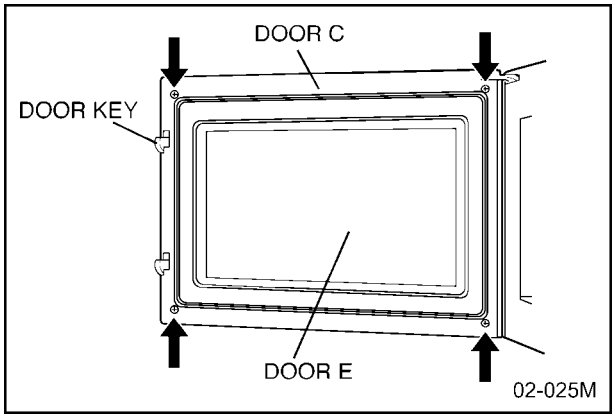






7.1.6. Door assemble

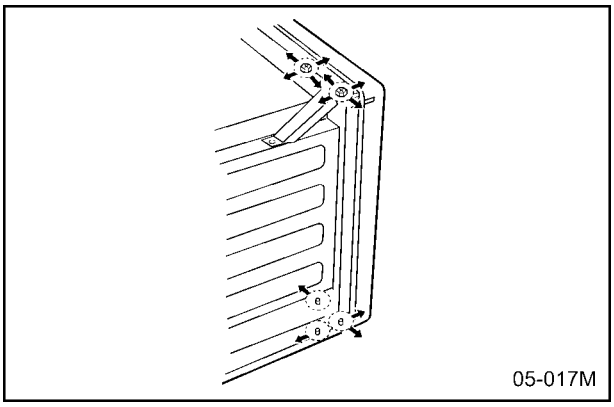
1. Open the door and remove 4 screws holding door C.
2. Remove the door C from door E by carefully pulling outward starting from upper right hand corner.
3. Separate the door A from the door E by freeing 8 catch hooks on the door A.
4. Remove door key spring and door key.



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

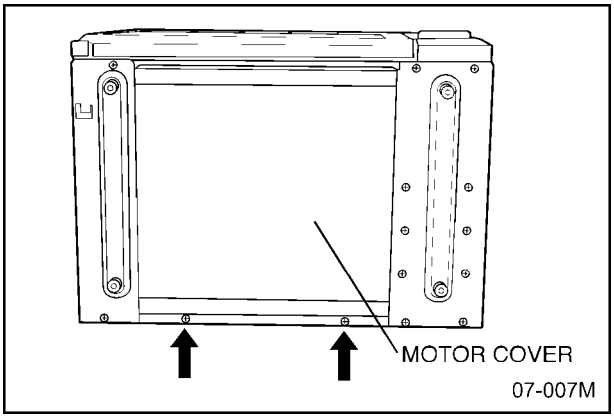
When mounting the door to the oven, be sure to adjust the door parallel to the bottom line of the oven face plate by moving the upper hinge and lower hinge in the direction necessary for proper alignment.

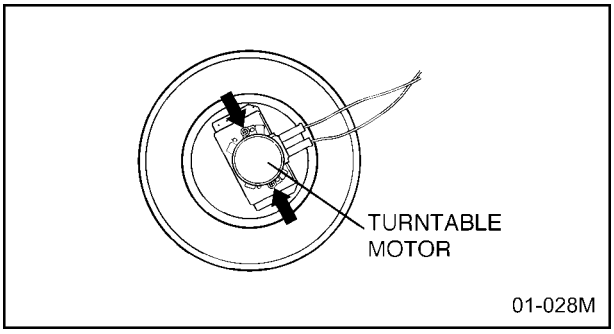
2. Adjust so that the door has no play between the inner door surface and oven front surface. If the door assembly is not mounted properly, microwave may leak from the clearance between the door and oven.



7.1.7. Turntable motor

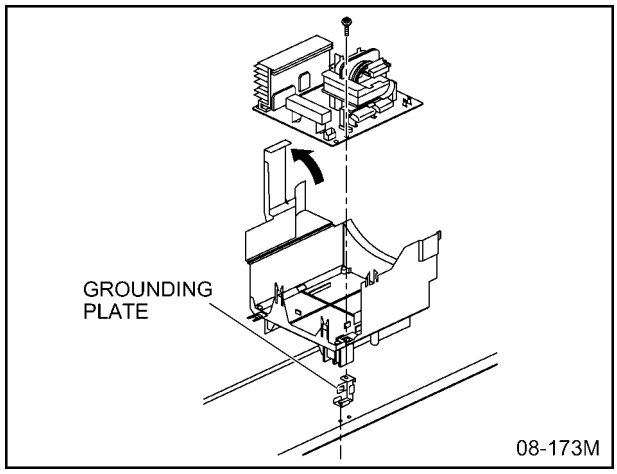
1. Remove 2 screws holding motor cover.
2. Disconnect 2 lead wires from turntable motor.
3. Remove 2 screws holding turntable motor.





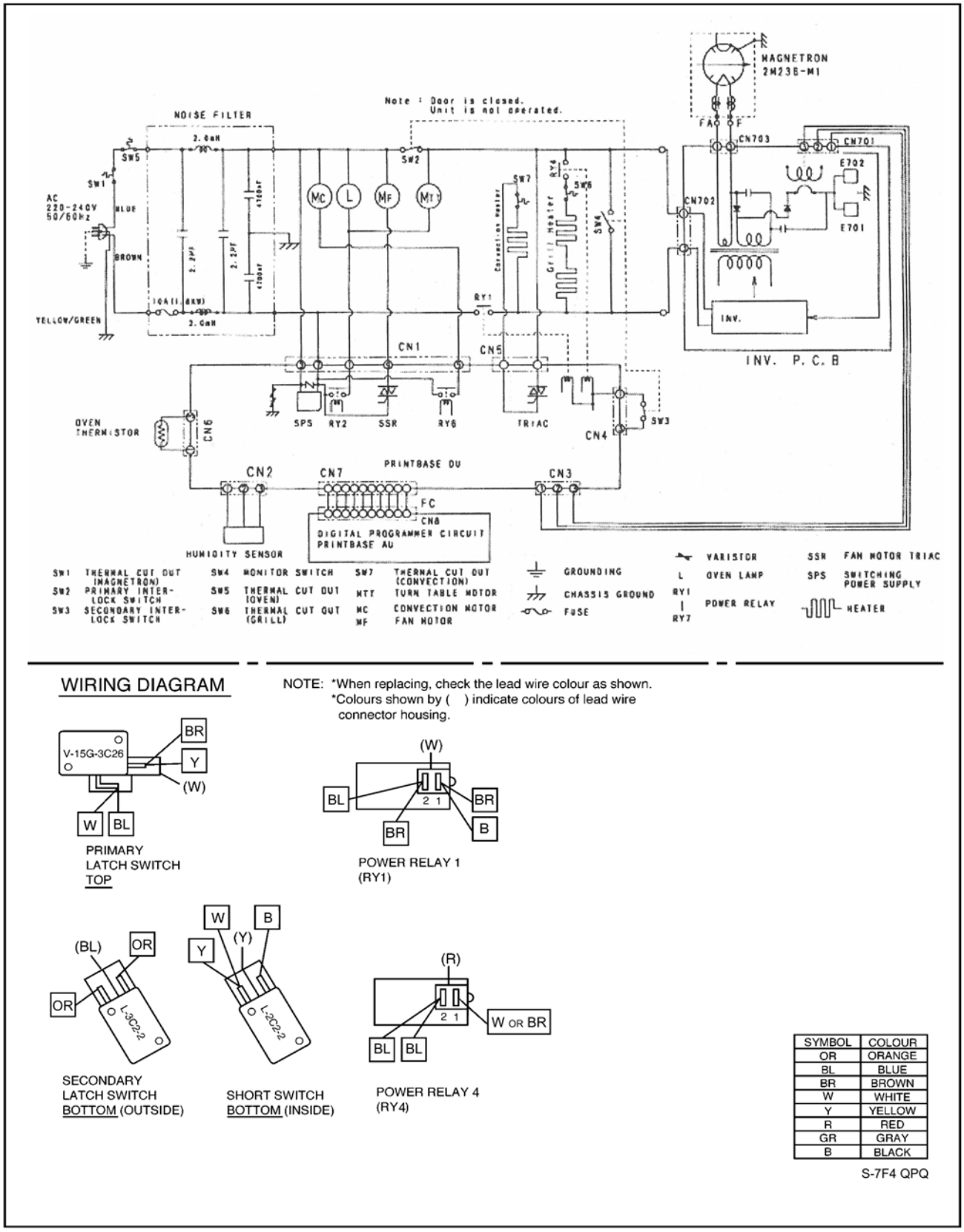
7.1.8. Inverter PCB

1. Remove 4 screws holding inverter bracket to oven chassis.
2. Remove all lead wires from inverter PCB.
3. Slide and take out inverter PCB with brackets.
4. Remove 9 screws holding inverter PCB to bracket.
5. When re-install, make sure to place grounding plate and air guide in its place.



8 Schematic Diagram

8.1. SCHEMATIC DIAGRAM (FOR QPQ, JPG, STM, ZPE)



WIRING DIAGRAM

NOTE: *When replacing, check the lead wire colour as shown.
*Colours shown by ( ) indicate colours of lead wire connector housing.

PRIMARY
LATCH SWITCH
TOP

POWER RELAY 1
(RY1)

SECONDARY
LATCH SWITCH
BOTTOM (OUTSIDE)

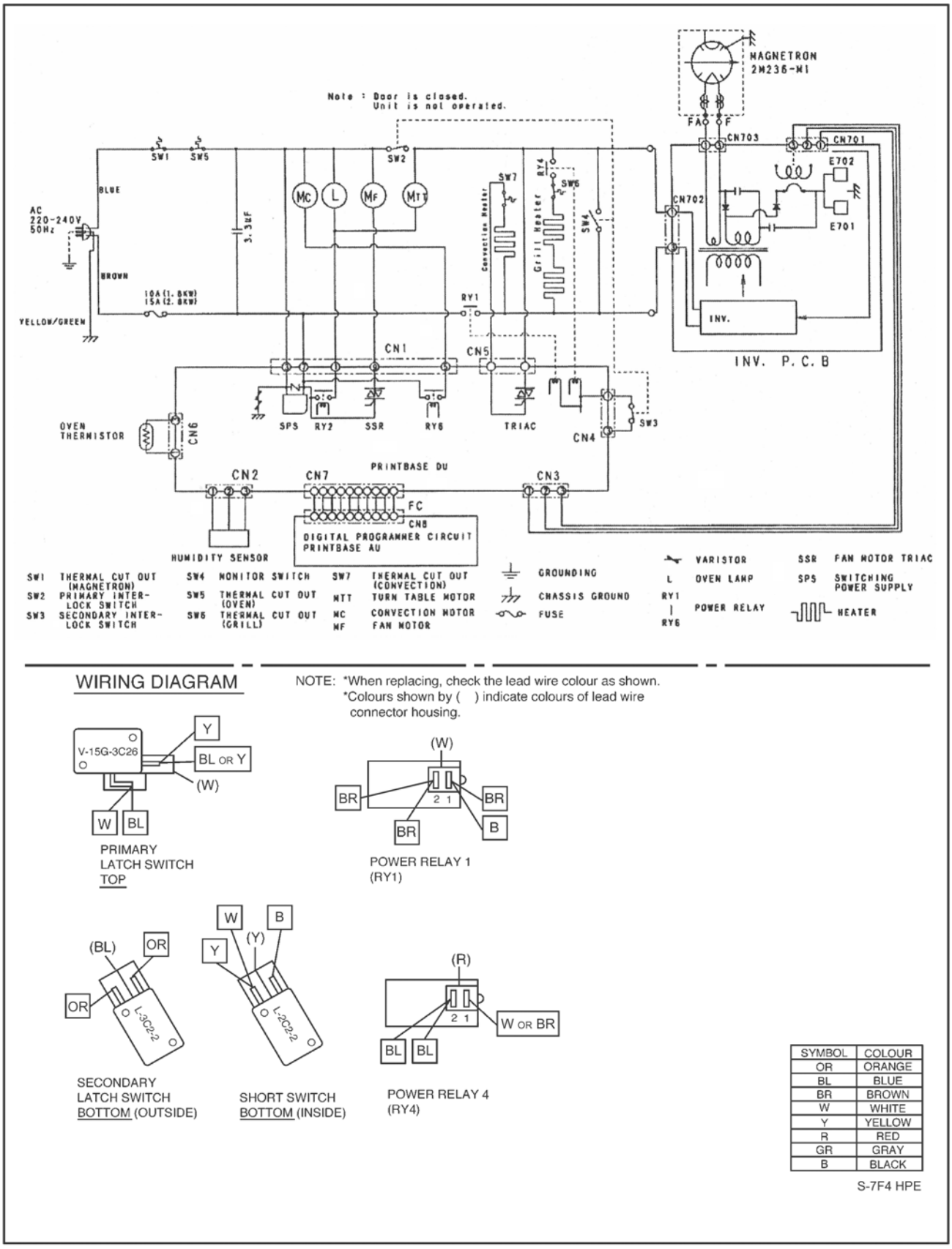
SHORT SWITCH
BOTTOM (INSIDE)

POWER RELAY 4
(RY4)

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

S-7F4 QPQ

8.2. SCHEMATIC DIAGRAM (FOR MPQ, YPQ, PTE, YTE, KPQ, HPE, KTE)



WIRING DIAGRAM

NOTE: *When replacing, check the lead wire colour as shown.
*Colours shown by ( ) indicate colours of lead wire connector housing.

PRIMARY LATCH SWITCH TOP

POWER RELAY 1 (RY1)

SECONDARY LATCH SWITCH BOTTOM (OUTSIDE)

SHORT SWITCH BOTTOM (INSIDE)

POWER RELAY 4 (RY4)

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

S-7F4 HPE

8.3. DESCRIPTION OF OPERATIONG SEQUENCE

8.3.1. Variable power cooking control

HIGH VOLTAGE INVERTER POWER SUPPLY (U) controls output power by the signal from Digital Programmer Circuit (DPC). Power relay 1 stays on but the inverter drive signal to control it's 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.

8.3.2. Turbo defrost

When auto weight defrost is selected and the Start Pad is tapped:

1. The digital programmer 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 in the display window has elapsed, the oven turns off automatically by a control signal from the digital programmer circuit.

8.3.3. Convection cooking control

The digital programmer circuit controls the ON-OFF time of the heater in order to control oven cavity temperature.

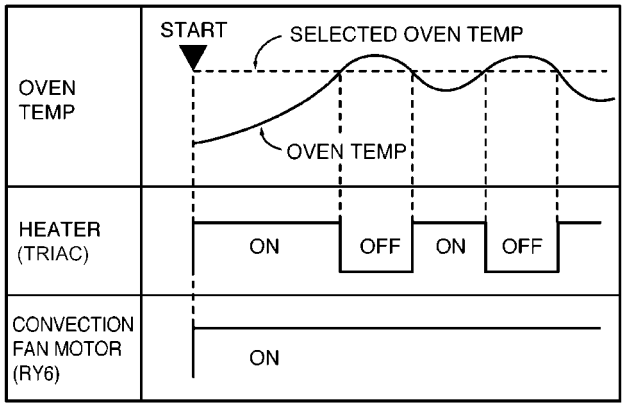
1. After the start pad is tapped with the desired convection program set, an 12V DC signal comes out of the digital programmer circuit and is applied to TRIAC.
2. When TRIAC activated, power source voltage is applied to the heater and the heater turns on.
3. When the oven temperature reaches the set temperature, the digital programmer circuit senses the temperature through oven temp sensor and stops supplying an 12V DC signal to TRIAC circuit and the heater turns off.
4. After the heater turns off, the oven temperature will continue increasing a while and then decrease as shown in Figure. When the oven temperature drops below the set temperature, the digital programmer circuit senses the signal and starts supplying an 12V DC signal to the TRIAC circuit again.

NOTE: When Broil feature is selected, oven temperature is determined automatically as shown in Figure.

POWER SETTING	ON-OFF TIME OF POWER RELAY 1 (RY1)	
	ON (SEC)	OFF (SEC)
HIGH	22	0
MEDIUM-HIGH	22	0
MEDIUM	22	0
MEDIUM-LOW / DEFROST	19	3
LOW	7	15

Turbo Defrost

WEIGHT SELECTED	TOTAL DEFROSTING TIME
1.0 kg	14 min. 41 sec.
2.0 kg	30 min. 21 sec.



96-017M

8.3.4. Combination cooking control

Combination cooking is accomplished by microwave and convection cooking being done alternately during one combination cooking cycle. One combination cooking cycle is 22 seconds.

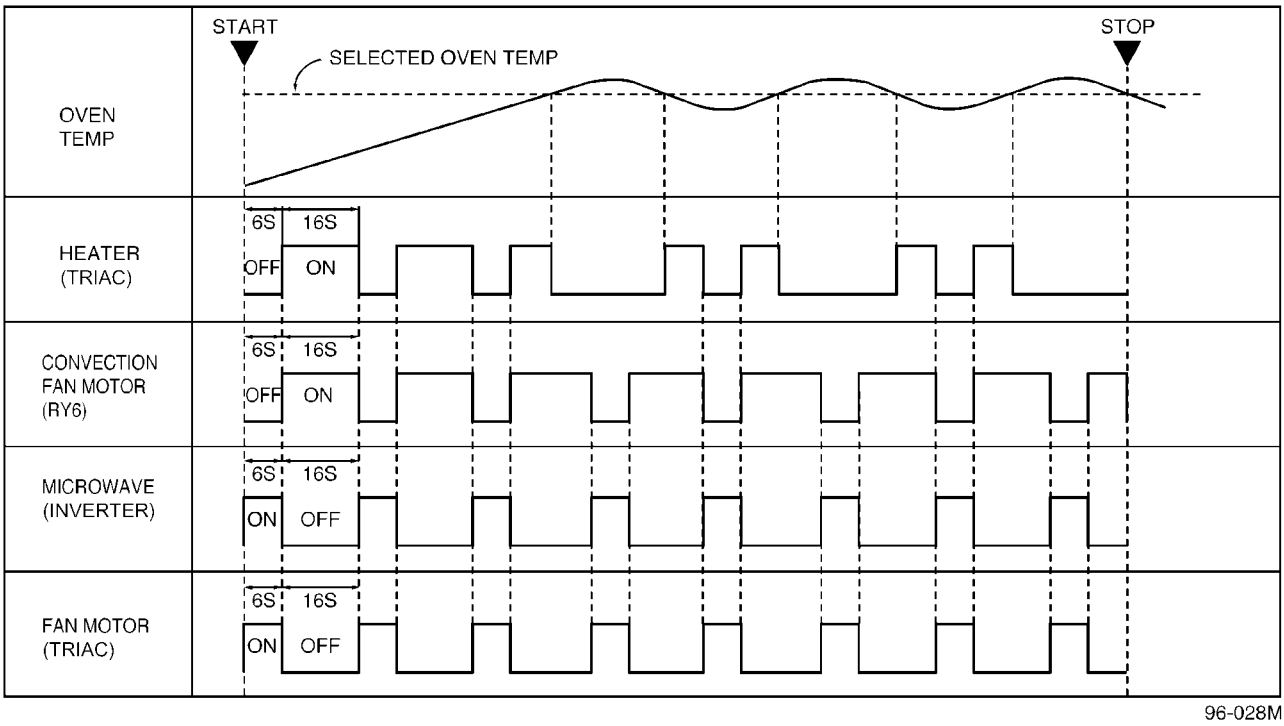
1. During combination cooking, the digital programmer circuit controls ON-OFF time of both inverter and TRIAC as shown in Figure.
2. When the inverter is turned on, heater turns off and after the inverter turns off, heater turns on.

NOTE 1: Note that the heater may not be on during a heater on period if the preprogrammed oven temperature has been reached. This is due to the fact that the oven is keeping the preprogrammed oven temperature constant, so of course the heater will only be on when it is needed and off when it is not needed.

NOTE 2: As for temperatures of combination cooking for convection, the temperatures by each program are preprogrammed in the microprocessor as shown in Figure.

Combination Cooking

CATEGORY	MICROWAVE	OVEN TEMP
1	6/16 SEC	150°C
2	6/16 SEC	160°C
3	6/16 SEC	170°C
6	6/16 SEC	230°C



96-028M

8.3.5. One touch Auto sensor cooking

Auto sensor cooking is a revolutionary way to cook by microwave without setting a power level or selecting a time. All that is necessary is to select an Auto sensor Program before starting to cook.

Understanding of Cooking

As food cooks, a certain amount of steam is produced. If the food is covered, this steam builds up and eventually escapes from the container. In Auto Sensor Cooking, carefully designed instrument, called the humidity sensor element, senses this escape of steam. Then, based upon the Auto Sensor Program selected, the unit will automatically determine the correct power level and the proper length of time it will take to cook the food.

NOTE: Auto Sensor Cooking is successful with the foods and recipes found in the Auto Sensor Cooking Guide. Because of the vast differences in food composition, items not mentioned in the Cooking Guide should be prepared in the microwave oven using power select and time features. Please consult Variable Power Microwave Cookbook for procedures.

Explanation of the Auto Sensor Cooking process

1) T2 time When the steam escapes from the cooking container placed in the oven, the humidity sensor detects it and the microprocessor calculates the balance of cooking time. This T2 time is then shown in the display and begins counting down.

Balance of cooking time (T2 time)

The balance of cooking time which is called T2 time, can be calculated by the following formula.

T2 time (in sec.) = T1 time K factor

NOTE: Remember, the T1 time starts after the Start pad is tapped. The coefficient K is programmed into the microprocessor memory and they are listed in the following tables along with the P1 and P2 powers.

NOTE: When "More" or "Less" pad is selected, the K factor varies resulting in T2 time to be increased or decreased.

NOTE: For T2 time of Category Casserole, HEATER operation programmed.

Example of calculating theT2 time

Example 1: If the T1 time is measured to be 2 minutes and 40 seconds, and the Auto Sensor program selected is Sensor Reheat.

T2 = T1 K

= 2 min. and 40 sec. 0.3

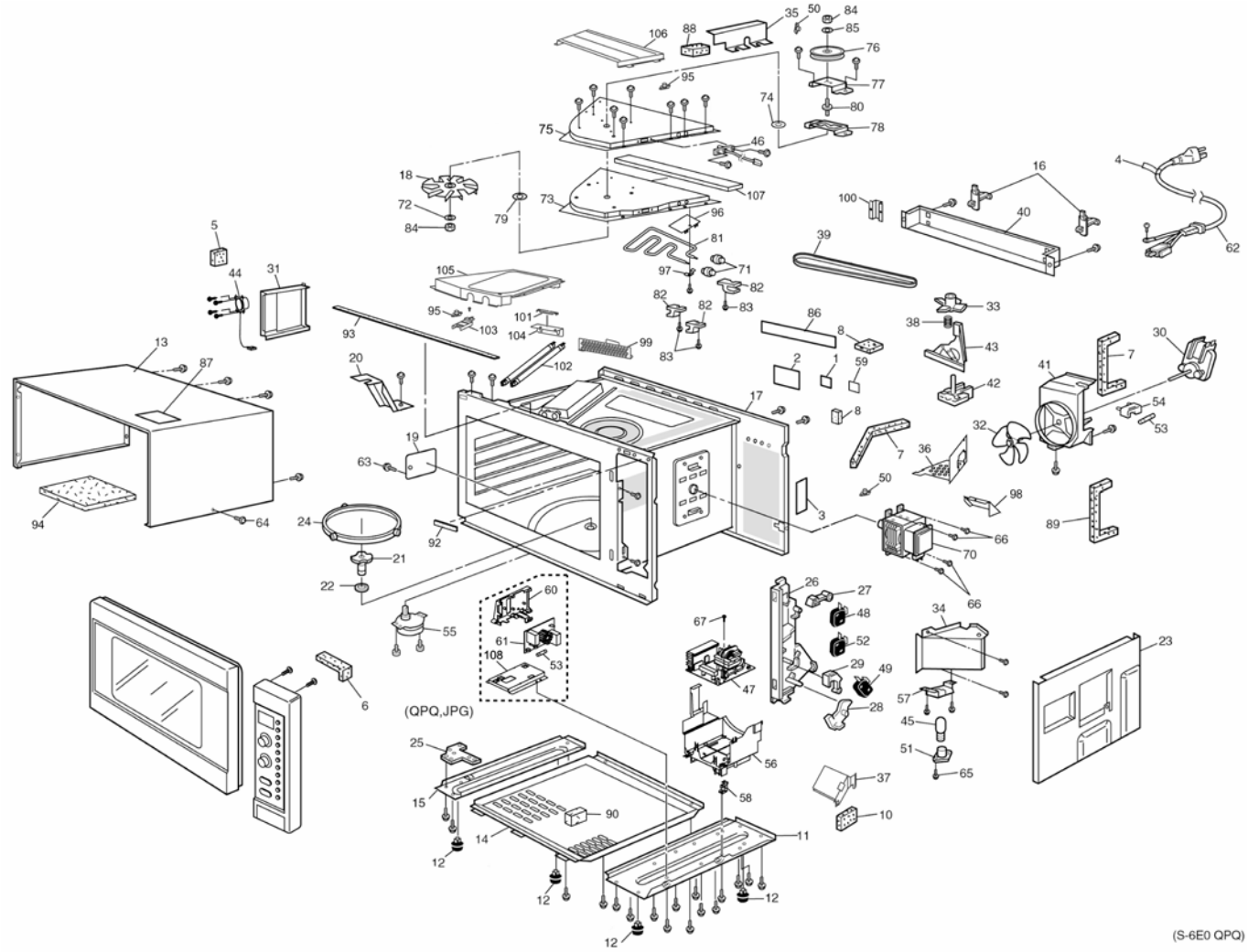
= 48 sec.

Auto Sensor Cook

Category	P1 Power	P2 Power	K factor Standard
Sensor Reheat	HIGH	M.HIGH	0.2
Soup	M. HIGH	M.HIGH	0.1
Frozen Veg.	M. HIGH	LOW	3.0

9 Exploded View and Replacement Parts List

9.1. EXPLODED VIEW AND PARTS LIST



9.2. PARTS LIST

When ordering replacement part(s) please use part number(s) shown in this parts list.
Do not use description of the part.
Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.
Alphabet marks in Remarks colums (I. e. HPE etc.) indicate parts applicable to only specified country models as follows.

HPE : For Hong Kong, JPG: For new Zealand, KTE: For U.A.E.
KPQ : For Kuwait, Qatar, Oman, Baharain, Pakistan, ZPE: For CIS
MPQ: For Malaysia, QPQ: For Australia, STM: For Saudi Arabia, PTE: For Iran
YPQ : For Singapore PTE: For Iran YTE: For Other country

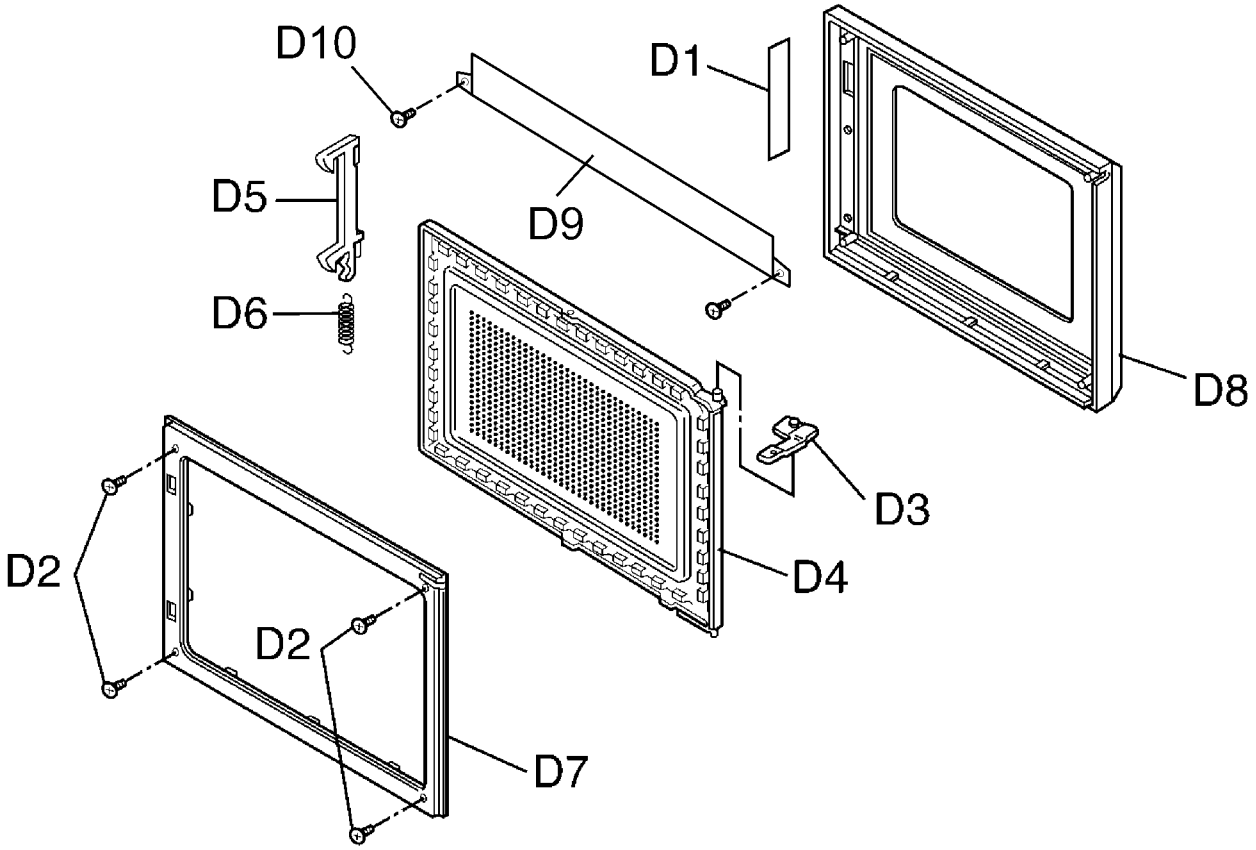
Parts without these marks can be used for all models.

Safety	Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
	1	ANE00057J0XN	EARTH LABEL	1	YTE
	2	A00064X70JP	CAUTION LABEL	1	QPQ/YTE/YPQ/JPG/HPE/KTE/KPQ/MPQ/STM/PTE
	2	A00065540MN	CAUTION LABEL	1	YPQ
	2	A00066000ZP	CAUTION LABEL.	1	ZPE
	3	ANE0033730GN	FUSE LABEL 10A	1	OTHER THAN PTE
	3	A00337F40PT	FUSE LABEL 15A	1	PTE
	4	ANE0239L00XN	CORD LABEL	1	KTE/STM/PTE/KPQ
	5	ANE0902000CA	CUSHION RUBBER A	1	
	6	ANE0921000BK	CUSHION RUBBER C	1	
	7	ANE0924000AQ	CUSHION RUBBER C	1	
	8	ANE0922000DD	CUSHOIN RUBBER C	1	
	9	ANE0902000AV	CUSHION RUBBER A	1	
	10	ANE0924000GE	CUSHION RUBBER C	1	
	11	A10017M70AH	BASE	1	
	12	ANE1008-3W0	RUBBER FOOT	4	
	13	A10097F70HQP	CAB NET BODY	1	NN-CD987W
	13	A10097F40QP	CABINET BODY	1	NN-CD997S
	14	A10267F40QP	BASE C	1	
	15	A11294X00AP	BASE B	1	
	16	A11406660QP	STOPPER	2	
	17	A200A7F40QP	OVEN	1	
⚠	18	ANE22392L0AP	CIRCULATION FAN	1	
	19	A20554X00AP	COVER	1	
	20	A20764X00AP	REINFORCE BRACKET C	1	
	21	A21315870GP	PULLEY SHAFT	1	
	22	ANE2177-F80	WASHER	1	
	23	A22365450AP	RIGHT HEATER PANEL	1	
	24	A290D4X70MN	ROLLER RING	1	
⚠	25	A30077M70AH	LOWER HINGE	1	
⚠	26	A30208000BP	DOOR HOOK A	1	
	27	A31368000BP	HOOK SPACER A	1	
	28	A31374830AP	HOOK SPACER B	1	
	29	A31384830AP	HOOKS PACER C	1	
	30	A400A7F40QP	FAN MOTOR	1	
	31	A400K7F40QP	EXHAUST GUIDE	1	
	32	ANE40086W0AP	FAN	1	
	33	A40087F40QP	FAN	1	
	34	A40256660QP	AIR GUIDE A	1	MAGNETRON
	35	A40267F40QP	AIR GUIDE B	1	
	36	A40307F40QP	AIR GUIDE D	1	
	37	A40477F40QP	AIR GUIDE E	1	INVERTER
	38	ANE4057-F50	SPRING	1	
	39	A40606660QP	BELT	1	
	40	A41206660QP	EXHAUST COVER	1	BACK
	41	A41446660SN	ORIFICE	1	
	42	A41797F40QP	HEATER FAN MOTOR	1	MPQ/JPG/KPQ/QPQ/YPQ (16W)
	42	A41797F40ST	HEATER FAN MOTOR	1	STM/ZPE/YTE/PTE/KTE/HPE (35/33.5W)
	43	A41804X00AP	HEATER FAN MOTOR BRACKET	1	
	44	A601L7F40QP	HUMIDITY SENSOR	1	
	45	A60304080BP	INCANDESCENT LAMP	1	(20W/240V)
	46	A605A4X70QP	THERMISTOR	1	
⚠	47	A606Y7F40QP	H. V. INVERTER	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
⚠	48	A6142-1450	MICRO SWITCH	1	(V-15G-3C26-1) (PRIMARY)
⚠	49	A61425180AP	MICRO SWITCH	1	(L-3C2-2) (SECONDARY)
⚠	50	A61456670AP	THERMAL CUTOUT	1	MAGNETRON CONV HEATER SIDE
	51	A61527F40QP	SOCKET	1	
⚠	52	A61785180AP	MICRO SWITCH	1	(L-2C2-2) (SHORT SW)
⚠	53	A62304210BP	FUSE	1	(10A/250V) EXCEPT PTE
	53	A62303A60AP	FUSE	1	(15A/250V) PTE
	54	A62314000AP	FUSE HOLDER	1	PTE/HPE/KTE/KPQ/MPQ/YPQ/YTE
	55	A63267F40ST	TURNTABLE MOTOR	1	HPE/KTE/PTE/ZPE/STM/YTE
	55	A63267F40QP	TURNTABLE MOTOR	1	QPQ/KPQ/M PQ/YPQ/J PG
	56	A65857M70AH	P. C. B. HOLDER A	1	INVERTER
	57	A66037F40QP	OVEN LAMP BRACKET	1	
	58	A66627M70AH	EARTH SPACER	1	INVERTER EARTHING
	59	A02846E00YP	NUMBER LABEL	1	
	60	A67927M70AH	P. C. B. HOLDER C	1	NOISE FILTER PCB
	61	A692Y4T00QP	NOISE FILTER	1	QPQ/JPG/STM/ZPE
⚠	62	A900C7F40HP	AC CORD W/PLUG	1	HPE (220-240V)
⚠	62	A900C7F40MP	AC CORD W/PLUG	1	KTE/KPQ/MPQ/YPQ (220-240V)
⚠	62	A900C7F40YT	AC CORD W/PLUG	1	YTE (230-240V)
⚠	62	A900C7F40ST	AC CORD W/PLUG	1	STM (220-240V)
⚠	62	A900C7F40PT	AC CORD W/PLUG	1	PTE (220V)
⚠	62	A900C7F40QP	AC CORD W/PLUG	1	QPQ/JPG (240V)
⚠	62	A900C7F40ZP	AC CORD W/PLUG	1	ZPE
	63	XST4+5VS	SCREW	1	4X5 (FOR COVER)
	64	XTT4+8RDN	SCREW	1	4X8 (FOR CABINET BODY)
	65	XTWA3+10S4J	SCREW	1	3X10 (FOR LAMP SOCKET)
	66	XTWA4+10RUJ	SCREW	4	4X10 (FOR MAGNETRON)
	67	XTWA3+8CFJ	SCREW	1	3X8 (FOR INVETER EARTH)
	68	XTW3+18BJ	SCREW	4	
	69	XYD4+EE12F	SCREW	1	4X12 (FOR EARTH)
⚠	70	2M261-M1J1	MAGNETRON	1	
	71	A65017M70AH	HEATER HOLDER C	2	
	72	XWS4VL	WASHER	2	
	73	A21447F40QP	UPPER PANEL	1	
	74	A21776660QP	WASHER	1	
	75	A22787F40QP	UPPER HEATER PANEL	1	
	76	A41325020AQ	PULLEY B	1	
	77	A41575450AP	FAN BRACKET A	1	
	78	A41585450AP	FAN BRACKET B	1	
	79	A41635020AQ	FAN SPACER C	1	
	80	A400S6660QPS	SHAFT	1	
	81	A630G7F40QP	HEATER A	1	QPQ/KPQ/MPQ/YPQ
	81	A630G7F40PT	HEATER A	1	STM/ZPE/HPE/PTE/KTE/YTE
	81	A630G7F40JP	HEATER A	1	JPG
	82	A64177M70AH	HEATER SUPPORT	3	
	83	XTWANE35+14N	SCREW	3	3.5X14 (FOR HEATER SUPPORT)
	84	XNG4EVS	NUT	2	
	85	A41074X70QP	EXHAUST GUIDE B	1	
	86	A01577F40HP	NAME LABEL	1	NN-CD997S HPE
	86	A01577F40KT	NAME LABEL	1	NN-CD997S KTE
	86	A01577F40KP	NAME LABEL	1	NN-CD997S KPQ
	86	A01577F40YT	NAME LABEL	1	NN-CD997S YTE
	86	A01577F40MP	NAME LABEL	1	NN-CD997S MPQ
	86	A01577F40ST	NAME LABEL	1	NN-CD997S STM
	86	A01577F40PT	NAME LABEL	1	NN-CD997S PTE
	86	A01577F40YP	NAME LABEL	1	NN-CD997S YPQ
	86	A01577F40QP	NAME LABEL	1	NN-CD997S QPQ
	86	A01577F40JP	NAME LABEL	1	NN-CD997S JPG
	86	A01577F40ZP	NAME LABEL	1	NN-CD997S ZPE
	86	A01577F70QP	NAME LABEL	1	NN-CD987W QPQ
	86	A01577F70ST	NAME LABEL	1	NN-CD987W STM
	86	A01577F70PT	NAME LABEL	1	NN-CD987W PTE
	86	A01577F70KT	NAME LABEL	1	NN-CD987W KTE
	86	A01577F70JP	NAME LABEL	1	NN-CD987W JPG
	87	A05427F40JP	HOT CAUTION LABEL	1	QPQ/PTE/KTE/STM/KPQ/JPG
	87	A05427F40ZP	HOT CAUTION LABEL	1	ZPE
	87	A05427F40MP	HOT CAUTION LABEL	1	MPQ/HPE/YPQ/YTE
	88	A09254X70QP	CUSHION RUBBER C	1	
	89	ANE0922000AQ	CUSHION RUBBER C	1	
	90	ANE0927000AK	CUSHION RUBBER C	1	BASE C
	91	ANE0922000AD	CUSHION RUBBER C	1	
	92	ANE0961000AH	CUSHION RUBBER C	1	OVEN

Safety	Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
	93	ANE0961000BK	CUSHION RUBBER C	1	OVEN
	94	A22437F40QP	ADIABATIC MATERIAL B	1	OUTER PANEL
⚠	95	A61457F40QP	THERMAL CUTOUT	2	HEATERS
	96	A64237F40QP	HEATER HOLDER A	1	HEATER
	97	A64297F40QP	HEATER HOLDER A	1	HEATER
	98	A40317F40QP	AIR GUIDE C	1	MAGNETRON
	99	A41917F40QP	EXHAUST GUIDE B	1	
	100	A44777F40QP	EXHAUST GUIDE	1	BACK
	101	A60327F40QP	TERMINAL PLATE	1	GRILL HEATERS CONNNECTION
⚠	102	A630H7F40QP	HEATER B U	1	QPQ/KPQ/YPQ/MPQ
⚠	102	A630H7F40PT	HEATER B U	1	HPE/ZPG/PTE/KTE/STM/YTE
⚠	102	A630H7F40JP	HEATER B U	1	JPG
	103	A66267F40QP	THERMAL CUTOUT BRACKET	1	GRILL HEATER
	104	A64607F40QP	HEATER BRACKET A	1	GRILL HEATER
	105	A22177F40QP	HEATER PANEL	1	GRILL HEATER COVER
	106	A22187F40QP	HEATER PANEL	1	CONVECTION HEATER COVER
	107	A22427F40QP	ADIABATIC MATERIAL B	1	HEATER
	108	A67927M70AH	PCB HOLDER	1	NOISE FILTER

9.3. DOOR ASSEMBLY

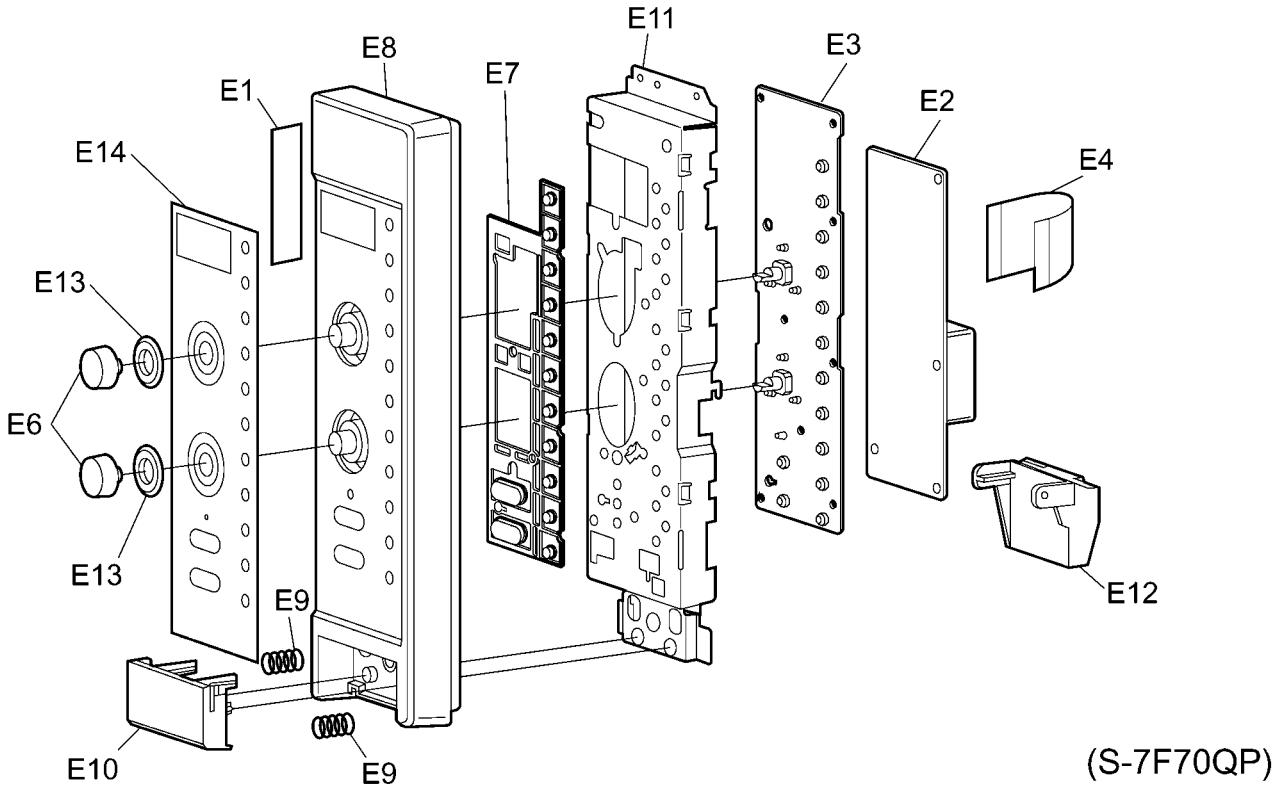


(S-7F40)

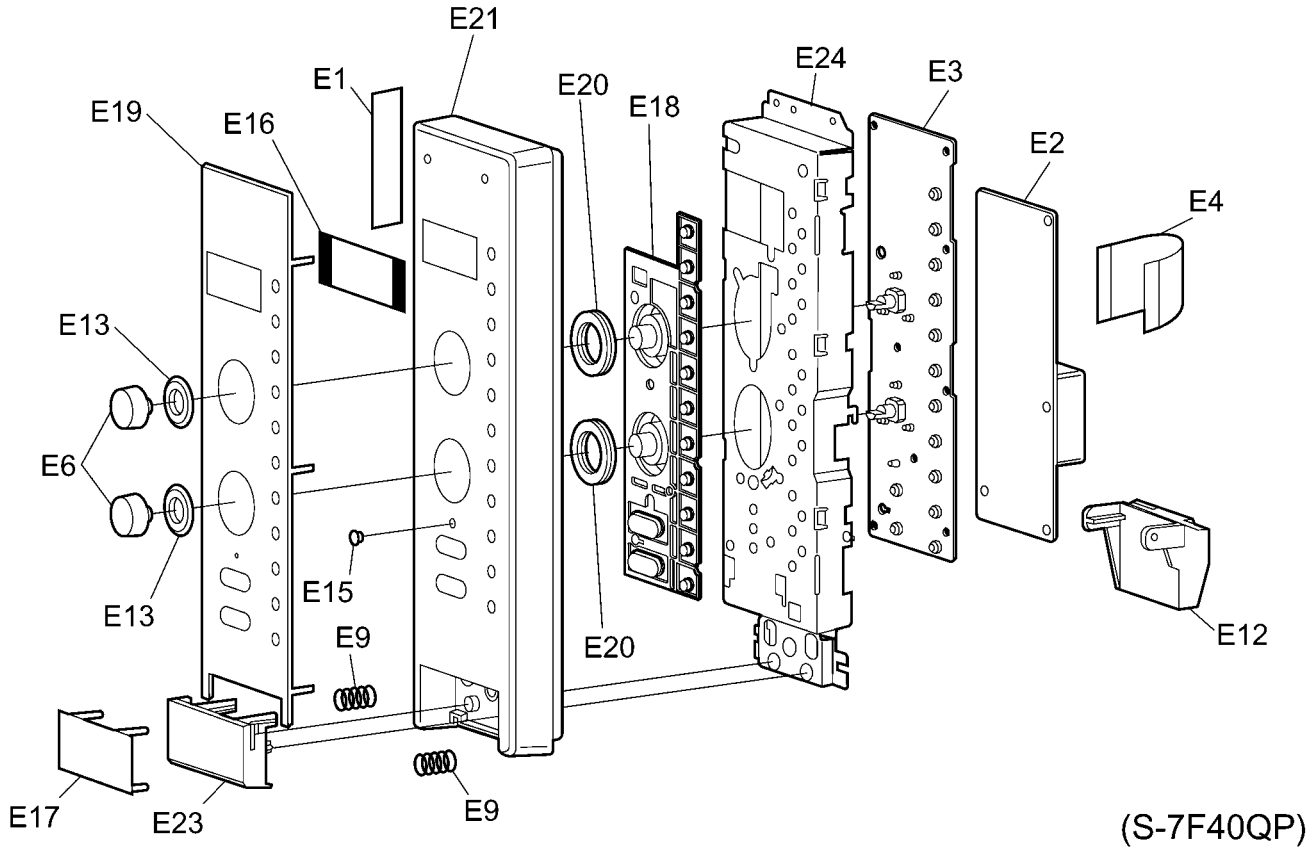
Safety	Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
	D1	A01726210JP	CAUTION LABEL	1	JPG
	D2	XTBANE4+12FKJ	SCREW	4	4X12 (FOR DOOR C)
⚠	D3	A300B5450AP	UPPER HINGE	1	
⚠	D4	A302K6660QP	DOOR E	1	
	D5	A30186660QP	DOOR KEY A	1	
	D6	A30214000AP	DOOR KEY SPRING	1	
⚠	D7	A30856660QP	DOOR C	1	
	D8	A302A7F40MP	DOOR A	1	NN-CD997S YTE/YPQ/HPE/MPQ
	D8	A302A7F40KP	DOOR A	1	NN-CD997S KTE/KPQ/STM/PTE
	D8	A302A7F40QP	DOOR A	1	NN-CD997S JPG/QPQ
	D8	A302A7F40ZP	DOOR A	1	NN-CD997S ZPE
	D8	A302A7F4HKP	DOOR A	1	NN-CD987W PTE/KTE/STM
	D8	A302A7F4HQP	DOOR A	1	NN-CD987W QPQ/JPG
	D9	A33816E00AP	HEAT SHIELD PANEL	1	NN-CD997S
	D10	XTW3+8Q	SCREW	2	3X8 (FOR D9)
	D11	A05427F40QP	HOT CAUTION LABEL	1	QPQ

NOTE 1 : Please order DHHS LABEL or CAUTION LABEL together.

9.4. ESCUTCHEON BASE ASSEMBLY



(S-7F70QP)

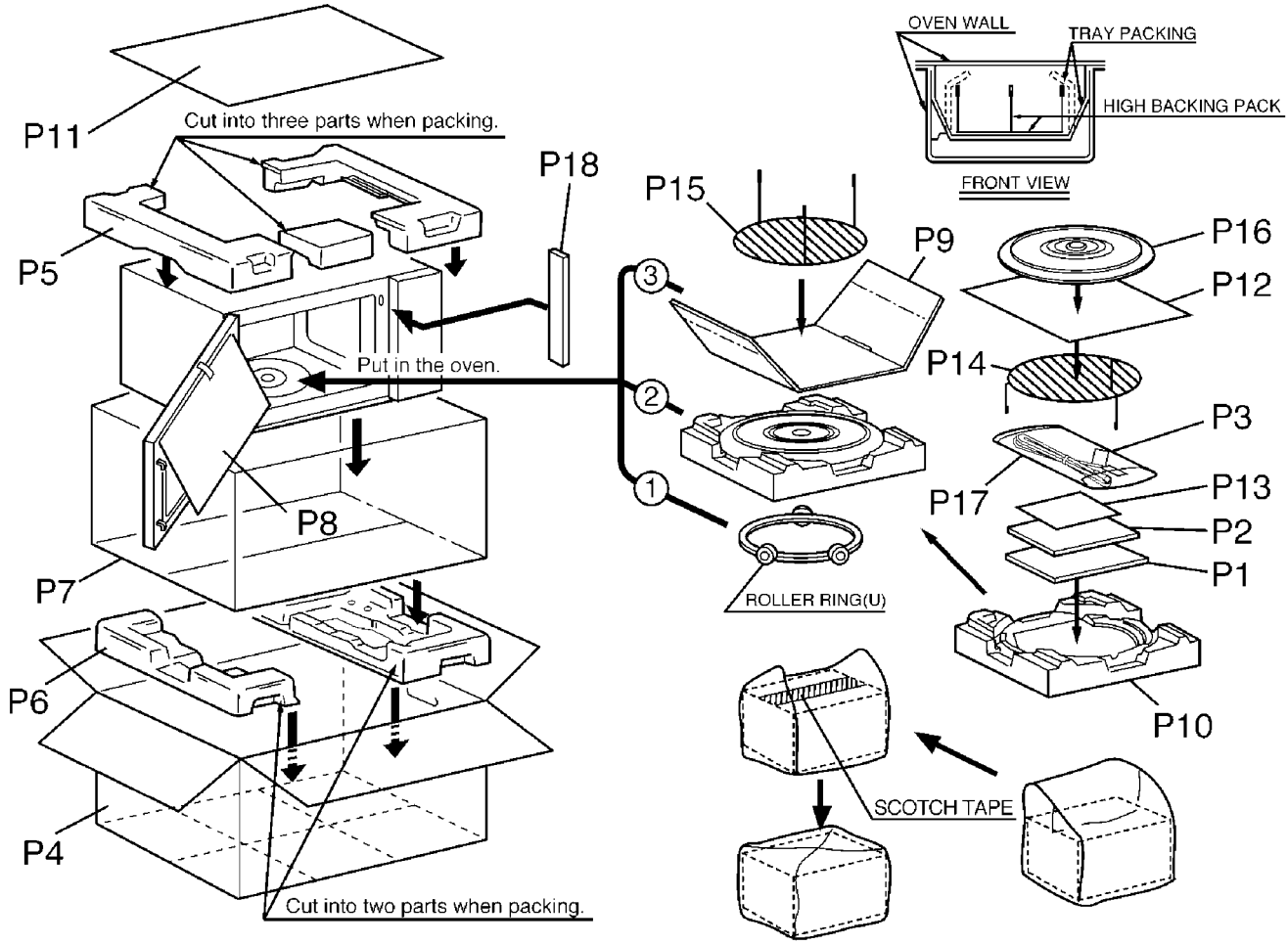


(S-7F40QP)

Safety	Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
	E1	A02840000MK	NUMBER LABEL	1	YPQ
	E2	A603Y7F40QP	PC BOARD D	1	
	E3	A603L7F40HP	PC BOARD A	1	HPE
	E3	A603L7F40PT	PC BOARD A	1	PTE
	E3	A603L7F40ZP	PC BOARD A	1	ZPE
	E3	A603L7F40KT	PC BOARD A	1	KTE
	E3	A603L7F40ST	PC BOARD A	1	STM
	E3	A603L7F40QP	PC BOARD A	1	QPQ
	E3	A603L7F40JP	PC BOARD A	1	JPG
	E3	A603L7F40KP	PC BOARD A	1	KPQ
	E3	A603L7F40YP	PC BOARD A	1	YPQ
	E3	A603L7F40MP	PC BOARD A	1	MPQ
	E3	A603L7F40YT	PC BOARD A	1	YTE
	E4	A66167F40QP	FLAT CABLE	1	
	E5	XTW3+12QJ	SCREW	9	3x12
	E6	A80207F40QP	TIMER KNOB	1	
	E7	A80247F70HQP	OPERATION BUTTON	1	NN-CD987W
	E8	A80347F70HQP	ESCUTCHEON BASE	1	NN-CD987W
	E9	ANE80378A0AG	SPRING	2	
	E10	A80724X70HQP	DOOR OPENIG BUTTON	1	NN-CD987W
	E11	A81277F70QP	BACK PANEL	1	NN-CD987W
	E12	A82567F40QP	DOOR OPENING LEVER	1	
	E13	A82877F40QP	SPACER A	2	
	E14	A83377F70HKT	ESCUTCHEON SHEET	1	NN-CD987W PTE/KTE/STM
	E14	A83377F70HQP	ESCUTCHEON SHEET	1	NN-CD987W QPE/JPG
	E15	A82516E00AP	LED CAP	1	NN-CD997S
	E16	A80167F40QP	ESCUTCHEON B	1	NN-CD997S
	E17	A80566E00AP	TRIM	1	NN-CD997S
	E18	A80247F40QP	OPERATION BUTTON	1	NN-CD997S QPQ/JPG/PTE/KTE/STM/KPQ
	E18	A80247F40HP	OPERATION BUTTON	1	NN-CD997S YPQ/MPQ/YTE/HPE
	E18	A80247F40ZP	OPERATION BUTTON	1	NN-CD997S ZPE
	E19	A80357F40QP	ESCUTCHEON PANEL	1	NN-CD997S QPQ/JPG
	E19	A80357F40MP	ESCUTCHEON PANEL	1	NN-CD997S YPQ/HPE/MPQ/YTE
	E19	A80357F40PT	ESCUTCHEON PANEL	1	NN-CD997S PTE/KTE/KPQ/STM
	E19	A80357F40ZP	ESCUTCHEON PANEL	1	NN-CD997S ZPE
	E20	A80097F40QP	INDICATOR A	2	NN-CD997S
	E21	A80347F40QP	ESCUTCHEON BASE	1	NN-CD997S
	E22	XTW3+8BJ	SCREW	4	3X8
	E23	A80726E00AP	DOOR OPENIG BUTTON	1	NN-CD997S
	E24	A81277F40QP	BACK PANEL	1	

NOTE 2 : Please order NUMBER LABEL together.

9.5. PACKING AND ACCESSORIES

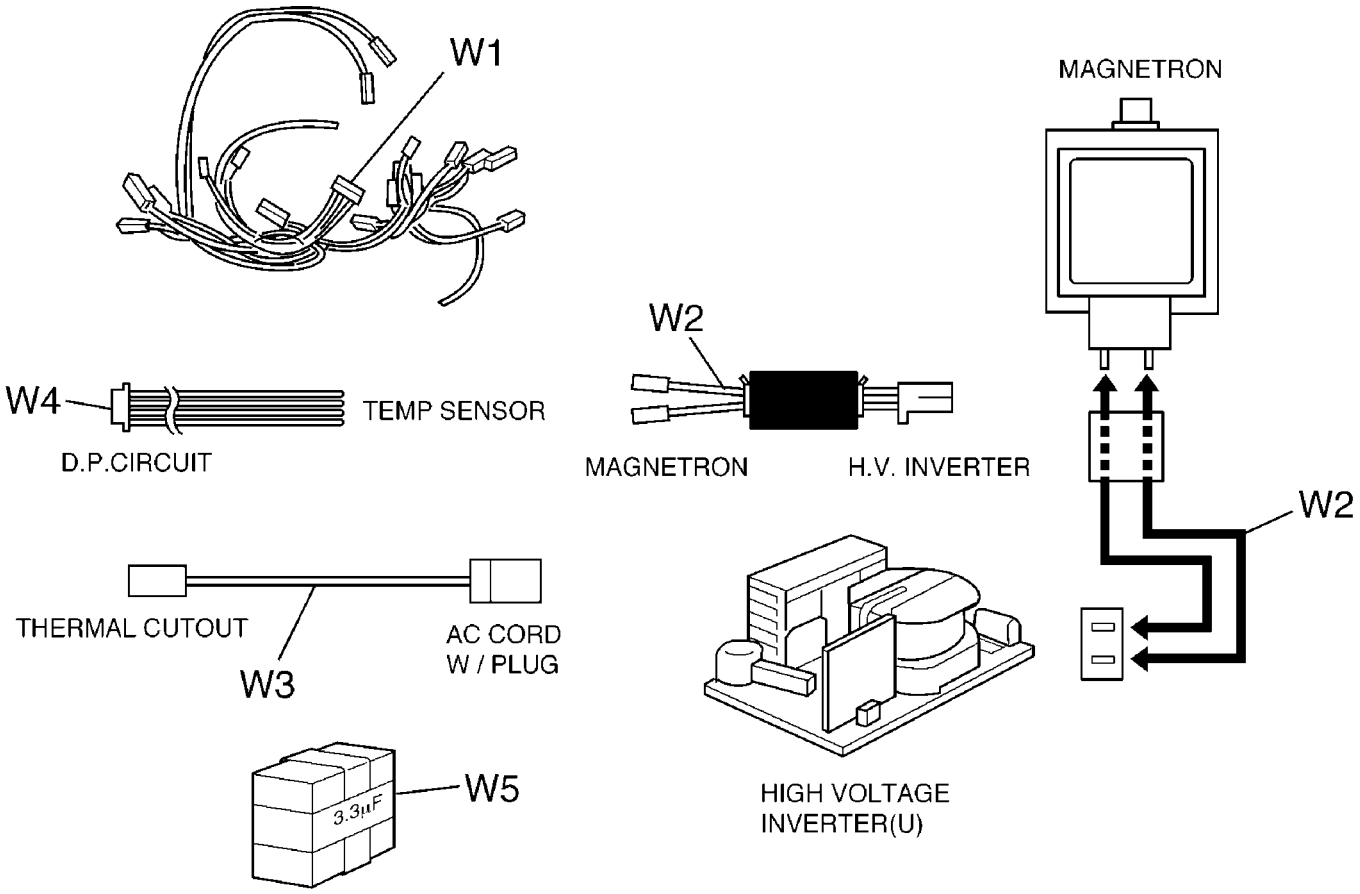


(S-6E0 QPQ)

Safety	Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
	P1	A000B5820KN	COOK BOOK	1	KTE/PTE/STM/KPQ
	P1	A000B7F40MP	COOK BOOK	1	HPE/MPQ/YPQ/YTE
	P1	A000B8240ZP	COOK BOOK	1	ZPE
	P2	A00037F40HP	INSTRUCTION BOOK	1	HPE/YPQ/MPQ/YTE
	P2	A00037F40KP	INSTRUCTION BOOK	1	KTE/PTE/KPQ/STM
	P2	A00037F70QP	INSTRUCTION BOOK	1	QPQ/JPG
	P2	A00037F40ZP	INSTRUCTION BOOK	1	ZPE
	P3	A00324040XN	EARTH CAUTION LABEL	1	YTE
	P4	A01027F70HKT	PACKING CASE PAPER	1	NN-CD987W STM/KTE
	P4	A01027F40MP	PACKING CASE PAPER	1	NN-CD997S YTE/HPE/MPQ/YPQ
	P4	A01027F40QP	PACKING CASE PAPER	1	NN-CD997S QPQ/JPG
	P4	A01027F40KP	PACKING CASE PAPER	1	NN-CD997S PTE/KTE/KPQ/STM
	P4	A01027F40ZP	PACKING CASE PAPER	1	NN-CD997S ZPE
	P4	A01027F70HQP	PACKING CASE PAPER	1	NN-CD987W JPG/QPQ
	P4	A01027F70HPT	PACKING CASE PAPER	1	NN-CD987W PTE
	P5	A01046660MN	UPPER FILLER	1	HPE/YPQ/YTE/MPQ
	P5	A01046660KN	UPPER FILLER	1	KTE/STM/PTE/KPQ
	P5	A01046660QP	UPPER FILLER	1	QPQ/JPG/ZPE
	P6	A01056660MN	LOWER FILLER	1	MPQ/YPQ/YTE/HPE
	P6	A01056660KN	LOWER FILLER	1	STM/PTE/KPQ/KTE
	P6	A01056660QP	LOWER FILLER	1	QPQ/JPG/ZPE
	P7	A01065130AP	VINYL COVER	1	
	P8	ANE0107580AP	DOOR SHEET	1	
	P9	A01086660QP	TRAY PACKING	1	
	P10	A01136660QP	TRAY STYROL	1	
	P11	A01265820HKN	REINFORCE MATERIAL	1	STM/PTE/KTE/KPQ/PTE
	P12	ANE02072L0AP	STYROL SHEET	1	
	P13	A04457F40MP	MENU LABEL B	1	NN-CD987W MPQ
	P13	A04457F40QP	MENU LABEL B	1	QPQ/JPG

Safety	Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
	P13	A04457F40PT	MENU LABEL B	1	PTE
	P13	A04457F40ST	MENU LABEL B	1	STM
	P14	A060V4X00AP	HIGH BAKING RACK	1	MID (50MM)
	P15	A060V4X00CP	HIGH BAKING RACK	1	HIGH (135MM)
	P16	A06014X70QP	COOKING TRAY	1	
	P17	A91644000XN	EARTH LEAD	1	YTE
	P18	A01456E00KP	DOOR SHEET B	1	NN-CD997S
	P18	A01459770KN	DOOR SHEET B	1	NN-CD987W

9.6. WIRING MATERIAL

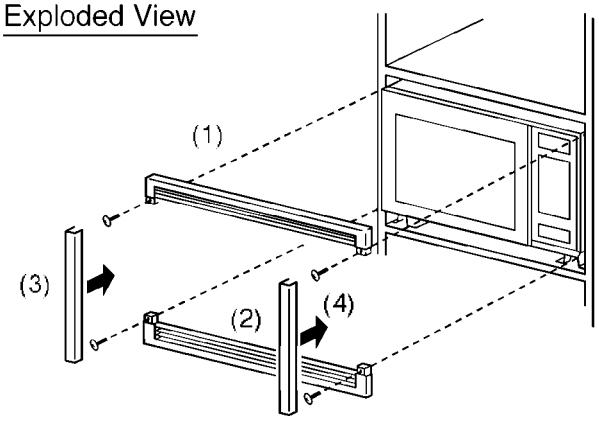


(S-6E0 QPQ)

Safety	Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
	W1	A030A7F40PT	LEAD WIRE HARNESS	1	PTE/HPE/KTE/KPQ/YPQ/YTE/MPQ
	W1	A030A7F40QP	LEAD WIRE HARNESS	1	QPQ/STM/ZPE/JPG
	W2	A030E7M70AH	LEAD WIRE	1	HPE/KTE/KPQ/MPQ/PTE/YPQ/YTE
	W2	A030E7F40QP	LEAD WIRE	1	QPQ/JPG/ZPE W/FERRITE CORE
	W3	A03509770LN	LEAD WIRE	1	
	W4	A03536660QP	LEAD WIRE	1	
	W5	MKP62-335K	CAPACITOR	1	3.3MF PTE/KPQ/MPQ/YPQ/YTE

PARTS LIST FOR MICROWAVE OVEN TRIM KITS

Exploded View



Trim Kit Model No.	Top and Bottom Strip Ref No:1.2	Pcs/ Set	Side Strip Ref No:3.4	Pcs/ Set	Microwave Oven Model No.
NN-TK957	A1603A000HAG	2	A1601A240HAP	2	NN-CD987W

NOTE: The top and bottom strips have the same part number and the left and right side strips also have the same part number. These parts will be supplied on one piece per one part number.

9.7. REF. NO. 47 H.V. INVERTER (U)

Safety	Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
	L701	A5020M300GP	CHOKE COIL	1	
⚠	T701	A609A7F40QP	INVERTER TRANSFORMER	1	
	D707	B0AACK000004	DIODE SI	1	1SS133T
	ZD701, ZD702, ZD703	B0BA011A0059	ZENNER DIODE SI	3	RD12JS2
	ZD704	B0BA8R8A0034	ZENNER DIODE SI	1	RD9.1ES-T1-AZ(AB2)
	D703, D704	B0EAKR000018	DIODE SI	2	ERA1506
	D705, D706	B0HAGR000004	DIODE SI	2	ERA38-06
	R728, R729, R730, R732	D1AC2403A075	METAL OXICIDE RESISTOR	4	240K, 1/2W, 1%
	R718	ERDS1TJ101T	CARBON RESISTOR	1	100, 1/2W, 5%
	R714, R715	ERDS1TJ204T	CARBON RESISTOR	2	200K, 1/2W, 5%
	R731	ERDS1TJ244T	CARBON RESISTOR	1	240K, 1/2W, 5%
	R712	ERDS2TJ100T	CARBON RESISTOR	1	10, 1/4W, 5%
	R725, R726	ERDS2TJ181T	CARBON RESISTOR	2	180,1/4W, 5%
	R717, R719-R723	ERDS2TJ510T	CARBON RESISTOR	6	51, 1/4W, 5%
	Q705	B1AABR000001	TRANSISTOR SI	1	2SC5201
	VR701	D3BB6503A006	VARIABLE RESISTOR	1	50K, 30%
	C708	ECA1EM331B	ELECTRIC CAPACITOR, AL	1	330MF/25V
	C714, C719, C720	ECEA1CKA100B	ELECTRIC CAPACITOR, AL	3	10MF/16V
	C709	ECEA1CKA470B	ELECTRIC CAPACITOR, AL	1	47MF/16V
	C723	ECEA1HKA010B	ELECTRIC CAPACITOR, AL	1	1MF/50V
	C716	ECEA1HKA2R2B	ELECTRIC CAPACITOR, AL	1	2.2MF/50V
	C717, C730	ECQB1H333JF3	FILM CAPACITOR	2	0.033MF,50V
	C718	ECQV1H154JL3	FILM CAPACITOR	1	0.15MF/50V
	C721	ECQV1H224JL3	FILM CAPACITOR	1	2.2MF,50V
	CN701	K1KA03AA0089	CONNECTOR	1	B03B-XAKS-1-T(LF)(SN)
	IC701	AN47056A-VT	IC	1	
	D709	B0ADCJ000007	CHIP DIODE, SI	1	
	Q703, Q706	B1ABCF000116	CHIP TRANSISTOR , SI	2	
	Q704, Q707	B1HFCFA00007	CHIP TRANSISTOR , SI	2	
	R707	D0GB100JA006	CHIP RESISTOR	1	10, 5%
	R750, R772	D0GB104JA006	CHIP RESISTOR	2	100K, 5%
	R746	D0GB113JA006	CHIP RESISTOR	1	11K, 1/16W, 5%
	R724, R774, R783, R787	D0GB124ZA005	CHIP RESISTOR	4	120K, 1/16W1%
	R760	D0GB154JA006	CHIP RESISTOR	1	150K, 5%
	R745, R779	D0GB162ZA005	CHIP RESISTOR	2	1.6K, 1/16W,1%
	R777	D0GB163ZA005	CHIP RESISTOR	1	16K, 1%
	R767	D0GB184ZA005	CHIP RESISTOR	1	180K, 1/16W, 1%
	R705, R706, R710, R711	D0GB203JA006	CHIP RESISTOR	4	20K, 5%
	R785	D0GB225JA006	CHIP RESISTOR	1	2.2M, 5%
	R759, R768, R769, R770	D0GB242JA006	CHIP RESISTOR	4	2.4K, 4,5%
	R782	D0GB272ZA005	CHIP RESISTOR	1	2.7K, 1%
	R780, R781	D0GB303ZA005	CHIP RESISTOR	2	30K, 1%
	R758, R761, R763	D0GB333ZA005	CHIP RESISTOR	3	33K, 1%
	R709, R754	D0GB512ZA005	CHIP RESISTOR	2	5.1K, 1%
	R773	D0GB513ZA005	CHIP RESISTOR	1	51K, 1%
	R752	D0GB564JA006	CHIP RESISTOR	1	560K, 5%
	R751	D0GB681JA006	CHIP RESISTOR	1	680, 5%
	R765	D0GB753ZA005	CHIP RESISTOR	1	75K, 1/16W, 1%,
	R771, R789	D0GB823JA006	CHIP RESISTOR	2	82K, 5%
	R704	D0GD200JA067	CHIP RESISTOR	1	20, 5%
	R733-R744	D0GF363ZA009	CHIP RESISTOR	12	36K, 1/8W, 1%
	J701-J713, R727, R748	D0YBR0000011	CHIP RESISTOR	15	0
	R757	D1BB1782A004	CHIP RESISTOR	1	17.8K, 1/16W, 1%
	R784	D1BB2552A004	CHIP RESISTOR	1	25.5K, 1/16W, 1%
	R764	D1BB3162A004	CHIP RESISTOR	1	31.6K, 1/16W, 1%
	R755	D1BB3481A004	CHIP RESISTOR	1	3.48K, 1/16W, 1%
	R786	D1BB3572A004	CHIP RESISTOR	1	35.7K, 1/16W, 1%

Safety	Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
	R788, R790	D1BB3831A004	CHIP RESISTOR	2	3.83K, 1/16W,1%
	R756	D1BB4023A004	CHIP RESISTOR	1	402K, 1/16W, 1%
	R708, R713, R762	D1BB4222A004	CHIP RESISTOR	3	42.2K, 1/16W, 1%
	R766	D1BB5901A004	CHIP RESISTOR	1	5.9K, 1/16W, 1%
	R776	D1BB6491A004	CHIP RESISTOR	1	6.49K, 1/16W, 1%
	R749, R775	D1BB9761A004	CHIP RESISTOR	2	9.76K, 1/16W, 1%
	TH701	D4CC11040009	CHIP THERMISTOR	1	100K,B=4390
	C705, C710, C712, C713	F1H1E104A030	CHIP CAPACITOR	4	0.1MF/25V
	C704	F1H1E474A100	CHIP CAPACITOR	1	0.47MF/25V
	C711, C722, C727, C728, C729	F1H1H1010005	CHIP CAPACITOR	5	0.0001MF/50V
	C715	F1H1H102A219	CHIP CAPACITOR	1	0.001MF/50V
	C726	F1H1H471A824	CHIP CAPACITOR	1	470PF/50V, 2%
	D224	A6691M300GP	HEAT SINK	1	
	DB701	B0FBBQ000004	BRIDGED DIODE, SI	1	15A,600V,PBF
	Q702	B1JADR000009	TRANSISTOR, SI	1	J321
	Q701	B1JAFV000004	TRANSISTOR, SI	1	GT50N322
	Q702	XTNA3+12BJ	SCREW 3X12	1	
	DB701, Q701	XTWA3+12BJ	SCREW 3X12	2	
	IC702, IC703	B3PAA0000387	PHOTO COUPLER IC	2	PS2501-1 HL,4P,PBF
	D224	XTWANE3+8ZKJ	SCREW 3X 8	1	
	R702	D0CM352JA002	SAND BAR RESISTOR	1	3.5K, 15W
	R701	D0XE107M0003	HIGH VOLTAGE RESISTOR	1	100M, P=28
	C702	ECQE2505T878	FILM CAPACITOR	1	5.0MF,250VDC
	C703	ECWF2395N640	FILM CAPACITOR	1	3.9MF,250VDC
	C701	ECWF5184N641	FILM CAPACITOR	1	0.18MF,500VDC

9.8. REF. NO. E2 P. C. BOARD D (U)

Safety	Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
	D100,D225, D226	B0AACK000004	DIODE, SI	3	1SS133T
	ZD10	B0BA01200046	ZENNER DI, SI	1	7712C
	D222	B0EAKR000018	DIODE, SI	1	ERA1506
	D28	B0HAGM000007	DIODE, SI	1	ERA9102
	R100, R101	ERDS1FJ563T	CARBON FILM RESISTOR	2	56K, 1/2W,5%
	R29	ERDS2TJ100T	CARBON FILM RESISTOR	1	10, 1/4W,5%
	R234	ERDS2TJ102T	CARBON FILM RESISTOR	1	1.0K, 1/4W,5%
	R235	ERDS2TJ104T	CARBON FILM RESISTOR	1	100K, 1/4W,5%
	R211, R241, R242	ERDS2TJ391T	CARBON FILM RESISTOR	3	390, 1/4W 5%
	R223, R224	ERDS2TJ471T	CARBON FILM RESISTOR	2	470, 1/4W,5%
	R220, R221, R238, R239	ERDS2TJ680T	CARBON FILM RESISTOR	4	68, 1/4W,5%
	R225	ERG12SJ201V	METAL OXIDE RESISTOR	1	200, 1/2W,5%
	R226	ERG12SJ331V	METAL OXIDE RESISTOR	1	330, 1/2W,5%
	Q220	B1ACGF000004	TRANSISTOR, SI	1	KTA200-Y-AT/P
	C29	ECA1HHG100B	ELECTRIC CAPACITOR, AL	1	10MF/50V/105?C
	C26	ECKN3A102KBP	CERAMIC CAPACITOR	1	0.001MF/1KV
	C228, C229	ECKN3A182KBP	CERAMIC CAPACITOR	2	0.001MF/1KV
	C10	EEUFC1C471B	ELECTRIC CAPACITOR, AL	1	470MF/16V/FC
	R26	ERG1SJ393E	METAL OXIDE RESISTOR	1	39K,1W,5%
	R25	ERX12SJ1R0E	METAL OXIDE RESISTOR	1	1,1/2W,5%
	CN2	K1KA03AA0086	CONNECTOR	1	B03B-XASS-1-T(LF)(SN)
	CN6	K1KA03AA0087	CONNECTOR	1	B03B-XARS-1-T(LF)(SN)
	CN3	K1KA03AA0091	CONNECTOR	1	B03B-XAMS-1-T(LF)(SN)
	CN4	K1KA03AA0170	CONNECTOR	1	B3(4-2)B-XASK-1(LF)(SN)
	IC220	B1HBGFF00007	IC	1	ULN2003ADR
	R10, R233	D0GB104JA002	CHIP RESISTOR	2	100K, 1/16W,5%
	R27	D0GB153JA002	CHIP RESISTOR	1	15K, 1/16W,5%
	R30	D0GB220JA002	CHIP RESISTOR	1	22, 1/16W,5%
	R28	D0GB394JA002	CHIP RESISTOR	1	390K, 1/16W,5%
	R210	D0GB512JA002	CHIP RESISTOR	1	5.1K, 1/16W,5%
	C27	F1H1E104A030	CHIP RESISTOR	1	0.1MF/25V
	C28	F1H1H102A219	CHIP RESISTOR	1	0.001MF/50V
	D27	B0BB200A0005	DIODE, SI	1	ST03D-200-4002P7.5
	D26	B0EBKR000038	DIODE, SI	1	600V
	D10	B0JAMK000017	DIODE, SI	1	RK19
	D224	B2BALR000060	TRIAC	1	BCR16PM-12LG
	IC26, IC100	B3PAA0000387	IC	2	PS2501-1 HL,4P,PBF
	IC223	B3PAC0000060	IC	1	AQH2223
	IC221	B3PAC0000128	PHOTO COUPLER IC	1	TLP665J(D4,S,PF)
	C25	ECA2WHG220E	ELECTRIC CAPACITOR, AL	1	22MF/450V/105?C
	C220	ECQU2A104MLA	MP CAPACITOR	1	0.1MF,275V
	D29,D30	ERZV10D112C1	VARISTOR	2	V10112U
	D25	ERZV10D511CS	VARISTOR	1	V10511U
	T10	ETS19AA221AC	SWITCHING TRANSFORMER	1	
	CN1	K1KA05AA0122	CONNECTOR	1	B5(5.0)B-XASK-1-A(LF)(SN)
	CN7	K1MN19A00026	CONNECTOR	1	19FEBTVKN
⚠	RY2,RY6	K6B1AGA00114	RELAY	2	G5NB_12
⚠	RY1,RY4	K6B1AGA00212	RELAY	2	ALE73B12
	BZ210	L0DCEA000047	BUZZER	1	PS2220P02
	IC25	MIP2D20MSSCF	IC	1	MIP2D20MSSCF
	D224	W2406-28600	HEAT SINK	1	
	D224	XYN3+F8S6J	SCREW 3X8	1	3X8

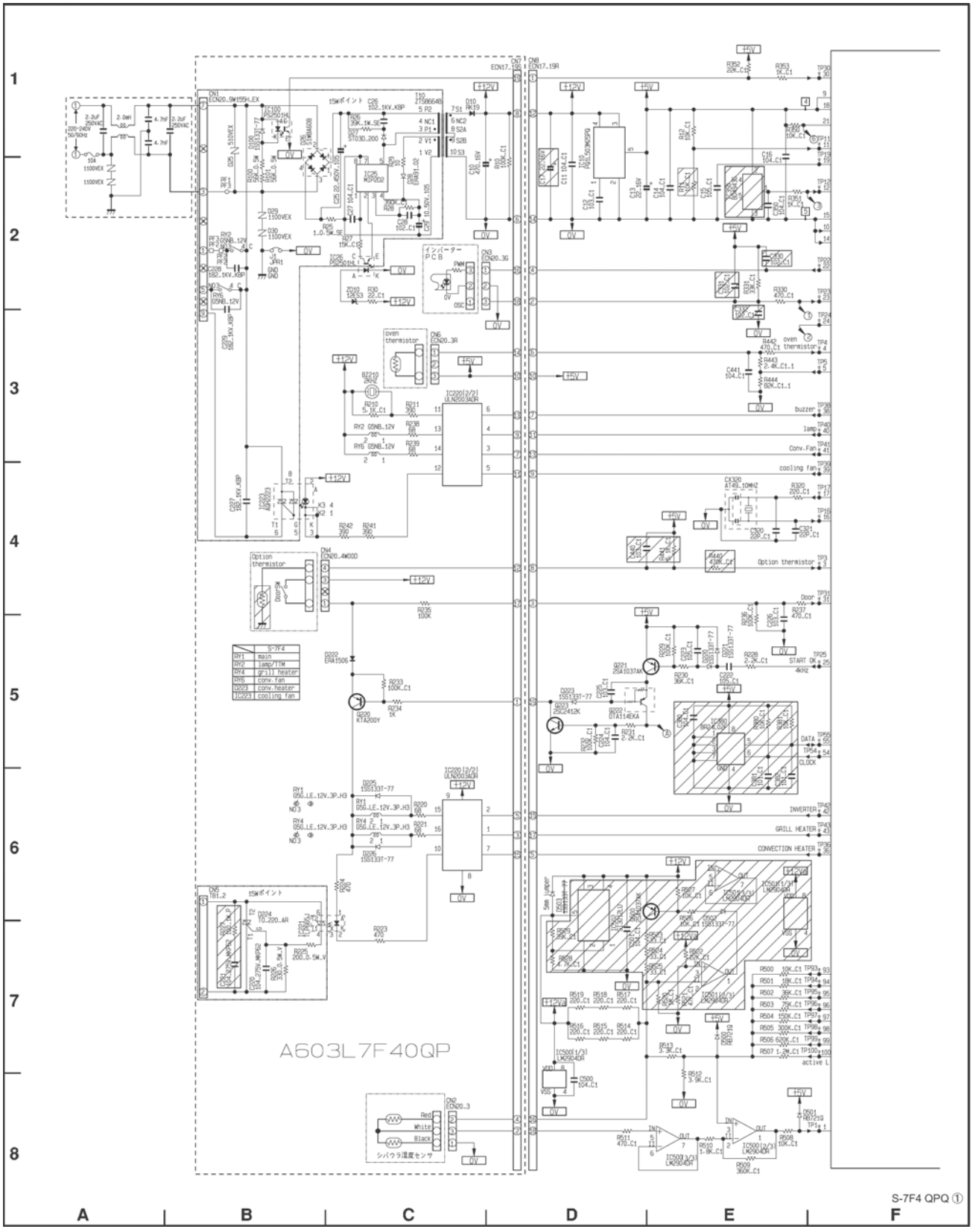
9.9. REF. NO. E3 P. C. BOARD F (U)

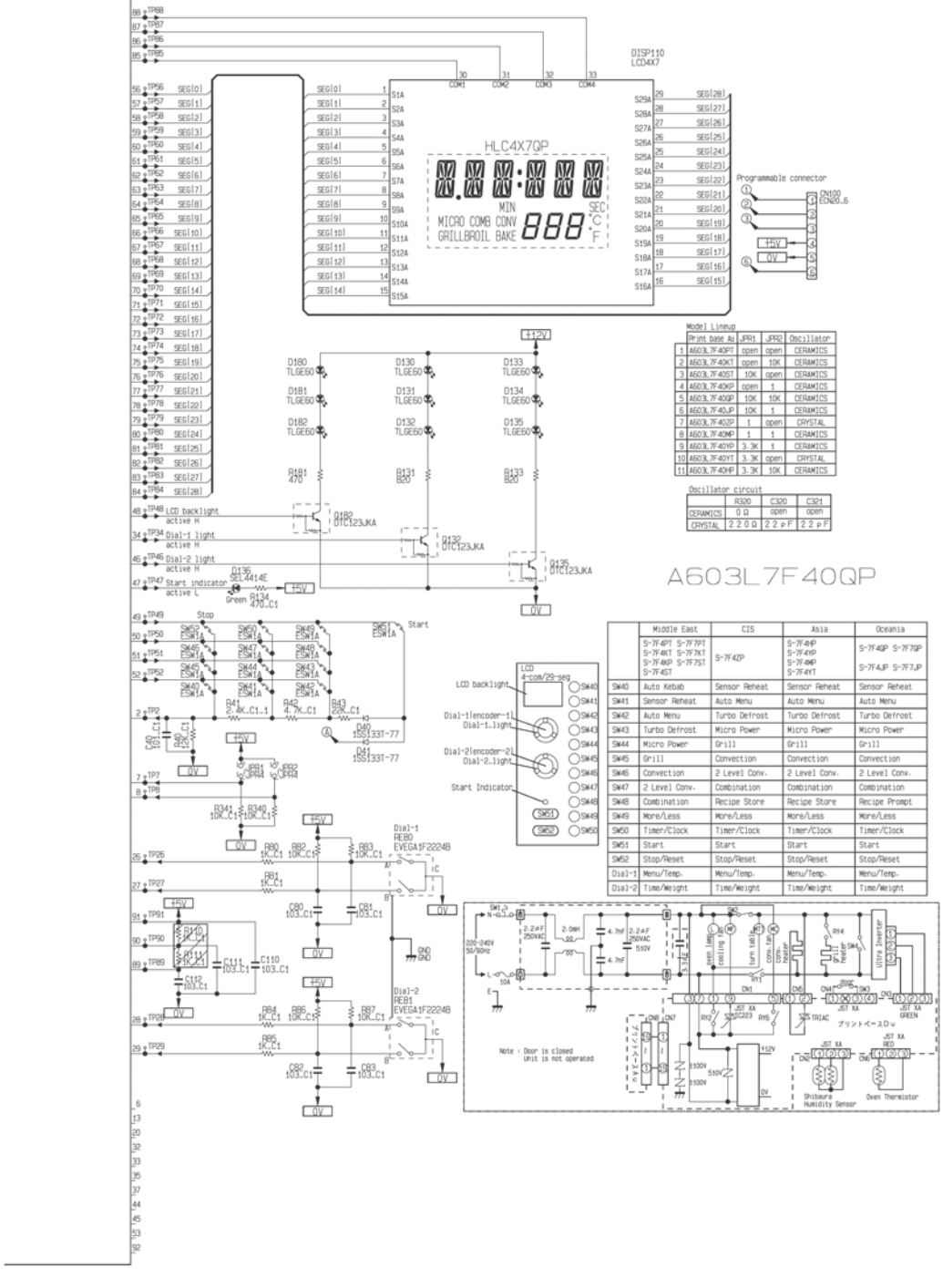
Safety	Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
	DISP110	A66174J02XN	DISPLAY HOLDER	1	
	DISP110	A66184J00XN	LIGHT DRIVE SHEET	1	
	DISP110	A67524J00XN	REFRECT SHEET	1	
	D220, D221, D223, D40,D41	B0AACK000004	DIODE, SI	5	1SS133T
	D500, D501	B0JAAE000001	DIODE, SI	2	RB721Q
	JPR1, JPR2	ERDS2TJ103T	CARBON FILM RESISTOR	2	10K, 1/4W, 5%
	JPR1, JPR2	ERDS2TJ1R0T	CARBON FILM RESISTOR	2	1, 1/4W, 5%
	JPR1, JPR2	ERDS2TJ332T	CARBON FILM RESISTOR	2	3.3K, 1/4W, 5%
	R181	ERDS2TJ471T	CARBON FILM RESISTOR	1	470, 1/4W, 5%
	R131, R133	ERDS2TJ821T	CARBON FILM RESISTOR	2	820, 1/4W, 5%
	D136	B3ABA0000505	LED	1	SEL4414ETP5
	D180, D181, D182, D130, D131, D132, D133, D134, D135	B3ABA0000580	LED	9	TLGE60T(K53,MAT,F)
	C13	ECEA1CKA220B	ELECTRIC CAPACITOR, AL	1	22MF/16V
	SW40, SW41, SW42, SW43, SW44, SW45, SW46, SW47, SW48, SW49, SW50, SW51, SW52	EVQ11L05R	SW	13	EVQ21505R
	C320	F1H1H2200008	CERAMIC CAPACITOR	2	FOR ZPE,YTE
	CX320	H0D100500020	CRYSTAL	1	FOR ZPE,YTE
	CX320	H2B100500007	CERAMIC	1	CSTLS10M00G53-A0
	Q223	B1ABCF000010	CHIP TRANSISTOR, SI	1	2SC2412K
	Q221	B1ADCF000001	CHIP TRANSISTOR, SI	1	
	Q182,Q132, Q135	B1GBCFEL0002	CHIP TRANSISTOR, SI	3	DTC123JKA/E42
	Q222	B1GDCFJJ0002	CHIP TRANSISTOR, SI	1	DTA114EKA/14
	IC500	C0ABBA000137	IC OP-AMP	1	LM2904DR
	IC10	C0DBAHD00013	IC	1	PQ1L503M2SPQ
	R80,R81, R84,R85, R351,R353	D0GB102JA002	CHIP RESISTOR	6	1K, 1/16W, 5%
	R12, R340, R341, R508, R82, R83, R86, R87, R350, R500, R508	D0GB103JA002	CHIP RESISTOR	11	10K,1/16W, 5%
	R232, R229, R236	D0GB104JA002	CHIP RESISTOR	3	100K, 1/16W, 5%
	R40	D0GB123JA002	CHIP RESISTOR	1	12K, 1/16W, 5%
	R507	D0GB125JA002	CHIP RESISTOR	1	
	R504	D0GB154JA002	CHIP RESISTOR	1	150K, 1/16W, 5%
	R510	D0GB182JA002	CHIP RESISTOR	1	1.8K, 1/16W, 5%
	R501	D0GB183JA002	CHIP RESISTOR	1	18K, 1/16W , 5%
	R514, R515, R516, R517, R518, R519	D0GB221JA002	CHIP RESISTOR	6	220, 1/16W, 5%
	R228,R231	D0GB222JA002	CHIP RESISTOR	2	2.2K, 1/16W, 5%
	R352,R43	D0GB223JA002	CHIP RESISTOR	2	22K, 1/16, 5%
	R505	D0GB304JA002	CHIP RESISTOR	1	300K, 1/16W, 5%
	R513	D0GB332JA002	CHIP RESISTOR	1	3.3K, 1/16W, 5%
	R331	D0GB333JA002	CHIP RESISTOR	1	33K, 1/16W, 5%
	R230,R502	D0GB363JA002	CHIP RESISTOR	2	36K, 1/16W, 5%
	R509	D0GB364ZA005	CHIP RESISTOR	1	360K, 1/16W, 1%
	R512	D0GB392JA002	CHIP RESISTOR	1	3.9K, 1/16W, 5%
	R134, R442, R330, R237, R511	D0GB471JA002	CHIP RESISTOR	1	470, 1/16W, 5%
	R42	D0GB472JA002	CHIP RESISTOR	1	4.7K, 1/16W, 5%
	R506	D0GB624JA002	CHIP RESISTOR	1	620K, 1/16W, 5%
	R503	D0GB753JA002	CHIP RESISTOR	1	75K, 1/16W§5%
	R320	D0YBR0000002	CHIP RESISTOR	1	0
	R41, R443	D1BB2401A001	CHIP RESISTOR	2	2.4K, 1/16W, 1%
	R444	D1BB8202A001	CHIP RESISTOR	1	82K, 1/16W, 1%
	C15, C222, C223	F1H1A105A019	CHIP CAPACITOR	3	1MF/10V

Safety	Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
	C11, C16, C350, C500, C441, C14, C224	F1H1E104A030	CHIP CAPACITOR	7	0.1MF/25V
	C40	F1H1H1010005	CHIP CAPACITOR	1	0.0001MF/50V
	C80, C81, C82, C83, C12, C226, C225, C110, C111, R112	F1H1H103A220	CHIP CAPACITOR	10	0.01MF/50V
	IC1 (S-7F4)	MN101E29GEA	LSI	1	
	RE80, RE81	EVEGA1F2224B	ENCODER	2	EVEGA1F2224B
	CN8	K1MN19B00063	CONNECTOR	1	19FESTVKN
	DISP110	L5AAAFD00014	LCD/HLC7607-012410	1	

9.10. DIGITAL PROGRAMMER CIRCUIT

SCHEMATIC DIAGRAM





Model Lineup

	Print base Au	JPR1	JPR2	Oscillator
1	A603L7F40PT	open	open	CERAMICS
2	A603L7F40KT	open	10K	CERAMICS
3	A603L7F40ST	10K	open	CERAMICS
4	A603L7F40KP	open	1	CERAMICS
5	A603L7F40QP	10K	10K	CERAMICS
6	A603L7F40JP	10K	1	CERAMICS
7	A603L7F40ZP	1	open	CRYSTAL
8	A603L7F40MP	1	1	CERAMICS
9	A603L7F40YP	3.3K	1	CERAMICS
10	A603L7F40YT	3.3K	open	CRYSTAL
11	A603L7F40HP	3.3K	10K	CERAMICS

Oscillator circuit

	R320	C320	C321
CERAMICS	0 Ω	open	open
CRYSTAL	220Ω	22pF	22pF

	Middle East	CIS	Asia	Oceania
	S-7F4PT S-7F7PT S-7F4KT S-7F7KT S-7F4KP S-7F7ST S-7F4ST	S-7F47P	S-7F4HP S-7F4YP S-7F4MP S-7F4YT	S-7F4QP S-7F7QP S-7F4JP S-7F7JP
SW40	Auto Kebab	Sensor Reheat	Sensor Reheat	Sensor Reheat
SW41	Sensor Reheat	Auto Menu	Auto Menu	Auto Menu
SW42	Auto Menu	Turbo Defrost	Turbo Defrost	Turbo Defrost
SW43	Turbo Defrost	Micro Power	Micro Power	Micro Power
SW44	Micro Power	Grill	Grill	Grill
SW45	Grill	Convection	Convection	Convection
SW46	Convection	2 Level Conv.	2 Level Conv.	2 Level Conv.
SW47	2 Level Conv.	Combination	Combination	Combination
SW48	Combination	Recipe Store	Recipe Store	Recipe Prompt
SW49	More/Less	More/Less	More/Less	More/Less
SW50	Timer/Clock	Timer/Clock	Timer/Clock	Timer/Clock
SW51	Start	Start	Start	Start
SW52	Stop/Reset	Stop/Reset	Stop/Reset	Stop/Reset
Dial-1	Menu/Temp.	Menu/Temp.	Menu/Temp.	Menu/Temp.
Dial-2	Time/Weight	Time/Weight	Time/Weight	Time/Weight

S-7F4 QPQ ②

G | H | I | J | K | L