

SHARP SERVICE MANUAL

S0313R15ATPH/

COMMERCIAL MICROWAVE OVEN



MODEL **R-15AT**

In interests of user-safety the oven should be restored to its original condition and only parts identical to those specified should be used.

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SHARP CORPORATION

CAUTION

MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from the magnetron or other microwave generating devices if it is improperly used or connected. All input and output microwave connections, waveguides, flanges and gaskets must be secured.

Never operate the device without a microwave energy absorbing load attached.

Never look into an open waveguide or antenna while the device is energized.

VARNING

MICKROVAGSSTRÅLING

Personer får inte utsättas för mikrovågsenergi som kan stråla från magnetronen eller andra mikrovågsstrålande anordningar om dessa är felanslutna eller används på fel sätt. Alla in- och utgångsanslutningar för mikrovågor, vågledare, flänsar och packningar måste vara fast anslutna.

Mikrovågsgeneratoren får inte arbeta utan att absorberande belastning är ansluten. Titta aldrig in i en öppen vågledare eller antenn när mikrovågsgeneratoren är påkopplad eller laddad.

VAROITUS

MIKROAALTOSÄTELYÄ

Käyttäjät ei saa joutua alttiiksi mikroaaltoenergialle, jota voi säteillä magnetronista tai muusta mikroaaltoja kehittävästä laitteesta, jos sitä käytetään tai jos se kytketään väärin. Kaikkien mikroaaltoliitännöiden sekä syöttö-että ulostulopuolella, aaltoputkien laippojen ja tiivisteiden tulee olla varmistettuja.

Mikroaaltouunnia ei koskaan saa käyttää ilman kuormaa jossa mikroaaltoenergiaa kuluu. Avoimeen aaltoputkeen tai antenniin ei koskaan saa katsoa virran ollessa kytkettynä.

ADVARSEL

MIKROBØLGESTRÅLING

Personell må ikke utsettes for mikrobølge-energi som kan utståles fra magnetronen eller andre mikrobølge-generende deler dersom apparatet feilbetjenes eller blir feiltikoplet. Alle inn- og ut-tilkoplinger i forbindelse med mikrobølge-strålingen, bølgeledere, flenser og tetningsringer/pakninger må festes ordentlig.

Aldri bruk apparatet med mindre en mikrobølge-absorberende last er plassert i ovnsrommet.

Aldri se direkte inn i en åpen bølgeleder eller antenne mens apparatet er strømførende.

ADVARSEL

MIKROBØLGEBESTRÅLING

Man bør ikke udsætte sig for mikrobølgebestråling fra magnetronen eller andre mikrobølgefrembringende anordninger, hvilket kan ske hvis apparatet er forkert tilsluttet eller bruges forkert. Alle mikrobølgeindgange og-udgange, bølgeledere, flanger og tætningsstrimler må være forsvarligt udført.

Anvend aldrig ovnen uden en mikrobølgesabsorberende anordning. Se aldrig ind i en åben bølgeleder eller antenne, mens ovnen er i brug.

SERVICE MANUAL

SHARP

COMMERCIAL
MICROWAVE OVEN

R-15AT

GENERAL IMPORTANT INFORMATION

This Manual has been prepared to provide Sharp Corp. Service engineers with Operation and Service Information.

It is recommended that service engineers carefully study the entire text of this manual, so they will be qualified to render satisfactory customer service.

CAUTION

MICROWAVE RADIATION

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

WARNING

- Note: The parts marked "*" are used at voltages more than 250V. (Parts List)
- Anm: Delar märket med "*" har en spänning överstigande 250V.
- Huom: Huolto-ohjeeseen merkitty "tähdellä" osat joissa jännite on yli 250 V.
- Bemerk: Deler som er merket "asterisk" er utsatt for spenninger over 250V til jord.
- Bemærk: "Dele mærket med stjerne benyttes med højere spænding end 250 volt.

WARNING

Never operate the oven until the following points are ensured.

- (A) The door is tightly closed.
- (B) The door brackets and hinges are not defective.
- (C) The door packing is not damaged.
- (D) The door is not deformed or warped.
- (E) There is not any other visible damage with the oven.

Servicing and repair work must be carried out only by trained service engineers.

All the parts marked "*" on parts list are used at voltages more than 250V.

Removal of the outer wrap gives access to potential above 250V.

All the parts marked "Δ" on the parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

SHARP CORPORATION

OSAKA, JAPAN

SERVICING

PRODUCT SPECIFICATIONS

GENERAL INFORMATION

APPEARANCE VIEW

OPERATING SEQUENCE

FUNCTION OF IMPORTANT
COMPONENTS

TROUBLESHOOTING GUIDE
AND TEST PROCEDURE

TOUCH CONTROL PANEL

COMPONENT REPLACEMENT
AND ADJUSTMENT PROCEDURE

MICROWAVE MEASUREMENT

TEST DATA AT A GLANCE

WIRING DIAGRAM

PARTS LIST

SERVICING

WARNING TO SERVICE PERSONNEL

(GB) Microwave ovens contain circuitry capable of producing very high voltage and current, contact with following parts will result in electrocution.
High voltage capacitor, High voltage transformer, Magnetron, High voltage rectifier assembly, High voltage fuse, High voltage harness.

REMEMBER TO CHECK 3D

- 1) Disconnect the supply.
- 2) Door opened, and wedged open.
- 3) Discharge high voltage capacitor.

WARNING: AGAINST THE CHARGE OF THE HIGH-VOLTAGE CAPACITOR

The high-voltage capacitor remains charged about 60 seconds after the oven has been switched off. Wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is, of the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Sharp recommend that wherever possible fault-finding is carried out with the supply disconnected. It may, in some cases, be necessary to connect the supply after the outer case has been removed, in this case carry out 3D checks and then disconnect the leads to the primary of the High voltage transformer. Ensure that these leads remain isolated from other components and the oven chassis. (Use insulation tape if necessary.) When the testing is completed carry out 3D checks and reconnect the leads to the primary of the High voltage transformer.

REMEMBER TO CHECK 4R

- 1) Reconnect all leads removed from components during testing.
- 2) Replace the outer case (cabinet).
- 3) Reconnect the supply.
- 4) Run the oven. Check all functions.

Microwave ovens should not be run empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the ceramic shelf, close the door and set the power to HIGH and set the microwave timer for one (1) minutes and push the start key. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out 3D checks and re-examine the connections to the component being tested.

When all service work is completed, and the oven is fully assembled, the microwave power output should be checked and a microwave leakage test should be carried out.

(NL) Magnetronovens bevatten circuits die een zeer hoge spanning en stroom kunnen voortbrengen. Contact met de volgende onderdelen kan elektrocutie tot gevolg hebben.
Hoogspanningscondensator, hoogspanningstransformator, magnetron, hoogspanningsgelijkrichter, hoogspannings kabelboom.

VERGEET DE VOLGENDE 3 STAPPEN NIET

- 1) Haal de stekker uit het stopcontact.
- 2) Open de deur en zorg ervoor dat hij niet dicht kan vallen.
- 3) Ontlaad de hoogspanningscondensator.

PAS OP VOOR DE ELECTRISCHE LADING VAN DE HOOGSPANNINGSCONDENSATOR

De hoogspanningscondensator blijft nog ongeveer 60 seconden lang opgeladen, nadat de oven is uitgeschakeld. Wacht 60 seconden voordat u de verbinding van de hoogspannings-condensator (m.a.w. de verbindingsdraad van de hoogspanningsgelijkrichter) met een geïsoleerde schroevendraaier kortsluit tegen het chassis.

Sharp beveelt ten sterkste aan dat, voor zover mogelijk, defecten worden opgespoord wanneer de stekker uit het stopcontact is gehaald. Soms is het nodig om de stroomtoevoer weer tot stand te brengen nadat de buitenmantel verwijderd is. Herhaal dan de bovengenoemde 3 stappen en haal de elektrische draden uit de primaire zijde van de vermogenstransformator. Zorg ervoor dat deze draden geïsoleerd blijven van andere elementen en van het chassis van de oven. (Gebruik zo nodig isolatieband.) Wanneer de test is uitgevoerd, herhaalt u de bovenstaande 3 stappen en verbindt u de elektrische draden weer aan de primaire zijde van de vermogenstransformator.

VERGEET DE VOLGENDE 4 STAPPEN NIET

- 1) Sluit de draden weer aan die zijn losgehaald voor de test.
- 2) Plaats de buitenmantel weer om het toestel heen (kabinet).
- 3) Stop de stekker weer in het stopcontact.
- 4) Zet de oven aan. Controleer alle functies.

Magnetronovens mogen niet leeg aangezet worden. Om te controleren of er microgolf-energie binnen de oven wordt geproduceerd, plaatst u een mok met koud water op de draaitafel van de oven, sluit de deur, zet de oven op HIGH en stelt de klok van de magnetron in op twee (2) minuten. Wanneer de twee minuten voorbij zijn (klok staat op nul), controleert u voorzichtig of het water heet is. Indien het water nog steeds koud is, herhaalt u de allereerste drie stappen en controleer nogmaals de aansluitingen naar de geteste onderdelen.

Wanneer alle reparaties zijn uitgevoerd en de oven weer in elkaar is gezet, moet de het magnetronvermogen worden gecontroleerd en moet worden gecontroleerd of er geen microgolflekage is.

- (E)** Los hornos de microondas contienen circuitos eléctricos capaces de producir voltajes de alta tensión y descargas eléctricas. Para evitar el riesgo de electrocución, absténgase de tocar los siguientes componentes: condensador de alta tensión, transformador de alta tensión, magnetrón, dispositivo del rectificador de alta tensión y arnés de alta tensión.

RECUERDE LA COMPROBACION 3D

- 1) Desconecte la alimentación.
- 2) Deje la puerta abierta y calzada.
- 3) Descargue el condensador de alto voltaje.

ADVERTENCIA SOBRE LA CARGA DEL CONDENSADOR DE ALTO VOLTAJE

El condensador de alto voltaje permanece cargado unos 60 segundos después de haber apagado el horno. Espere 60 segundos y luego ponga en cortocircuito la conexión del condensador de alto voltaje (esto es, del conductor de conexión del rectificador de alto voltaje) al chasis con un destornillador de mango aislado.

Se recomienda encarecidamente que siempre que sea posible la localización de fallos se realice con la alimentación desconectada. Puede ser que en algunos casos sea necesario conectar la alimentación después de haber retirado la carcasa exterior. En este caso, realice las comprobaciones 3D y luego desconecte los conductores del primario del transformador de alimentación. Asegúrese de que estos conductores permanezcan aislados de otros componentes y del chasis del horno. (Use cinta aislante si es necesario). Cuando termine la prueba efectúe las comprobaciones 3D y reconecte los conductores al primario del transformador de alimentación.

RECUERDE LA COMPROBACION 4C

- 1) Conecte todos los componentes desconectados de los componentes durante la prueba.
- 2) Coloque la carcasa exterior (cabina).
- 3) Conecte la alimentación.
- 4) Compruebe todas sus funciones después de poner en marcha el horno.

Los hornos de microondas no deben funcionar vacíos. Para comprobar la presencia de energía de microondas dentro de una cavidad, coloque una taza de agua fría en el plato giratorio del horno, cierre la puerta y ponga la potencia en HIGH (alta) y coloque el temporizador en dos (2) minutos. Cuando transcurran los dos minutos (temporizador a cero) compruebe cuidadosamente que el agua se ha calentado. Si el agua permaneciese fría, efectúe las comprobaciones 3D y vuelva a examinar las conexiones de los componentes que han sido probados.

Cuando haya terminado la intervención en el equipo y el horno haya sido ensamblado de nuevo completamente, deberá comprobar la potencia de salida de microondas y realizar una prueba de fugas de microondas.

- (SV)** Mikrovågsugnar innehåller kretsar som producerar mycket höga spänningar och strömmar. Kontakt med följande komponenter kan leda till dödsfall: Högspänningskondensator, transformator, magnetron, högspännings likriktare, högspännings kablage.

KOM IHÅG ATT KONTROLLERA 3 STEG

- 1) Koppla från strömkällan.
- 2) Öppna dörren på glänt.
- 3) Ladda ur högspänningskondensatorn.

VARNING FÖR LADDNINGEN I HÖGSPÄNNINGSKONDENSATORN

Högspänningskondensatorn är laddad i 60 sekunder efter det att ugnen stängts av. Vänta 60 sekunder och korrslut sedan kondensators anslutning (dvs anslutningen till högspänningslikriktaren) till chassiet med hjälp av en isolerad skruvmejsel.

Sharp rekommenderar att felsökning sker med strömmen fränkopplad. Ibland kan det vara nödvändigt att koppla på strömmen efter det att höljet avlägsnats, utför då 3 Steg kontrollen och koppla sedan från ledarna till transformatorns primärsida. Se till att ledarna är isolerade från andra komponenter och chassiet. (Använd isoleringsband om det behövs). När Du testat färdigt utför Du 3 Steg kontrollen och ansluter ledningarna till transformatorns primärsida igen.

KOM IHÅG ATT KONTROLLERA 4 STEG

- 1) Anslut alla ledningar som använts vid testning
- 2) Sätt tillbaka ytterhöljet.
- 3) Anslut strömkällan på nytt.
- 4) Sätt på ugnen. Kontrollera alla funktioner.

Mikrovågsugnar får inte användas tomma. Kontrollera mikrovågsstrålningen i olika delar av ugnen genom att placera en kopp med kallt vatten på ugnens tallrik, stäng dörren, ställ in HIGH och ställ in 2 minuter på timern. När två minuter har gått (timern visar 0) kontrollerar du om vattnet är varmt. Om vattnet fortfarande är kallt utför Du 3 steg kontroller och kontrollerar anslutningarna till varje enskild komponent på nytt.

När all service är klar och ugnen ihopskruvad skall ugnens uteffekt och eventuellt mikrovågsläckage kontrolleras.

I I forni a microonde contengono un circuito elettrico in grado di generare tensioni e correnti estremamente elevate. L'eventuale contatto con i seguenti componenti può causare la folgorazione: condensatore ad alta tensione; trasformatore ad alta tensione; magnetron; rettificatore alta tensione; cablaggio ad alta tensione.

TRE OPERAZIONI IMPORTANTI PER INCOMINCIARE

- 1) Scollegare l'alimentazione elettrica.
- 2) Verificare che la porta sia bloccata in posizione aperta.
- 3) Scaricare il condensatore ad alta tensione.

ATTENZIONE AL CONDENSATORE AD ALTA TENSIONE: PUO ESSERE CARICO

Il condensatore ad alta tensione rimane carico per circa 60 secondi dopo lo spegnimento del forno. Occorre quindi aspettare 60 secondi prima di cortocircuitare, utilizzando un cacciavite con impugnatura isolata, il collegamento del condensatore ad alta tensione (cioè del conduttore di collegamento del raddrizzatore ad alta tensione) sul telaio del forno.

Sharp raccomanda, nei limiti del possibile, che la ricerca dei guasti avvenga in assenza di alimentazione elettrica. In alcuni casi tuttavia, può essere necessario alimentare l'apparecchio dopo aver rimosso la scatola esterna. In questo caso eseguire i tre controlli sopra citati e quindi scollegare i connettori dal primario del trasformatore. Assicurarsi che tali connettori non vengano a contatto con altri componenti, né con il telaio del forno (fare uso, se necessario, di nastro isolante). Al termine dell'intervento, eseguire nuovamente i tre controlli e ricollegare i conduttori al primario del trasformatore.

QUATTRO VERIFICHE IMPORTANTI DA NON DIMENTICARE

- 1) Ricollegare tutti i conduttori staccati dai vari componenti durante l'intervento.
- 2) Rimontare la scatola esterna.
- 3) Ripristinare l'alimentazione elettrica.
- 4) Rimettere in funzione il forno. Controllare tutte le funzioni.

I forni a microonde non devono mai funzionare a vuoto. Per verificare la presenza di energia da microonde all'interno di una cavità, mettere una tazza di acqua fredda sul piatto rotante del forno, chiudere la porta, regolare la potenza su HIGH ed impostare il temporizzatore su due (2) minuti. Trascorsi i due minuti (temporizzatore a zero), controllare accuratamente che ora l'acqua sia calda. Se l'acqua è rimasta fredda, eseguire i tre controlli iniziali e verificare nuovamente i collegamenti del componente in questione.

Dopo aver portato a termine le operazioni di manutenzione e rimontato il forno, è necessario controllare la potenza delle microonde emesse ed eseguire un test per verificare che non vi sia alcuna dispersione.

PRODUCT DESCRIPTION

SPECIFICATION

ITEM	DESCRIPTION
Power Requirements	230 Volts 50 Hertz Single phase, 3 wire earthed
Power Consumption	1.55 KW Approx. 7.0 A
Power Output	1000 W nominal of RF microwave energy (measured by method of IEC 60705) Operating frequency 2450 MHz
Case Dimensions	Width 520 mm Height 309 mm including foot Depth 424 mm
Cooking Cavity Dimensions	Width 351 mm Height 211 mm Depth 372 mm
Control Complement	Touch Control System Timer (0 - 99 minutes and 99 seconds) Microwave Power for Variable Cooking Repetition Rate; P-HI Full power throughout the cooking time P-90 approx. 90% of Full Power P-80 approx. 80% of Full Power P-70 approx. 70% of Full Power P-60 approx. 60% of Full Power P-50 approx. 50% of Full Power P-40 approx. 40% of Full Power P-30 approx. 30% of Full Power P-20 approx. 20% of Full Power P-10 approx. 10% of Full Power P-0 No power throughout the cooking time DOUBLE QUANTITY pad EXPRESS DEFROST pad Number pads SELECT TIME pad STOP/CLEAR pad SELECT POWER pad START pad SET pad CHECK pad SIGNAL pad
Set Weight	Approx. 18 kg

GENERAL INFORMATION

WARNING

THIS APPLIANCE MUST BE EARTHED

IMPORTANT

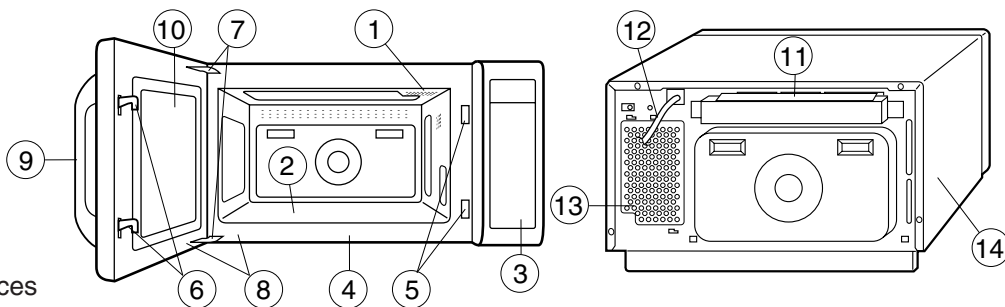
THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE:

GREEN-AND-YELLOW	: EARTH
BLUE	: NEUTRAL
BROWN	: LIVE

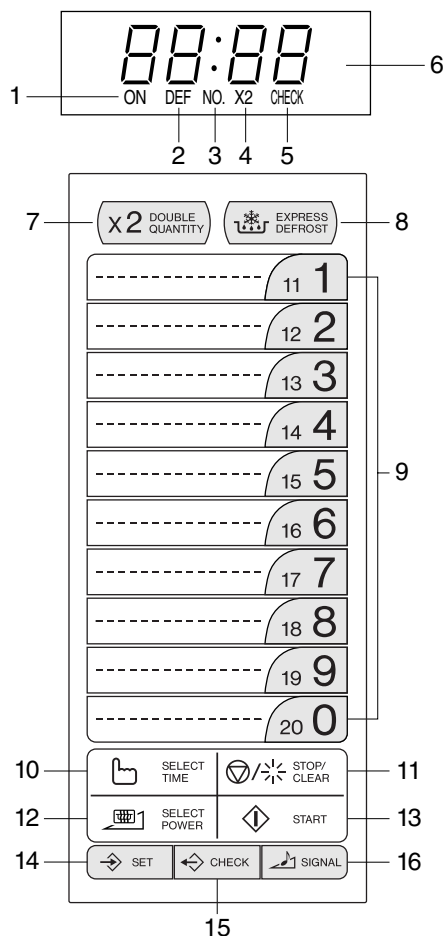
APPEARANCE VIEW

OVEN

1. Oven light
2. Ceramic shelf
3. Control panel
4. Cavity face plate
5. Door latch openings
6. Door latches
7. Door hinges
8. Door seals and sealing surfaces
9. Door handle
10. Oven door with see-through window
11. Air ventilation cover and openings
12. Power supply cord
13. Air intake openings
14. Outer case cabinet



TOUCH CONTROL PANEL



DISPLAY AND INDICATORS

Check indicators after the oven starts to oven is operating as desired.

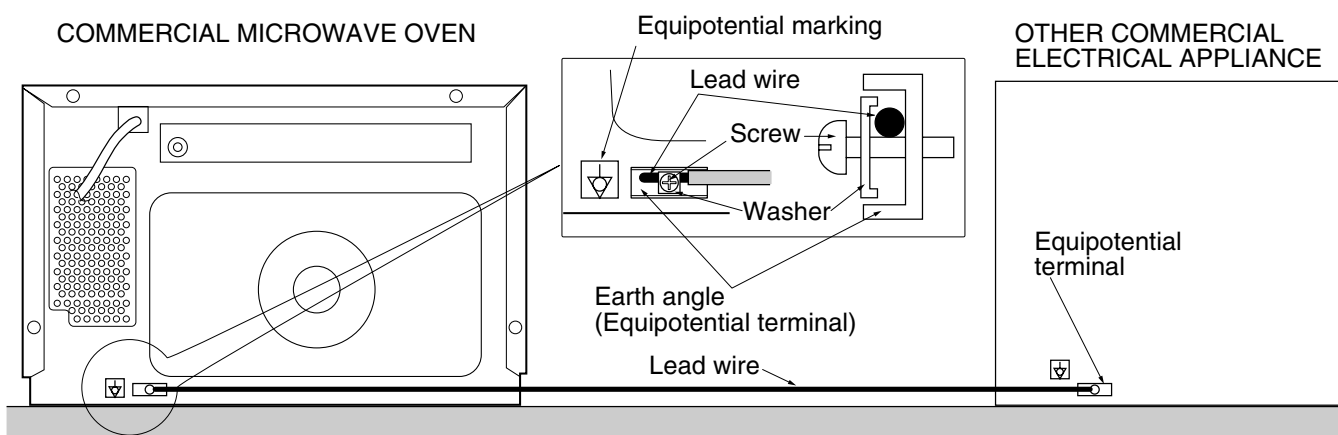
- 1 Cook indicator
This indicator shows cooking in progress.
- 2 Express Defrost indicator
- 3 Memory number indicator
- 4 Double quantity indicator
- 5 Check mode indicator
- 6 Digital display

OPERATING KEYS

- 7 DOUBLE QUANTITY key
- 8 EXPRESS DEFROST key
- 9 NUMBER keys
- 10 SELECT TIME key
- 11 STOP/CLEAR key
- 12 SELECT POWER key
- 13 START key
- 14 SET key
- 15 CHECK key
- 16 SIGNAL key

INSTALLATION INFORMATION

When this commercial microwave oven is installed near other commercial electrical appliances, connect a lead wire to each equivalent potential terminal with equipotential marking between them (insert a lead wire between a washer and an earth angle, and screw them), as shown in Fig. A-1, to make sure that they are at equivalent potential. If any lead wire is not connected between them, when person touch them he/she will get a electric shock.



OPERATION SEQUENCE

OFF CONDITION

Closing the door activates the primary interlock relay control switch SW1 and 2nd. interlock switch SW2.

IMPORTANT:

When the oven door is closed, the contacts COM-NC of the monitor switch SW3 must be open. When the microwave oven is plugged in a wall outlet (230V 50Hz), the line voltage is supplied to the noise filter and the control unit

Figure O-1 on page 30

1. The oven display will show .

MICROWAVE COOKING CONDITION

Program desired cooking time by touching SELECT TIME pad and the NUMBER pads. When the START pad is touched, the following operations occur:

Figure O-2 on page 30

RELAY	CONNECTED COMPONENTS
RY-2	High voltage transformer
RY-3	Oven lamp/Antenna motor/Fan motor

1. The line voltage is supplied to the primary winding of the high voltage transformer. The voltage is converted to about 3.3 volts A.C. output on the filament winding and high voltage of approximately 2300 volts A.C. on the secondary winding.
2. The filament winding voltage (3.3 volts) heats the magnetron filament and the high voltage (2000 volts) is sent to the voltage doubling circuit, where it is doubled to negative voltage of approximately 4000 volts D.C..
3. The 2450 MHz microwave energy produced in the magnetron generates a wave length of 12.24 cm. This energy is channelled through the waveguide (transport channel) into the oven cavity, where the food is placed to be cooked.
4. When the cooking time is up, a signal tone is heard and the relays RY2 + RY3 go back to their home position. The circuits to the oven lamp, high voltage transformer, fan motor and antenna motor are cut off.
5. When the oven door is opened during a cooking cycle, the switches come to the following condition.

Switch	Contact	Condition	
		During Cooking	Oven Door Open(No cooking)
primary interlock relay control switch	COM-NO	Closed	Opened
2nd. interlock switch	COM-NO	Closed	Opened
Monitor Switch	COM-NC	Opened	Closed

The circuit to the high voltage transformer, fan motor and antenna motor are cut off when the 2nd. interlock switch SW2 is made open. The oven lamp remains on even if the oven door is opened after the cooking cycle has been interrupted, because the relay RY-3 stays closed. Shown in the display is remaining time.

6. MONITOR SWITCH CIRCUIT

The monitor switch SW3 is mechanically controlled by the oven door, and monitors the operation of the 2nd. interlock switch SW2.

- 6-1. When the oven door is opened during or after the cycle of a cooking program, the 2nd. interlock switch SW2 and primary interlock relay control switch SW1 must open their contacts first. After that the contacts (COM-NC) of the monitor switch SW3 can be closed.
- 6-2. When the oven door is closed, the contacts (COM-NC) of the monitor switch SW3 must be opened. After that the contacts of the 2nd. interlock switch SW2, and primary interlock relay control switch SW1 are closed.
- 6-3. When the oven door is opened and the contacts of the 2nd. latch switch SW2 and the relay RY3 remain closed, the fuse F10A will blow, because the monitor switch SW3 is closed and a short circuit is caused.

POWER LEVEL P-0 TO P-90 COOKING

When Variable Cooking Power is programmed, the line voltage is supplied to the power transformer intermittently through the contacts of relay (RY-2) which is operated by the control unit within a 32 second time base. Microwave power operation is as follows:

VARI-MODE	ON TIME	OFF TIME
Power 10(P-HI) (100% power)	32 sec.	0 sec.
Power 9(P-90) (approx. 90% power)	30 sec.	2 sec.
Power 8(P-80) (approx. 80% power)	26 sec.	6 sec.
Power 7(P-70) (approx. 70% power)	24 sec.	8 sec.
Power 6(P-60) (approx. 60% power)	22 sec.	10 sec.
Power 5(P-50) (approx. 50% power)	18 sec.	14 sec.
Power 4(P-40) (approx. 40% power)	16 sec.	16 sec.
Power 3(P-30) (approx. 30% power)	12 sec.	20 sec.
Power 2(P-20) (approx. 20% power)	8 sec.	24 sec.
Power 1(P-10) (approx. 10% power)	6 sec.	26 sec.
Power 0(P-0) (0% power)	0 sec.	32 sec.

Note: The ON/OFF time ratio does not correspond with the percentage of microwave power, because approx. 2 seconds are needed for heating of the magnetron filament.

FUNCTION OF IMPORTANT COMPONENTS

DOOR OPEN MECHANISM

The door is opened by grasping the door handle, refer to Figure D-1.

When the door handle is grasped, the handle lever is pulled. And then the upper and lower latch heads are moved upward by the handle lever, and they are released from the latch hook. Now the door will open.

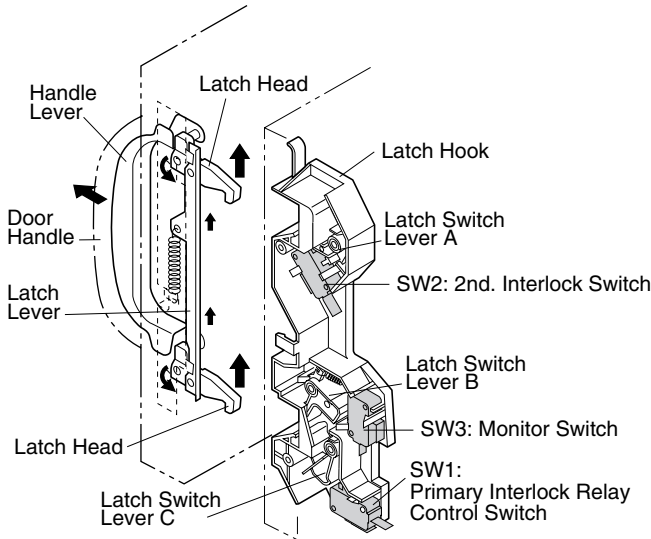


Figure D-1. Door Open Mechanism

2ND. INTERLOCK SWITCH SW2 AND PRIMARY INTERLOCK RELAY CONTROL SWITCH SW1

1. When the oven door is closed, the contacts (COM-NO) of each switch must be closed.
2. When the oven door is opened, the contacts (COM-NO) of each switch must be opened.

MONITOR SWITCH SW3

1. When the door is closed, the contacts (COM-NC) must be opened.
2. When the door is opened, the contacts (COM-NC) must be closed.
3. If the oven door is opened and the contacts (COM-NO) of the 2nd. interlock switch SW2 and the relay RY-3 fail to open, the fuse F10A blows immediately after closing the contacts (COM-NC) of the monitor switch SW3.

CAUTION: BEFORE REPLACING A BLOWN FUSE F10A TEST THE 2ND. INTERLOCK SWITCH SW2, MONITOR SWITCH SW3 AND RELAY RY-3 FOR PROPER OPERATION. (REFER TO CHAPTER "TEST PROCEDURE").

FUSE F1 F10A 250V

1. If the wire harness or electrical components are short-circuited, this fuse blows to prevent an electric shock or fire hazard.
2. This fuse blows when the 2nd. interlock switch SW2 remain closed with the oven door open and when the contacts (COM-NC) of monitor switch SW3 closes.

HIGH VOLTAGE FUSE F2 0.75A

The high voltage fuse blows when the high voltage rectifier or the magnetron is shorted.

THERMAL CUT-OUT TC2 145°C (MAGNETRON)

This thermal cut-out protects the magnetron against over-heating. If the temperature goes up higher than 145°C because the fan motor is interrupted or the ventilation openings are blocked, the thermal cut-out will open and line voltages to the high voltage transformer will be cut off and the operation of the magnetron will be stopped. The thermal cut-out will not resume.

THERMAL CUT-OUT TC1 125°C (OVEN)

The thermal cut-out located on the top of the oven cavity is designed to prevent damage to the oven if the food in the oven catches fire due to over heating produced by improper setting of the cooking time or failure of control unit. Under normal operation, the oven thermal cut-out remains closed. However, when abnormally high temperatures are reached within the oven cavity, the oven thermal cut-out will open at 125°C causing the oven to shut down. The thermal cut-out will not resume.

NOISE FILTER

The noise filter assembly prevents radio frequency interference that might flow back in the power circuit.

ANTENNA MOTOR AM

The antenna motor rotates the stirrer antenna located on the bottom of the oven cavity, so that the food on the ceramic shelf is cooked evenly during cooking. The antenna motor may turn in either direction.

COOLING FAN MOTOR FM

The cooling fan motor drives a blade which draws external cool air. This cool air is directed through the air vanes surrounding the magnetron and cools the magnetron. This air is channelled through the oven cavity to remove steam and vapors given off from the heating food. It is then exhausted through the exhausting air vents at the oven cavity.

TROUBLESHOOTING GUIDE

When troubleshooting the microwave oven, it is helpful to follow the Sequence of Operation in performing the checks. Many of the possible causes of trouble will require that a specific test be performed. These tests are given a procedure letter which will be found in the "Test Procedure" section.

IMPORTANT: If the oven becomes inoperative because of a blown fuse F1 (F10A) in the 2nd. interlock switch SW2 - monitor switch SW3 - relay RY3 circuit, check the 2nd. interlock switch SW2, monitor switch SW3 and relay RY3 before replacing the fuse F1 (F10A).

TEST PROCEDURE		A	B	C	D	E	E	E	F	G	H	I	I	J	K	L	M	M	N	CK	RE	RE	RE	CK	CK	CK	CK
POSSIBLE CASE AND DEFECTIVE PARTS		MAGNETRON	HIGH VOLTAGE TRANSFORMER	H.V. RECTIFIER ASSEMBLY	HIGH VOLTAGE CAPACITOR	2ND. INTERLOCK SWITCH	PRIMARY INTERLOCK RELAY CONTROL SWITCH	MONITOR SWITCH	THERMAL CUT-OUT	FUSE F1 F10A	NOISE FILTER	COOLING FAN MOTOR	ANTENNA MOTOR	HIGH VOLTAGE FUSE	TOUCH CONTROL PANEL	KEY UNIT	RELAY (RY2)	RELAY (RY3)	FOIL PATTERN ON P.W.B.	EXCEED MAX. HEATING TIME	OVEN LAMP OR SOCKET	SHORTED IN POWER CORD	SHORT OR OPENED WIRING	WRONG OPERATION	LOW VOLTAGE	DIRTY OVEN CAVITY	MISADJUSTMENT SWITCH
CONDITION	PROBLEM																										
OFF CONDITION	Home fuse or circuit breaker blows when power cord is plugged into wall outlet.																										
	Fuse F1 F10A blows when power cord is plugged into wall receptacle.																										
	does not appear in display when power cord is first plugged into wall outlet.																										
	Oven lamp does not light when door is opened.																										
COOKING CONDITION	Oven lamp lights but fan motor and antenna motor do not operate.																										
	Oven does not go into cook cycle when START pad is touched.																										
	Oven seems to be operating but little or no heat is produced in oven load. (Food incompletely cooked or not cooked at all at end of cook cycle.)																										
	Oven goes into a cook cycle but extremely uneven heating is produced in oven load (food).																										
	Oven does not cook properly when programmed for Cooking Power 5 mode. (Operates properly on Cooking Power HI (HIGH) mode.)																										
ERROR MODE	"EE9" Maximum time is exceeded.																										

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST								
A	MAGNETRON TEST								
NEVER TOUCH ANY PART IN THE CIRCUIT WITH YOUR HAND OR AN INSULATED TOOL WHILE THE OVEN IS IN OPERATION.									
CARRY OUT <u>3D</u> CHECKS.									
Isolate the magnetron from high voltage circuit by removing all leads connected to filament terminal.									
To test for an open circuit filament use an ohmmeter to make a continuity test between the magnetron filament terminals, the meter should show a reading of less than 1 ohm.									
To test for short circuit filament to anode condition, connect ohmmeter between one of the filament terminals and the case of the magnetron (ground). This test should be indicated an infinite resistance. If a low or zero resistance reading is obtained then the magnetron should be replaced.									
MICROWAVE OUTPUT POWER (1 litre load, IEC60705 procedure)									
The following test procedure should be carried out with the microwave oven in a fully assembled condition (outer case fitted). Microwave output power from the magnetron can be measured by way of IEC 60705, i.e. it is measured by how much power the water load can absorb. To measure the microwave output power in the microwave oven, the relation of calorie and watt is used. When P(W) heating works for t(second), approximately $P \times t / 4.187$ calorie is generated. On the other hand, if the temperature of the water with V(ml) rises ΔT (°C) during this microwave heating period, the calorie of the water is $V \times \Delta T$.									
The formula is as follows; $P \times t / 4.187 = V \times \Delta T + 0.55 \times mc (T_2 - T_0) / 4.187$ Our condition for water load is as follows: <table> <tr> <td>Room temperature (T₀) ... around 20°C</td> <td>Power supply Voltage Rated voltage</td> </tr> <tr> <td>Water load 1000 g</td> <td>Initial temperature 10±1°C</td> </tr> <tr> <td>Heating time 42 sec.</td> <td>Mass of container (mc) 330 g</td> </tr> <tr> <td>T₂ Final Temperature</td> <td>$P = 100 \times \Delta T + 0.55 \times mc (T_2 - T_0) / 42$</td> </tr> </table>		Room temperature (T ₀) ... around 20°C	Power supply Voltage Rated voltage	Water load 1000 g	Initial temperature 10±1°C	Heating time 42 sec.	Mass of container (mc) 330 g	T ₂ Final Temperature	$P = 100 \times \Delta T + 0.55 \times mc (T_2 - T_0) / 42$
Room temperature (T ₀) ... around 20°C	Power supply Voltage Rated voltage								
Water load 1000 g	Initial temperature 10±1°C								
Heating time 42 sec.	Mass of container (mc) 330 g								
T ₂ Final Temperature	$P = 100 \times \Delta T + 0.55 \times mc (T_2 - T_0) / 42$								
Measuring condition:									
1. Container									
The water container must be a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190 mm.									
2. Temperature of the oven and vessel									
The oven and the empty vessel are at ambient temperature prior to the start the test.									
3. Temperature of the water									
The initial temperature of the water is (10±1)°C.									
4. Select the initial and final water temperature so that the maximum difference between the final water temperature and the ambient temperature is 5°C.									
5. Select stirring devices and measuring instruments in order to minimize addition or removal of heat.									
6. The graduation of the thermometer must be scaled by 0.1°C at minimum and be an accurate thermometer.									
7. The water load must be (1000±5) g.									
8. “t” is measured while the microwave generator is operating at full power. Magnetron filament heat-up time is not included.									
NOTE: The operation time of the microwave oven is “t + 3” sec. (3 sec. is magnetron filament heat-up time.)									
Measuring method:									
1. Measure the initial temperature of the water before the water is added to the vessel. (Example: The initial temperature T ₁ = 11°C)									
2. Add the 1 litre water to the vessel.									
3. Place the load on the centre of the shelf.									
4. Operate the microwave oven at HIGH for the temperature of the water rises by a value ΔT of 10°C.									
5. Stir the water to equalize temperature throughout the vessel.									
6. Measure the final water temperature. (Example: The final temperature T ₂ = 21°C)									
7. Calculate the microwave power output <u>P</u> in watts from above formula.									

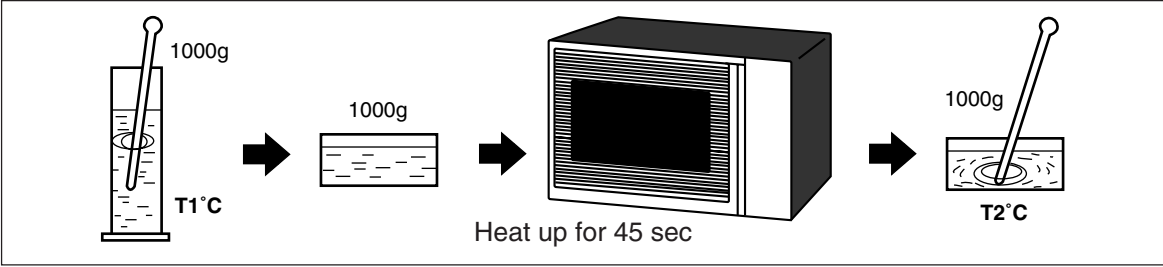
TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
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Room temperature	To = 21°C
Initial temperature	T1 = 11°C
Temperature after (42 + 3) = 45 sec	T2 = 21°C
Temperature difference Cold-Warm	ΔT1 = 10°C
Measured output power	
The equation is "P = 100 x ΔT"	P = 100 x 10°C = 1000 Watts

JUDGMENT: The measured output power should be within the range of ± 15 % of the rated output power.

CAUTION: 1°C CORRESPONDS TO 100 WATTS. REPEAT MEASUREMENT IF THE POWER IS INSUFFICIENT.



B HIGH VOLTAGE TRANSFORMER TEST

WARNING: High voltage and large currents are present at the secondary winding and filament winding of the high voltage transformer. It is very dangerous to work near this part when the oven is on. NEVER make any voltage measurements of the high-voltage circuits, including the magnetron filament.

CARRY OUT 3D CHECKS.
 Disconnect the leads to the primary winding of the high voltage transformer. Disconnect the filament and secondary winding connections from the rest of the HV circuitry. Using an ohmmeter, set on a low range, it is possible to check the continuity of all three windings. The following readings should be obtained:-

- a. Primary winding approximately 1.3 Ω
- b. Secondary winding approximately 90Ω
- c. Filament winding less than 1 Ω

If the readings obtained are not stated as above, then the high voltage transformer is probably faulty and should be replaced.
 CARRY OUT 4R CHECKS.

C HIGH VOLTAGE RECTIFIER ASSEMBLY TEST



CARRY OUT 3D CHECKS.
 Isolate the high voltage rectifier assembly from the HV circuit. The high voltage rectifier can be tested using an ohmmeter set to its highest range. Connect the ohmmeter across the terminal B+C of the high voltage rectifier and note the reading obtained. Reverse the meter leads and note this second reading. The normal resistance is infinite in one direction and more than 100 kΩ in the other direction.
 CARRY OUT 4R CHECKS.
 NOTE: FOR MEASUREMENT OF THE RESISTANCE OF THE RECTIFIER, THE BATTERIES OF THE MEASURING INSTRUMENT MUST HAVE A VOLTAGE AT LEAST 6 VOLTS, BECAUSE OTHERWISE AN INFINITE RESISTANCE MIGHT BE SHOWN IN BOTH DIRECTIONS.

D HIGH VOLTAGE CAPACITOR TEST

CARRY OUT 3D CHECKS.

- A. Isolate the high voltage capacitor from the circuit.
- B. Continuity check must be carried out with measuring instrument which is set to the highest resistance range.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
	C. A normal capacitor shows continuity for a short time (kick) and then a resistance of about 10MΩ after it has been charged. D. A short-circuited capacitor shows continuity all the time. E. An open capacitor constantly shows a resistance about 10 MΩ because of its internal 10MΩ resistance. F. When the internal wire is opened in the high voltage capacitor shows an infinite resistance. G. The resistance across all the terminals and the chassis must be infinite when the capacitor is normal. If incorrect reading are obtained, the high voltage capacitor must be replaced. CARRY OUT <u>4R</u> CHECKS.

E SWITCH TEST

CARRY OUT 3D CHECKS.

Isolate the switch to be tested and using an ohmmeter check between the terminals as described in the following table.

Table: Terminal Connection of Switch

Plunger Operation	COM to NO	COM to NC	COM; Common terminal, NO; Normally open terminal NC; Normally close terminal
Released	Open circuit	Short circuit	
Depressed	Short circuit	Open circuit	

If incorrect readings are obtained, make the necessary switch adjustment or replace the switch.

CARRY OUT 4R CHECKS.

F THERMAL CUT-OUT TEST

CARRY OUT 3D CHECKS.

Disconnect the leads from the terminals of the thermal cut-out. Then using an ohmmeter, make a continuity test across the two terminals as described in the below.

Table: Thermal Cut-out Test

Parts Name	Temperature of "ON" condition (closed circuit). (°C)	Temperature of "OFF" condition (open circuit). (°C)	Indication of ohmmeter (When room temperature is approx. 20°C.)
Thermal cut-out <u>TC1</u> 125°C	This is not resetable type.	Above 125°C	Closed circuit
Thermal cut-out <u>TC2</u> 145°C	This is not resetable type.	Above 145°C	Closed circuit

If incorrect readings are obtained, replace the thermal cut-out.

An open circuit thermal cut-out TC2 (MG) indicates that the magnetron has overheated, this may be due to restricted ventilation, cooling fan failure or a fault condition within the magnetron or HV. circuit.

An open circuit thermal cut-out TC1 (OVEN) indicates that the food in the oven cavity may catch fire, this may be due to over heating produced by improper setting of the cooking timer or failure of the control panel.

CARRY OUT 4R CHECKS.

G BLOWN FUSE F1 F10A

CARRY OUT 3D CHECKS.

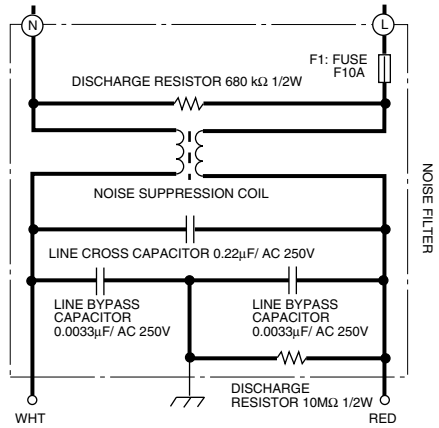
If the fuse F1 F10A is blown when the door is opened, check the 2nd. interlock switch SW2, monitor switch SW3 and relay RY-3.

If the fuse F1 F10A is blown, there could be a short or ground in electrical parts or wire harness. Check them and replace the defective parts or repair the wire harness.

CARRY OUT 4R CHECKS.

CAUTION: Only replace fuse F1 F10A with the correct value replacement.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST								
H	NOISE FILTER TEST CARRY OUT <u>3D</u> CHECKS. Disconnect the leads from the terminals of noise filter. Using an ohmmeter, check between the terminals as described in the following table. <table border="1"> <thead> <tr> <th>MEASURING POINTS</th><th>INDICATION OF OHMMETER</th></tr> </thead> <tbody> <tr> <td>Between N and L</td><td>Approx. 680 kΩ</td></tr> <tr> <td>Between terminal N and WHITE</td><td>Short circuit</td></tr> <tr> <td>Between terminal L and RED</td><td>Short circuit</td></tr> </tbody> </table> If incorrect readings are absorbed, replace the noise filter unit. CARRY OUT <u>4R</u> CHECKS. 	MEASURING POINTS	INDICATION OF OHMMETER	Between N and L	Approx. 680 k Ω	Between terminal N and WHITE	Short circuit	Between terminal L and RED	Short circuit
MEASURING POINTS	INDICATION OF OHMMETER								
Between N and L	Approx. 680 k Ω								
Between terminal N and WHITE	Short circuit								
Between terminal L and RED	Short circuit								
I	MOTOR WINDING TEST CARRY OUT <u>3D</u> CHECKS. Disconnect the leads from the motor. Using an ohmmeter, check the resistance between the two terminals as described in the table below. <table border="1"> <caption>Table: Resistance of Motor</caption> <thead> <tr> <th>Motors</th><th>Resistance</th></tr> </thead> <tbody> <tr> <td>Fan motor</td><td>Approximately 219 Ω</td></tr> <tr> <td>Antenna motor</td><td>Approximately 11 kΩ</td></tr> </tbody> </table> If incorrect readings are obtained, replace the motor. CARRY OUT <u>4R</u> CHECKS.	Motors	Resistance	Fan motor	Approximately 219 Ω	Antenna motor	Approximately 11 k Ω		
Motors	Resistance								
Fan motor	Approximately 219 Ω								
Antenna motor	Approximately 11 k Ω								
J	HIGH VOLTAGE FUSE F2 TST CARRY OUT <u>3D</u> CHECKS. If the high voltage fuse <u>F2</u> is blown, there could be a short in the high voltage rectifier or the magnetron. Check them and replace the defective parts and the high voltage fuse. CARRY OUT <u>4R</u> CHECKS. CAUTION: Only replace high voltage fuse with the correct value replacement.								
K	TOUCH CONTROL PANEL ASSEMBLY TEST The touch control panel consists of circuits including semiconductors such as LSI, ICs, etc. Therefore, unlike conventional microwave ovens, proper maintenance can not be performed with only a voltmeter and ohmmeter. In this service manual, the touch control panel assembly is divided into two units, Control Unit and Key Unit and troubleshooting by replacement is described according to the symptoms indicated. - Key Unit Note : Check key unit ribbon connection before replacement. The following symptoms indicate a defective key unit. Replace the key unit. - When touching the pads, a certain pad produces no signal at all. - When touching a number pad, two figures or more are displayed. - When touching the pads, sometimes a pad produces no signal. - Control Panel The following symptoms indicate a defective control unit. Before replacing the control unit, perform the key unit test (Procedure L) to determine if control unit is faulty. - In connection with pads - When touching the pads, a certain group of pads do not produce a signal. - When touching the pads, no pads produce a signal. - In connection with indicators - At a certain digit, all or some segments do not light up. - At a certain digit, brightness is low. - Only one indicator does not light up. - The corresponding segments of all digits do not light up; or they continue to light up.								

TEST PROCEDURES

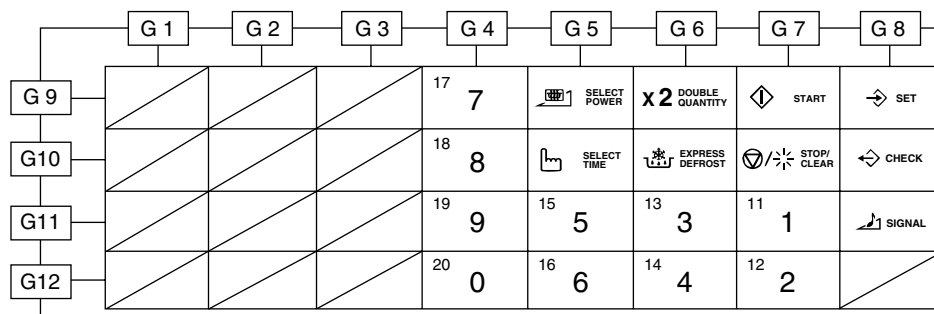
PROCEDURE LETTER

COMPONENT TEST

- e) Wrong figure appears.
- f) A certain group of indicators do not light up.
- g) The figure of all digits flicker.
- 2-3 Other possible troubles caused by defective control unit.
 - a) Buzzer does not sound or continues to sound.
 - b) Clock does not operate properly.
 - c) Cooking is not possible.

L KEY UNIT TEST

If the display fails to clear when the STOP/CLEAR pad is depressed, first verify the flat ribbon cable is marking good contact, verify that the primary interlock relay control switch operates properly; that is the contacts are closed when the door is closed and open when the door is open. If the primary interlock relay control switch is good, disconnect the flat ribbon cable that connects the key unit to the control unit and make sure the primary interlock relay control switch is closed (either close the door or short the primary interlock relay control switch connector). Use the Key unit matrix indicated on the control panel schematic and place a jumper wire between the pins that correspond to the STOP/CLEAR pad marking momentary contact. If the control unit responds by clearing with a beep the key unit is faulty and must be replaced. If the control unit does not respond, it is a faulty and must be replaced. If a specific pad does not respond, the above method may be used (after clearing the control unit) to determine if the control unit or key pad is at fault.



CARRY OUT 4R CHECKS.

M RELAY TEST

CARRY OUT 3D CHECKS.

Remove the outer case and check voltage between Pin Nos. 3 and 7 of the 3 pin connector (A) on the control unit with an A.C. voltmeter.

The meter should indicate 230 volts, if not check oven circuit.

Relay Test

Check voltage at the relay coil with a D.C. voltmeter during the microwave cooking operation.

DC. voltage indicated Defective relay.

DC. voltage not indicated Check diode which is connected to the relay coil. If diode is good, control unit is defective.

RELAY SYMBOL	OPERATIONAL VOLTAGE	CONNECTED COMPONENTS
RY2	Approx. 18.0V D.C.	High voltage transformer
RY3	Approx. 18.0V D.C.	Oven lamp / Antenna motor / Fan motor

CARRY OUT 4R CHECKS.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
N	PROCEDURES TO BE TAKEN WHEN THE FOIL PATTERN ON THE PRINTED WIRING BOARD (PWB) IS OPEN

To protect the electronic circuits, this model is provided with a fine foil pattern added to the input circuit on the PWB, this foil pattern acts as a fuse. If the foil pattern is open, follow the troubleshooting guide given below for repair.

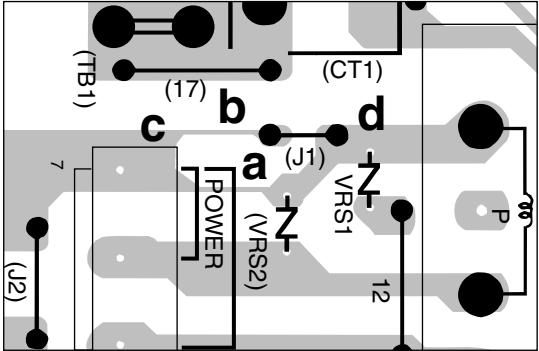
Problem: POWER ON, indicator does not light up.

CARRY OUT 3D CHECKS.

STEPS	OCCURRENCE	CAUSE OR CORRECTION
1	The rated AC voltage is not present at Power terminal of CPU connector (CN-A).	Check supply voltage and oven power cord.
2	The rated AC voltage is present at primary side of low voltage transformer.	Low voltage transformer or secondary circuit defective. Check and repair.
3	Only pattern at "a" is broken.	*Insert jumper wire J1 and solder. (CARRY OUT <u>3D</u> CHECKS BEFORE REPAIR)
4	Pattern at "a" and "b" are broken.	*Insert the coil RCILF2003YAZZ between "c" and "d". (CARRY OUT <u>3D</u> CHECKS BEFORE REPAIR)

NOTE: *At the time of these repairs, make a visual inspection of the varistor for burning damage and examine the transformer with tester for the presence of layer short circuit (check primary coil resistance).
If any abnormal condition is detected, replace the defective parts.

CARRY OUT 4R CHECKS.



TOUCH CONTROL PANEL ASSEMBLY

OUTLINE OF TOUCH CONTROL PANEL

The touch control section consists of the following units as shown in the touch control panel circuit.

- (1) Control Unit
- (2) Key Unit

The principal functions of these units and the signals communicated among them are explained below.

1. Control Unit

Signal of key touch and oven function control are all processed by one microcomputer.

1) Power Supply Circuit

This circuit changes output voltage at the secondary side of the low voltage (T1) transformer to voltages required at each part by full wave rectifying circuit, constant voltage circuit, etc..

2) Reset Circuit

This is a reset circuit, which enables IC1 to be activated from initial state.

3) Power SYNC Signal Generating Circuit

This is a circuit for generating power SYNC signal by virtue of the secondary side output of transformer T1. This signal is used for a basic frequency to time processing and so on.

4) Clock Circuit

This is a circuit for controlling clock frequency required for operating IC1.

5) IC1 (Main Processor)

This is a one-chip microcomputer, responsible for controlling the entire control unit.

6) IC2 (Memory Processor)

This is a memory IC, responsible for memory function.

7) IC3

This is a IC for driving light emitting diode.

8) Display Circuit

This is a circuit for driving light emitting diode by IC1 output.

9) Key Input Circuit

This is a circuit for transmitting key input information to IC1.

10) Sound-body Driving Circuit

This is a circuit for driving sound body by IC1 output.

11) Relay Driving Circuit

This is a circuit for driving output relay by IC1 output.

12) Primary Interlock Relay Control Switch Circuit

This is a circuit for driving IC1 to detect door opening/closing.

2. Key Unit

The key unit is composed of a matrix circuit in which when a key is touched, one of signals P30--P34 generated by the LSI, is passed through the key and returned to the LSI as one of signals P24--P27.

This model has 20 Memory pads.

When the oven is shipped, Memory pad 1 to 10 are set as follows: fig.1.

Memory No.	Cook Time	Output Power
1	10 sec.	100%
2	20 sec.	100%
3	30 sec.	100%
4	45 sec.	100%
5	1 min.	100%
6	1 min. 15 sec.	100%
7	1 min. 30 sec.	100%
8	2 min.	100%
9	2 min. 30 sec.	100%
0	3 min.	100%

(fig. 1)

This model has a double quantity pad. When the oven is shipped, Magnification "1.7" is preset in the double quantity pad.

This model has an express defrost pad. When the oven is shipped, express defrost is set as follows: fig.2.

	1 STAGE	2 STAGE	3 STAGE
FORMULA	$P = 0.2T$	$P = 0.15T$	$P = 0.65T$
POWER	60 %	40 %	20 %

T : Total cooling time

(fig. 2)

When 1/2 total cooking time is passed, the signal will sound and "CHECK" indicator will flash

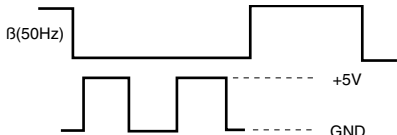
DESCRIPTION OF LSI

LSI(IZA897DR)

The I/O signal of the LSI(IZA897DR) is detailed in the following table.

Pin No.	Signal	I/O	Description
1	VCC	IN	Power source voltage: +5V. VC voltage of power source circuit input.
2/3	VEE/AVSS	IN	Connected to GND
4	VREF	IN	Connected to VC. (+5V)
5-6	AN7-AN6	IN	Terminal not used.

Pin No.	Signal	I/O	Description																																										
7-8	AN5-AN4	IN	Terminal to change functions according to the model. Signal in accordance with the model in operation is applied to set up its function.																																										
9-10	AN3-AN2	IN	Terminal not used.																																										
11	AN1	IN	Input signal which communicates the door open/close information to LSI. Door closed; "L" level signal (0V). Door opened; "H" level signal (+5V).																																										
12	AN0	IN	Terminal not used.																																										
13	P55	OUT	Magnetron high-voltage circuit driving signal. To turn on and off the cook relay. In 100% power level operation, "H" level during cooking; "L" level otherwise. In other power level operation (90,80,70,60,50,40,30,20,10 or 0%), "H" and "L" level is repeated according to power level. <table><tr><td>Power level</td><td>ON</td><td>OFF</td><td>Power level</td><td>ON</td><td>OFF</td></tr><tr><td>100%</td><td>32sec.</td><td>0sec.</td><td>40%</td><td>16sec.</td><td>16sec.</td></tr><tr><td>90%</td><td>30sec.</td><td>2sec.</td><td>30%</td><td>12sec.</td><td>20sec.</td></tr><tr><td>80%</td><td>26sec.</td><td>6sec.</td><td>20%</td><td>8sec.</td><td>24sec.</td></tr><tr><td>70%</td><td>24sec.</td><td>8sec.</td><td>10%</td><td>6sec.</td><td>26sec.</td></tr><tr><td>60%</td><td>22sec.</td><td>10sec.</td><td>0%</td><td>0sec.</td><td>32sec.</td></tr><tr><td>50%</td><td>18sec.</td><td>14sec.</td><td></td><td></td><td></td></tr></table>	Power level	ON	OFF	Power level	ON	OFF	100%	32sec.	0sec.	40%	16sec.	16sec.	90%	30sec.	2sec.	30%	12sec.	20sec.	80%	26sec.	6sec.	20%	8sec.	24sec.	70%	24sec.	8sec.	10%	6sec.	26sec.	60%	22sec.	10sec.	0%	0sec.	32sec.	50%	18sec.	14sec.			
Power level	ON	OFF	Power level	ON	OFF																																								
100%	32sec.	0sec.	40%	16sec.	16sec.																																								
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70%	24sec.	8sec.	10%	6sec.	26sec.																																								
60%	22sec.	10sec.	0%	0sec.	32sec.																																								
50%	18sec.	14sec.																																											
14-15	P54-P53	OUT	Terminal not used.																																										
16-18	P52-P50	IN	Terminal not used.																																										
19	P47	OUT	Signal to sound buzzer. This signal is to control the 2.5kHz continuous signal through IC3. A: key touch sound. B: Guidance sound. C: Completion sound.																																										
20	P46	OUT	Oven lamp, Fan motor and Antenna motor driving signal. (Square Waveform : 50Hz) To turn on and off the shut-off relay (RY3). The Square waveform voltage is delivered to the RY3 driving circuit and relays(RY2, COOK RELAY) control circuit.																																										
21	P45	OUT	Digit selection signal. The relation between digit signal and digit are as follows: Digit signal Digit P42 1st. P43 2nd. P44 3rd. P45 4th. Normally, one pulse is output in every β period, and input to the grid of the light-emitting diode.																																										
22-24	P44-P42	OUT	Digit selection signal. Signal similar to P45.																																										
25	INT1	IN	Signal synchronized with commercial power source frequency. This is basic timing for all time processing of LSI.																																										
26	P40	IN	Connected to GND through resistor.																																										

Pin No.	Signal	I/O	Description																								
27	RESET	IN	Auto clear terminal. Signal is input to reset the LSI to the initial state when power is supplied. Temporarily set to "L" level the moment power is supplied, at this time the LSI is reset. Thereafter set at "H" level.																								
28	P71	OUT	Memory (EEPROM) clock output.																								
29	P70	IN/OUT	Memory (EEPROM) data input/output.																								
30	XIN	IN	Internal clock oscillation frequency setting input. The internal clock frequency is set by inserting the ceramic filter oscillation circuit with respect to XOUT terminal.																								
31	XOUT	OUT	Internal clock oscillation frequency control output. Output to control oscillation input of XIN.																								
32	VSS	IN	Connected to GND.																								
33	P27	IN	Signal coming from touch key. When either one of G-12 line keys on key matrix is touched, a corresponding signal out of P30, P31, P32, P33, P34 will be input into P27. When no key is touched, the signal is held at "L" level.																								
34	P26	IN	Signal similar to P27. When either one of G-11 line keys on key matrix is touched, a corresponding signal will be input into P26.																								
35	P25	IN	Signal similar to P27. When either one of G-10 line keys on key matrix is touched, a corresponding signal will be input into P25.																								
36	P24	IN	Signal similar to P27. When either one of G-9 line keys on key matrix is touched, a corresponding signal will be input into P24.																								
37-38	P23-P22	OUT	Terminal not used.																								
39-40	P21-P20	OUT	Segment data signals. The relation between signals and indicators are as follows: <table> <tr> <td>Signal</td><td>Segment</td><td>Signal</td><td>Segment</td></tr> <tr> <td>P21,P20</td><td>1</td><td>P07,P06</td><td>6</td></tr> <tr> <td>P17,P16</td><td>2</td><td>P05,P04</td><td>7</td></tr> <tr> <td>P15,P14</td><td>3</td><td>P03,P02</td><td>8</td></tr> <tr> <td>P13,P12</td><td>4</td><td>P01,P00</td><td>9</td></tr> <tr> <td>P11,P10</td><td>5</td><td></td><td></td></tr> </table> 	Signal	Segment	Signal	Segment	P21,P20	1	P07,P06	6	P17,P16	2	P05,P04	7	P15,P14	3	P03,P02	8	P13,P12	4	P01,P00	9	P11,P10	5		
Signal	Segment	Signal	Segment																								
P21,P20	1	P07,P06	6																								
P17,P16	2	P05,P04	7																								
P15,P14	3	P03,P02	8																								
P13,P12	4	P01,P00	9																								
P11,P10	5																										
41-48	P17-P10	OUT	Segment data signal. Signal similar to P21.																								
49-56	P07-P00	OUT	Segment data signal. Signal similar to P21.																								
57-59	P37-P35	OUT	Terminal not used.																								
60	P34	OUT	Key strobe signal. Signal applied to touch-key section. A pulse signal is input to P27, P26, P25 and P24 terminals while one of G4 line keys on key matrix is touched.																								
61	P33	OUT	Key strobe signal. Signal applied to touch-key section. A pulse signal is input to P27, P26, P25 and P24 terminals while one of G5 line keys on key matrix is touched.																								
62	P32	OUT	Key strobe signal. Signal applied to touch-key section. A pulse signal is input to P27, P26, P25 and P24 terminals while one of G6 line keys on key matrix is touched.																								
63	P31	OUT	Key strobe signal. Signal applied to touch-key section. A pulse signal is input to P27, P26, P25 and P24 terminals while one of G7 line keys on key matrix is touched.																								
64	P30	OUT	Key strobe signal. Signal applied to touch-key section. A pulse signal is input to P27, P26, P25 and P24 terminals while one of G8 line keys on key matrix is touched.																								

2-2 Memory IC (IC2)

AT24C02 is a 2K-bit, serial memory, enabling CMOS to be erased/written electrically. This memory is constructed with 256 registers x 8bits, enabling individual access, read and write operations to be performed. Details of input/output signal for IC2 are as shown in the following diagram.

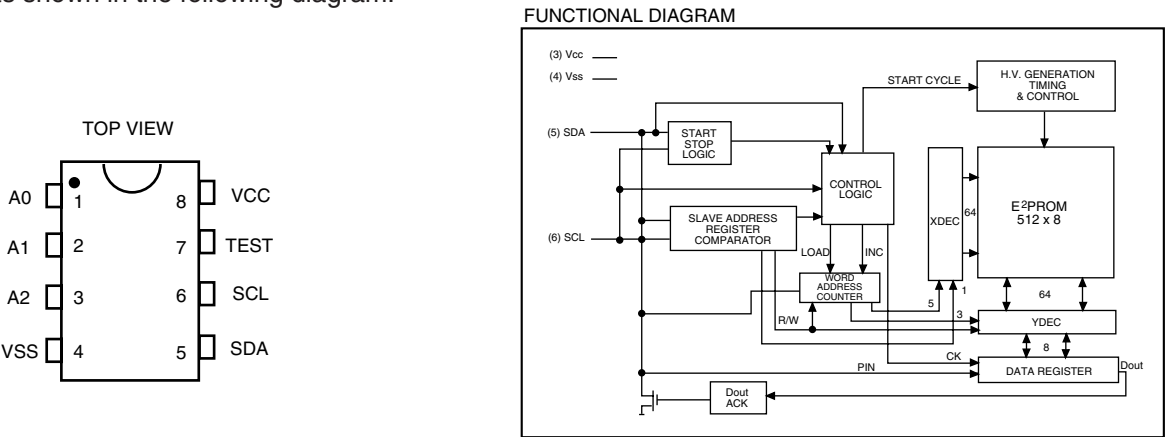


Table 1. Relation between Pin Nos, and Signals

Pin No.	Signal	I/O	Description
1-3	A0-A2	IN	Connected to +5V.
4	VSS	IN	Connected to GND.
5	SDA	IN/OUT	Serial data input/output : input/outputs data to IC1.
6	SCL	IN	Clock signal input : input/outputs sireal data at every one pulse.
7	TEST	IN	Connected to GND.
8	VCC	IN	Connected to +5V.

When the memory IC (IC2) or control unit is exchanged, input the relay timing to the memory IC (IC2), referring to the “how to input the relay timing”. Otherwise the oven will make a big noise when starting.

How to input the relay timing

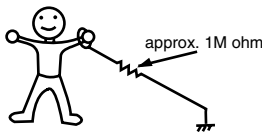
... Flashing / ○... 0.1sec BUZZER			
PAD	DISPLAY	INDICATOR	PHONE
(Door close)	.		
CHECK	.	CHECK No.	○
CHECK	82 68 (user total count)	CHECK	○
SIGNAL SIGNAL DOUBLE QUANTITY	↓ 34 56 (service total count upper figure 3456XX)		○
	↓ 7		
7	↓ 38 69	No.	○
(after 1 sec.)			○
SET	0		○
3,8,4,9	38 49		○ x 4
SET	38 49		
CHECK	↓ .		○

TOUCH CONTROL PANEL SERVICING

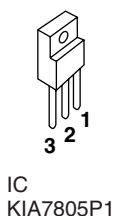
1. Precautions for Handling Electronic Components

This unit uses CMOS LSI in the integral part of the circuits. When handling these parts, the following precautions should be strictly followed. CMOS LSI have extremely high impedance at its input and output terminals. For this reason, it is easily influenced by the surrounding high voltage power source, static electricity charge in clothes, etc. and sometimes it is not fully protected by the built-in protection circuit. In order to protect CMOS LSI.

- 1) When storing and transporting, thoroughly wrap them in aluminium foil. Also wrap all PW boards containing them in aluminium foil.
- 2) When soldering, ground the technician as shown in the figure and use grounded soldering iron and work table.



2. Shapes of Electronic Components



Transistor
DTA123ES
DTB143ES
DTC143ES
DTD143ES
KRA223M
KRC101M
KRC243M

3. Servicing of Touch Control Panel

We describe the procedures to permit servicing of the touch control panel of the microwave oven and the precautions you must take when doing so. To perform the servicing, power to the touch control panel is available either from the power line of the oven itself or from an external power source.

(1) Servicing the touch control panel with power supply of the oven:

CAUTION:

THE HIGH VOLTAGE TRANSFORMER OF THE MICROWAVE OVEN IS STILL LIVE DURING SERVICING PRESENTS A HAZARD.

Therefore, before checking the performance of the touch control panel,

- 1) Disconnect the power supply cord, and then remove outer case.
- 2) Open the door and block it open.
- 3) Discharge high voltage capacitor.
- 4) Disconnect the leads to the primary of the power transformer.
- 5) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
- 6) After that procedure, re-connect the power supply cord.

After checking the performance of the touch control panel,

- 1) Disconnect the power supply cord.
- 2) Open the door and block it open.
- 3) Re-connect the leads to the primary of the power transformer.

- 4) Re-install the outer case (cabinet).
- 5) Re-connect the power supply cord after the outer case is installed.
- 6) Run the oven and check all functions.

A. On some models, the power supply cord between the touch control panel and the oven itself is so short that the two can't be separated. For those models, check and repair all the controls (sensor-related ones included) of the touch control panel while keeping it connected to the oven.

B. On some models, the power supply cord between the touch control panel and the oven proper is long enough that they may be separated from each other. For those models, therefore, it is possible to check and repair the controls of the touch control panel while keeping it apart from the oven proper; in this case you must short both ends of the door sensing switch (on PWB) of the touch control panel with a jumper, which brings about an operational state that is equivalent to the oven door being closed. As for the sensor-related controls of the touch control panel, checking them is possible if dummy resistor(s) with resistance equal to that of the controls are used.

(2) Servicing the touch control panel with power supply from an external power source:

Disconnect the touch control panel completely from the oven proper, and short both ends of the door sensing switch (on PWB) of the touch control panel, which brings about an operational state that is equivalent to the oven door being closed. Connect an external power source to the power input terminal of the touch control panel, then it is possible to check and repair the controls of the touch control panel it is also possible to check the sensor-related controls of the touch control panel by using the dummy resistor(s).

4. Servicing Tools

Tools required to service the touch control panel assembly.

- 1) Soldering iron: 30W
(It is recommended to use a soldering iron with a grounding terminal.)
- 2) Oscilloscope: Single beam, frequency range: DC-10MHz type or more advanced model.
- 3) Others: Hand tools

5. Other Precautions

- 1) Before turning on the power source of the control unit, remove the aluminium foil applied for preventing static electricity.
- 2) Connect the connectors of the key unit to the control unit being sure that the lead wires are not twisted.
- 3) After aluminium foil is removed, be careful that abnormal voltage due to static electricity etc. is not applied to the input or output terminals.
- 4) Attach connectors, electrolytic capacitors, etc. to PWB, making sure that all connections are tight.
- 5) Be sure to use specified components where high precision is required.

PROCEDURE FOR CHECKING/CLEARING SERVICE COUNTS OF MICROWAVE OVEN

The following procedure enables the servicer to obtain the total using times (cook cycles) since the microwave oven is purchased and the total operation time (hours) since the microwave oven is purchased. The maximum capacity of the total using is 999,999 times, and the maximum capacity of total operation time is 999,999 hours.

- 1) Practice for checking total using times (Ex. 345678 times).

■ ... Flashing / ○ ... 0.1sec BUZZER

PAD	DISPLAY	INDICATOR	PHONE
(Door close)	.		
CHECK	.	CHECK No.	○
CHECK	82 68 (user total count)	CHECK	○
[SIGNAL SIGNAL DOUBLE QUANTITY	↓		
	34 56 (service total count upper figure) 3456XX		○
1 (No 1) (after 1 sec.)	↓ 1 34 56 (service total count upper figure)	No.	○
2 (No 2) (after 1 sec.)	↓ 2 78 (service total count lower figure)	No.	○
CHECK	.		○

- 2) Practice for checking total operation time (Ex. 4567 hours).

■ ... Flashing / ○ ... 0.1sec BUZZER

PAD	DISPLAY	INDICATOR	PHONE
(Door close)	.		
CHECK	.	CHECK No.	○
CHECK	82 68 (user total count)	CHECK	○
[SIGNAL SIGNAL DOUBLE QUANTITY	↓		
	34 56 (service total count upper figure) 3456XX		○
9 (No 9) (after 1 sec.)	↓ 9 45 (Total operation time upper figure)	No.	○
0 (No 0) (after 1 sec.)	↓ 0 67 (Total operation time lower figure)	No.	○
CHECK	.		○

- 3) Practice for inputting total using times (Ex. 310000 times).

■ ... Flashing / ○ ... 0.1sec BUZZER

PAD	DISPLAY	INDICATOR	PHONE
(Door close)	.		
CHECK	.	CHECK No.	○
CHECK	82 68 (user total count)	CHECK	○
[SIGNAL SIGNAL DOUBLE QUANTITY	↓		
	34 56 (service total count upper figure) 3456XX		○
2 (after 1 sec.)	↓ 2 78 (service total count lower figure) XXXX78	No.	○
1 (after 1 sec.)	↓ 1 34 56	No.	○
SET	0		○
3,1,0,0	31 00		○ x 4
SET	31 00		○
2 (after 1 sec.)	↓ 2 78	No.	○
SET	0		○
0	0		○
SET	0		○
	(service total count 310000 set)		
CHECK	↓ .		○

- 4) Practice for inputting total operation time (Ex. 1234 hours).

■ ... Flashing / ○ ... 0.1sec BUZZER

PAD	DISPLAY	INDICATOR	PHONE
(Door close)	.		
CHECK	.	CHECK No.	○
CHECK	82 68 (user total count)	CHECK	○
[SIGNAL SIGNAL DOUBLE QUANTITY	↓		
	34 56 (service total count upper figure) 3456XX		○
9 (after 1 sec.)	↓ 9 45	No.	○
SET	0		○
1,2	12		○ x 2
SET	12		○
0 (after 1 sec.)	↓ 10 67	No.	○
SET	0		○
3,4	34		○ x 2
SET	34 (Total operation time 1234 hours set)		○
CHECK	↓ .		○

- 5) Practice for cancelling total using times and total operation time (user and service) and all other counter.

■ ... Flashing / ○ ... 0.1sec BUZZER

PAD	DISPLAY	INDICATOR	PHONE
(Door close)	.		
SET	.		
SET	.	No.	○
(within 2.0sec.)	.		
	.		
DOUBLE QUANTITY	.	DOUBLE	○
CHECK	.	↓	
SIGNAL	.		
SET	.		○

OTHER SETTING AND CHECKING PROCEDURE

1. EXPRESS DEFROST

$T = \text{STG1} + \text{STG2} + \text{STG3}$

$\text{STG} = A \times T + B$

- 1) To set the constants of Express defrost.

(Ex. 0.20T, 60% at 1st stage)
 0.15T, 40% at 2nd stage)
 0.65T, 20% at 3rd stage)

“ ” : Flicker / ○ 0.1 sec BUZZER

PAD ORDER	DISPLAY	PHONE
(Door close)	.	
SET	.	
SET	"NO"	○
(within 2 sec.)	.	
#1 START	.	
EXPRESS DEF	0.00 DEF.	○
2,0	0.20 DEF (A)	○ x 2
#2 SELECT TIME	0 DEF	○
0	0 DEF (+ - B)	○
	DEF	○
SELECT POWER	P -	
	DEF	○
6	P - 60	
SELECT TIME	0.00 DEF	○
1,5	0.15 DEF (A)	○ x 2
SELECT TIME	0 DEF	
0	0 DEF (+ - B)	○
	DEF	○
SELECT POWER	P -	
	DEF	○
4	P - 40	
SELECT TIME	0 DEF	○
#3 5	5 DEF	○
	DEF	○
SELECT POWER	P -	
	DEF	○
2	P - 20	
SET	. DEF	○
SET	.	○

#1 : No key entry signal.

#2 : To set -B, touch the select power key twice.

#3 : Ex. defrost is paused after 50% of cooking time has lapsed when 5 key is entered, otherwise it is paused at the end of each stage.

KEY	DISPLAY	PAUSE
0	0	End of each stage
1	1	After 10% of total cooking time is passed
:	:	:
9	9	After 90% of total cooking time is passed
START	A	There is no pause

- 2) To check the constants of Express defrost.

“ ” : Flicker / ○ 0.1 sec BUZZER

PAD	DISPLAY	INDICATOR	PHONE
	.		
CHECK	.	"No." CHECK	○
EXPRESS DEFROST	0.20 (A) 0 (+ - B) ↓ P - 60 (PL) ↓ 0.15 (A) 0 (+ - B) ↓ P - 40 (PL) ↓ 5 (pause time) ↓ P - 20 (PL) ↓ (repeat)	DEF	○
CHECK	.		○

- 3) To set user counts

Practice for inputting total number of using times (Ex. 3100 times), and using times of Memory 1 (Ex. 100 times).

“ ” : Flicker / ○ 0.1 sec BUZZER

PAD	DISPLAY	INDICATOR	PHONE
(Door close)	.		
	.		
CHECK	.	CHECK No.	○
CHECK	82 68 (user total count)	CHECK	○
DOUBLE QUANTITY	↓		
SIGNAL			○
SET	0		○
3,1,0,0	31 00		○ x 4
SET	31 00 (user total count 3100 set)		○
#A 1	↓ 1	No.	
(after 1 sec.)	1 32 (memory 1 count)		○
SET	0		○
1,0,0	1 00		x 3
SET	1 00 (memory 1 count 100 set)		○
CHECK	.		

NOTE:

- 1 : To input using times of other memory, touch necessary Memory key at above step #A.
- 2 : To input using times of manual cooking, touch SELECT TIME key at above step #A.
- 3 : To input using times of Express Defrost, touch EXPRESS DEFROST key at above step #A.

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

WARNING: Avoid possible exposure to microwave energy. Please follow the instructions below before operating the oven.

1. Disconnect the oven from power supply.
2. Visually check the door and cavity face plate for damage (dents, cracks, signs of arcing etc.).

Carry out any remedial work that is necessary before operating the oven.

Do not operate the oven if any of the following conditions exist;

1. Door does not close firmly.
2. Door hinge, support or latch hook is damaged.
3. The door gasket or seal is damaged.

4. The door is bent or warped.
5. There are defective parts in the door interlock system.
6. There are defective parts in the microwave generating and transmission assembly.
7. There is visible damage to the oven.

Do not operate the oven:

1. Without the RF gasket (Magnetron).
2. If the wave guide or oven cavity are not intact.
3. If the door is not closed.
4. If the outer case (cabinet) is not fitted.

Please refer to 'OVEN PARTS, CABINET PARTS, CONTROL PANEL PARTS, DOOR PARTS', when carrying out any of the following removal procedures:

WARNING FOR WIRING

To prevent an electric shock, take the following manners.

1. Before wiring,
 - 1) Disconnect the power supply.
 - 2) Open the door and wedge the door open.
 - 3) Discharge the high voltage capacitor and wait for 60 seconds.
2. Don't let the wire leads touch to the following parts;
 - 1) High voltage parts:
Magnetron, High voltage transformer, High voltage capacitor, High voltage rectifier assembly and High voltage fuse.

- 2) Hot parts:
Oven lamp, Magnetron, High voltage transformer and Oven cavity.
- 3) Sharp edge:
Bottom plate, Oven cavity, Weveguide flange, Chassis support and other metallic plate.
- 4) Movable parts (to prevent a fault)
Fan blade, Fan motor, Switch and Antenna motor.
3. Do not catch the wire leads in the outer case cabinet.
4. Insert the positive lock connector certainly until its pin is locked. And make sure that the wire leads should not come off even if the wire leads is pulled.
5. To prevent an error function, connect the wire leads correctly, referring to the Pictorial Diagram.

OUTER CASE REMOVAL

To remove the outer case, proceed as follows.

1. Disconnect oven from power supply.
2. Open the oven door and wedge it open.
3. Remove the five (5) screws from rear and along the side edge of case.
4. Slide the entire case back about 3cm to free it from retaining clips on the cavity face plate.
5. Lift the entire case from the oven.
6. Discharge the H.V. capacitor before carrying out any

further work.

7. Do not operate the oven with the outer case removed.
N.B.; Step 1, 2 and 6 form the basis of the 3D checks.

CAUTION: 1. DISCONNECT OVEN FROM POWER SUPPLY BEFORE REMOVING OUTER CASE.
2. DISCHARGE THE HIGH VOLTAGE CAPACITOR BEFORE TOUCHING ANY OVEN COMPONENTS OR WIRING.

HIGH VOLTAGE TRANSFORMER REMOVAL

1. CARRY OUT 3D CHECKS.
2. Disconnect the filament leads of high voltage transformer from high voltage capacitor and the magnetron.
3. Disconnect the H.V. fuse from the high voltage transformer.
4. Disconnect the main wire harness from the high voltage

transformer.

5. Remove the four (4) screws holding the transformer to base plate.
6. Remove the transformer.
7. Now the high voltage transformer is free.

HIGH VOLTAGE CAPACITOR, HIGH VOLTAGE FUSE AND HIGH VOLTAGE RECTIFIER ASSEMBLY REMOVAL

To remove the components, proceed as follows.

1. CARRY OUT 3D CHECKS.
2. Disconnect H.V. wire of the high voltage rectifier assem-

bly from the magnetron.

3. Disconnect the filament lead of the high voltage transformer from the high voltage capacitor.

4. Remove one (1) screw holding earth side terminal of the high voltage rectifier assembly.
5. Disconnect high voltage fuse and terminal of high voltage rectifier assembly from the high voltage capacitor.
6. Now, the high voltage rectifier assembly should be free.
7. Disconnect the high voltage fuse from the high voltage transformer.
8. Now, the high voltage fuse is free.
9. Remove one (1) screw holding the capacitor holder to the oven cavity rear plate.
10. Remove one (1) screw holding the fan duct to the oven

cavity rear plate.

11. Release the capacitor holder from the fan duct.
12. Remove the capacitor from the capacitor holder.
13. Now, the capacitor should be free.

CAUTION: WHEN REPLACING HIGH VOLTAGE RECTIFIER ASSEMBLY, ENSURE THAT THE CATHODE (EARTH) CONNECTION IS SECURELY FIXED TO THE CAPACITOR HOLDER AND OVEN CAVITY REAR PLATE WITH AN EARTHING SCREW.

MAGNETRON REMOVAL

1. CARRY OUT 3D CHECKS.
2. Disconnect the high voltage wire of the high voltage rectifier assembly and filament lead of the transformer from the magnetron.
3. Remove the one (1) screw holding the air guide to the magnetron and remove the air guide.
4. Remove the one (1) screw holding the chassis support to the magnetron.
5. Carefully remove four (4) screws holding magnetron to

waveguide, when removing the screws hold the magnetron to prevent it from falling.

6. Remove the magnetron from the waveguide with care so the magnetron antenna is not hit by any metal object around the antenna.

CAUTION: WHEN REPLACING THE MAGNETRON, BE SURE THE R.F. GASKET IS IN PLACE AND THE MAGNETRON MOUNTING SCREWS ARE TIGHTENED SECURELY.

CONTROL PANEL ASSEMBLY REMOVAL

CONTROL PANEL ASSEMBLY

1. CARRY OUT 3D CHECKS.
2. Disconnect the main wire harness from the control unit.
3. Remove the one (1) screw holding the control panel assembly to the oven cavity front plate.
4. Lift up the control panel assembly.
5. Now, the control panel assembly is free.

CONTROL UNIT

6. Disconnect the flat ribbon cable from the connector CN-G.
7. Remove the six (6) screws holding the control unit to the control panel frame.
8. Release the two (2) tabs of the control panel frame holding

the control unit to the control panel frame.

9. Now, the control unit is free.

- NOTE:**
1. Before attaching a new key unit, wipe off remaining adhesive on the control panel frame surfaces completely with a soft cloth soaked in alcohol.
 2. When attaching the key unit to the control panel frame, adjust the upper edge and right edge of the key unit to the correct position of control panel frame.
 3. Stick the key unit firmly to the control panel frame by rubbing with a soft cloth so not to cause scratches.

OVEN LAMP AND LAMP SOCKET REMOVAL

1. CARRY OUT 3D CHECKS.
2. Screw the oven lamp from the oven lamp socket off.
3. Now, the oven lamp is free.
4. Lift up the oven lamp socket from air intake duct.
5. Pull the wire leads from the oven lamp socket by pushing the terminal hole of the oven lamp socket with the small flat type screw driver.
6. Now, the oven lamp socket is free.

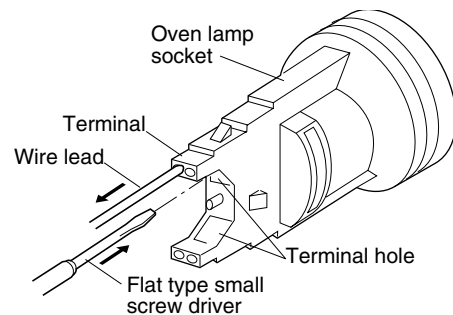


Figure C-1. Oven lamp socket

POSITIVE LOCK® CONNECTOR (NO-CASE TYPE) REMOVAL

1. CARRY OUT 3D CHECKS.
2. Push the lever of positive lock® connector.
3. Pull down on the positive lock® connector.

CAUTION: WHEN CONNECTING THE POSITIVE LOCK® CONNECTORS TO THE TERMINALS, INSTALL THE POSITIVE LOCK® CONNECTOR SO THAT THE LEVER FACES YOU

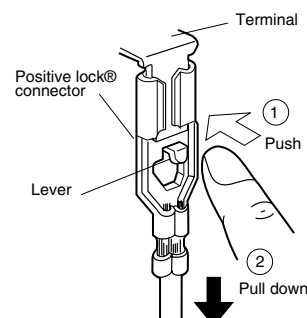


Figure C-2 Positive lock® connector

ANTENNA MOTOR REMOVAL

1. Disconnect the oven from the power supply.
2. Remove the one (1) screw holding the base plate cover to the base plate and remove the base plate cover.
3. Disconnect the wire leads from the antenna motor and remove the one (1) screw holding the antenna motor.
4. Remove the antenna motor shaft from the antenna motor.
5. Now, the antenna motor is free.

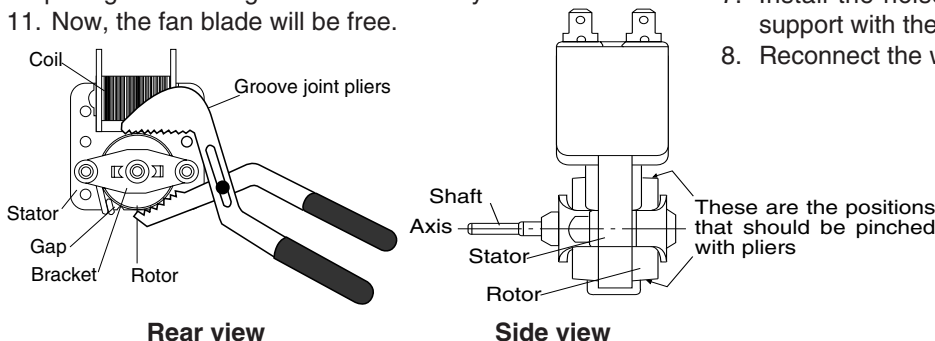
FAN MOTOR REPLACEMENT

REMOVAL

1. CARRY OUT 3D CHECKS.
2. Remove the one (1) screw holding the noise filter to the chassis support.
3. Release the noise filter from the tab on the fan duct.
4. Disconnect the wire leads from the fan motor.
5. Remove the one (1) screw holding the capacitor holder to the oven cavity rear plate.
6. Remove the one (1) screw holding the fan duct to the oven cavity rear plate.
7. Remove the fan duct from the oven.
8. Remove the fan blade from the fan motor shaft according to the following procedure.
9. Hold the edge of the rotor of the fan motor by using a pair of groove joint pliers.

CAUTION:

- * Make sure that no metal pieces enter the gap between the rotor and the stator of the fan motor because the rotor is easily shaven by pliers and metal pieces may be produced.
 - * Do not touch the pliers to the coil of the fan motor because the coil may be cut or injured.
 - * Do not disfigure the bracket by touching with the pliers.
10. Remove the fan blade from the shaft of the fan motor by pulling and rotating the fan blade with your hand.
 11. Now, the fan blade will be free.



CAUTION:

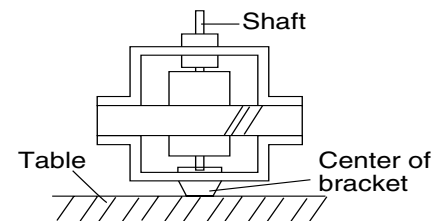
- * Do not reuse the removed fan blade because the hole (for shaft) may be larger than normal.
12. Remove the two (2) screws holding the fan motor to the fan duct.
 13. Now, the fan motor is free.

INSTALLATION

1. Install the fan motor to the fan duct with the two (2) screws.
2. Install the fan blade to the fan motor shaft according to the following procedure.
3. Hold the center of the bracket which supports the shaft of the fan motor on the flat table.
4. Install the fan blade to the shaft of fan motor by pushing the fan blade with a small, light weight, ball peen hammer or rubber mallet.

CAUTION:

- * Do not hit the fan blade hard when installing because the bracket may be disfigured.
 - * Make sure that the fan blade rotates smooth after installation.
 - * Make sure that the axis of the shaft is not slanted.
5. Install the fan duct to the oven cavity rear plate with the one (1) screw.
 6. Install the capacitor holder to the oven cavity rear plate with the one (1) screw.
 7. Install the noise filter to the fan duct and the chassis support with the one (1) screw.
 8. Reconnect the wire leads to the fan motor.



POWER SUPPLY CORD REPLACEMENT

Removal

1. CARRY OUT 3D CHECKS.
2. Remove the one (1) screw holding the green/yellow wire to the cavity rear plate.
3. Disconnect the leads of the power supply cord from the noise filter, referring to the Figure C-3(a).
4. Release the power supply cord from the oven cavity rear plate.
5. Now, the power supply cord is free.

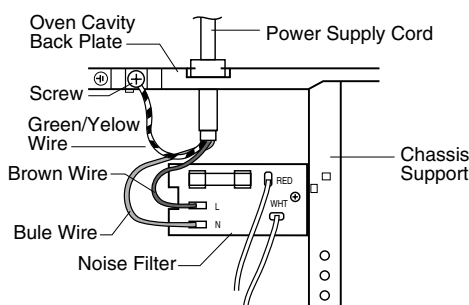


Figure C-3 (a) Replacement of Power Supply Cord

Reinstall

1. Insert the moulding cord stopper of power supply cord into the square hole of the oven cavity rear plate, referring to the Figure C-3(b).
2. Install the earth wire lead of power supply cord to the cavity rear plate with one (1) screw and tight the screw.
3. Connect the brown and blue wire leads of power supply cord to the noise filter correctly, referring to the Pictorial Diagram.

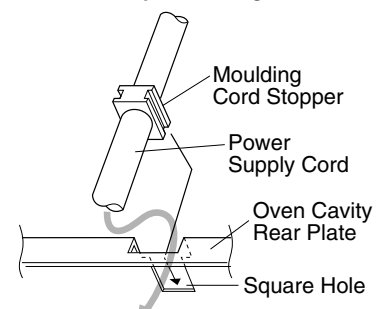


Figure C-3(b). Power Supply Cord Replacement

PRIMARY INTERLOCK RELAY CONTROL SWITCH, 2ND. INTERLOCK SWITCH AND MONITOR SWITCH REMOVAL

1. CARRY OUT 3D CHECKS.
2. Remove the control panel assembly referring to "CONTROL PANEL ASSEMBLY REMOVAL".
3. Disconnect the leads from all switches.
4. Remove the two (2) screws holding the latch hook to the oven cavity.
5. Remove the latch hook.
6. Push the retaining tab outward slightly and remove the switch.

Reinstall

1. Reinstall each switch in its place. The primary interlock relay control switch is in the lower position and the 2nd. interlock switch is in the upper position. The monitor switch is in the middle position.
2. Reconnect wire leads to each switch. Refer to pictorial diagram.
3. Secure latch hook (with two (2) mounting screws) to oven flange.

4. Make sure that the monitor switch is operating properly and check continuity of the monitor circuit. Refer to chapter "Test Procedure" and Adjustment procedure.

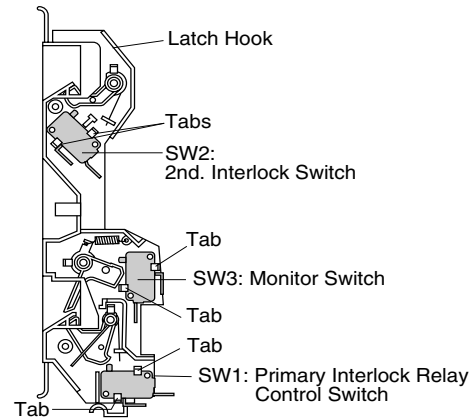


Figure C-4. Switches

PRIMARY INTERLOCK RELAY CONTROL SWITCH, 2ND. INTERLOCK SWITCH AND MONITOR SWITCH ADJUSTMENT

If the primary interlock relay control switch, 2nd. interlock switch and monitor switch do not operate properly due to a mis-adjustment, the following adjustment should be made.

1. CARRY OUT 3D CHECKS.
2. Loosen the two (2) screws holding the latch hook to the oven cavity front flange.
3. With door closed, adjust latch hook by moving it back and forth, and up and down. In and out play of the door allowed by the upper and lower position of the latch hook should be less than 0.5mm. The vertical position of the latch hook should be adjusted so that the primary interlock relay control switch and 2nd. interlock switch are activated with the door closed. The horizontal position of the latch hook should be adjusted so that the plunger of the monitor switch is pressed with the door closed.
4. Secure the screws with washers firmly.
5. Check the operation of all switches. If each switch has not activated with the door closed, loosen screw and adjust the latch hook position.

After adjustment, check the following.

1. In and out play of door remains less than 0.5mm when in the latched position. First check upper position of latch hook, pushing and pulling upper portion of door toward the oven face. Then check lower portion of the latch hook, pushing and pulling lower portion of the door toward the oven face. Both results (play in the door) should be less than 0.5mm.

2. The 1st. interlock switch, latch switch and 2nd. interlock relay control switch interrupt the circuit before the door can be opened.
3. Monitor switch contacts close when door is opened.
4. Reinstall outer case and check for microwave leakage around door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

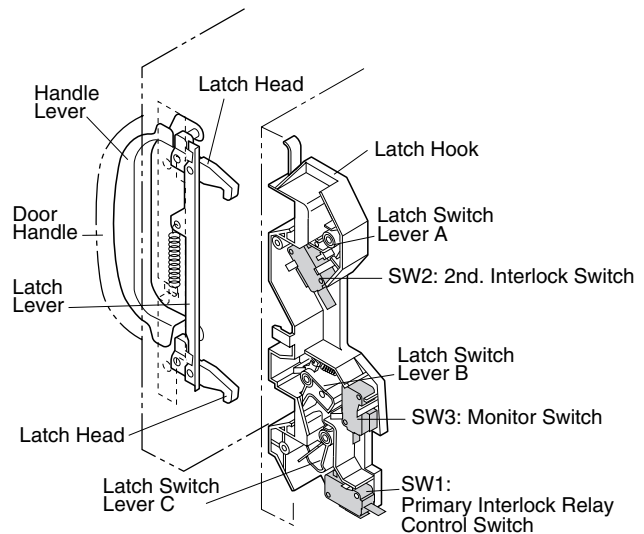


Figure C-5. Latch Switch Adjustments

DOOR PARTS REPLACEMENT

CHOKE COVER

1. Disconnect the oven from the power supply.
2. Open the oven door and wedge it open.
3. Insert a putty knife (thickness of about 0.5mm) into the gap between the choke cover and door frame as shown in Figure C-6 to free engaging parts.
4. Pry the choke cover by inserting a putty knife as shown in Figure C-6.
5. Release choke cover from door panel.
6. Now choke cover is free.

NOTE: When carrying out any repair to the door, do not bend or warp the slit choke (tabs on the door panel assembly) to prevent microwave leakage.

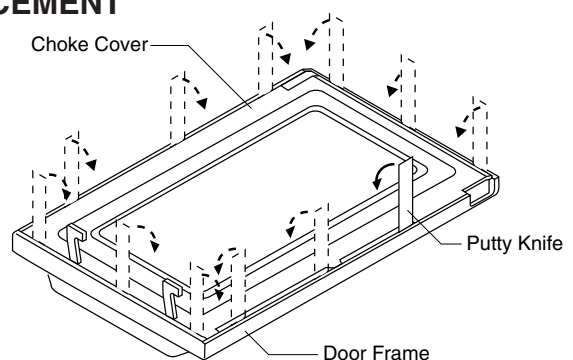


Figure C-6. Door Disassembly

7. Release two (2) pins of door panel from two (2) holes of upper and lower oven hinges by lifting up.
8. Now, door sub assembly is free from oven cavity.

DOOR PANEL REMOVAL

9. Remove the four (4) screws holding the door panel to the door frame.
10. Release door panel from seven (7) tabs of door frame by sliding door panel downward.
11. Now, the door panel is free.

DOOR HANDLE REMOVAL

12. Release the latch spring from the tab of the latch angle assembly.
13. Remove the two (2) screws holding the door handle and the latch angle assembly through the door frame.
14. Now, door handle is free.

LATCH HEADS REMOVAL

15. Remove the one (1) screw holding the latch angle assembly to the door frame.
16. Remove the latch angle assembly together with the latch lever, latch spring and the upper and lower latch heads from the door frame.
17. Release the latch lever together with the latch spring and the latch heads from the latch angle assembly.
18. Release the two (2) latch heads from the latch lever.
19. Now, the upper and lower latch heads are free.

FRONT DOOR GLASS OR SEALER PLATE REMOVAL

(After DOOR PANEL REMOVAL)

12. Remove the four (4) screws holding the glass stopper U to the door frame and remove the glass stopper U.
13. Remove the two (2) screws holding the glass stopper R to the door frame and remove the glass stopper R.
14. Slide the front door glass and sealer plate left at first and then slide upwards to release them from the tabs holding them.
15. Now, the front door glass or sealer plate is free

DOOR CASE REMOVAL

(After DOOR PANEL REMOVAL)

12. Straighten all tabs of the door case holding the door case to the door frame.
13. Release door case from the door frame.
14. Now, the door case is free

NOTE: At this moment, the door badge is attached on the door case.

REINSTALL OF THE DOOR

1. Reinstall all door parts except the choke cover.
2. Catch two (2) pins of door panel on two (2) holes of upper and lower oven hinges.
3. Reinstall choke cover to door panel by pushing.

NOTE: After any service to the door;

(A) Make sure that 2nd. interlock switch, primary inter-

lock relay control switch and monitor switch are operating properly. (Refer to chapter "Test Procedures").

(B) An approved microwave survey meter should be used to assure compliance with proper microwave radiation emission limitation standards. (Refer to Microwave Measurement Procedure.)

After any service, make sure of the following :

1. Door latch heads smoothly catch latch hook through latch holes and that latch head goes through center of latch hole.
2. Deviation of door alignment from horizontal line of cavity face plate is to be less than 1.0mm.
3. Door is positioned with its face pressed toward cavity face plate.
4. Check for microwave leakage around door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

Note: The door on a microwave oven is designed to act as an electronic seal preventing the leakage of microwave energy from oven cavity during cook cycle. This function does not require that the door be airtight, moisture (condensation)-tight or light-tight. Therefore, occasional appearance of moisture, light or sensing of gentle warm air movement around oven door is not abnormal and do not in themselves indicate a leakage of microwave energy from oven cavity.

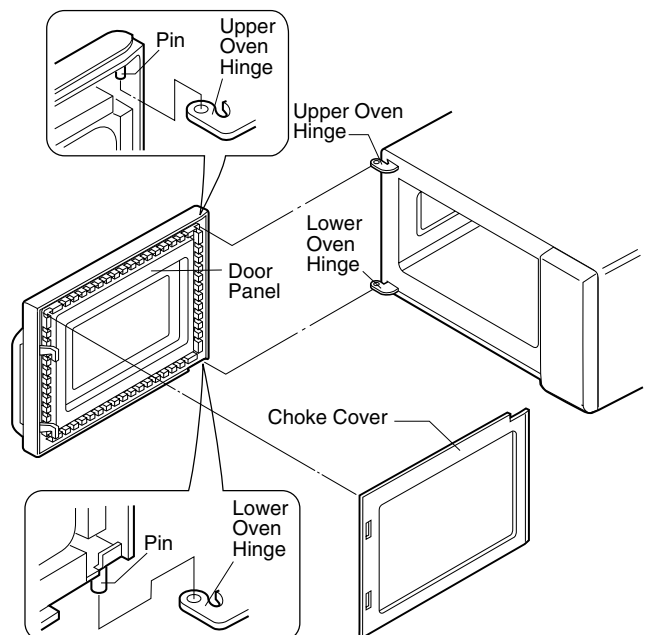


Figure C-7. Door Replacement

INSTALLATION OF CERAMIC SHELF

1. Disconnect the oven from the power supply.
2. Open the oven door and wedge it open.
3. Make sure that the smooth surface of the ceramic shelf face up.
4. Make sure that the rubber packing without a fin of the ceramic shelf faces the front of the oven.

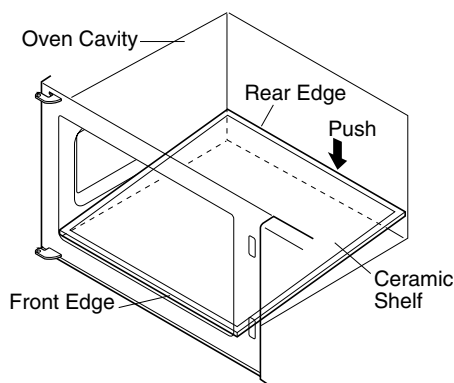
NOTE: The three (3) rubber packings with the fins and the one (1) rubber packing without a fin are attached to the four (4) edges of the ceramic shelf. The one

(1) rubber packing without a fin is the front edge of the ceramic shelf.

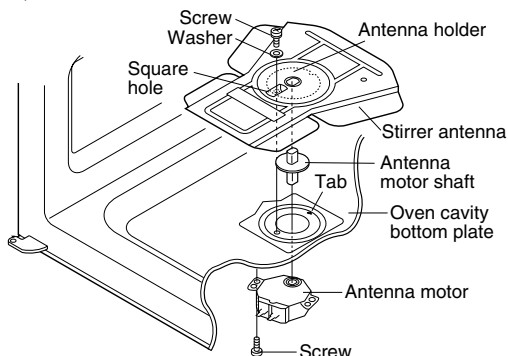
5. Put the front edge of the ceramic shelf into the front edge of the oven cavity bottom plate.
6. Push down the rear edge of the ceramic shelf into the oven cavity bottom plate.
7. Now, the ceramic shelf is installed.

WARNING

Make sure that the rubber packing is not caught between the oven door and the oven cavity front plate, to avoid possible exposure to excessive microwave energy.

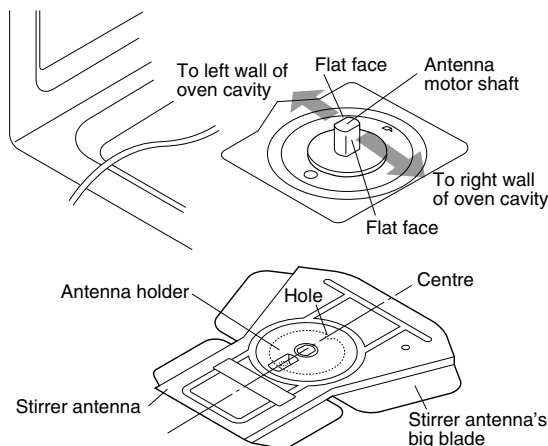
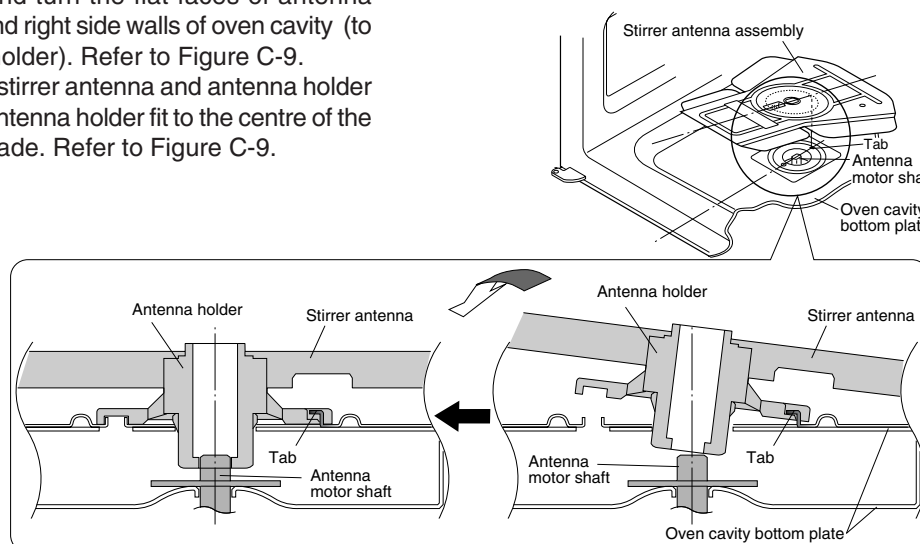
**ANTENNA MOTOR SHAFT REPLACEMENT****REMOVAL**

1. Disconnect the power supply cord.
2. Open the door and wedge the door open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Remove the antenna motor from the oven cavity bottom plate, referring to "ANTENNA MOTOR REMOVAL".
5. Remove the ceramic shelf from the oven cavity bottom plate.
6. Remove the one (1) screw and the one (1) washer holding the antenna holder of the stirrer antenna assembly to the oven cavity bottom plate through the square hole of the stirrer antenna. Refer to Figure C-8.
7. Release the antenna holder from the one (1) tab of the oven cavity bottom plate.
8. Remove the stirrer antenna assembly from the oven cavity bottom plate.
9. Remove the antenna motor shaft from the hole of the oven cavity bottom plate.
10. Now, the antenna motor shaft is free.

**Figure C-8. mMotor Shaft Removal****INSTALLATION**

1. Install the antenna motor shaft into the hole of the oven cavity bottom plate, and turn the flat faces of antenna motor shaft to the left and right side walls of oven cavity (to fit the stirrer antenna holder). Refer to Figure C-9.
2. Set the direction of the stirrer antenna and antenna holder so that the hole of the antenna holder fit to the centre of the stirrer antenna's big blade. Refer to Figure C-9.

3. Hook the hole of the antenna holder on the tab of the oven cavity bottom plate. Refer to Figure C-10.
4. Insert the antenna holder into the hole of the oven cavity bottom plate and fit the hole of the antenna holder with an antenna motor shaft. Refer to Figure C-10.
5. Install the antenna holder to the oven cavity bottom plate with the one (1) screw and the one (1) washer. Refer to Figure C-8.
6. Install the antenna motor to the oven cavity bottom plate with one (1) screw. Refer to Figure C-8.
7. Connect the wire leads to the antenna motor, referring to the pictorial diagram.
8. Install the base plate cover to the base plate with one (1) screw.
9. Install the ceramic shelf to the oven cavity bottom plate. Refer to "INSTALLATION OF CERAMIC SHELF".

**Figure C-9. Direction of Antenna Motor Shaft and Stirrer Antenna Assembly****Figure C-10. Stirrer Antenna Assembly Installation**

MICROWAVE MEASUREMENT

After adjustment of door latch switches, monitor switch and door are completed individually or collectively, the following leakage test must be performed with a survey instrument and it must be confirmed that the result meets the requirements of the performance standard for microwave oven.

REQUIREMENT

The safety switch must prevent microwave radiation emission in excess of $5\text{mW}/\text{cm}^2$ at any point 5cm or more from external surface of the oven.

PREPARATION FOR TESTING:

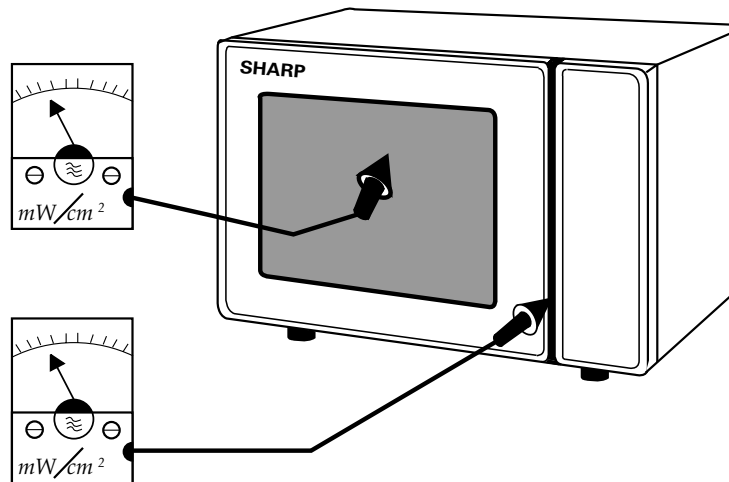
Before beginning the actual test for leakage, proceed as follows;

1. Make sure that the test instrument is operating normally as specified in its instruction booklet.
Important:
Survey instruments that comply with the requirement for instrumentations as prescribed by the performance standard for microwave ovens must be used for testing.

Recommended instruments are:

NARDA 8100
NARDA 8200
HOLADAY HI 1500
SIMPSON 380M

2. Place the oven tray into the oven cavity.
3. Place the load of $275 \pm 15\text{ml}$ of water initially at $20 \pm 5^\circ\text{C}$ in the centre of the oven tray. The water container should be a low form of 600 ml beaker with inside diameter of approx. 8.5cm and made of an electrically non-conductive material such as glass or plastic.
The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
4. Close the door and turn the oven ON with the timer set for several minutes. If the water begins to boil before the survey is completed, replace it with 275ml of cool water.
5. Move the probe slowly (not faster than $2.5\text{cm}/\text{sec.}$) along the gap.
6. The microwave radiation emission should be measured at any point of 5cm or more from the external surface of the oven.



Microwave leakage measurement at 5 cm distance

TEST DATA AT A GLANCE

PARTS	SYMBOL	VALUE / DATA
Fuse	F1	F10A
Thermal cut-out	TC1	125°C Off
Thermal cut-out	TC2	145°C Off
Oven lamp	OL	240 V 25W E14
High voltage capacitor	C	1.07 μF AC 2300V
Magnetron	MG	Filament $< 1\Omega$ / Filament – chassis ∞ ohm.
High voltage transformer	T	Filament winding $< 1\Omega$ Secondary winding Approx. 90Ω / Primary winding Approx. 1.3Ω
High voltage fuse	F2	0.75A 5kV

WARNING: DISCONNECT THE PLUG WHEN MEASURING RESISTANCE.

SCHEMATIC

NOTE: CONDITION OF OVEN

1. DOOR CLOSED.

2.  APPEAR ON DISPLAY.

NOTE: ★ Indicates components with potential above 250 V.

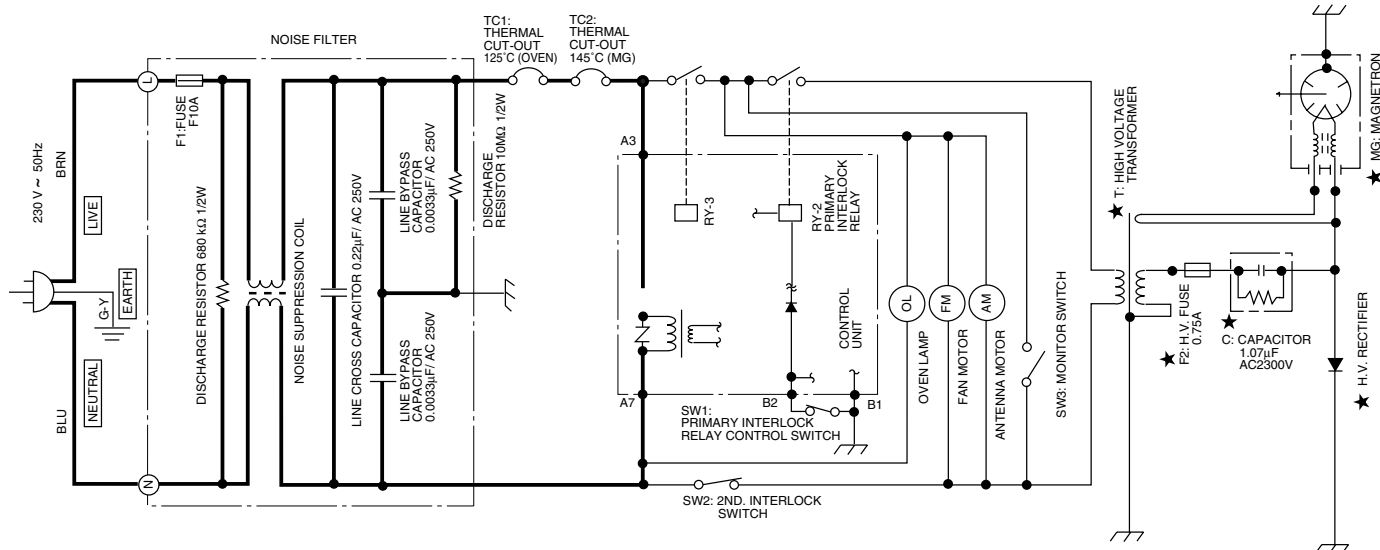


Figure O-1 Oven Schematic-OFF Condition

SCHEMATIC

NOTE: CONDITION OF OVEN

1. DOOR CLOSED.

2. "SELECT TIME" PAD TOUCHED.

3. COOKING TIME ENTERED.

4. START PAD TOUCHED.

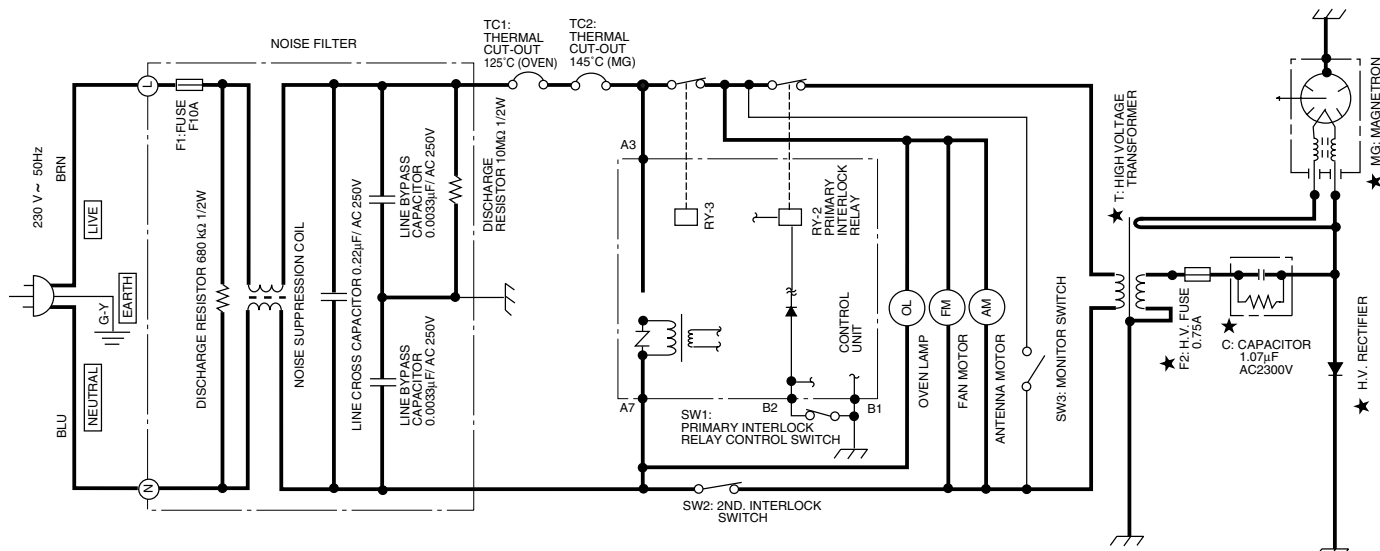
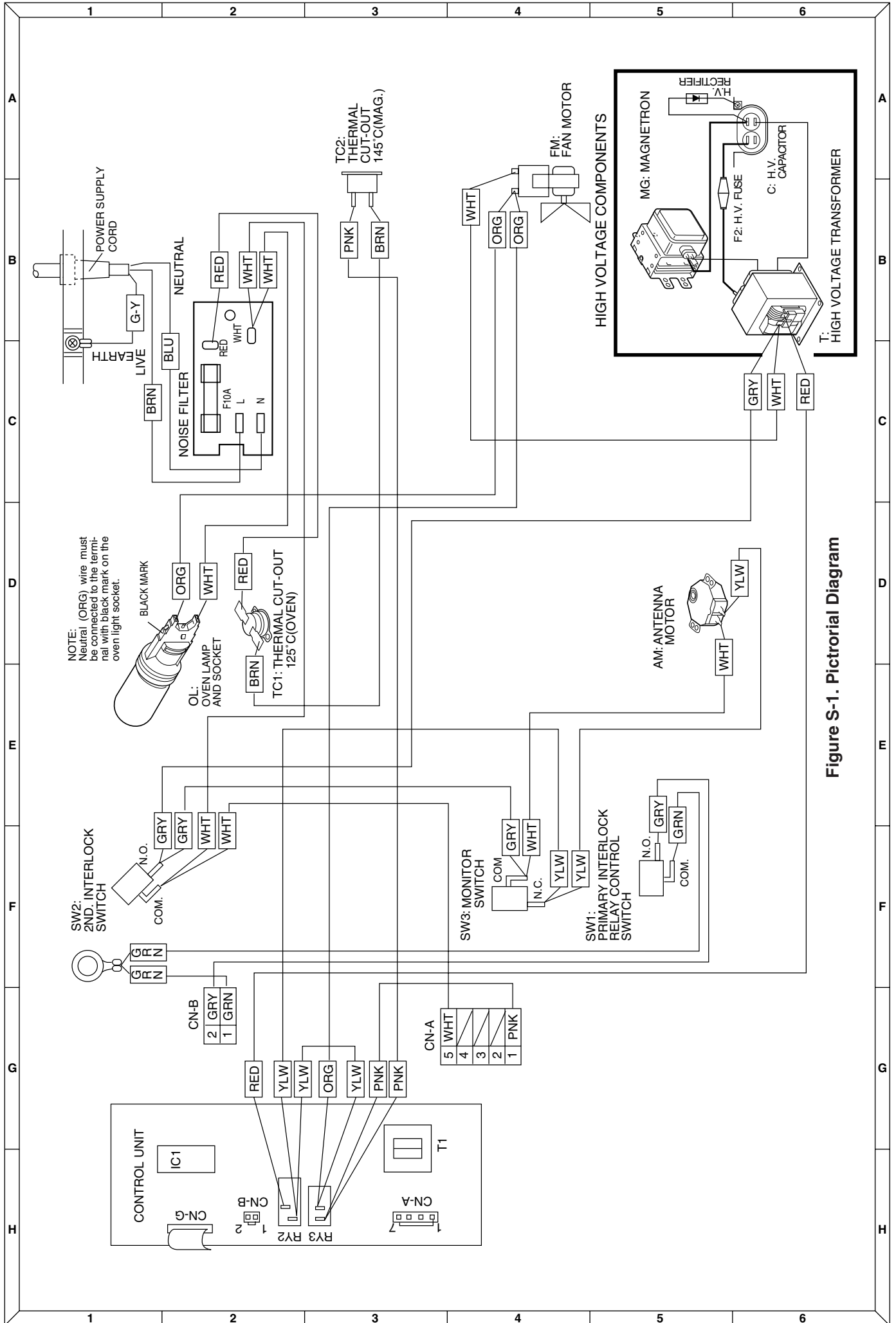
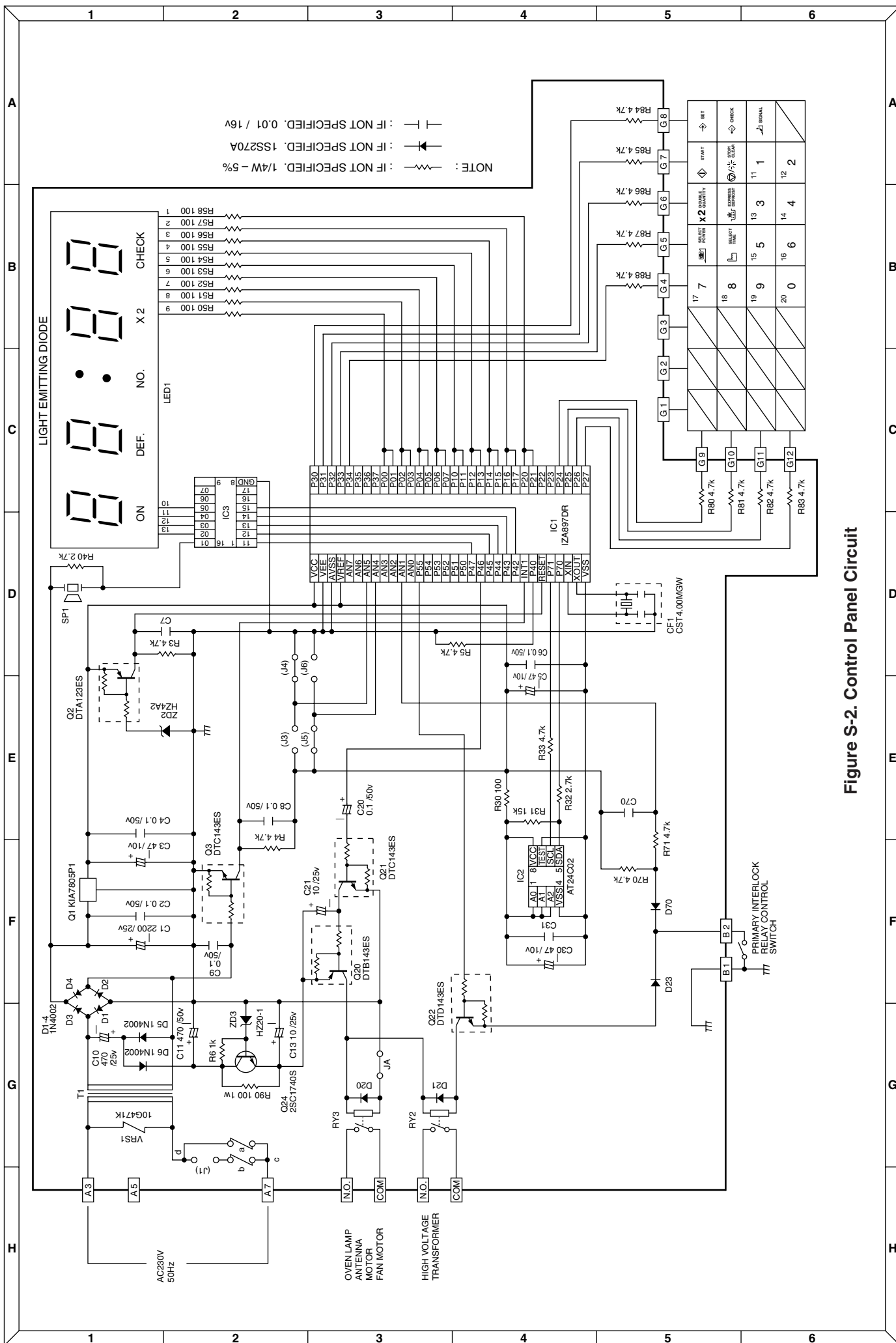
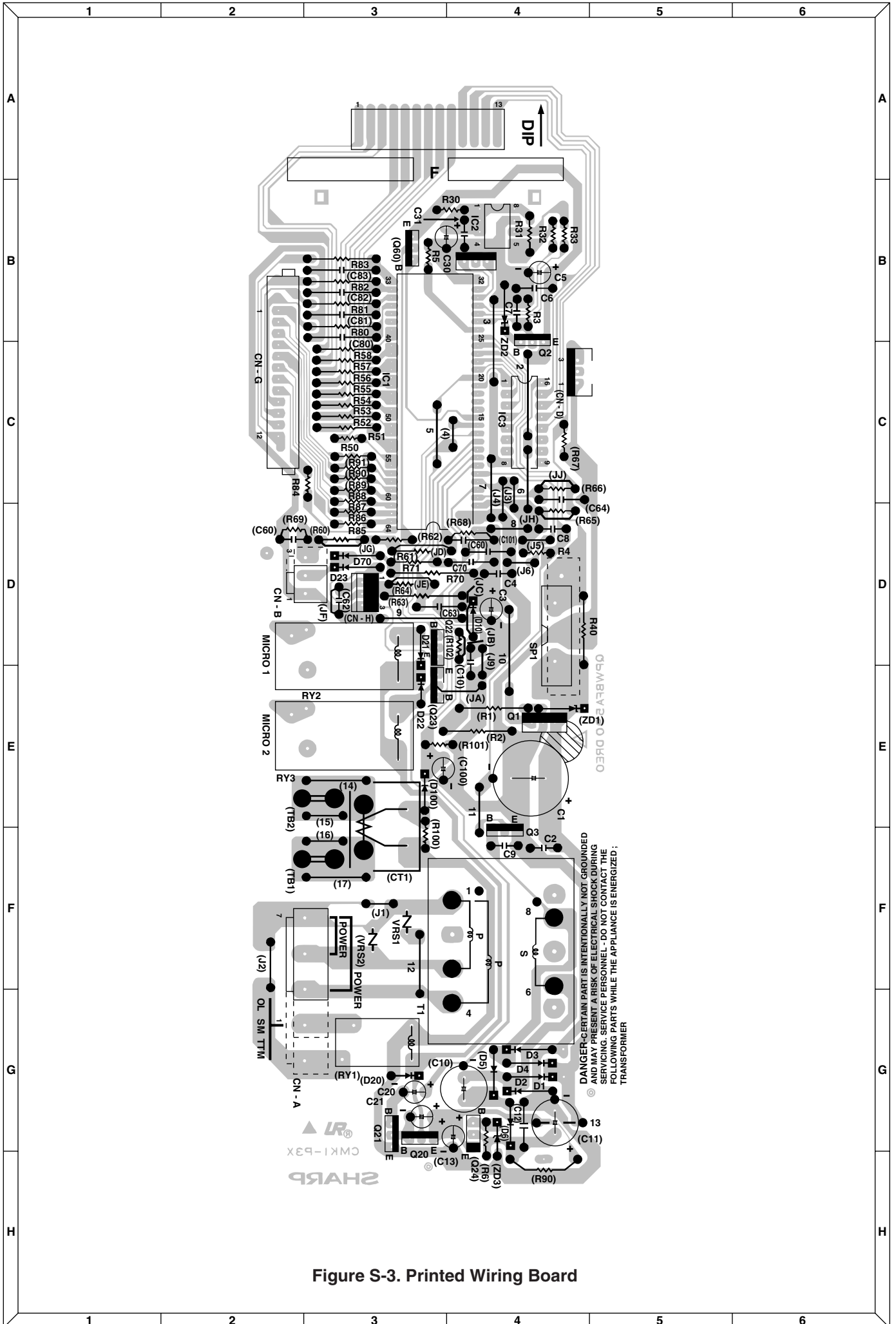


Figure O-2 Oven Schematic-Cooking Condition







PARTS LIST

Note: The parts marked "Δ" may cause undue microwave exposure.

The parts marked "*" are used in voltage more than 250V.

REF. NO.	PART NO.	DESCRIPTION	Q'TY	CODE
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ELECTRIC PARTS

	AM	RMOTDA234WRE0	Antenna motor	1	AR
*	C	RC-QZA320WRZZ	High voltage capacitor	1	AV
	F1	QFS-CA026WRZZ	Fuse F10A	1	AH
*	F2	QFS-IA002WRE0	High voltage fuse 0.75 A	1	AQ
	FM	RMOTEA378WRE0	Fan motor	1	AU
Δ*	MG	RV-MZA299WRE0	Magnetron	1	BK
	OL	RLMPTA078WRE0	Oven lamp	1	AL
	OL	RLMPTA069WRE0	Oven lamp (Interchangeable)	1	AK
	SW1	QSW-MA085WRE0	Primary interlock relay control switch	1	AF
	SW2	QSW-MA085WRE0	2nd. interlock switch	1	AF
	SW3	QSW-MA086WRE0	Monitor switch	1	AF
*	T	RTRN-A717WRZZ	High voltage transformer	1	BP
	TC1	RTHM-A123WRZZ	Thermal cut-out 125 deg. (OVEN)	1	AK
	TC1	RTHM-A096WRE0	Thermal cut-out 125 deg. (OVEN) (Interchangeable)	1	AK
	TC2	RTHM-A120WRE0	Thermal cut-out 145 deg. (MAG)	1	AH
	TC2	RTHM-A080WRE0	Thermal cut-out 145 deg. (MAG) (Interchangeable)	1	AP
*	1- 1	QACC-A148WRZZ	Power supply cord	1	AW
	1- 2	FH-DZA091WRK0	High voltage rectifier assembly	1	AY
	1- 3	FPWBFA367WRKZ	Noise filter	1	AZ
	1- 4	QSOCLA024WRE0	Oven lamp socket	1	AH

CABINET PARTS

	2- 1	GCABUA672WRP0	Outer case cabinet	1	BH
	2- 2	GDAI-A318WRW0	Base plate	1	AV
	2- 3	GCOVHA406WRW0	Base plate cover	1	AQ
	2- 4	GLEGPA074WRE0	Foot	2	AC
	2- 5	GLEGPA076WRF0	Leg	1	AF

CONTROL PANEL PARTS

	3- 1	DPWBF911WRU0	Control unit	1	BP
	3- 1A	QCNCMA234DRE0	3-pin connector (CN-A)	1	AC
	3- 1B	QCNCMA275DRE0	2-pin connector (CN-B)	1	AB
	3- 1C	QCNCWA057DRE0	12-pin connector (CN-G)	1	AF
	C1	VCEAB51EW228M	Capacitor 2200 uF 25V	1	AE
	C2	RC-KZA087DRE0	Capacitor 0.1 uF 50V	1	AA
	C3	VCEAB31AW476M	Capacitor 47 uF 10V	1	AA
	C4	RC-KZA087DRE0	Capacitor 0.1 uF 50V	1	AA
	C5	VCEAB31AW476M	Capacitor 47 uF 10V	1	AA
	C6	RC-KZA087DRE0	Capacitor 0.1 uF 50V	1	AA
	C7	VCKYD11CY103N	Capacitor 0.01 uF 16V	1	AA
	C8-9	RC-KZA087DRE0	Capacitor 0.1 uF 50V	2	AA
	C10	VCEAB31EW477M	Capacitor 470 uF 25V	1	AC
	C11	VCEAB31HW477M	Capacitor 470 uF 50V	1	AE
	C13	VCEAB31EW106M	Capacitor 10 uF 25V	1	AA
	C20	VCEAB31HW104M	Capacitor 0.1 uF 50V	1	AM
	C21	VCEAB31EW106M	Capacitor 10 uF 25V	1	AA
	C30	VCEAB31AW476M	Capacitor 47 uF 10V	1	AA
	C31	VCKYD11CY103N	Capacitor 0.01 uF 16V	1	AA
	C70	VCKYD11CY103N	Capacitor 0.01 uF 16V	1	AA
	CF1	RCRS-A012DRE0	Ceramic resonator CST4.00MGW	1	AD
	D1-6	RH-DZA006PRE0	Diode (1N4002)	6	AD
	D20-21	VHD1SS270A/-1	Diode (1SS270A)	2	AA
	D23	VHD1SS270A/-1	Diode (1SS270A)	1	AA
	D70	VHD1SS270A/-1	Diode (1SS270A)	1	AA
	IC1	RH-IZA897DRE0	LSI	1	AV
	IC2	RH-IZA980DRE0	IC (AT24C02)	1	AD
	IC3	RIC--A025BDE0	IC (KID65004AP)	1	AE
	LED1	VHPSL3966T/1B	Light emitting diode	1	AS
	Q1	RIC--A022BDE0	IC (KIA7805P1)	1	AE
	Q2	VSDTA123ES/-3	Transistor (DTA123ES)	1	AA
	Q3	VSDTC143ES/-3	Transistor (DTC143ES)	1	AB
	Q3	VSKRC101M/-3	Transistor (KRC101M) (Interchangeable)	1	AB
	Q20	VSDTB143ES/-3	Transistor (DTB143ES)	1	AC
	Q20	VSKRA223M/-3	Transistor (KRA223M) (Interchangeable)	1	AB
	Q21	VSDTC143ES/-3	Transistor (DTC143ES)	1	AB
	Q21	VSKRC101M/-3	Transistor (KRC101M) (Interchangeable)	1	AB
	Q22	VSDTD143ES/-3	Transistor (DTD143ES)	1	AC
	Q22	VSKRC243M/-3	Transistor (KRC243M) (Interchangeable)	1	AB
	Q24	VS2SC1740S/-3	Transistor (2SC1740)	1	AB
	R3-5	VRD-B12EF472J	Resistor 4.7k ohm 1/4W	3	AA
	R6	VRD-B12EF102J	Resistor 1k ohm 1/4W	1	AA
	R30	VRD-B12EF101J	Resistor 100 ohm 1/4W	1	AA
	R31	VRD-B12EF153J	Resistor 15k ohm 1/4W	1	AA

**Note: The parts marked "Δ" may cause undue microwave exposure.
The parts marked "*" are used in voltage more than 250V.**

REF. NO.	PART NO.	DESCRIPTION	Q'TY	CODE
R32	VRD-B12EF272J	Resistor 2.7k ohm 1/4W	1	AA
R33	VRD-B12EF472J	Resistor 4.7k ohm 1/4W	1	AA
R40	VRD-B12EF272J	Resistor 2.7k ohm 1/4W	1	AA
R50-58	VRD-B12EF101J	Resistor 100 ohm 1/4W	9	AA
R70-71	VRD-B12EF472J	Resistor 4.7 ohm 1/4W	2	AA
R80-88	VRD-B12EF472J	Resistor 4.7 ohm 1/4W	9	AA
R90	VRS-B13AA101J	Resistor 100 ohm 1W	1	AA
RY2	RRLY-A092DRE0	Relay (VRB18SP)	1	AL
RY3	RRLY-A093DRE0	Relay (VRB18)	1	AL
SP1	RALM-A014DRE0	Buzzer (PKM22EPT)	1	AG
T1	RTRNPA131DRE0	Touch control transformer	1	AR
VRS1	RH-VZA032DRE0	Varistor (10G471K)	1	AE
ZD2	VHEHZ4A2///-1	Zener diode (HZ4A2)	1	AA
ZD3	VHEHZ201///-1	Zener diode (HZ20-1)	1	AA
3- 2	FPNLB773WRKZ	Control panel frame with key unit	1	BA
3- 2-1	FUNTKB146WREZ	Key unit	1	AW
3- 2-2	GCOVAA260WRP0	C/P case	1	BA
3- 2-3	GMADIA109WRF0	Display window	1	AE
3- 3	XEPSD30P08XS0	Screw; 3mm x 8mm	6	AA

OVEN PARTS

Δ	4- 1	FGLSPA062WRE0	Ceramic shelf	1	BL
Δ	4- 2	DOVN-A514WRY0	Oven cavity	1	BU
Δ	4- 3	MLEVPA227WRF0	Latch switch lever A	1	AF
Δ	4- 4	MLEVPA228WRF0	Latch switch lever B	1	AF
Δ	4- 5	MLEVPA229WRF0	Latch switch lever C	1	AF
	4- 6	MSPRCA108WRE0	Latch lever spring	3	AC
	4- 7	MSPRTA191WRE0	Switch lever B spring	1	AC
Δ	4- 8	PHOK-A121WRFZ	Latch hook	1	AG
	4- 9	FDUC-A362WRYZ	Steam duct sub assembly	1	BB
	4-10	PSKR-A351WRP0	Steam guide	1	AY
	4-11	LBNDKA139WRW0	HV capacitor holder	1	AR
	4-12	NFANJA029WRE0	Fan blade	1	AK
	4-13	PDUC-A697WRF0	Fan duct	1	AM
	4-14	FPLT-A007WRY0	Stirrer antenna assembly	1	BB
	4-15	PCUSUA507WRP0	Cushion	1	AC
	4-16	PCUSGA378WRP0	Cushion	1	AL
	4-17	PSPA-A112WRE0	Mica washer	1	AC
	4-18	LANGFA199WRWZ	Chassis support	1	AH
	4-19	NSFTPA035WRFZ	Antenna motor shaft	1	AQ
	4-20	PSKR-A359WRW0	Air guide	1	AM
	4-21	PSKR-A349WRP0	Steam duct barrier	1	AF
	4-22	PFILWA060WRP0	Lamp filter	1	AD
	4-23	PDUC-A722WRF0	Air intake duct	1	AF
	4-24	PCUSGA249WRP0	Cushion	1	AA
	4-25	PCUSUA235WRP0	Cushion	1	AE
	4-26	PCUSUA511WRP0	Cushion	2	AC
	4-27	PCUSUA329WRP0	Cushion	1	AC
	4-28	PCUSUA514WRP0	Cushion	1	AB
	4-29	PPACGA171WRE0	Cushion	1	AK
	4-30	PCUSUA515WRP0	Cushion	1	AD
	4-31	PSHEPA668WRE0	Cover	1	AK
	4-32	PCLICA034WRE0	Hand clip	3	AD
	4-33	PSHEPA673WRE0	S/Film	1	AD
	4-34	GLEGPA056WRE0	Leg	1	AD
	4-35	LANGQA556WRMZ	Earth angle	1	AL

DOOR PARTS

Δ	5- 1	FDORFA322WRT0	Door panel assembly	1	AZ
	5- 2	PSHEPA649WRE0	Sealer film	1	AB
Δ	5- 3	FANGKA206WRY0	Latch angle assembly	1	AW
	5- 4	FCOV-A005WRKZ	Door case assembly	1	BH
	5-4-1	LSTPPA180WRF0	Glass stopper R	1	AK
	5-4-2	LSTPPA182WRF0	Glass stopper U	1	AN
	5-4-3	PGLSPA522WRE0	Front door glass	1	AQ
	5-4-4	XCPD40P08000	Screw : 4mm x 8mm	6	AA
	5-4-5	PSLDMA198WREZ	Sealer plate	1	BB
	5- 5	GWAKPA580WRM0	Door handle	1	AQ
	5- 6	JHNDMA040WRW0	Handle lever	1	AN
Δ	5- 7	LANGKA874WRW0	Latch lever	1	AR
Δ	5- 8	LSTPPA181WRF0	Latch head	2	AL
	5- 9	MSPRTA190WRE0	Latch spring	1	AD
	5-10	PCUSUA506WRP0	Cushion	1	AC
	5-11	XEPSD40P06000	Screw : 4mm x 6mm	1	AB
	5-12	PSHEPA686WRE0	Panel sheet	2	AK
	5-13	PSHEPA687WRE0	Panel sheet	1	AK

Note: The parts marked "Δ" may cause undue microwave exposure.
The parts marked "*" are used in voltage more than 250V.**

REF. NO.	PART NO.	DESCRIPTION	Q'TY	CODE
5-14	LANGJA020WRP0	Earth angle	1	AD
5-15	PCUSUA505WRP0	Cushion	1	AC
5-16	XEBSD38P08000	Screw : 3.8mm x 8mm	4	AA
5-17	GCOVHA407WRF0	Choke cover	1	AM
5-18	HBDGCA117WREZ	Door badge	1	AG
5-19	XEPSD40P25K00	Screw : 4mm x 25mm	2	AB
5-20	PCUSUA508WRP0	Cushion	1	AC
5-21	PCUSGA514WRP0	Cushion	1	AG

MISCELLANEOUS

6- 1	TINSZA101WRRZ	Instruction book	1	AP
6- 2	TCAUAA249WRR0	Caution label	1	AE
6- 3	FW-VZB998WREZ	Main wire harness	1	AY
6- 4	TCAUHA276WRRZ	Caution sheet	1	AH
6- 5	TCAUHA168WRR0	H caution label	1	AH
6- 6	TLABMA585WRR0	Menu sticker	1	AG

SCREWS, NUTS AND WASHERS

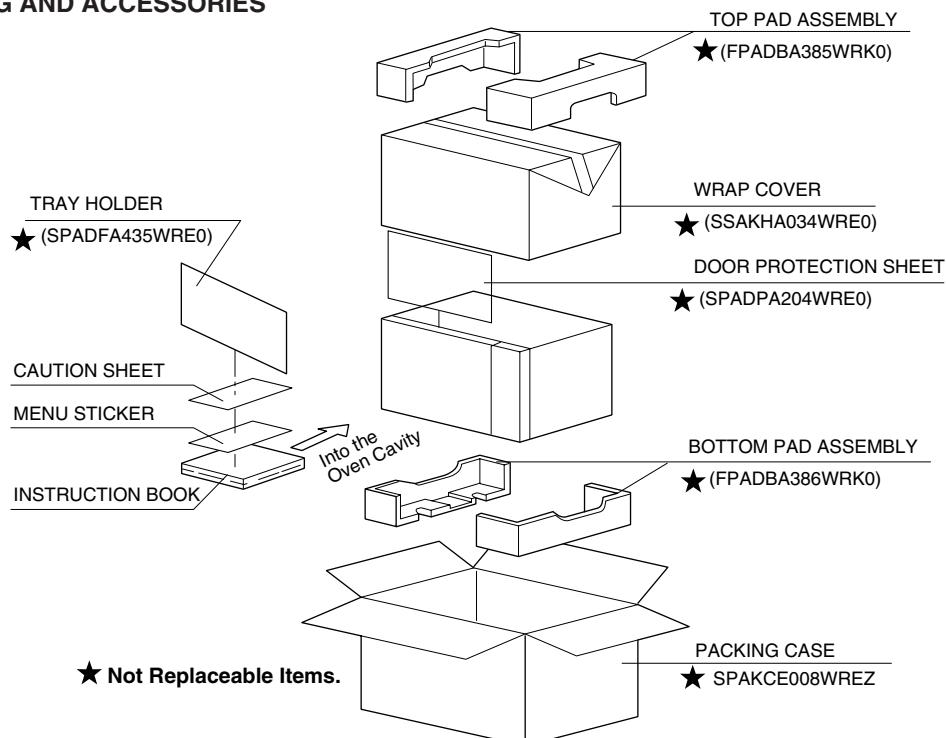
7- 1	XHPSD40P08K00	Screw : 4mm x 8mm	5	AA
7- 2	XEPSD40P25000	Screw : 4mm x 25mm	2	AA
7- 3	XOTSD40P12RV0	Screw : 4mm x 12mm	12	AA
7- 4	LX-CZ0052WRE0	Special screw	2	AA
7- 5	LX-EZA042WRE0	Special screw	2	AB
7- 6	XBPPW40P04000	Screw : 4mm x 4mm	1	AB
7- 7	XFPDSD40P08000	Screw : 4mm x 8mm	1	AA
7- 8	XHTSD40P12RV0	Screw : 4mm x 12mm	1	AA
7- 9	XHPSD30P06000	Screw : 3mm x 6mm	1	AA
7-10	XHTSD40P08RV0	Screw : 4mm x 8mm	3	AA
7-11	XOTSD40P12000	Screw : 4mm x 12mm	4	AA
7-12	XOTSE40P08000	Screw : 4mm x 8mm	1	AA
7-13	XOTWW40P10000	Screw : 4mm x 10mm	4	AA
7-14	LX-WZA035WRE0	Special washer	1	AB
7-15	XHPSD40P08000	Screw : 4mm x 8mm	4	AA

HOW TO ORDER REPLACEMENT PARTS

To have your order filled promptly and correctly, please furnish the following information.

1. MODEL NUMBER 2. REF. NO. 3. PART NO. 4. DESCRIPTION

PACKING AND ACCESSORIES



OVEN AND CABINET PARTS

