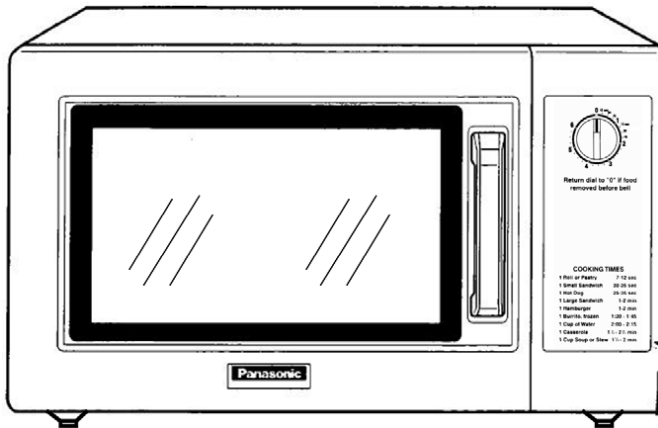


# Service Manual

## Microwave Oven



### NE-1022F

APH (USA)

## Specification

Models	NE-1022F
Power Source:	120V AC Single Phase, 60Hz
Power Consumption:	1500W (13.4A)
Output:	1000W
Microwave Frequency:	2450MHz
Timer:	6 min. Rotary
Outside Dimensions:	12"(H) x 20 <sup>1</sup> / <sub>18</sub> "(W) x 14 <sup>3</sup> / <sub>16</sub> "(D) 306mm(H) x 510mm(W) x 360mm(D)
Oven Cavity Dimensions:	8 <sup>1</sup> / <sub>16</sub> "(H) x 13"(W) x 13"(D) 205mm(H) x 330mm(W) x 330mm(D)
Weight:	Approx. 34 lbs (15.4kg)
PbF	This product with PbF
Specifications subject to change without notice.	

# Panasonic®

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(Shanghai) Co., Ltd. 2012.

## Your safety and the safety of others are very important.

We have provided important safety messages in this manual and on your appliance. Always read and obey all safety messages.



This is the safety alert symbol. It is used to alert you to potential hazards that can kill or hurt you and others. The safety messages will follow the safety alert symbol and either the word "DANGER", "WARNING" or "CAUTION". These words mean:



### **DANGER**

You can be killed or seriously injured if you don't immediately follow instructions.



### **WARNING**

You can be killed or seriously injured if you don't follow instructions.




### **CAUTION**

You can be exposed to a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

The safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

## **WARNING**

- This product should be serviced only by trained, qualified personnel.
- Though this product has been manufactured in compliance with:
  - "Federal Performance Standard 21 CFR Subchapter J"(D.H.H.S): U.S.A. models
  - or "Radiation Emitting Devices Act"(Health and Welfare Canada): Canadian models
 it is very important all repairs should be made in accordance with procedures described in this manual to avoid being exposed to excessive microwave radiation.
- Check for radiation leakage before and after every servicing according to the "procedure for measuring radiation leakage."
- If the unit cannot be repaired on site, advise the customer not to use until unit is repaired.
- Any serviceman who learns of any accident pertaining to microwave radiation leakage including the oven operating with open door should immediately notify the appropriate address listed below and Center for Devices and Radiological Health, DHHS.
 

IN U.S.A. (PSTC)	Panasonic Service and Technology Company 50 Meadowland Parkway, Secaucus, New Jersey 07094 Attention: Technical Service Division. (201)348-7000	IN PUERTO RICO (PPR)	Panasonic Puerto Rico, Inc. San Gabriel Industrial Park 65th Infantry Ave. Km.9.5 Carolina, Puerto Rico 00985 (787)750-4300
		IN CANADA (PCI)	Panasonic Canada Inc. 5770 Ambler Drive, Mississauga, Ontario, L4W2T3 (905)624-5010
- There are special components used in the microwave oven which are important for safety. These parts are marked with a  on the replacement parts list. It is essential that these critical parts should be replaced only with the manufacture's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the original design.

## PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

- Do not operate or allow the oven to be operated with the door open.
- Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
  - Interlock operation
  - Proper door closing
  - Seal and sealing surfaces (arcing, wear, and other damage)
  - Damage to or loosening of hinges and latches.
  - Evidence of dropping or abuse
- Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, waveguide or transmission line, and cavity for proper alignment, integrity and connections.
- Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
- A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

## **CAUTION**

### About lead free solder (PbF)

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

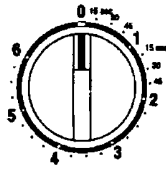
**Caution:** ● Pb free solder has a higher melting point than standard solder; Typically the melting point is 30 - 40°C higher. Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 370 ± 10°C.

- Pb free solder will tend to splash when heated too high (about 600°C). Use eyeware protection.

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# 1 CONTROL PANEL



Return dial to "0" if food removed before bell

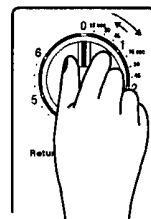
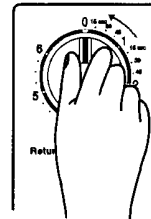
#### COOKING TIMES

1 Roll or Pastry	7-12 sec
1 Small Sandwich	30-35 sec
1 Hot Dog	25-35 sec
1 Large Sandwich	1-2 min
1 Hamburger	1-2 min
1 Burrito, frozen	1:30 - 1:45
1 Cup of Water	2:00 - 2:15
1 Casserole	1 1/2 - 2 1/2 min
1 Cup Soup or Stew	1 1/2 - 2 min

1. CLOSE THE DOOR securely, after placing food in the oven.
2. SET A DESIRED HEATING TIME.
  - MICROWAVE HEATING BEGINS. Oven light turns on.
3. You may open the door while the oven is operating. As soon as the door is opened, the safety mechanisms stop microwave power and heating time.
  - To continue heating, close door.
  - Microwave heating begins again.
  - If you wish to change the time during heating, simply adjust the timer to desired minutes.
4. When time has elapsed, a bell will ring and the unit will turn off.
  - Oven light turns on.

#### NOTE:

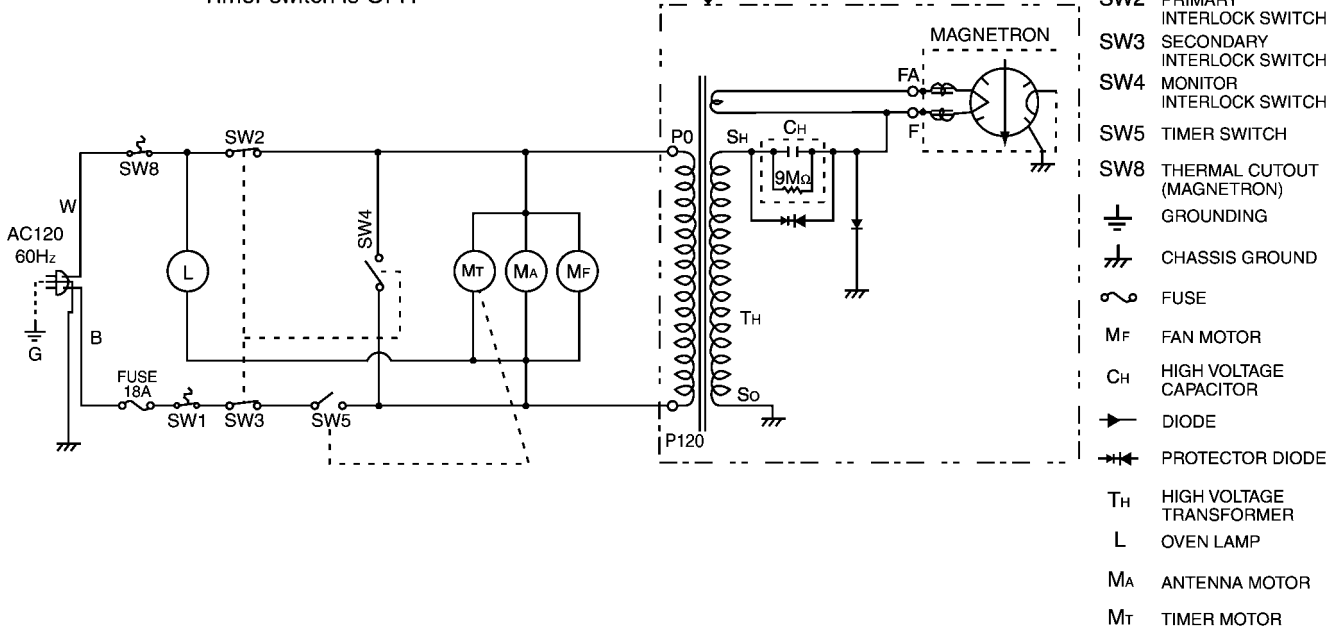
1. If heating is completed BEFORE the timer time has elapsed, turn the TIMER TO "0" position. (The unit will operate until the timer returns to "0".)
2. When setting timer for less than 30 sec, turn timer past 30 sec and then turn to the desired time.
3. If the timer has not reached zero and the door is opened and closed again, that the oven will continue to operate.



## 2 SCHEMATIC DIAGRAM

NOTE: Door is closed.  
Timer switch is OFF.

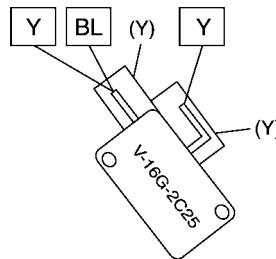
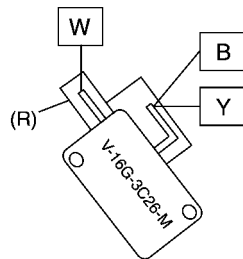
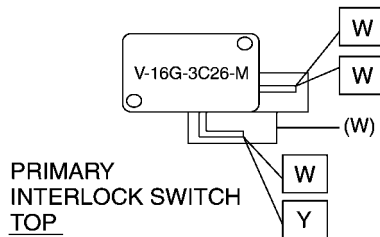
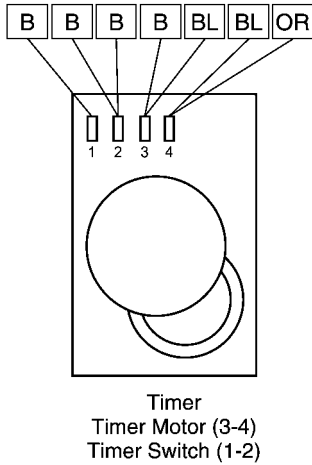
**CAUTION:**  
HIGH VOLTAGE AREA



IMPORTANT SAFETY NOTICE: POTENTIALS ABOVE 120V IS PRESENT ON THE PARTS AND WIRING IN SECONDARY CIRCUIT OF HIGH VOLTAGE TRANSFORMER. WHEN OVEN IS ENERGIZED. EXTREMELY CARE SHOULD BE TAKEN DURING REPAIR.

### WIRING DIAGRAM

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



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

(S-8K7)

### 3 CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

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

**⚠ CAUTION**

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

#### 3.1. Check the grounding

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

#### 3.2. Warning about the electric charge in the high voltage capacitor

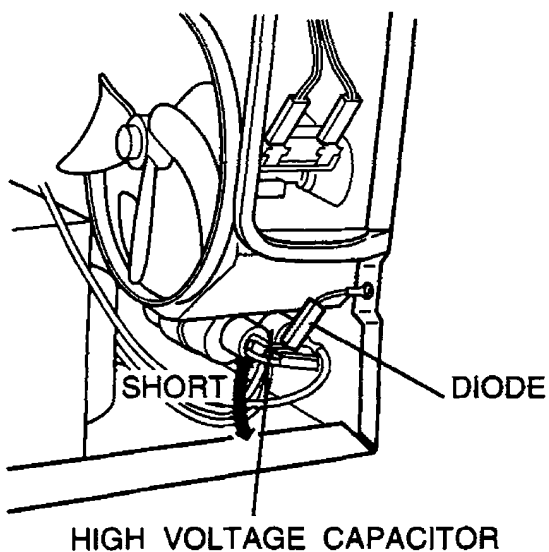
For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitor. When replacing or checking parts, remove the power plug from the outlet and short the terminal of the high voltage capacitor (terminal of lead wire from diode) to chassis ground with an insulated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

**⚠ WARNING**

There is high voltage present with high current capabilities in the circuits of the primary and secondary winding and filament winding of the high voltage transformer. It is extremely dangerous to work on or near these circuits with the oven energized. DO NOT measure the voltage in the high voltage circuit including filament voltage of the magnetron.

**⚠ WARNING**

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



Contact chassis side first then short to the high voltage capacitor terminal.

#### 3.3. Part replacement.

When troubleshooting any part of component is to be replaced, always ensure that the power cord is unplugged from the wall outlet.

#### 3.4. When the 18 Amp fuse is blown due to the malfunction of the monitor interlock switch:

**⚠ WARNING**

When the 10 Amp fuse is blown due to malfunction of the short switch, replace all of the components (Primary interlock switch, Secondary interlock switch, Monitor interlock switch).

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

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

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

#### 3.6. Verification after repair

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

**⚠ CAUTION OF MICROWAVE RADIATION OF LEAKAGE**

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

**⚠ IMPORTANT NOTICE**

1. The following components have potentials above 2000V while the appliance is operated.
  - \* Magnetron
  - \* High voltage transformer
  - \* High voltage diode
  - \* High voltage capacitor
 Pay special attention to these areas.
2. When the appliance is operated with the door hinges or magnetron installed incorrectly, the microwave leakage can exceed more than 5mW/cm<sup>2</sup>. After repair or exchange, it is very important to check if the magnetron and the door hinges are correctly installed.

## 4 DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

### 4.1. Magnetron

1. Discharge the high voltage capacitor.
2. Remove 2 screws holding magnetron thermal cutout.
3. Remove 1 screw holding air guide A.
4. Disconnect 2 high voltage lead wires from magnetron filament terminals.
5. Remove 4 screws holding the magnetron.

#### NOTE:

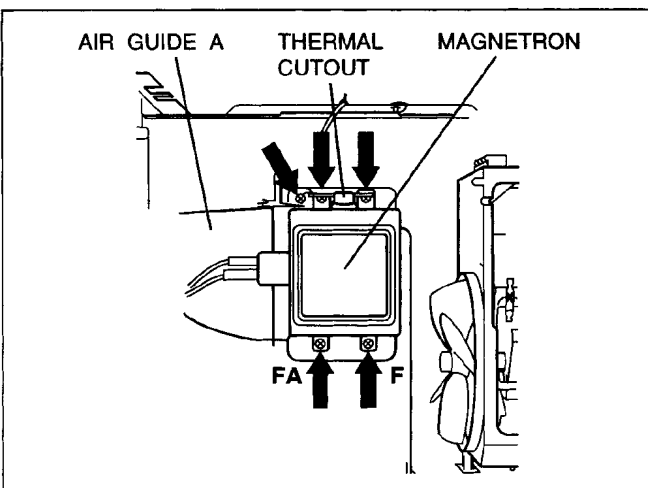
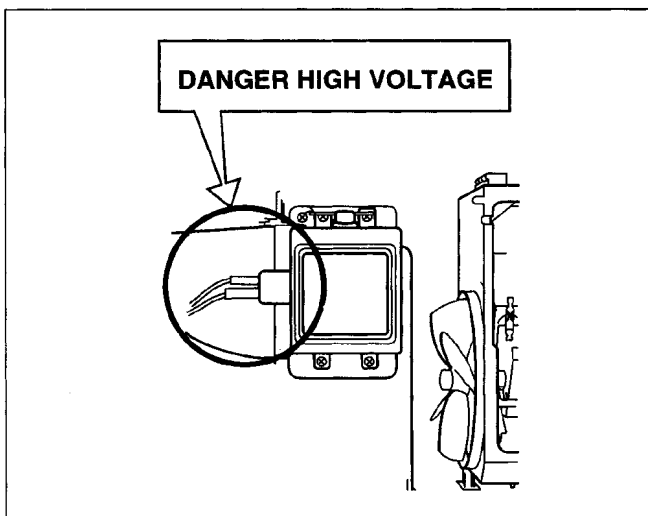
After replacement of the magnetron, tighten mounting screws properly making sure there is no gap between the waveguide and the magnetron to prevent microwave leakage.

#### CAUTION

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

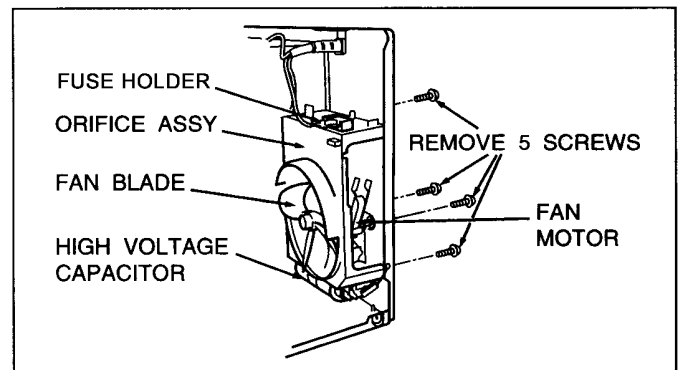
#### CAUTION

When connecting 2 filament lead wires to the magnetron terminals, be sure to connect the lead wires in the correct position. The lead wire of high voltage transformer should be connected to "F terminal" and the lead wire from high voltage capacitor should be connected to "FA terminal".



### 4.2. Fan motor

1. Disconnect 2 lead wires from fan motor terminals.
2. Disconnect 2 lead wires from fuse holder terminals.
3. Disconnect 4 high voltage lead wires from high voltage capacitor terminals.
4. Remove 5 screws holding fan motor and orifice assy, detach the orifice assy with fan motor from oven assy.
5. Remove fan blade from the fan motor shaft by pulling it straight Out.
6. Separate the fan motor from the orifice assy by freeing 2 catch hooks on the orifice assy.



### 4.3. Stirrer motor

1. Remove the motor cover by breaking off at the 8 spots indicated by arrows with a cutter or the like. (See Figure)

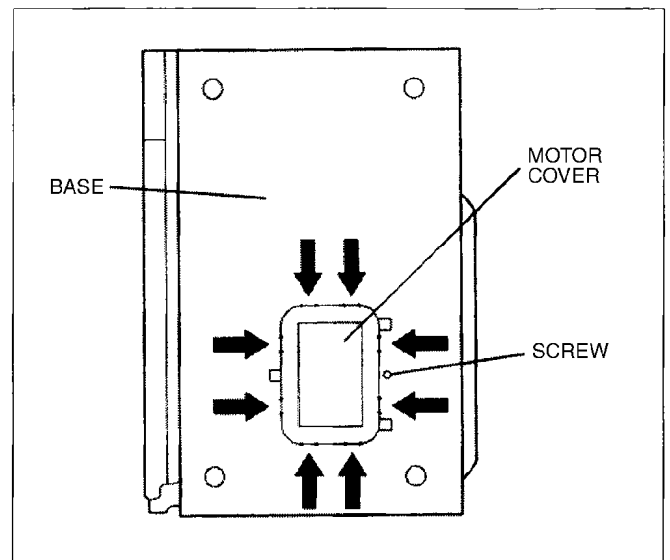
#### Note:

After breaking off the motor cover, make sure the cut-off portions are properly trimmed off or bend to inside so that no sharp edge will expose to outside.

2. Disconnect 2 lead wires connected to the stirrer motor.
3. Remove the stirrer motor by removing 2 screws.

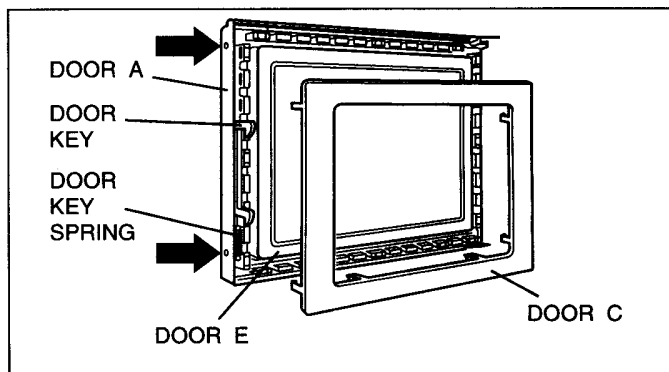
#### Note:

To reinstall the motor cover, use 4x6 screw.



## 4.4. Door assembly

1. Open the door and remove door C from door E by carefully pulling outward starting from upper right hand corner.
2. Remove door key and door key spring.



3. Remove 2 screws holding side frame of door A.
4. Separate the door A from the door E by freeing catch hooks on the door A using a flat screwdriver.

### To re-install components:

#### NOTE:

After replacement of the defective component parts of the door, reassemble it properly and adjustment so as to prevent an excessive microwave leakage. Adjustment of the door assembly (Refer page 11).

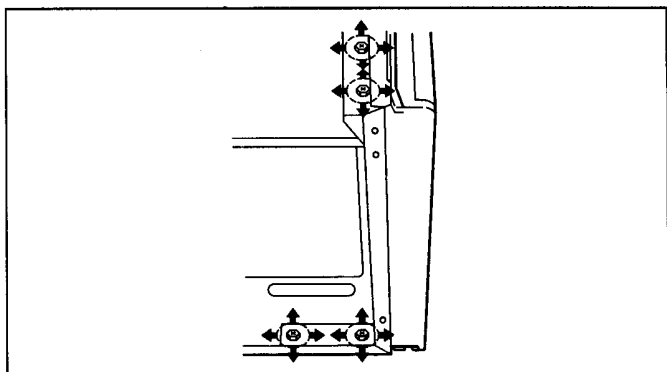
5. When mounting the door to the oven, be sure to adjust the door parallel to the bottom line of the oven face plate by moving the upper hinge and lower hinge in the direction necessary for proper alignment.
6. Adjust so that the door has no play between the inner door surface and oven front surface. If the door assembly is not mounted properly, microwave power may leak from the clearance between the door and oven.

#### NOTE:

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

#### NOTE:

Adjust so that the upper portion of the door will touch firmly to the oven cavity front plate, without pushing the door. If the door assembly is not mounted properly, microwave power may leak from the clearance between the door and oven.



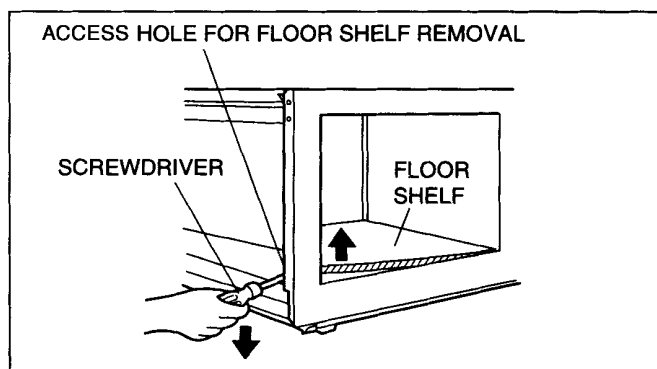
Be sure the gap between door E and cavity front plate will be 0.3~0.8mm.

#### NOTE:

Always perform the microwave leakage measurement test after installation and adjustment of door assembly.

## 4.5. Floor shelf and/or moving antenna

1. Insert a phillips type screwdriver or equivalent approx. 2" (5 cm) in shaft length in the access hole in the left side oven wall as shown in Figure.
2. Carefully lift up the floor shelf by prying up with the screwdriver until the floor shelf is lifted up over the level of oven front opening.
3. Remove the floor shelf by lifting it out through the oven front.



### To replace moving antenna.

4. Remove the moving antenna by simply lifting it up off the stirrer motor shaft.

#### NOTE:

When replacing the moving antenna, make sure the plastic stirrer spacers are correctly in place. They are necessary to stabilize the antenna by gliding around the oven bottom as the antenna turns.



# 5 COMPONENT TEST PROCEDURE

**⚠ WARNING**

1. High voltage is present at the high voltage terminal of the high voltage transformer during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components, or wiring, always unplug the power cord and discharge the high voltage capacitor (see page 6).

## 5.1. Primary, Secondary Interlock Switch

1. Unplug lead connectors to Primary Interlock Switch and Secondary Interlock Switch.
2. Test the continuity of switches at door opened and closed positions with ohm meter (low scale).

Normal continuity readings should be as follows.

	Door Opened	Door Closed
Primary Interlock Switch	$\infty \Omega$ (open)	$0 \Omega$ (close)
Secondary Interlock Switch	$\infty \Omega$ (open)	$0 \Omega$ (close)
Power Relay	$\infty \Omega$ (open)	$\infty \Omega$ (open)

## 5.2. Monitor Interlock Switch

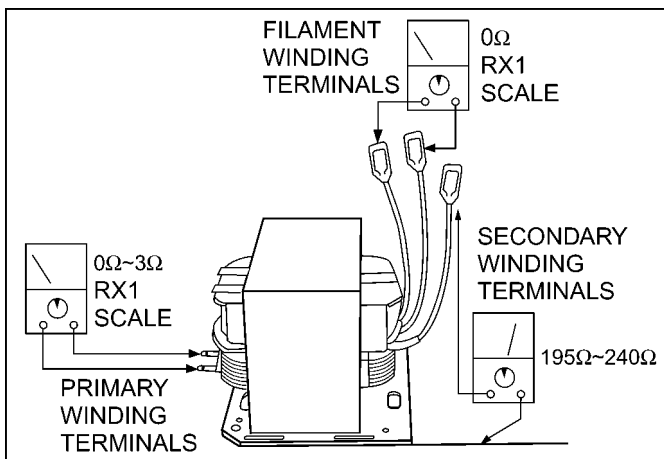
1. Unplug lead wires from H.V. transformer primary terminals.
2. Connect test probes of ohm meter to the disconnected leads of the H.V. Transformer.
3. Test the continuity of Monitor Interlock Switch with door opened and closed positions using lowest scale of the ohm meter.

Normal continuity readings should be as follows.

Door Opened	Door Closed
$0 \Omega$ (close)	$\infty \Omega$ (open)

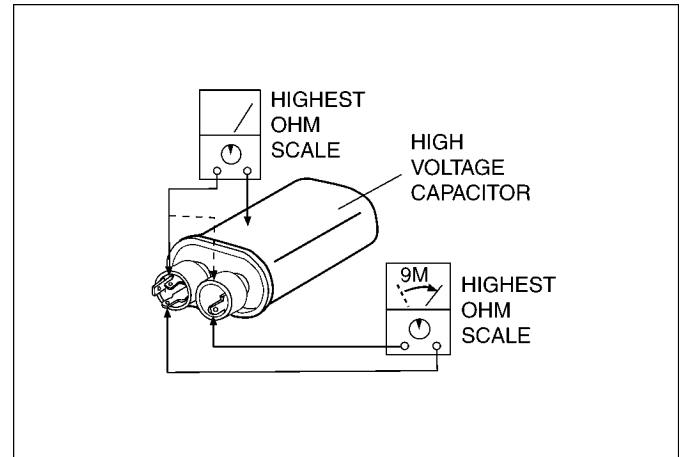
## 5.3. High voltage transformer

1. Remove connectors from the transformer terminals and check continuity.
2. Normal (cold) resistance readings should be as follows:  
 Secondary winding..... Approx.  $60 \Omega \sim 120 \Omega$   
 Filament winding..... Approx.  $0 \Omega$   
 Primary winding..... Approx.  $0 \Omega \sim 2 \Omega$



## 5.4. High voltage capacitor

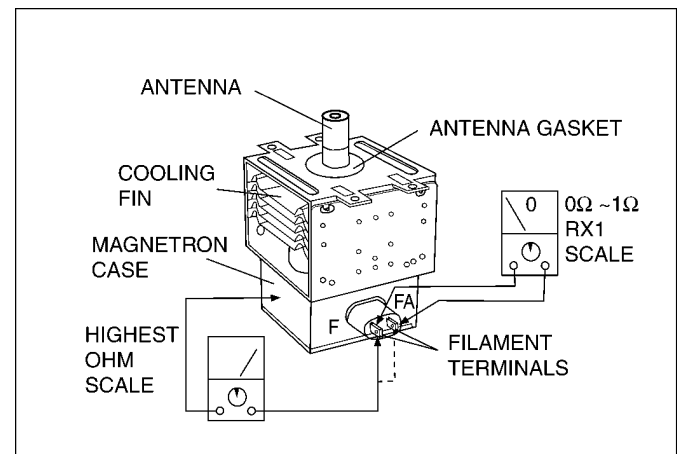
1. Check continuity of capacitor with meter on highest OHM scale.
2. A normal capacitor will show continuity for a short time, and then indicate  $9M\Omega$  once the capacitor is charged.
3. A shorted capacitor will show continuous continuity.
4. An open capacitor will show constant  $9M\Omega$ .
5.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



## 5.5. Magnetron

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

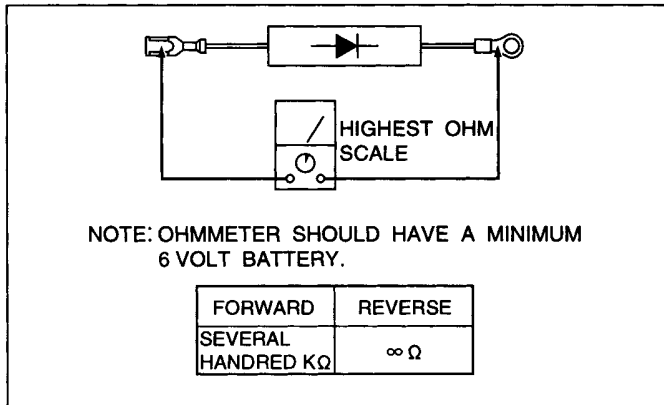
1. Isolate magnetron from the circuit by disconnecting the leads.
2. A continuity check across magnetron filament terminals should indicate one ohm or less.
3. A continuity check between each filament terminal and magnetron case should read open.



## 5.6. Diode

1. Isolate the diode from the circuit by disconnecting the leads.
2. With the ohmmeter set on the highest resistance scale, measure the resistance across the diode terminals. Reverse the meter leads and again observe the resistance reading. Meter with 6V, 9V or higher voltage batteries should be used to check the front-to-back resistance of the diode, otherwise an infinite resistance may be read in both directions.

A normal diode's resistance will be infinite in one direction and several hundred k $\Omega$  in the other direction.

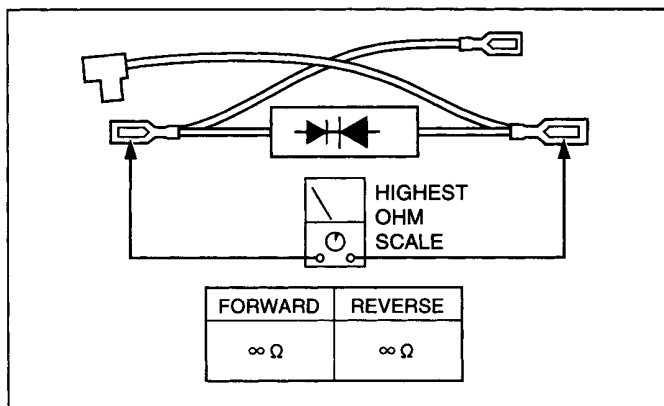


## 5.7. Protector diode

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

Reverse the meter leads and again observe the resistance reading. A normal protector diode's resistance will be infinite in both directions.

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



## 6 MEASUREMENTS AND ADJUSTMENTS

### ⚠ WARNING

- \* For continued protection against radiation hazard, replace only with identical replacement parts (Part No. J6142-1450, Type No. V-16G-3C26-M for primary interlock switch; Part No. J6142-1450, Type No. V-16G-3C26-M for secondary interlock switch and Part No. ANE6161-3X0, Type No. V-16G-2C25 for monitor switch.)
- \* When the 18 Amp. fuse is blown due to the operation of the monitor interlock switch, you must replace the primary interlock switch and the monitor interlock switch. Then follow the installation procedures below.
- \* Interlock switch replacement: In replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.
- \* Refer to schematic diagram to ensure proper connection.

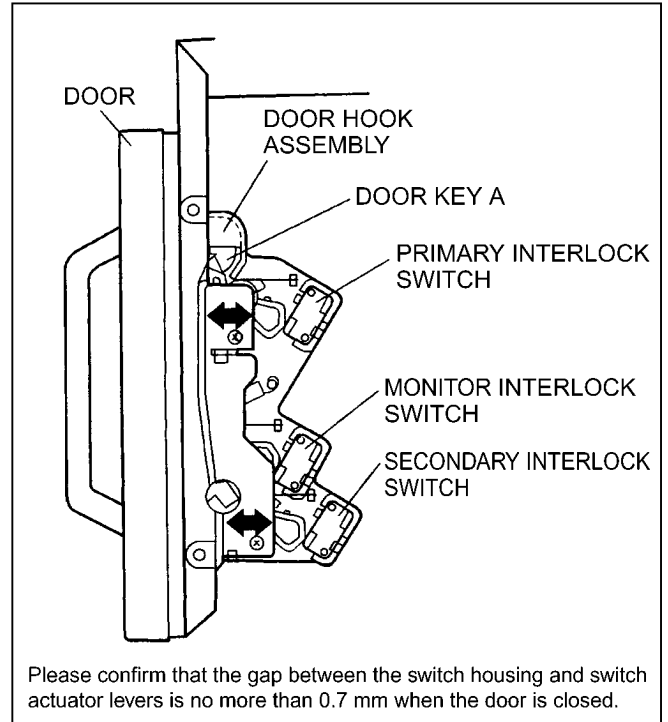
### 6.1. Adjustment of primary interlock switch, secondary interlock switch and monitor interlock switch.

1. Mount the Primary interlock switch, the Secondary interlock switch and the Monitor Interlock switch to the door hook assembly as shown in illustration.

#### NOTE:

**No specific individual adjustments during installation of the Primary interlock switch, Secondary interlock switch or Monitor interlock switch to the door hook are required.**

2. When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of the arrows in the illustration so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.
3. Reconnect the monitor interlock switch and check the continuity of the monitor circuit and all interlock switches again by following the component test procedures.



### 6.2. Measurement of microwave output

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

#### Necessary Equipment:

- \*1 liter beaker
- \*Glass thermometer
- \*Wrist watch or stopwatch

#### NOTE:

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

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

TABLE (1L-1min. test)

RATED OUTPUT	TEMPERATURE RISE
1000W	Min. 15.4°F(8.6°C)

# 7 PROCEDURE FOR MEASURING MICROWAVE ENERGY LEAKAGE

## ⚠ WARNING

Check for radiation leakage after every servicing. Should the leakage be more than 2 mW/cm<sup>2</sup> (1mW/cm<sup>2</sup> for Canada) inform PSTC, PPR, or PCI immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by D.H.H.S. and Health and Welfare Canada regulation. This requirement must be strictly observed. In addition, the leakage reading must be recorded on the service repair ticket while in the customer's home.

### NOTE:

The U.S. Government standard is 5 mW/cm<sup>2</sup> while in the customer's home. 2mW/cm<sup>2</sup> stated here is our own voluntary standard. (1mW/cm<sup>2</sup> for Canada)

## 7.1. Equipment

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

## 7.2. Procedure for measuring radiation leakage

Note before measuring:

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

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

### 7.2.1. Measurement with the outer panel removed.

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

## ⚠ WARNING

Do not touch any high voltage parts. Doing so can lead to personal injury or death.

### 7.2.2. Measurements with a fully assembled oven.

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

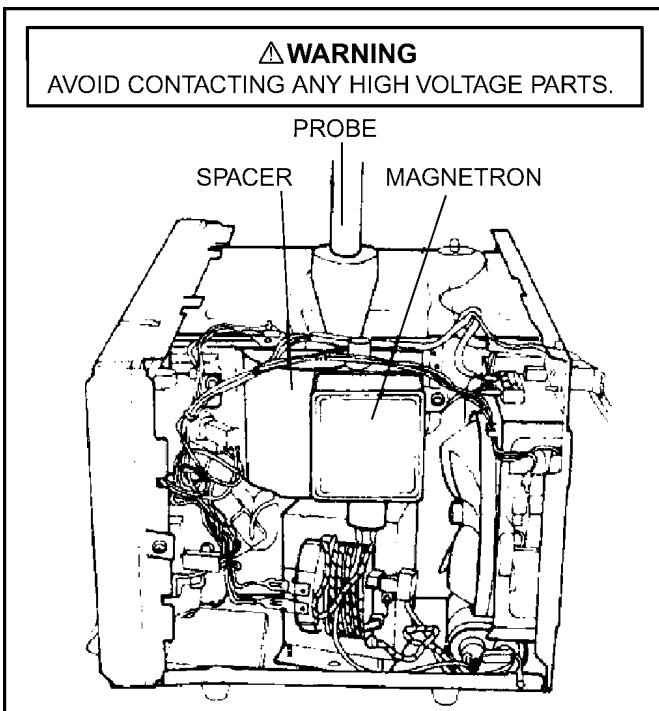
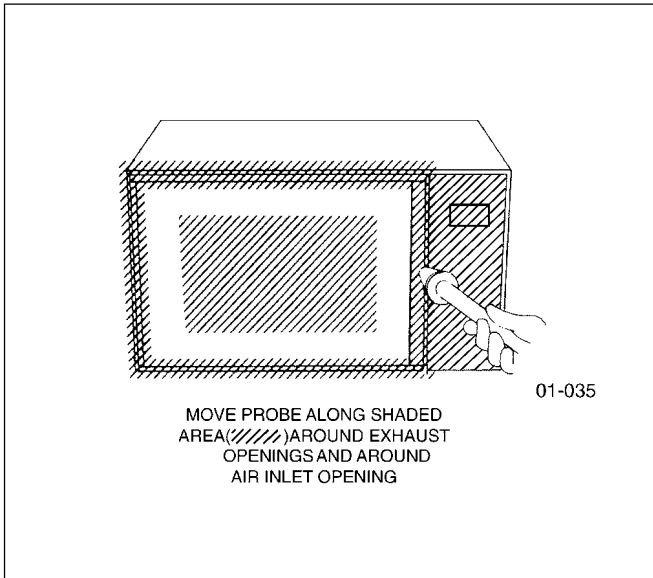
## 7.3. Record keeping and notification after measurement

- After any adjustment or repair to a microwave oven, a leakage reading must be taken. Record this leakage reading on the repair ticket even if it is zero.

A copy of this repair ticket and the microwave leakage reading should be kept by repair facility.

- Should the radiation leakage be more than 2 mW/cm<sup>2</sup> (1mW/cm<sup>2</sup> for Canada) after determining that all parts are in good condition, functioning properly, and genuine replacement parts as listed in this manual have been used, immediately notify PSTC, PPR or PCI.

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



## 8 TROUBLESHOOTING GUIDE

### ⚠ DANGER: HIGH VOLTAGES

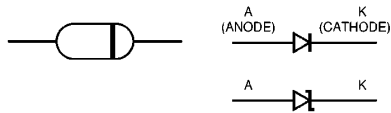
1. Ensure proper grounding before troubleshooting.
  2. Be careful of high voltage circuit.
  3. Discharge high voltage capacitor.
  4. When checking the continuity of the switches or the high voltage transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
- When disconnecting a plastic connector from a terminal, you must hold the plastic connector instead of the lead wire and then disconnect it, otherwise lead wire may be damaged or the connector cannot be removed.

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

	SYMPTOM	CAUSE	CORRECTIONS
1.	Oven is dead. Fuse is OK.	<ol style="list-style-type: none"> <li>1. Open or loose lead wire harness</li> <li>2. Open thermal cutout</li> </ol>	Check fan motor if thermal cutout is defective.
2.	No operation at all. Fuse is blown.	<ol style="list-style-type: none"> <li>1. Shorted lead wire harness</li> <li>2. Defective primary interlock switch (NOTE 1)</li> <li>3. Defective monitor switch (NOTE 1)</li> <li>4. Shorted H.V. capacitor</li> <li>5. Shorted H.V. transformer (NOTE 2)</li> <li>6. Shorted diode</li> </ol> <p>NOTE 1: All of these switches must be replaced at the same time. NOTE 2: When H.V. transformer is replaced, check diode and magnetron also.</p>	Check adjustment of primary, secondary interlock switch and monitor switch including door.
3.	Fan motor turn on when oven is plugged in with door closed.	<ol style="list-style-type: none"> <li>1. Misadjustment or loose wiring of secondary interlock switch</li> <li>2. Defective secondary interlock switch</li> </ol>	Adjust door and interlock switches.
4.	Oven lamp and fan motor operate normally but no microwave oscillation	<ol style="list-style-type: none"> <li>1. Off-alignment of interlock switches</li> <li>2. Open or loose connection of high voltage circuit especially magnetron filament circuit</li> </ol> <p>NOTE: Large contact resistance will cause lower magnetron filament voltage and cause magnetron to lower output and/or be intermittent.</p> <ol style="list-style-type: none"> <li>3. Defective high voltage component H.V. transformer H.V. capacitor H.V. diode Magnetron</li> <li>4. Defective primary interlock switch</li> <li>5. Defective timer switch</li> </ol>	Adjust door and interlock switches.  Check high voltage component according to component test procedure and replace if it is defective.
5.	Microwave output is low. Oven takes longer time to cook food.	<ol style="list-style-type: none"> <li>1. Decrease in power source voltage</li> <li>2. Open or loose wiring of magnetron filament circuit. (Intermittent oscillation)</li> <li>3. Aging change of magnetron</li> </ol>	Consult electrician
6.	Fan motor turns on and turntable rotates when door is opened.	<ol style="list-style-type: none"> <li>1. Shorted primary interlock switch.</li> </ol>	
7.	Loud buzzing noise can be heard.	<ol style="list-style-type: none"> <li>1. Loose fan and fan motor</li> <li>2. Loose screws on H.V. transformer</li> </ol>	
8.	Antenna motor does not rotate.	<ol style="list-style-type: none"> <li>1. Open or loose wiring of antenna motor</li> <li>2. Defective antenna motor</li> </ol>	
9.	Oven stops operation during cooking.	<ol style="list-style-type: none"> <li>1. Open or loose wiring of primary and secondary interlock switch</li> <li>2. Operation of thermal cutout</li> </ol>	Adjust door and interlock switches.
10.	18A fuse is blown.	<ol style="list-style-type: none"> <li>1. Shorted lead wire harness</li> <li>2. Defective monitor switch</li> <li>3. Defective primary interlock switch</li> <li>4. Shorted H.V. capacitor</li> <li>5. Shorted H.V. diode</li> <li>6. Defective magnetron</li> <li>7. Shorted H.V. transformer</li> <li>8. Shorted protector diode</li> </ol>	Check adjustment of interlock switches and door  Replace H.V. Diode Replace Magnetron Replace H.V. Transformer Replace protector diode

# 8.1. How to check the semiconductors using an OHM meter

**Diode**



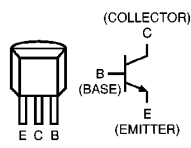
	FORWARD	REVERSE
A-K	SMALL	$\infty$

**Transistor**

**NPN Transistor**

2SC.....

2SD.....

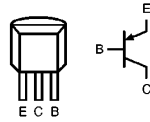


	FORWARD	REVERSE
B-E	SMALL	$\infty$
B-C	SMALL	$\infty$
C-E	$\infty$	$\infty$

**PNP Transistor**

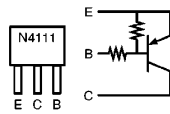
2SA.....

2SB.....



	FORWARD	REVERSE
B-E	SMALL	$\infty$
C-B	SMALL	$\infty$
C-E	$\infty$	$\infty$

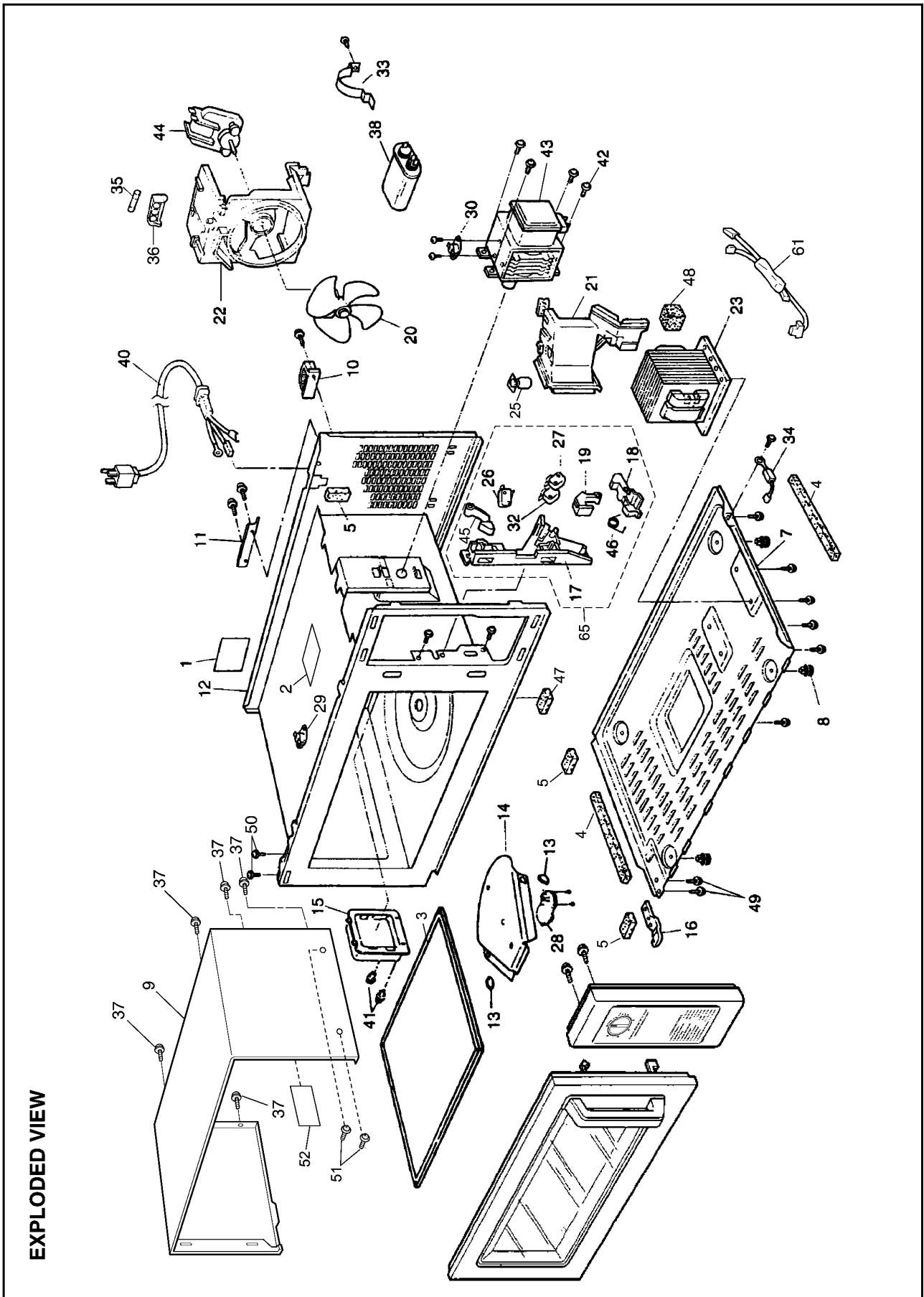
**Digital Transistor  
PNP Transistor**



	FORWARD	REVERSE
E-B	10k $\Omega$ ~ 30k $\Omega$	10k $\Omega$ ~ 30k $\Omega$
C-B	50k $\Omega$ ~ 90k $\Omega$	$\infty$
C-E	40k $\Omega$ ~ 80k $\Omega$	$\infty$

# 9 EXPLODED VIEW AND PARTS LIST

## 9.1. EXPLODED VIEW





## 9.2. PARTS LIST

### NOTE:

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

Do not use description of the part.

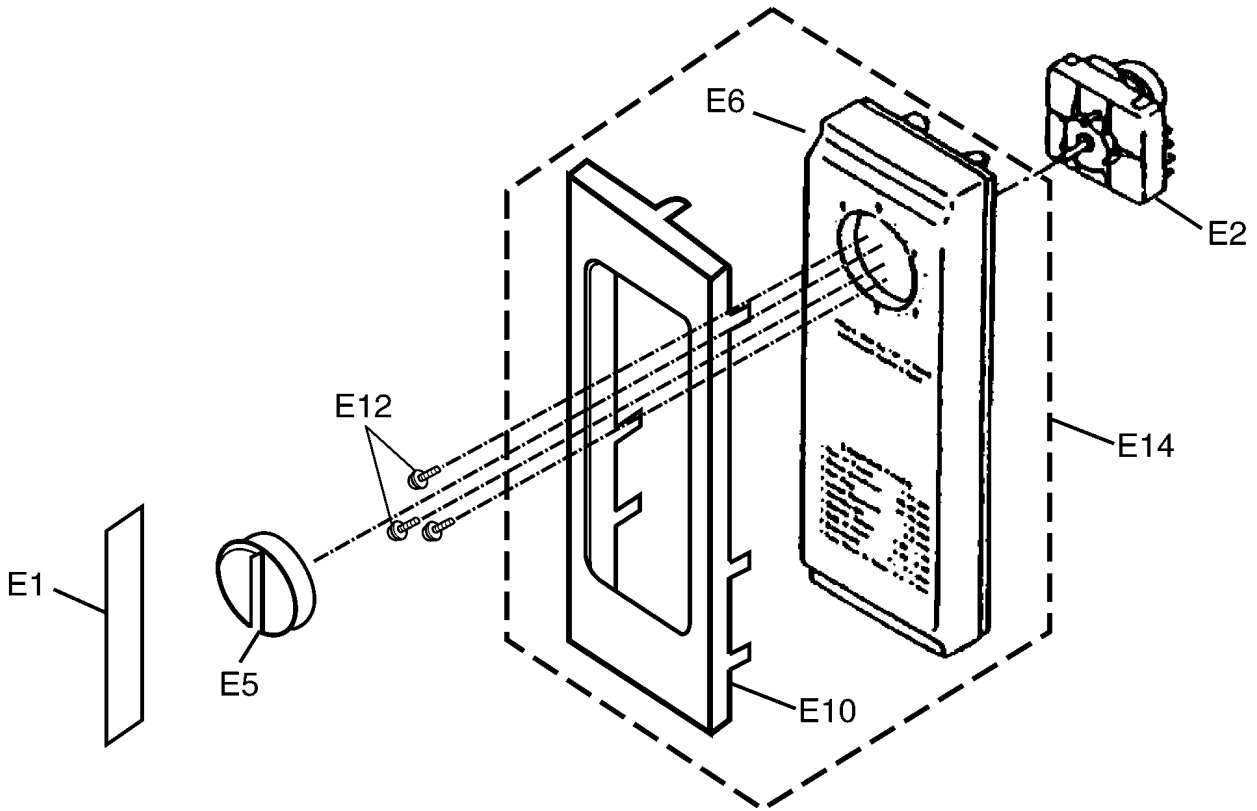
2. Important safety notice:

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

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

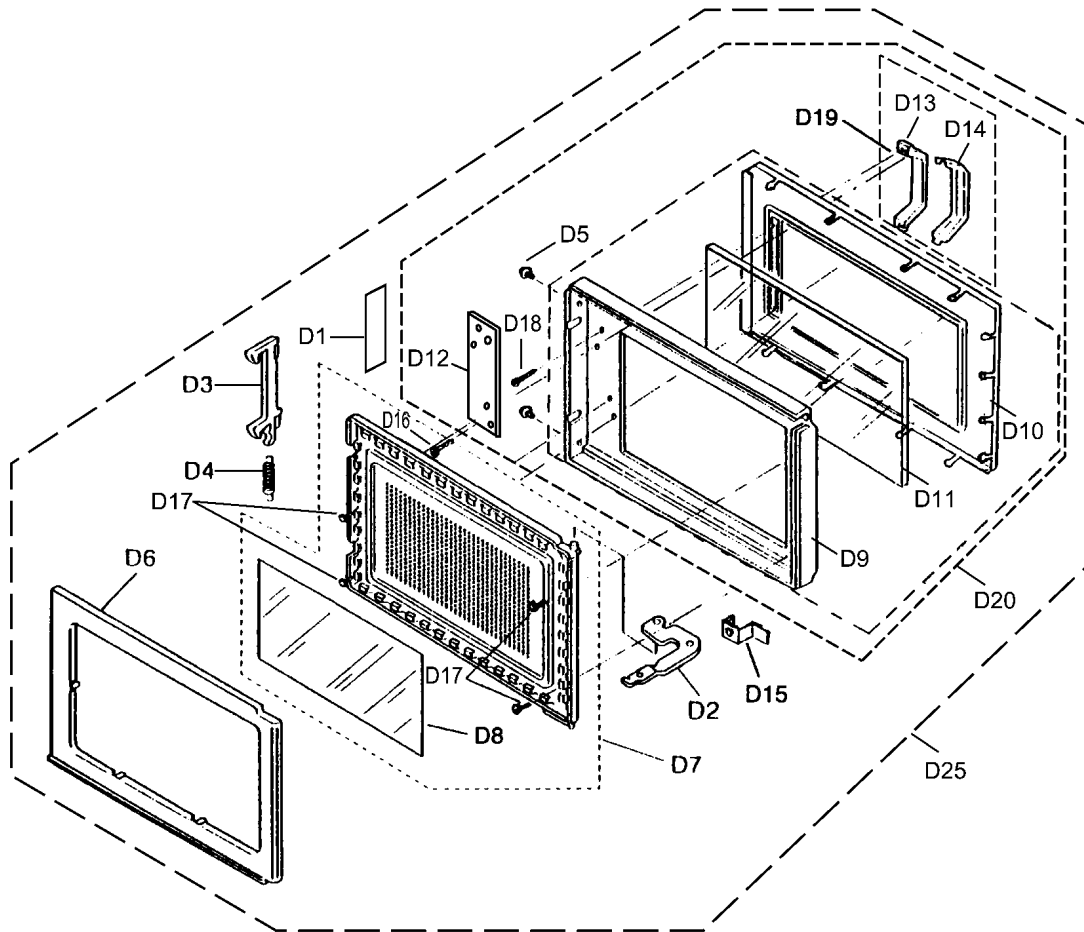
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
1		F00069660AP	CAUTION LABEL	1	
2		F00338K00AP	FUSE LABEL	1	
3		A010T8K10AP	CERAMIC TRAY	1	
4		F0903000AG	CUSHION RUBBER A	2	
5		F0904000BB	CUSHION RUBBER A	2	
7		F100A3700AP	BASE	1	
8		A1008-1180S	RUBBER FOOT	4	
9		F10098K10AP	CABINET BODY (U)	1	
10		F11406V00HP	STOPPER A	1	
11		F10613130AP	REAR COVER	1	
12	$\triangle$	F200A8K10AP	OVEN CAVITY	1	
13		F20194210AQ	ANTENNA SPACER	2	
14		F202K3700BP	MOVING ANTENNA	1	
15		F20553130AP	CEILING COVER	1	
16	$\triangle$	F30073700BP	LOWER HINGE (B)	1	
17		J3020-1480	DOOR HOOK	1	
18		J3137-1480	HOOK SPACER B	1	
19		J3138-1480	HOOK SPACER C	1	
20		F4008-1480	FAN BLADE	1	
21		F40253700BP	AIR GUIDE A	1	
22		F41445540AP	ORIFICE	1	
23		F621B6P10AP	H.V.TRANSFORMER	1	
25		F612E5Y30AP	INCANDESCENT LAMP (U)	1	
26	$\triangle$	J6142-1450	MICRO SWITCH	1	(V-16G-3C26-M) PRIMARY INTERLOCK SWITCH
27	$\triangle$	J6142-1450	MICRO SWITCH	1	(V-16G-3C26-M) SECONDARY INTERLOCK SWITCH
28		F61448K00AP	ANTENNA MOTOR	1	
29	$\triangle$	F61456N00AP	THERMAL CUTOUT	1	FOR OVEN CAVITY
30	$\triangle$	F61458K10AP	THERMAL CUTOUT	1	FOR MAGNETRON
32	$\triangle$	ANE6161-3X0	MICRO SWITCH	1	(V-16G-2C25) MONITOR INTERLOCK SWITCH
33		F60374760GP	CAPACITOR HOLDER	1	
34		F62025G10XN	DIODE,SI	1	
35	$\triangle$	F62308F20AP	FUSE	1	18A
36		F62315G10XN	FUSE HOLDER	1	
37		XTTBE4T12AS	SCREW	5	FOR CABINET BODY
38	$\triangle$	F60908K00AP	H.V.CAPACITOR	1	
40	$\triangle$	F900C8K00AP	AC CORD W/PLUG	1	
41		A90823960AP	CLIP	2	FOR COVER
42		XTWFL4+12T	SCREW	4	FOR MAGNETRON
43	$\triangle$	2M244-M1J1P	MAGNETRON	1	
44		J400A8K00AP	FAN MOTOR	1	120V,AC SINGLE PHASE
45		J3136-1480	HOOK SPACER A	1	
46		J3097-1480	LATCH SPRING	1	
47		F0903000CD	CUSHION RUBBER A	1	
48		F10498K00AP	SPACER CUSHION	1	
49		XTWFA4+12LR	SCREW	2	
50		XYFBFE4+AF8	SCREW	2	
51		XTC4+12BC	SCREW	2	FOR CABINET BODY SIDE
52		F60708K30BP	INSULATION SHEET	1	
61		F606V8K00CP	PROTECTOR DIODE (U)	1	
65	$\triangle$	J393C3710BP	DOOR HOOK (U)	1	

### 9.3. ESCUTCHEON BASE ASSEMBLY



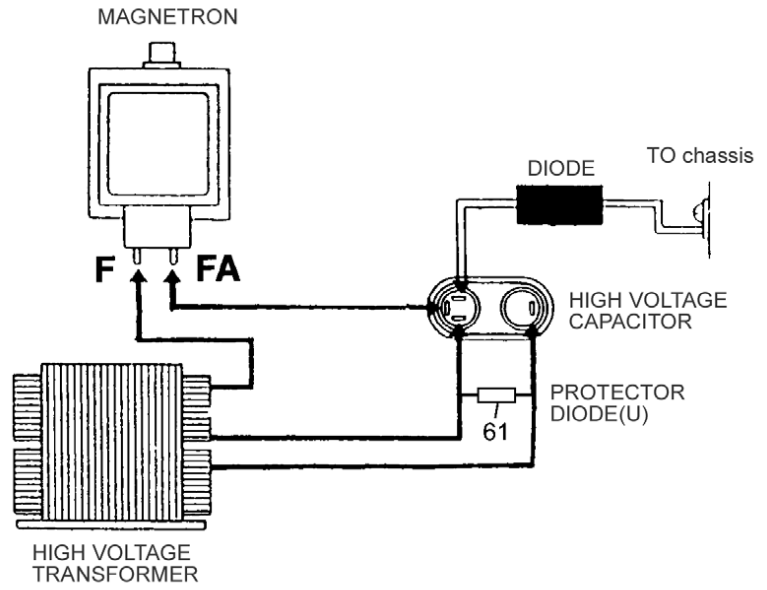
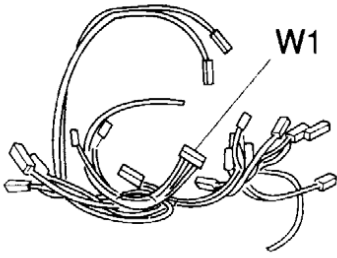
Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
E1	F00078K70AP	NAME PLATE	1	
E2	F60018K20AP	TIMER SWITCH	1	
E5	F80206P00AP	TIMER KNOB	1	
E6	F80346P00AP	ESCUTCHEON BASE	1	
E10	F80356P00AP	ESCU FACIA	1	
E12	XTWEPNE3+8Q	SCREW	1	
E14	F800L8K20SAP	ESCUTCHEON BASE (BU)	1	

## 9.4. DOOR ASSEMBLY



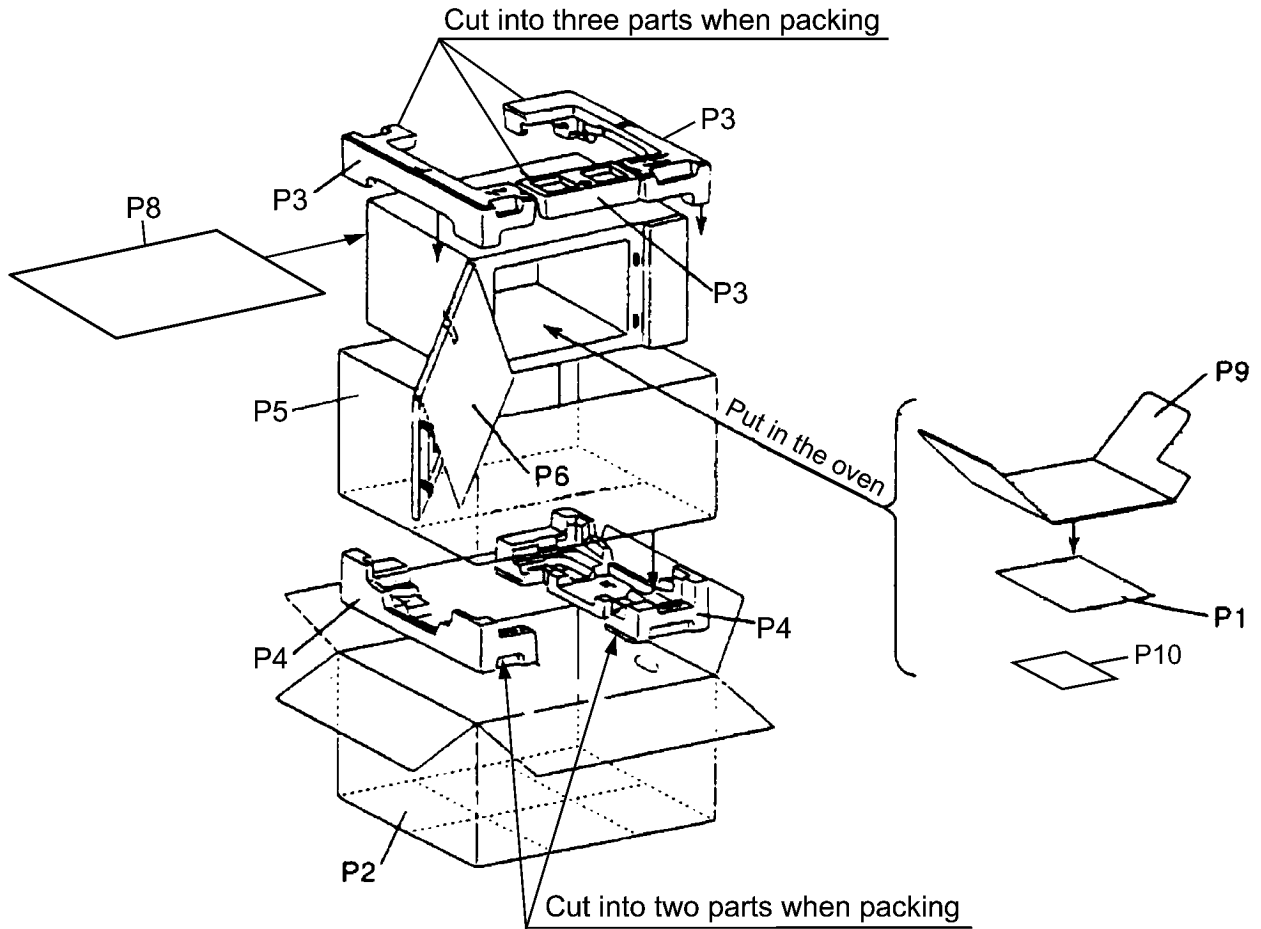
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
D1		F02459660AP	DHHS LABEL	1	
D2		F30063700BP	UPPER HINGE (A)	1	
D3		F3018-1480	DOOR KEY A	1	
D4		F30214000AP	DOOR KEY SPRING	1	
D5		XTN3+8BJ	SCREW	2	
D6	⚠	F30858960HN	DOOR C	1	
D7	⚠	F302K3700BP	DOOR E (U)	1	
D8		F31454J50XN	DOOR SCREEN A	1	
D9	⚠	F30016P00AP	DOOR A	1	
D10		F30026P00AP	DOOR B (U)	1	
D11		F31466P00AP	DOOR SCREEN B	1	
D12		F32863700AP	HANDLE BRACKET	1	
D13		F30706P00AP	HANDLE PIECE A	1	
D14		F31466P00AP	HANDLE PIECE B	1	
D15		F90096P00AP	EARTH PLATE	1	
D16		XTN4+16Q	SCREW	2	
D17		XTN4+8C	SCREW	4	
D18		XTCAFL4+12AFS	SCREW	2	
D19		F301F6P10AP	HANDLE (U)	2	
D20	⚠	F302A8K10SAP	DOOR A (U)	1	
D25	⚠	F390L8K10SAP	DOOR (U)	1	

### 9.5. WIRING MATERIALS



Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
W1	F030A8K20AP	LEAD WIRE HARNESS	1	
61	F606V8K00CP	PROTECTOR DIODE (U)	1	

## 9.6. PACKING AND ACCESSORIES



Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
P1	F00036P00AP	OPERATING INSTRUCTION	1	
P2	F01028K70SAP	PACKING CASE, PAPER	1	
P3	F01048K00AP	UPPER FILLER	1	
P4	F01058K00AP	LOWER FILLER	1	
P5	F01068K00AP	P.E. BAG	1	
P6	F01074W00AP	DOOR SHEET	1	
P8	F01924T00AP	SHEET	1	
P9	F01088K00AP	TRAY PACKING	1	
P10	F04243130AP	SECURITY BOLT INSTALLATION INSTRUCTION	1	