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MICROWAVE OVEN **SERVICE MANUAL**

**MODEL: MH-1355M
MH-1356M
MH-1357M**

CAUTION

BEFORE SERVICING THE UNIT, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.

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SAFETY PRECAUTIONS

This device is to be serviced only by properly qualified service personnel. Consult the Service Manual for proper service procedures to assure continued safety operation and for precautions to be taken to avoid possible exposure to excessive microwave energy.

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

- A) Do not operate or allow the oven to be operated with the door open.**
- B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary; (1) interlock operation, (2) proper door closing, (3) seal and sealing surfaces (arcing, wear, and other damage), (4) damage to or loosening of hinges and latches, (5) evidence of dropping or abuse.**
- C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.**
- D) 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.**
- E) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.**

- Proper operation of the microwave ovens requires that the magnetron be assembled to the wave guide and cavity. Never operate the magnetron unless it is properly installed.
- Be sure that the magnetron gasket is properly installed around the dome of the tube whenever installing the magnetron.
- Routine service safety procedures should be exercised at all times.
- Untrained personnel should not attempt service without a thorough review of the test procedures and safety information contained in this manual.

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SPECIFICATIONS

Power Supply	120 VAC, 60 Hz
Power Consumption	1400 Watts (Microwave), 12A
	1580 Watts (Convection), 13.2A
Output	*850 Watts (Microwave)
	1500 Watts (Convection)
Microwave Frequency	2450 MHz \pm 50 MHz
High Voltage Capacitor	0.91 μ F, 2100V AC
High Voltage Diode	HVR-IX
Oven Lamp	125V, 25W
Timer	99 min. 99 sec. (Microwave, Convection and Combination)
Power Control	MICOM
Outer Dimension	15" x 22 ¹ / ₄ " x 19 ¹³ / ₁₆ " (H x W x D)
Cavity Dimension	10 ³ / ₁₆ " x 14 ⁹ / ₁₆ " x 14 ¹¹ / ₁₆ " (H x W x D)
Safety Device	Primary Interlock Switch, Secondary Interlock Switch
	Monitor Switch
	Fuse 15 Amp
	Magnetron Thermostat
	Open at 145°C \pm 6°C
	Close at 60°C \pm 15°C
	Oven Thermostat:
	Open at 130°C \pm 6°C
	Close at 60°C \pm 15°C

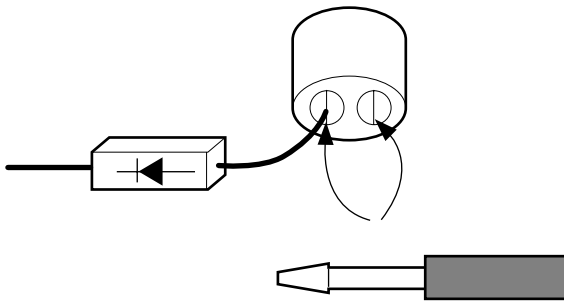
* IEC60705 Rating Standard.

* Specifications are subject to change without notice.

CAUTIONS

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

- DO NOT operate on a 2-wire extension cord during repair and use.
- NEVER TOUCH any oven components or wiring during operation.
- BEFORE TOUCHING any parts of the oven, always remove the power plug from the outlet.
- For about 30 seconds after the oven stops, an electric charge remains in the high voltage capacitor. When replacing or checking, you must discharge the high voltage capacitor by shorting across the two terminals with an insulated screwdriver.

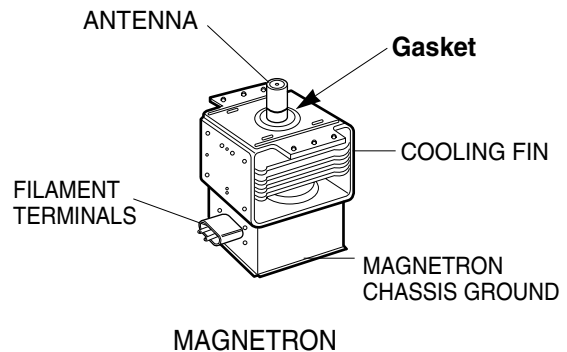


- Remove your watches whenever working close to or replacing the Magnetron.
- NEVER operate the oven with no load.
- NEVER injure the door seal and front plate of the oven cavity.
- NEVER put iron tools on the magnetron.
- NEVER put anything into the latch hole and the interlock switches area.

MICROWAVE RADIATION

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

- Proper operation of the microwave oven requires that the magnetron be assembled to the waveguide and cavity. Never operate the magnetron unless it is properly installed.
- **Be sure that the magnetron gasket is properly installed around the dome of the tube whenever installing the magnetron.**



THE OVEN IS TO BE SERVICED ONLY BY PROPERLY QUALIFIED SERVICE PERSONNEL.

INSTALLATIONS

BEFORE YOU BEGIN, READ THE FOLLOWING INSTRUCTIONS COMPLETELY AND CAREFULLY.

INSTALLING

1. Empty the microwave oven and clean inside it with a soft, damp cloth. Check for damage such as misaligned door, damage around the door or dents inside the cavity or on the exterior.
2. Put the oven on a counter, table, or shelf that is strong enough to hold the oven and the food and utensils you put in it. (The control panel side of the oven is the heavy side. Use care when handling.)
3. Do not block the vent and the air intake openings. Blocking vent or air intake openings can cause damage to the oven and poor cooking results. Make sure the microwave oven legs are in place to ensure proper air flow.
4. The oven should not be installed in any area where heat and steam are generated, because they may damage the electronic or mechanical parts of the unit.
Do not install the oven next to a conventional surface unit or above a conventional wall oven.
5. Use microwave oven in an ambient temperature less than 104°F(40°C).
6. Place the microwave oven on a sturdy and flat surface at least 10 cm(4 inches) from the wall.
7. Place the microwave oven as far away as possible from TV, RADIO, COMPUTER, etc., to prevent interference.
8. This oven must be plugged into a 15A outlet.
9. Do not touch the front glass during or after cooking of the Grill and Combination mode.
This glass is very hot during heater operating.
10. Do not operate the oven at microwave and combination mode with Grill rack placed in the cavity when the oven is empty.

EARTHING INSTRUCTIONS

This microwave oven is designed to be used in a fully earthed condition.

It is imperative, therefore, to make sure it is properly earthed before servicing

WARNING- THIS APPLIANCE MUST BE EARTHED

IMPORTANT

The wires in this mains lead are colored in accordance with the following code:

Green-and-yellow:	Earth
Blue:	Neutral
Brown:	Live

As the colors of the wires in the mains lead of this appliance may not correspond with the colored markings identifying the terminals in your plug, proceed as follows.

The wire which is colored **green-and-yellow** must be connected to the terminal in the plug which is marked with the letter **E** or by the **earth symbol** (\perp) or colored **green** or **green-and-yellow**.

The wire which is colored **blue** must be connected to the terminal in the plug which is marked with the letter **N** or colored **black**.

The wire which is colored **brown** must be connected to the terminal in the plug which is marked with the letter **L** or colored **red**.

FEATURE DIAGRAM

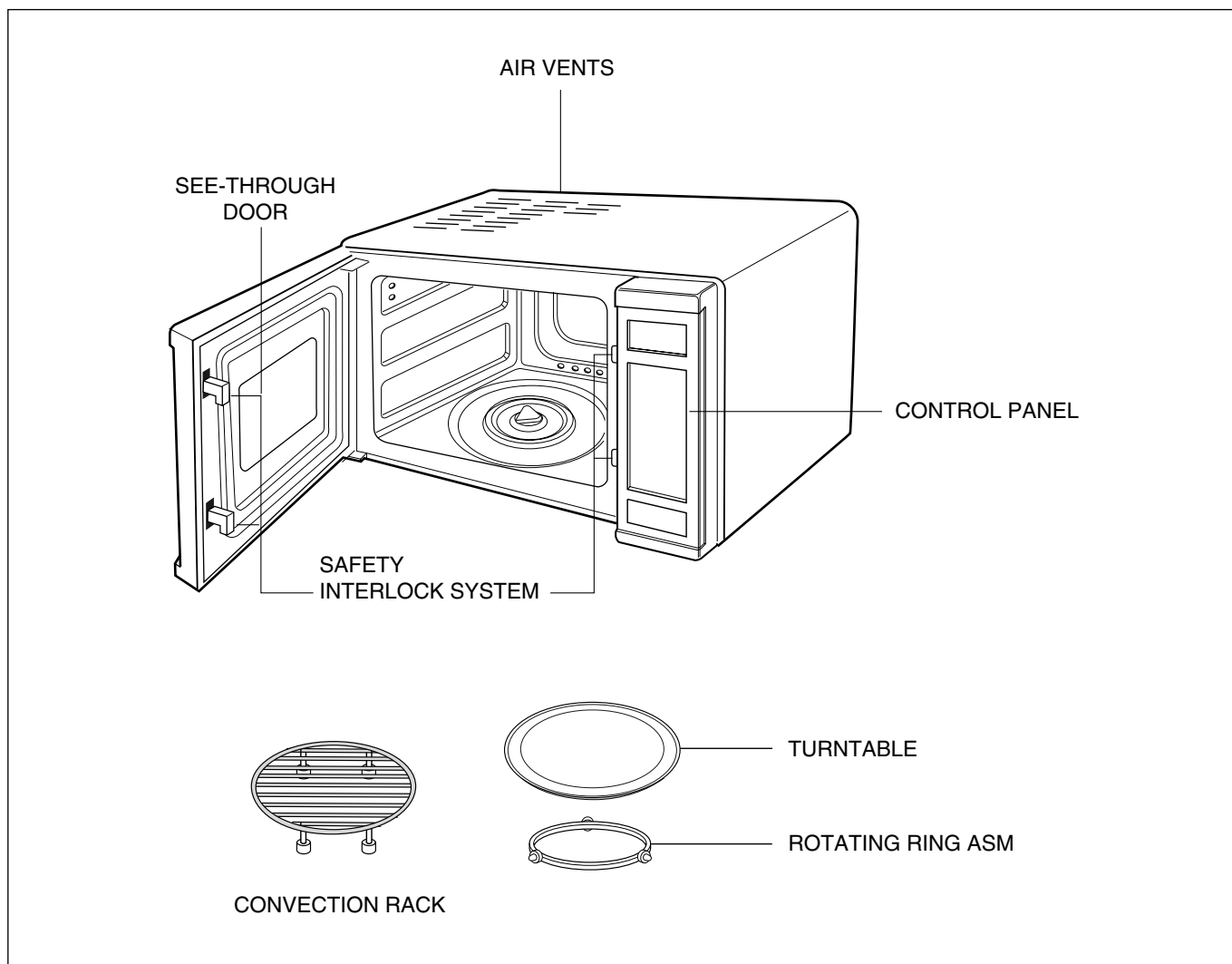


Fig. 3

Remove your Microwave/Convection Oven and all material from the shipping carton.
Your oven will be packed with the following material:

Turntable	1 Each
Rotating Ring Asm	1 Each
Convection Rack	1 Each
Cookbook	1 Each
Owner's Manual	1 Each

Do not use this Microwave/Convection Oven for commercial purposes.
This Microwave/Convection Oven is made for household use only.

CONTROL PANEL

INDICATOR LIGHTS-

When cooking operations are set, lights will go on indicating the cycle in which your oven is cooking.

CONVECTION-

Used in setting convection cooking or pre-heat.

REHEAT- Used to reheat foods easily. Reheat Guides is next to the pad.

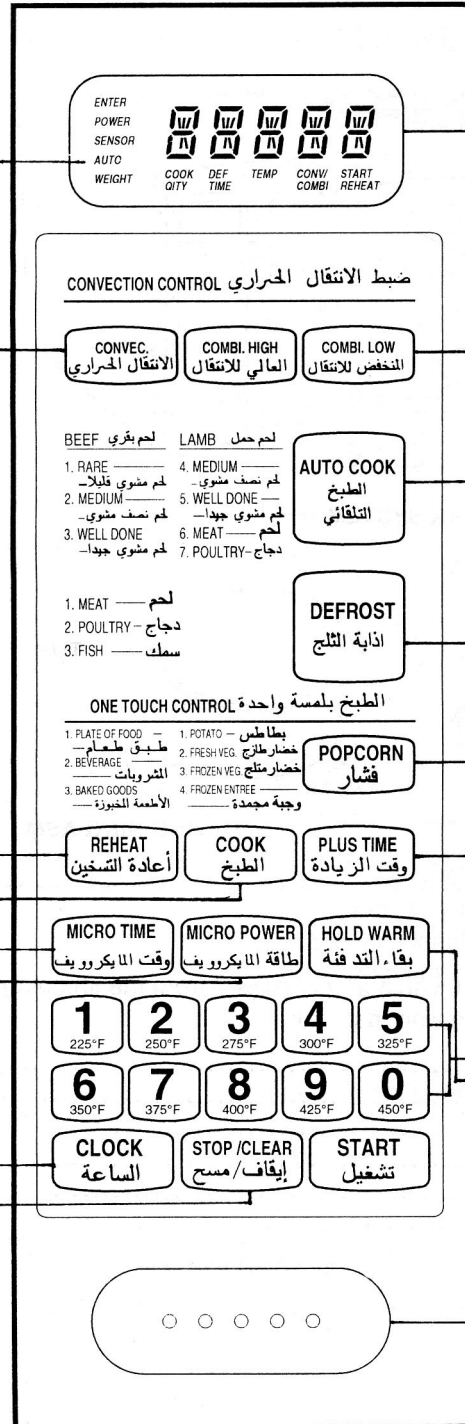
COOK- Used to cook foods easily. Cook guide is next to the pad.

MICRO TIME- Used in setting microwave cooking time.

MICRO POWER- Used to select cooking power levels.

CLOCK- Used to set the time of day.

STOP/CLEAR- Stops the oven and Clears all entries except TIME OF DAY. Once cooking has begun, however, CLEAR will function only after STOP has been touched.



DISPLAY WINDOW-

Used to show:

- Time of day.
- Cooking time.
- Cooking power level.
- Cooking temperature.
- It also functions as a countdown timer or temperature indicator when cooking.

COMBINATION HIGH/LOW-

Used in setting combination high or low cooking.

AUTO COOK- Used in setting weight combination cooking. Auto Combination Guide is next to the pad.

DEFROST- Used in setting Auto Defrost.

POPCORN- Used to pop pack aged popcorn.

PLUS TIME- Used to cook food for a longer time after cooking end.

HOLD WARM- Used to keep the food warm.

NUMBERS- Used to enter the:

- Time of day.
- Cooking times.
- Cooking powers.
- Cooking temperatures.
- Weight for Auto Combination cooking.

START- Starts the oven.

NOTE: A "beep tone" sounds when a "pad" on the control panel is touched, to indicate a setting has been entered.

NOTE:**1. Beep Sound**

The beep sound is activated under the following conditions.

Conditions

- When the control key is touched,
- When the cooking stage is changed,
- When the preheat is ended and the holding time is begun,
- When cooking is ended,
- When an error occurs,
- When foods need to be turned over during auto weight defrost or auto weight combination operation.

Beep Sound Signal

2. Microwave Cooking Power

Microwave cooking power can be chosen from one of the 10 cooking powers listed below. If cooking power is not programmed, the oven operates at cooking power HI.

Numbers of Touch Pads	Cooking Power	%	Microwave Emission Time (sec/cycle)	
			ON	OFF
1	10	10	4	18
2	20	20	6	16
3	30	30	8	14
4	40	40	10	12
5	50	50	12	10

Numbers of Touch Pads	Cooking Power	%	Microwave Emission Time (sec/cycle)	
			ON	OFF
6	60	60	14	8
7	70	70	16	6
8	80	80	18	4
9	90	90	20	2
	HI	100	22	0

3. Digital Readout Display

Time

99:99

(Example: 99 min and 99 sec)

Time

24 30

(Example: 2 hours and 30 min)

Temperature

30 0F

(Example: 300°F)

Clock

12:30

(Example: 12 hours and 30 min)

Cooking Power

P- 50

(Example: cooking power 50)

Weight

4.5

(Example: 4.5 lbs)

End

End

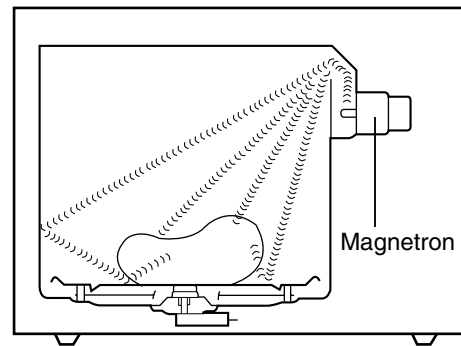
Error

E

HOW THE MICROWAVE/ CONVECTION OVEN WORKS

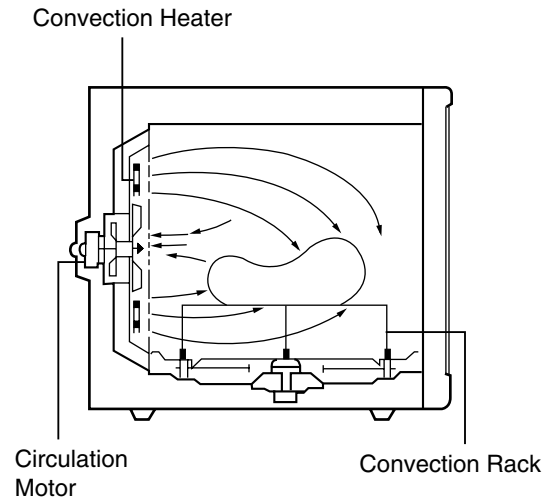
MICROWAVE COOKING

Using microwave energy only, food is cooked quickly without altering its color or shape. The food is evenly cooked on a rotating turntable as the microwaves are produced by the magnetron. Power Control can be adjusted in 10 steps, enabling the various kinds of foods to cook at most desirable cooking power for the best results.



CONVECTION COOKING

This is a way of cooking with hot air from the convection heater on the back side of the unit. This method allows food to be browned evenly without losing any of the juices. Heated air is circulated in the oven by a fan to enable the heating and cooking of food. Since hot air remains in the oven as it circulates, cooking is very efficient. The temperature inside the oven can be controlled according to the type of food being cooked.



COMBINATION COOKING

With microwave energy and hot air, this solid-state control can cook alternately according to the cycles programmed between microwave and hot air to provide efficient cooking fully utilizing the advantages of two functions. Convection rack is also used in Combination Cooking.

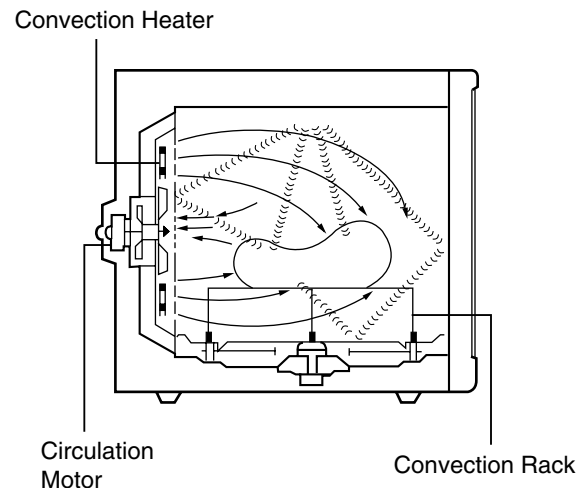
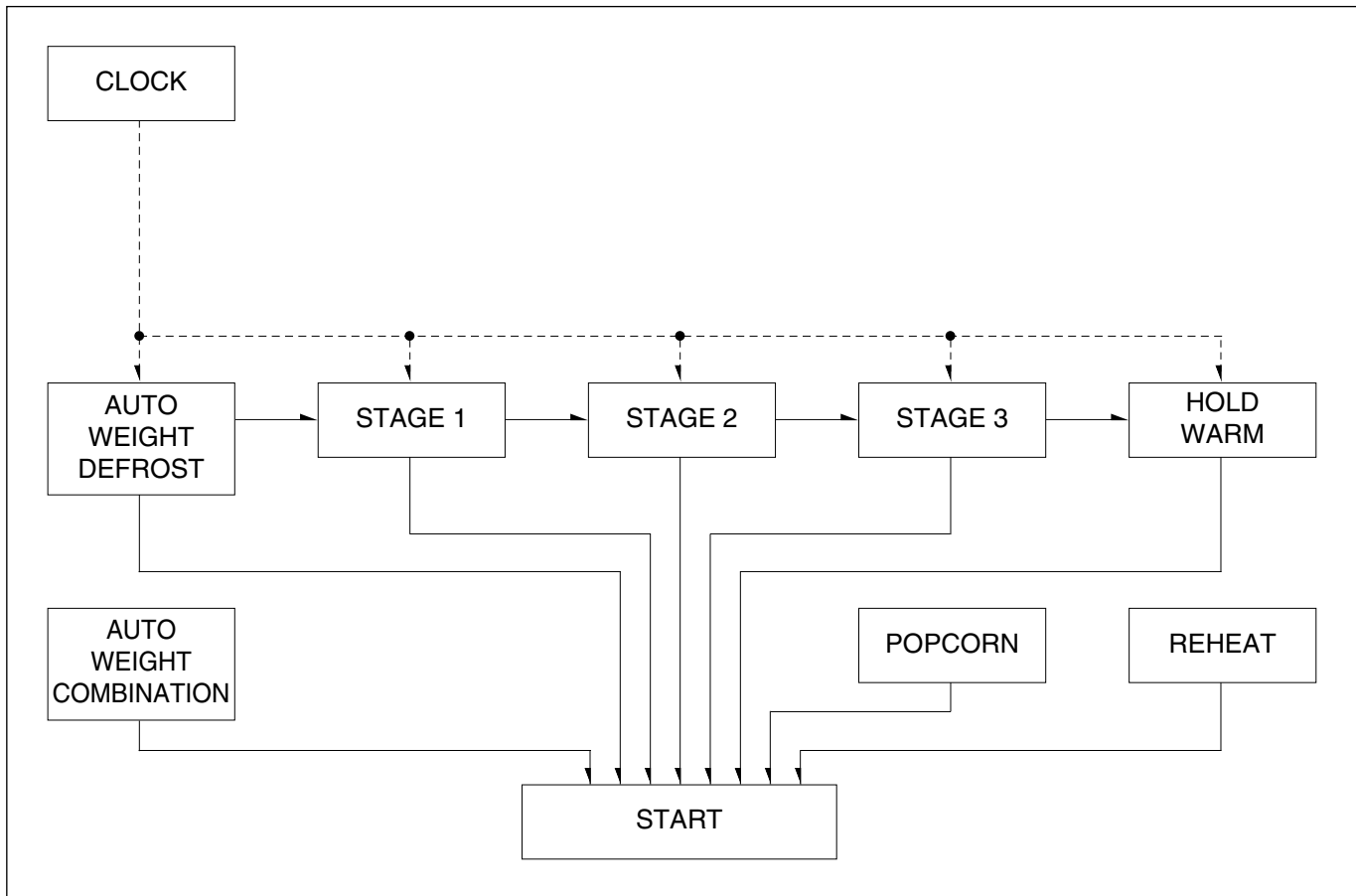


Fig. 5

COOKING FLOW CHART



Cooking procedure have five sequential programs.

AUTO WEIGHT DEFROST → STAGE 1 → STAGE 2 → STAGE 3 → HOLD WARM

Cooking program can be partially and independently selected.

Example:

AUTO WEIGHT DEFROST → STAGE 1 → STAGE 2 → STAGE 3 → HOLD WARM

AUTO WEIGHT DEFROST → STAGE 1 → STAGE 2 → STAGE 3

AUTO WEIGHT DEFROST → STAGE 1 → STAGE 2 → HOLD WARM

AUTO WEIGHT DEFROST → STAGE 1 → STAGE 2

AUTO WEIGHT DEFROST → STAGE 1 → HOLD WARM

AUTO WEIGHT DEFROST → STAGE 1

AUTO WEIGHT DEFROST → HOLD WARM

AUTO WEIGHT DEFROST

STAGE 1 → STAGE 2 → STAGE 3 → HOLD WARM

STAGE 1 → STAGE 2 → STAGE 3

STAGE 1 → STAGE 2 → HOLD WARM

STAGE 1 → STAGE 2

STAGE 1 → HOLD WARM

STAGE 1

HOLD WARM

AUTO WEIGHT COMBINATION

REHEAT

POPCORN

OPERATING INSTRUCTIONS

TO SET THE TIME OF DAY

1. When the oven is plugged in, the display window will show zero(:0)
2. Touch CLOCK.
3. Touch numbers for correct time of day.
4. Touch CLOCK again.

NOTE:

- If your oven does not operate properly, unplug the oven from the 120-volt household outlet and then plug it back in.
- To reset the time of day in the display window, touch CLOCK again.
The colon will disappear. Enter the correct time of day by following the above procedure.
- Oven will operate even though the TIME OF DAY is not set.
- If the TIME OF DAY is not set, nothing will show in the display window when STOP/CLEAR is touched.
- The TIME OF DAY can be set only from 1 : 00 to 12 : 59. At invalid setting, "E" will appear in the display window with two short and one long beep sounds. Only STOP/CLEAR can be operated while an error condition exists.
- If you accidentally touch more than 4 numbers, the last 4 numbers you have touched will appear in the display window.
- If a momentary power failure occurs, the clock display returns to zero (: 0). If this occurs, please reset the clock.
- If STOP/CLEAR is touched or door is opened after cooking, the TIME OF DAY will appear in the display window.
- If you don't set the time of day, the display counts up per minute.

REGULAR TIMER

1. Touch MICRO TIME.
2. Touch numbers for desired time.
3. Touch MICRO POWER.
4. Touch "0"
5. Touch START.

"MICRO TIME" COOKING

1. Touch MICRO TIME.
2. Touch numbers for desired cooking time.
3. Touch MICRO POWER.
4. Touch number for desired cooking power.
5. Touch START.

"CONVECTION" COOKING

To Preheat

1. Touch CONVECTION.
2. Touch number for desired preheating temperature.
3. Touch START.

NOTE:

- After oven temperature reached the selected temperature, the oven will automatically begin to hold operation at the preheat temperature for 30 minutes.

To Cook

1. Touch CONVECTION.
2. Touch number for desired oven temperature.
3. Touch numbers for desired cooking time.
4. Touch START.

NOTE:

- Convection cooking temperatures range from 225°F to 450°F.
- When oven doesn't reach selected temperature, oven temperature will appear in the display window. Current temperature of oven will be displayed in rising 5°F increments. If oven temperature is lower than 200°F, the display window will show "LO F" until oven temperature reaches 200°F.

“COMBINATION” COOKING

1. Touch COMBINATION HIGH or LOW.
2. Touch numbers for desired cooking time.
3. Touch START.

NOTE:

- Output is fixed as follows.

	MICROWAVE COOKING TIME	CONVECTION COOKING TIME
COMBI-HIGH	8 Sec	14 Sec (375°F)
COMBI-LOW	8 Sec	14 Sec (350°F)

“AUTOMATIC DEFROST BY WEIGHT”

1. Touch MEAT, POULTRY or FISH of AUTO WEIGHT DEFROST.
2. Touch numbers for desired weight.
3. Touch START.

NOTE:

- If you input over the acceptable weight, "E" will show in the display window. It means error and the oven does not operate.
- When five short beeps sound during Auto Weight Defrost, please turn over foods.
- Each category can defrost food with the weight of the defrosting food input. The cooking power will automatically be fixed in proportion to the time. Categories for Auto Weight Defrost and the maximum weights are 9.9 lbs.

“AUTOMATIC COMBINATION” COOKING

1. Touch AUTO COOK.
2. Touch number for desired category.
3. Touch numbers for desired cooking weight.
4. Touch START.

NOTE:

- If you input over the acceptable weight, "E" will show in the display window. It means error and the oven does not operate.
- When five short beeps sound during cooking, please turn over foods.
- Don't cook with plugging in the temperature probe.
- If you touch Auto Weight Combination Cook key, the cooking data input already in each stage is cancelled.
- If you are going to reprogram a certain cooking function after programming Auto Weight Combination data, STOP/CLEAR must always be touched before.
- Weight can be programmed in pounds and tenths of a pound. Categories for Auto Weight Combination Cooking and the maximum weights are 5.9 lbs.

“REHEAT”

1. Touch REHEAT.
2. Touch REHEAT repeatedly for desired category of Reheat. (Touch 1. or 2)
3. Touch START.

NOTE:

- If you touch Reheat key, the cooking data input already in each stage is cancelled.
- If you reprogram a certain cooking function after programming Reheat data, STOP/CLEAR must always be touched before.

“HOLD WARM”

1. Touch HOLD WARM.
2. Touch START.

NOTE:

- The time of HOLD WARM is 60 minutes.
- With temperature probe foods will be held at 120°F.
- Take care that the temperature probe is not removed from foods.

“POPCORN”

1. Put a micro-proof rack on the turntable.
2. Touch POPCORN.
3. Touch START.

NOTE:

- If additional time is required, micro HI power in increments of 20 sec.
- Elevate popcorn packages on a micro-proof rack.
- Do not leave oven unattended while popping corn.
- This feature can only be used for popping packaged.

CHILD LOCK

To Set Child Lock

1. Touch “0” more than 2 seconds.

NOTE:

- When Child Lock is selected STOP/CLEAR must always be touched before selection.
- At this time, the oven will operate normally but Micro Power and Heater Power will be zero and cooking can not take place.
- At this time, if you start to cook “L” will appear in the display window for 1 sec at first.

To Cancel Child Lock

1. Touch “0” more than 2 seconds.

NOTE:

- When you cancel Child Lock, STOP/CLEAR must always be touched before selection.

MULTI-STAGE COOKING

Let's start to cook with a first stage 4 minutes at the cooking power HI followed by a second stage of 10 minutes at cooking power 60.

1. Touch MICRO TIME.
2. Touch “4”, “0” and “0” in sequence.
3. Touch MICRO TIME.
4. Touch “1”, “0”, “0” and “0” in sequence.
5. Touch MICRO POWER.
6. Touch “6”.
7. Touch START.

NOTE:

- There are three memory stages.

SCHEMATIC DIAGRAM

SYSTEM 1: STAND-BY CONDITION

Set up: Door is opened. Oven power cord is plugged into standard 120 volt ground outlet.
Normal operation
• Oven light turns on.

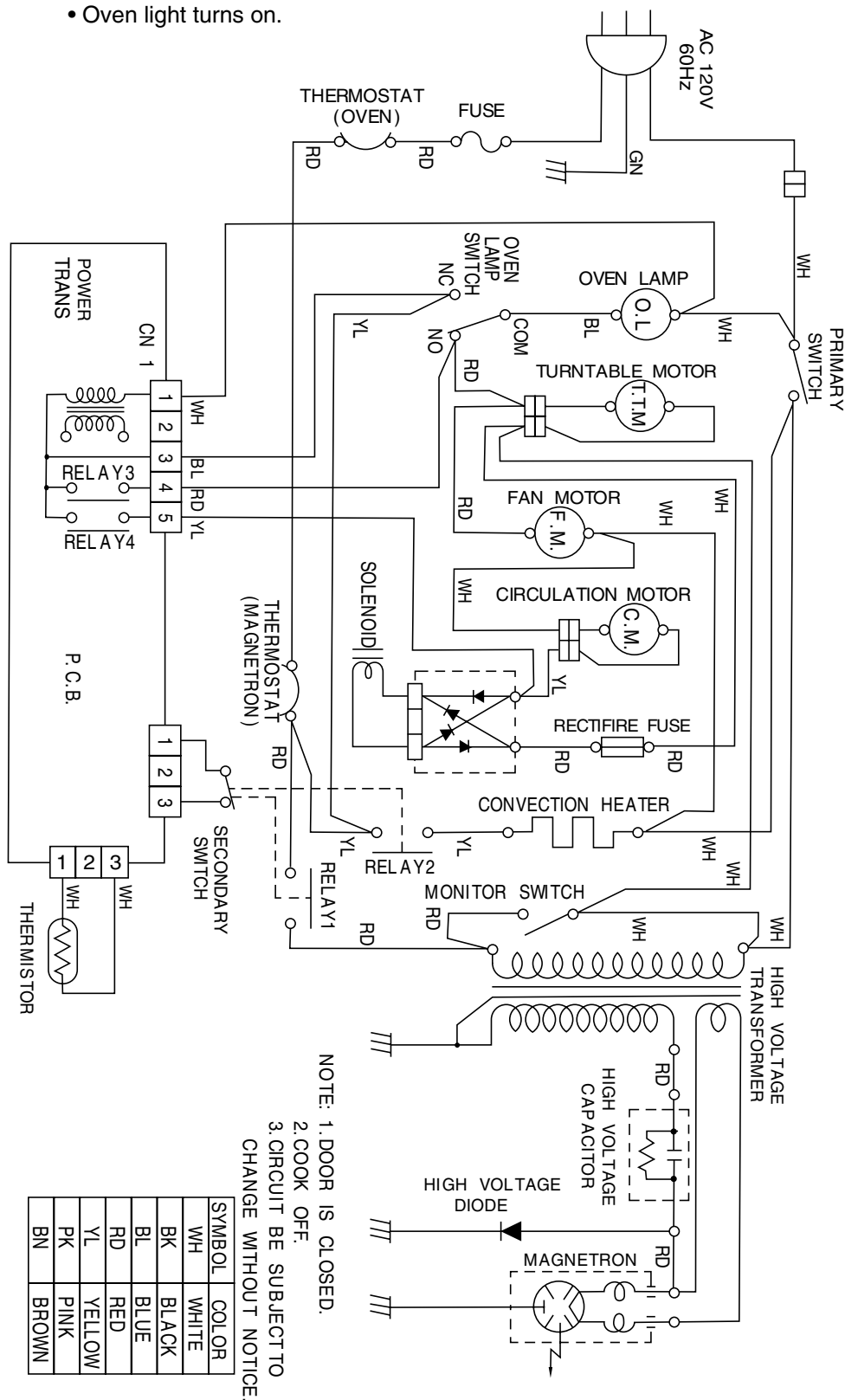


Fig. 6

SYSTEM 2: MICROWAVE COOKING CONDITION

- Set up:
- Door is closed. START is touched.
 - Normal operation
 - Oven light turns on.
 - Turntable operates.
 - Fan motor operates.

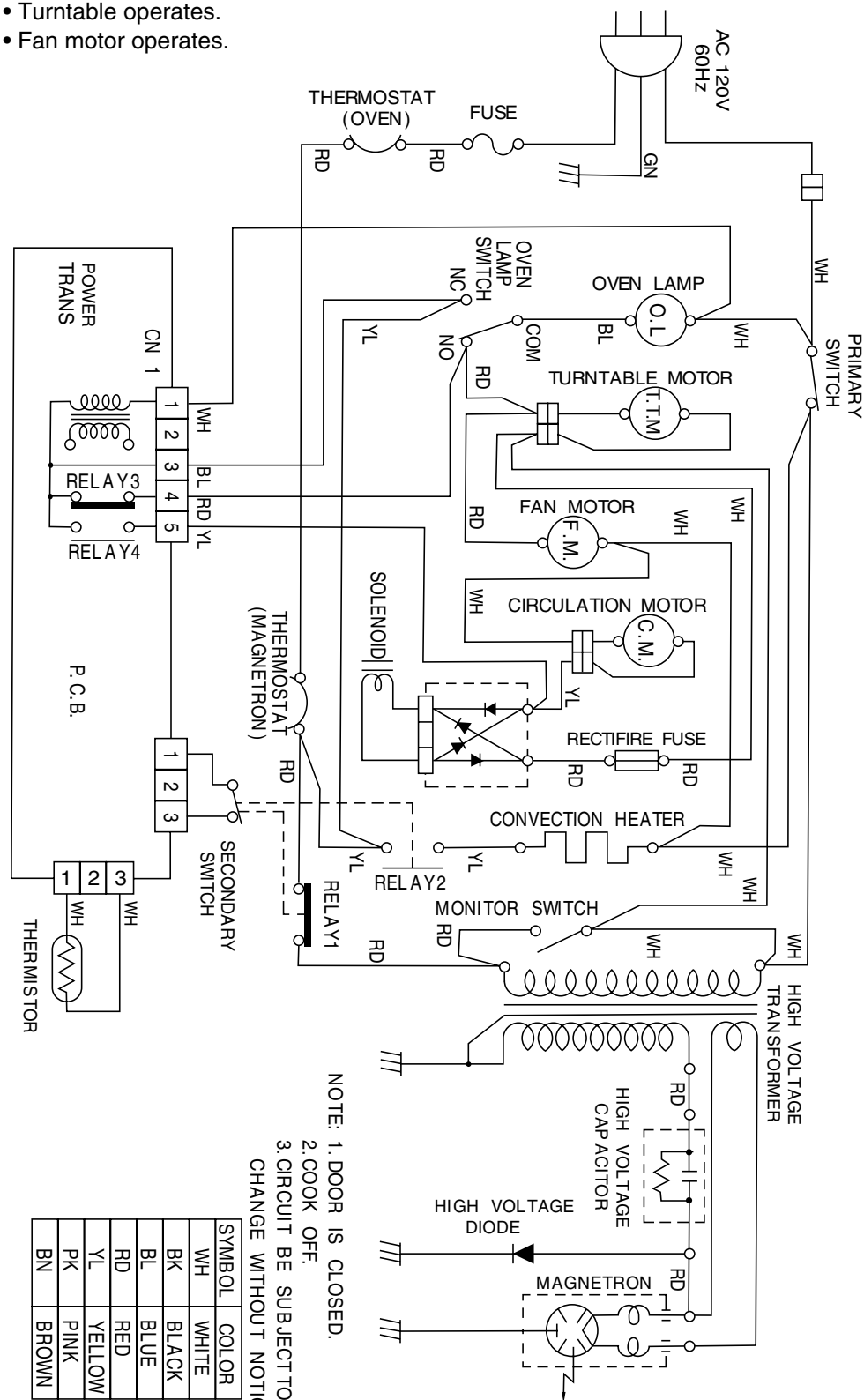


Fig. 7

SYSTEM 3: CONVECTION COOKING CONDITION

Set up:

Door is closed. START is touched.

Normal operation

- Oven light turns on.
- Turntable operates.
- Fan motor and circulation motor operate.

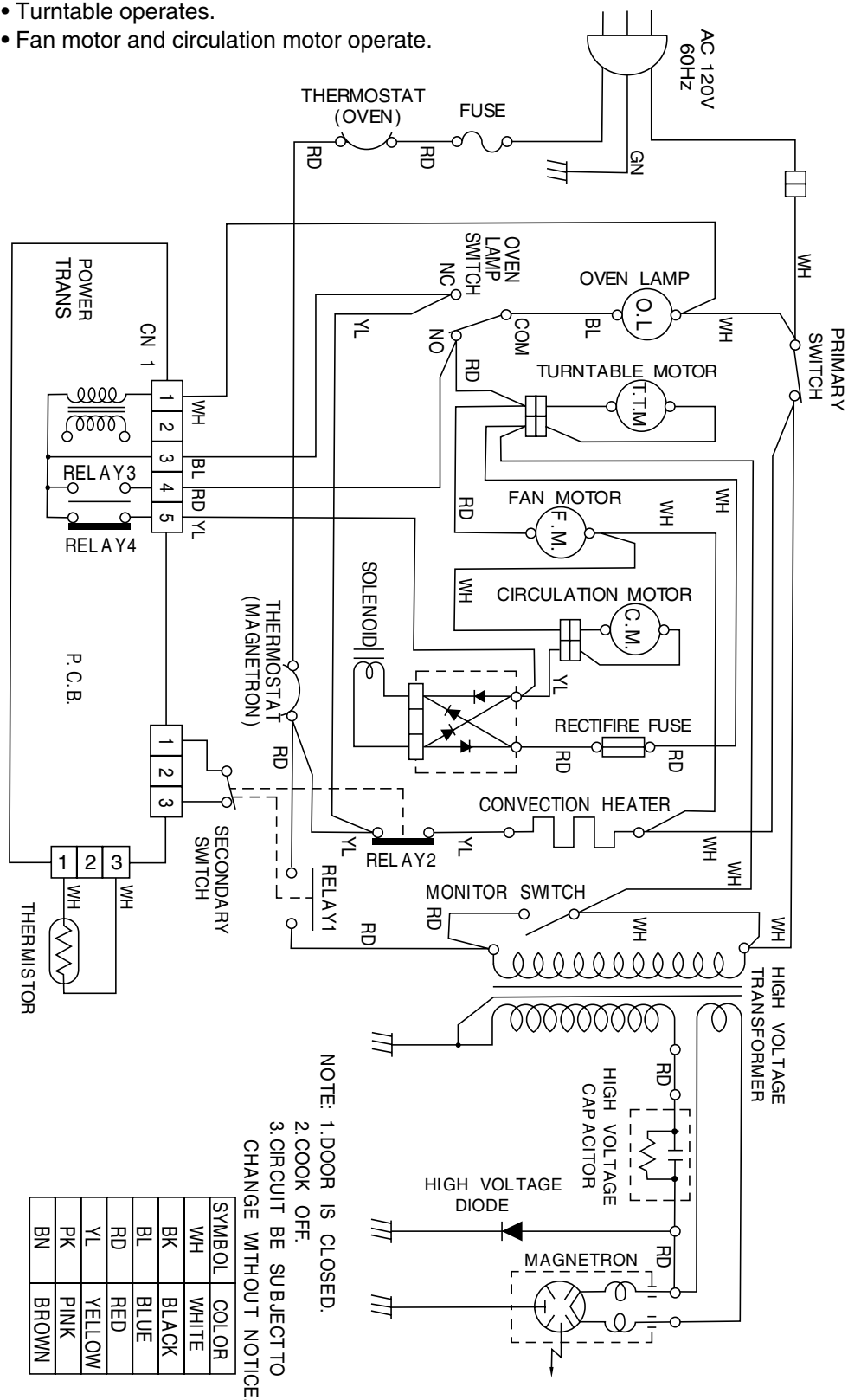


Fig. 8

CIRCUIT DESCRIPTION

- The low voltage transformer supplies the necessary voltage to the micom controller when power cord is plugged in.
- As the door is opened, the contact of MONITOR SWITCH short. This switch creates the short circuit to blow 15 A fuse during operation under abnormal condition. (i.e. should the contacts of primary switch and relay and/or secondary switch fail to open the circuit).

WHEN COOKING POWER AND COOKING TIME ARE SET BY TOUCHING THE TIME AND THE POWER PAD

- The micom controller memorizes the function you set.
- The time or cooking power you set appears in the display window.
- Each indicator light turns on to indicate that stage has been set.

WHEN TOUCHING THE START PAD WITH THE MICROWAVE FUNCTION SELECTED.

- The oven lamp, fan motor and turntable motor operate by closing the relay 3 and primary switch.
- The 120 Volts AC is supplied to the high voltage transformer through the contact of the relay 1 and primary switch. 3.5 Volt AC generated from the filament (winding of the high voltage transformer applied to the magnetron to heat magnetron filament) through two noise suppression choke coils. A high voltage 2100 Volts AC is generated in the secondary winding of the high voltage transformer and this secondary voltage is increased by action of the diode and charging of the high voltage capacitor. This resultant is then applied to the magnetron via the filament.
- The disturbance wave generated by the magnetron is suppressed by the choke coils, filter capacitors and the magnetron shielded case, so that TV and RADIO programs are not impaired by noise.

WHEN TOUCHING THE START PAD WITH THE CONVECTION COOKING FUNCTION SELECTED.

- Relay 2 is closed to provide a current path to the Convection Heater.
- The microwave does not emit with Relay 1 open.
- The Relay 3, 4 and primary switch are closed to provide a current path to the oven lamp, the turntable motor, the fan motor and the circulation motor.

WHEN THE OVEN IS SET AT SOME COOKING POWER EXCEPT MAX. COOKING POWER.

- Micom controller controls the ON-OFF time of the RELAY by the applied gets signal to vary the average output power of microwave oven from "COOKING POWER 10" to "COOKING POWER HI".
- One complete cycle of Relay is 22 seconds.

WHEN THE DOOR IS OPENED DURING COOKING.

- Both primary switch and relay open to cut off primary winding voltage to the high voltage transformer.
- ON-OFF of relay is coupled electrically with open and close of secondary switch.
- When the door is opened, secondary switch is closed and when the door is closed, secondary switch is opened.
- Function indicator light and colon turn off and display stops counting down.
- Relay stops functioning.
- As the door is opened, if the contact of primary switch and relay and/or secondary switch fail to open, the 15 A fuse opens due to the large current surge caused, by the monitor switch activation and then stops magnetron oscillation.

MAGNETRON TUBE

- The magnetron tube is the heart of the microwave oven. It is basically a diode with the addition of a magnetic field. The magnetron tube assembly consists of cylindrical cathode (negative) terminal, enclosed within a cylindrical anode (positive) terminal, evacuated of all air, and surrounded by a permanent magnet.
- In order to create an electron flow from cathode to anode, the cathode must be heated and a potential difference must exist between the two. This is accomplished by heating the cathode with 3.15 VAC (from the filament winding of the high voltage transformer), and applying a negative 4000 VDC (from the voltage doubler circuit) to the cathode.
- Originally, the electrons would travel in a straight line from the cathode to the anode (see Fig. 9). However, with the addition of a permanent magnet surrounding the anode creating a magnetic field, the electrons travel an orbital path between the cathode and anode (see Fig. 10). As the electrons approach the anode, their orbital path takes them past small resonant cavities that are part of the anode. The passing notion of the electrons induces electron current to oscillate in the resonant cavities at the very high frequency or 2,450 megahertz. This RF energy is then transferred to the antenna.

TESTING MAGNETRON TUBE

- Disconnect power, remove the wrapper, and discharge the capacitor.
- Remove the two leads from the magnetron terminals.
- Connect the ohmmeter between one terminal of the magnetron and the outer case of the magnetron. If the ohmmeter reads infinity, go to below. If the ohmmeter reads less than infinity, the magnetron is shorted.
- Connect an ohmmeter across the terminals of the magnetron. The ohmmeter should read less than one ohm. If the ohmmeter reads over one ohm or infinity, the tube is defective.

MAGNETRON WITHOUT MAGNETIC FIELD

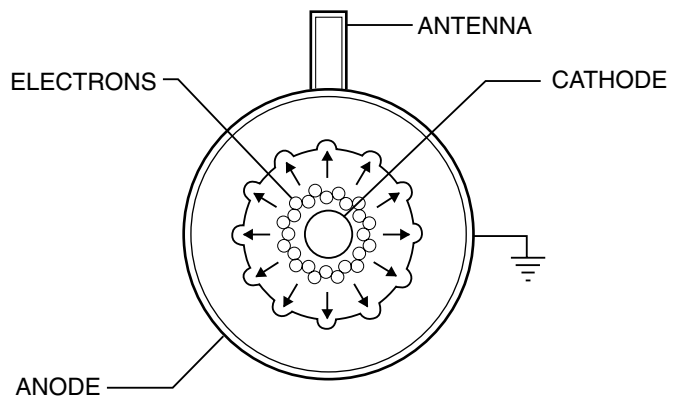


Fig. 9

MAGNETRON WITH MAGNETIC FIELD

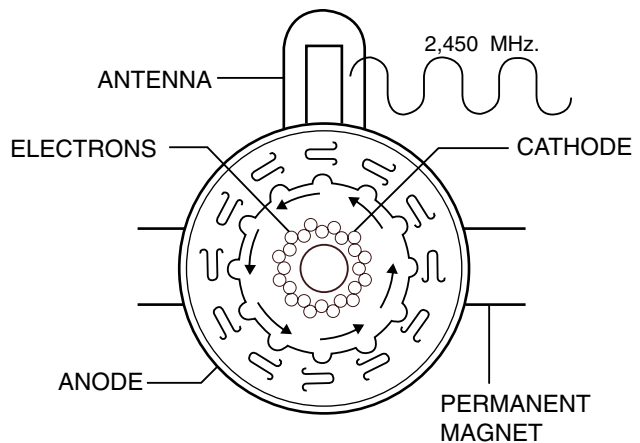


Fig. 10

DESCRIPTION AND FUNCTION OF COMPONENTS

OVEN LAMP

The oven lamp illuminates the interior of the oven during cooking so that food can be seen without opening the door.

The oven lamp will turn off when the cooking time is ended.

TURNTABLE MOTOR

The turntable motor rotates the turntable located on the bottom of the oven cavity during the cooking operation to cook the foods evenly.

Turntable will rotate in either direction.

OVEN THERMOSTAT

The oven thermostat located on the insulator-T, is designed to prevent damage to the components and acts when heater overheats to abnormally high temperatures. Under normal convection operation, the heater thermostat remains closed. However, when abnormal condition within the convection chamber approaches a critical level (130°C), the oven thermostat will open and interrupt the circuit to the oven, causing it to shut down.

MAGNETRON THERMOSTAT

The magnetron thermostat located on the magnetron, is designed to prevent damage to the magnetron if an overheated condition develops in the tube due to abnormal state.

The magnetron thermostat remains closed under normal operation, but the magnetron thermostat opens when abnormal high temperatures within the magnetron approach a critical level (145°C), causing oven to shut down.

DOOR OPENING MECHANISM

The door can be opened by pushing button and lifting the latch as a result of action by the latch spring, latch and latch board jaw. The latch is released from the latch board and the door can be opened.

PRIMARY AND SECONDARY INTERLOCK SWITCHES (FIG. 11)

The primary interlock switch is mounted in the latch board-U and secondary interlock switch is mounted in the latch board-L.

When the door is closed, the switches are activated by the latch on the door. When the door is opened, the switches interrupt the circuit to all components except the oven lamp.

MONITOR SWITCH (FIG. 11)

The monitor switch, mounted on the latch board-L with the oven lamp switch, is activated by a latch on the door while the door is closed.

If the door is opened and the primary and secondary interlock switch contacts fail to open, this switch is intended to render the oven inoperative by means of fuse failure, simultaneously with the closing of monitor switch contacts.

OVEN LAMP SWITCH (FIG. 11)

The oven lamp switch mounted on the latch board-L with monitor switch, is activated by latch on the door while the door is closed.

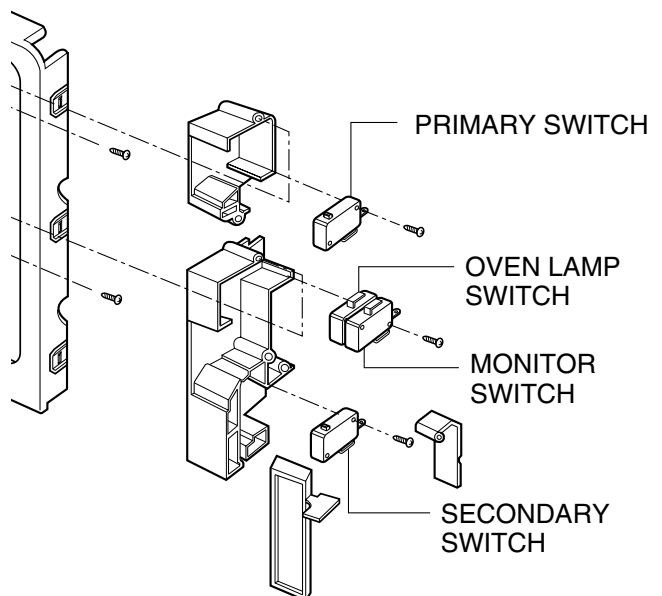


Fig. 11

CONVECTION COOKING SYSTEM (FIG. 12)

Convection cooking is not performed by direct heat from the heating elements, but by forced circulation of the hot air produced by the heating elements located at the back side of the oven cavity.

The air heated by the heating elements (heater) is circulated through the convection chamber of the oven cavity by means of the circulation fan which is driven by the circulation motor.

Then the hot air enters the inside of oven through the vent holes provided in the back plate of the oven cavity. Next the hot air heats up the food on the turntable and leaves the oven cavity through the vent in the centre of the oven cavity back side. In a continuous cycle, this hot air is reheated by the heater, passes through the back chamber (convection chamber) and enters the inside of the oven cavity again. In this way, the hot air raises inside air temperature of the oven cavity and thus the food is being cooked. Convection heater will heat continuously before the setting temperature is reached, and alternates on and off according to temperature after the setting temperature is reached.

The on/off of the convection heater is controlled by thermistor.

CHAMBER ASSEMBLY (FIG. 12)

The air heated by the heating element is circulated through the convection passage provided on the back side of the oven by means of the convection fan which is driven by the convection motor. It then enters the inside of oven through the vent holes provided on the rear of the oven cavity. Next, the hot air heats up the food on the turntable and leaves the oven cavity through the vent in the centre of the oven cavity rear wall.

Without leaving the oven, this hot air is reheated by the heating element, passes through the convection passage and enters the inside of the oven cavity again, in a continuing cycle.

DAMPER OPERATION

When the oven starts convection and combination function, damper bracket is pulled by solenoid so that the hot air does not leave the cavity.

When the function is microwave, the power supply to the solenoid is turn off and damper spring push the damper bracket so that the fan circulate the air within the cavity.

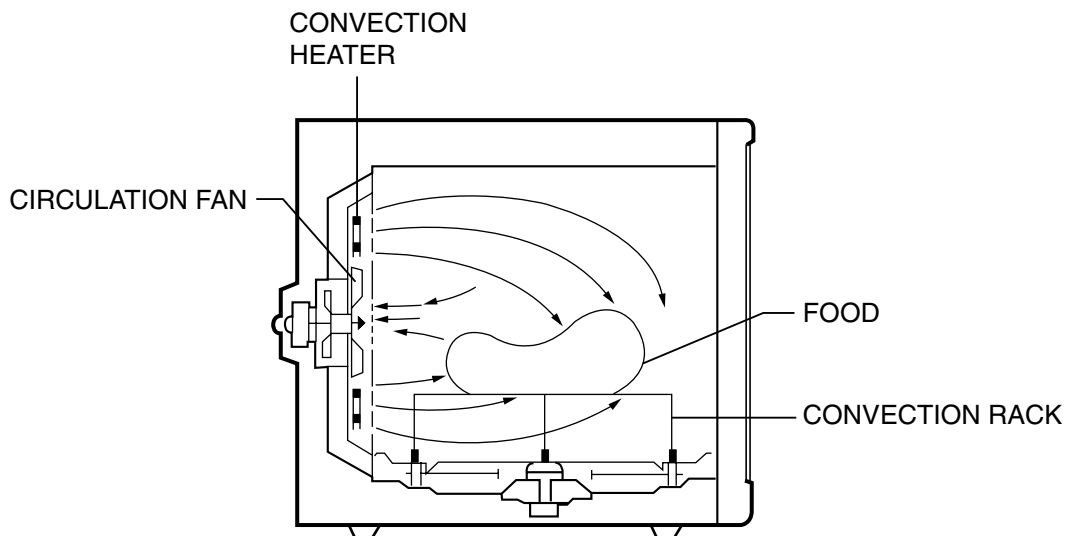


Fig. 12

NECESSARY TOOLS AND MEASURING INSTRUMENTS

NECESSARY TOOLS

Tools normally used for TV servicing are sufficient. Standard tools are listed below.

- Diagonal pliers
- Long nose pliers
- Cross head screwdriver
- Socket wrench (size 5 mm)
- Nutdriver (size 5 mm)
- Adjustable wrench
- Soldering iron
- Solder
- Vinyl insulation tape
- Polishing cloth

NECESSARY MEASURING INSTRUMENTS

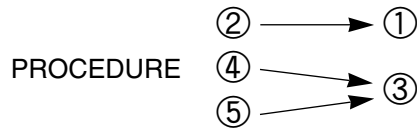
- Tester (Volt DC, AC-ohmmeter)
- Inch scale
- Electromagnetic radiation monitor
- 600 cc glass beaker or equivalent
- Glass thermometer 100°C
- Two 1 liter beakers or equivalent

INSTALLATION AND ADJUSTMENT OF THE INTERLOCK SYSTEM

A. INSTALLATION

CAUTION: FOR CONTINUED PROTECTION AGAINST RADIATION EMISSION, REPLACE ONLY WITH THESE TYPES OF SWITCHES.
PRIMARY (INTERLOCK) SWITCH; SZM-V16-FA-63 or VP-533A-OF
SECONDARY (INTERLOCK) SWITCH; SZM-V01-FA-33
(INTERLOCK) MONITOR SWITCH; SZM-V16-FA-62 or VP-532A-OF
OVEN LAMP SWITCH; SZM-V6-FA-31 or VP-331A-OD

The installation of PRIMARY, SECONDARY, MONITOR and OVEN LAMP SWITCH is as shown Fig. 13.



B. ADJUSTMENT PROCEDURE

TO AVOID POSSIBLE EXPOSURE TO MICRO-WAVE ENERGY LEAKAGE, THE FOLLOWING ADJUSTMENT OF THE INTERLOCK SWITCHES SHOULD BE MADE ONLY BY AUTHORIZED SERVICE PERSONNEL.

- (1) Loosen the two screws (1) holding the latch board-U to the oven cavity front flange.
- (2) With the door closed, adjust the latch board by moving it back and forth, or up and down.
- (3) Secure the screws firmly.
- (4) Loosen the two screws (3) holding the latch board-L to the oven cavity front flange.
- (5) With the door closed, adjust the latch board by moving it back and forth, or up and down.
- (6) In and out play of the door allowed by the latch board U and L should be less than 0.5 mm.
- (7) Secure the screws firmly.

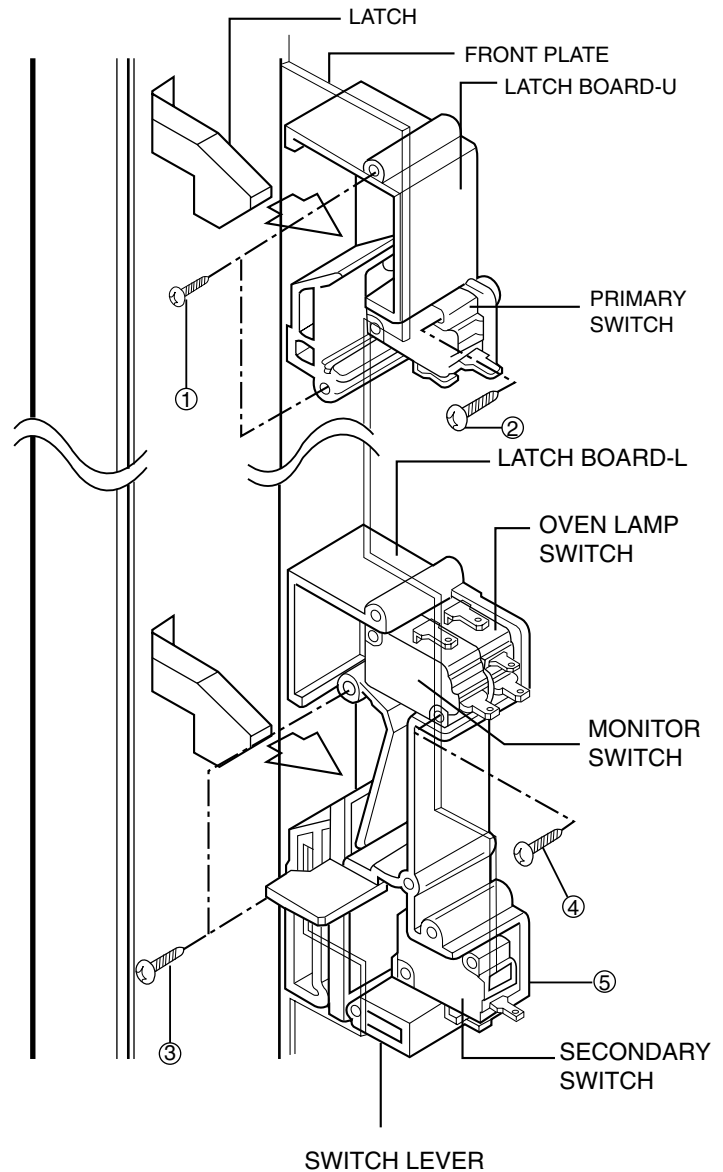


Fig. 13

After the adjustment, make sure to perform the following test. This test should only be performed by authorized service personnel.

- (1) The in and out play of the door must be less than 0.5mm when latched. First check the latch board-U position, pushing and pulling the upper portion of door toward the oven face. Then check the lower portion of door toward the oven face. Both results should be less than 0.5mm.
- (2) Make sure the door latch closes the monitor switch and oven lamp switch after the primary switch is open.

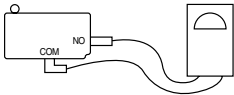


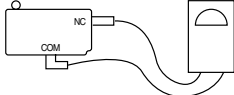


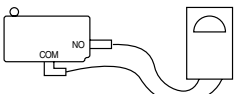


This (COM-NO) test should be performed with the door being opened very slowly.

- (3) Re-install the outer case and check for microwave leakage. Makes sure the microwave leakage is below the limit of 4mW/cm² (with a 275 ml water load.)

NOTE: A MICROWAVE ENERGY LEAKAGE TEST MUST ALWAYS BE PERFORMED WHEN THE UNIT IS SERVICED, FOR ANY REASON.

INTERLOCK CONTINUITY TEST

- The service personnel should replace all of the monitored safety interlock switches and monitor switch if the oven has been rendered inoperative due to the failure of the monitored safety interlock(s).
- Be sure to connect the monitor switch after replacement and to check interlock/monitor continuity.

COMPONENTS	TEST PROCEDURE		RESULTS	
SWITCHES (Wire leads removed)	Check for continuity of the switch with an Ohm-meter		Door open	Door closed
	Primary Switch			
	Monitor Switch			
	Secondary Switch			
NOTE : After checking for the continuity of switches, make sure the wires are correctly connected.				

PRIMARY INTERLOCK (UPPER LATCH) SWITCH TEST

When the door button is slowly depressed with the door closed, an audible “click” should be heard at the same time or successively at intervals. When the button is slowly released, the latches should activate the switches with an audible “click”.

If the latches do not activate the switches when the door is closed, the switches should be adjusted in accordance with adjustment procedure.

Isolate the primary switch by disconnecting it from leadwire. Connect the ohmmeter leads to the common (COM) and normally open (NO) terminal of the switch. The meter should indicate an open circuit in door open condition.

When the door is closed, the meter should indicate a closed circuit.

When the primary switch operation is abnormal, make the necessary adjustment or replace the switch only with the same type of switch.

SECONDARY INTERLOCK (LOWER LATCH) SWITCH TEST

Isolate the secondary switch by disconnecting it from leadwire. Connect the ohmmeter leads to the common (COM) and normally open (NO) terminals of the switch. The meter should indicate a closed circuit in the door open condition. When door is closed, the meter should indicate an open circuit. When the secondary switch operation is abnormal, make the necessary adjustment or replace the switch only with the same type of switch.

MONITOR SWITCH TEST

Isolate the monitor switch by disconnecting it from leadwire. Connect the ohmmeter leads to the common (COM) and normally closed (NC) terminals of the switch. The meter should indicate a closed circuit in the door open condition. When door is closed, the meter should indicate an open circuit.

When the monitor switch operation is abnormal, replace the same type of switch.

NOTE: After repairing the door or the interlock system, it is necessary to do this continuity test before operating the oven.

DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

CAUTION

Before touching any oven component or wiring, first of all, disconnect the power supply cord and wait for about 5 minutes (in order to discharge the high voltage capacitor).

A. REMOVING OUTER CASE (FIG. 14)

- (1) Remove four screws from the side section.
- (2) Remove seven screws from the rear section.
- (3) Push the outer case back about 1 inch (3cm) to free it from the front plate.
- (4) Lift the case from the set.

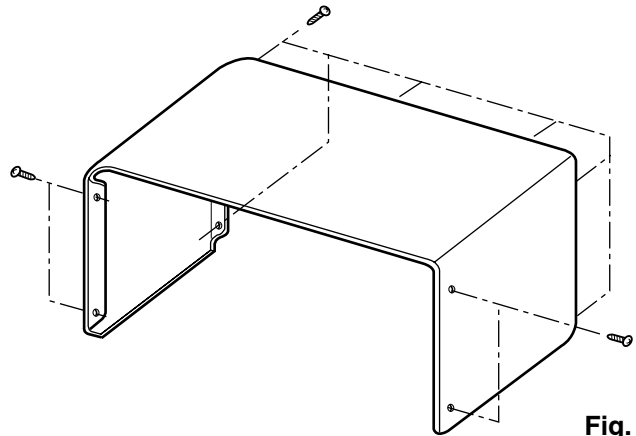


Fig. 14

B. REMOVING CONTROL PANEL ASSEMBLY AND PCB ASSEMBLY (FIG. 15)

- (1) Disconnect the wire leads (from relay 3, 4), power trans connector (5-pin), thermistor connector (2-pin), temperature probe jack connector (8-pin) and I/O connector (5-pin).
- (2) Remove one screw securing the P.C.B. earth wire lead and key pad earth bend to the front plate.
- (3) Remove two screws securing the control panel to the front plate.
- (4) Lift the control panel slightly and remove from the front plate.
- (5) Remove the F.P.C. connector the terminal socket.
- (6) Remove three screws securing the P.C.B. assembly to the control panel.

NOTE:

Remove the wire leads and connector VERY CAREFULLY Be sure to grasp the connector and not the wires.

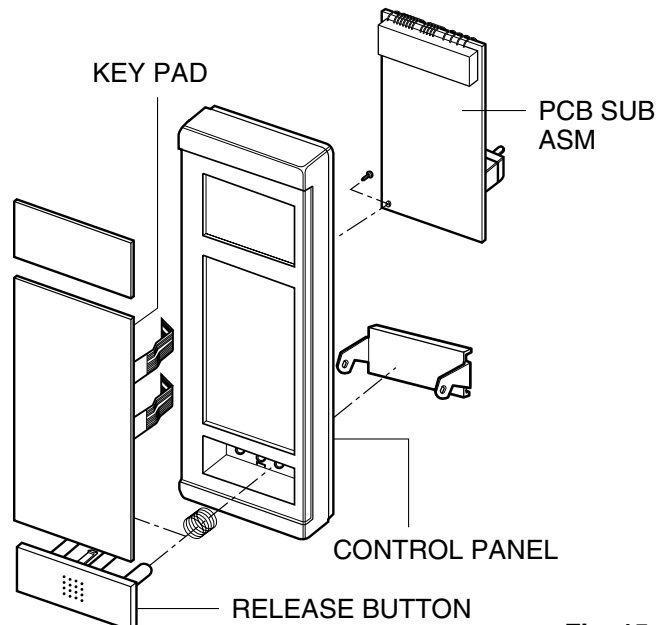


Fig. 15

C. REMOVING DOOR ASSEMBLY (FIG. 16)

- (1) Remove three tap tite screws securing the hingeplate-U to the hinge support.
- (2) To remove the door, tilt the top of the door towards you and lift the door up.

NOTES:

1. After replacing the door, be sure to check that the primary switch, monitor switch, oven lamp switch and secondary switch operate normally.
2. After replacing the door, check for microwave energy leakage with a survey meter. (Refer to the test procedure on page 43.)

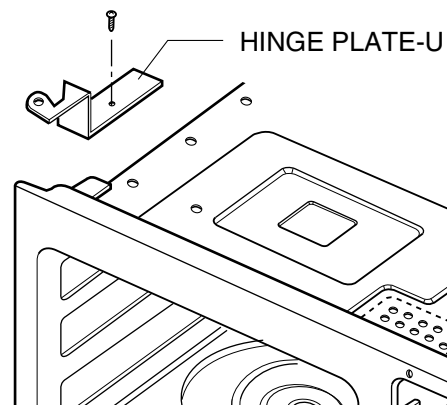


Fig. 16

D. REMOVING MAGNETRON (FIG. 17)

- (1) Disconnect the wire leads from the magnetron terminals.
- (2) Remove the two screws holding the air duct to magnetron.
- (3) Remove four screws securing the magnetron to the wave guide.

NOTE:

1. When removing the magnetron, make sure its dome does not hit any adjacent parts, or it may be damaged.
2. When replacing the magnetron, be sure to install the magnetron gasket in the correct position and be sure that the gasket is in good condition.

E. REMOVING COOLING FAN MOTOR (FIG. 17)

- (1) Remove the power supply cord from the oven and disconnect lead wire from the Fuse Holder.
- (2) Disconnect each two lead wires from the Fan Motor.
- (3) Remove three screws securing the Fan Guide Asm to the back cover and lift up the Fan Guide Asm.
- (4) Remove two screws securing the Fan Motor to the Fan Guide after pulling out the fan from the Fan Motor.

F. REMOVING HIGH VOLTAGE DIODE AND HIGH VOLTAGE CAPACITOR. (FIG. 18)

- (1) Disconnect lead wires from H.V. Trans and Magnetron.
- (2) Remove one screw securing the capacitor bracket and one lead wire of H.V. Diode to the base plate.
- (3) Pull the Capacitor Bracket upwards.

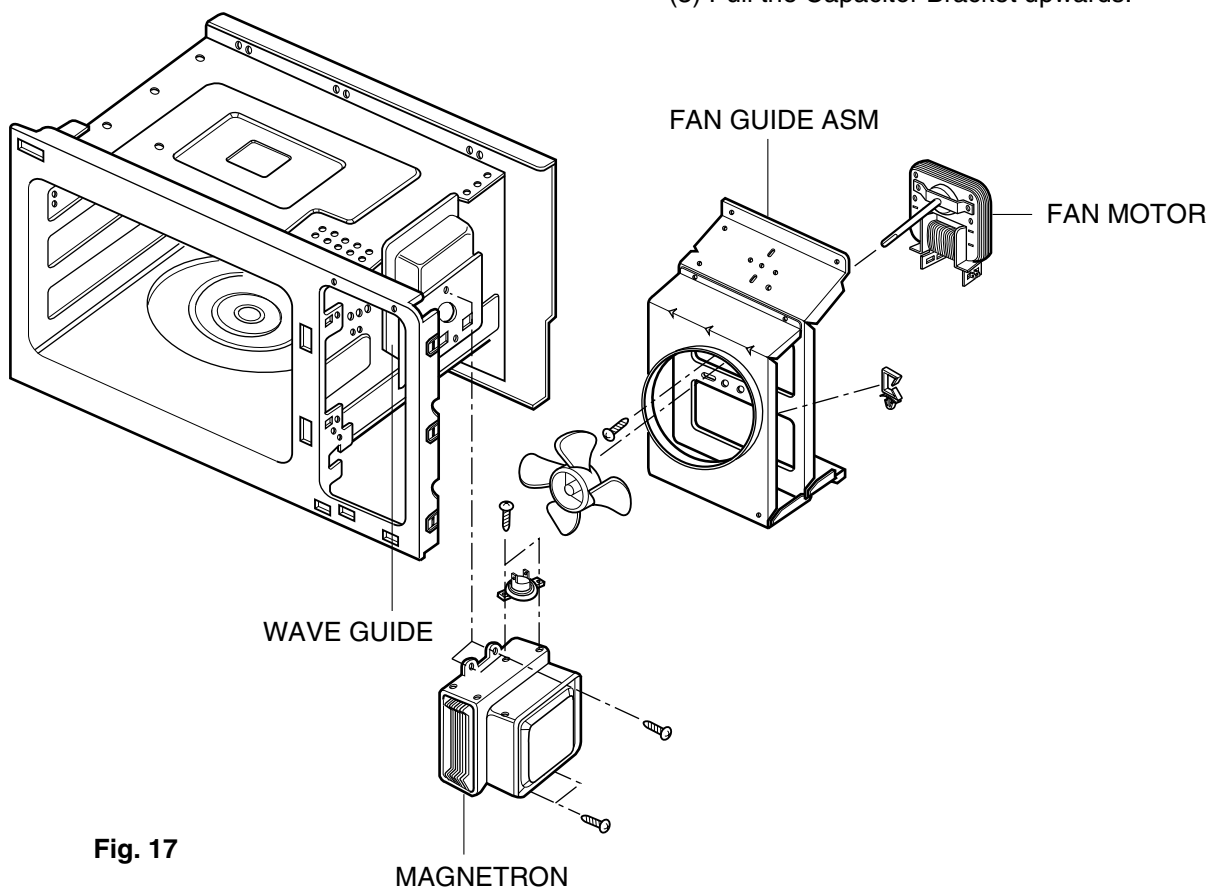


Fig. 17

G. REMOVING HIGH VOLTAGE TRANSFORMER (FIG. 18)

- (1) Disconnect the wire leads from the transformer to the magnetron and H.V. Capacitor.
- (2) Remove four screws securing the H.V. Transformer to the base plate.
- (3) Tilt the top of the H.V. Transformer towards you, pull slightly and lift it up.

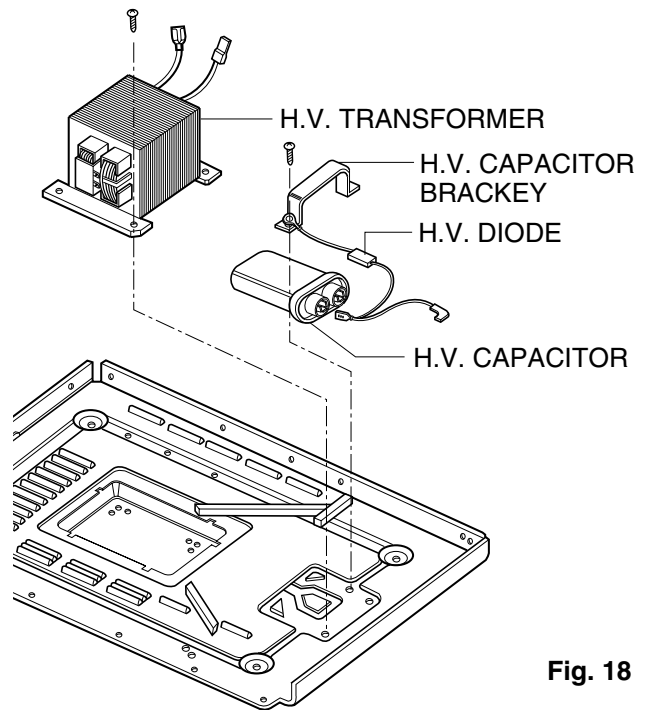


Fig. 18

H. REMOVING TURNTABLE MOTOR (FIG. 19, 20, 21)

- (1) Remove the turntable, the rotating ring and the turntable shaft. (Fig. 19)
- (2) Lay the set down on its back.
- (3) Remove the turntable motor cover of the baseplate. The turntable motor cover is easily removed by pinching the six parts with a wire cutter. (Fig. 20)
- (4) Disconnect the lead wires from the turntable motor terminals.
- (5) Remove two screws securing the turntable motor to the oven cavity assembly.
- (6) Lift the turntable motor.

- (7) After repairing the motor, rotate the removed turntable motor cover. (Fig. 20)
- (8) Fit the turntable motor cover's projecting part to the base plate's slit. (Fig. 21)

NOTE:

1. Remove the lead wire from the turntable motor VERY CAREFULLY with long nose pliers.
2. Be sure to grasp the connector, and not the wires when removing.
3. In assembling, insert the slit part of turntable motor cover and secure it by using two screws.

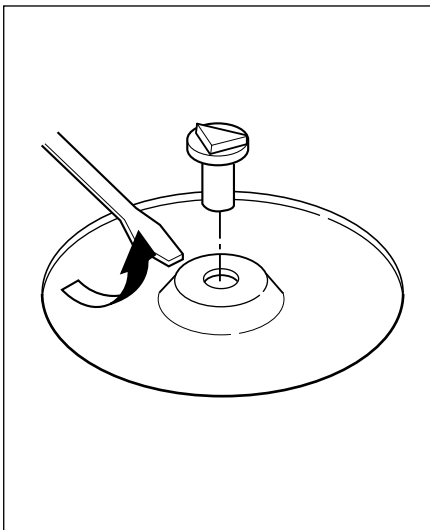


Fig. 19

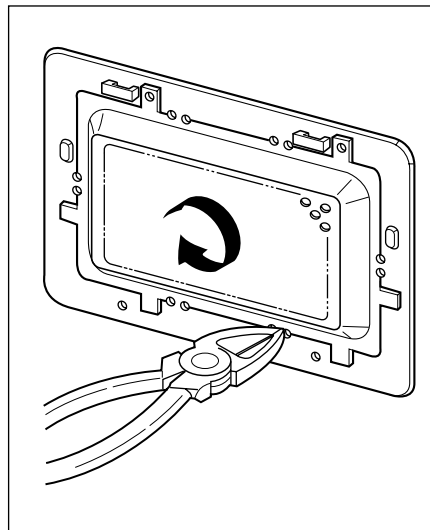


Fig. 20

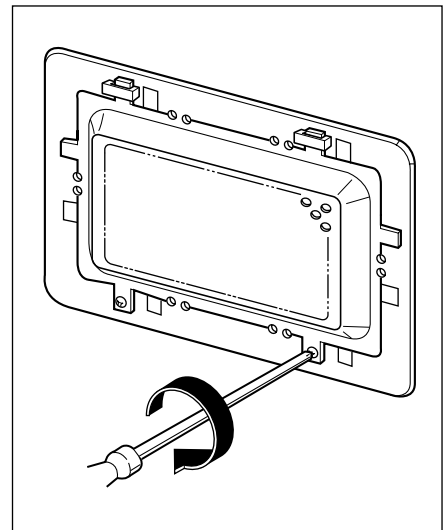


Fig. 21

I. REMOVING CIRCULATION MOTOR (FIG. 22)

- (1) Disconnect the wire leads from the circulation motor terminal.
- (2) Remove the screws securing the supporter bracket, insulator-R and the chamber gross assembly to the oven cavity.
- (3) To remove the chamber gross assembly, lift the chamber gross assembly up.
- (4) Remove one hex nut securing the circulation fan to shaft of the circulation motor.
- (5) Remove three screws securing the motor bracket to the chamber.
- (6) Remove two hex nuts securing the circulation motor to the motor bracket.

J. REMOVING CONVECTION HEATER AND THERMISTOR (FIG. 22)

CONVECTION HEATER

- (1) Follow section I, step 1-3.
- (2) Remove three screws securing the chamber wall to the chamber.
- (3) Remove two screws securing the convection heater to the chamber.
- (4) Pull out the convection heater diagonally with it pursed by both sides from the C-Heater hanger.

THERMISTOR

- (1) Follow section I, step 1-3.
- (2) Pull up the thermistor.

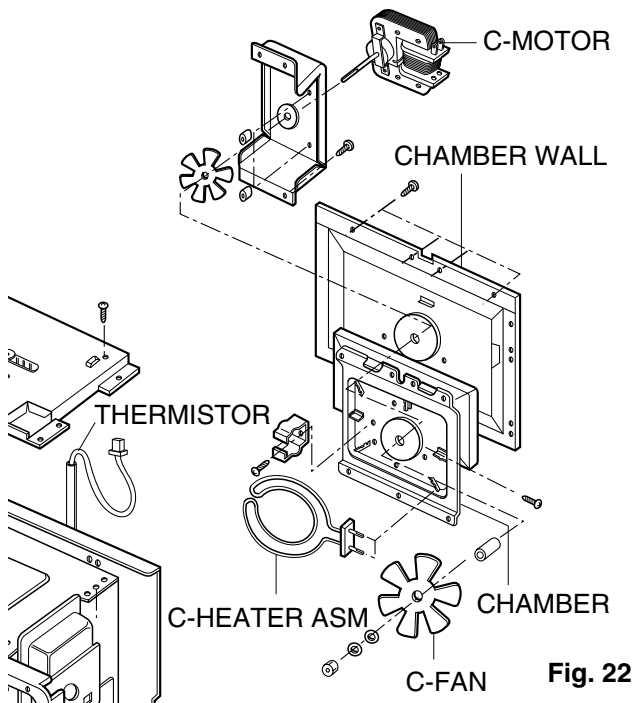


Fig. 22

K. REMOVING PRIMARY INTERLOCK SWITCH (FIG. 23)

- (1) After removing the complete control pane assembly, disconnect the wire leads from the switches.
- (2) Remove two screws holding the latch board-U to the front plate flange.
- (3) Remove the latch board-U from the flange by moving it upward and push outward.
- (4) Remove one screw securing primary switch to the latch board-U.
- (5) Remove the switch from the latch board-U.

L. REMOVING SECONDARY INTERLOCK SWITCH, MONITOR SWITCH AND OVEN LAMP SWITCH (FIG. 23)

- (1) Disconnect the wire leads from the switches.
- (2) Remove two screws holding the latch board-L to the front plate flange.
- (3) Remove the latch board-L from the flange by moving it upward and push outward.
- (4) Remove the individual switch from the latch board-L by removing two screws.

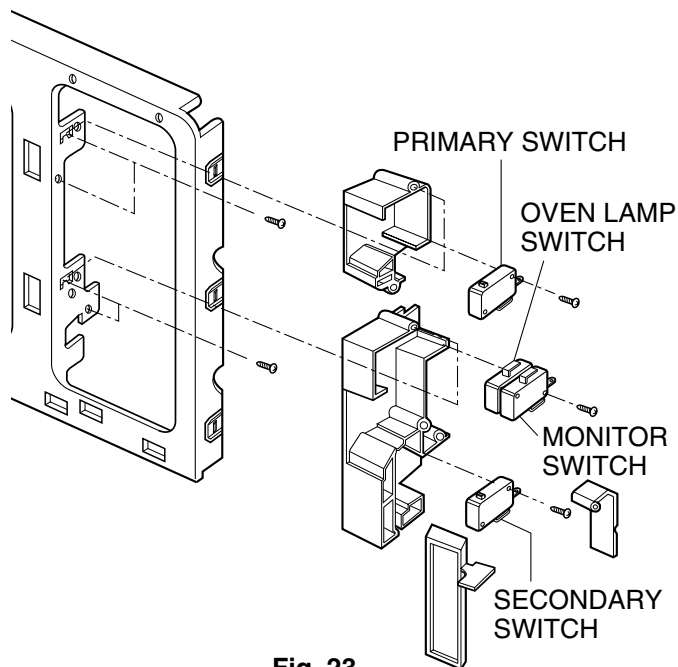


Fig. 23

TROUBLESHOOTING

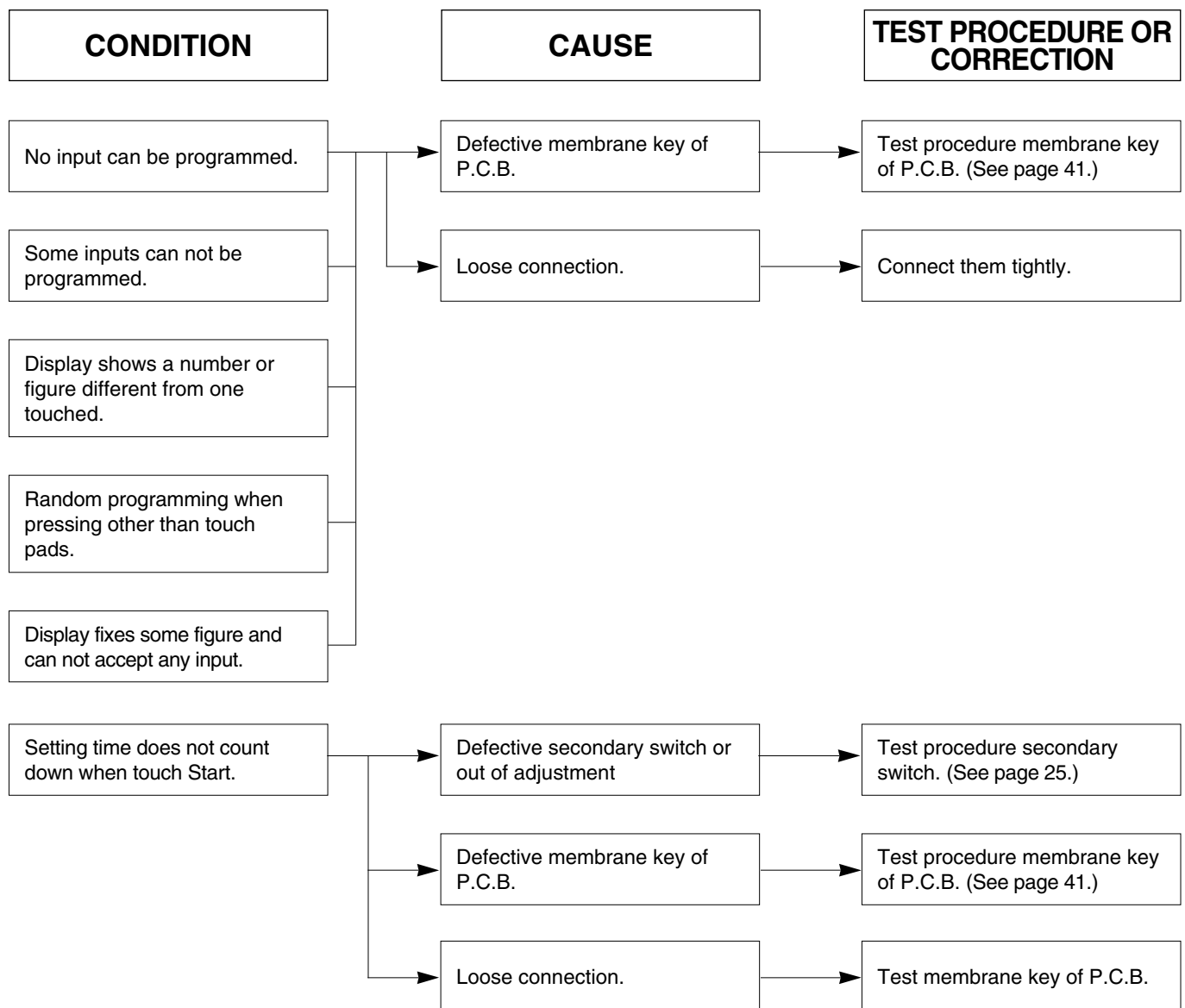
- CAUTION:**
 1. Check grounding before checking for other trouble.
 2. Be careful of the high voltage circuit.
 3. When checking the continuity of the switches or transformer, disconnect one lead wire from these parts and then check continuity without turning the power source on.
 4. Do not touch any part of the circuitry on the control circuit board, since electrostatic discharge may damage this control circuit.
Always touch yourself to ground while working on this circuit to discharge any static charge built up in your body.
 5. First operate the microwave oven following the correct operating procedures.
 6. If the oven becomes inoperative because of a fuse, check the primary, the secondary and the monitor switches, before replacing the fuse.

CONDITION	CAUSE	TEST PROCEDURE OR CORRECTION
OFF CONDITION		
The fuse opens when power cord is plugged into wall receptacle.	Shorted wire in power cord or wire harness.	Replace power cord or check and repair wire harness.
	Defective monitor switch or out of adjustment.	Test procedure monitor switch. (See page 25.)
":0"does not appear in display window when power cord is first plugged into wall outlet.	Microwave oven plug is not inserted tightly.	Insert microwave oven plug securely.
	No power at outlet.	Check home fuse.
	Open fuse.	Perform fuse test procedure (See page 39.)
	Open wire in power cord, wiring harness, or wiring between control panel assembly units.	Replace or repair wiring.
Display does not operate properly when Clock is touched.	Defective membrane key of P.C.B.	Test procedure membrane key of P.C.B. (See page 41.)

CONDITION	CAUSE	TEST PROCEDURE OR CORRECTION
Oven light does not light with door opened.	No power in home.	Check wall outlet.
	Open wire in power cord or wire harness.	Replace or repair wiring.
	Defective oven lamp switch or out of adjustment.	Test procedure oven lamp switch. (See page 38.)
	Defective oven light.	Replace.
	Open or loose wire connection to the above components.	Check wiring.
	Blown fuse or Oven light.	Test procedure fuse. (See page 39.)

COOKING CONDITION

Oven light does not light in cook cycle. (Oven light lights when door is opened.)	Defective relay 3 of P.C.B.	Test procedure relay 3 of P.C.B. (See page 40.)
Oven light lights, but turntable motor does not operate.	Defective primary switch or out of adjustment	Test procedure primary switch (See page 25.)
	Defective turntable motor.	Test procedure turntable motor. (See page 38.)
	Open wiring of turntable motor.	Check connector and repair wiring.
Turntable motor operates normally but circulation motor does not operate.	Defective relay 4 of P.C.B.	Test procedure relay 4 of P.C.B. (See page 40.)
	Defective circulation motor.	Test procedure circulation motor. (See page 38.)
	Open or loose wiring to the circulation motor.	Check and repair wiring. Check receptacles of wire.
Turntable drags or makes noise.	Excessive weight on tray or improperly balanced.	Distribute food evenly, cook smaller portions and/or use lighter weight cookware.



CONDITION	CAUSE	TEST PROCEDURE OR CORRECTION
MICROWAVE		
Oven does not go into a cook cycle when Start pad is touched.	Primary and/or secondary interlock switches defective or out of adjustment.	Test procedure primary and secondary switches. (See page 25.)
	Defective relay 1 of P.C.B.	Test procedure relay 1 of P.C.B. (See page 40.)
	Defective membrane key of P.C.B.	Test procedure membrane key of P.C.B. (See page 41.)
	Open or loose wiring to above components.	Check and repair wiring.
Output power is too low.	Defective fan motor.	Test procedure fan motor. (See page 38.)
	Low AC input voltage.	Use the microwave oven at adequate line voltage.
	Food temperature is too low.	This may not be a defect. It is possible that the food should be cooked for a longer time period.
	Defective relay 1 or 3 of P.C.B.	Test procedure relay 1 and 3 of P.C.B. (See page 40.)
Output is too high when you set lower power level.	Defective relay 1 of P.C.B.	Test procedure relay 1 of P.C.B. (See page 40.)
	High AC input voltage.	Use the microwave oven at adequate line voltage.
Sparks occurring.	Using metallic ware and allowing it to touch the oven wall.	Do not use metallic ware for cooking, except where noted in the cookbook.
	Ceramic ware trimmed in gold or silver powder is used.	Do not use any type of cookware with metallic trimming.
Uneven cooking.	Inconsistent intensity of microwave due to their characteristics.	1. Wrap the thinner food with aluminum foil. 2. Use plastic wrap or with a lid. 3. Stir once or twice while cooking soup, cocoa or milk etc.
	Food does not turn during cooking cycle.	Food or cookware extending oven edges of turntable prevents turning; rearrange food.
	Turntable motor does not operate.	Refer to preceding turntable motor problem.

CONDITION	CAUSE	TEST PROCEDURE OR CORRECTION
No microwave oscillation.	Child Lock is set.	This is not a defect. Touch "0" key pad till a beep sounds. (See page 14.)
	Defective relay 1 of P.C.B.	Test procedure relay 1 of P.C.B. (See page 40.)
	Defective high voltage transformer.	Test procedure high voltage transformer. (See page 36.)
	Defective high voltage capacitor.	Test procedure high voltage capacitor. (See page 37.)
	Defective high voltage diode.	Test procedure high voltage diode. (See page 36.)
	Defective magnetron.	Test procedure magnetron. (See page 36.)
	Low AC input voltage.	Use the microwave oven at adequate line voltage.
	Open or loose wiring to above components.	Check and repair wiring.
Oven operates properly on P-HI but does not cook properly using another cooking power.	Defective relay 1 of P.C.B.	Test procedure relay 1 of P.C.B. (See page 40.)
	Defective membrane key of P.C.B.	Test procedure membrane key of P.C.B. (See page 41.)

CONDITION	CAUSE	TEST PROCEDURE OR CORRECTION
CONVECTION		
CONV. indicator lights, but oven does not go into cook cycle when START pad is touched.	Child Lock is set.	This is not a defect. Touch "0" key pad till a beep sounds. (See page 14.)
	Defective relay 2 of P.C.B.	Test procedure relay 2 of P.C.B. (See page 40.)
	Defective thermistor.	Test procedure thermistor. (See page 40.)
	Open or loose wire connection to the above components.	Check and repair wiring.
	Open or loose connection to P.C.B.	Check and repair wiring.
Temperature in the oven cavity is lower or higher than preset.	Defective relay 4 or 2 of P.C.B.	Test procedure relay 4 and 2 of P.C.B. (See page 40.)
	Defective convection heater element.	Test procedure convection heater. (See page 39.)
	Defective thermistor.	Test procedure thermistor. (See page 40.)
	Defective circulation motor.	Test procedure circulation motor. (See page 38.)
	Defective drive mechanism of circulation fan.	Check and repair.
	Defective Solenoid.	Test procedure solenoid. (See page 39.)
	Defective air duct assembly.	Check and repair.

NOTE : • MAKE SURE THE WIRE LEADS CORRECTLY POSITIONED.

- WHEN REMOVING THE WIRE LEADS FROM THE PARTS, BE SURE TO GRASP THE CONNECTOR, AND NOT THE WIRES.
- WHEN REMOVING THE MAGNETRON, BE SURE TO INSTALL THE MAGNETRON GASKET IN THE CORRECT POSITION AND GOOD CONDITION.

COMPONENT TEST PROCEDURE

CAUTIONS

1. DISCONNECT THE POWER SUPPLY CORD FROM THE WALL OUTLET WHENEVER REMOVING THE OUT CASE FROM THE UNIT. PROCEED WITH THE TEST ONLY AFTER DISCHARGING THE HIGH VOLTAGE CAPACITOR AND REMOVING THE WIRE LEADS FROM THE PRIMARY WINDING OF THE HIGH VOLTAGE TRANSFORMER. (SEE FIGURE 24)
2. ALL OPERATIONAL CHECKS WITH MICROWAVE ENERGY MUST BE DONE WITH A LOAD (1 LITER OF WATER IN A BEAKER) IN THE OVEN.

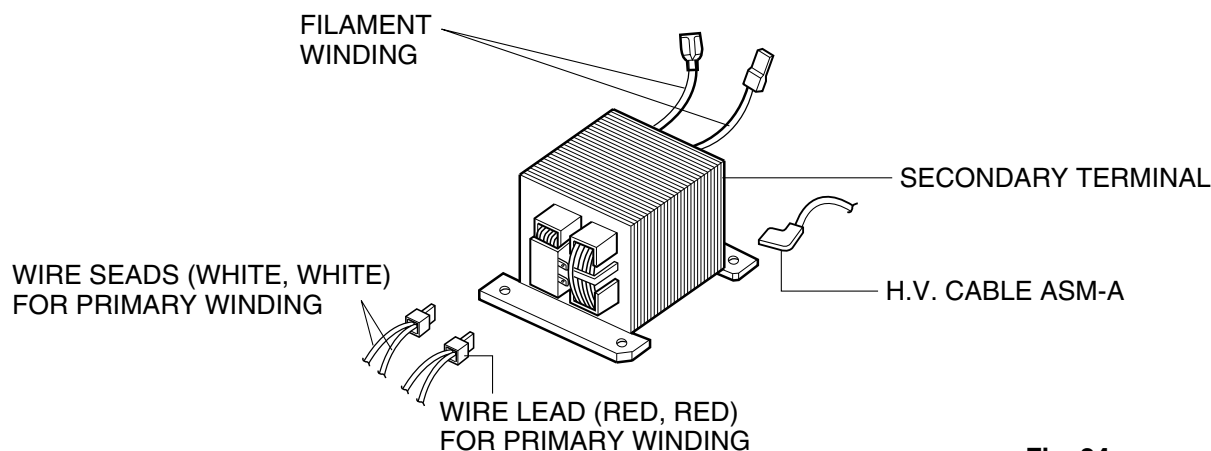
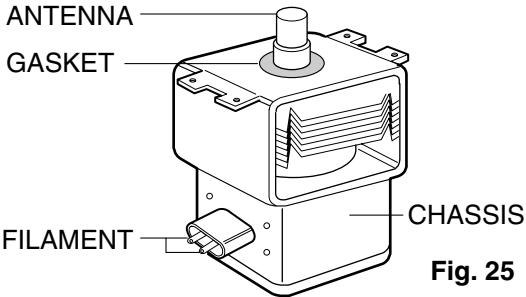
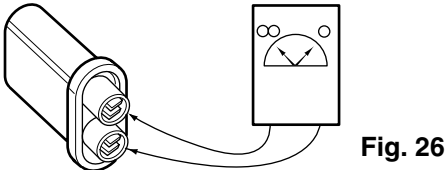
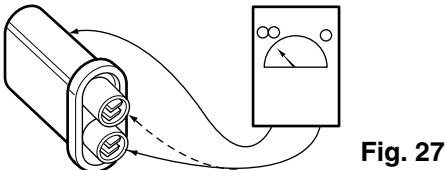
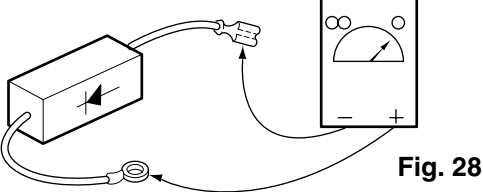
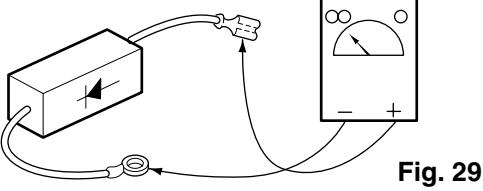
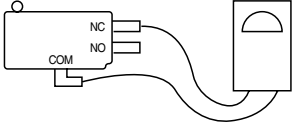
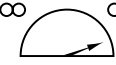
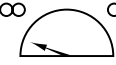
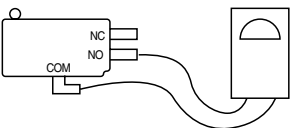

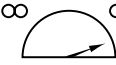
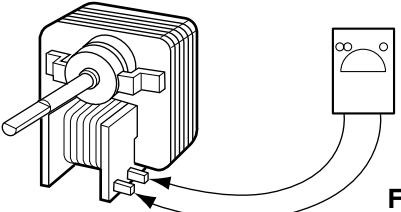
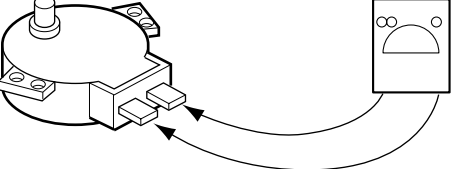
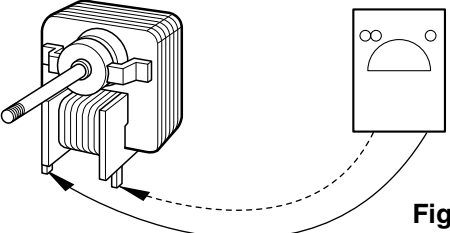


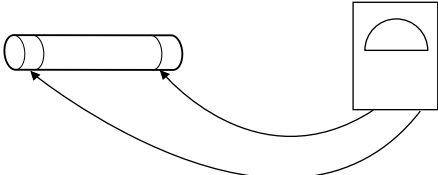


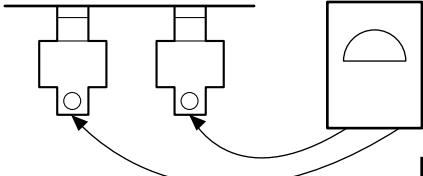
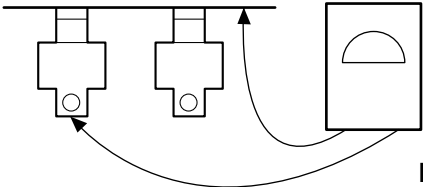
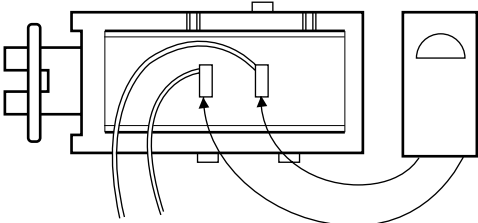
Fig. 24

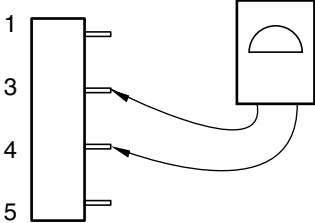


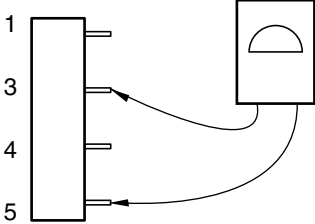

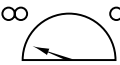
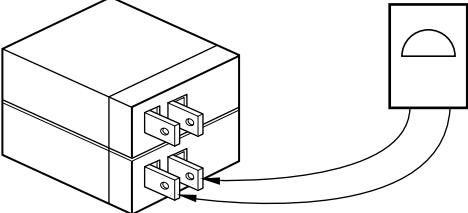


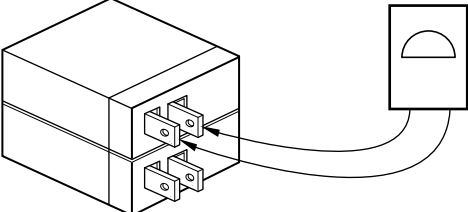


• TEST PROCEDURE

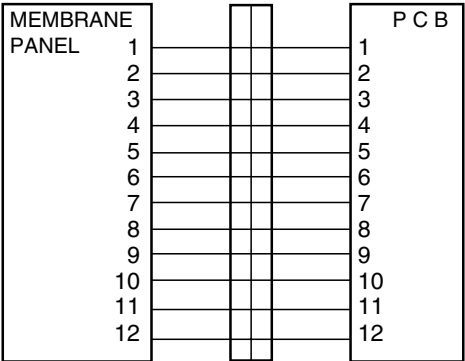
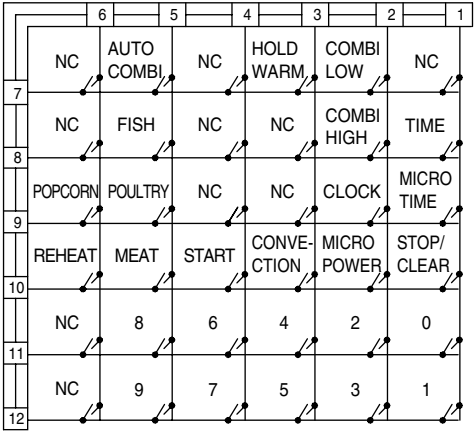
COMPONENTS	TEST PROCEDURE	RESULTS
HIGH VOLTAGE TRANSFORMER (Wire leads removed)	<p>See Fig 24.</p> <ol style="list-style-type: none"> 1. Measure the resistance. (Ohm-meter scale: R x 1) <ul style="list-style-type: none"> • Primary winding • Secondary winding • Filament winding 2. Measure the resistance. (Ohm-meter scale: R x 1000) <ul style="list-style-type: none"> • Primary winding to ground • Filament winding to ground 	<p>Approx.: 0.37 ohm (at 20 °C) Approx.: 90 ohm (at 20 °C) Less than: 0.9 ohm</p> <p>Normal: Infinite Normal: Infinite</p>
MAGNETRON (Wire leads removed)	<p>See Fig 25.</p> <ol style="list-style-type: none"> 1. Measure the resistance. (Ohm-meter scale: R x 1) <ul style="list-style-type: none"> • Filament terminal 2. Measure the resistance. (Ohm-meter scale: R x 1000) <ul style="list-style-type: none"> • Filament to chassis 	<p>Normal: Less than 1 ohm</p> <p>Normal: Infinite</p>

COMPONENTS	TEST PROCEDURE	RESULTS
	<div data-bbox="540 342 1062 640">  <p>Fig. 25</p> </div> <p data-bbox="540 655 1463 719">NOTE: When testing the magnetron, be sure to install the magnetron gasket in the correct position and be sure that the gasket is in good condition.</p>	
HIGH VOLTAGE CAPACITOR	<p data-bbox="557 753 886 846">Measure the resistance. (Ohm-meter scale: Rx1000) • Terminal to terminal.</p> <div data-bbox="609 857 1052 1027">  <p>Fig. 26</p> </div>	Normal: Momentary indicates several ohms, and then gradually returns to infinite.
	<p data-bbox="557 1059 886 1153">Measure the resistance. (Ohm-meter scale: Rx1000) • Terminal to case.</p> <div data-bbox="609 1164 1052 1334">  <p>Fig. 27</p> </div>	Normal: Infinite.
HIGH VOLTAGE DIODE	<p data-bbox="557 1378 954 1451">Measure the continuity (Forward). (Ohm-meter scale: Rx1000)</p> <div data-bbox="573 1461 1052 1653">  <p>Fig. 28</p> </div>	Normal: Continuity. Abnormal: Infinite.
	<p data-bbox="557 1685 954 1757">Measure the continuity (Reverse). (Ohm-meter scale: Rx1000)</p> <div data-bbox="573 1768 1052 1959">  <p>Fig. 29</p> </div>	Normal: Infinite. Abnormal: Continuity.

COMPONENTS	TEST PROCEDURE	RESULTS	
OVEN LAMP SWITCH (Wire leads removed.)	Check for continuity of the switch with an Ohm-meter	Door open	Door close
			
			
NOTE: After checking for the continuity of switches, make sure that they are correctly connected.			
FAN MOTOR (Wire leads removed.)	Measure the resistance. (Ohm-meter scale: Rx1)  Fig. 30	Normal: Approx. 51 ohm. Abnormal: Infinite or Several ohms.	
TURNTABLE MOTOR (Wire leads removed.)	Measure the resistance. (Ohm-meter scale: Rx1000)  Fig. 31	Normal: Approx. 2800 ohm. Abnormal: Infinite or Several ohms.	
CIRCULATION MOTOR (Wire leads removed.)	Measure the resistance. (Ohm-meter scale: Rx1)  Fig. 32	Normal: Approx. 26 ohm. Abnormal: Infinite or Several ohms.	

COMPONENTS	TEST PROCEDURE	RESULTS	
FUSE	Check for continuity of the fuse with an Ohm-meter	Normal	Abnormal
	<div></div> <div>Fig. 33</div>	<div></div>	<div></div>
	<p>NOTE: If the fuse is blown, check the primary, the secondary, and the monitor switches before replacing the fuse. (Refer to Test Procedure Switches on page 25.) If the fuse is blown by improper switch operation replace the defective switch and the fuse at the same time. Replace just the fuse if the switches operate normally.</p>		
HEATER ELEMENT (Wire leads removed.)	Measure the resistance. (Ohm-meter scale: Rx1)	Normal: Approx. 9.3 ohm. (at 20~30°C)	
	<div></div> <div>Fig. 34</div>		
	Measure the resistance with 500V-100M Ohm insulation resistance meter.	Normal: more than 0.5 M ohm.	
	<div></div> <div>Fig. 35</div>		
	<p>NOTE: Make sure heater is fully cooled when tested.</p>		
SOLENOID	<div></div> <div>Fig. 36</div>	Normal: Approx. 2200 ohm. Abnormal: Infinite or Several ohms.	

COMPONENTS	TEST PROCEDURE	RESULTS	
Relay 3 of P.C.B. (Disconnect the 5 pin connector from P.C.B.)	 <p>Fig. 37</p>	Micro Power Cooking Start	OFF
			
Relay 4 of P.C.B. (Disconnect the 5 pin connector from P.C.B.)	 <p>Fig. 38</p>	Convection Cooking Start	OFF
			
Relay 3 of P.C.B. (Wire leads removed.)	 <p>Fig. 39</p>	Micro Power Cooking Start	OFF
			
Relay 4 of P.C.B. (Wire leads removed.)	 <p>Fig. 40</p>	Convection Cooking Start	OFF
			

COMPONENTS	TEST PROCEDURE	RESULTS
Membrane key	 <p>CONNECTOR KEY MATRIX</p>  <p>Fig. 41</p>	<p>Check continuity between switch terminals, by pressing an appropriate pad on the key board.</p> <p>The contacts assignment of the respective pads on the key board is as shown left figures.</p>

- NOTE :**
- A MICROWAVE ENERGY LEAKAGE TEST MUST ALWAYS BE PERFORMED WHEN THE UNIT IS SERVICED FOR ANY REASON.
 - MAKE SURE THE WIRE LEADS ARE CORRECT POSITION.
 - WHEN REMOVING THE WIRE LEAD FROM THE PARTS, BE SURE TO GRASP THE CONNECTOR, NOT THE WIRES.

PROCEDURE FOR MEASURING MICROWAVE ENERGY LEAKAGE

CAUTIONS

- Be sure to check a microwave emission prior to servicing the oven if the oven is operative prior to servicing.
- The service personnel should inform the manufacturer, importer, or assembler of any certified oven unit found to have a microwave emission level in excess of 4 mW/cm^2 and should repair any unit found to have excessive emission levels at no cost to the owner and should ascertain the cause of the excessive leakage. The service personnel should instruct the owner not to use the unit until the oven has been brought into compliance.
- If the oven operates with door open, the service personnel should;
 - Tell the user not to operate the oven.
 - Contact the manufacturer and CDRH (Center for Devices and Radiological Health) immediately.

NOTE: Address on CDRH:

Office of Compliance (HFZ-312)

Center for Devices and Radiological Health

1390, Piccard Drive,

Rockville, Maryland 20850

- The service personnel should check all surface and vent openings for microwave emission testing.
- Check for microwave energy leakage after every servicing. The power density of the microwave radiation leakage emitted by the microwave oven should not exceed 2 mW/cm^2 .

And always start measuring of an unknown field to assure safety for operating personnel from radiation leakage.

NOTE: The standard is 4 mW/cm^2 while in the customer's home. 2 mW/cm^2 stated here is manufacturer's own voluntary standard for units in customer's home.

EQUIPMENT

- Electromagnetic energy leakage monitor (NARDA 8100B, HOLADAY HI-1501)
- 600 cc glass beaker
- Glass thermometer 100°C or 212°F

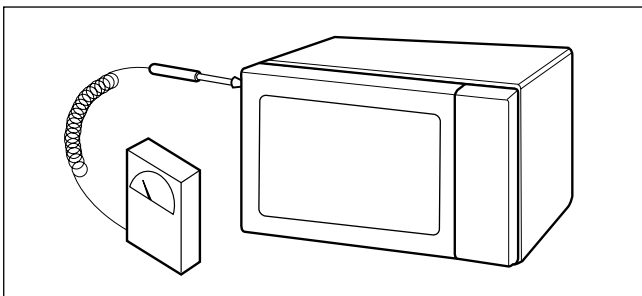


Fig. 42

MEASURING MICROWAVE ENERGY LEAKAGE

- POUR $275 \pm 15 \text{ cc}$ of $20 \pm 5^\circ\text{C}$, $68 \pm 9^\circ\text{F}$ water in a beaker which is graduated to 600 cc, and place the beaker in the center of the oven.
- Set the energy leakage monitor to 2,450 MHz and use it following the manufacturer's recommended test procedure to assure correct result.
- When measuring the leakage, always use the 2 inch (5cm) spacer supplied with the probe.
- Operate the oven at its maximum output.
- Measure the microwave radiation using an electromagnetic radiation monitor by holding the probe perpendicular to the surface being measured.

Move probe along shaded area

Probe scanning speed

Less than 2.0 cm/sec

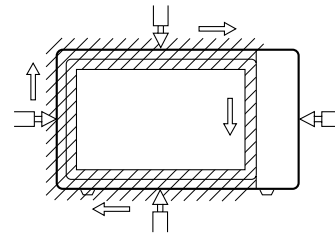


Fig. 43

MEASUREMENT WITH THE OUTER CASE REMOVED

- When you replace the magnetron, measure microwave energy leakage before the outer case is installed and after all necessary components are replaced or adjusted.

Special care should be taken in measuring the following parts.

- Around the magnetron
- The waveguide

WARNING : AVOID CONTACTING ANY HIGH VOLTAGE PARTS

MEASUREMENT WITH A FULLY ASSEMBLED OVEN

- After all components, including the outer case are fully assembled, measure for microwave energy leakage around the door viewing window, the exhaust opening and air inlet openings.
- Microwave energy leakage must not exceed the values prescribed below.

NOTES:

Leakage with the out case removed - less than 4 mW/cm².sq.

Leakage for a fully assembled oven ("Before the latch switch (primary) interrupted") with the door in a slightly opened position-less than 2 mW/cm².sq.

NOTE WHEN MEASURING

- Do not exceed meter full scale deflection.
- The test probe must be removed no faster than 1 inch/sec (2.0 cm/sec) along the shaded, otherwise a false reading may result.
- The test probe must be held with the grip portion of the handle.
A false reading may result if the operator's hand is between the handle and the probe.
- When testing near a corner of the door, keep the probe perpendicular to the surface making sure the probe horizontally along the oven surface, this may possibly cause probe damage.
- When high leakage is suspected, do not move the probe horizontally along the oven surface, this may possibly cause damage.

RECORD KEEPING AND NOTIFICATION AFTER MEASUREMENT

- After adjustment and repair of any microwave energy interruption or microwave energy blocking device, record the measured values for future reference. Also enter the information on the service invoice.
- Should the microwave energy leakage not be more than 2 mW/cm².sq. after determining that all parts are in good condition, functioning properly and genuine replacement parts which are listed in this manual have been used.
- At least once a year, have the electromagnetic energy leakage monitor checked for calibration by its manufacturer.

DETERMINATION OF MEASUREMENT OF MICROWAVE POWER OUTPUT

- Microwave power output measurement is made with the microwave oven supplied at its rated voltage and operated at its maximum microwave power setting with a load of (1000 ± 5) cc potable water.
- The water is contained in a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190 mm.
- The oven and the empty vessel are at ambient temperature prior to the start of the test.
- The initial temperature of the water is (10±2)°C. It is measured immediately before the water is added to the vessel. After addition of the water to the vessel, the load is immediately placed on the center of the Glass Tray which is in the lowest position and the microwave power switched on.
- The time T for the temperature of the water to rise by a value ΔT of (10±2) K is measured, where T is the time in seconds and ΔT is the temperature rise. The initial and final water temperatures are selected so that the maximum difference between the final water temperature and the ambient temperature is 5°K.
- The microwave power output P in watts is calculated from the following formula:

$$P = \frac{4187 \times (\Delta T) + 0.55 \times (T_2 - T_0) \times M}{T}$$

- T₂ : Temperature after heating
- T₀ : Temperature of bowl
- M : Weight of bowl

is measured while the microwave generator is operating at full power. Magnetron filament heat-up time is not included.

- The water is stirred to equalize temperature throughout the vessel, prior to measuring the final water temperature.
- Stirring devices and measuring instruments are selected in order to minimize addition or removal of heat.

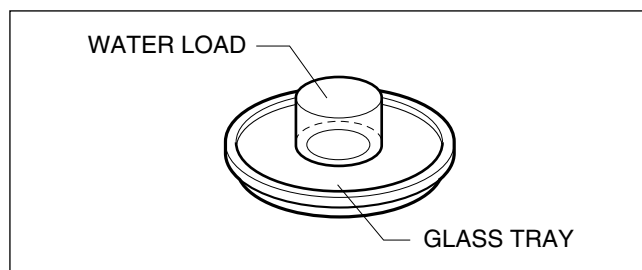
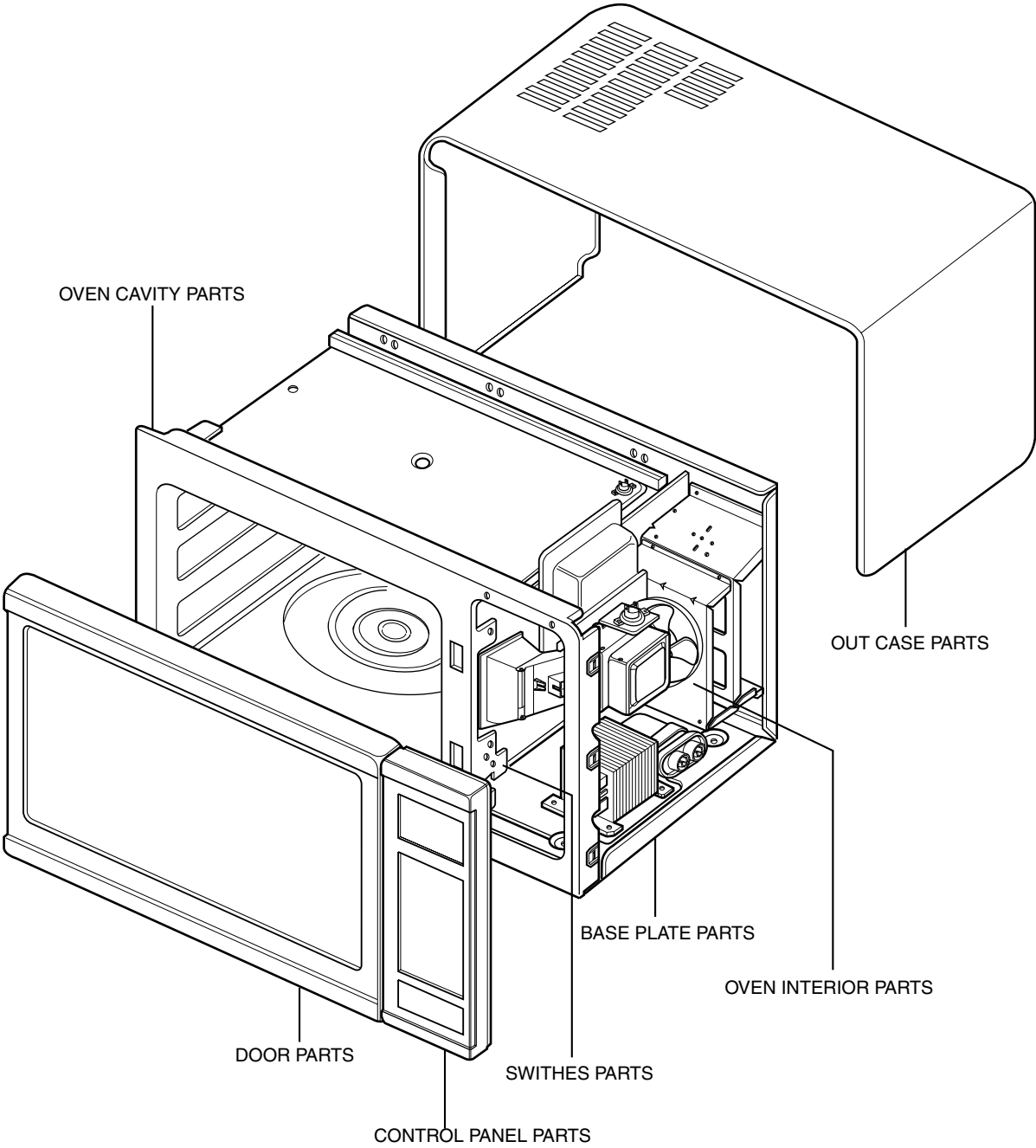


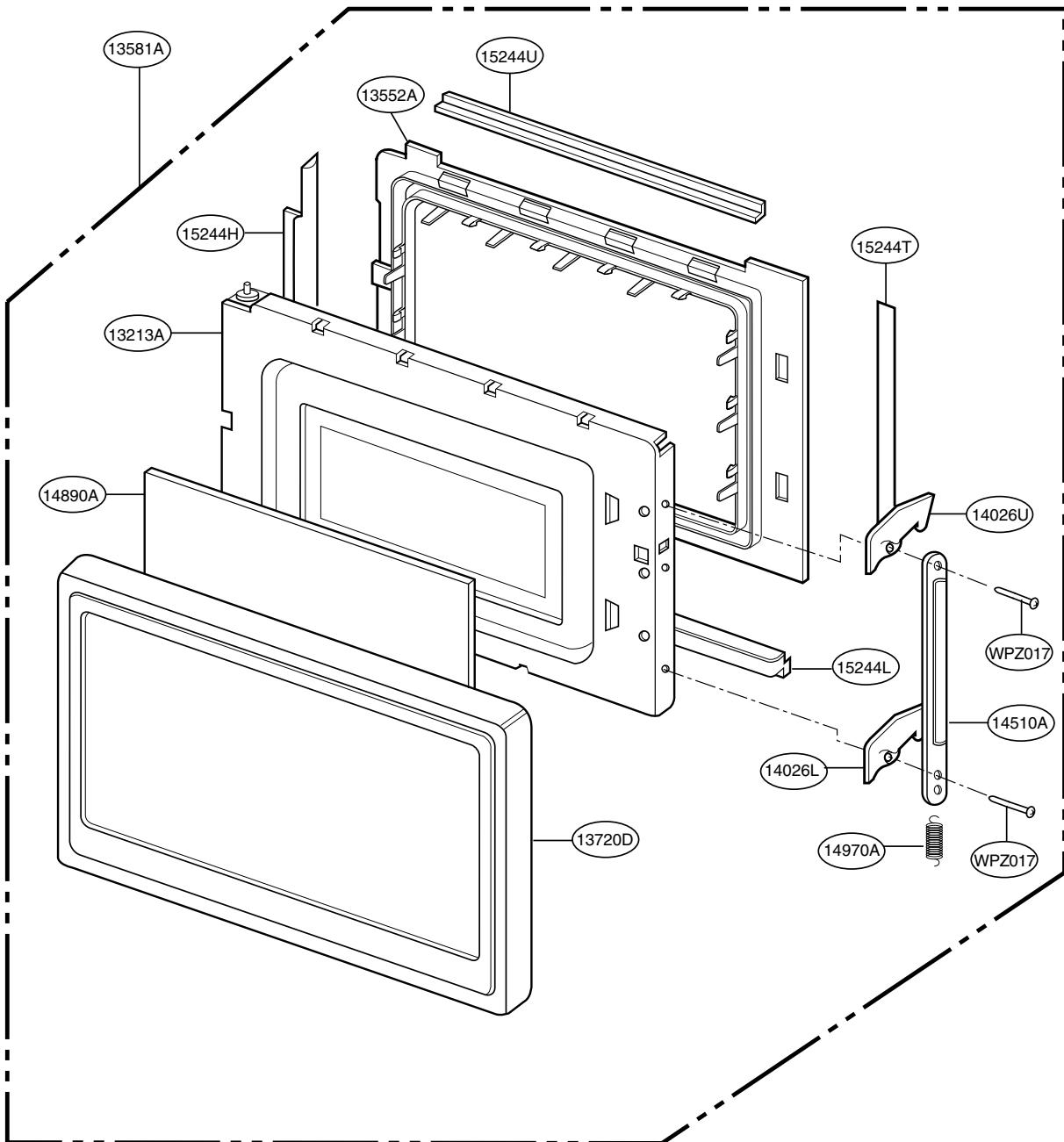
Fig. 44

EXPLODED VIEW AND PARTS LIST

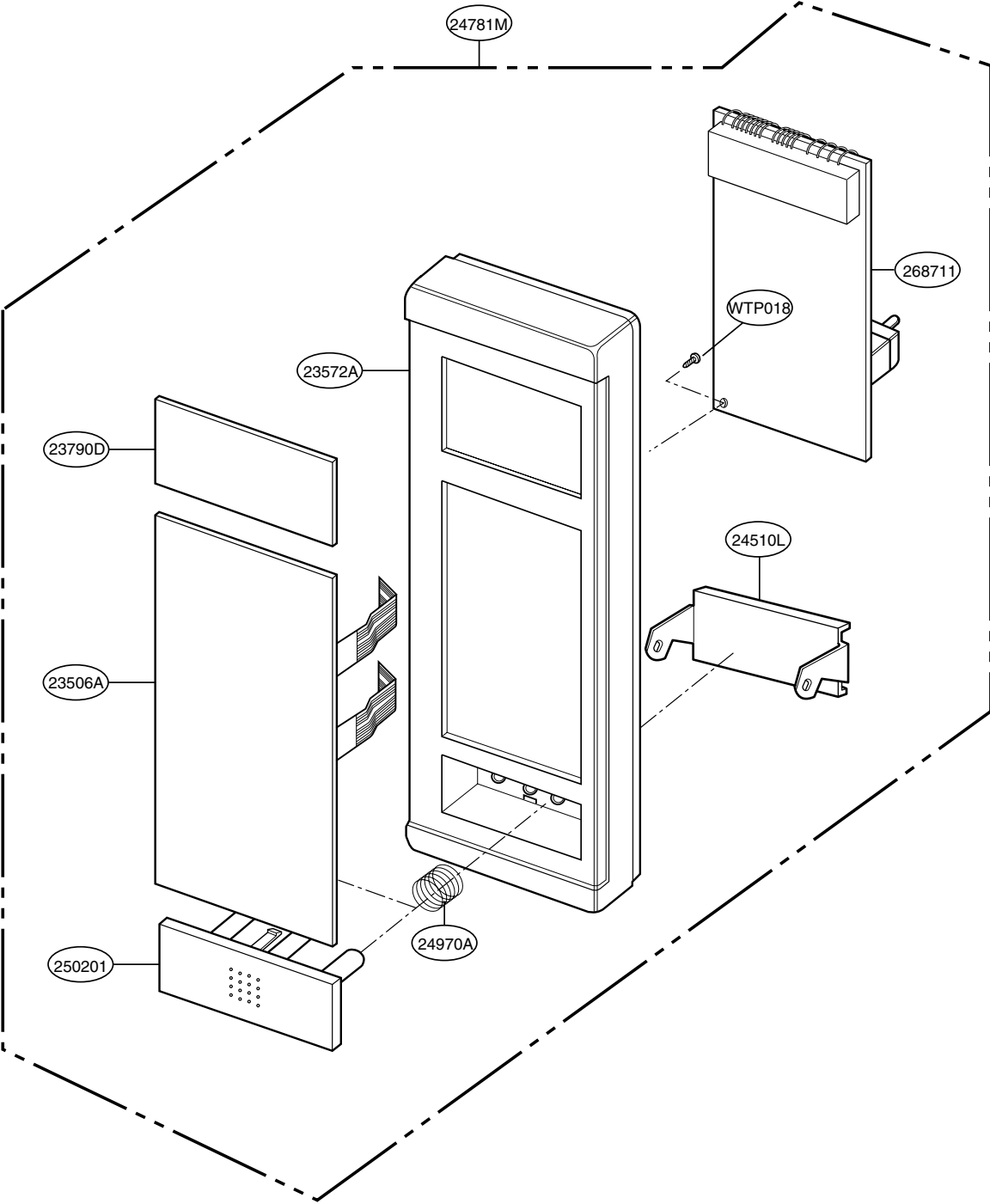
INTRODUCTION



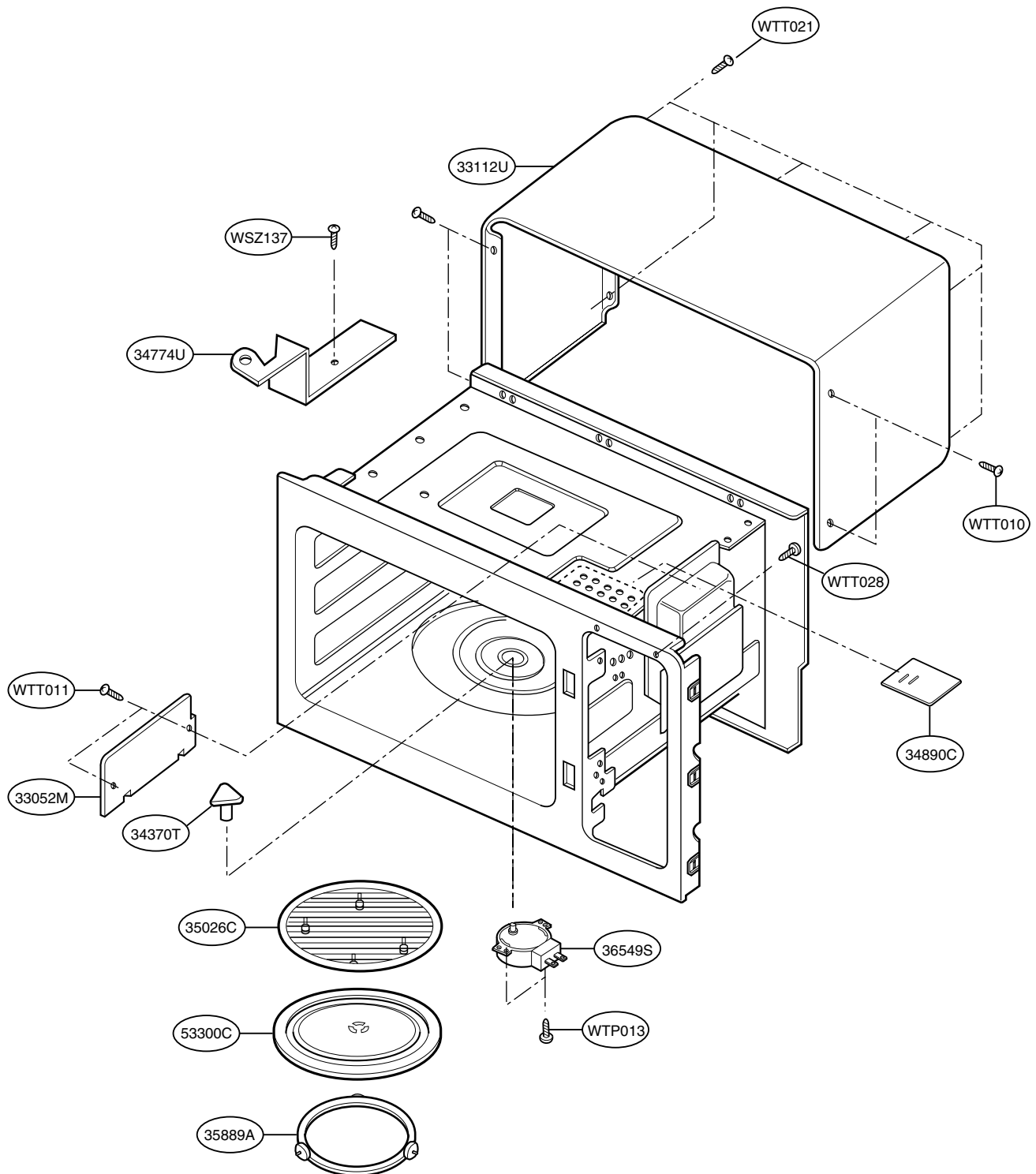
1 DOOR PARTS



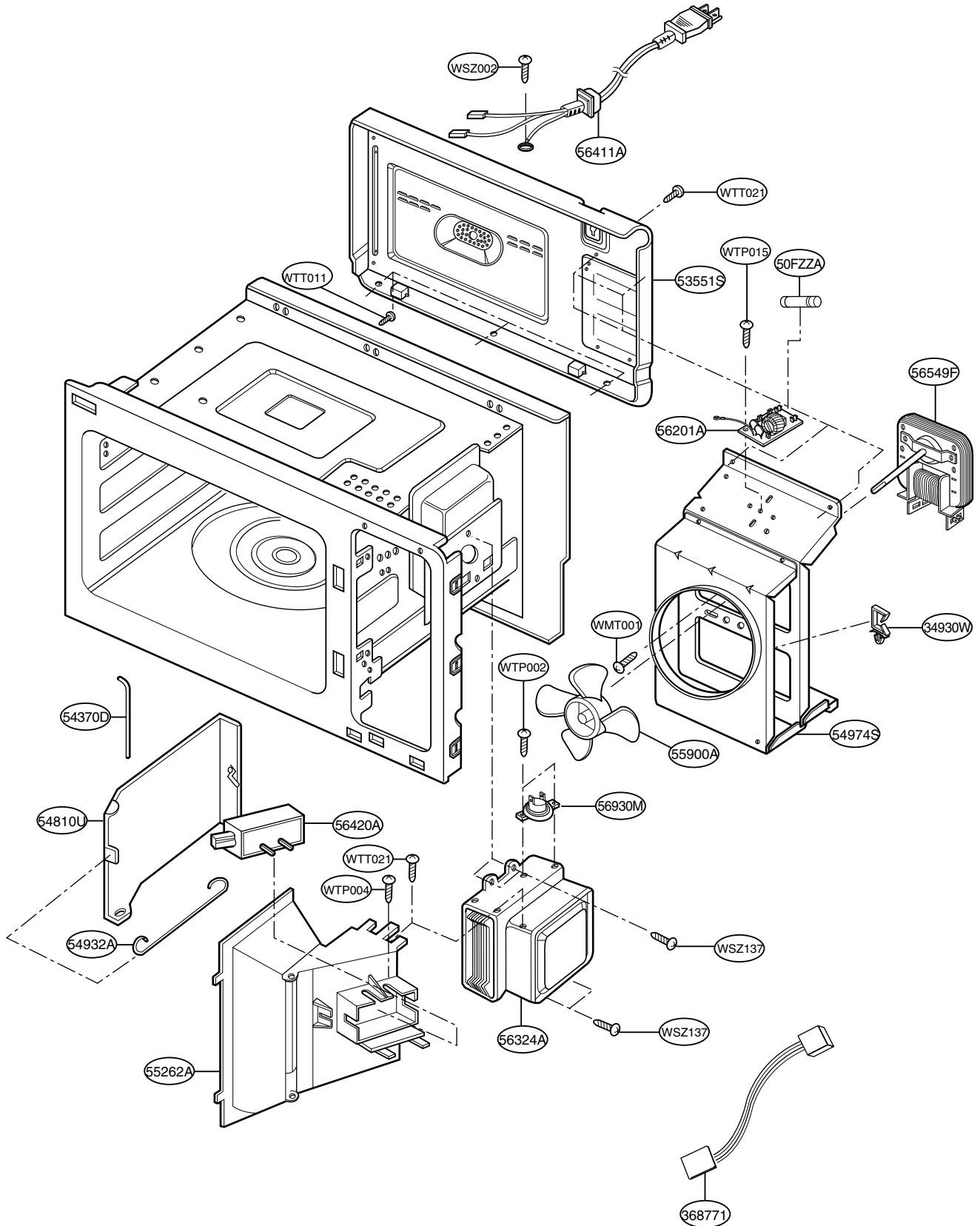
2 CONTROL PANEL PARTS



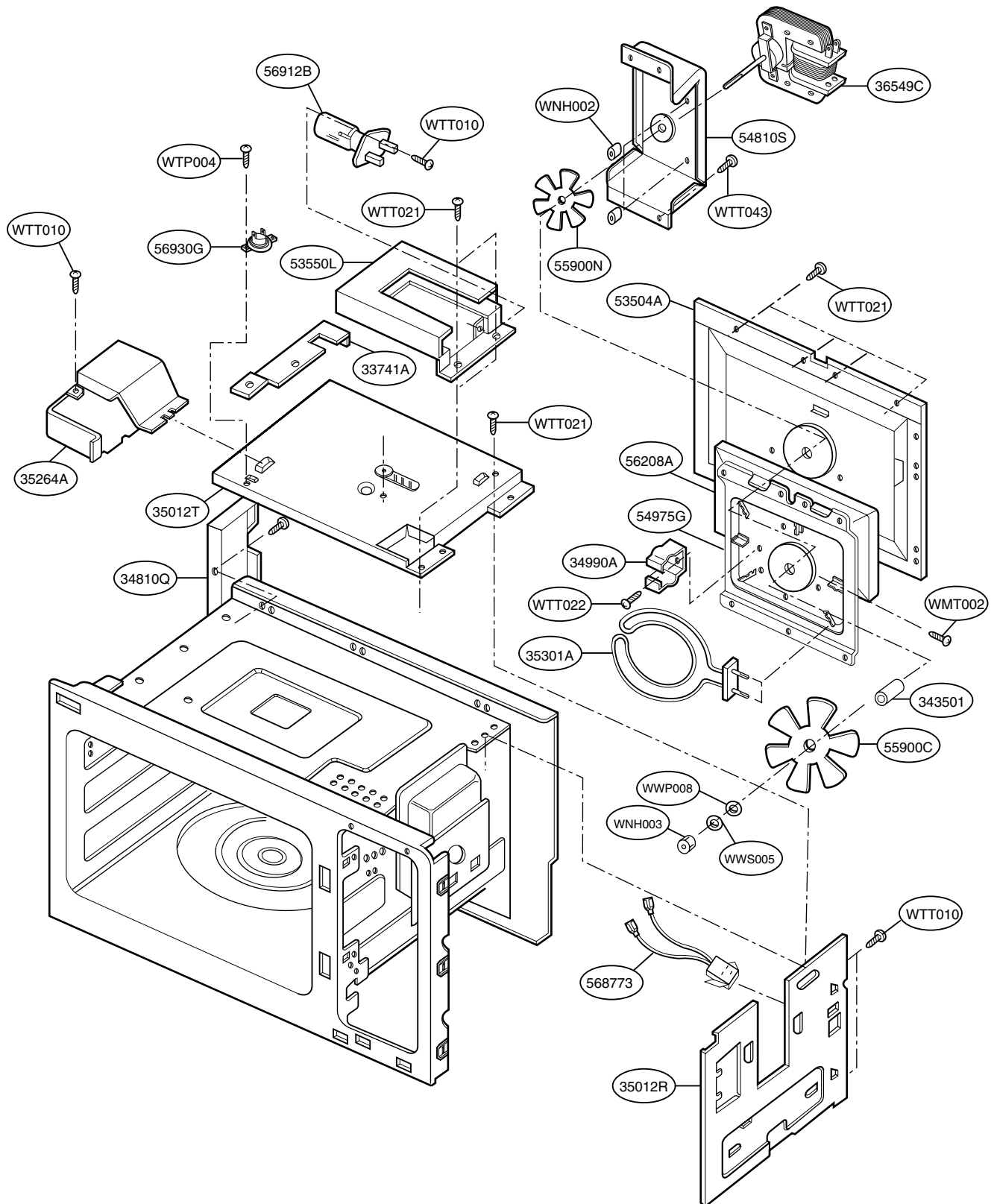
3. OVEN CAVITY PARTS



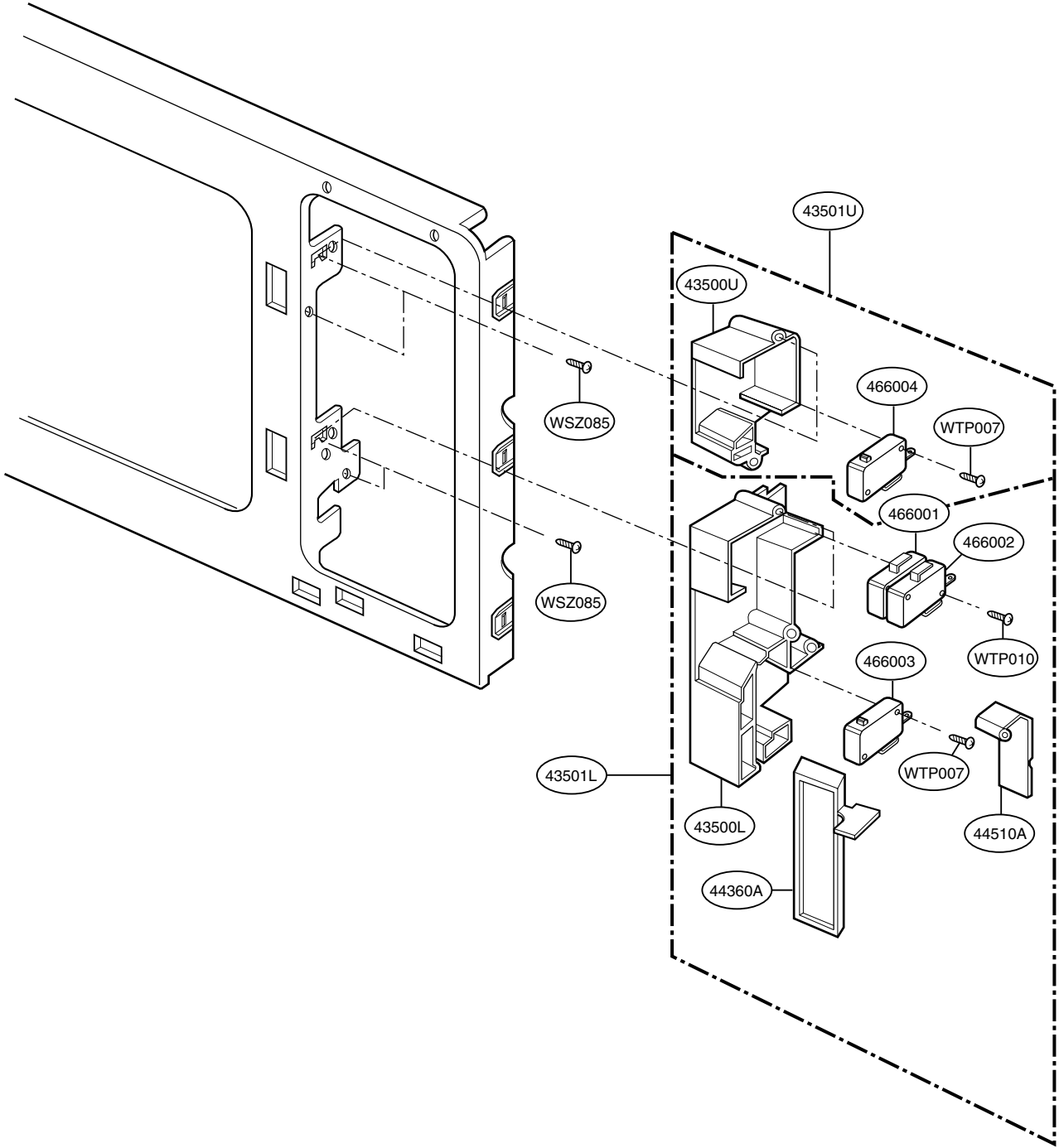
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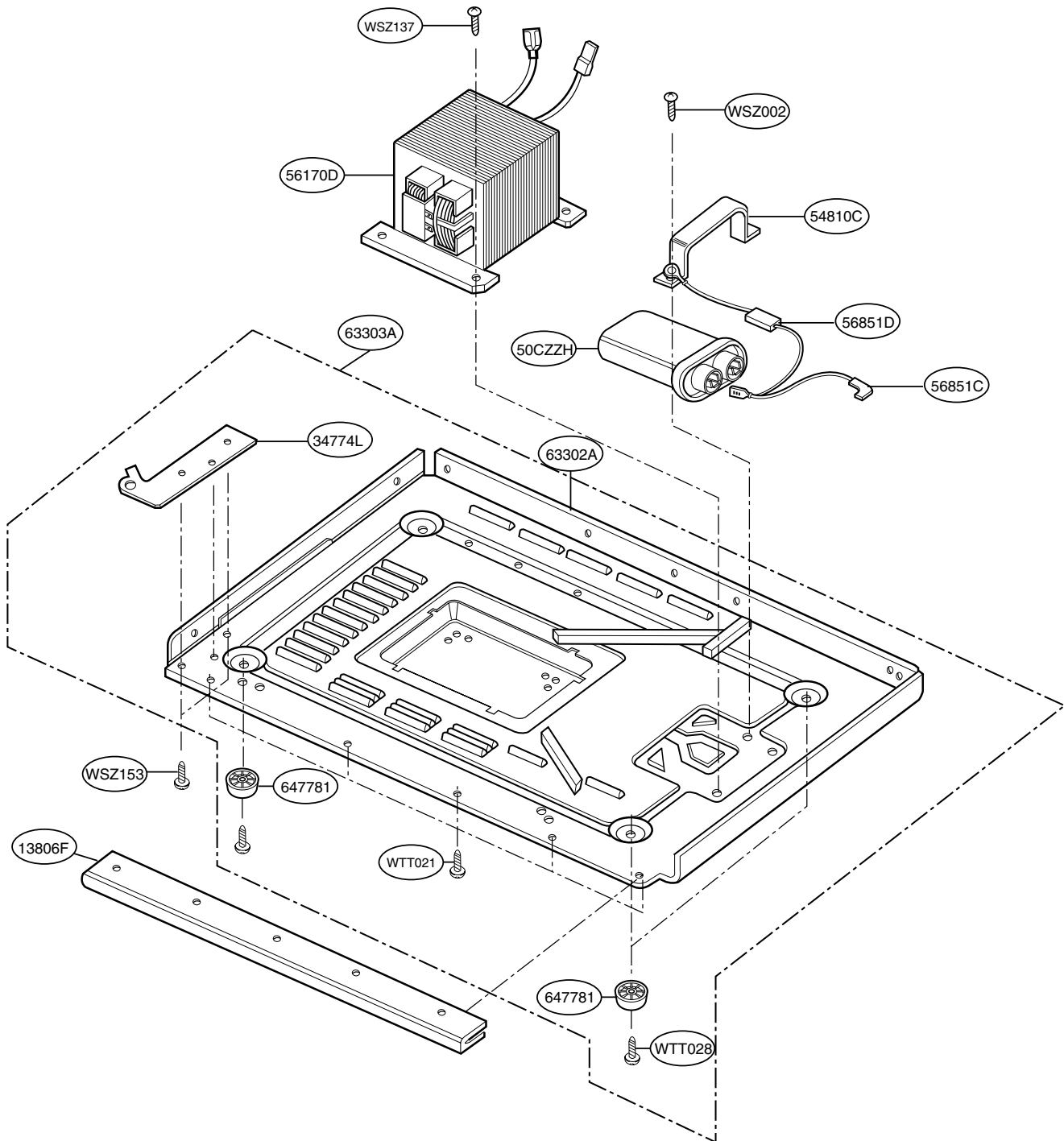
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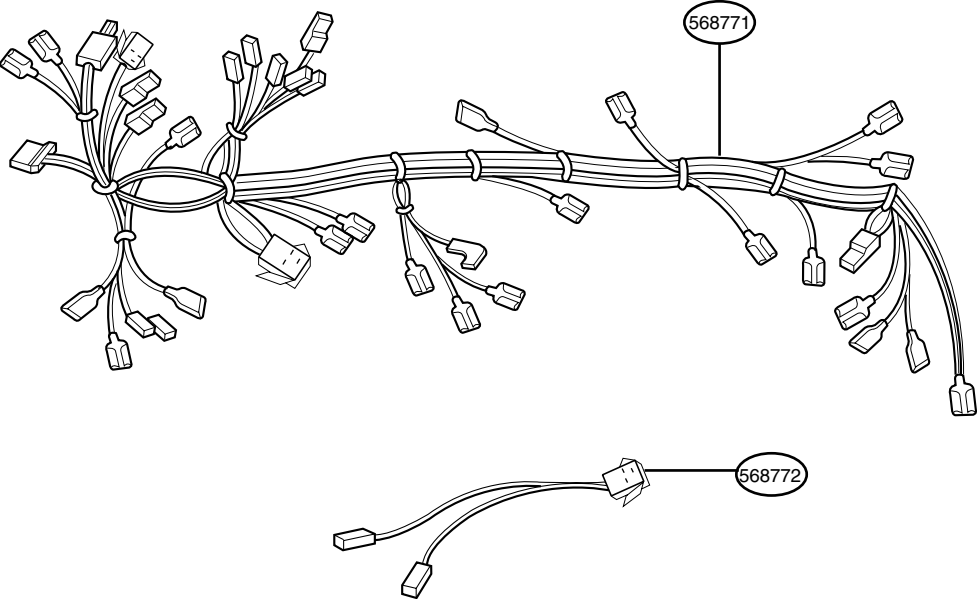
6. SWITCHES PARTS



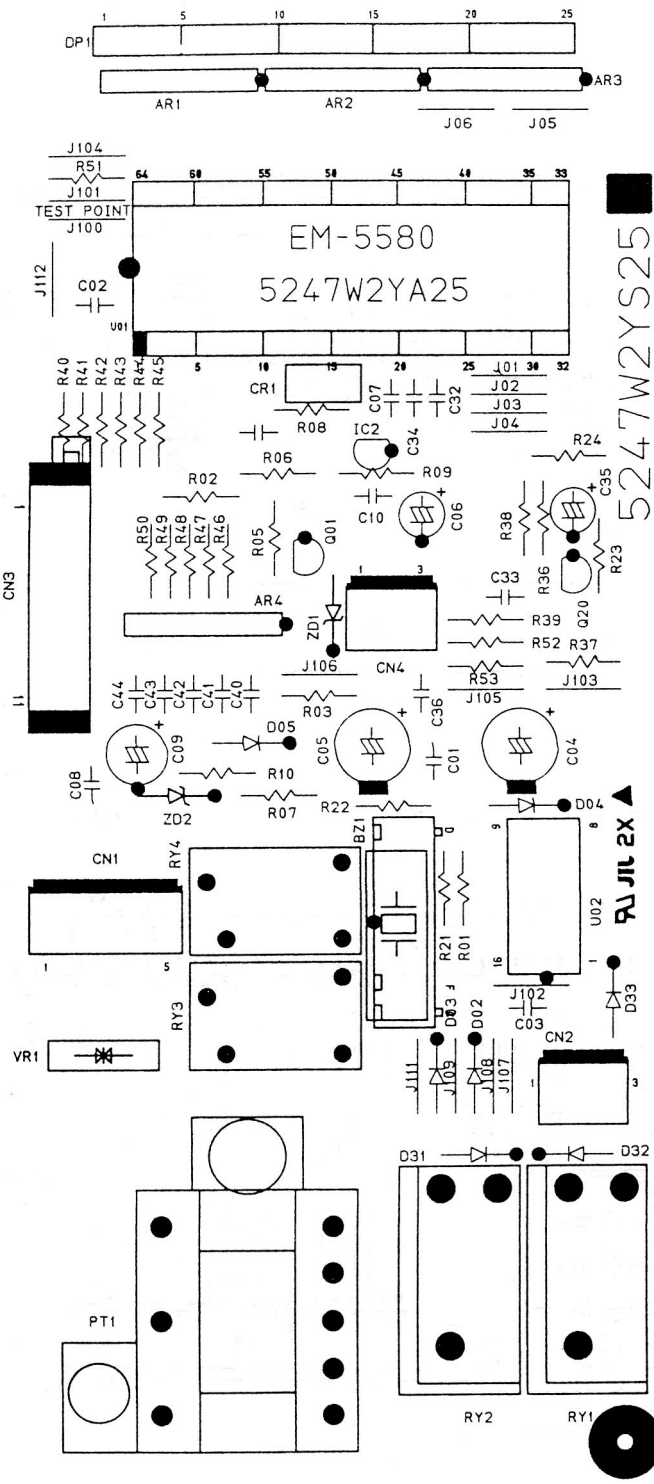
7. BASE PLATE PARTS



8. WIRING HARNESS PARTS



9. CIRCUIT BOARD



10. CIRCUIT BOARD SCHEMATIC DIAGRAM

