

MAYTAG

**Maytag
Jenn-Air**

**Microwave
Service Manual**

16008497
Issued 5/97
Revised 7/99

SAFETY PRECAUTIONS

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 needed.**
 - (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.**
- F.- Operate the oven from a properly grounded AC outlet capable of supplying 120 volts at 15 amperes.**

THIS MANUAL, AS WELL AS THE INFORMATION CONTAINED IN IT, IS TO BE USED ONLY BY A MAYTAG AUTHORIZED SERVICE TECHNICIAN FAMILIAR WITH AND KNOWLEDGEABLE OF PROPER SAFETY AND SERVICING PROCEDURES AND POSSESSING HIGH QUALITY TESTING EQUIPMENT ASSOCIATED WITH MICROWAVE, GAS, AND ELECTRICAL APPLIANCE REPAIR.

ALL INDIVIDUALS WHO ATTEMPT REPAIRS BY IMPROPER MEANS OR ADJUSTMENT, SUBJECT THEMSELVES AND OTHERS TO THE RISK OF SERIOUS OR FATAL INJURY.

USE ONLY GENUINE MAYTAG APPROVED FACTORY REPLACEMENT COMPONENTS.

CONTENTS

SECTION 1 - GENERAL INFORMATION	1-1
Specifications (Model M170)	1-1
Specifications (Model JMC7000, MMC 5000)	1-1
Feature Diagrams (Model M170)	1-3
Feature Diagrams (Model JMC7000, MMC5000)	1-4
Control Panel (Model JMC7000, MMC5000)	1-5
SECTION 2 - INSTALLATION	2-1
SECTION 3 - USE & CARE	3-1
Operation Procedure (Model M170)	3-1
Operation Procedure (Model JMC7000, MMC5000)	3-2
SECTION 4 - CONTROLS	4-1
Child Safety Lock	4-1
Stop Oven While in Operation	4-1
Interlock Mechanism (Model M170)	4-1
Interlock Mechanism (Model JMC7000, MMC5000)	4-3
SECTION 5 - ELECTRICAL	5-1
Circuit Description	5-1
Wiring Diagram	5-2
Auto Defrost Cycle	5-3
SECTION 6 - SERVICING THE COMPONENTS	6-1
DISASSEMBLY AND ASSEMBLY	6-2
Remove Cabinet	6-2
Remove Door Parts/Assembly	6-2
Remove Control Panel Assembly	6-4
Remove High Voltage Capacitor	6-5
Remove Magnetron	6-5
Remove Fan Motor	6-6
Remove Transformer	6-6
Replacement of Tray Motor	6-6
DISASSEMBLY AND ASSEMBLY (Model JMC7000, MMC5000)	6-7
Remove Cabinet	6-7
Remove Door Parts/Assembly	6-7
Interlock Mechanism and Adjustment	6-7
Remove Control Panel Assembly	6-8
SECTION 7 - TROUBLESHOOTING	7-1
Membrane Keyboard Check Procedure (Model M170)	7-2
Measuring Microwave Power Output	7-8
Membrane Keyboard Check Procedure (Model JMC7000, MMC5000)	7-9

SECTION 8 - COMPONENT TEST PROCEDURE	8-1
Microwave Radiation Test	8-3
SECTION 9 - PRINTED CIRCUIT BOARD	9-1
PRINTED CIRCUIT BOARD (Model M170)	9-1
PRINTED CIRCUIT BOARD (Model JMC7000, MMC5000)	9-3
SECTION 10 - PARTS LIST	10-1

SECTION 1 - GENERAL INFORMATION

SPECIFICATIONS

Model: M170

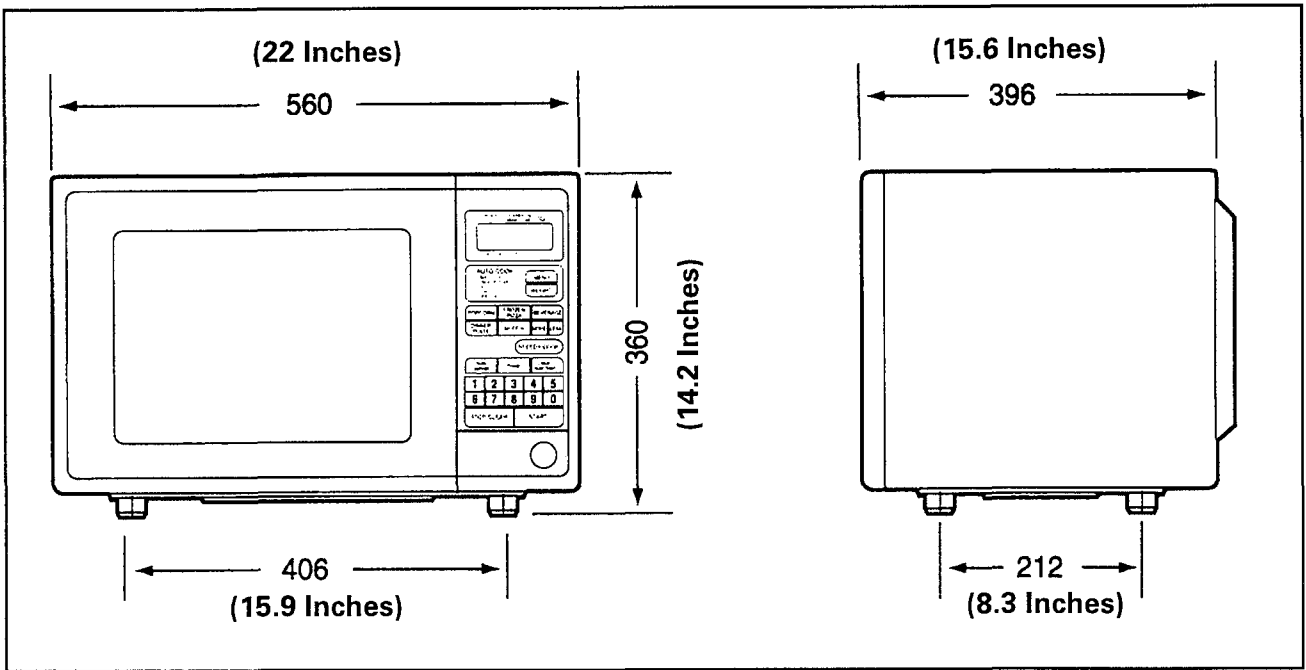
POWER SUPPLY		120VAC 60Hz Single Phase with Grounding
MICROWAVE	Power Consumption	1350 Watts
	Output Power	850 Watts (IEC 705)
	Frequency	2450 MHZ
Outside Dimensions (W x H x D)		560 x 360 x 396 mm (22 x 14.2 x 15.6 inches)
Cavity Dimensions (W x H x D)		382 x 270 x 360 mm (15.0 x 10.6 x 14.2 inches)
Net Weight		Approximately 18.5 kg. (40.8 pounds)
Timer		99 minutes, 99 seconds
Power Selections		10 Levels

Models: JMC7000ADB, JMC7000ADW, MMC5000DBD, MMC5000BDW

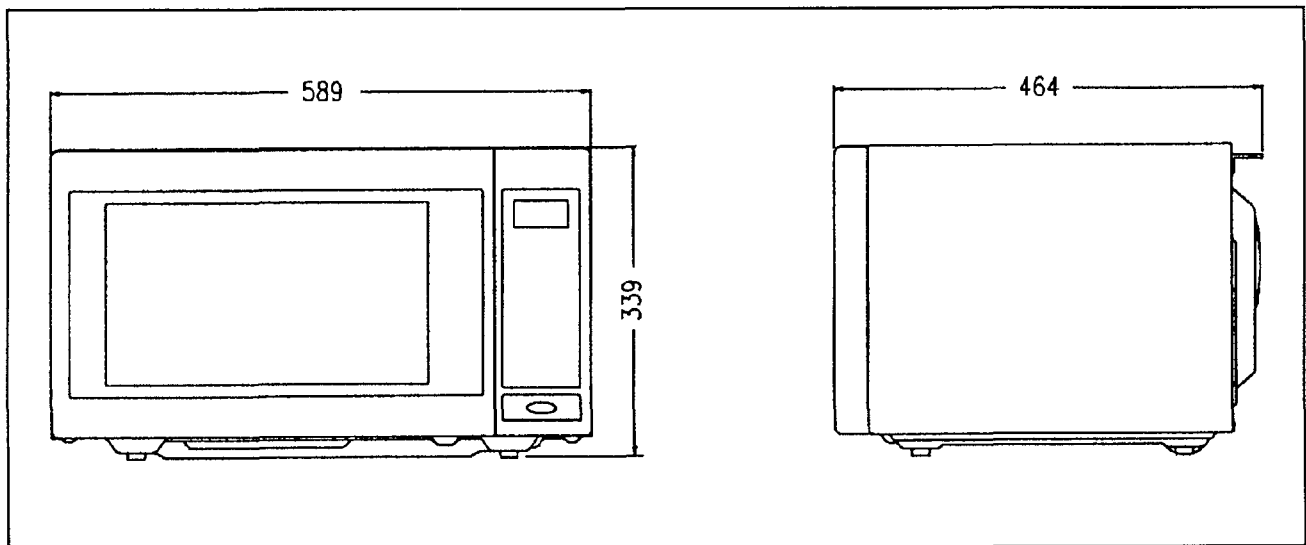
Power Supply	120 VAC 60Hz, Single Phase with Grounding
Power Consumption	1400W
Microwave Energy Output	1000W
Microwave Frequency	2450MHz
Outside Dimensions (W x H x D)	589 x 339 x 464 mm (23.2 "x 13.3" x 18.3")
Cavity Dimensions (W x H x D)	399 x 263 x 426 mm (15.7" x 10.4" x 16.8")
Net Weight	Approx. 18.5 kg (40.8 lbs.)
Timer	99 minutes, 99 seconds
Power Selections	10 Levels
Cavity Volume	1.6 Cu. Ft.

**Specifications subject to change without notice.*

Model: M170

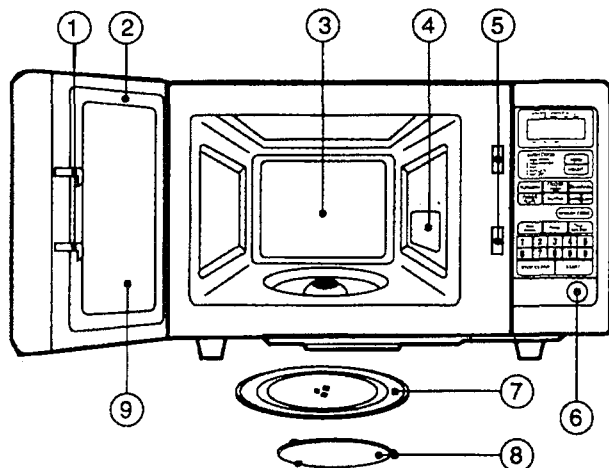


Models: JMC7000ADB, JMC7000ADW, MMC5000BDB, MMC5000BDW

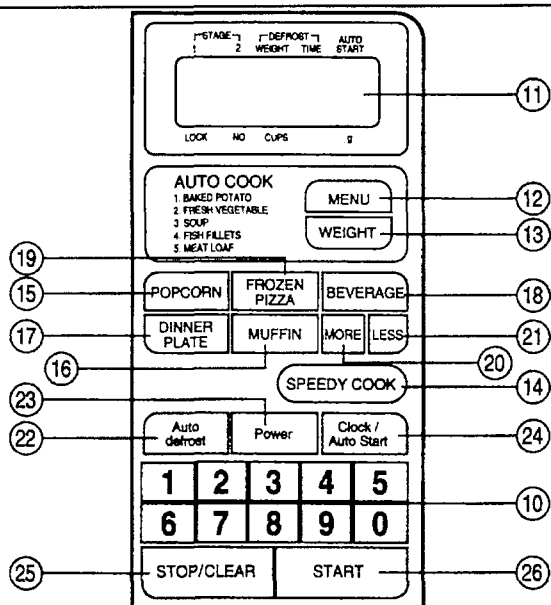


FEATURES DIAGRAM

Model: M170

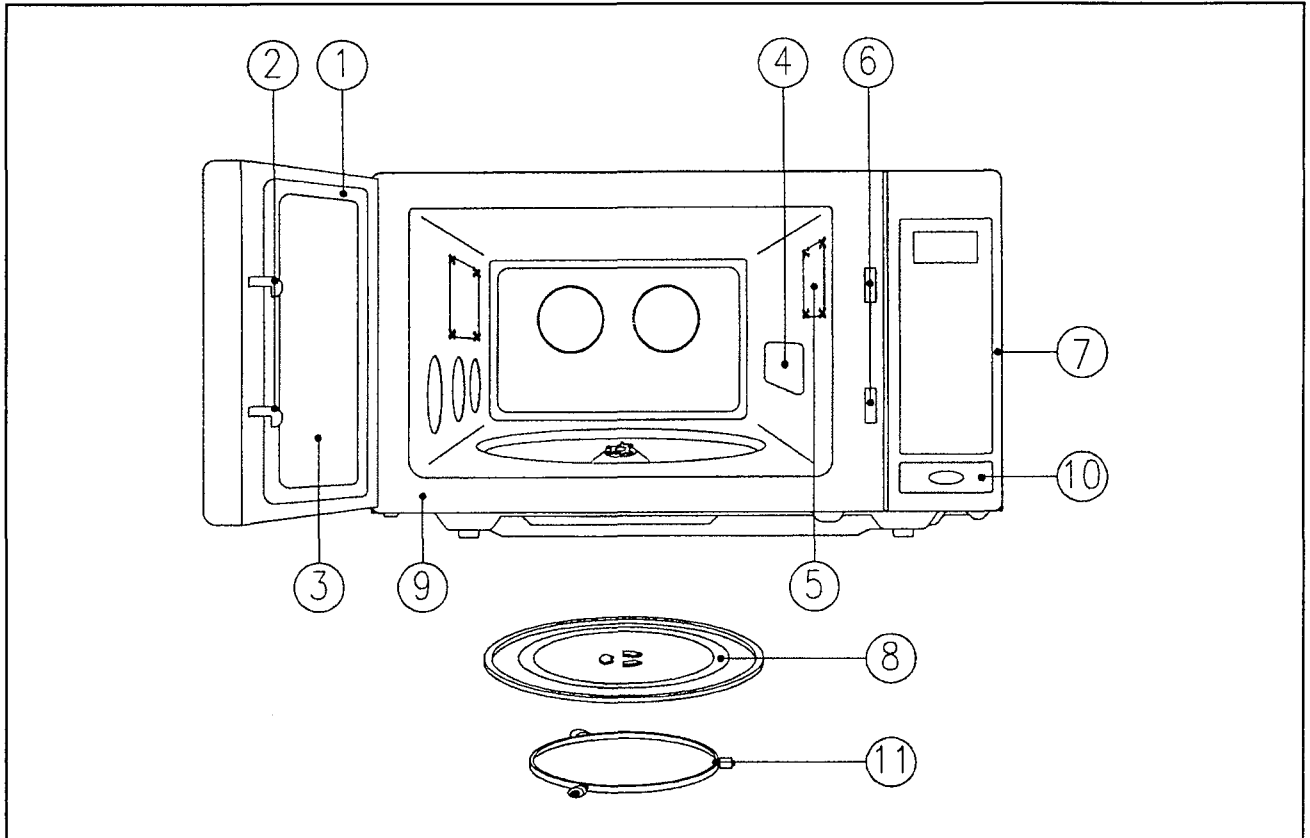


1. **Door latch** - When the door is closed it will automatically lock shut. If the door is opened while the oven is operating the magnetron will automatically shut off.
2. **Door seal** - The door seal maintains the microwave within the oven cavity and prevents microwave leakage.
3. **Oven cavity**
4. **Spatter shield** - Protects the microwave outlet from splashes of cooking foods.
5. **Safety interlock system** - Prevents the oven from operating while the door is opened.
6. **Door release button** - Pushing this button stops oven operation and opens the door.
7. **Glass cooking tray** - Made of special heat resistant glass. The tray must always be in proper position before operating. Do not cook food directly on the tray.
8. **Roller guide** - Supports the glass cooking tray.
9. **Door screen** - Allows viewing of food. The screen is designed so that light can pass through, but not the microwaves.
10. **Time set pad** - Used to set the cooking time and the present time.
11. **Display** - Cooking time, power level, present time are displayed.



12. **Menu** - Used to select foods.
13. **Weight** - Used to select quantity of foods.
14. **Speedy cook** - Touch to set any desired reheat setting.
15. **Popcorn** - Used to cook popcorn.
16. **Muffin** - Used to cook muffins.
17. **Dinner plate** - Used to reheat dinner plates.
18. **Beverage** - Used to reheat beverages.
19. **Frozen pizza** - Used to reheat frozen pizza.
20. **More** - Used to increase times on one touch cooking.
21. **Less** - Used to decrease times on one touch cooking.
22. **Auto defrost** - Used to defrost foods.
23. **Power** - Used to set power level.
24. **Clock/Auto Start** - Used to set clock & used to set auto start.
25. **Stop/Clear** - Used to stop the oven operation or to delete the cooking data.
26. **Start** - Used to start a selected operation.

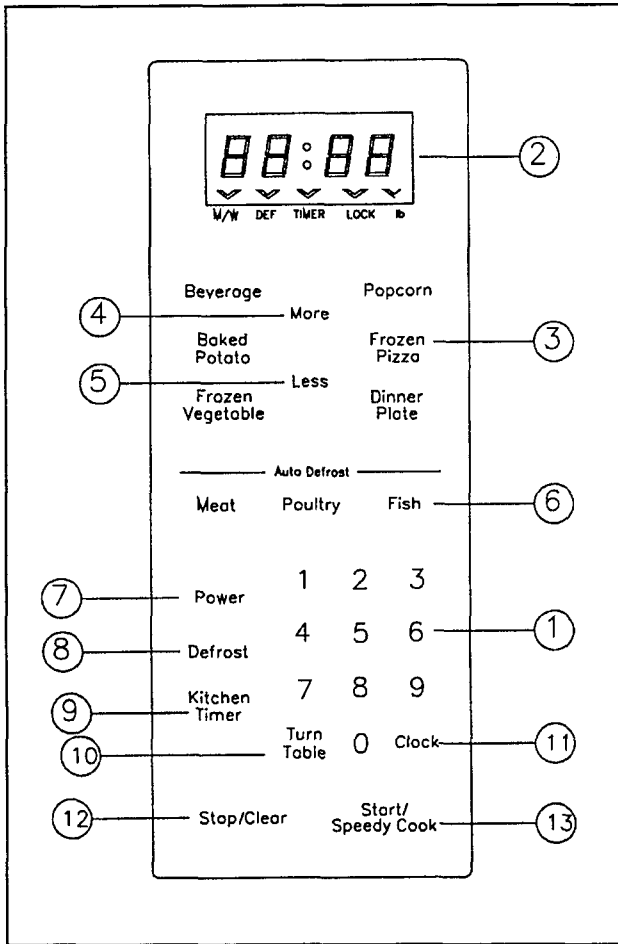
Models: JMC7000ADB, JMC7000ADW, MMC5000BDB, MMC5000BDW



1. **Door Seal** - Door seal maintains the microwave within the oven cavity and prevents microwave leakage.
2. **Door Hook** - When door is closed, it will automatically lock shut. If door is opened while oven is operating, magnetron tube will immediately stop operating.
3. **Door Screen** - Allows viewing of food. Microwave cannot pass through perforations in screen.
4. **Spatter Shield** - Protects the microwave outlet from splashes of cooking food.
5. **Oven Lamp** - Automatically turns on during operating.
6. **Safety Interlock Switch**
7. **Control Panel**
8. **Glass Cooking Tray** - Made of special heat resistant glass. The tray must always be in proper position before operating. Do not cook food directly on the tray.
9. **Oven Front Plate**
10. **Door Opening Button** - To open the door, push the door opening button. When door is closed, it will automatically lock shut. If door is opened while oven is operating, magnetron tube will immediately stop operating.
11. **Roller Guide** - Supports the glass cooking tray.

CONTROL PANEL

Models: JMC7000ADB, JMC7000ADW, MMC5000DBD, MMC5000BDW



1. **Time Set Pad** - Used to set the cooking time and the present time.
2. **Display** - Cooking time, power level, indicators and present time are displayed.
3. **One Touch** - Used to cook or reheat specific quantities of food.
4. **More** - Used to add time to cooking.
5. **Less** - Used to remove time from cooking.
6. **Auto Defrost** - Used to defrost foods. (For weight)
7. **Power** - Used to set power level.
8. **Defrost** - Used to defrost foods. (For time.)
9. **Kitchen Timer** - Used as a minute timer, delay cooking, hold setting after cooking.
10. **Turn Table** - Used to turn the turntable on and off.
11. **Clock** - Used to set clock.
12. **Stop/Clear** - Used to stop the oven operation or to delete the cooking data.
13. **Start/Speedy Cook** - Used to start the oven and also used to set reheat time.

SECTION 2 - INSTALLATION

1 Steady, flat location

This microwave oven weighs 18.5 kg. (40.8 pounds), so it should be set on a steady, flat location.

2 Leave space behind and on the side

All air vents should be kept clear. If all vents are covered during operation, the oven may overheat and, eventually, cause oven failure.

3 Away from Radio and TV sets

Poor television reception and radio interference may result if the oven is located close to a TV, radio antenna, feeder and so on.

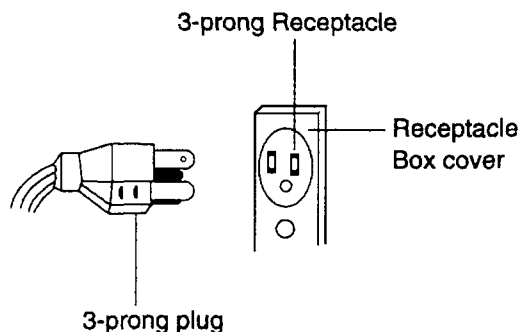
4 Away from heating appliances and water taps

Keep the oven away from hot air, steam or splash when choosing a place to position it, or the insulation might be adversely affected and breakdowns occur.

5 Power supply

•*Check your local power source.*

This microwave oven requires a current of approximately 15 amperes, 120V 60Hz. Use a receptacle that will accept the ground prong.



WARNING

Voltage - The Voltage used must be the same as specified on this Microwave Oven. Using a higher voltage may result in a fire or other accident causing oven damage. Using low voltage will cause slow cooking.

We are not responsible for damage resulting from use of this Microwave Oven with a voltage or amperage fuse other than those specified.

SECTION 3 - USE & CARE

Model: M170

OPERATION PROCEDURE

This section includes useful information about oven operation.

1. Plug power supply cord into a standard 3-pronged 15 Amp. 120VAC 60Hz power outlet socket.
2. After placing the food in a suitable container, open the oven door and place it on the glass tray. The glass tray must always be in place during cooking.
3. Shut the door. Make sure door is firmly closed.

1 When the oven door is opened, the light turns on.

2 The oven door can be opened at any time during operation by pressing the door release button on the control panel. The oven will automatically shut off. To restart the oven, close the door and then touch START.

3 Each time a pad is touched, a BEEP will sound to acknowledge the touch.

4 The oven will automatically cook on full power unless set to a lower power level.

5 The display will show ".0" when the oven is plugged in.

6 Time clock returns to the present time when the cooking time ends.

7 When the STOP/CLEAR pad is touched during the oven operation, the oven stops cooking and all information retained. To erase all information (except the present time), touch the STOP/CLEAR pad once more. If the oven door is opened during the oven operation, all information is retained.

8 If the START pad is touched and the oven does not operate, check the area between the door and door seal for obstructions and make sure the door is closed securely. The oven will not start cooking until the door is completely closed or the program has been reset.

Note

Make sure the oven is properly installed and plugged into the electrical outlet.

Wattage output chart

•The power-level is set by touching the POWER pad.

The chart shows the display, the power level and the percentage of power.

Power Pad, Number Selected	Power Level (Display)	Approximate % of Power
Power	P-HI	100%
9	P-90	90%
8	P-80	80%
7	P-70	70%
6	P-60	60%
5	P-50	50%
4	P-40	40%
3	P-30	30%
2	P-20	20%
1	P-10	10%
0	P-0	0%

Models: JMC7000ADB, JMC7000ADW, MMC5000DBD, MMC5000BDW

1. When the oven door is opened, the light turns off.
2. The oven door can be opened at any time during operation by touching the door release button on the control panel.
3. Each time a pad is touched, a BEEP will sound to acknowledge the touch.
4. The oven automatically cooks on full power unless set to lower power level.
5. The display will show :0 when the oven is plugged in.
6. Time clock returns to the present time when the cooking time ends.
7. When the STOP/CLEAR pad is touched during the oven operation, the oven stops cooking and all information retained. To erase all information (except the present time), touch the STOP/CLEAR pad once more. If the oven door is opened during the oven operation, all information is retained.
8. If the START pad is touched and the oven does not operate, check that the door is closed securely. The oven will not start until the door is completely closed or the program has been reset.

Wattage Output Chart

The power level is set by pressing the POWER pad as indicated.
The chart shows the display, power level, and the percentage of power for each touch.

Touch Power Pad	Power Level (Display)	Approximate % of Power
Once	P-HI	100%
Twice	P-90	90%
3 Times	P-80	80%
4 Times	P-70	70%
5 Times	P-60	60%
6 Times	P-50	50%
7 Times	P-40	40%
8 Times	P-30	30%
9 Times	P-20	20%
10 Times	P-10	10%
11 Times	P-00	0%

SECTION 4 - CONTROLS

CHILD SAFETY LOCK

The safety lock prevents unwanted oven operation by small children. To set, press STOP/CLEAR for 3 seconds, LOCK indicator lights. To cancel, press STOP/CLEAR for 3 seconds, LOCK indicator goes off.

STOP OVEN WHILE IT'S OPERATING

1. Press STOP/CLEAR pad.
 - Restarts the oven by touching START pad.
 - Touch STOP/CLEAR to erase all instructions.
 - Enter new instructions.
2. Open the door.
 - Restart the oven by closing the door and touching START.

Note

Oven stops operating when door is opened.

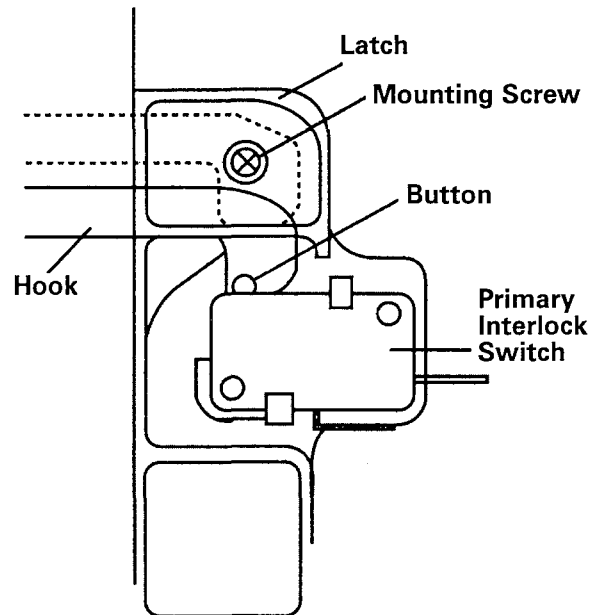
INTERLOCK MECHANISM

Model: M170

The door lock mechanism is a device specially designed to completely eliminate microwave radiation when the door is opened during operation, and thus to prevent the danger resulting from the leakage of microwave.

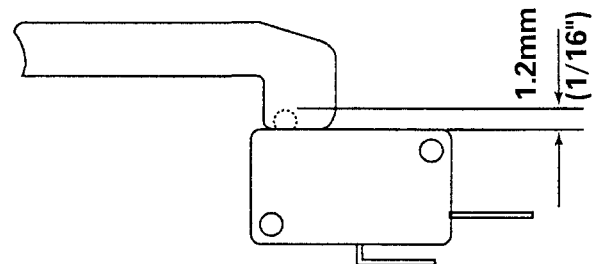
1. Primary Interlock Switch

When the door is closed, the hook locks the oven door. If the door is not closed properly, the oven will not operate. When the door is closed, the hook pushes the button of the micro switch. Then the button of the primary interlock switch brings it under "NO" condition. (Closed "COM" to "NO"), see switch chart, page 4-2.



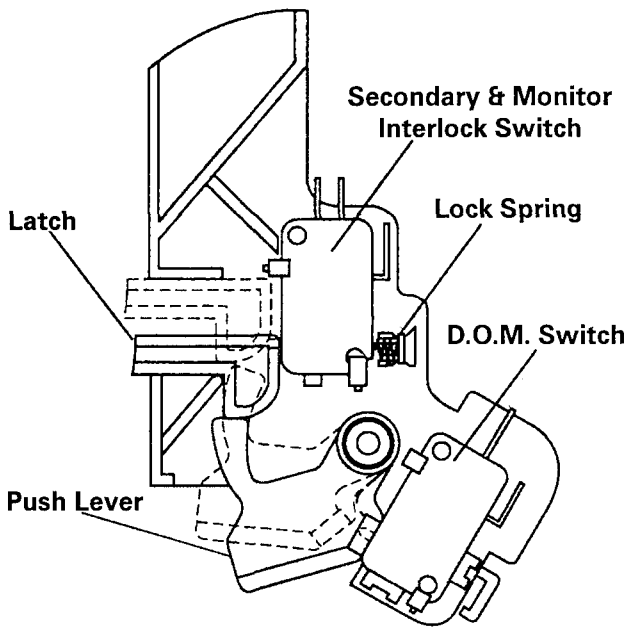
ADJUSTMENT

When the door is closed, the switch button should exceed 1.2mm measured at the top of the button.



2. Secondary Interlock Switch, Interlock Monitor Switch

When the door is closed, the hook pushes the push lever downward. The push lever presses the button of the D.O.M. switch to bring it under "NO" condition. The hook presses the button of interlock monitor switch to bring it under "NO", condition. (See Chart 1)



D.O.M. SWITCH

The movement of the switch button should exceed 1.2mm (1/16") measured at the top of the button.

3. Adjustment Steps

- Step 1. Loosen the two mounting screws
 Step 2. Adjust interlock switch assembly position.
 Step 3. Check the movement of the switch button.
 Step 4. Tighten the two mounting screws.

4. Interlock Switch Replacement

Whenever safety interlock switches are replaced:

1. Check the connection of monitor switch after replacement.
2. Perform the electrical continuity check of interlock switches and microwave emission test mentioned in this manual.

ADJUSTMENT

Interlock monitor switch (= Secondary Interlock Switch)

When the door is closed, the interlock monitor switch should be "NO" condition before other switches close. When the door is opened, the monitor switch should be "NC" condition after other switches open.

SWITCH POSITIONS VS. DOOR POSITION		
D.O.M Switch		
Door Open	COM to "NO"	Open
Door Closed	COM to "NO"	Closed
Secondary and Monitor Interlock Switch		
Door Open	COM to "NC"	Closed
Door Open	COM to "NO"	Open
Door Closed	COM to "NC"	Open
Door Closed	COM to "NO"	Closed
Primary Interlock Switch		
Door Open	COM to "NO"	Open
Door Closed	COM to "NO"	Closed

Chart 1

ADJUSTMENT

(Models: JMC7000ADB, JMC7000ADW,
MMC5000DBD, MMC5000BDW)

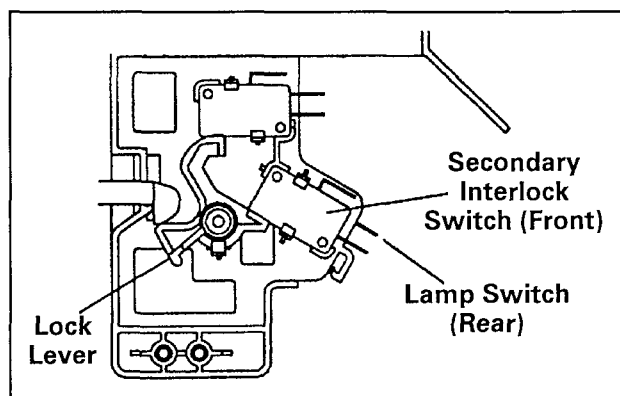
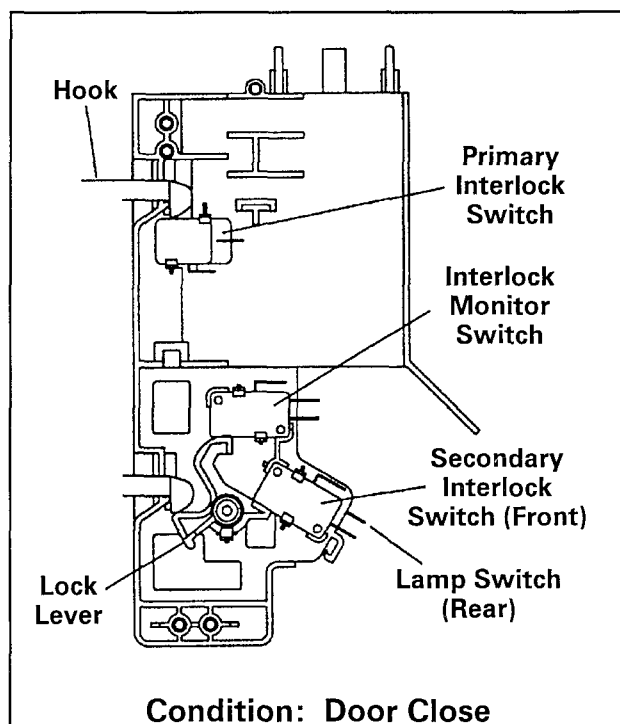
When the door is closed, the interlock monitor switch should be changed (NO condition) before other switches are closed. When the door is opened, the interlock monitor switch should be changed (NC condition) after other switches are opened.

Adjustment steps

- a) Loosen the two mounting screws.
- b) Adjust interlock switch assembly position.
- c) Make sure that lock lever moves smoothly after adjustment is completed.
- d) Tighten completely two mounting screws.

NOTE: *Microwave emission test should be performed after adjusting interlock mechanism. If the microwave emission exceed $4\text{mW}/\text{cm}^2$, readjust interlock mechanism.*

1. When the door is closed, the hook pushes the lock lever down. The lock lever presses the button of the interlock monitor switch to bring it under NO condition and presses the button of the secondary interlock switch to bring it under NO condition.



SECTION 5 - ELECTRICAL

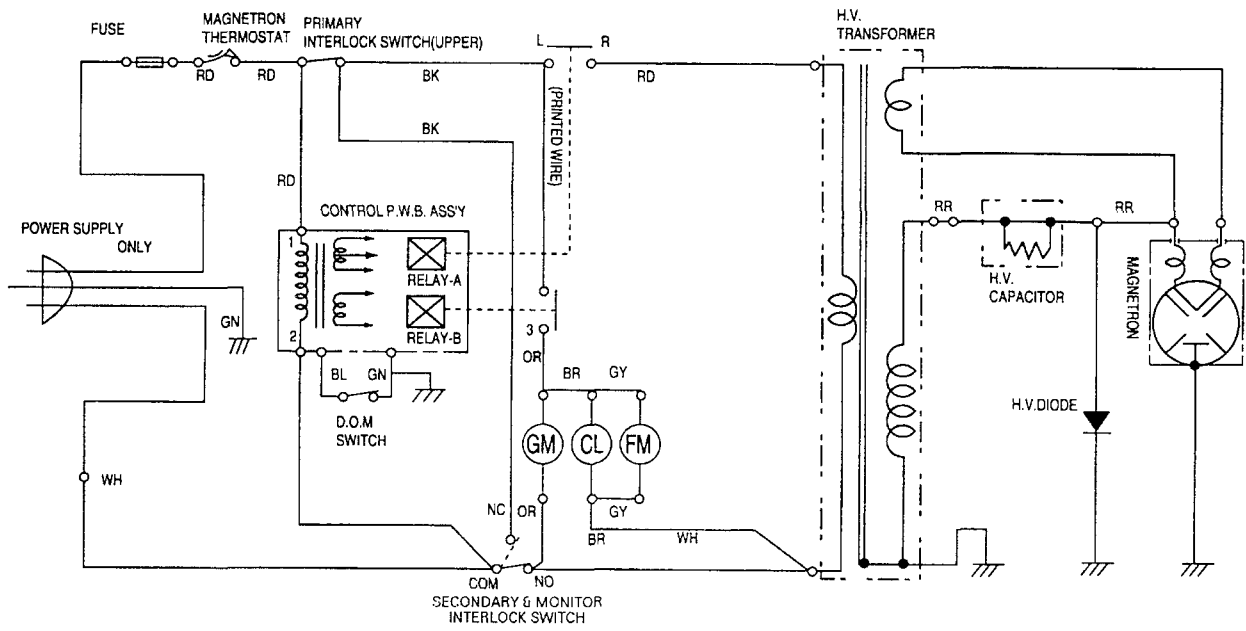
CIRCUIT DESCRIPTION MICROWAVE COOKING/TIME COOKING

Refer to the "Wiring Diagram" Figure 1.

1. **When the food is placed inside the oven and door is closed.**
 - a. The low voltage transformer supplies the necessary voltage to the touch control circuit when the power cord is plugged in.
 - b. The contacts of the interlock monitor switch open.
This switch creates short circuit to blow 15A fuse and stop magnetron oscillation when door is opened during operation under abnormal condition (i.e. the contacts of the primary interlock switch do not open the circuit).
 - c. The contacts of the primary interlock switch close the primary circuit.

2. **Cooking cycle, power and time are set by touching the function pads and the desired numerical pads.**
 - a. The clock light illuminates to indicate that the function has been set.
 - b. The time set appears in the display window.
 - c. The touch control memorizes the cooking program you set.

3. **When the start pad is touched.**
 - The RELAY "1", "2" are controlled by the touch control circuit.
 - a. 120VAC is applied to the high voltage transformer through the contacts of RELAY "1" (*See Wiring Diagram*)
 - b. Fan motor starts rotating and cools the magnetron by blowing the air coming from the intake on the rear plate hole.
 - c. The oven lamp lights the inside of the oven.
 - d. Indicator light turns on to indicate function operation. Cooking time starts count down.
 - e. 3.3 VAC is generated from the filament winding of the high voltage transformer. This filament voltage is applied to the magnetron to heat the magnetron filament through two noise preventing choke coils.
 - f. A high voltage of 2000 VAC is generated in the secondary of high voltage transformer and this secondary voltage is increased by the action of the diode and the charging of the high voltage capacitor. This resultant DC voltage is then applied to the anode of the magnetron. As shown in *Figure 2* the first half cycle of the high voltage produced in the high voltage transformer secondary charges the high voltage capacitor. Current flow is in the direction of the dotted-line during the second half cycle, the voltage produced by the transformer secondary, and the charge of the high voltage capacitor are combined and applied to the magnetron as shown by the solid line so that oscillations begin. The disturbance wave generated by the magnetron is prevented by the choke coils of 3.2 μ H, filter capacitors of 16pF and the magnetron's shielded case so that TV and radio programs are not impaired by noise.



- | | | | |
|---------------|------------------|-----------------------|--------------|
| NOTE: RD: RED | OR: ORANGE | CL: CAVITY LAMP | [CONDITION] |
| WH: WHITE | BL: BLUE | FM: FAN(BLOWER) MOTOR | DOOR: CLOSED |
| BK: BLACK | GY: GRAY | GM: GEARED MOTOR | COOK: OFF |
| GN: GREEN | GE: GREEN/YELLOW | | |
| BR: BROWN | | | |

Figure 1

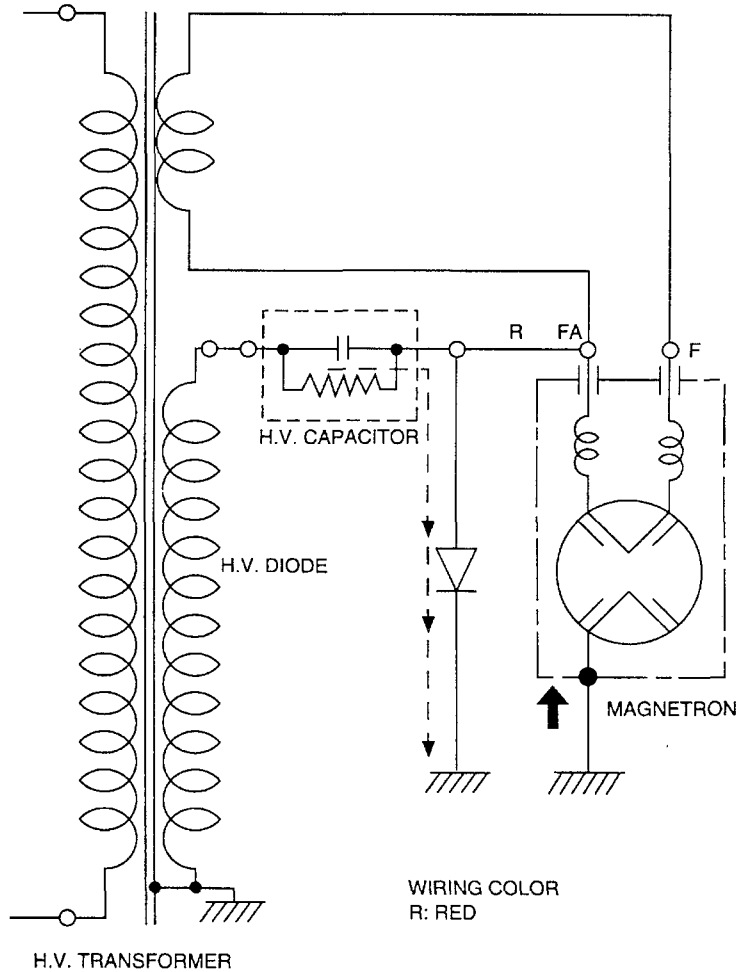


Figure 2

The touch control circuit controls the ON-OFF time of Relay "1" in order to vary the output power of the microwave oven from "power level 1" to "HI" (100%) power".

One complete ON and OFF cycle of the RELAY "1" is 29 seconds. The relation between indications on the control panel and the output of the microwave oven is as shown in **Figure 3**.

POWER LEVEL	OUTPUT POWER AGAINST FULL POWER	RELAY "1" TURN ON, OFF TIME
0	0/29 (0 %)	ON OFF
1	3/29 (10 %)	ON 3S OFF
2	5/29 (17 %)	ON 5S OFF
3	8/29 (28 %)	ON 8S OFF
4	11/29 (38 %)	ON 11S OFF
5	14/29 (48 %)	ON 14S OFF
6	17/29 (59 %)	ON 17S OFF
7	20/29 (69 %)	ON 20S OFF
8	23/29 (79 %)	ON 23S OFF
9	26/29 (90 %)	ON 26S OFF
HI	29/29 (100%)	ON 29S OFF

Figure 3

AUTO DEFROST CYCLE

When auto defrost is selected and the desired defrosting time is chosen, the automatic cycle divides the defrosting time into 5 periods of alternating defrost and stand times, by cycling on and off.

4. When the door is opened during cooking.

- a. The primary interlock switch is opened to cut off primary voltage to the high voltage transformer to stop microwave oscillation.
- b. The *D.O.M switch is opened to give the door open information to touch control circuit. The contacts of the Relay "1" and "2" open, the display stops counting down.
- c. Fan motor and turn table stop rotating.
- d. The oven lamp turns off.

**D.O.M. switch or secondary interlock (depending on model)*

- e. As soon as the door is opened, the interlock monitor switch contacts close and creates the short circuit.
- f. If the contacts of primary interlock switch malfunction, the 15A fuse blows open due to the large current surge caused by the short circuit activation, and this in turn stops magnetron oscillation.

5. When the STOP/CLEAR pad is touched during cooking.

- a. The touch control circuit cuts the voltage supplied to the RELAY "1" coil and causes the magnetron to stop oscillating.
- b. RELAY "2" turns off.
- c. The display will show the time of day. If clock is not set, the display will show a colon.
- d. The oven lamp turns off.
- e. Fan motor and turn table motor stop rotating.

SECTION 6 - SERVICING THE COMPONENTS

Cautions should be observed when troubleshooting.

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. It is completely safe during normal operation. However, carelessness in servicing the oven can result in an electric shock or possible danger from a short circuit.

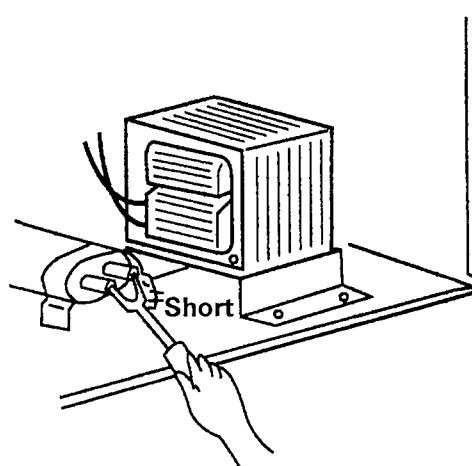
1. Always remove the power plug from the outlet before servicing.
2. Use an insulated screwdriver and wear rubber gloves when servicing the high voltage side.
3. **Warning about the electric charge in the high voltage capacitor.** When inspecting and repairing the high voltage side, always short the capacitor terminals and make sure of discharge. Use insulated screwdriver.

a. Check the grounding.

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

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

- For about 30 seconds after the operation stops, electric charge remains in the high voltage capacitor. When replacing or checking parts, short between oven chassis and each terminal of the high voltage capacitor, by using a properly insulated screwdriver to discharge.



4. When the 15 Amp. fuse is blown due to operation of the monitor switch; replace primary, and monitor switch. Refer to Section 4, page 4-2 for the necessary adjustment.
5. After repair or replacement of parts, make sure that the screws are properly tightened, and all electrical connections are tightened.
6. Do not operate without cabinet.

CAUTION

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

DISASSEMBLY AND ASSEMBLY

Model M170

1. Remove cabinet. (Figure 1)

- a. Remove four screws from the rear section and push the cabinet backward.

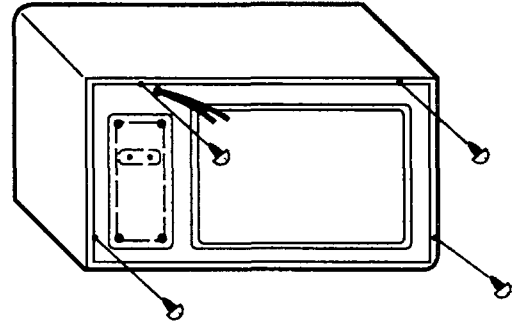


Figure 1

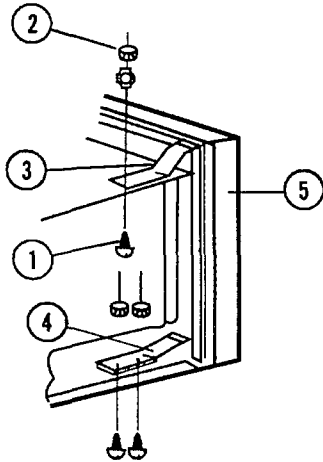


Figure 2

2. To remove door assembly. (Figure 2)

- a. Remove three bolts ① and nuts ② which secure top hinge and lower hinge stopper, ④ respectively.
- b. Remove the top hinge stopper ③ and lower hinge stopper ④.
- c. Remove door assembly ⑤.
Reverse the above for reassembly, gently replace fixing glue.

3. To remove door parts. (Figure 3)

- a. Remove the outer plate ⑥ and door frame ⑤.
- b. Remove the microwave absorber ② and film ①.
- c. Remove spring ⑦ and hook ③.
- d. Reverse the above steps for reassembly.

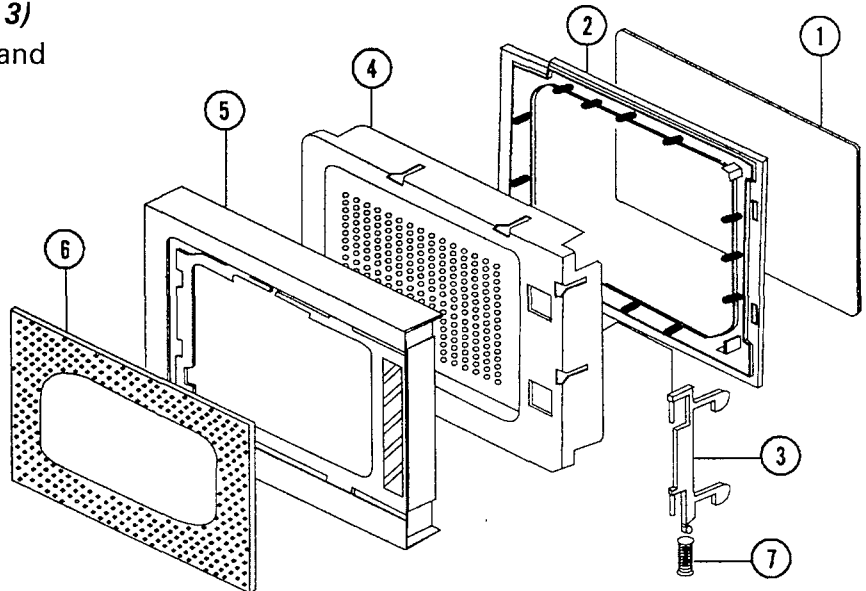


Figure 3

NOTE

Do not attempt to remove Barrier screen "4" except for replacement

4. Method to reduce the gap between the door seal and the oven front surface.

a. To reduce gap located on part "A". **(Figure 4)**

- Loosen bolt and nut on top door hinge stopper, then push the door to contact the door seal to oven front surface.
- Tighten bolt and nut.

b. To reduce gap located on part "B".

- Loosen two bolts and nuts on lower hinge stopper, then push the door to contact the seal to oven front surface.
- Tighten bolts and nuts.

c. To reduce gap located on part "C".

(Figure 5)

- Remove the cabinet.
- Loosen screw on interlock switch assembly located on bottom of oven body.
- Draw the interlock switch assembly inward as far as possible to engage with hook on the door bottom.
- Tighten screw.

d. To reduce gap located on part "D". **(Figure 6)**

- Remove the cabinet.
- Loosen a screw on interlock switch assembly located on top of oven body.
- Draw the interlock switch assembly inward as far as possible to engage with hook on the door bottom.
- Tighten screw.

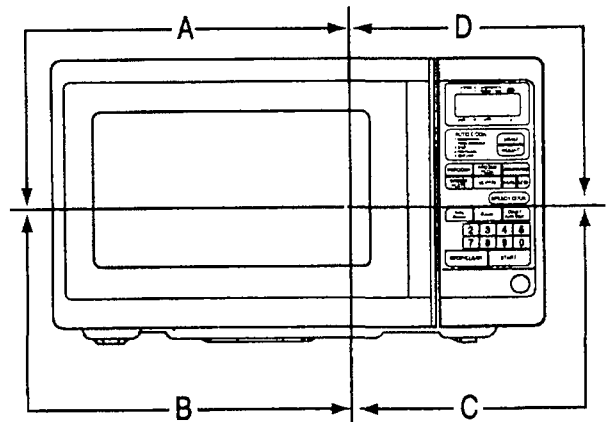


Figure 4

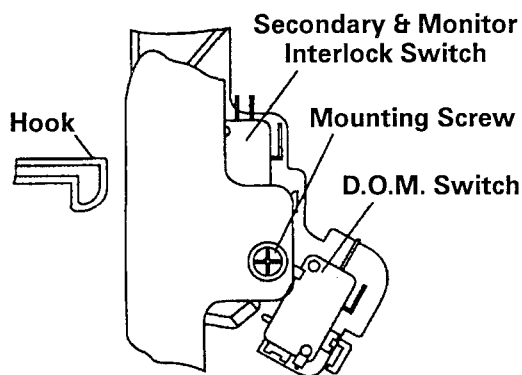


Figure 5

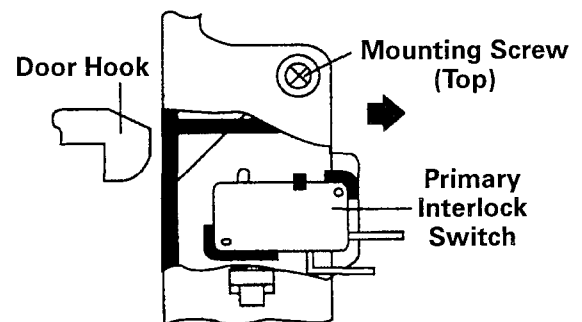


Figure 6

NOTE

Small gap may be acceptable if the microwave leakage does not exceed 4mW/cm²

**5. To remove control panel assembly
(Figure 7)**

- a. Disconnect two connectors and terminals on the printed circuit board assembly. Remove screw ⑧ while holding the grounding ring terminal ⑦ of main harness, which secures front plate.
- b. Remove three screws holding control panel assembly to the oven front. At the same time, draw forward the control panel assembly from oven front.
- c. Remove the push lever ⑤.
- d. Remove three screws ⑥ from the control.

- e. Remove push button ③ and button spring ④ from control panel ①.
- f. Reverse the above steps for reassembly.

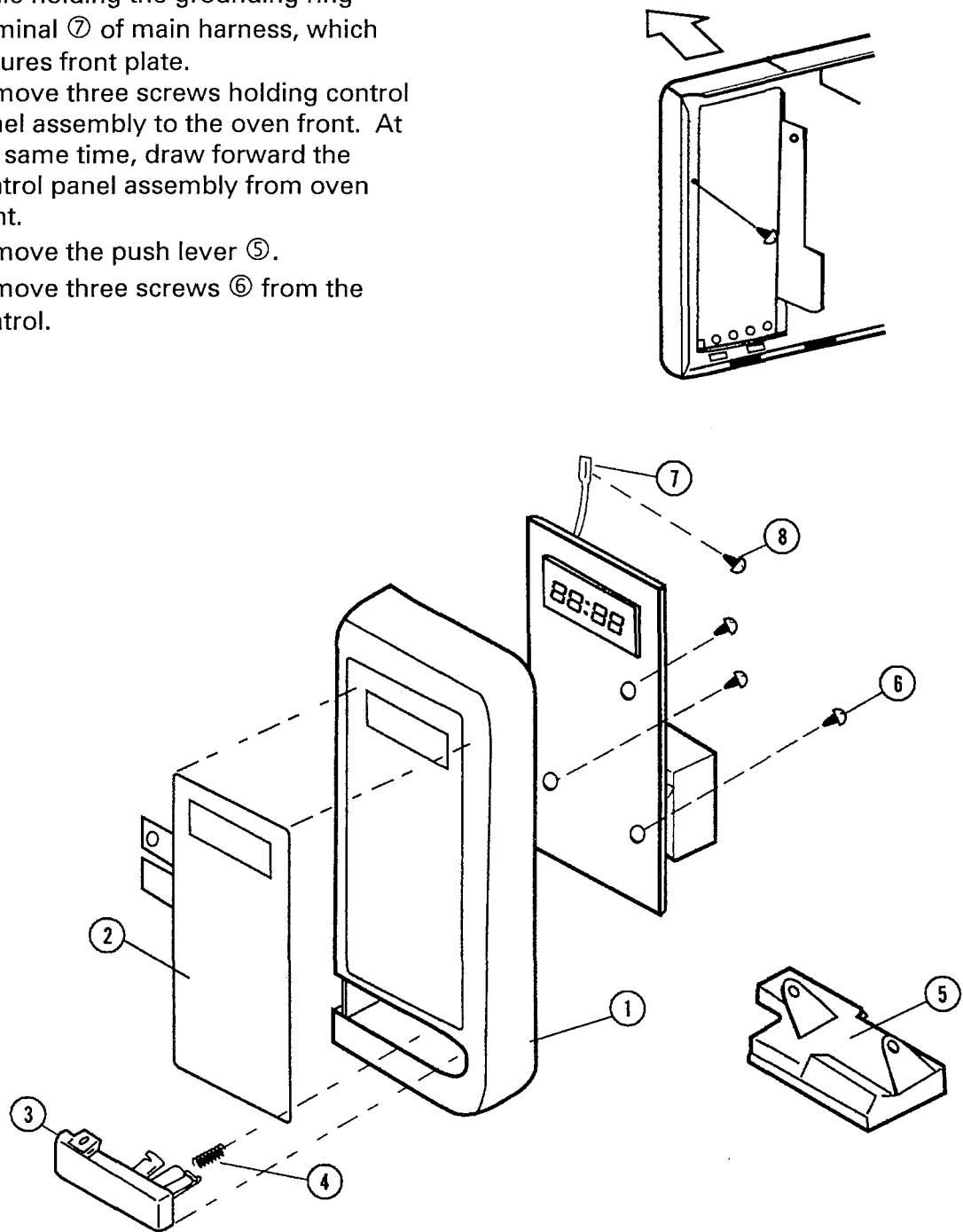


Figure 7

NOTE

Do not attempt to remove membrane key board "2" except for replacement.

6. To remove high voltage capacitor.
(Figure 8)

- a. Remove one or two screws (depending on configuration) ① which secure the grounding terminal ② of diode and capacitor holder ③.
- b. Remove capacitor holder ③ with capacitor ④.
- c. Reverse the above steps for reassembly.

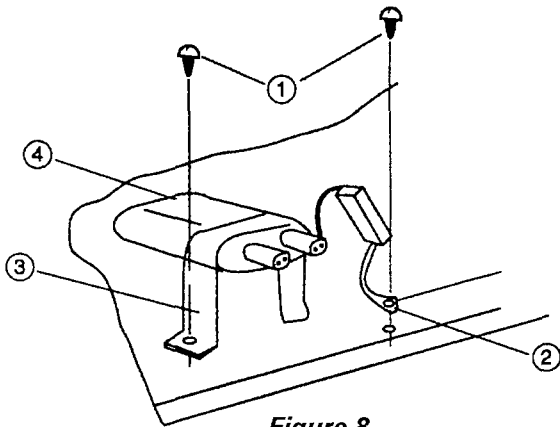


Figure 8

7. To remove magnetron. *(Figure 9)*

- a. Remove screws ① which secure air guide assembly ② and remove air guide assembly ②.
- b. Remove three screws ③ which secure the magnetron ④.
- c. Remove the magnetron ④.
- d. Reverse the above steps for reassembly.

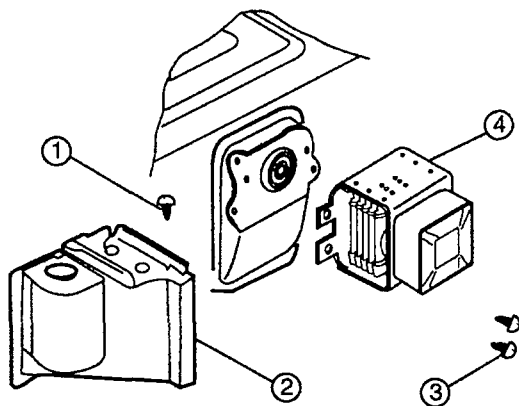
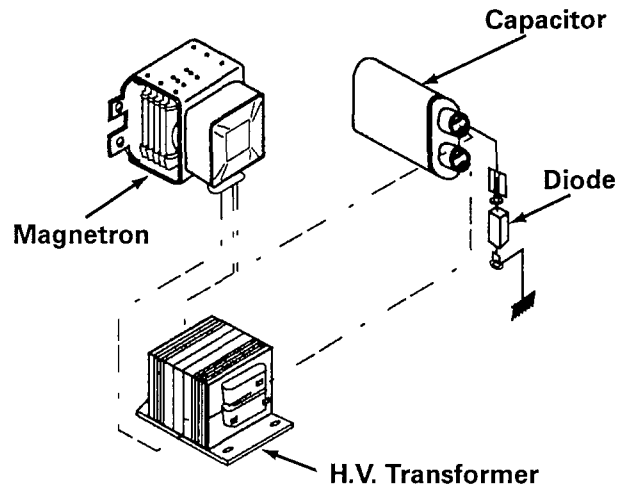


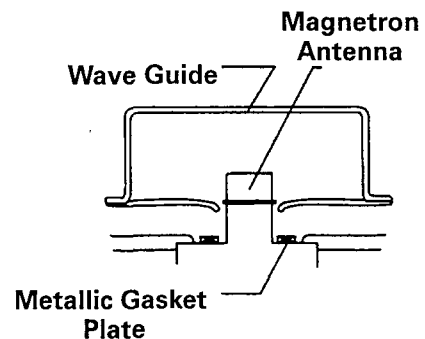
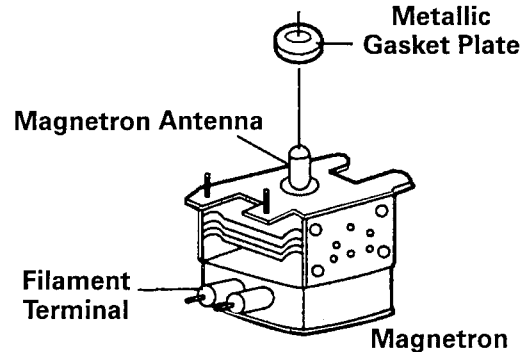
Figure 9

High Voltage Circuit Wiring



CAUTION

Never install the magnetron without the metallic gasket plate which is packed with each magnetron to prevent microwave leakage. Whenever repair work is carried out on magnetron, check the microwave leakage. It shall not exceed 4mW/cm².



8. To remove fan motor assembly and air guide. (Figure 10)

- a. Remove screws ①.
- b. Remove air guide assembly.
- c. Remove fan blade ③.
- d. Remove two screws ④ holding the fan motor ⑤.
- e. Remove air guide ②.
- f. Reverse the above for reassembly.

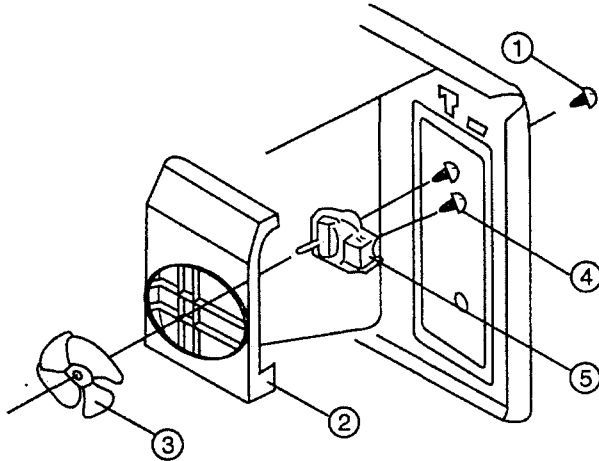


Figure 10

9. To remove transformer. (Figure 11)

- a. Remove four tapping screws ①.
- b. Remove the transformer ②.
- c. Reverse the above steps for reassembly.

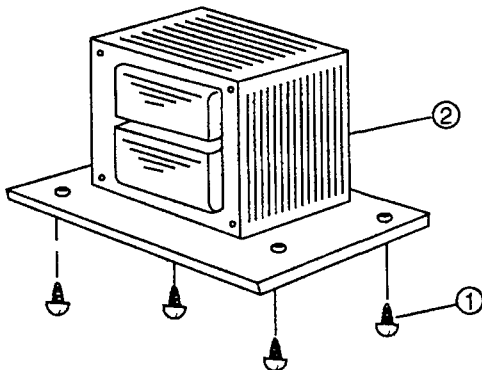


Figure 11

10. Replacement of Tray Motor. (Figure 12)

- a. Cut the TRAY MOTOR COVER from the BASE PLATE.
- b. Disconnect two wires from the tray motor.
- c. Remove two screws holding the tray motor.
- d. To install a new tray motor reverse the above steps.

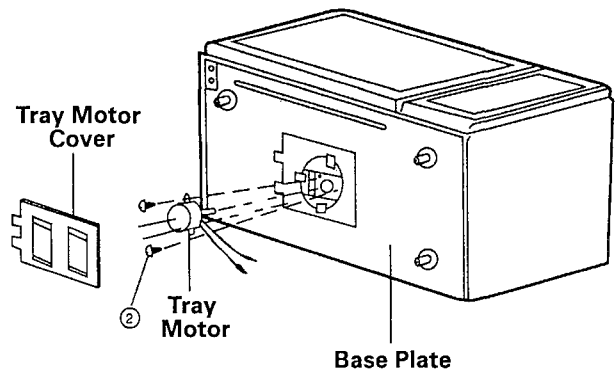


Figure 12

NOTE

When Reinstalling Tray Motor Cover, turn cover 180° from the position it was removed from. Insert 2 tabs into bottom cover and install screw through cover and into mounting hole in base plate.

DISASSEMBLY AND ASSEMBLY

(Models: JMC7000ADB, JMC7000ADW, MMC5000DBD, MMC5000BDW)

1. Remove cabinet. (Figure 13)

- a. Remove three screws from the rear section and push the cabinet backward.

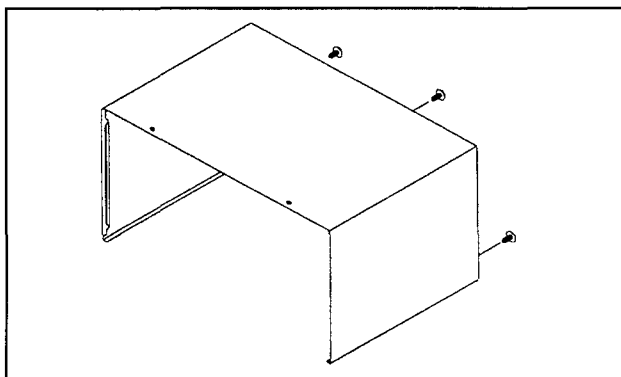


Figure 13

2. To remove door assembly. (Figure 14)

- a. Remove two screws which secure the stopper hinge top.
- b. Remove the door assembly from top plate of cavity.
- c. Reverse the above for reassembly.

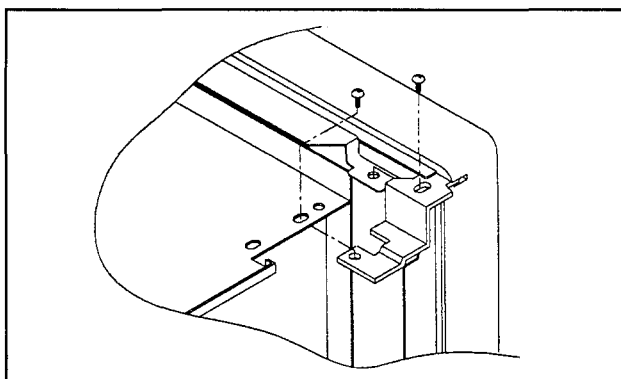


Figure 14

3. To remove door parts. (Figure 15)

- a. Remove the gasket door A06 from door plate.

- b. Remove the inner barrier screen A05 from door plate.
- c. Remove the door frame A02 from door plate.
- d. Remove the stopper hinge top A03 from door plate.
- e. Remove the spring A08 and hook A07.
- f. Remove the outer barrier screen A01 from door frame A02.
- g. Reverse the above steps for reassembly.

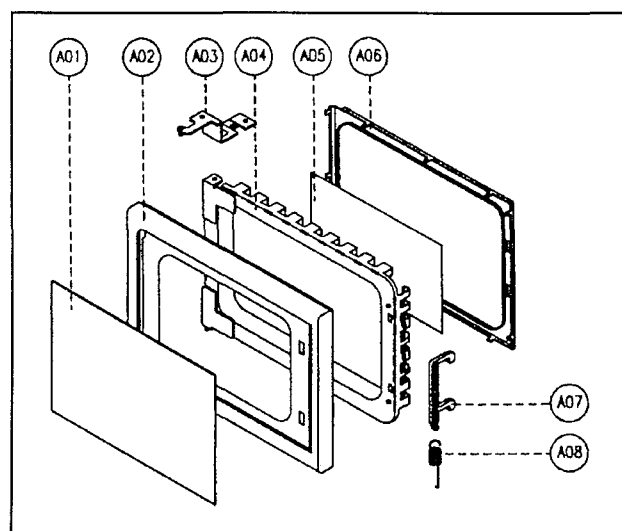


Figure 15

4. Interlock Mechanism and Adjustment (Figure 16)

- a. Loosen two screws on stopper hinge top, and then push the door to contact the door seal to oven front surface.
 - Tighten two screws.
- b. Loosen two screws on upper stopper hinge, and then push door to contact the door seal to oven front surface.
 - Tighten screws.

- c. Loosen one screw on interlock switch assembly located at top of oven body.
 - Draw the interlock switch assembly inward to engage with upper hook on the door.
 - Tighten the screw.
- d. Loosen one screw on interlock switch assembly located at bottom of oven body.
 - Draw the interlock switch assembly inward to engage with lower hook on the door.
 - Tighten the screw.
- e. Detach membrane B01 from the control panel
- f. Remove door open button B07 and button spring B06 from the control panel B02.
- g. Reverse the above steps for reassembly.

5. To remove control panel assembly.
(Figure 17)

- a. Remove the screw which secures the control panel B02, push up two snap fits and draw forward the control panel assembly.
- b. Remove the door open lever B05 from the control panel B02.
- c. Remove four screws which secure the PCB B03 assembly to control panel.

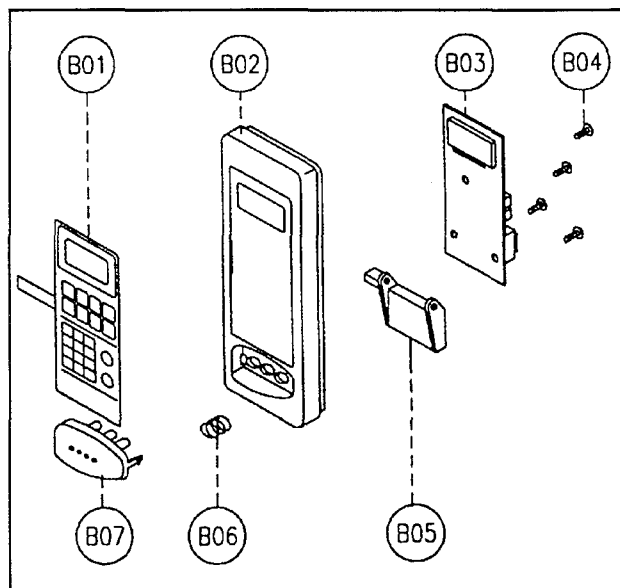


Figure 17

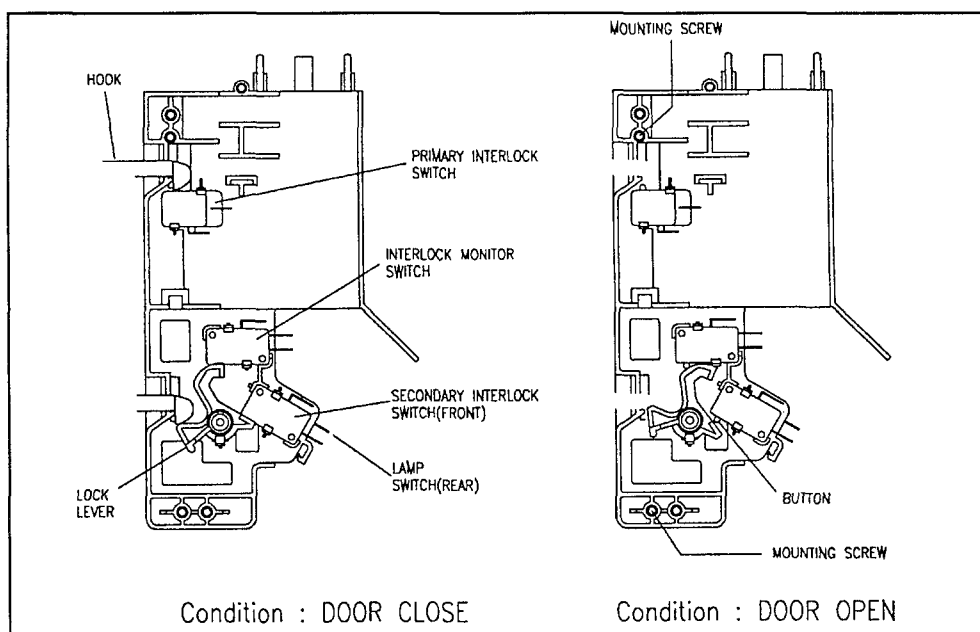


Figure 16

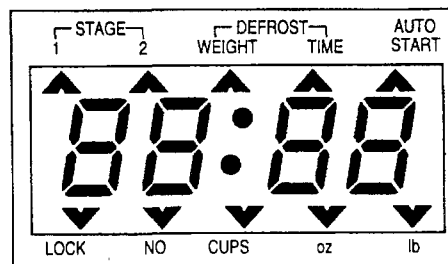
SECTION 7 - TROUBLESHOOTING

Follow the procedures below for malfunctioning of the oven.

- a. Disconnect from electrical supply.
- b. Be careful of the high voltage circuit.
- c. Discharge the high voltage capacitor.
- d. When checking the continuity of switches or of the high voltage transformer, disconnect one lead wire from these parts and then check continuity. To do otherwise may result in false reading or damage to your meter.
- e. Do not touch any part of the circuitry on the touch control circuit since static electric discharge may damage this control panel.
- f. Always ground yourself while working on this panel to discharge any static charge built up in your body.

1. The following visual conditions indicate a problem with the touch control circuit or membrane switch assembly.

- a. Incomplete segments.
 - Segments missing.
 - Partial segments missing.
 - Digit flickering other than normal fluorescent light flickering.
 - " :0" does not display when power is on.
- b. A distinct change in the brightness of one or more numbers in the display.
- c. One or more digits in the display are not on when they should be.
- d. Display indicates a number different from one touched.
- e. For example, touch 5 and 3 appears in the display.
- f. Specific numbers (for example 5 and 3) will not display when the panel is touched.
- g. Display does not count down or up with time cooking or clock operation.
NOTE: Verify door interlock switch circuit functions properly.
- h. Oven is programmable and cooks normally, but no display shows.
- i. Display obviously jumps in time while counting down.
- j. Display counts down noticeably too fast while cooking.
- k. Display can not shift from the first stage cooking to the third stage cooking while 3 phase cooking (including defrost).
- l. Display does not show the time of day when clear pad is touched (in cook mode.)
- m. Oven lamp, fan motor and turntable motor do not stop although cooking is finished. Check if the RELAY "2" contacts close. If contacts are closed, replace touch control circuit.



2. Digital readout display does not show programming, even if the membrane keyboard is programmed by touching proper pads.

Condition	Check	Result	Cause	Remedy
Display does not show programming at all, even if keyboard is touched	Check each pad for continuity of the membrane keyboard from the following keyboard check procedure	Normal	Malfunction of touch control circuitry of control board	Replace control board
		Abnormal	Malfunction of the membrane keyboard	Replace the membrane keyboard

NOTE

Before following the particular steps listed above in the troubleshooting section for the membrane keyboard failure, please check for the continuity of each wire-harness between the membrane keyboard and control box assembly.

MEMBRANE KEYBOARD CHECK PROCEDURE

3. Check the membrane tail and PCB Connector order. (Figure 1)

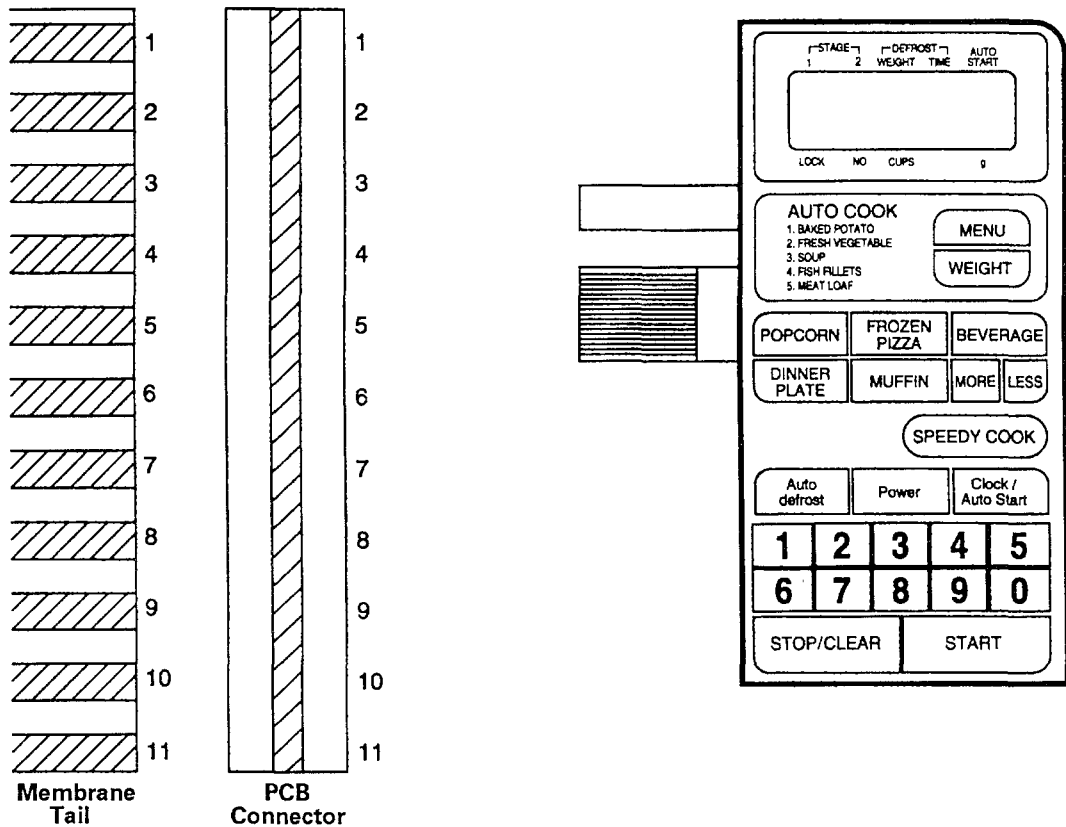
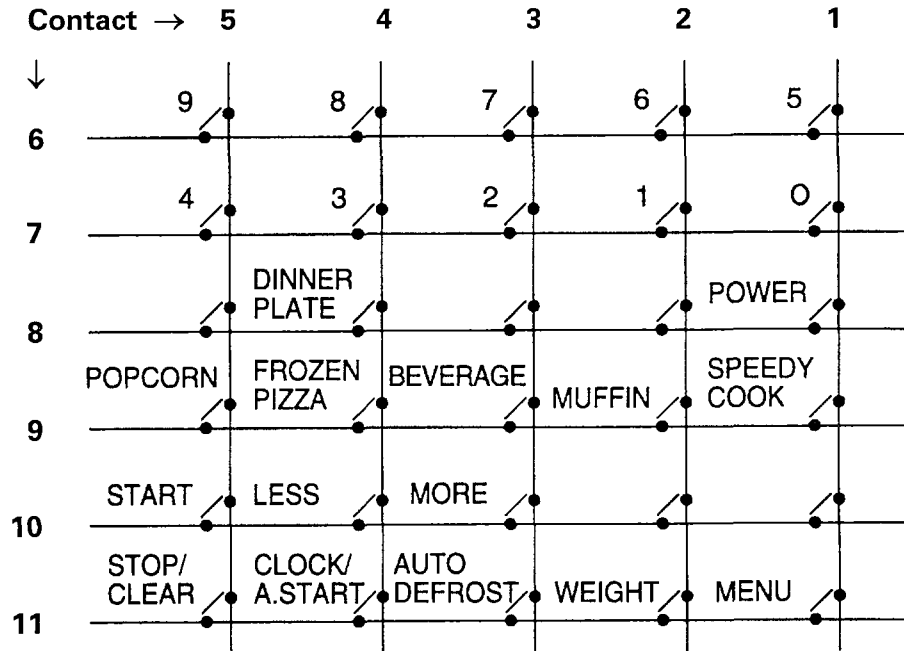


Figure 1

4. Type of encoding and pad names.



Keyboard Matrix

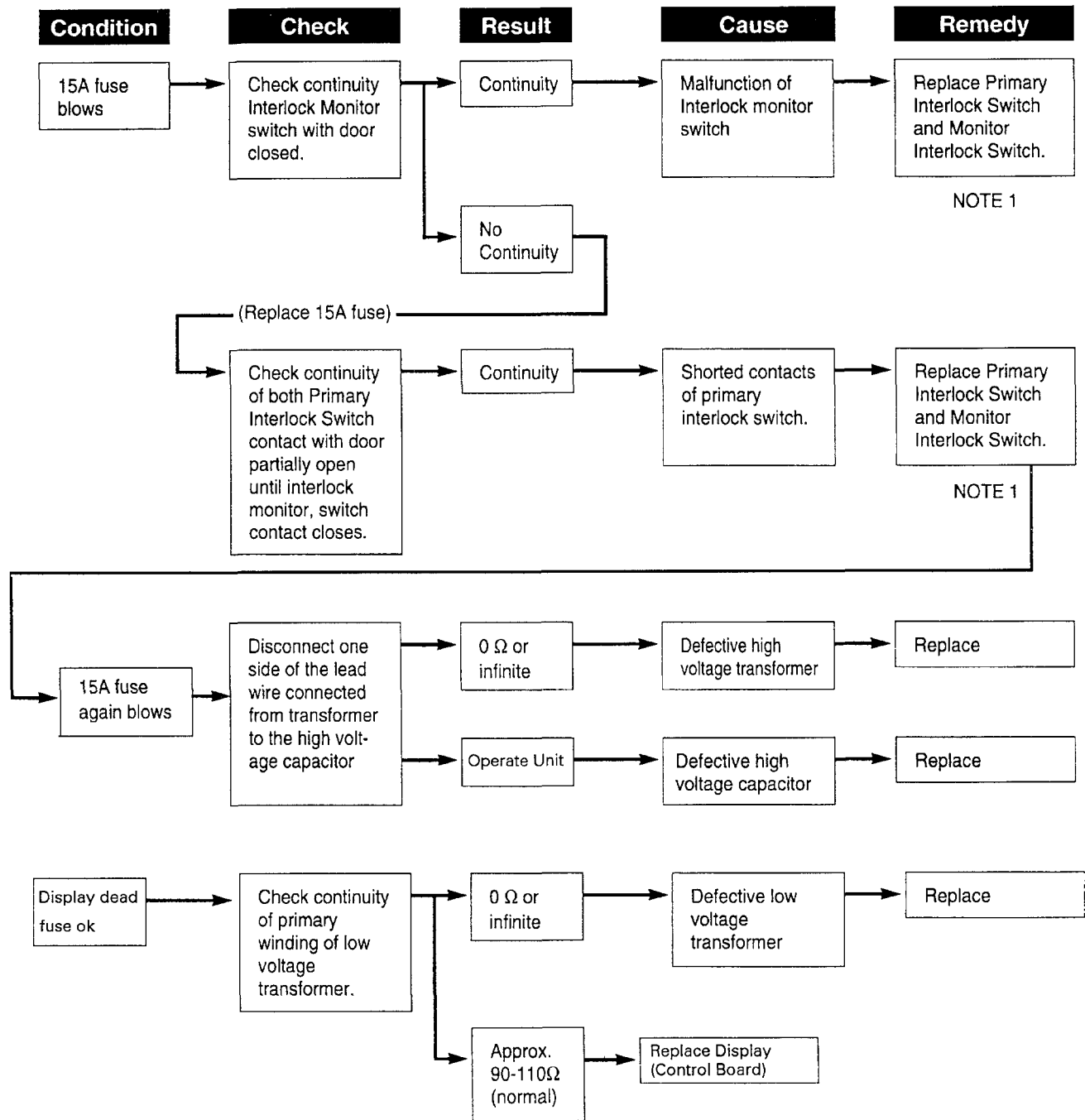
The membrane keyboard consists of 25 keys whose configurations are described above and provide 11 pad terminations to be connected to the touch control circuit as shown above.

5. Key check procedure.

To determine if the membrane keyboard is malfunctioning or not, check the continuity of each pad (KEY) contacts with a multimeter.

1	5	Pad: Between 1-6	14	Auto Defrost	Pad: Between 3-11
2	0	Pad: Between 1-7	15	8	Pad: Between 4-6
3	Power	Pad: Between 1-8	16	3	Pad: Between 4-7
4	Speedy Cook	Pad: Between 1-9	17	Dinner Plate	Pad: Between 4-8
5	Menu	Pad: Between 1-11	18	Frozen Pizza	Pad: Between 4-9
6	6	Pad: Between 2-6	19	Less	Pad: Between 4-10
7	1	Pad: Between 2-7	20	Clock/A. Start	Pad: Between 4-11
8	Muffin	Pad: Between 2-9	21	9	Pad: Between 5-6
9	Weight	Pad: Between 2-11	22	4	Pad: Between 5-7
10	7	Pad: Between 3-6	23	Popcorn	Pad: Between 5-9
11	2	Pad: Between 3-7	24	Start	Pad: Between 5-10
12	Beverage	Pad: Between 3-9	25	Stop/Clear	Pad: Between 5-11
13	More	Pad: Between 3-10			

6. Oven does not operate at all: Display window does not display any figures and inputs are not accepted.



NOTE 1
All these switches must be replaced at the same time, please refer to pages 4-1 and 4-2 for adjustment instructions.

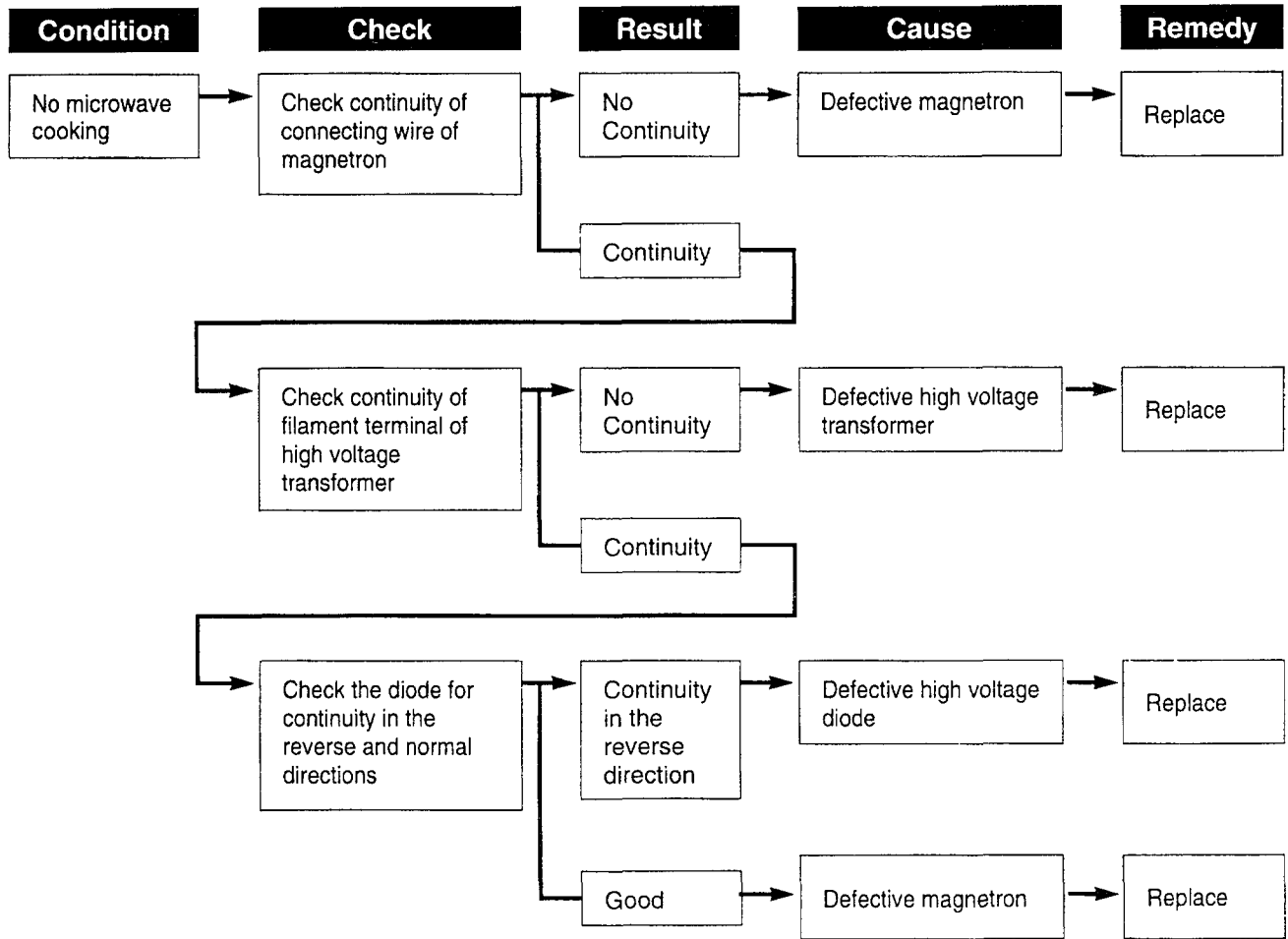
Condition	Check	Result	Cause	Remedy
Outlet has proper voltage. No voltage at fuse.	Check continuity of magnetron thermostat	No Continuity	Defective magnetron thermostat.	Replace
	Check continuity of power supply cord.	No Continuity	Open power supply cord	Replace
		Normal	Defective P.C.B. ASSY	Replace
	Display does not countdown		Malfunction of D.O.M switch	Replace

7. Display shows all figures selected, but oven does not start cooking, even though desired program and time are set and start pad is touched.

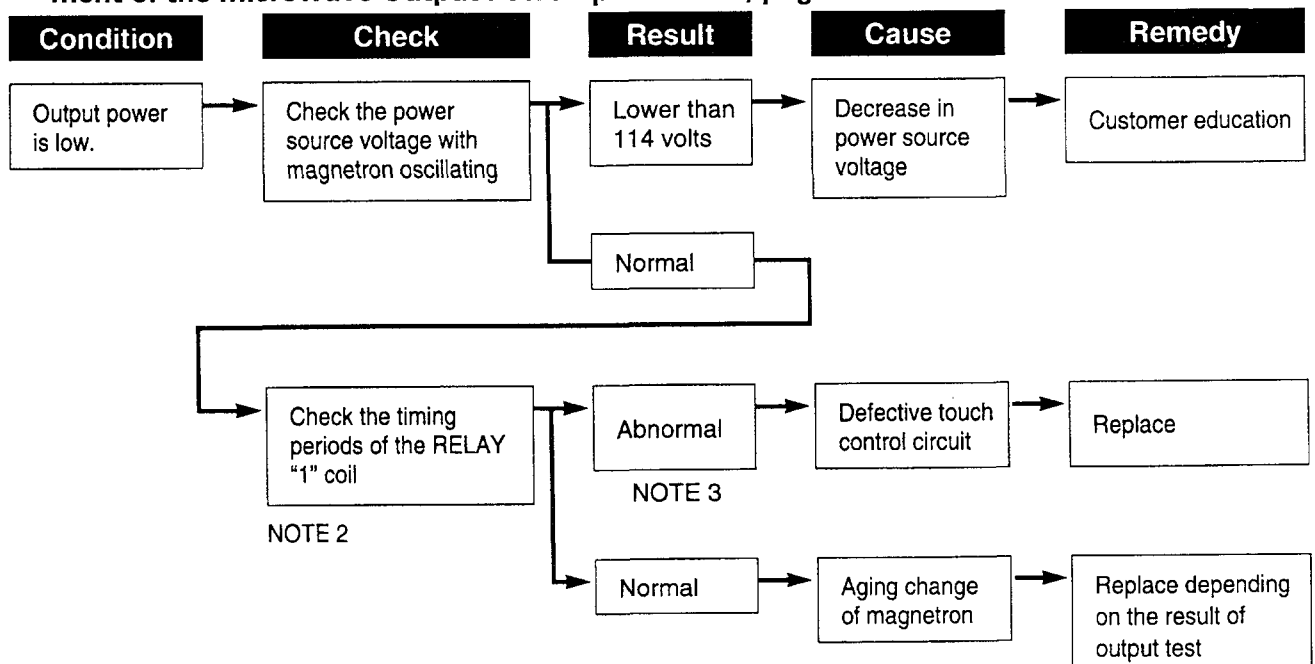
Condition	Check	Result	Cause	Remedy
Turntable motor, fan motor and oven lamp do not turn on.	Check continuity of primary interlock switch	No Continuity	Malfunction of Primary Interlock Switch	Adjust or replace
	Check D.C. voltage being supplied to RELAY "2" coil.	No voltage.	Defective P.C.B. ASSY	Replace
		Approx. 24VDC	Faulty contacts of RELAY "2" or open relay coil	Replace

Condition	Check	Result	Cause	Remedy
Turntable motor, fan motor and oven lamp turn on for a second when the start pad is touched.	Check continuity of primary winding of high voltage transformer and touch control circuit	No Continuity	Open winding	Replace
		Normal	Defective touch control circuit	Replace

8. No microwave cooking even though fan motor runs.



9. Microwave output power is low. First, check if output power is low following "Measurement of the Microwave Output Power" procedures, page 7-8.



NOTE 2

The following chart shows the timing periods of the RELAY "1".

POWER	RELAY "1" ON TIME	RELAY "1" OFF TIME
0	0 (Seconds)	29 (Seconds)
1	3	26
2	5	24
3	8	21
4	11	18
5	14	15
6	17	12
7	20	9
8	23	6
9	26	3
HI	29	0

NOTE 3

Interlock monitor switch must be replaced when fuse is blown or open.

MEASURING MICROWAVE POWER OUTPUT USING THE IEC-705 RATING STANDARD

When determining the microwave oven's power output using the **IEC-705** rating standard, the following conditions must be met:

- When making microwave power output measurements, the oven is supplied with its rated line voltage, and operated at its maximum power output setting with a load of **1000 (±5) cc** of potable water.
- The water is contained in a cylindrical borosilicate glass vessel having a maximum material thickness of **1/8"** and an outside diameter of approximately **7.6"**.
- 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°C ± 2° (50°F)**. 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 shelf, which is in the lowest position, and the microwave power switched on.
- The time (in seconds) for the temperature of the water to rise by a value of **10°C ± 2°** is measured. The initial and final water temperatures are selected so that the maximum difference between the final water temperature, and the ambient temperature, is **5°C**.
- The microwave power output (in watts) is calculated, using the following formula:
$$P = \frac{4187 (\Delta T)}{L}$$

L = time (in seconds)
P = microwave output power
(ΔT) = temperature rise °C
- Microwave power output is measured with the oven operating at full power. The magnetron filament heat-up time (approximately 2-seconds) is not included.
- The water is stirred to equalize the temperature throughout the vessel, prior to measuring the final water temperature.
- Stirring devices and measuring instruments are selected to minimize the addition or removal of heat.

EXAMPLE

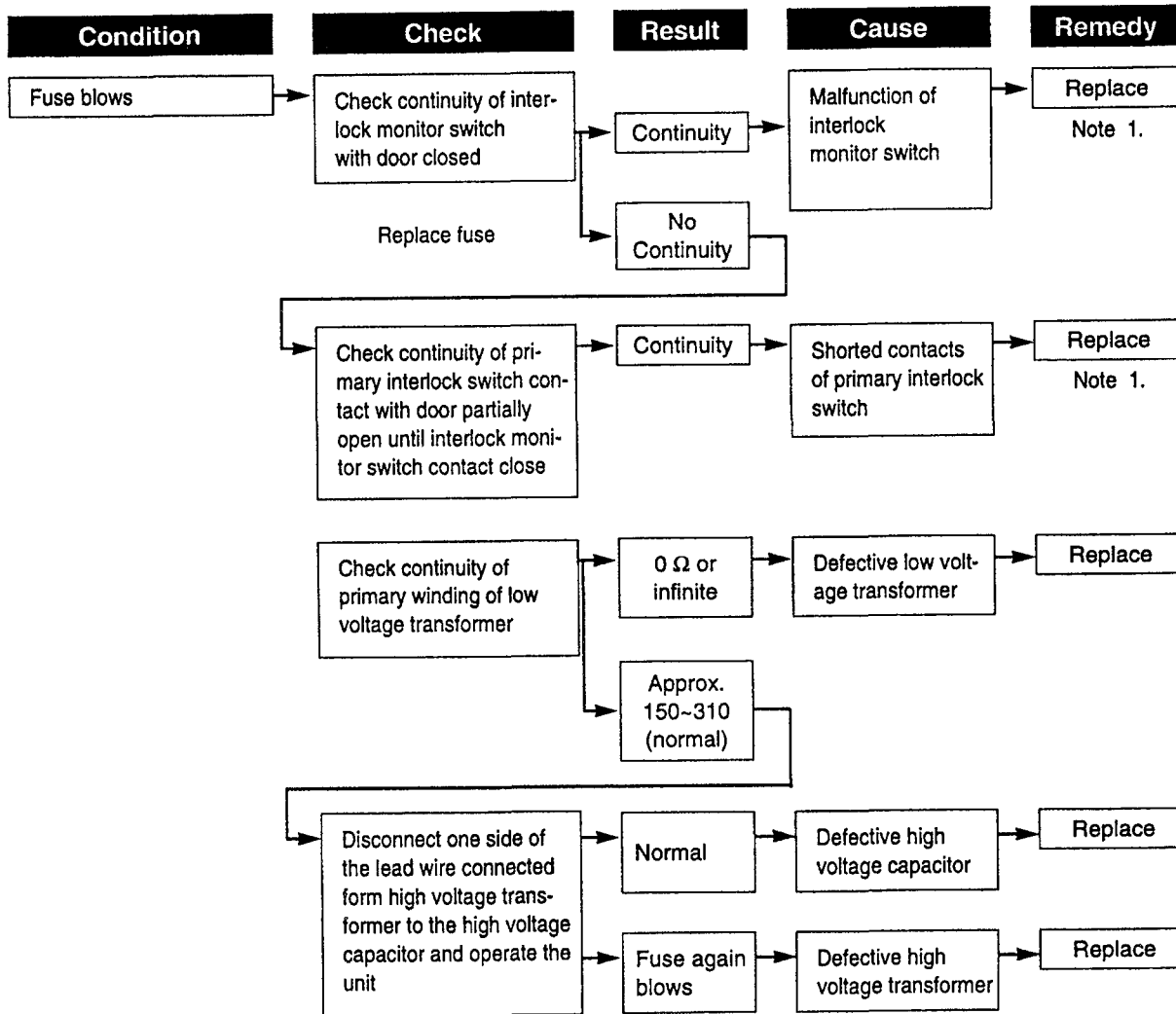
1. 30 oz. water.
2. Measure water temperature.
3. Program on high for 49 seconds.
4. Measure water temperature and determine difference
5. Multiply difference x 49 seconds = wattage
6. Temperature rise should be approximately 85°F. with 120 vac.

Example: $P = 4187 \times \frac{10 \text{ degrees}}{49 \text{ seconds}}$

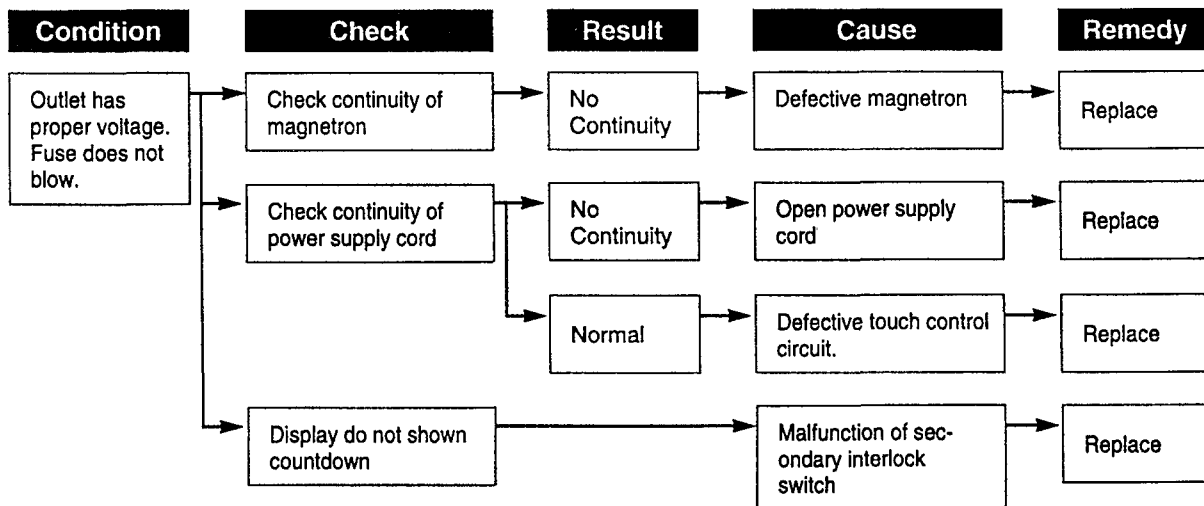
TROUBLESHOOTING GUIDE

(Models: JMC7000ADB, JMC7000ADW, MMC5000DBD, MMC5000BDW)

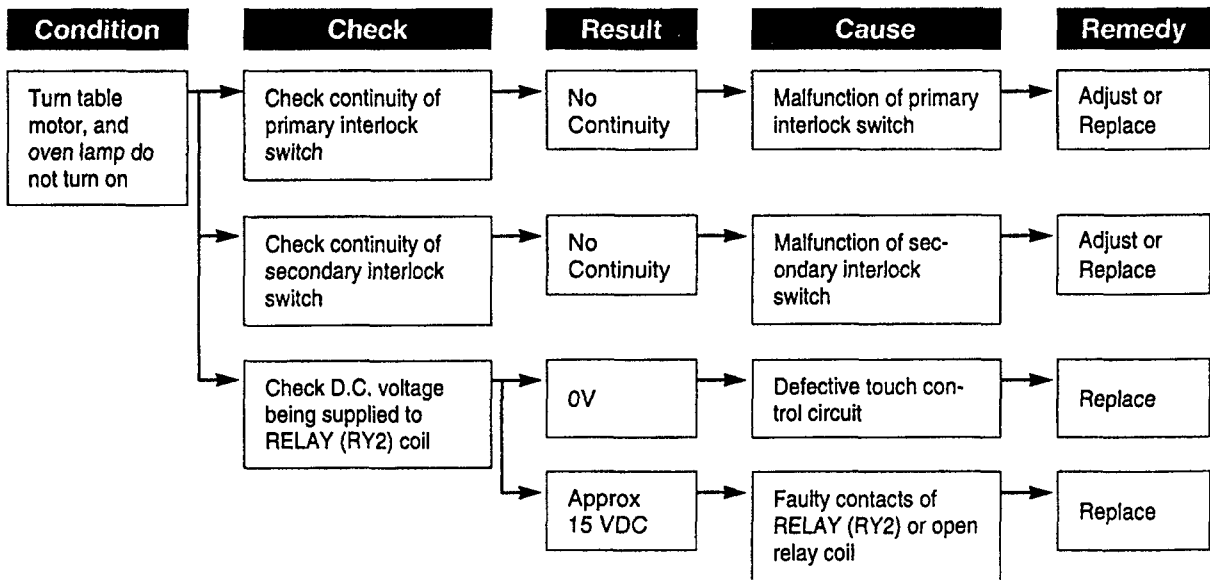
1. Oven does not operate at all: any inputs can not be accepted.



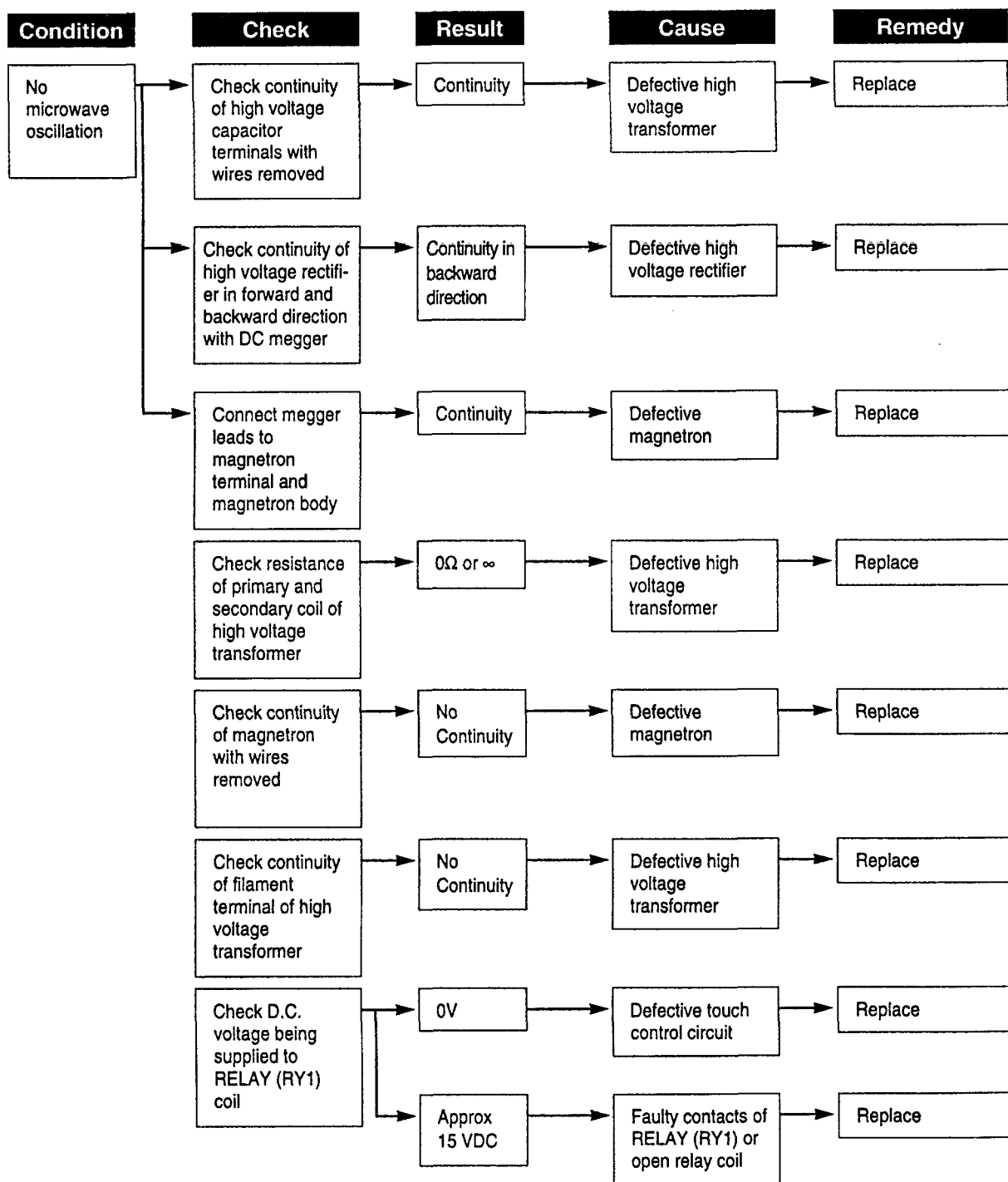
Note: All the switches must be replaced at the same time, please refer to "Interlock Mechanism and Adjustment" (section 4-1).



2. Display shows all figures selected, but oven does not start cooking, even though desired program and time are set and start pad is tapped.

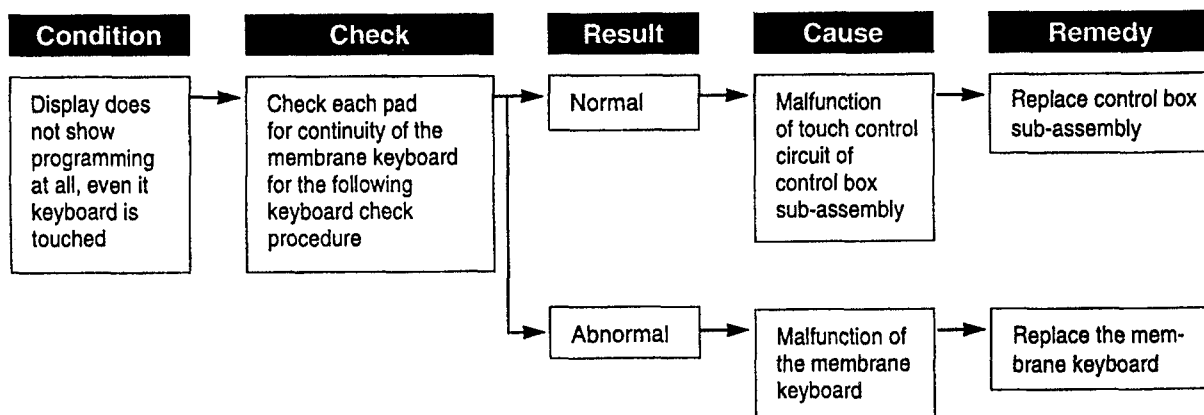


3. No microwave oscillation even though fan motor rotates.



4. The following visual conditions indicate a probable touch control circuit membrane switch assembly.

- a. Incomplete segments.
 - Segments missing.
 - Partial segments missing.
 - Digit flickering other than normal display slight flickering.
 - “.0” does not display when power is on.
- b. A distinct change in the display when the numbers are illuminated.
- c. One or more digits in the display are not on when they should be.
- d. Display indicates a number different from one touched.
- e. Specific numbers (for example 2 or 3) will not display when the panel is touched.
- f. Display does not count down or up with time cooking or clock operation.
- g. Oven is programmable and cooks normally, but no display shows.
- h. Display obviously jumps in time while counting down.
- i. Display counts down noticeably, too fast while cooking.
- j. Display does not show the time of day when clear pad is touched.
- k. Oven lamp and turntable motor do not stop although cooking is finished. Check if the Relay 2 contacts close if they are closed, replace the control circuit.



Note: Before following the particular steps listed above in the troubleshooting guide for the membrane keyboard’s failure, please check for continuity of each wire-harness between the membrane keyboard and P.C.B. assembly.

SECTION 8 - COMPONENT TEST PROCEDURE

- High Voltage is present at the high voltage terminal of the transformer during any cooking cycle.
- It's not necessary nor advisable to attempt measurement of the high voltage.
- Before touching any oven components or wiring, always unplug the oven from its power source and discharge the capacitor (see page 6-1).

1. High voltage transformer (Figure 1)

- Remove connections from the transformer terminals and check continuity.
- Normal readings should be as follows:
Secondary winding Approx. $120\Omega \pm 5\%$
Filament winding Approx. 0Ω
Primary winding Approx. 1.5Ω
For models: JMC7000ADB, JMC7000ADW,
MMC5000BDB, MC5000BDW
Secondary winding Approx. $110\Omega \pm 10\%$

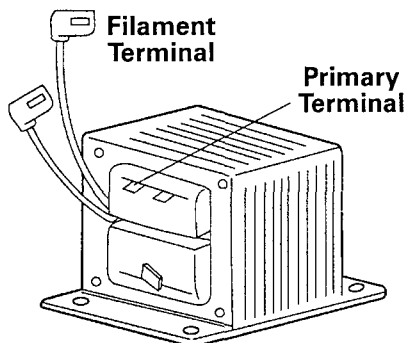


Figure 1

2. High voltage capacitor

- Check continuity of capacitor with meter on the highest OHM scale.
- A normal capacitor will show continuity for a short time, and then indicate $10M\Omega$ once the capacitor is charged.
- A shorted capacitor will show continuous continuity.
- An open capacitor will show constant $10m\Omega$.
- Resistance between each terminal and chassis should be infinite.

3. High voltage diode

- Isolate the diode from the circuit by disconnecting the leads.
- 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. Meters with 6V, 9V or higher voltage batteries should be used to check the front-back resistance of the diode, otherwise an infinite resistance may be read in both directions. A normal diode resistance will be infinite in one direction and several hundred $K\Omega$ in the other direction.

4. Magnetron. (Figure 2)

For complete magnetron diagnosis, refer to "Measurement of the Microwave Output Power" page 5-1. Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or shorted magnetron:

- Isolate magnetron from the circuit by disconnecting the leads.
- A continuity check across magnetron filament terminals should indicate 0.1 ohm or less.
- A continuity check between each filament terminal and magnetron case should read open.

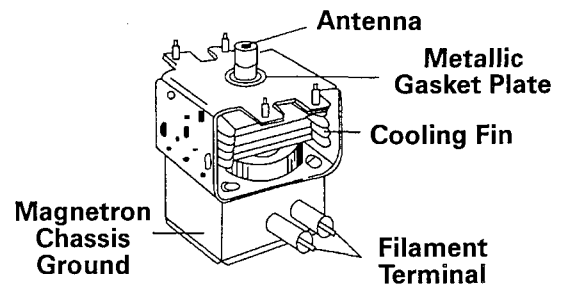


Figure 2

CAUTION

Never install the magnetron without the metallic gasket plate which is packed with each magnetron to prevent microwave leakage. Whenever repair work is carried out on magnetron, check the microwave leakage. It should not exceed $4mW/cm^2$ for a fully assembled oven with door normally closed.

5. Fuse

If the fuse in the primary and monitor switch circuit is blown when the door is opened, check the primary and monitor switch before replacing the blown fuse. In case the fuse is blown by an improper switch operation, replace the defective switch and fuse at the same time.

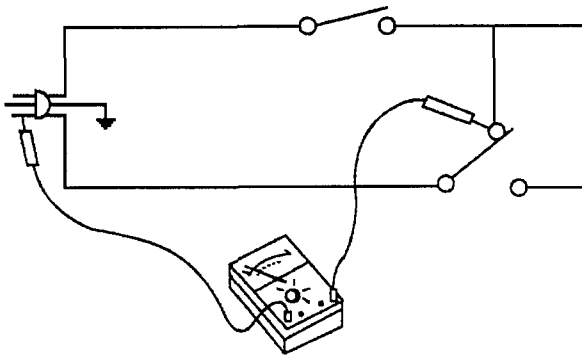
Replace just the fuse if the switches operate normally.

6. Interlock Switch

- You can test continuity of safety interlock and monitor switch by using ohmmeter.
- The switch operation is checked by zero/infinite.
- The meter should indicate zero resistance.
- The sequence of checks is; interlock monitor switch, then primary interlock switch.

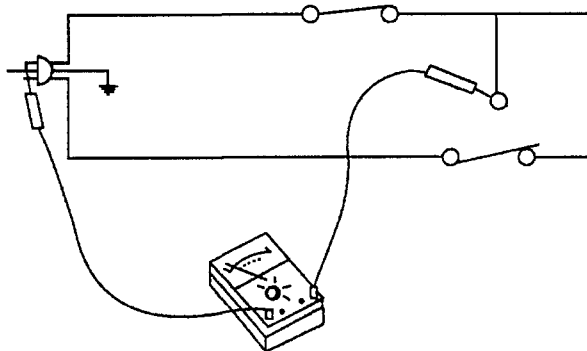
a. Interlock monitor switch check.

b. Primary interlock switch check.



Condition:

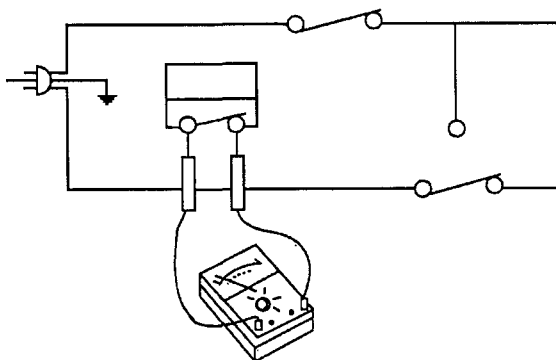
1. Door is opened.
2. NO terminal of the monitor switch disconnected.



Condition:

1. Door is closed.
2. NC terminal of the monitor switch disconnected.

c. D.O.M. switch check.



Condition:

1. The same as primary interlock switch check.

MICROWAVE RADIATION TEST

Caution:

1. Make sure to check for microwave leakage before and after repair or adjustment.
 2. Always start measuring in an unknown field to ensure safety for operating personnel from microwave energy.
 3. Do not place your hands into any suspected microwave radiation field unless the safe density level is known.
 4. Care should be taken not to place your eyes in direct line with the source of microwave energy.
 5. Slowly approach the unit under test until the radiometer reads an appreciable microwave leakage from the unit under test.
- b. When measuring the leakage, always use the 5cm (2") space cone with probe. Hold the probe perpendicular to the cabinet door. Place the space cone of the probe on the door, cabinet, door viewing screen, the exhaust air vents, and the suction air vents.
 - c. Measuring should be in a counterclockwise direction at a rate of 1"/sec. If the leakage of the cabinet door seam is unknown, move the probe more slowly.
 - d. When measuring near a corner of the door, keep the probe perpendicular to areas making sure the probe end at the base of the cone does not get closer than 2" from any metal. If it does not, erroneous reading may result.

Procedure:

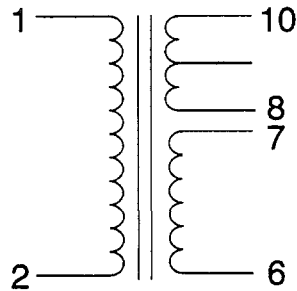
1. Prepare Microwave Energy Survey Meter, 600cc glass beaker, and glass thermometer 100C (212°F).
2. Pour 275cc of tap water initially at 20C (68°F) in the 600cc glass beaker with an inside diameter of approx. 95mm (3.5")
3. Place it at the center of the tray and set it in the cavity.
4. Close the door and operate the oven.
5. Measure the leakage by using Microwave Energy Survey Meter with dual ranges, set to 2450 MHZ.
 - a. Measured radiation leakage must not exceed the value prescribed below. Leakage for a fully assembled oven with door normally closed must be less than 4mW/cm².

SECTION 9 - PRINTED CIRCUIT BOARD

Model: M170

1. Circuit Check Procedure

- a. Low voltage Transformer check.
- The low voltage transformer is located on the P.C.B.
 - Measuring condition: Input voltage; 120V
Frequency; 60 Hz



Terminal \ Voltage	LOAD	NO LOAD
6 - 7	24VAC	30VAC
8 - 10	2.4VAC	2.5VAC
1 - 2	120VAC	120VAC

NOTE

Secondary side voltage of the low voltage transformer changes in proportion to fluctuation of power source voltage.

The allowable tolerance of the secondary voltage is within $\pm 5\%$ of nominal voltage.

2. Display Problems

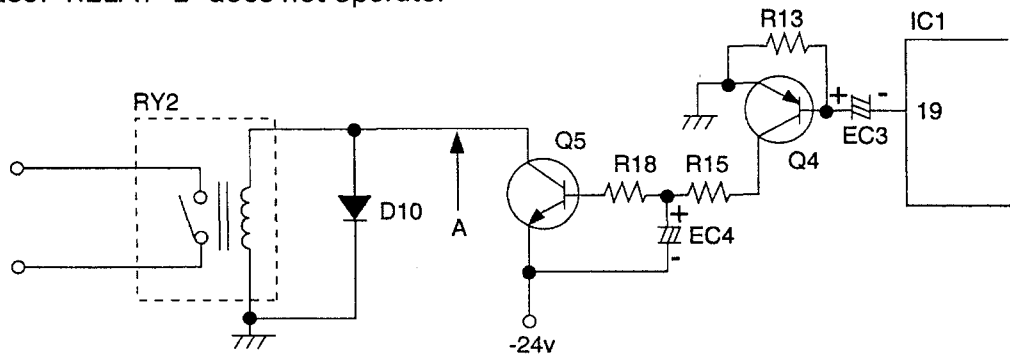
NO	CAUSE	MEASUREMENT	RESULT	REMEDY
1	Poor contact between P.C.B. and display filament	Check the voltage of PIN 1 & PIN 25.	2.4 VAC	Replace P.C.B.

NOTE

Each checkpoint is measured from the test point indicated to ground.

3. When there is no microwave cooking.

- a. When touching START pad, oven lamp does not turn on.
- Fan motor and turntable motor do rotate, cook indicator in display comes on.
 - * Cause: RELAY "2" does not operate.



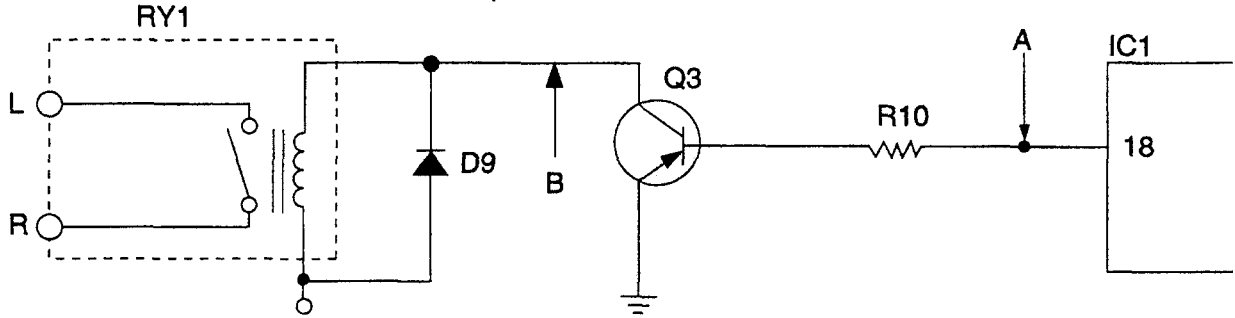
CHECK METHOD

STAGE \ POINT	A
RELAY "2" ON	-24VDC
RELAY "2" OFF	GND (0 voltage)

B. When touching START pad, oven lamp turns on.

- Fan motor and turntable rotate and cook indicator in display comes on but does not cook.

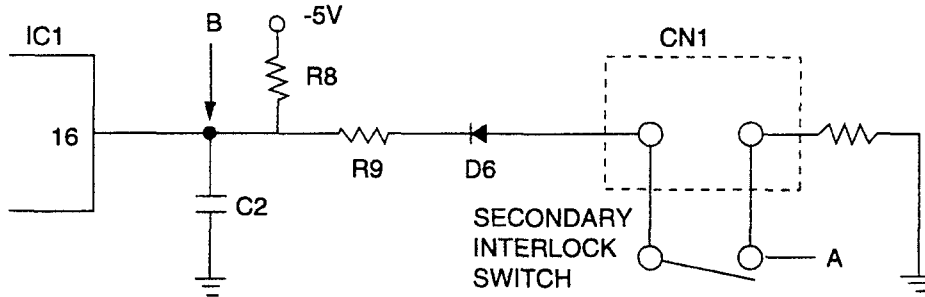
* Cause: RELAY "1" does not operate.



CHECK METHOD

STAGE \ POINT	A	B
RELAY "1" ON	-5VDC	GND
RELAY "1" OFF	GND	GND

4. When the door is opened during operation, the count down time does not stop.



CHECK METHOD

STAGE \ POINT	A	B
1) DOOR OPENED	OPEN	-5VDC
2) DOOR CLOSED	CLOSE	GND

CHECK NO.	METHOD	REMEDY
1	Check the stage (ON, OFF) of the secondary interlock switch by resistance measurement.	Replace secondary/interlock switch

Models: JMC7000ADB, JMC7000ADW, MMC5000DBD, MMC5000BDW

1. Circuit Check Procedure

TERMINAL VOLTAGE	LOAD	NO LOAD
4-7	12.6V (AC)	14.7 V (AC)

2. Display Problems

Voltage Check

- Key check point

NO	CHECK POINT	REMARK
1	ICI PIN 2,21,30,34	-5VDC

- Check method

NO	MEASURE POINT	WAVE FORM	REMEDY	REMARK
1	MP1	-5VDC +/-0.25 V	Replace VL1, EC1	No Load
2	MP2	-12 VDC +/-2.0 V	Replace EC2, D12,13,14	No Load

See Measurement Point (Page 9-5)

3. When there is no microwave cooking.

Condition: When touching START pad, oven lamp does not turn on. Fan motor does not rotate, but cook indicator in display comes on.

Cause: Relay 2 does not operate (Refer to Circuit Diagram point 3).

- Check method

STATE	POINT	A	B
Relay 2 On		-5VDC	GND
Relay 2 Off		GND	-12VDC

Condition: When touching START pad, oven lamp turns on. Fan motor and turntable rotate and cook indicator in display comes on.

Cause: Relay 1 does not operate. (Refer to Circuit Diagram point 2).

•Check Method

STATE	POINT	A	B
Relay 2 On		-5VDC	GND
Relay 1 Off		GND	-12VDC

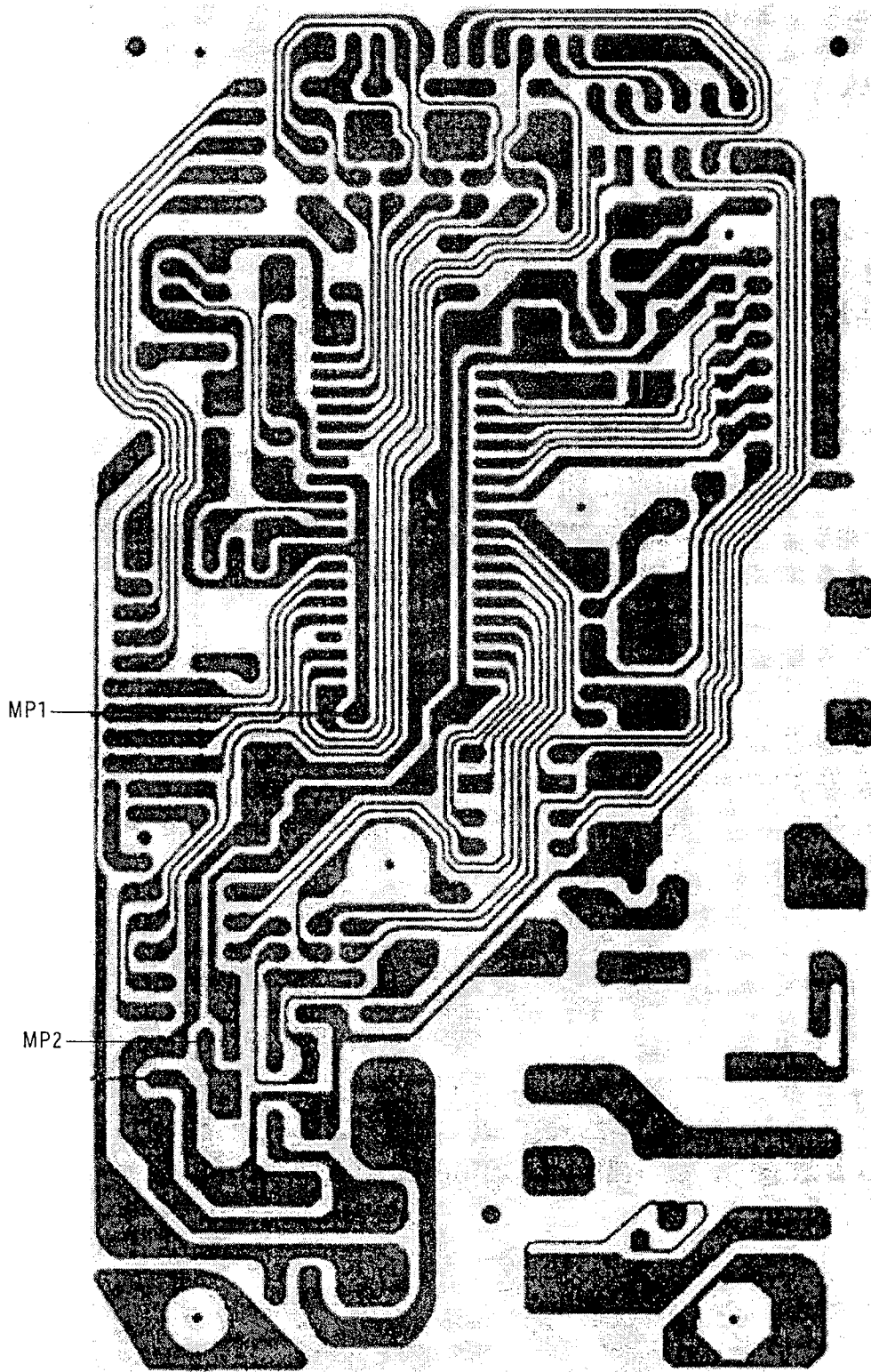
4. Refer to Circuit Diagram

•Check Method

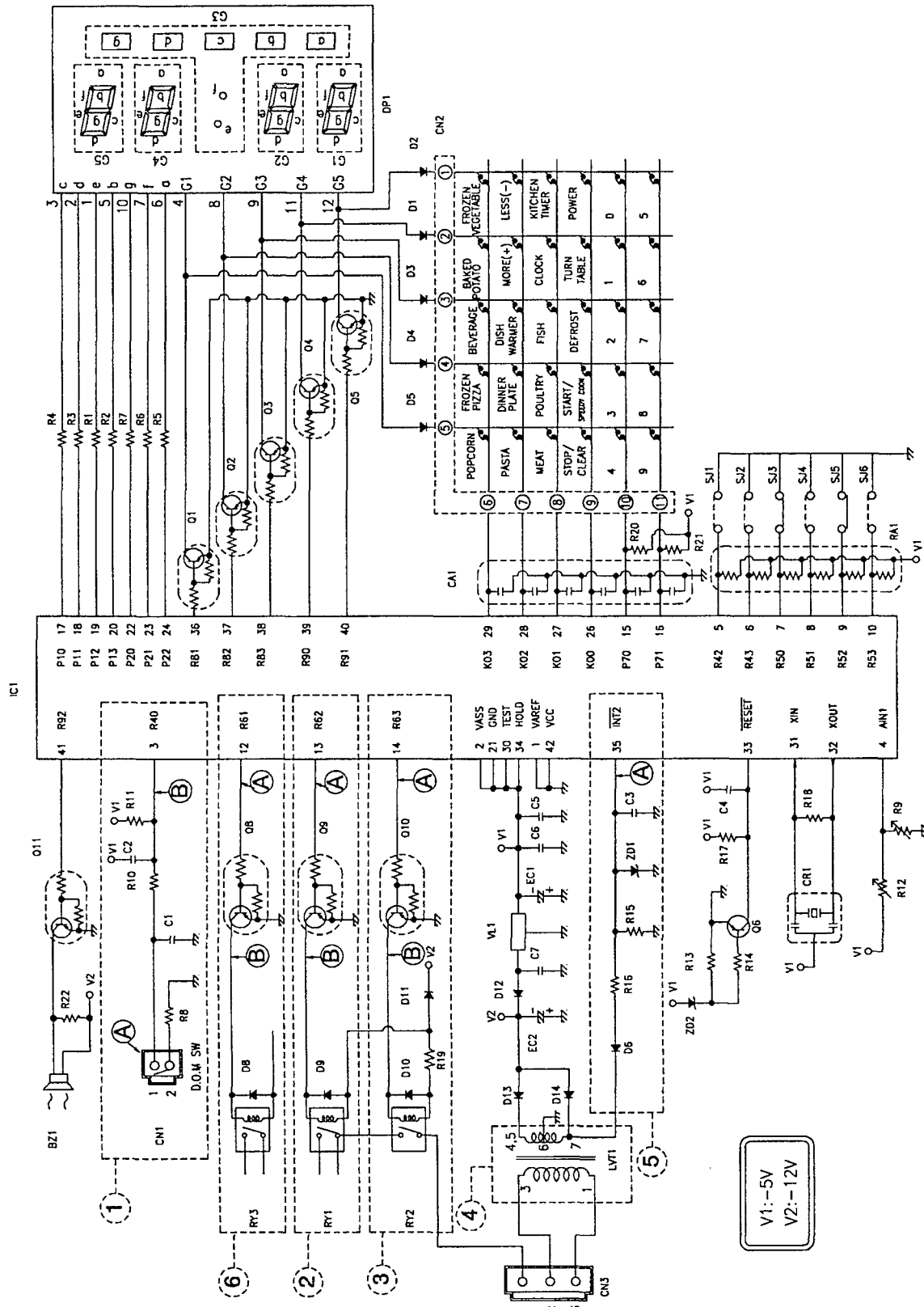
STATE	POINT	A	B
1) Door Open		Open	-5VDC
2) Door Closed		Closed	GND

CHECK NO	METHOD	REMEDY
1	Check the stage (on, off) of the secondary interlock switch by resistance measurement.	Replace secondary interlock switch.

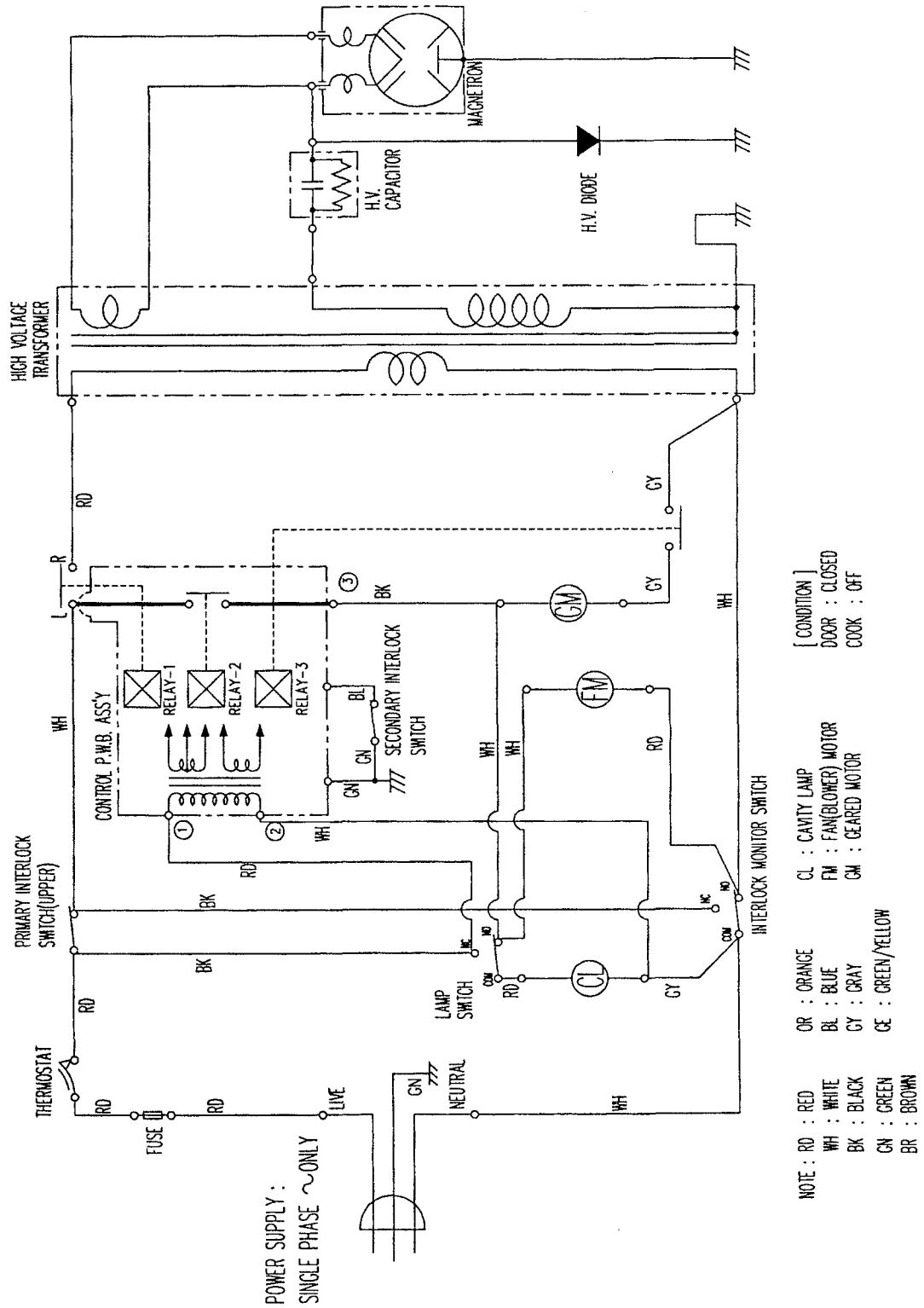
Printed Circuit Board - Measurement Point



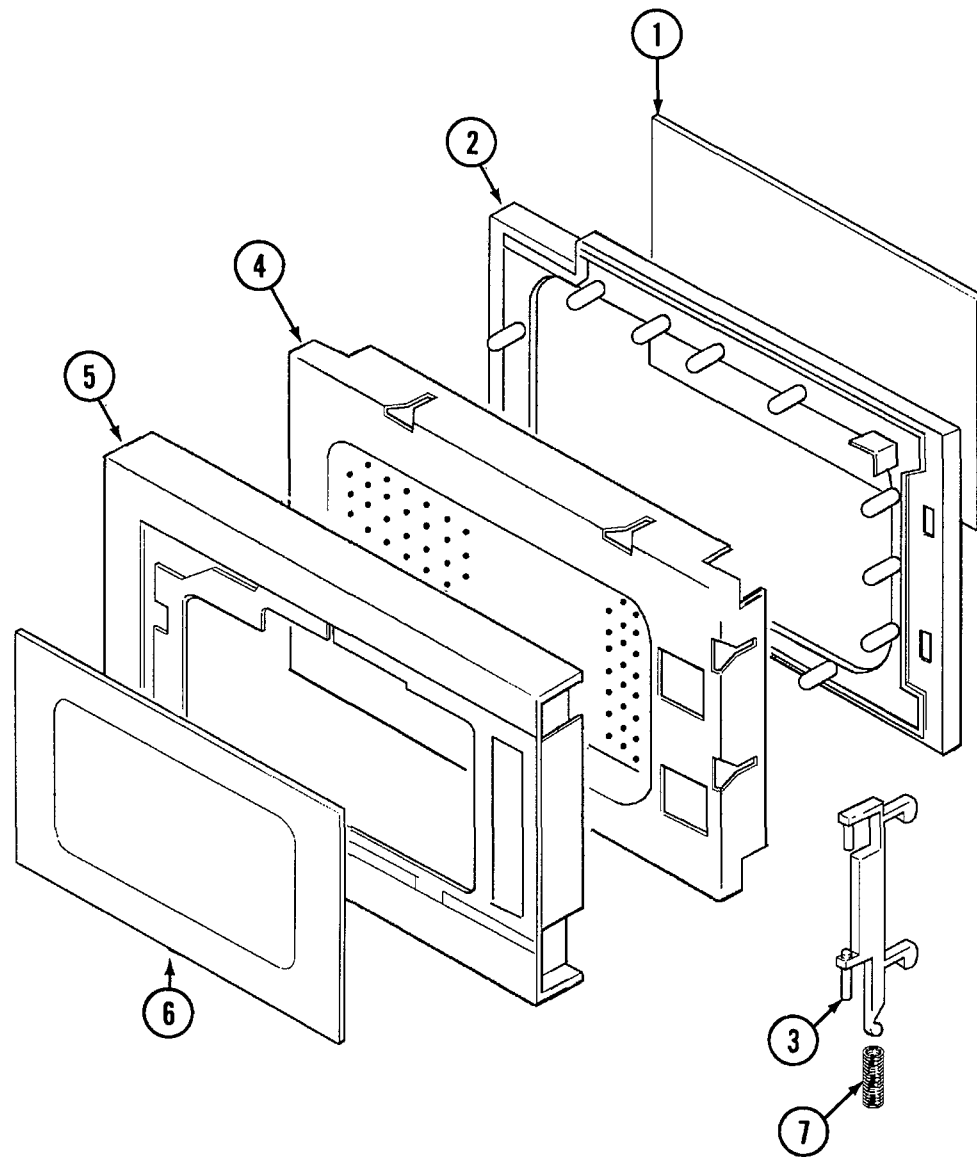
Printed Circuit Board - PCB Circuit Diagram



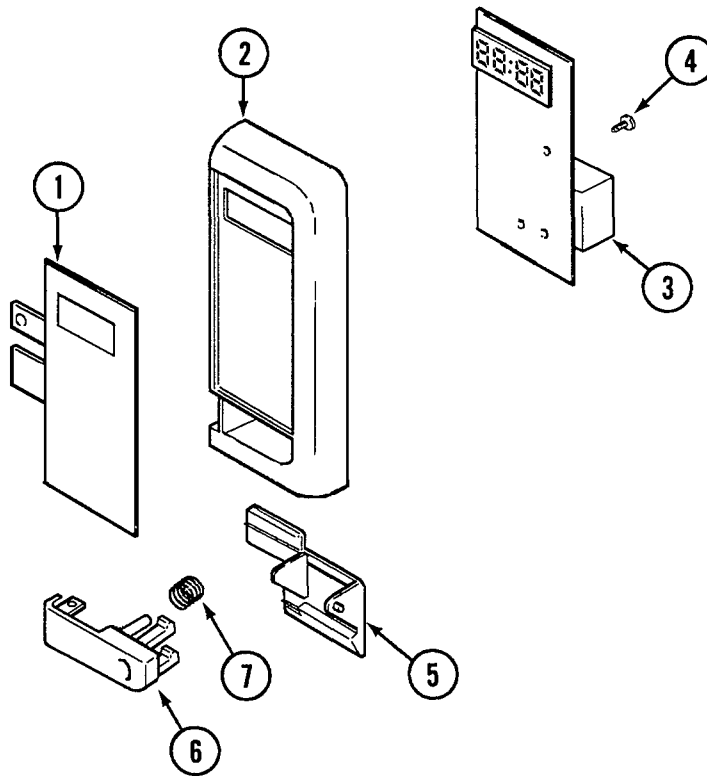
Wiring Diagram



SECTION 10 - PARTS LIST



1. Screen, Door (Inner)
2. Choke, Door
3. Strike, Door
4. Weld, Door
5. Frame, Door
6. Window, Outer
7. Spring, Strike



1. Switch, Membrane
2. Trim, Control Panel (must order #1 also)
3. Board, Control
4. Screw, Board
5. Lever, Door
6. Button, Door Release
7. Spring, Button

MAYTAG

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