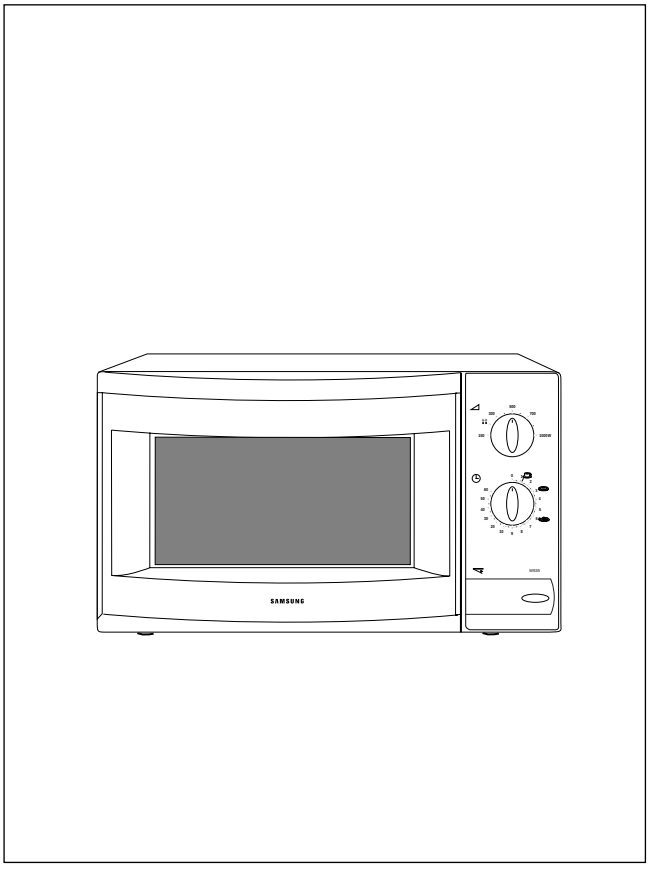
SAMSUNG

MICROWAVE OVEN

M935

SERVICE Manual

MICROWAVE OVEN



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1. Precaution

Follow these special safety precautions. Although the microwave oven is completely safe during ordinary use, repair work can be extremely hazardous due to possible exposure to microwave radiation, as well as potentially lethal high voltages and currents.

1-1 Safety precautions (⚠)

1. All repairs should be done in accordance with the procedures described in this manual. This product complies with Federal Performance Standard 21 CFR Subchapter J (DHHS).

2. Microwave emission check should be performed to prior to servicing if the oven is operative.

3. If the oven operates with the door open : Instruct the user not to operate the oven and contact the manufacturer and the center for devices and radiological health immediatly.

4. Notify the Central Service Center if the microwave leakage exceeds 5 mW/cm^2

5. Check all grounds.

6. Do not power the MWO from a "2-prong" AC cord. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.

7. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including: nonmetallic control knobs and compartment covers.

8. Make sure that there are no cabinet openings through which people--particularly children--might insert objects and contact dangerous voltages. Examples: Lamp hole, ventilation slots.

9. Inform the manufacturer of any oven found to have emmission in excess of 5 mW/cm^2, Make repairs to bring the unit into compliance at no cost to owner and try to determine cause.
   Instruct owner not to use oven until it has been brought into compliance.

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10. Service technicians should remove their watches while repairing an MWO.

11. To avoid any possible radiation hazard, replace parts in accordance with the wiring diagram. Also, use only the exact replacements for the following parts: Primary and secondary interlock switches, interlock monitor switch.

12. If the fuse is blown by the Interlock Monitor Switch: Replace all of the following at the same time: Primary and secondary switches, as well as the Interlock Monitor Switch. The correct adjustment of these switches is described elsewhere in this manual. Make sure that the fuse has the correct rating for the particular model being repaired.

13. Design Alteration Warning:
    Use exact replacement parts only, i.e., only those that are specified in the drawings and parts lists of this manual. This is especially important for the Interlock switches, described above. Never alter or add to the mechanical or electrical design of the MWO. Any design changes or additions will void the manufacturer's warranty.10.Always unplug the unit's AC power cord from the AC power source before attempting to remove or reinstall any component or assembly.

14. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.

15. Some semiconductor ("solid state") devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs). Examples include integrated circuits and field-effect transistors.

    Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground.

16. Always connect a test instrument's ground lead to the instrument chassis ground *before* connecting the positive lead; always remove the instrument's ground lead last.

1-2 Special Servicing Precautions (Continued)

17. When checking the continuity of the witches or transformer, always make sure that the power is OFF, and one of the lead wires is disconnected.
18. Components that are critical for safety are indicated in the circuit diagram by shading, ⚠ or ⚠.
19. Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

1-3 Special High Voltage Precautions

1. High Voltage Warning
   Do not attempt to measureany of the high voltages--this includes the filament voltage of the magnetron. High voltage is present during any cook cycle.

   Before touching any components or wiring, always unplug the oven and discharge the high voltage capacitor (See Figure 1-1)

2. The high-voltage capacitor remains charged about 30 seconds after disconnection. Short the negative terminal of the high-voltage capacitor to to the oven chassis. (Use a screwdriver.)

3. High voltage is maintained within specified limits by close-tolerance, safety-related components and adjustments. If the high voltage exceeds the specified limits, check each of the special components.

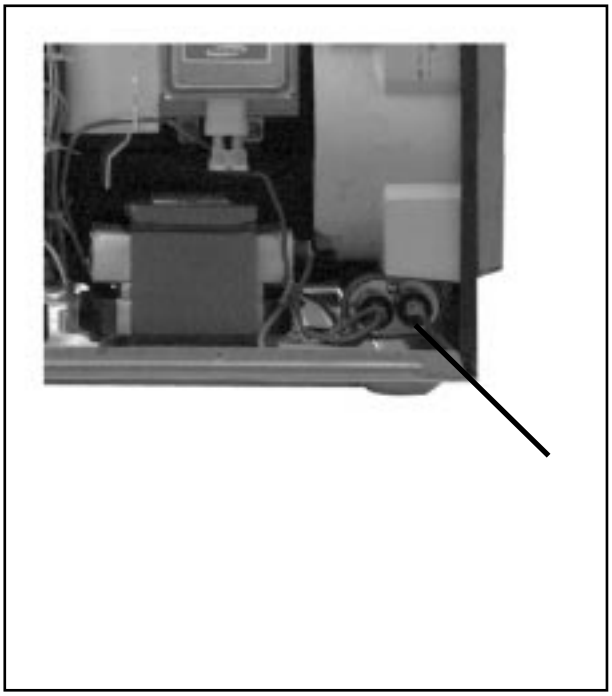


Fig. 1-1. Discharging the High Voltage Capacitor

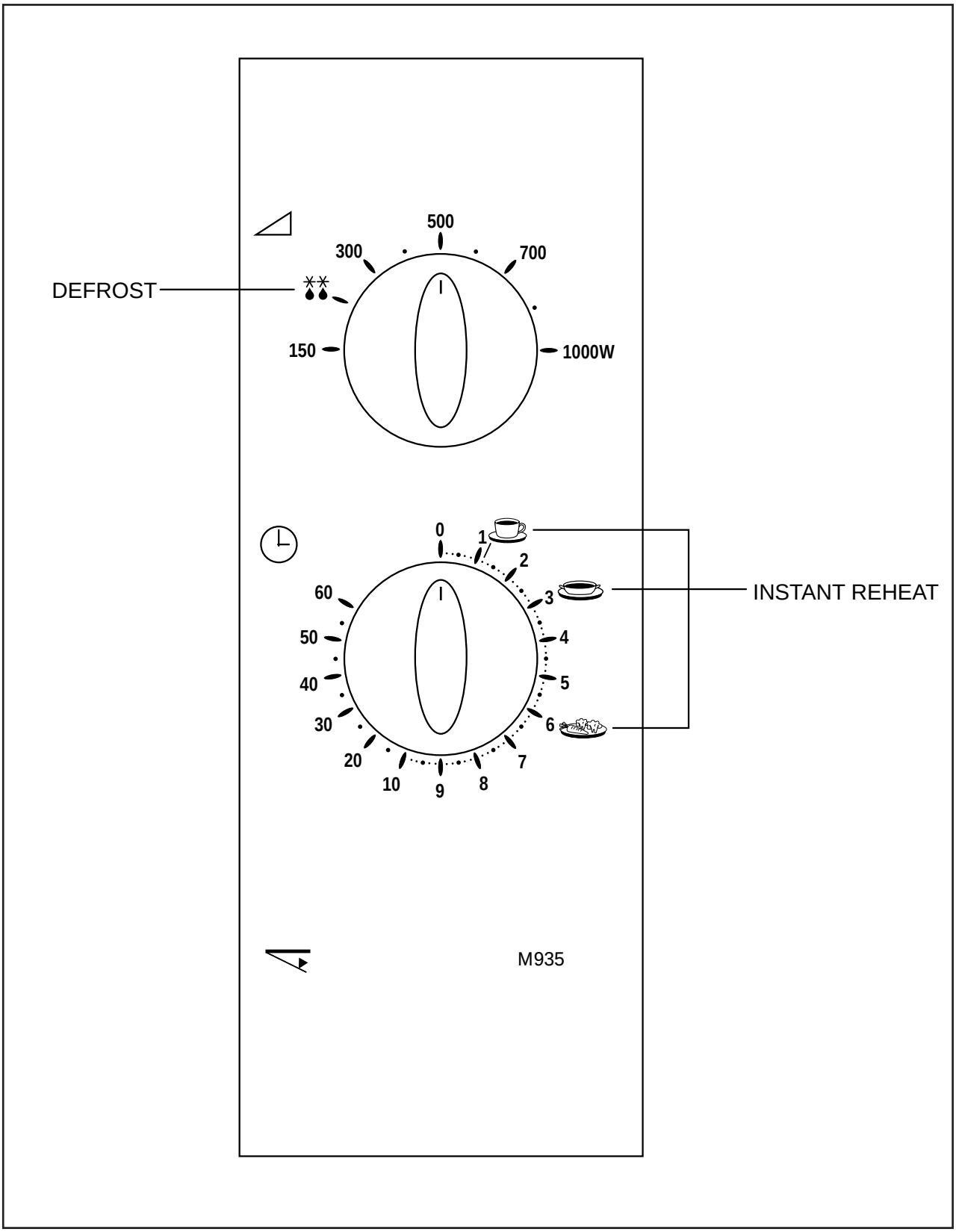
2. Specifications

2-1 Table of Specifications

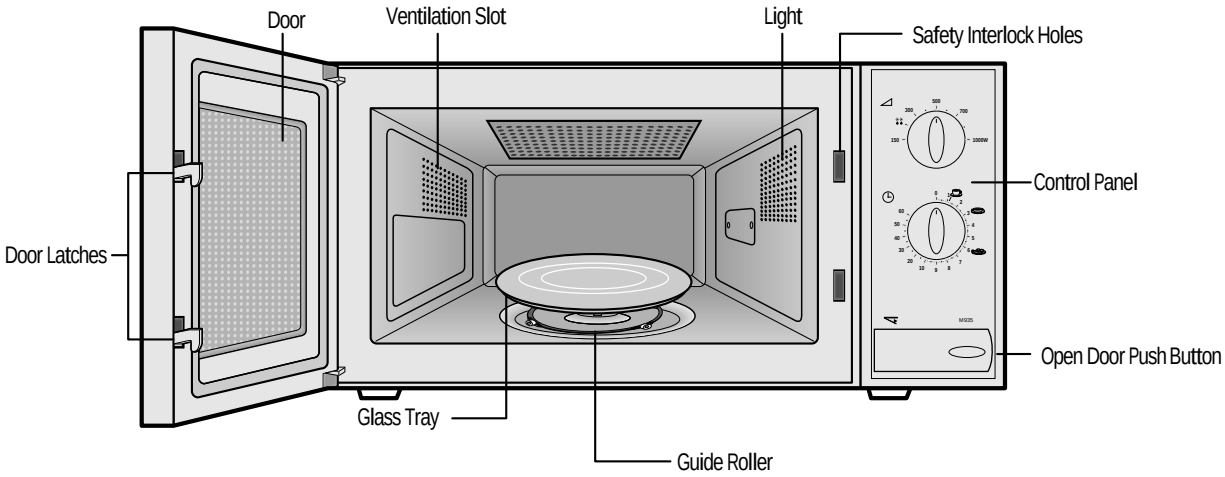
	M935
POWER SOURCE	230V 50Hz, SINGLE PHASE
POWER CONSUMPTION	1,550W
OUTPUT POWER	150W/1000W
OPERATING FREQUENCY	2450MHz
TIMER	60 MINUTES
COOLING METHOD	AIR COOLING
MAGNETRON	OM75P(31)ESST
OUTSIDE DIMENSIONS	517(W) x 297(D) x 385(H)mm
OVEN CAVITY DIMENSIONS	330(W) x 232(D) x341(H)mm
SHIPPING WEIGHT	APPROX. 15.5 Kg

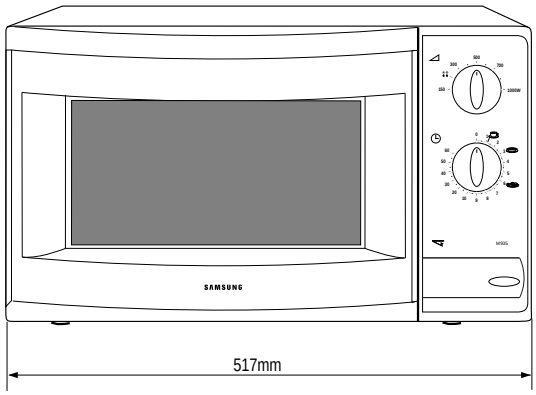
3. Operating Instructions

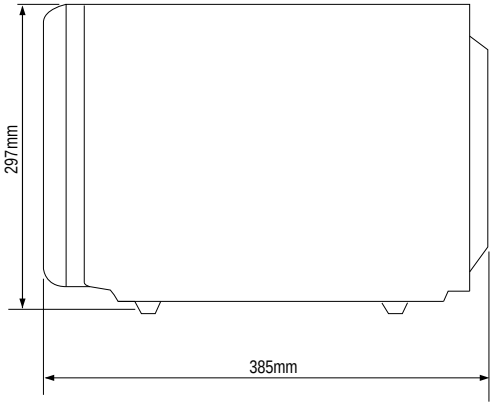
3-1 Control Panel



3-2 Features & External Views







3-3 Checking That Your Oven is Operating Correctly

NOTE: The oven must be plugged into an appropriate wall socket.
The glass plate must be in position in the ovn.

1. Open the oven door by pushing the OPEN DOOR button. Place a glass of water on the glass plate. Close the door.
2. Set the power level to 100(maximum) by turning COOKING POWER CONTROL knob.
3. Set the time to 4 to 5 minutes by turing TIMER knob.
   Important: If any problem is experienced in the operation of the oven, please refer to the section on page 4 "what to do if you are in doubt or have a problem."

3-4 Variable Power Cooking Chart

Operation:

Set the COOKING POWER CONTROL knob to the appropriate power level by turning it.

POWER LEVEL	%	OUTPUT
		M935
HIGH	100%	1000W
MEDIUM HIGH	70%	700W
MEDIUM	50%	500W
DEFROST	30%	300W
LOW	15%	150W

3-5 Adjusting the Cooking Time During Cooking

Stopping the Cooking

To stop the cooking....	Press....
Temporarily	Open Door. To resume cooking, close the door.
Completely	Turn the TIMER knob to 'O'

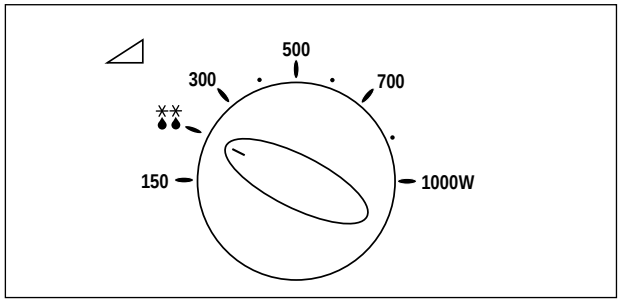
Adding Extra Time

Simply move the timer knob to any increased setting that you require.

3-6 Manual Defrosting Food

1. Place the frozen food in the oven and close the door.
2. Turn the COOKING POWER CONTROL knob to Defrost symbol.
3. Turn the TIMER knob to select appropriate time.

   Result: Defrosting begins.
   When Defrosting has finished, the oven beeps.



3-7 Instant Cook Guide

1. Place the food in the oven and close the door.
2. Turn the COOKING POWER CONTROL knob to Max Power.
3. Turn the TIMER knob to select instant cook, drinks or jacket potatoes.

Symbol	Recipes	Serving Size	Power level	Standing Time
	Drink	150 mL	100%	1~2mins.
	Soup/ Sauce	200~300 ml	100%	2mins.
	Fresh Vegetables	200~300 g	100%	2mins

4. Disassembly & Reassembly

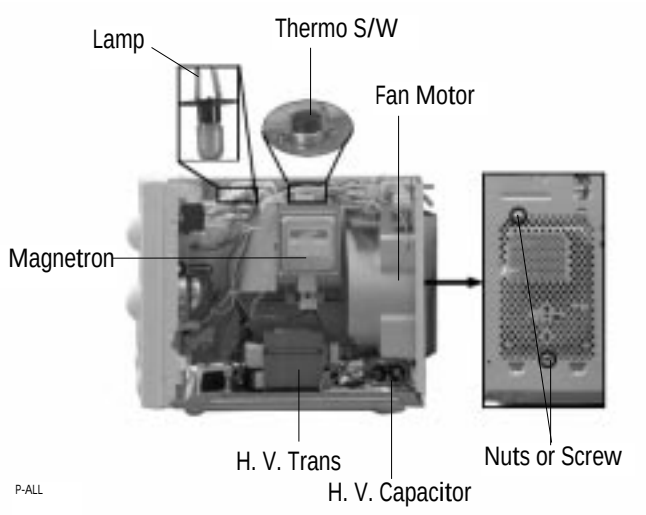
4-1 Replacement of Magnetron, Motor Assembly and Lamp

Remove the magnetron including the shield case, permanent magnet, choke coils and capacitors (all of which are contained in one assembly).

1. Disconnect all lead wires from the magnetron and lamp.
2. Remove a screw securing the magnetron supporter.
3. Remove the magnetron supporter.
4. Remove the air cover.
5. Remove screws securing the magnetron to the wave guide.
6. Take out the magnetron very carefully.
7. Remove screws from the back panel.
8. Take out the fan motor.
9. Remove the oven lamp by rotating to pull out from hole of air cover.

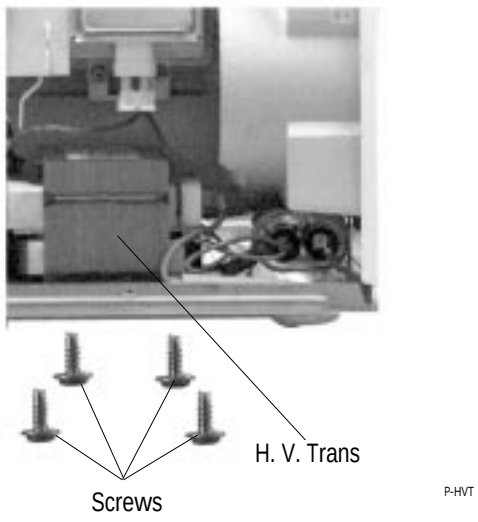
NOTE1: When removing the magnetron, make sure that its antenna does not hit any adjacent parts, or it may be damaged.

NOTE2: When replacing the magnetron, be sure to remount the magnetron gasket in the correct position and make sure the gasket is in good condition.



4-2 Replacement of High Voltage Transformer

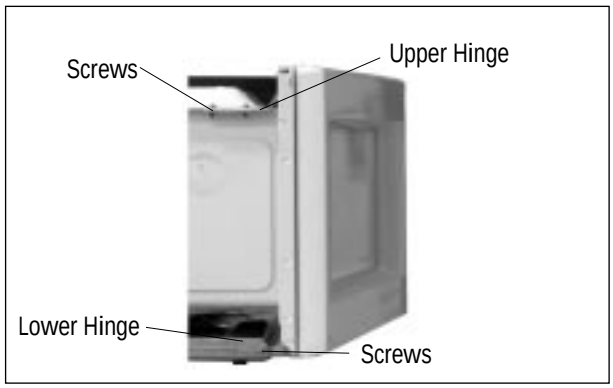
1. Discharge the high voltage capacitor.
2. Disconnect all the leads.
3. Remove the mounting bolts.
4. Reconnect the leads correctly and firmly.



4-3 Replacement of Door Assembly

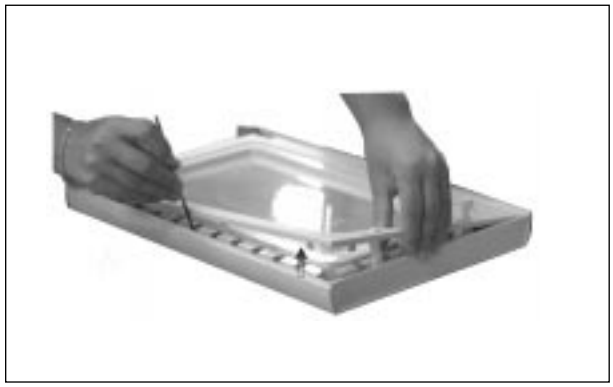
4-3-1 Removal of Door Assembly

Remove hex bolts securing the upper hinge and lower hinge. Then remove the door assembly.



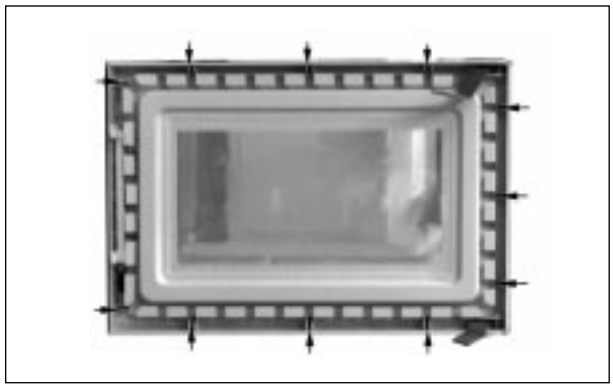
4-3-2 Removal of Door "C"

Insert flat screwdriver into the gap between Door "E" and Door "C" to remove Door "C". Be careful when handling Door "C" because it is fragile.



4-3-3 Removal of Door "E"

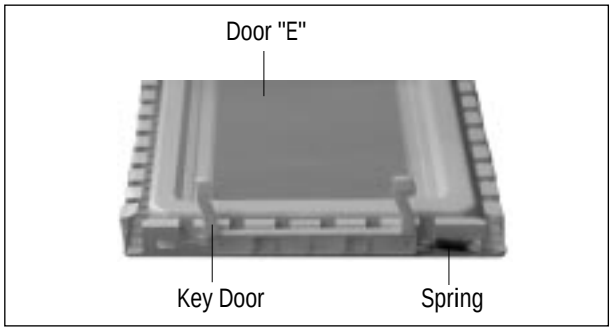
Following the procedure as shown in the figure, insert and bend a thin metal plate between Door "E" and Door "A" until you hear the 'tick' sound.



1. Insertion depth of the thin metal plate should be 0.5mm or less.

4-3-4 Removal of Key Door & Spring

Remove pin hinge from Door "E"
Detach spring from Door "E" and key door.



4-3-5 Reassembly Test

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

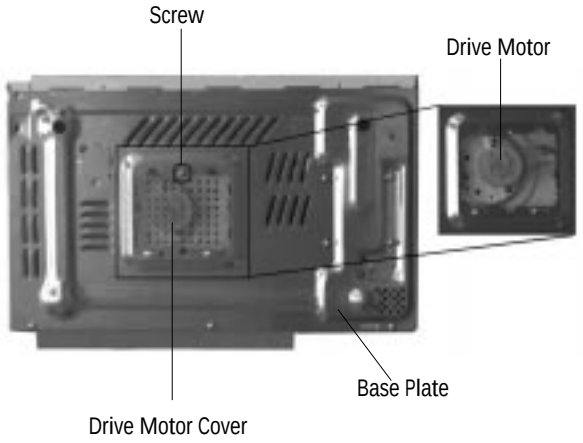
1. When mounting the door to the oven, be sure to adjust the door parallel to the bottom line of the oven face plate by moving the upper hinge and lower hinge in the direction necessary for proper alignment.
2. Adjust so that the door has no play between the inner door surface and oven front surface.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

4-4 Replacement of Fuse

1. Disconnect the oven from the power source.
2. Remove the 10A fuse in the fuse holder.
3. When replacing the 10A fuse, be sure to use an exact replacement part. If new 10A fuse blows out again after replacement, check the primary interlock switch, door sensing switch and interlock monitor switch.
4. When the above three switches operate properly, check if any other part such as the control circuit board, blower motor or high voltage transformer is defective.

4-5 Replacement of Drive Motor

1. Take out the glass tray, guide roller and coupler from cavity.
2. Turn the oven upside down to replace the drive motor.
3. Remove a screw securing the drive motor cover.
4. Disconnect all the lead wires from the drive motor.
5. Remove screws securing the drive motor to the cavity.
6. Remove the drive motor.
7. When replacing the drive motor, be sure to remount it in the correct position.
8. Connect all the leads to the drive motor.
9. Screw the deive motor cover to the base plate with a screw driver.
10. Remount the coupler in the correct position.



6. Troubleshooting

WARNING FOR HIGH VOLTAGE

4000 VOLTS EXIST AT THE HIGH VOLTAGE AREA. DO NOT OPERATE THE OVEN WITH CABINET PARTS REMOVED. DO NOT REMOVE THE CABINET PARTS IF THE POWER SUPPLY CORD IS PLUGGED IN THE WALL OUTLET. UNPLUG THE POWER CORD BEFORE SERVICING.

6-1 Electrical Malfunction

Parts	Cause	Diagnosis	Remedy
Fuse blows out when door is opened.	Defective primary interlock switch ary winding.	Check continuity of the primary switch terminals with wire removed using a multimeter. If there is continuity between switch terminals when door is opened, the switch is defective.	Replace the primary interlock switch
	Defective interlock monitor switch	Check continuity of the monitor switch terminals with wire removed by using a multimeter. If there is continuity between switch terminals when the door is closed, the switch is defective.	Replace the interlock monitor switch
Fuse is open.	Layer short of the secondary coil of H. V. Transformer	The fuse will not blow right away, but if it blows in a few seconds, then there is a layer short. If the fuse blows with H. V. Trans secondary open, the transformer may be faulty.	Replace H. V. Transformer
Oven lamp does not light.	1) Fuse blown out	Check fuse.	Replace the fuse.
	2) Poor contact of power cord	Check continuity of power supply cord. Also check whether the power cord is securely wired.	Adjust or replace the power supply cord.
	3) Defective lamp	The fan motor rotates, but lamp does not light.	Replace the lamp.
	4) Defective timer contacts	Check the terminals of timer for continuity, turning the timer knob ON and OFF repeatedly.	Replace the timer.
	5) Thermal cutout S/W open	In this case the oven lamp and fan do not turn on	Replace the thermal cutout S/W
Fan does not operate.	1) Defective fan motor.	If 220~230V is found at motor terminals, the motor should be replaced.	Replace the motor.
	2) Defective contacts of timer	The oven lamp does not light and fan motor does not operate.	Replace the timer.

NOTE: Interlock monitor switch must be replaced when the fuse is blown out.

6-1 Electrical Malfunction (Continved)

Parts	Cause	Diagnosis	Remedy
Microwave turns off during cook-ing cycle.	1) Too small a load	If a small amount of food is heated for a long time, period of microwave may turn off during operation.	To increase the oven load, add a glass of water into the oven.
	2) Defective magnetron thermal cutout S/W	Check to see if the magnetron thermal cutout switch is activated at a temperature higher than 150˚C.	Replace thermal cutout switch.
Electric shock is felt.	Incomplete qrounding	Make sure that qrounding of the power supply cord has been done properly.	Rewire.
Door does not operate properly	1) Broken door hinges	Remove the cabinet for inspection. Check the door hinge.	Replace door hinges.
	2) Missing or loose screw	Check if the screws are secured well to the door hinge.	Fasten or tighten.
Timer does not operate.	1) Defective timer motor	If the timer does not operate with 220~230V applied to the terminals, the timer motor amy be faulty.	Replace timer.
	2) Defective contacts of timer S/W	The lamp does not light.	Replace timer
Cooking tray does not rotate.	1) Defective drive motor	Check to see if 21V exists at the motor terminals. If so, motor will be defective.	Replace drive motor.
	1) Blocking of the ventilatior	Check if the air inlet or outlet ventilation is blocked by the wall or other objects.	Keep a distance of 100mm from the wall or the objects.
Magnetron thermal cutout switch OFF	2) Defective fan motor	If the fan motor does not operate with 220~230V applied to the terminal, the motor may be faulty.	Replace fan motor.
	3) Too small a load or no load	If a small amount of food is heated repeatedly over a long period of time, microwave turns off during operation.	To increase the oven load, place a glass of water into the oven.

6-2 Unsatisfactory Cooking

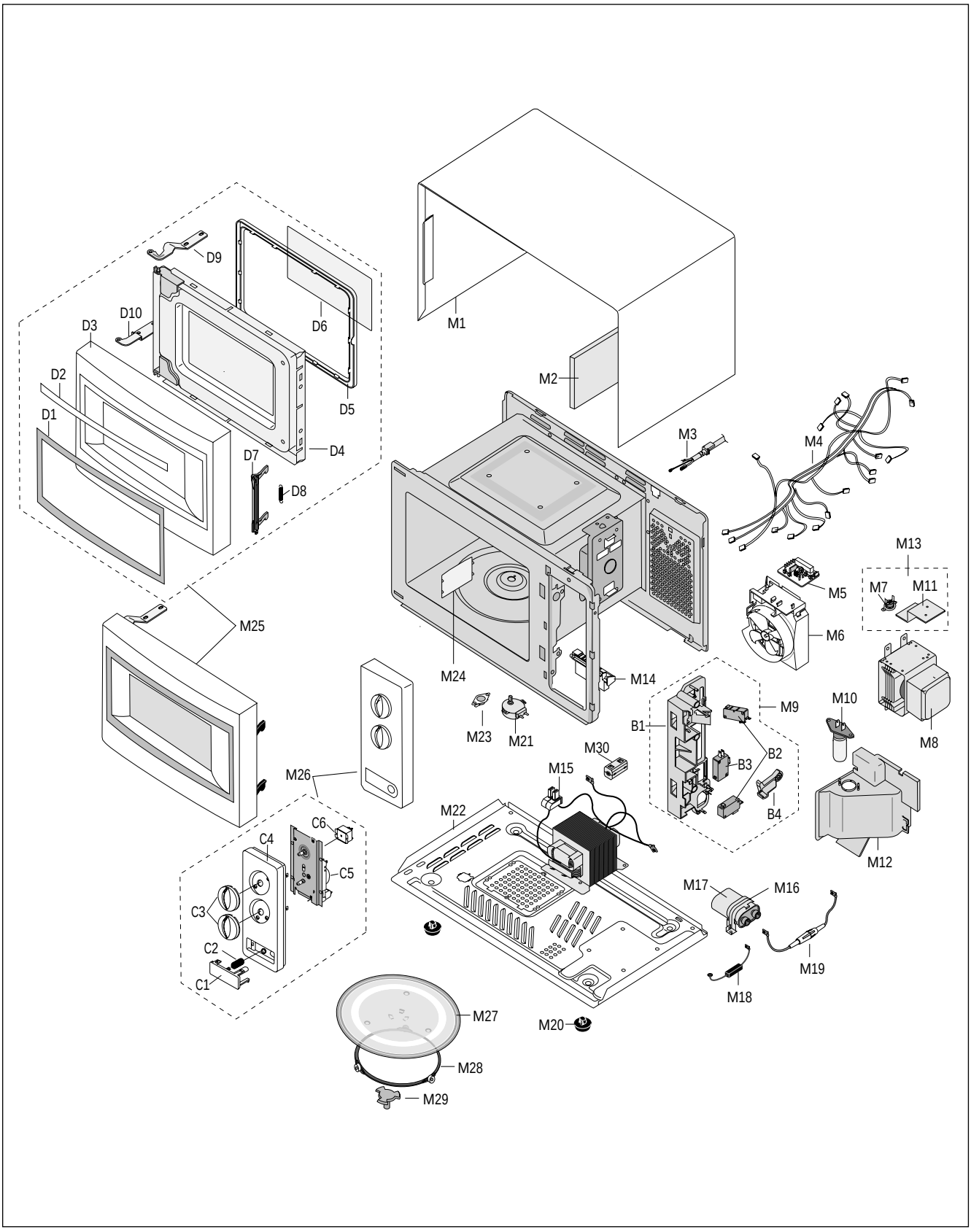
Parts	Cause	Diagnosis	Remedy
-	1) Open cathode of magnetron	Check the terminals with a multimeter to see if the heater circuit is open.	Replace magnetron.
	2) Defective H. V. Diode	Check the H. V. Diode for continuity in the reverse and normal directions using megger. If there is continuity in the reverse direction, the H. V. Diode may be faulty. (In this event H. V. Capacitor will be hot)	Replace H. V. Diode.
	3) Shorted magnetron	Connect megger leads to quick-connect terminal & body of the magnetron if there is continuity, the magnetron may be faulty. (In this case the main fuse will be blown)	Replace magnetron.
Food is not heated.	4) Defective magnetron	If there is a crack in the magnetron antenna (dome), the magnetron is defective.	Replace magnetron.
	5) Poor contact of primay interlock switch	Check if the screws are secured well to the door hinge. and pressing it ON and OFF repeatedly.	Replace or adjust.
	6) Open coil of H. V. Trans-former	Check the continuity of primary coil and secondary coil. If there is no continuity, H. V. Transformer is defective.	Replace the H. V. Transformer.
	7) Shorted H. V. capacitor	Check the continuity of capacitor. If the capacitor shorts, the fuse blows	Replace the H. V. Capacitor.
	8) Monitor fuse blown out	Check the monitor fuse (on the noise filter)	Replace the Monitor fuse

6-3 Part Check List

Symptom	Related Parts	Check Points	Remedy
Microwave cooking does not work.	H.V.Transformer	1) Check if the primary and secondary coil is open or shorted. * Resistance of primary coil: Approx. 2.30§ Resistance of secondary coil: Approx. 123§ 2) Check if the MGT Heater Voltage is approx. 3.3V AC. **Caution : High voltage !**	Replace.
	H.V.Capacitor	Check continuity of capacitor between two terminals with H.V.wire lead removed. The resistance should be approx. 10MΩ, it's failure.	Replace.
	H.V.Diode	1) If there is no continuity in forward, direction the H.V.Diode is open. 2) If there is continuity in reverse direction, it's shorted.	Replace.
Fan motor does not rotate.	Fan motor	Check if the motor coil is open.	Replace.

7. Exploded Views and Parts List

7-1 Main Exploded View



7-2 Main Parts List

Ref. No.	Parts No.	Description/Specification	Q'ty	Remarks
M 1	DE70-30001A	PANEL-OUTER;SECC T0.6 360 1128 EPOXY-COA	1	
M 2	DE63-90035G	CUSHION-RUBBER;DFA20 T2 W190 L100 BLK	1	
M 3	DE39-20054C	ASSY POWER CORD;KKP-4819D/B206 250V10A L150	1	
M 4	DE39-40539A	WIRE HARNESS-A;230V50HZ M935	1	
M 5	DE91-40095A	ASSY NOISE FILTER;SN-E10D 250V 10A "2	1	
M 6	DE31-10156A	MOTOR-FAN;SMF 945EA 230/50 2400 M97G45	1	
M 7	DE47-20009A	THERMOSTAT;CS-7SA (160/60) 187Y 250V7.5A 160	1	
M 8	DE03-30035A	MAGNETRON;OM75PH(31)ESS	1	⚠
M 9	DE93-20001A	ASSY BODY LATCH;2ND-W1 M97G45/M9745	1	
M 10	4713-001004	LAMP-INCANDESCENT;230V,-,40W,ORG,-,-,25x	1	
M 11	DE61-50490A	BRACKET-TCO;SECC1 T0.6 34 58	1	
M 12	DE71-60016A	COVER-AIR;PP 2 WHT M945/MB45	1	
M 13	DE91-70101C	ASSY-THERMOSTAT;MW5574W 160/60 187-HORIZ	1	
M 14	DE66-90013A	LEVER-DOOR;POM(F20-01) NTR MW5630T	1	
M 15	DE26-10100A	TRANS-H.V;SHV-945EG1 230V 50HZ 2310V DPC	1	⚠
M 16	DE61-50106A	BRACKET-HVC;SECC T0.8 W31 L125.8	1	
M 17	2501-001019	C-OIL;1.01uF,2100V,BK,35x54x90,20mm	1	
M 18	DE59-40001A	DIODE-H.V;HVR-1X-32B-12	1	
M 19	DE91-70061A	ASSY-H.V.FUSE;THV060T-0800-H 5KV/0.8A WHT	1	
M 20	DE61-40017A	FOOT;PP(A353) BLK MW5630T	2	
M 21	DE31-10154A	MOTOR-DRIVE;M2HJ49ZR02,ST-16 1V 5/6	1	
M 22	DE80-10001A	BASE-PLATE;SGCC T0.8 345 565	1	
M 23	DE47-20173A	THERMOSTAT;PW-2N(90/60)30 187Y 250V7.5A	1	
M 24	DE71-60011A	COVER-MGT;PP T2.0 WHT M745	1	
M 25		ASSY DOOR;BUTTON WHT M935,M945 IDEO	1	● ⚠
M 26		ASSY CONTROL-BOX;230V50HZ M935(SAW)	1	● ⚠
M 27	DE74-20015B	TRAY-COOKING;GLASS T6.0 PI318 1050G MW5630T	1	
M 28	DE92-90189A	ASSY-GUIDE ROLLER;MW5630T	1	
M 29	DE67-60002A	COUPLER;PPS 5GR BRN M97G45	1	
M 30	DE73-90027A	FERRITE-CORE;NI-ZN T13.8 W21.0 L28.0 BNF-14	1	

⚠ : Warning ● : Option Parts ⚠ : Electrostatically Sensitive Devices

7-3 Assembly Door Parts List

Ref. No	Parts No.	Description / Specification	Q'ty	Remarks
D 1	DE67-20003C	SCREEN-DOOR;ACRYL T1.5 L317.5 W401.5 WHT	1	● ⚠
D 2	DE02-00125A	TAPE-DOUBLE FACE;ACRYL T0.45 W9 WHT WF10	1	
D 3	DE64-40011A	DOOR-A;ARESIN-ABS(HR-0370U) T2.5 M945(IDE	1	●
D 4	DE92-50127H	ASSY DOOR-E;COATING BLACK T0.8	1	
D 5	DE64-40012A	DOOR-C;RESIN-PP(TB53) T2.0 CE945GF BLA	1	
D 6	DE01-00002B	FILM-DOOR;PC T0.15 275 175 MW5574W	2	
D 7	DE64-40006A	DOOR-KEY;POM(TC3005) T2.0 12GR BLK CE9	1	
D 8	DE61-70032A	SPRING-KEY;ES HSER PI0.6 D5.4 L25 MW8640T	1	
D 9	DE61-80003A	HINGE-LOWER;SCP1 T2.3 26 77 ZPC3 WHT CHR	1	
D 10	DE61-80002A	HINGE-UPPER;SCP1 T2.3 26 77 ZPC3 WHT CHR	1	

7-4 Assembly Control Box Parts List

Ref. No	Parts No.	Description / Specification	Q'ty	Remarks
C 1	DE66-20006A	BUTTON-PUSH;RESIN-ABS(HR-0370U) P/WHT M9	1	
C 2	DE61-70076A	SPRING-BUTTON;HSWR PI0.6	1	
C 3	DE64-10123A	KNOB;ABS PURE WHT M97G35	2	
C 4	DE72-70008D	CONTROL-PANEL;RESIN-ABS T250 P-WHT T2.5 106	1	● ⚠
C 5	DE45-10074A	TIMER-ASSY;TMFF60MTK1 220/240V-50HZ CMO-	1	
C 6	3501-000309	RELAY-POWER;CHP11-A240S-250V15A 240V,375	1	

7-5 Assembly Body Latch Parts List

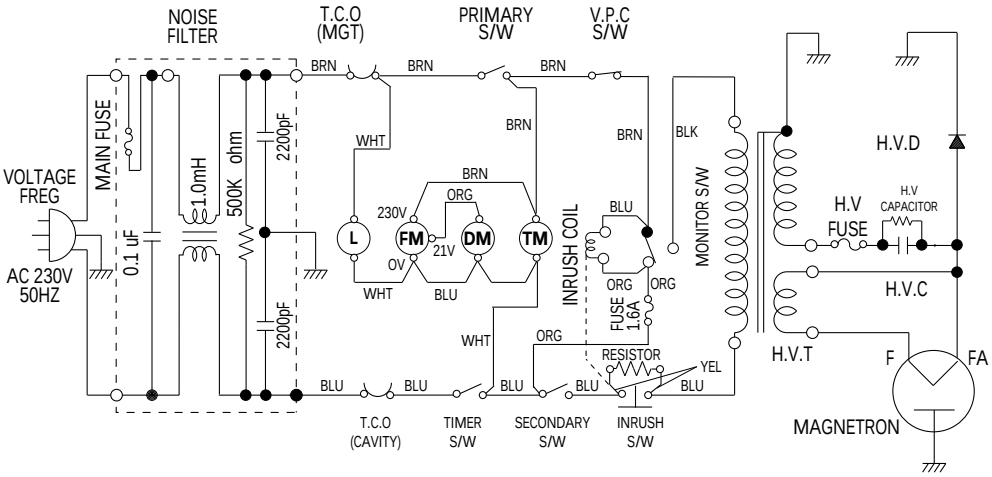
Ref. No	Parts No.	Description / Specification	Q'ty	Remarks
B 1	DE66-40001A	LATCH-BODY;POM(F20-02) 40GR NTR	1	
B 2	3405-000178	SWITCH-MICRO;250V,15A,200gf,SPST-NO	2	
B 3	3405-000175	SWITCH-MICRO;250V,15A,200gf,SPST-NO	1	
B 4	DE66-90001A	LEVER-SWITCH;P.O.M(F20-02) 2 6 NTR SND-W	1	

7-6 Standard Parts List

Parts No.	Description / Specification	Q'ty	Remarks
DE60-10082A	SCREW-A;M4 L12 2S TOOTHED	1	CA/AIR
DE60-10082A	SCREW-A;M4 L12 2S TOOTHED	1	NO-FIL
DE60-10082A	SCREW-A;M4 L12 2S TOOTHED	5	OUT-PN
DE60-10082A	SCREW-A;M4 L12 2S TOOTHED	2	BD-LAT
DE60-10082A	SCREW-A;M4 L12 2S TOOTHED	2	CON-BX
DE60-10033A	SCREW-TH;TH + M4 L10 MSWR10 FEFZY	2	HI-UPP
DE60-10012A	SCREW-TAP TITE;TH + 3 M4 L10 SWR10 ZPC2	1	MEM-PN
DE60-10082A	SCREW-A;M4 L12 2S TOOTHED	1	A/S-SC
DE60-10080A	SCREW-WASHER;M5 L12 2S	4	HVT
DE60-10080A	SCREW-WASHER;M5 L12 2S	4	MGT
DE60-10045A	SCREW-TAP PH;PH M3 L6 FRFZY	2	MGT-TC
DE60-10033A	SCREW-TH;TH + M4 L10 MSWR10 FEFZY	2	HI-LOW
DE60-10082A	SCREW-A;M4 L12 2S TOOTHED	1	MO/FAN
DE60-10082A	SCREW-A;M4 L12 2S TOOTHED	2	B-PLTE
DE02-00029A	TAPE-SCOTCHPAR;POLYESTER 3M-893 W50	2	
DE60-10082A	SCREW-A;M4 L12 2S TOOTHED	1	P-CORD
DE60-10098A	SCREW-ASSY TAPTITE;PH TC M4X8 SWRCH18A Z	1	HVD
DE60-10069A	SCREW-TAP TH;TH M4 L10 FRFZY	4	T-BKT
DE60-10024A	SCREW-PH;PH + M4 MSWR10 ZPC3	1	B/RELY
DE60-10098A	SCREW-ASSY TAPTITE;PH TC M4X8 SWRCH18A Z	1	CV-TCO
DE60-10098A	SCREW-ASSY TAPTITE;PH TC M4X8 SWRCH18A Z	2	M/GEAR

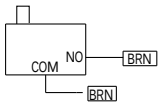
8. Wiring Diagram

Wiring Diagram

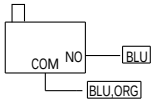


NOTE

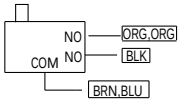
DOOR IS OPENDS	
BRN	BROWN
BLU	BLUE
ORG	ORANGE
WHT	WHITE
BLK	BLACK



PRIMARY LATCH S/W

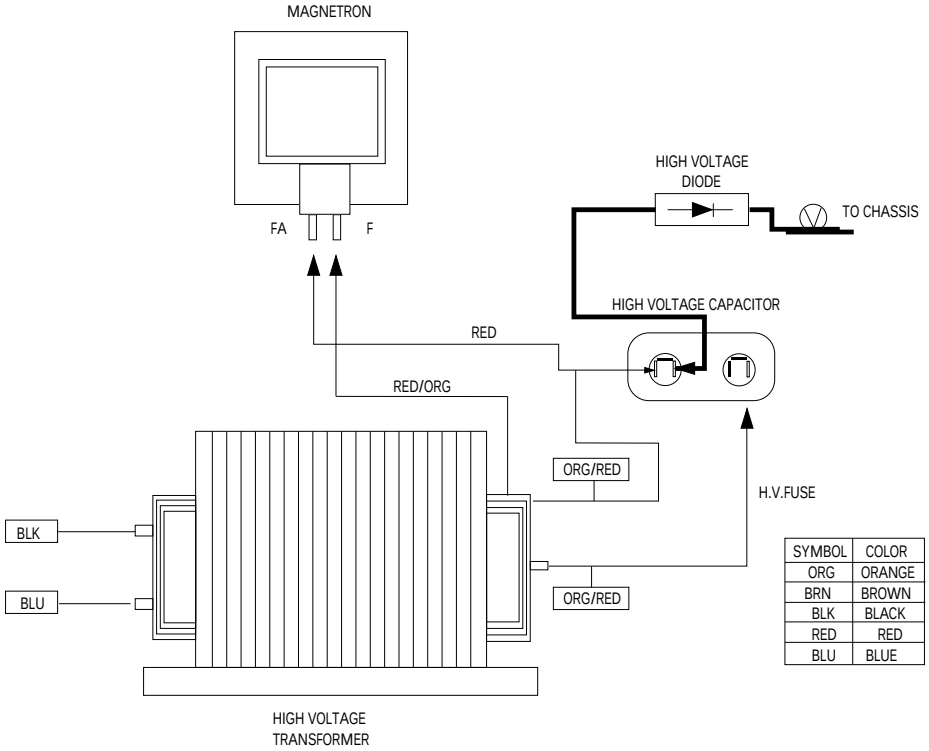


SECONDARY LATCH S/W



MONITOR LATCH S/W

High Voltage Circuit



SYMBOL	COLOR
ORG	ORANGE
BRN	BROWN
BLK	BLACK
RED	RED
BLU	BLUE