

# MICROWAVE OVEN

BASIC : CM1079 MODEL : CM1099

MODEL CODE : CM1099/XEU

# SERVICE Manual

#### **MICROWAVE OVEN**



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Refer to the service manual in the GSPN(see rear cover) for the more information.

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# 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.

#### 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
- 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 immediately.
- 4. Notify the Central Service Center if the microwave leakage exceeds 5 mW/cm2.
- 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.
- 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 emission in excess of 5 mW/cm2 ,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.

#### **CENTRAL SERVICE CENTER**

- **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, door sensing switch and power relay, 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.

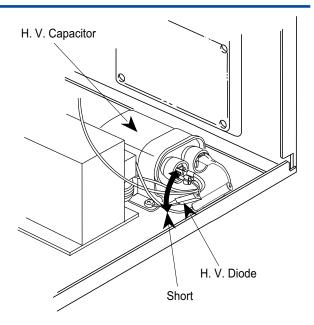
- **13.** Design Alteration Warning: Use exact replacement parts only, i.e., only those that are specified in thedrawings and parts lists of this manual. This is especially important for the Interlock switches, described above. Never alter or add to the mechanical or electrical design of the MWO. Any design changes or additions will void the manufacturer's warranty. 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.
- **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,  $\Lambda$  or  $\Lambda$ .
- **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.

NOTE: Connect the oven to a 20A. When connecting the oven to a 15A,make sure that circuit breaker can operate.

#### 1. Precaution

#### 1-2 Special High Voltage Precautions

- High Voltage Warning Do not attempt to measure any 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.)
- High voltage is maintained within specified limits by closetolerance, safety-related components and adjustments. If the high voltage exceeds the specified limits, check each of the special components.





#### **PRECAUTION**

There exists HIGH VOLTAGE ELECTRICITY with high current capabilities in the circuits of the HIGH VOLTAGE TRANSFORMER secondary and filament terminals. It is extremely dangerous to work on or near these circuits with the oven energized.

DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.



#### **PRECAUTION**

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



#### **PRECAUTION**

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

# 2. Specifications

### 2-1 Features

#### **Product Features**

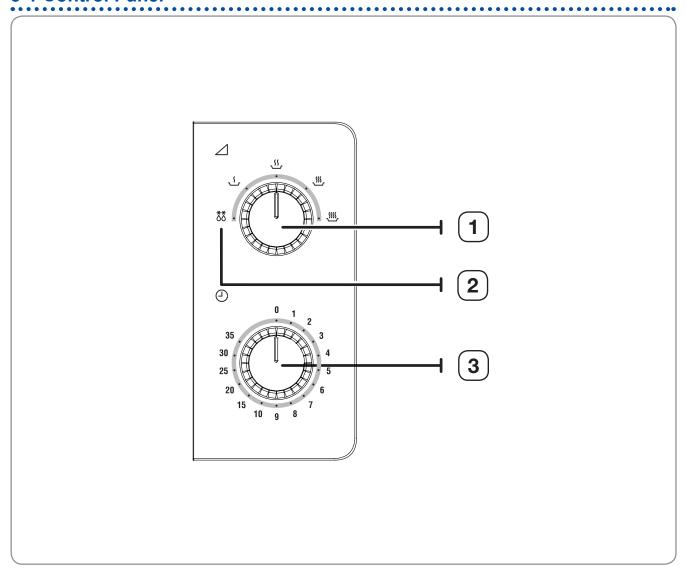
- Light-Duty Professional Microwave Oven.
- Sanitary Stainless Steel Cavity.
- Easy-to-use Dial Control Type.

## 2-2 Table of Specifications

Items -		Model		
		Model Basic	Model New	
MODEL NAME		CM1079	CM1099	
Power Source		230V~50Hz	230V~50Hz	
Power consumption	Microwave	1,600W	1,600W	
Output Power		230V / 1,050W (IEC-705)	230V / 1,050W (IEC-705)	
Operating Frequency		2,450MHz	2,450MHz	
Magnetron		OM75S(31)	OM75S(31)	
Cooling Method		Cooling fan motor	Cooling fan motor	
Dimensions	Outside	517 x 297 x 412mm	517 x 297 x 412mm	
(W x H x D)	Oven cavity	336 x 225 x 349mm	336 x 225 x 349mm	
Volume		26Liter	26Liter	
Weight	Net	17.5Kg	17.5Kg	
	Gross	19.0Kg	19.0Kg	
Export zone		UK	UK	

# 3. Operating Instructions

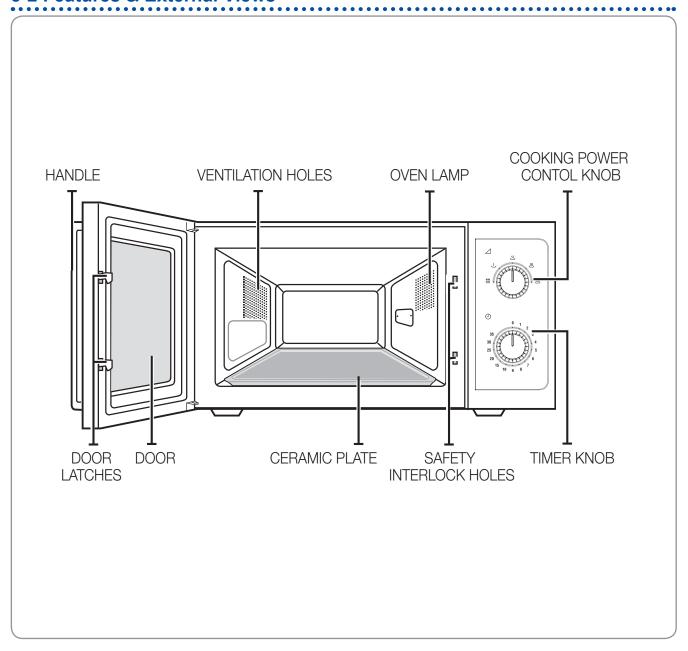
# **3-1 Control Panel**



- 1. COOKING POWER CONTROL KNOB
- 2. DEFROST
- 3. TIMER KNOB

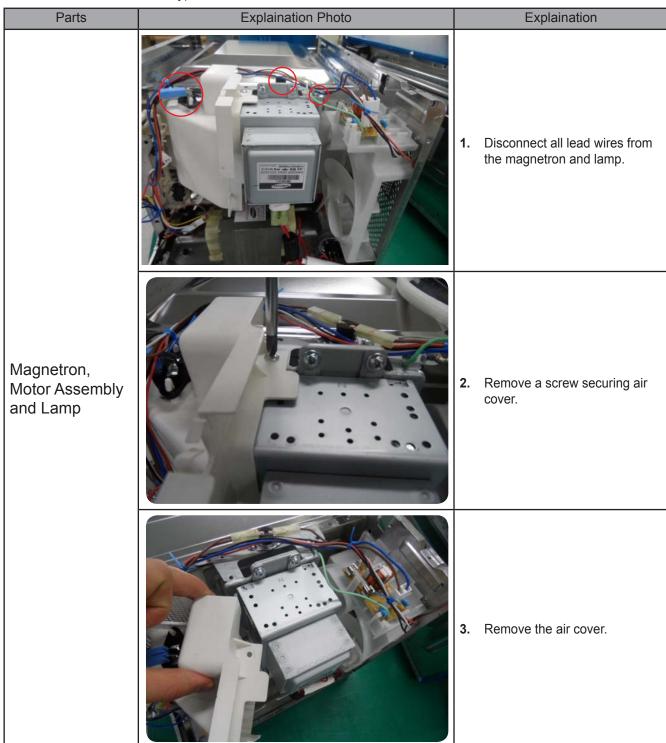
# 3. Operating Instructions

### 3-2 Features & External Views

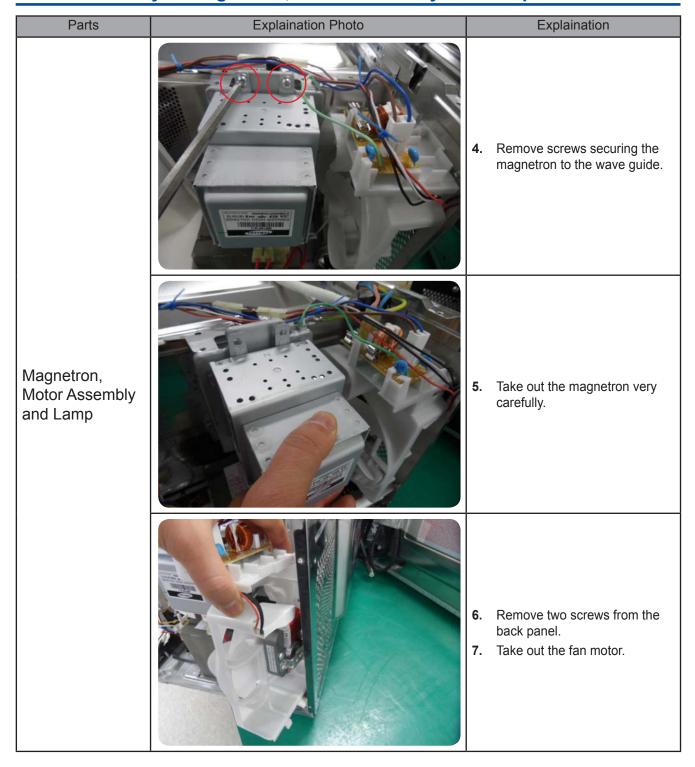


### 4-1 Disassembly of Magnetron, Motor Assembly and Lamp

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



## 4-1 Disassembly of Magnetron, Motor Assembly and Lamp



#### 4-1 Disassembly of Magnetron, Motor Assembly and Lamp

Parts	Explaination Photo	Explaination
Magnetron, Motor Assembly and Lamp		8. Remove the oven lamp from hole of air cover.

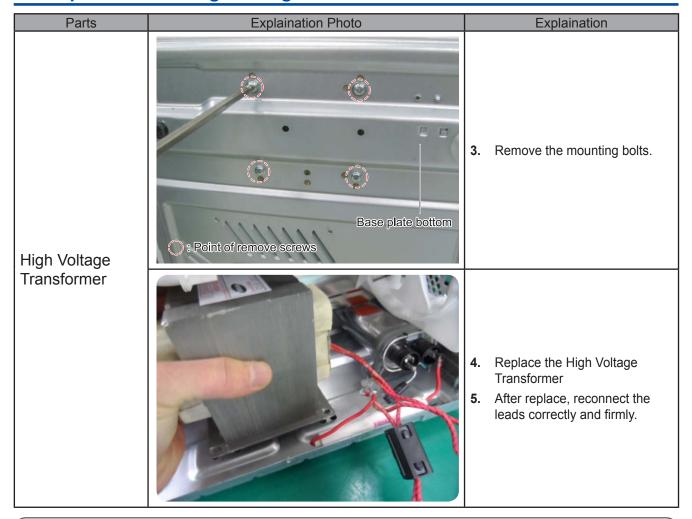
**NOTE1:** When removing the magnetron, make sure that its antenna does not hit any adjacent parts, or it may be damaged.

**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**

Parts	Explaination Photo	Explaination
High Voltage	E SCIMAL SKV	Discharge the high voltage capacitor.
Transformer	ANSHIP ON THE PROPERTY OF THE	2. Disconnect all the leads.

#### **4-2 Replacement of High Voltage Transformer**





#### **PRECAUTION**

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



#### **PRECAUTION**

There exists HIGH VOLTAGE ELECTRICITY with high current capabilities in the circuits of the HIGHVOLTAGE TRANSFORMER secondary and filament terminals. It is extremely dangerous to work on or near these circuits with the oven energized.

DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

# 4-3 Replacement of Door Assembly

Parts	Disassembly Photo	Explaination
Removal of Door "C"	Door "C"  Door "A"	Insert flat screwdriver into the gap between Door "A" and Door "C" to remove Door "C". Be careful when handling Door "C" because it is fragile. Then remove the door assembly.
Removal of Door Assembly		Lift up the Door Assembly from Cavity.
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.  Insertion depth of the thin metal plate should be 0.5mm or less.
Removal of Key Door & Spring	Door "E" Key Door Spring	Remove pin hinge from Door "E"  Detach spring from Door "E" and key door.

# **4-4 Replacement of Drive Motor**

Parts	Explaination Photo	Explaination
Daire Mater	: Point of cutting	<ol> <li>Take out the glass tray, guide roller from oven cavity, disconnect power.</li> <li>Remove turn table motor cover from case bottom.</li> <li>CAUTION: Remove sharp edge after cover removal.</li> </ol>
Drive Motor	Remove read wire	<ul><li>3. Disconnect leads from motor.</li><li>4. Remove the screws securing motor to bottom of over cavity.</li></ul>
Drive Motor		<ul> <li>6. Lift out the motor.</li> <li>5. When replacing the motor, be sure to remount it in the correct position.</li> <li>NOTE: The shaft of motor should fit tip coupler.</li> </ul>
	COVER FIXING SCREW : MATCHINE SCREW(6006-001170)	6. When reassemble a drive motor cover. give a turn in a 180° and fix with a screw.  NOTE: Bring the spare screw from service center.

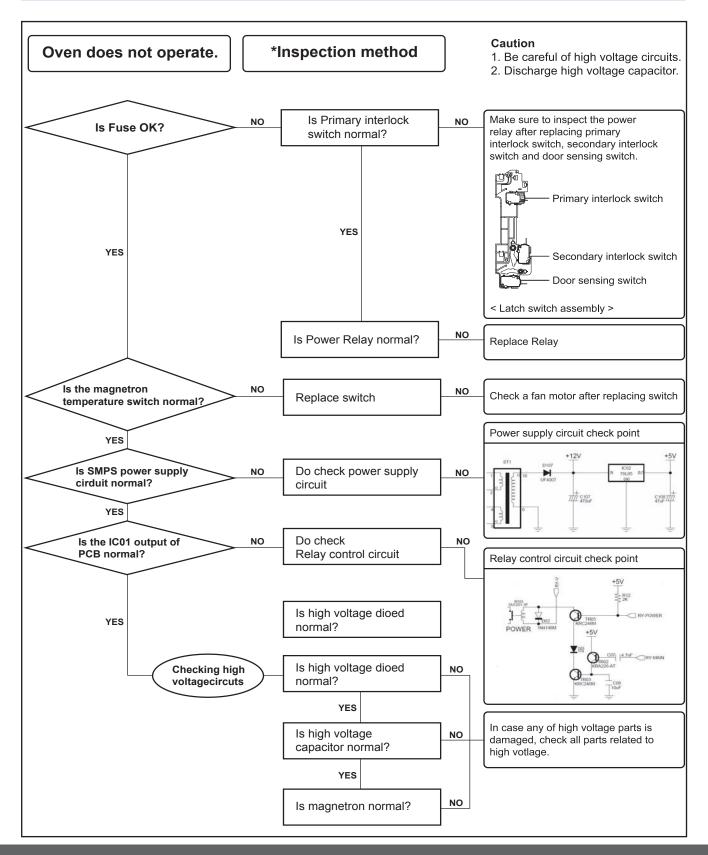
# 4-5 Replacement of Control Circuit Board

Parts	Explaination Photo	Explaination
Removal of Control Box Assembly	CONTROL BOX	<ol> <li>Disconnect the connectors from the control box assembly.</li> <li>Remove screws securing the control box assembly</li> <li>Remove the knobs of the control box A'ssy</li> <li>Remove the screw securing the timer.</li> </ol>

### 5. Troubleshooting

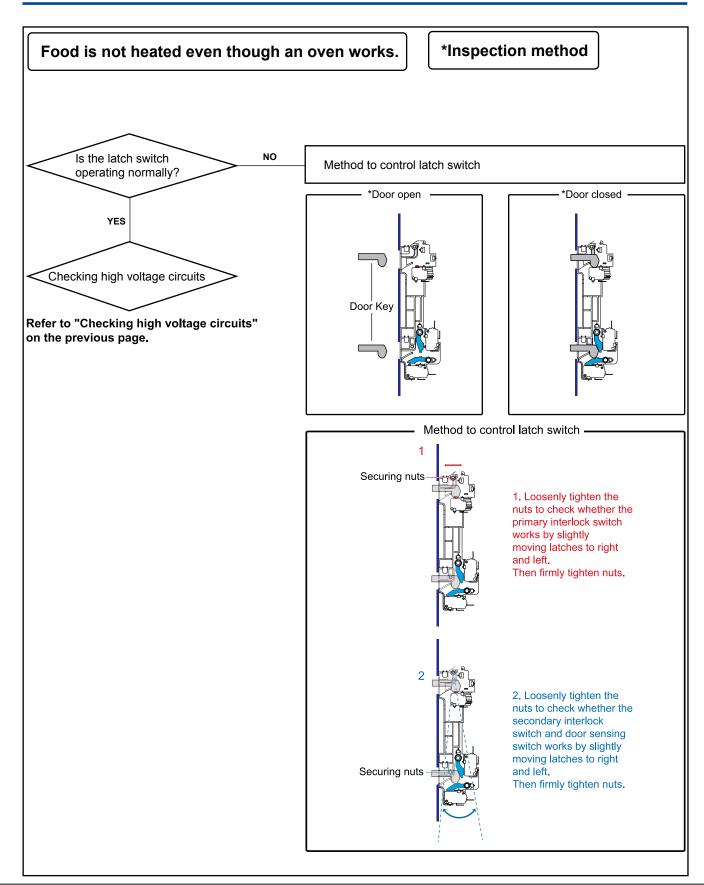
#### 5-1 Malfunction

#### 5-1-1 If oven malfunction



## 5. Troubleshooting

#### 5-1-2 If food is not heated even though an oven works



# 5. Troubleshooting

# **5-2 Unsatisfactory Cooking**

Parts	Cause	Diagnosis	Remedy
	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 meter. 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.
Food is	3) Shorted magnetron	Connect megger leads to quick-connect terminal & body of the magnetron if there is continuity, the magnetron may be fuse will be blown) faulty. (In this case the main fuse will be blown)	Replace magnetron.
	4) Defective magnetron	If there is a crack in the magnetron antenna (dome), the magnetron is defective.	Replace magnetron.
	5) Poor contact of primary 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. Transformer	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.	Check the continuity of capacitor.	Replace the H. V.
	capacitor	If the capacitor shorts, the fuse blows	Capacitor.
	8) Monitor Fuse out	Check the monitor fuse (on the noise filter)	Replace the Monitor fuse

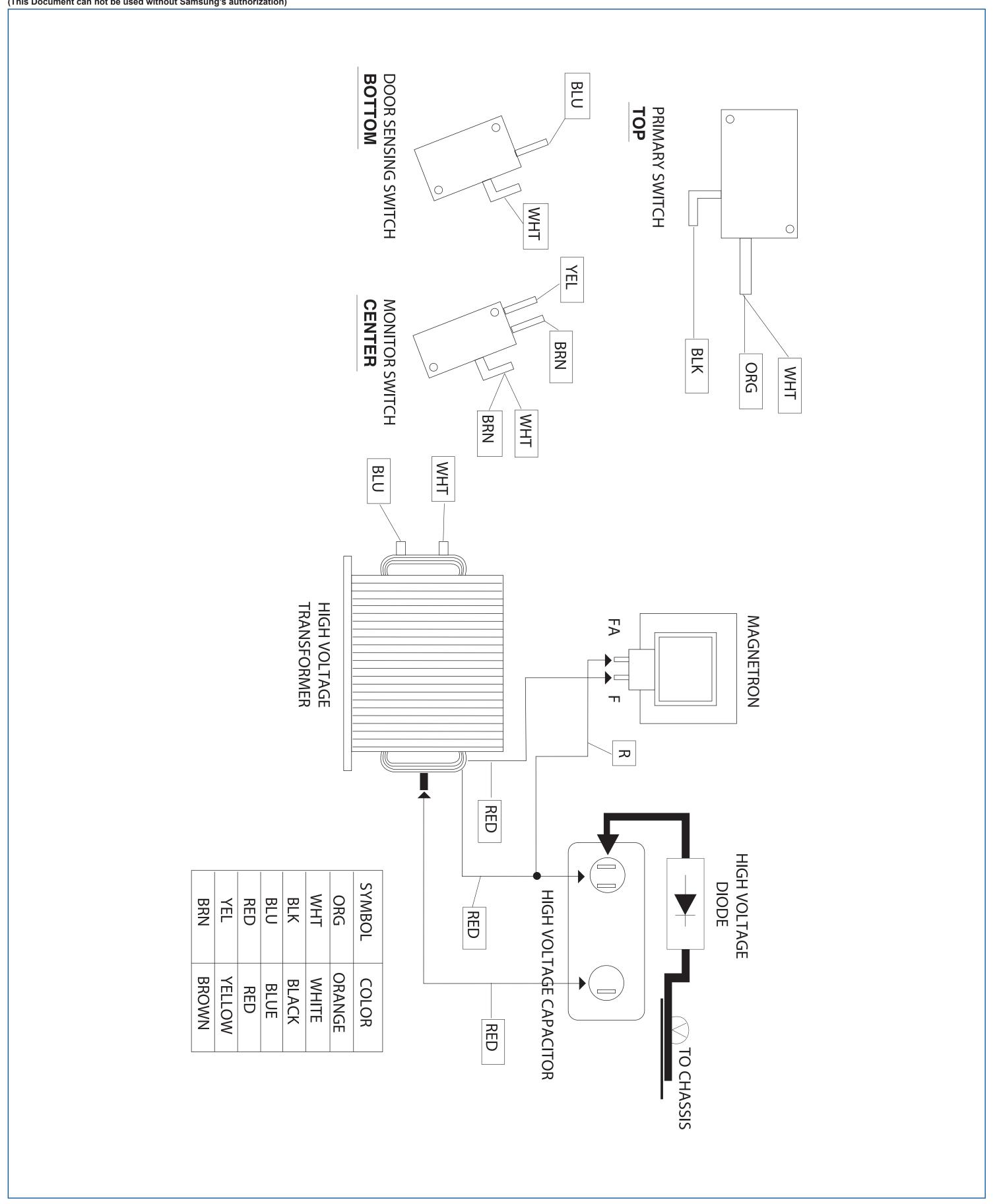
# **5-3 Part Check List**

Symptom	Related Parts	Check Points	Remedy
	H.V.Transformer	<ol> <li>Check if the primary and secondary coil is open or shorted.</li> <li>* Resistance of primary coil: . 1.2Ω Approx. Resistance of secondary coil: Approx. 90Ω</li> </ol>	Replace.
Microwave		<ol> <li>Check if the MGT Heater Voltage is approx. 3.3V AC.</li> <li>Caution: High voltage!</li> </ol>	
cooking does		Check continuity of capacitor between two	
not work.	H.V.Capacitor	terminals with H.V.wire lead removed.	Replace.
		The resistance should be approx. 10MW, it's failure	
H.V.Diode		<ol> <li>If there is no continuity in forward, direction the H.V.Diode is open.</li> <li>If there is continuity in reverse direction, it's shorted.</li> </ol>	Replace.
Fan motor does not rotate.	Fan motor	Check if the motor coil is open.	Replace.

6. Wiring Diagrams **6-1 Wiring Diagrams** (This Document can not be used without Samsung's authorization) POWER -CORD -230V50Hz BLU BRN  $\geq$ ZOTE FUSE 250V10A 0.1uF DOOR 1mH 500K OPEN 2200pF 2200pF BLU BRN MGT CVT TIMER S/W PRIMARY S/W BRN BLK Ϋ́ΕL  $\mathbb{A}\mathbb{A}$ BLU VPC S/W BRN BE BLU MONITOR FUSE INRUSH REELAY SE 1.6A MONITOR S/W <u> YE</u>  $\sim$  10W15 $\Omega$ SECONDARY INTERLOCK ONO  $\mathbb{A} \mathbb{A}$ H.V.TRANS H.V.D MAGNETRON

### **6-1 Wiring Diagrams**

(This Document can not be used without Samsung's authorization)



### 7-1 Model name standard

Baoad Classification	Distinguisher	Middle Classfication	Distinguisher	Product Code	Full Name
		CMO (Counter-top MWO)	w	MW	USA CMO(EPOXY CAVITY)
		UTC (Under The Cabinet)	U	MU	USA UTC
		Browner, Grill	G	MG	USA GRILL
USA CMO	М	Convection	С	MC	USA CONVECTION
USA CIMO	IVI	Sensor	S	MS	USA CMO SENSOR
		DC MWO	D	MD	USA DC MWO
		Hospital MWO	н	МН	USA Hospital MWO
		Ceramic Enamel	E	ME	USA CMO(CERAMIC ENAMEL)
		SOLO	M	RM	USA RV SOLO
USA RV	R	CONVECTION	С	RC	USA RV CONVECTION
		BUILT-IN	В	RB	USA RV BUILT-IN
USA Junior	SJ	-	-	SJ	USA Junior MWO
USA OTR	SM	SOLO	н	SMH	USA OTR SOLO
USAUIK	SIVI	CONVECTION	V	SMV	USA OTR CONVECTION
EUROPE	М	SOLO	1	M1	EUROPE SOLO(EPOXY CAVITY)
Epoxy Cavity		GRILL	2	M2	EUROPE GRILL(EPOXY CAVITY)
EUROPE	CE	SOLO	1	CE1	EUROPE SOLO(CERAMIC ENAMEL)
Ceramic Enamel	CE	GRILL	2	CE2	EUROPE GRILL(CERAMIC ENAMEL)
EUROPE Quartz GRILL	G2	-	-	G2	EUROPE Quartz GRILL
EUROPE Power Grill	PG	-	-	PG	POWER GRILL
EUROPE	СК	-	-	СК	EUROPE CONVECTION
Convection	С	-	-	С	EUROPE CONVECTION
		SOLO	w	FW	EUROPE SOLO FULLY BUILT-IN
EUROPE Fully Built-In	F	GRILL	G	FG	EUROPE GRILL FULLY BUILT-IN
		CONVECTION	С	FC	EUROPE CONVECTION FULLY BUILT-IN

# 7-1 Model name standard (Continued)

(Blue Color): Not Used

Baoad Classification	Distinguisher	Middle Classfication	Distinguisher	Cavity / type	Distinguisher	Full Name
		SOLO / CMO	М	CERAMIC	Е	CME / CMC / CMW / CMS
		Inverter SOLO	I	ENAMEL	_	CIE / CIC / CIW / CIS
		Grill / Browner	G	CERAMIC	С	CGE / CGC / CGW / CGS
CHINA	С	Quartz Grill / Browner	Q	ENAMEL(Clay)	C	CQE / CQC / CQW / CQS
		Conv.	С	Ероху	W	CCE / CCC / CCW / CCS
		TBMO / Power Grill	Т	Ероху	**	CTE / CTC / CTW / CTS
		Commercial	0	STSS	S	COE / COC / COW / COS
		SOLO / CMO	M	CERAMIC	Е	DME / DMC / DMW / DMS
		Inverter SOLO	1	ENAMEL		DIE / DIC / DIW / DIS
		Grill / Browner	G	CERAMIC	С	DGE / DGC / DGW / DGS
KOREA	D	Quartz Grill / Browner	Q	ENAMEL(Clay)	C	DQE / DQC / DQW / DQS
		Conv.	С	F	14/	DCE / DCC / DCW / DCS
		TBMO / Power Grill	Т	Ероху	W	DTE / DTC / DTW / DTS
		Commercial	0	STSS	S	DOE / DOC / DOW / DOS
		SOLO / CMO	M	CERAMIC	_	ME / MC / MW / MS
		Inverter SOLO	I	ENAMEL E	-	IE/IC/IW/IS
		Grill / Browner	G	CERAMIC ENAMEL(Clay)	С	GE / GC / GW / GS
EUROPE	-	Quartz Grill / Browner	Q			QE/QC/QW/QS
		Conv.	С	Enovy	w	CE / (CC) / (CW) / CST
		TBMO / Power Grill	Т	Ероху		TE / (TC) / TM / TST
		Commercial	0	STSS	S	OE/OC/OW/OS
		SOLO / CMO	M	CERAMIC	E	AME / (AMC) / AMW / AMS
		Inverter SOLO	I	ENAMEL		AIE / AIC / AIW / AIS
		Grill / Browner	G	CERAMIC	•	AGE / (AGC) / AGW / AGS
USA	Α	Quartz Grill / Browner	Q	ENAMEL(Clay)	С	AQE / AQC / AQW / AQS
		Conv.	С	Гром	W	ACE / ACC / ACW / ACS
		TBMO / Power Grill	Т	Ероху	VV	ATE / ATC / ATW / ATS
		Commercial	0	STSS	S	AOE / AOC / AOW / AOS
CHINA	С			SOLO(MW ONLY)	W	CFW / CFG / CFC / CFI / CFT
KOREA	D			GRILL	G	DFW / DFG / DFC / DFI / DFT
EUROPE	-	Fully Built-In	F	CONVECTION	С	DFW / DFG / DFC / DFI / DFT
LICA	^			INVERTER	I	FW / FG / FC / FI / FPG
USA	Α			TBMO / Power Grill	T	AFW / AFG / AFC / AFI / AFT
USA OTR	SM			SOLO(MW ONLY)	Н	SMH / SMB / SMV / SMI / STB
EUROPE OTR	ЕМ			GRILL	G	EMH / EMG / EMV / EMI / EMT
CHINA OTR	UM		CONVECTION	V	UMH / UMG / UMV / UMI / UMT	
KOREA OTR PM		РМ		INVERTER	1	DALL / DAG / DAG / DAG / DAG
				TBMO / Power Grill	Т	PMH / PMG / PMV / PMI / PMT

**CST**: EUROPE STSS Conv.

TST : EUROPE TBMO with STSS cavity

TM : EUROPE TBMO with epoxy cavity

FPG: EUROPE FBI POWER GRILL

SMB: USA Grill OTR STB: USA TBMO OTR

# 7-2 Customer inquiry cases and countermeasures

Symptom	Cause	Countermeasures
The oven works automatically whenever the power is turned on.	<ul> <li>It may happen due to power failure or abnormal voltage.</li> <li>It may happen when the door does not close completely.</li> </ul>	<ul> <li>Connect the power plug three seconds after disconnecting the power plug.</li> <li>Close the door completely =&gt; Press the Cancel button =&gt; Press the Start button.</li> </ul>
Heating	<ul> <li>In many cases, it may happen when the power level is incorrectly set.</li> <li>It may happen when the door does not close completely.</li> <li>It may happen when the oven is out of order.</li> </ul>	<ul> <li>Select HIGH/MEDIUM/LOW by pressing the Power Level button.</li> <li>MEDIUM/LOW: This function is used to cook the food slowly.</li> <li>Close the door completely. =&gt; Press the Cancel button. =&gt; Press The Start button.</li> <li>Contact the nearest Samsung after-sales service center.</li> </ul>
Ground	<ul> <li>Ground problem may happen when the oven is placed in a humid area and the over is not grounded.</li> <li>Ground is not provided by an extended electric outlet.</li> </ul>	<ul> <li>If the oven is placed in a humid area, buy an electric wire in a store selling electrical products. (Electric wires for home use are also allowed) Ground the oven through the electric wire.</li> <li>Buy an electric wire in a store selling electrical products. (Electric wires for home use are also allowed) Ground the oven through the electric wire.</li> </ul>
The oven sometimes beeps.	<ul> <li>The oven beeps every minute unless the food is in the oven after the food is cooked completely.</li> <li>The oven occasionally beeps during cooking.</li> </ul>	Open and close the door again. (Beeping sounds indicate that the food is ready to be removed from the oven after cooking is complete.)
Strange popping sounds are produced while fish is cooked.	Since fish is salty and maintains its moisture, it is cooked while making a series of soft popping sounds. (The liquid may come out of the fish when the fish is cooked.)	Food with bones such as fish (e.g. mackerel) and pork (e.g. pork chops) is cooked while making a series of soft popping sounds. Wrap the food completely so that food particles or spattered oils do not stick to the oven walls or floor.

# 7-2 Customer inquiry cases and countermeasures (Continued)

Symptom	Cause	Countermeasures
Strange smell is produced in the oven.	It may happen when food particles stuck to oven walls or floor.	Clean the inside of the oven. => Remove strange smell through the Deodorant button => If the strange smell still remains, place a piece of lemon on the turntable and operate the oven for 5 minutes by pressing the Deodorant button.(However, the smells produced from the food exposed such as herbal remedies are not removed.)
Error	Errors are classified with Failure and Non- failure.	Refer to the section of ERROR in User Manual.
Accessory		Visit the nearest Samsung Service Center or local dealer to buy accessories. Before visiting, check the model name printed on the lower right side of the front panel of the oven.
Number does not appear on the display screen.	It happens when the power saving function is activated.	Since the government recommends the reduction of electricity, the power saving function is performed for number display like that power cord is unplugged when the oven is not used. (Numbers are displayed when another button is pressed or when the door opens.)



#### **GSPN (GLOBAL SERVICE PARTNER NETWORK)**

Area	Web Site
Europe, CIS, Mideast & Africa	gspn1.samsungcsportal.com
Asia	gspn2.samsungcsportal.com
North & Latin America	gspn3.samsungcsportal.com
China	china.samsungportal.com