MICROWAVE OVEN

BASIC: GE73MR
MODEL: GE73M
MODEL CODE: GE73M/XEO

SERVICE Manual

MICROWAVE OVEN

CONTENTS

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

• Contents

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 (⚠)

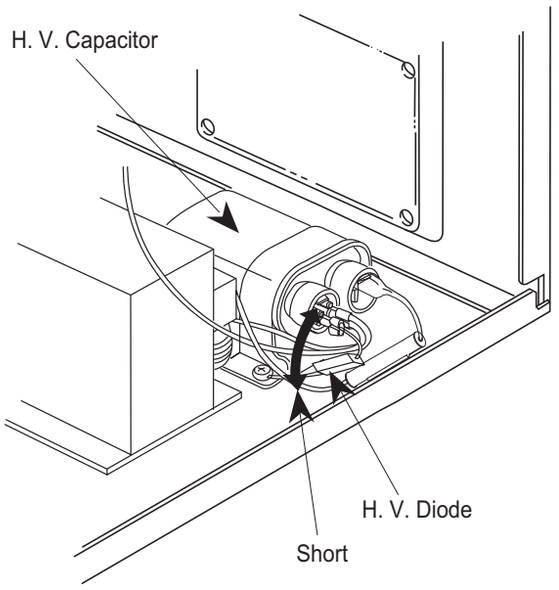
1. All repairs should be done in accordance with the procedures described in this manual. This product complies with Federal Performance Standard 21 CFR
2. Microwave emission check should be performed to prior to servicing if the oven is operative.
3. If the oven operates with the door open :Instruct 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.
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 foundto 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, ⚠ 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.

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

1-2 Special High Voltage Precautions

1. 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.)
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.



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

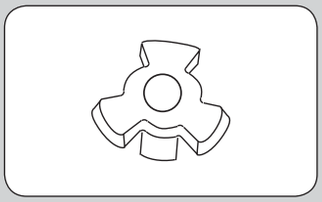
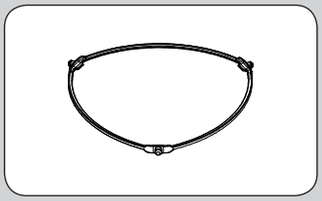
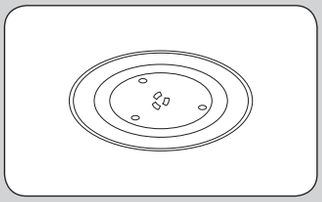
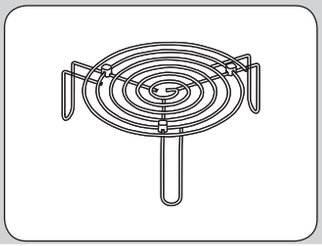
2-1 Features

Product Features
- 0.7 Cu.Ft (20Liter)
- 0.7 Marimba PJT. (Membrane Type)
- 0.7 Ceramic Enamel Cavity

2-2 Table of Specifications

Items		Model	
		Model Basic	Model New
MODEL NAME		GE73MR/BWT	GE73M/XEO
Power Source		230V ~ 50Hz AC	230V ~ 50Hz AC
Power consumption	Microwave	1150W	1150W
	Grill	1100W	1100W
	Combi	2250W	2250W
Output Power		100W / 750W (IEC-705)	100W / 750W (IEC-705)
Operating Frequency		2450MHz	2450MHz
Cooling Method		Cooling fan motor	Cooling fan motor
Dimensions (W x H x D)	Outside	489 x 275 x 367mm	489 x 275 x 352mm
	Oven cavity	330 x 211 x 309mm	330 x 211 x 309mm
Volume		20Liter	20Liter
Weight	Net	12.5Kg	12.5Kg
Export Zone		Russia	Poland

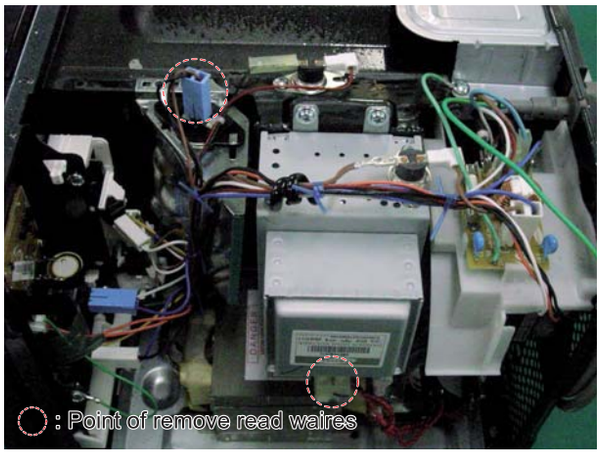
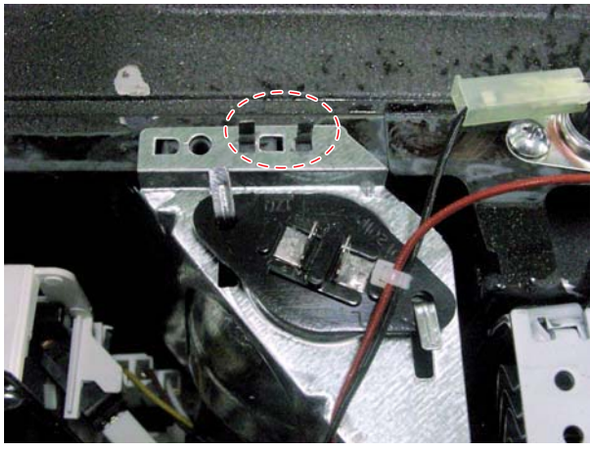
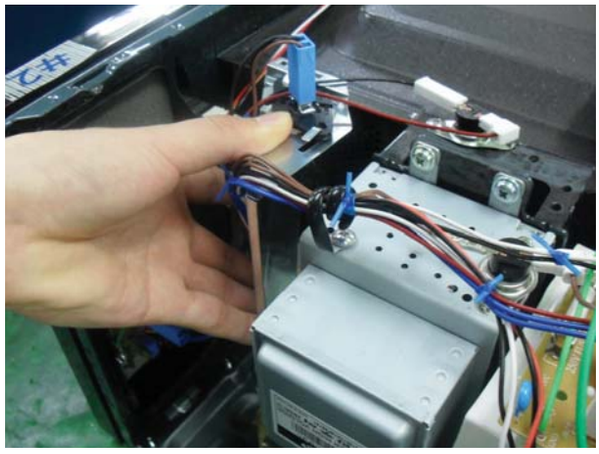
2-3 Accessory

Item	Description	Code No.	Q'ty
	Coupler	DE67-00258A	1
	Assy-Guide Roller	DE94-02266D	1
	Tray-cooking	DE74-00027A	1
	Assy-Wire Rack	DE74-70071D	1

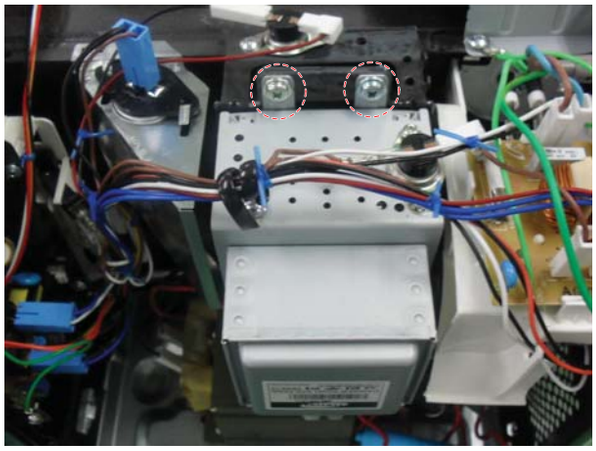
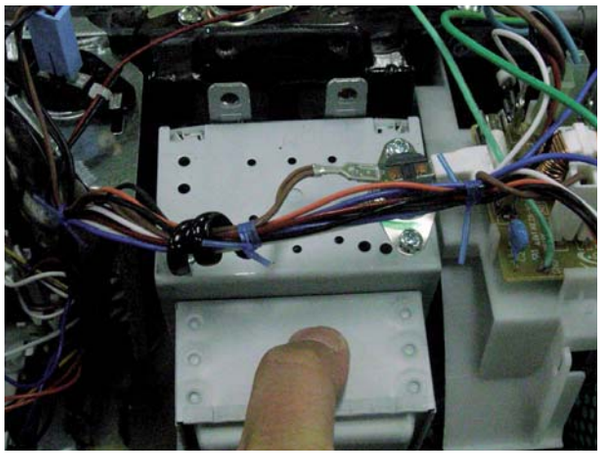
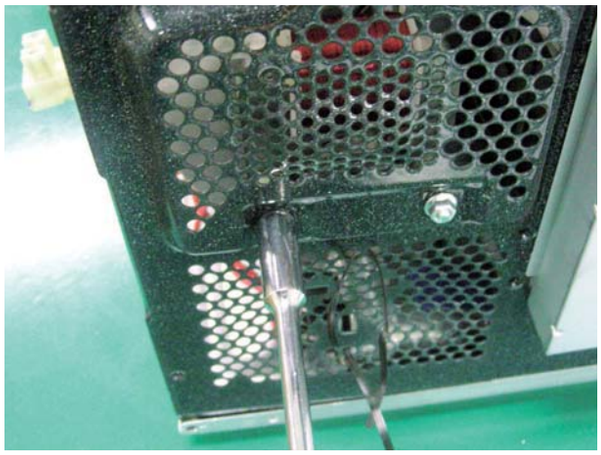
3. Disassembly and Reassembly

3-1 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)

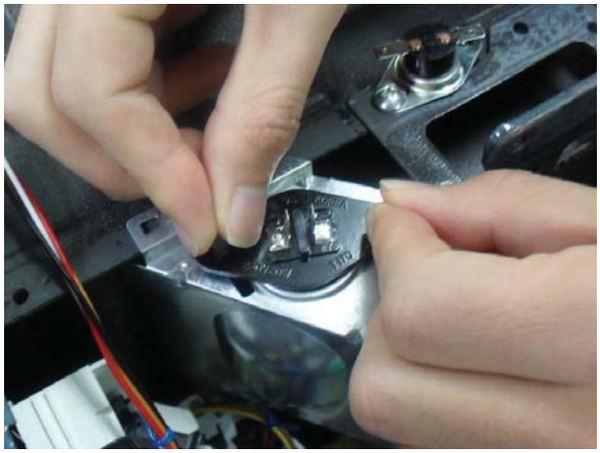
Parts	Explaination Photo	Explaination
Magnetron, Motor Assembly and Lamp		**1.** Disconnect all lead wires from the magnetron and lamp.
		**2.** Unfold the 2 pieces of small iron piece on the Cavity.
		**3.** Remove the air cover.

3-1 Disassembly of Magnetron, Motor Assembly and Lamp

Parts	Explaination Photo	Explaination
Magnetron, Motor Assembly and Lamp		**4.** Remove screws securing the magnetron to the wave guide.
		**5.** Take out the magnetron very carefully.
		**6.** Remove two screws from the back panel. **7.** Take out the fan motor.

3. Disassembly and Reassembly

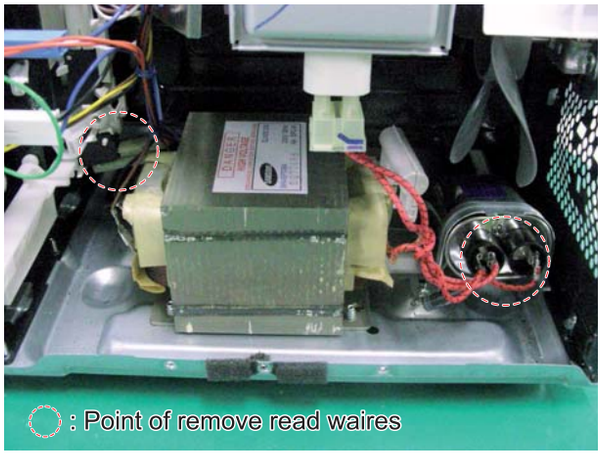
3-1 Disassembly of Magnetron, Motor Assembly and Lamp

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

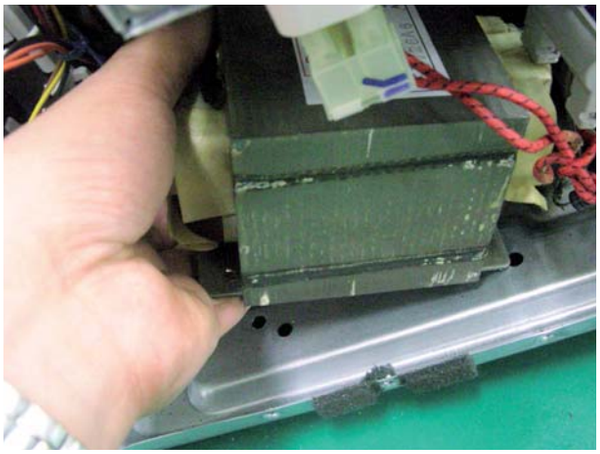
NOTE1: When removing the magnetron, make sure that its antenna does not hit any adjacent parts, or it may be damaged.

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.

3-2 Replacement of High Voltage Trancefomer

Parts	Explaination Photo	Explaination
High Voltage Transformer		**1.** Discharge the high voltage capacitor.
		**2.** Disconnect all the leads.

3-2 Replacement of High Voltage Trancefomer

Parts	Explanation Photo	Explanation
High Voltage Transformer		**3.** Remove the mounting bolts.
		**4.** Replace the High Voltage Transformer **5.** After replace, reconnect the leads correctly and firmly.

PRECAUTION

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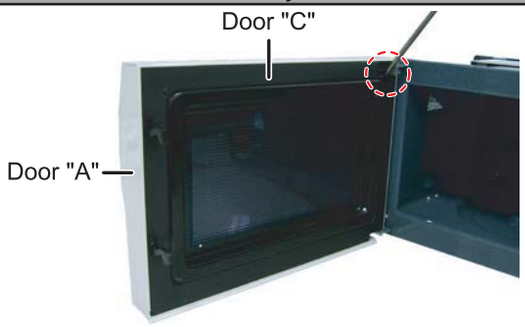
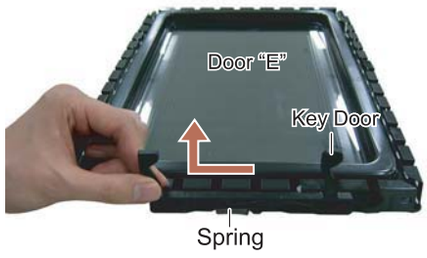
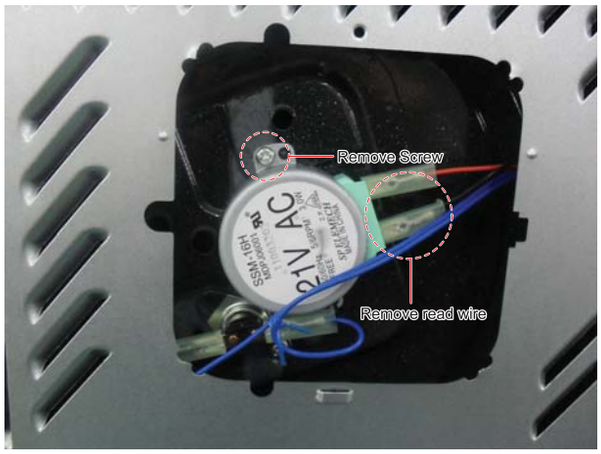
DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

3-3 Replacement of Door Assembly

Parts	Disassembly Photo	Explanation
Removal of Door “C” and Door Assembly		Insert flat screwdriver into gap between Door “A” and Door “C” to remove Door “C” because it is fragile. Then remove 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		Remove pin hinge from Door “E” Detach spring from Door “E” and key door.

3-4 Replacement of Drive Motor

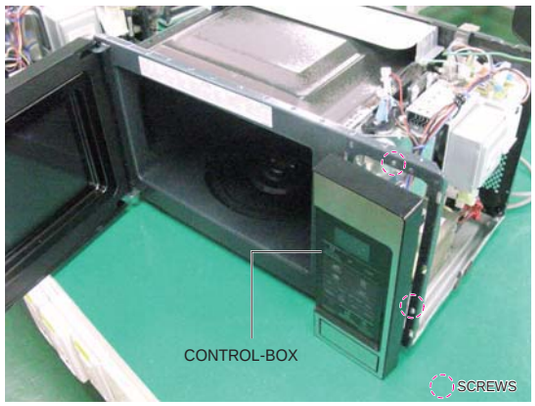
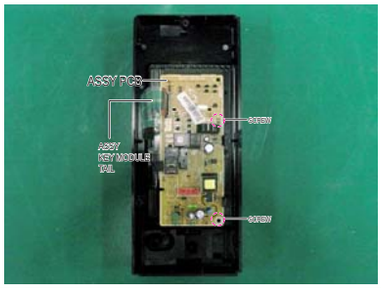
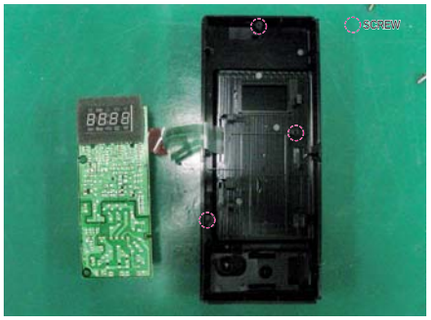
<table>
<tr><th>Parts</th><th>Explaination Photo</th><th>Explaination</th></tr>
<tr><td rowspan="2">Drive Motor</td><td> 
</td><td>1. Take out the glass tray, guide roller from oven cavity, disconnect power.
2. Remove turn table motor cover from case bottom.

CAUTION : Remove sharp edge after cover removal.</td></tr>
<tr><td> 
</td><td>3. Disconnect leads from motor.
4. Remove the screws securing motor to bottom of over cavity.</td></tr>
<tr><td rowspan="2">Drive Motor</td><td> 
</td><td>6. Lift out the motor.
5. When replacing the motor, be sure to remount it in the correct position.

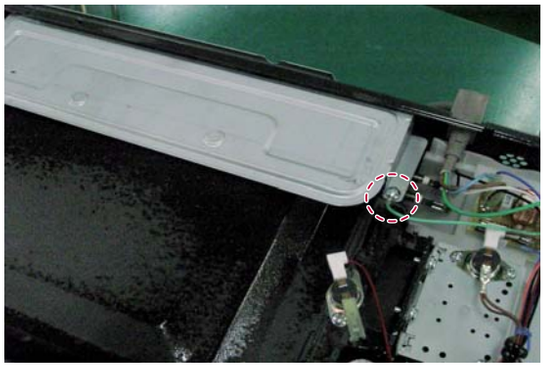
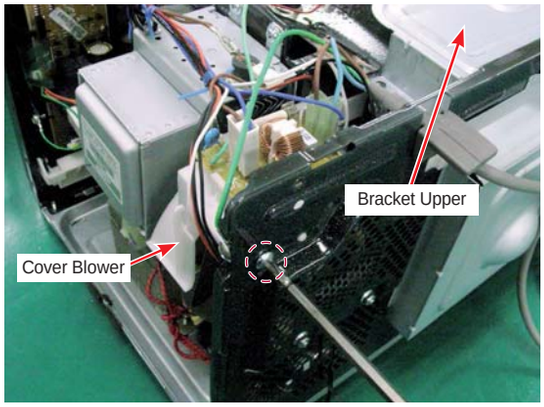
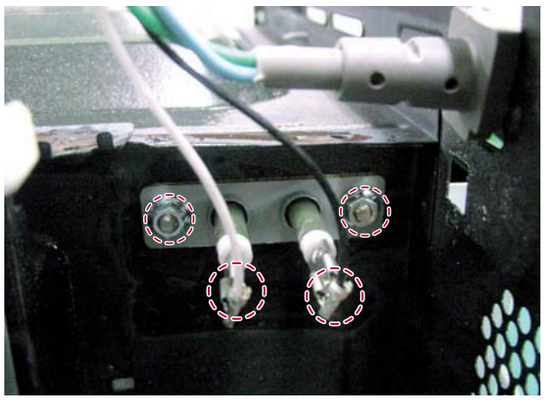
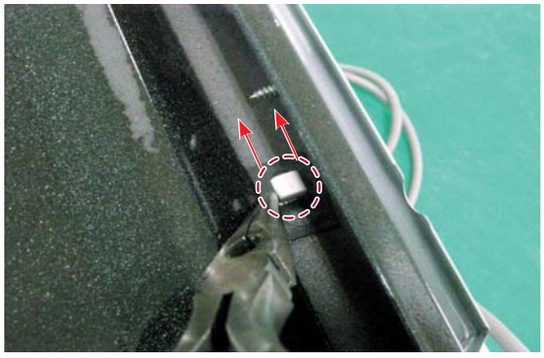
NOTE : The shaft of motor should fit tip coupler.</td></tr>
<tr><td>COVER FIXING SCREW :
MATCHINE SCREW(6006-001170)</td><td>6. When reassemble a drive motor cover. give a turn in a 180° and fix with a screw.

NOTE : Bring the spare screw from service center.</td></tr>
</table>

3-5 Replacement of Control Circuit Board

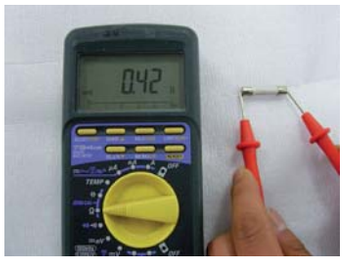
Parts	Explaination Photo	Explaination
Removal of Control Box Assembly		**1.** Be sure to ground any static electric charge in your body and never touch the control circuit. **2.** Disconnect the connectors from the control circuit board. **3.** Remove screws securing the control box assembly. **4.** Remove the screw securing the ground tail of the keyboard.
Removal of Ass'y P.C.B Assembly and Assy Key Module	 	**1.** Remove 2 screws securing the Assy PCB **2.** Remove Assy Key Module Tail from the Assy PCB. **3.** Lift up the Assy PCB from the Ass'y control box. **4.** Remove 6 screws securing the Key Module PCB **5.** Lift up the Key Module PCB from the Ass'y control box.

3-6 Replacement of Heater

Parts	Explaination Photo	Explaination
Bracket Upper		**1.** Remove the Screw on Bracket upper.
Cover Blower		**2.** Remove the screw, Cover Blower and Bracket Upper
Gasket		**3.** Remove the Nuts for disassemble the Gasket and lead Wire.
Stopper		**4.** Press the center of stopper with tools and move the stopper.

4. Troubleshooting

4-1 Parts checking method

Parts	Photo	Good	No Good
Fuse		0.1 ~ 1 Ω	100 MΩ exceed
T.C.O		0.1 ~ 1 Ω	100 MΩ exceed
H.V Trans		1 ~ 9 Ω	100 MΩ exceed
Convection		100 ~ 990 Ω	100 MΩ exceed
Fan Motor		10 ~ 99 Ω	100 MΩ exceed
Grill Heater		10 ~ 99 Ω	100 MΩ exceed

4-2 Error Code Numbering Rule

1. ERROR CODE NUMBERING RULE is applied to a microwave oven and an oven.(CMO, OTR, Grill, Convection, Commercial etc.)
2. All sensors and devices have their own number. ex) Gas Sensor = 1, Temp. Sensor = 2, ...
3. Of each device, No.1 and No.2 refer to “Open Error” (not sensed) and “Short Error”, respectively.
4. This numbering rule has been applied to models to have been developed since January, 1, 2005. (But, GE or Customize model are excluded.)

E	-	1	1

	DEVICE	ERROR CASE
	0- Others	1- Open
	1- Gas Sensor	2- Short
	2- Temp. Sensor	•
	3- Weight Sensor	•
	4- Easy/PH Sensor	•
	5- EEPROM	
	•	
	•	
	•	

4-3 Error Code List

Gas Sensor

Error Code	Gas Sensor Error Case (E-1X)	Solution	Page
E-11	Open	Check Sensor part ,connection of sensor housing and PCB’s connector.	19 Page
E-12	Short		20 Page
E-13	T1 Max Time Error		21 Page
E-14	Dry Up / No Load	Insert food and restart.	

Temp Sensor

Error Code	Temp. Sensor Error Case (E-2X)	Solution	Page
E-21	Open	Check sensor part and connection of sensor housing and PCB’s connector.	19 Page
E-22	Short		20 Page
E-23	T1 Max Time Error (Preheating not completed)	Check heater.	28 Page
E-24	Over temperature error		31 Page
E-25	In case abnormal temperature is sensed at Micro Cook	Cool down set and restart.	31 Page
E-26	In case the temperature is not over the fixed AD in first 3 minutes after cooking by heater starts.	Check sensor and heater.	28 Page

Eeprom Error

Error Code	EEPROM Error Case (E-5X)	Solution	Page
E-51	Open (Sense Failure)	Replace EEPROM and restart.	26 Page
E-53	Read/Write Error		
E-54	Zero not to be set		

4. Troubleshooting

Weight Sensor

Error Code	Gas Sensor Error Case (E-1X)	Solution	Page
E-31	Open (When value of HEX is above “FF” for 5 seconds)	Check Sensor.	19 Page
E-32	Short		20 Page
E-33	In case the initial value of HEX is under “14” for 30 seconds while a weight sensor in operation.		23 Page
E-34	In case the initial value of K calculated by a weight sensor is above and under “±28” as value of HEX.		
E-35	In case the value of A is “-” as a weight sensor calculates.		
E-36	In case the door opens during sensor cooking.	Cancel the present mode and restart from the begining.	24 Page

Easy/Ph Sensor

Error Code	Easy/PH Sensor Error Case (E4)	Solution	Page
E-41	Open	Check Sensor.	19 Page
E-42	Short		20 Page
E-43	T1 Max Time Error		21 Page
E-44	Dry Up	Insert food and restart.	21 Page
E-45	Cooling Error (3minutes)	Remove moisture from sensor and restart.	24 Page
E-46	Primary Open Error(3minutes)	Check Sensor.	19 Page
E-47	The door opens during cooking	Cancel the present mode and restart from the begining.	24 Page

Humidity Sensor

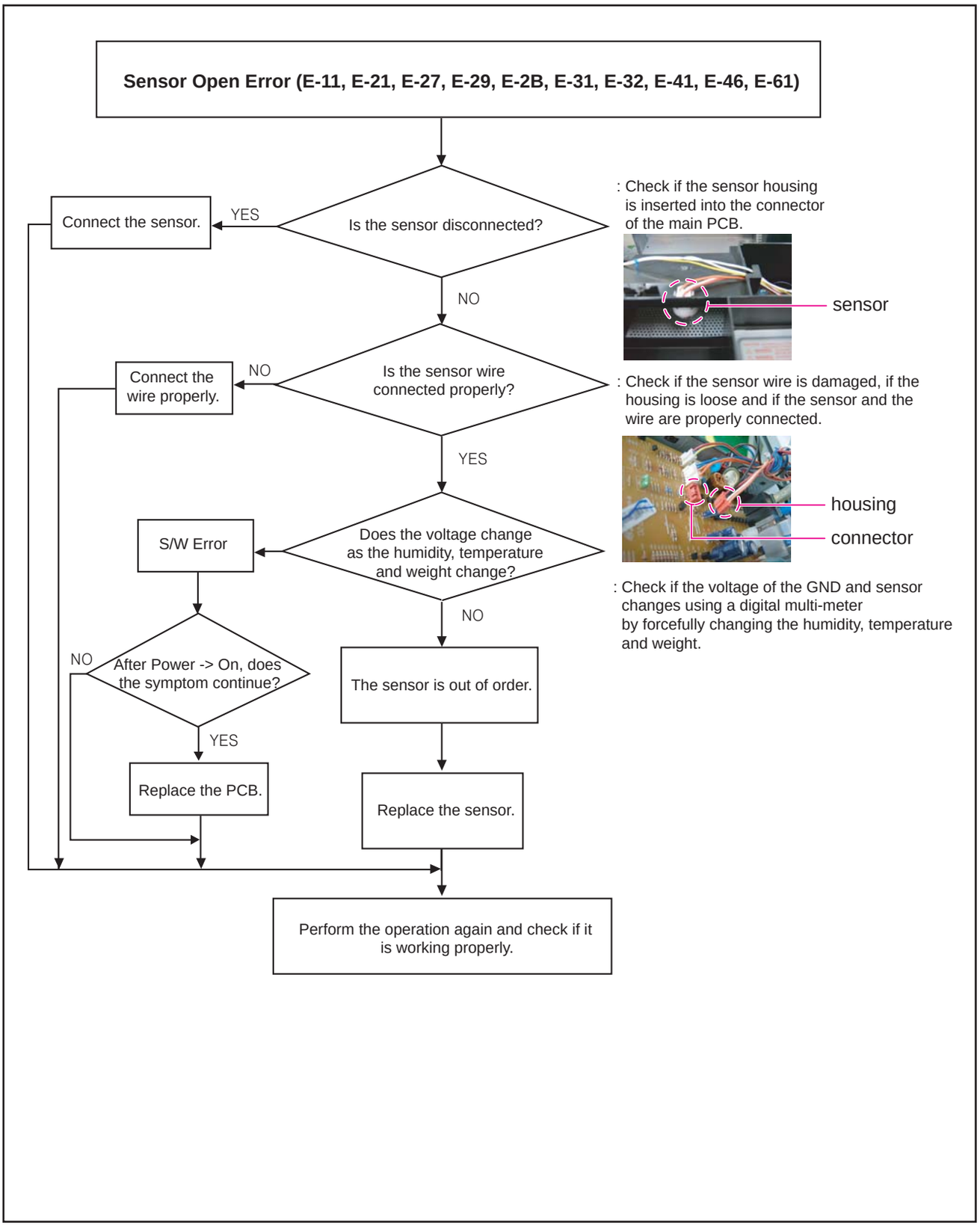
Error Code	Humidity Sensor Error Case (E-6X)	Solution	Page
E-61	Open	Check Sensor.	19 Page
E-62	Short		20 Page
E-63	T1 Max Time Error		21 Page

Others

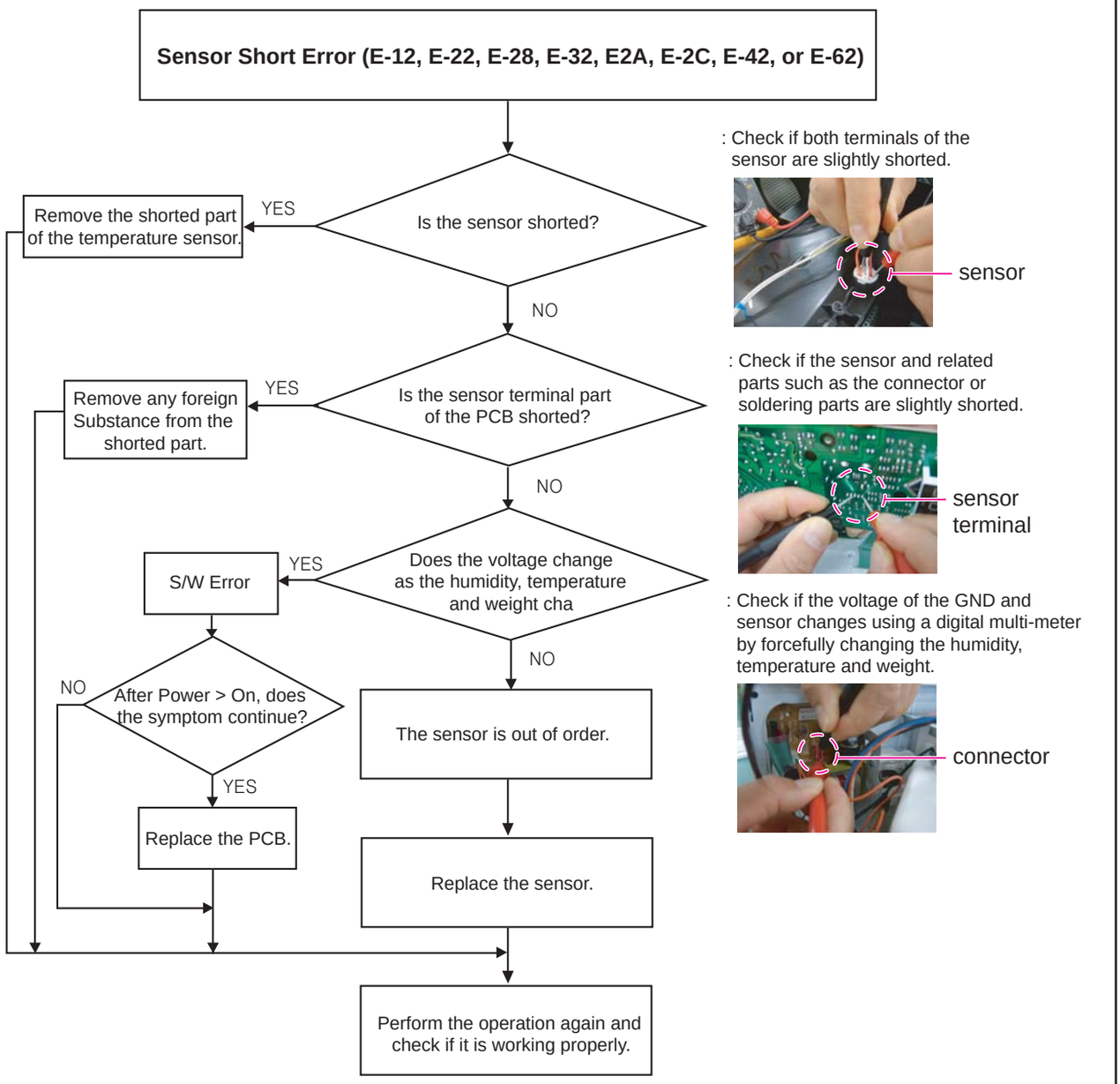
Error Code	Others (E-0X, Letter)	Solution	Page
-SE-	Key Short Error (10 seconds)	Turn off set and restart.	22 Page
E-02	Cooking Time Setting Over Error (MWO)	Check each mode’s setting time.	28 Page
E-03	Cooking Time Setting Over Error (Grill)		
E-04	Cooking Time Setting Over Error (Convection)		
E-05	Cooking Time Setting Over Error (Combination)		
E-06	It fails to sense that the swing heater has stopped for 20 seconds during cooking.	Check Swing heater’s motor and connector.	32 Page

4-4 Electrical Malfunction

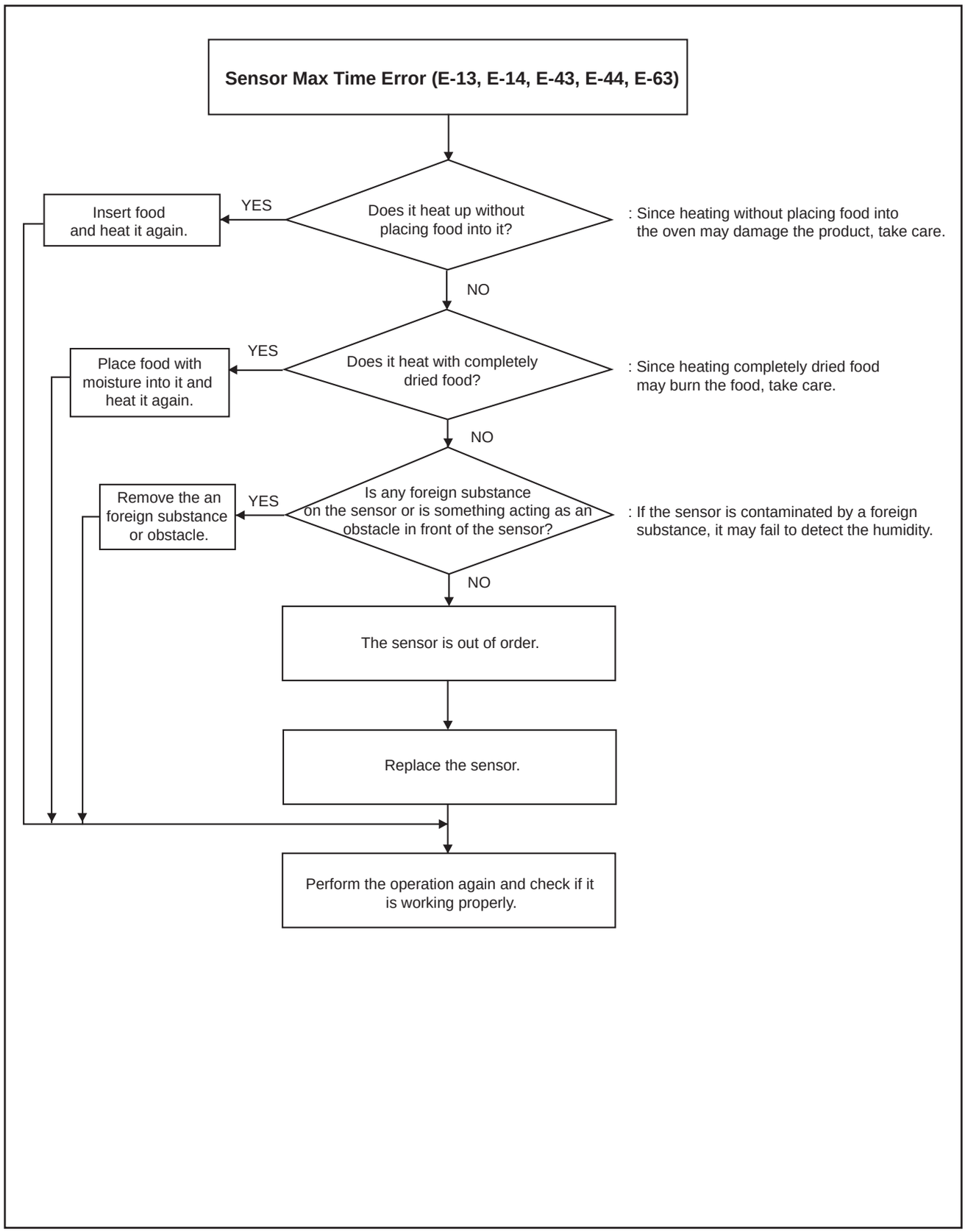
4-4-1 E-11, E-21, E-27, E-29, E-2B, E-31, E-32, E-41, E-46, E-61



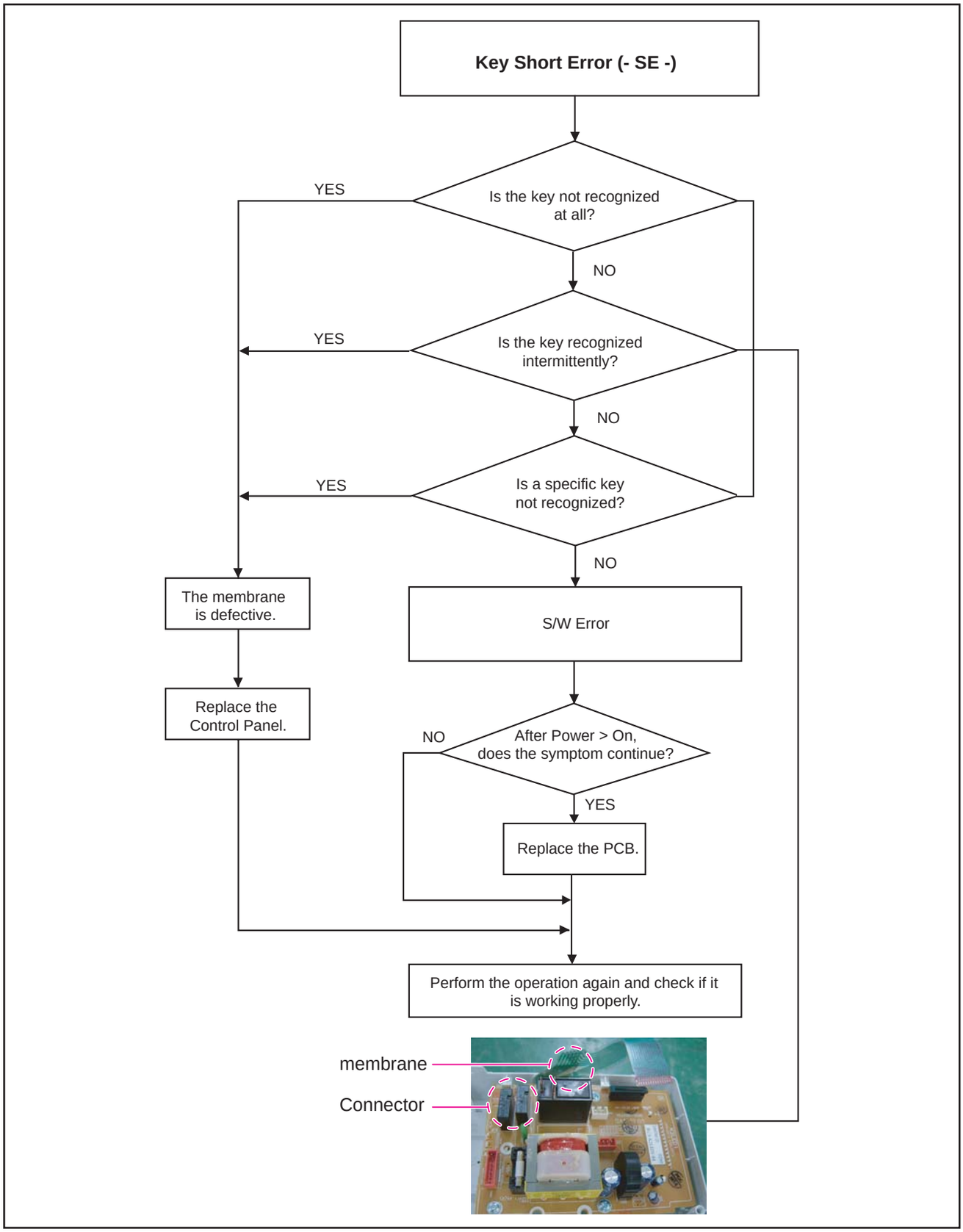
4-4-2 E-12, E-22, E-28, E-32, E2A, E-2C ,E-42, E-2C, E-42 or E-62



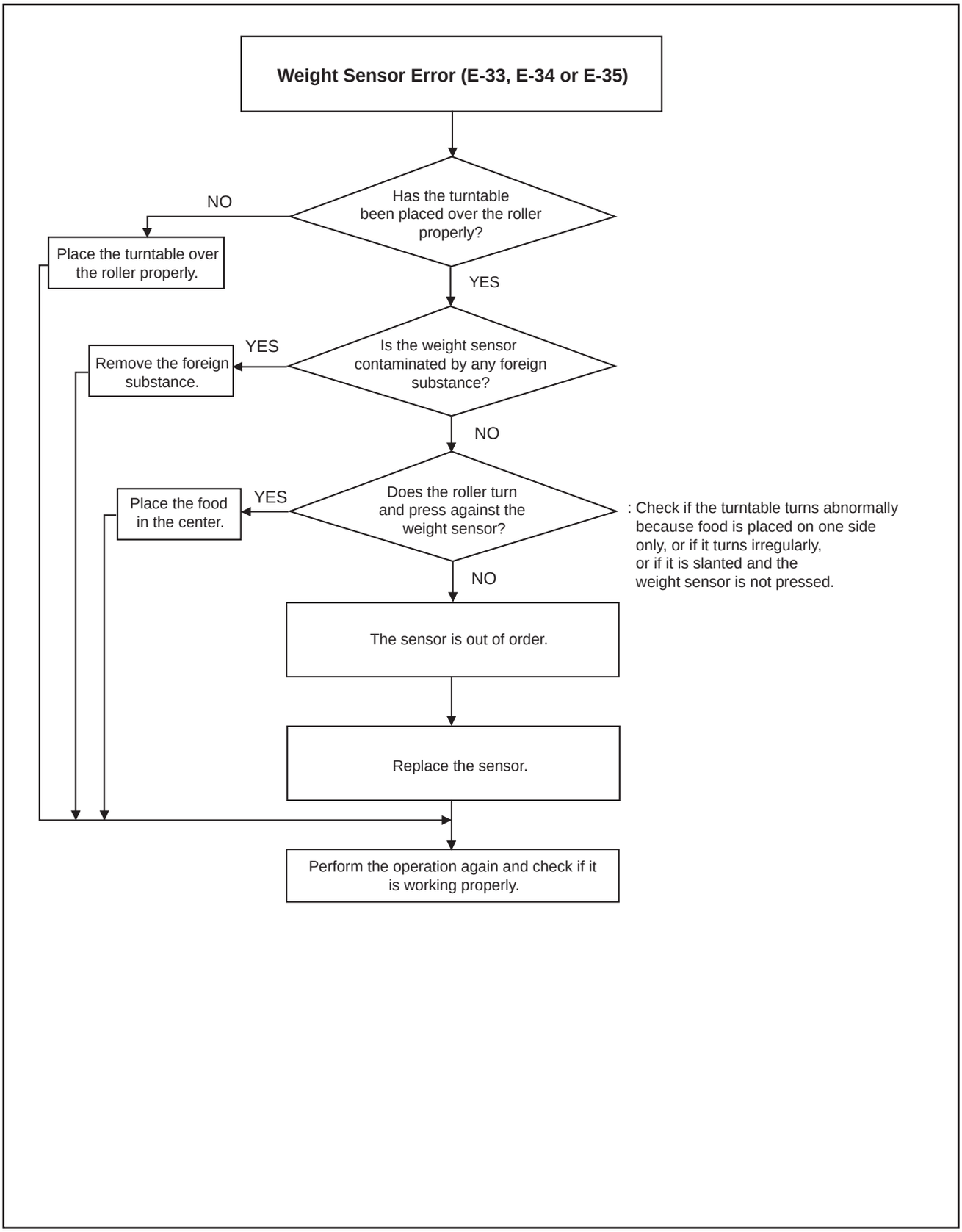
4-4-3 E-13, E-14, E-43, E-44, E-63



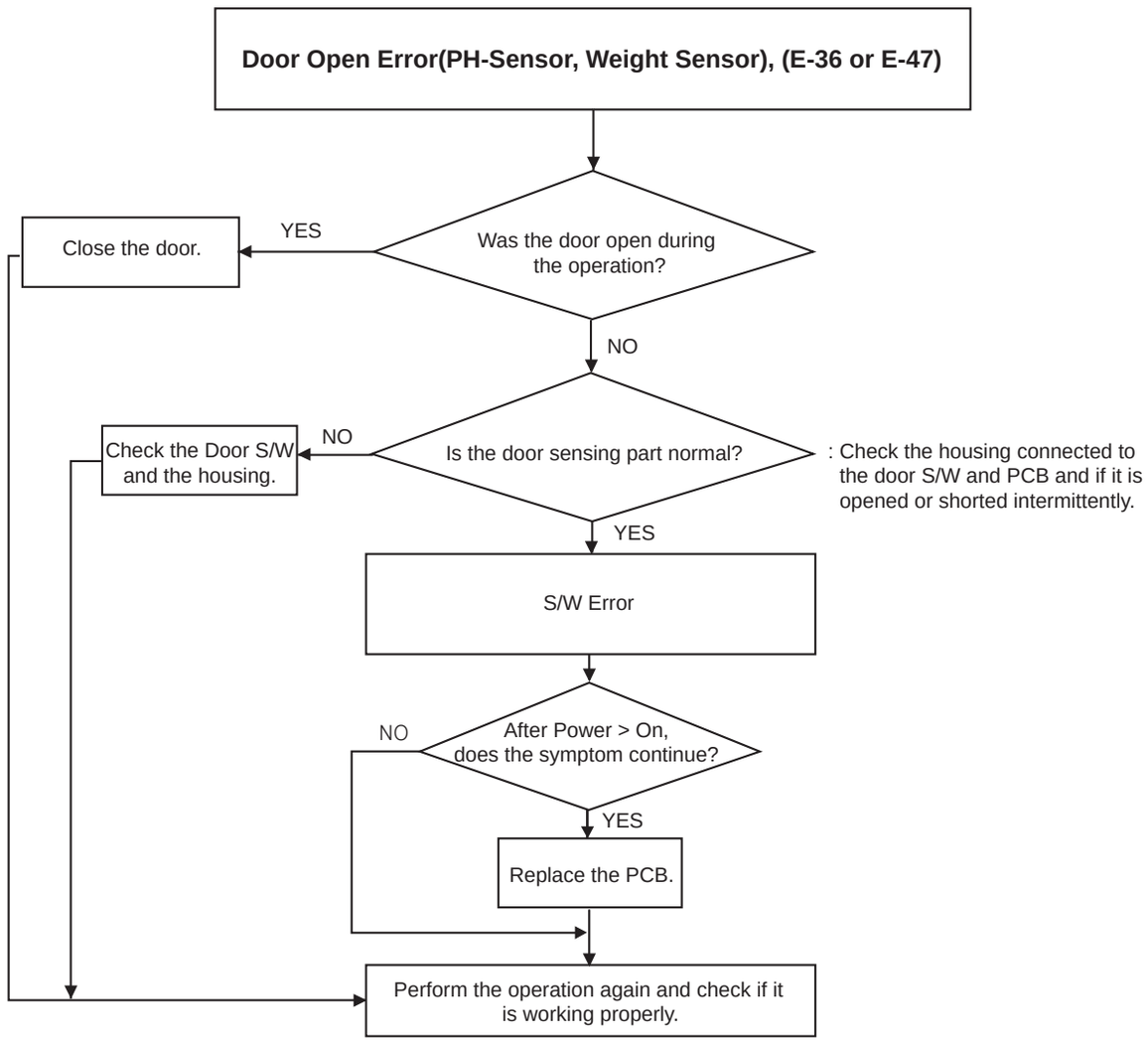
4-4-4 -SE-



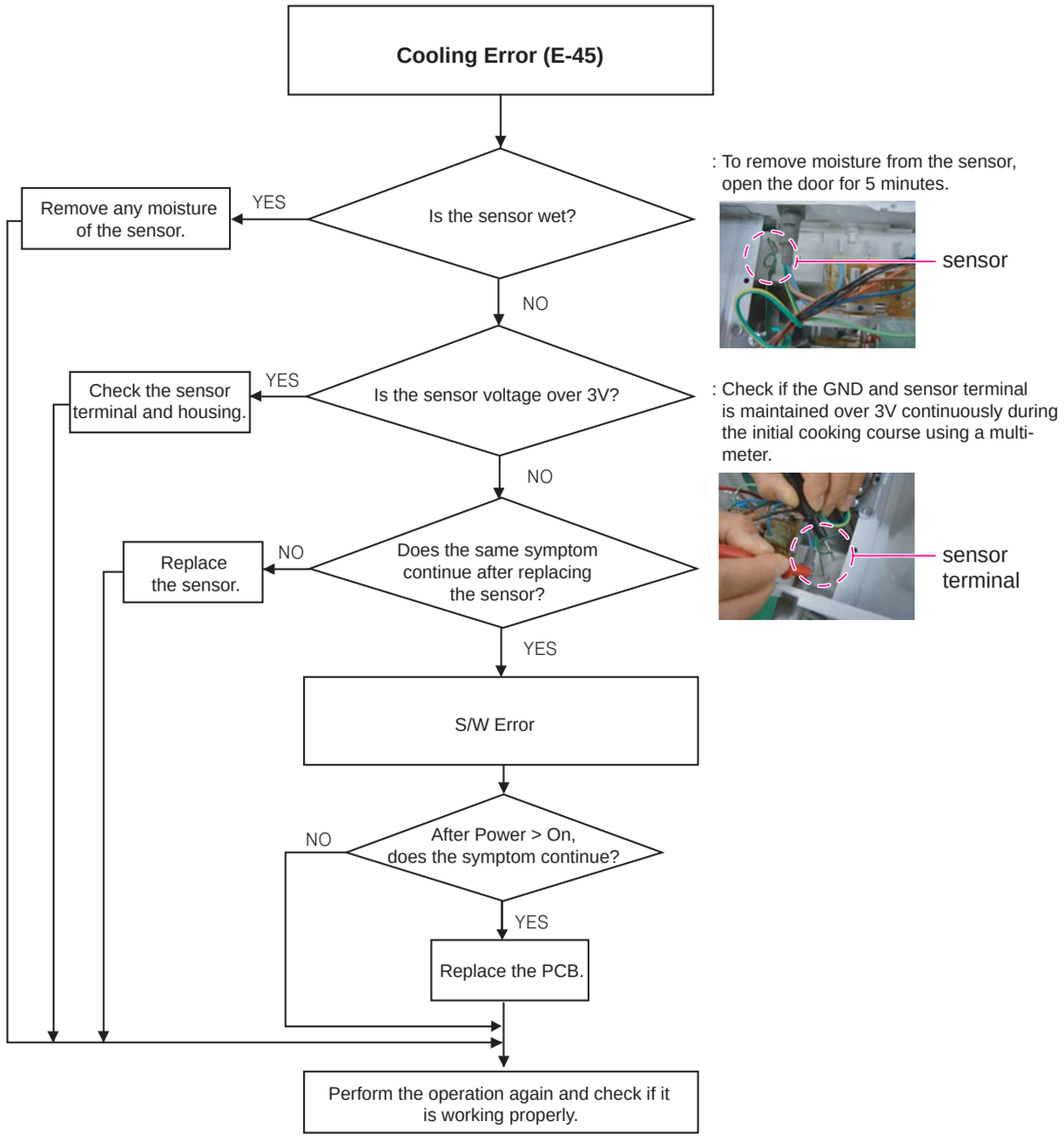
4-4-5 E-33, E-34 or E-35



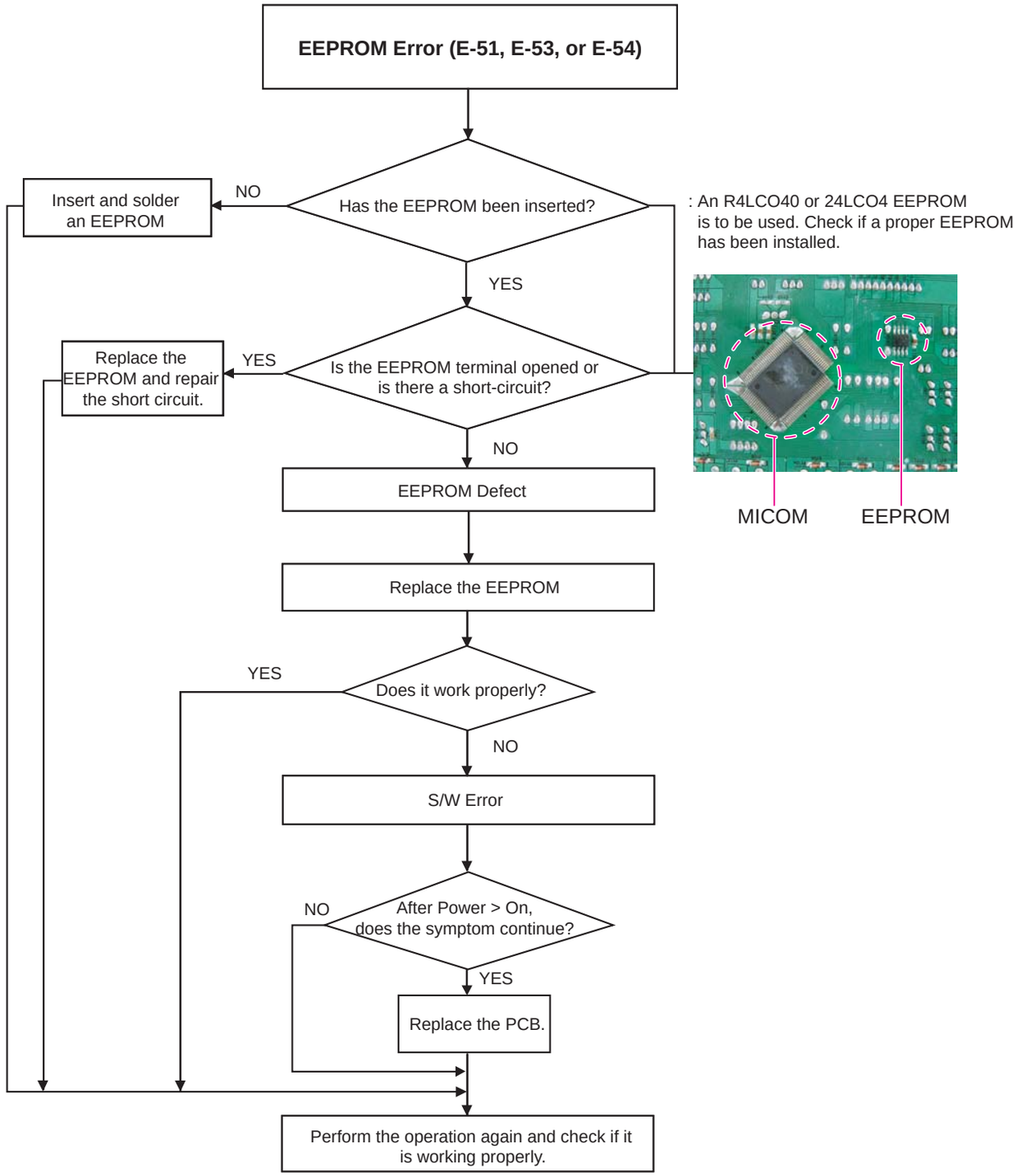
4-4-6 E-36 or E-47



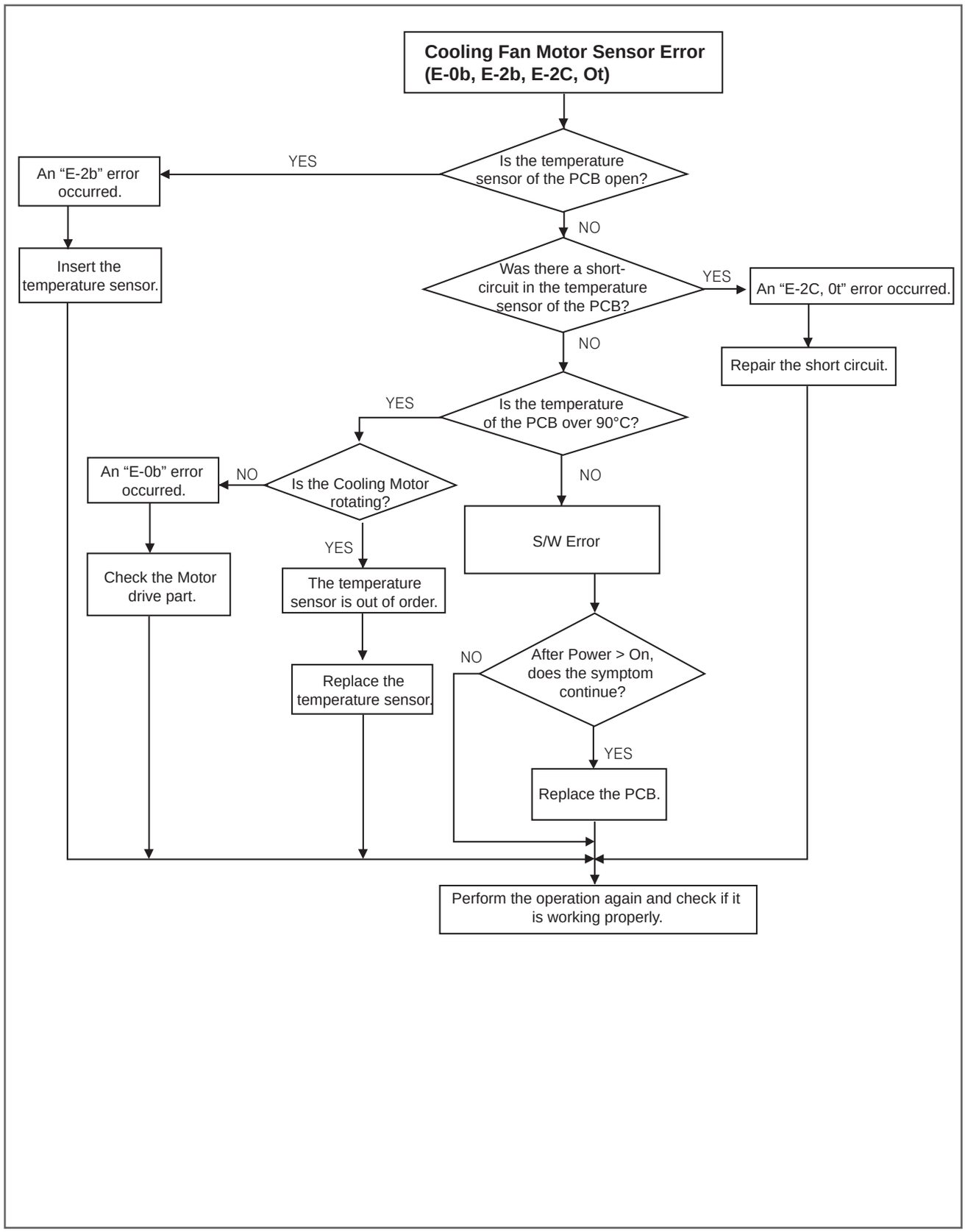
4-4-7 E-45



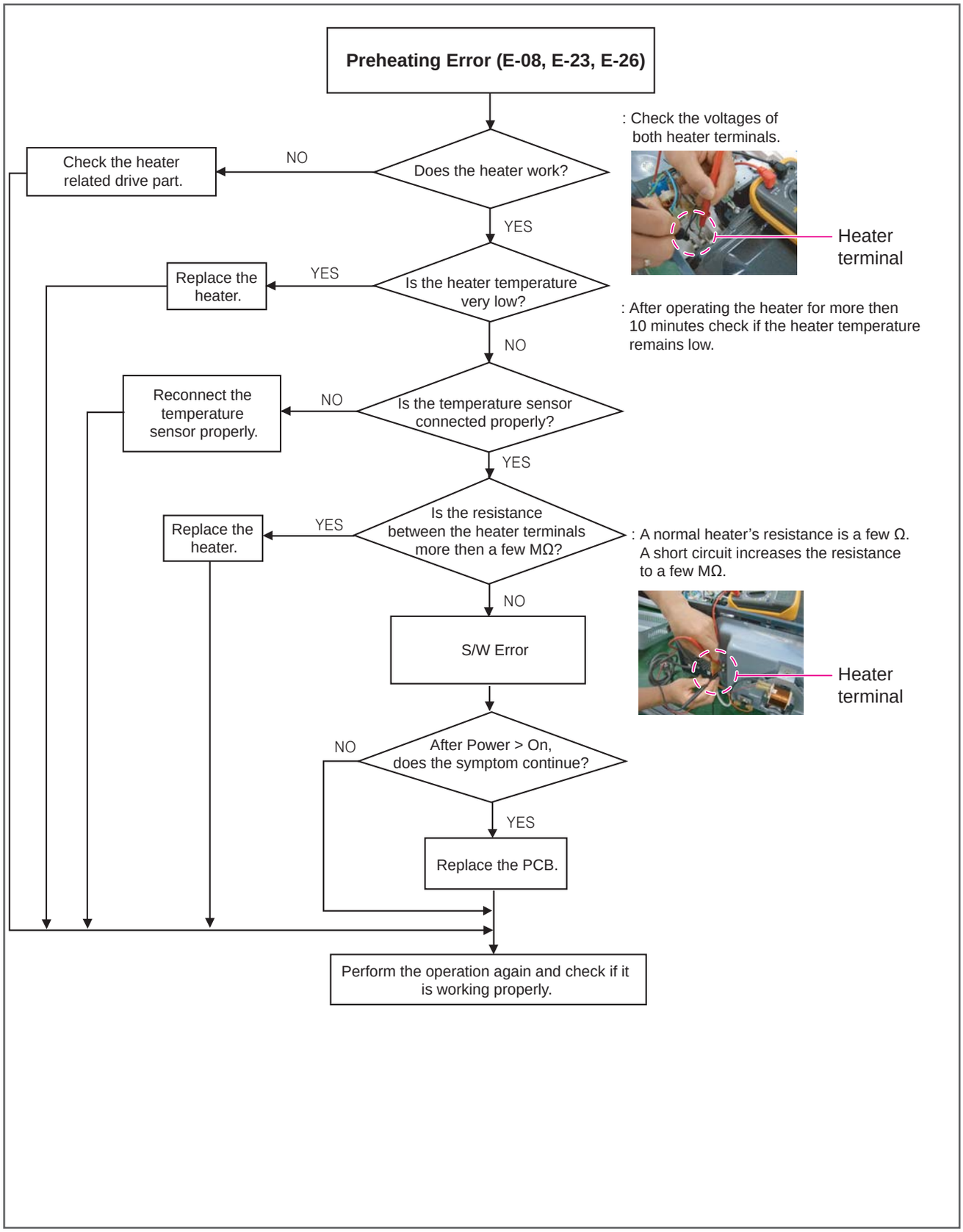
4-4-8 E-51, E-53 or E-54



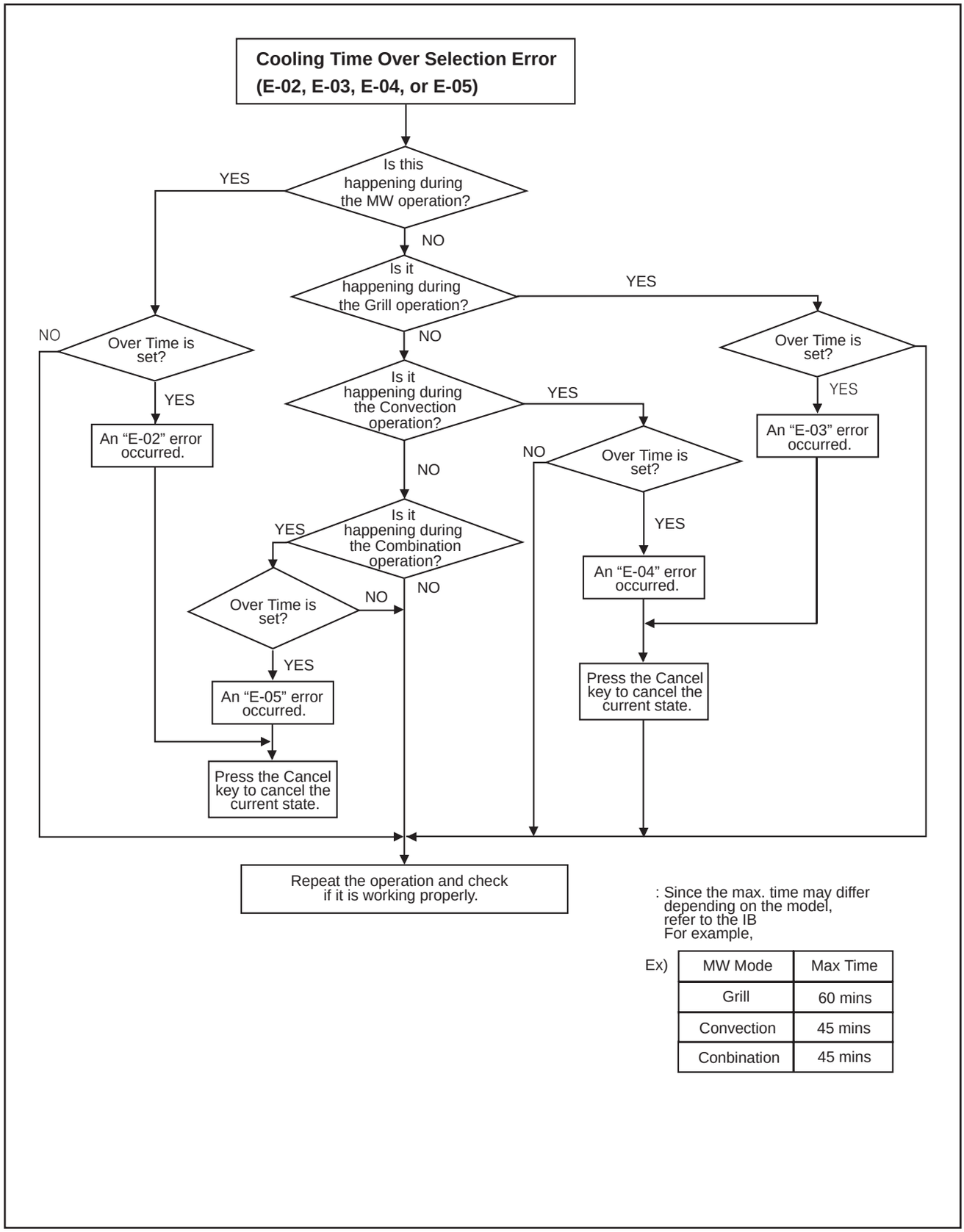
4-4-11 E-0b, E-2b, E-2C, 0t



4-4-12 E-23, E-26



4-4-13 E-02, E-03, E-04 or E-05

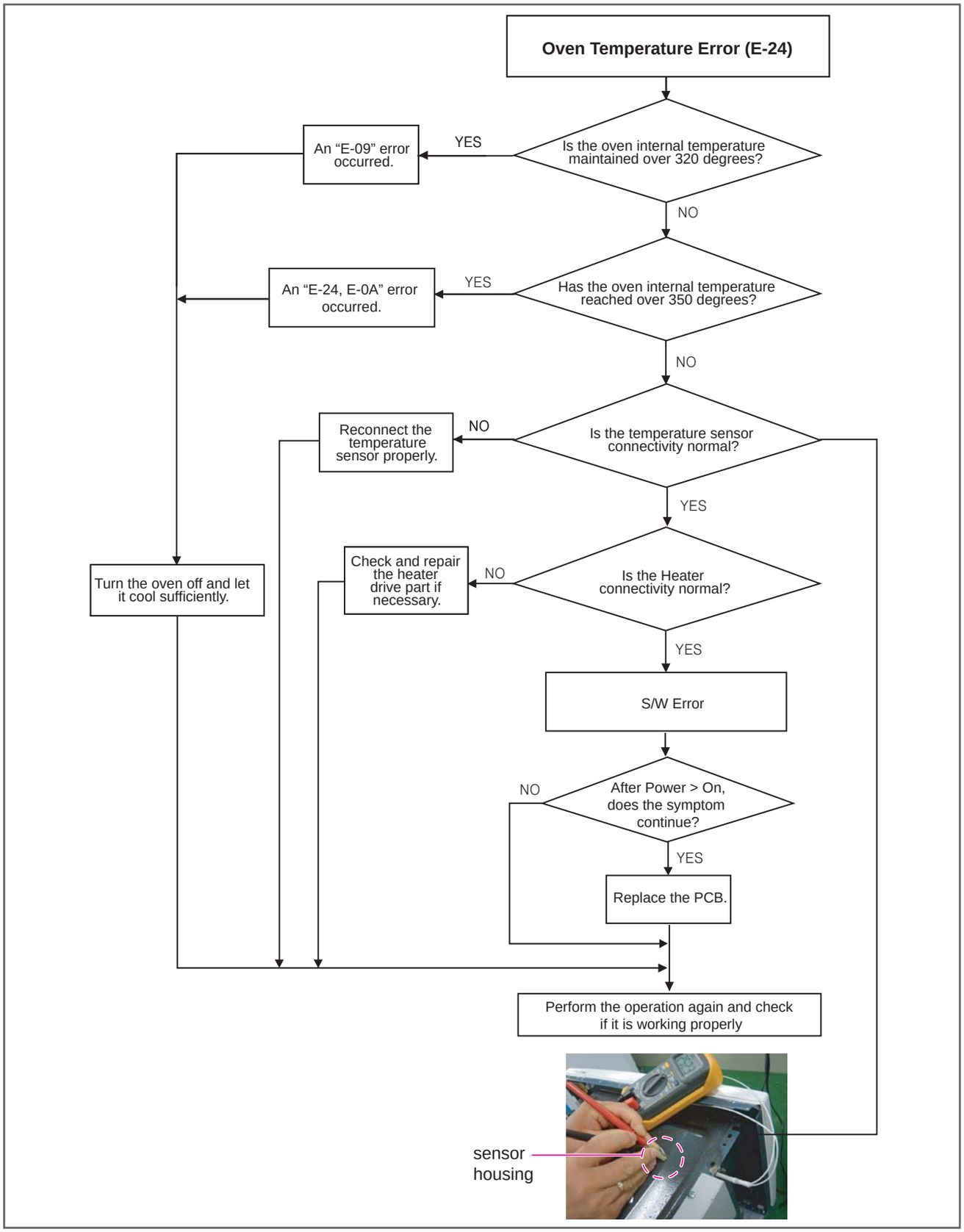


: Since the max. time may differ depending on the model, refer to the IB
For example,

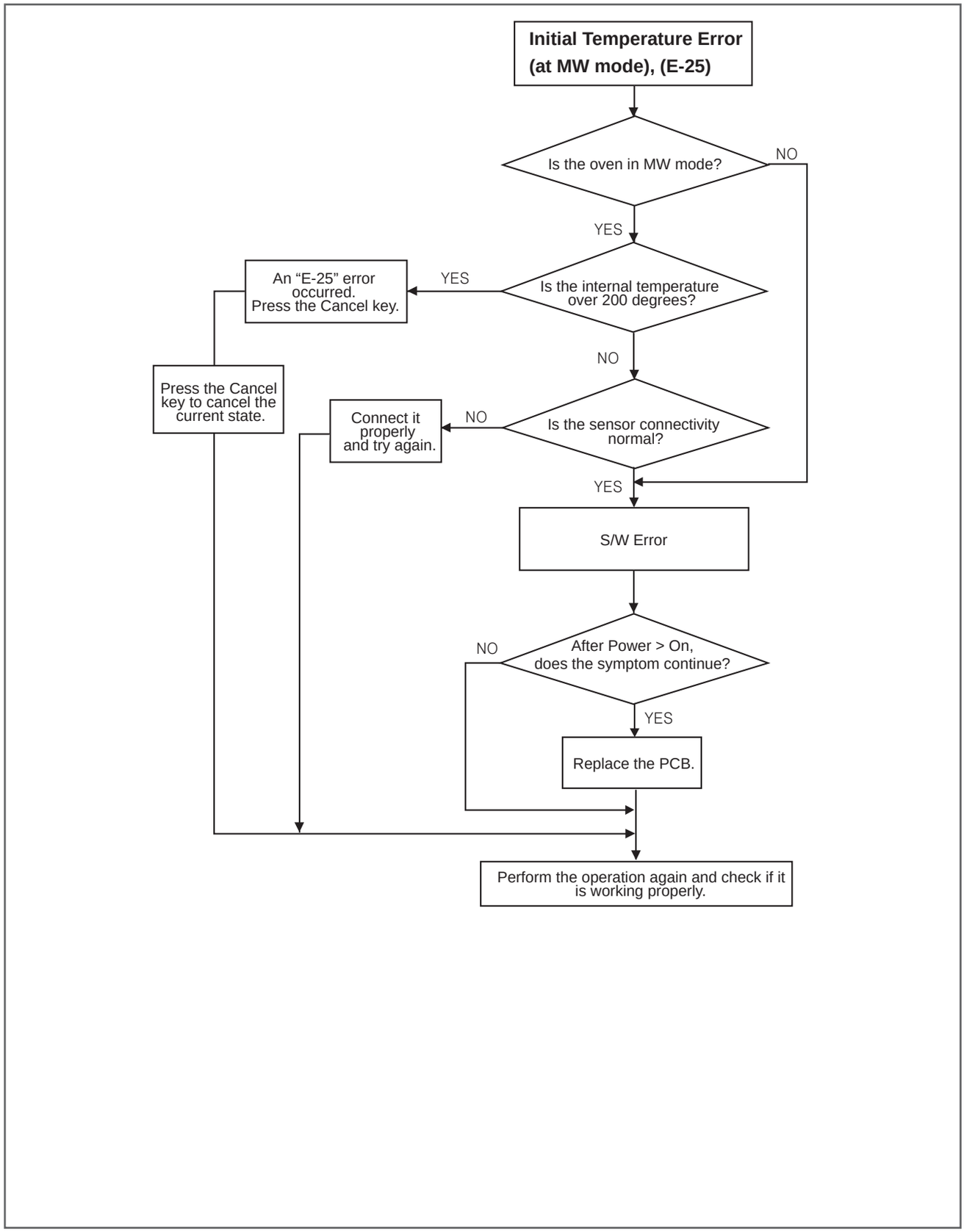
Ex)

MW Mode	Max Time
Grill	60 mins
Convection	45 mins
Conbination	45 mins

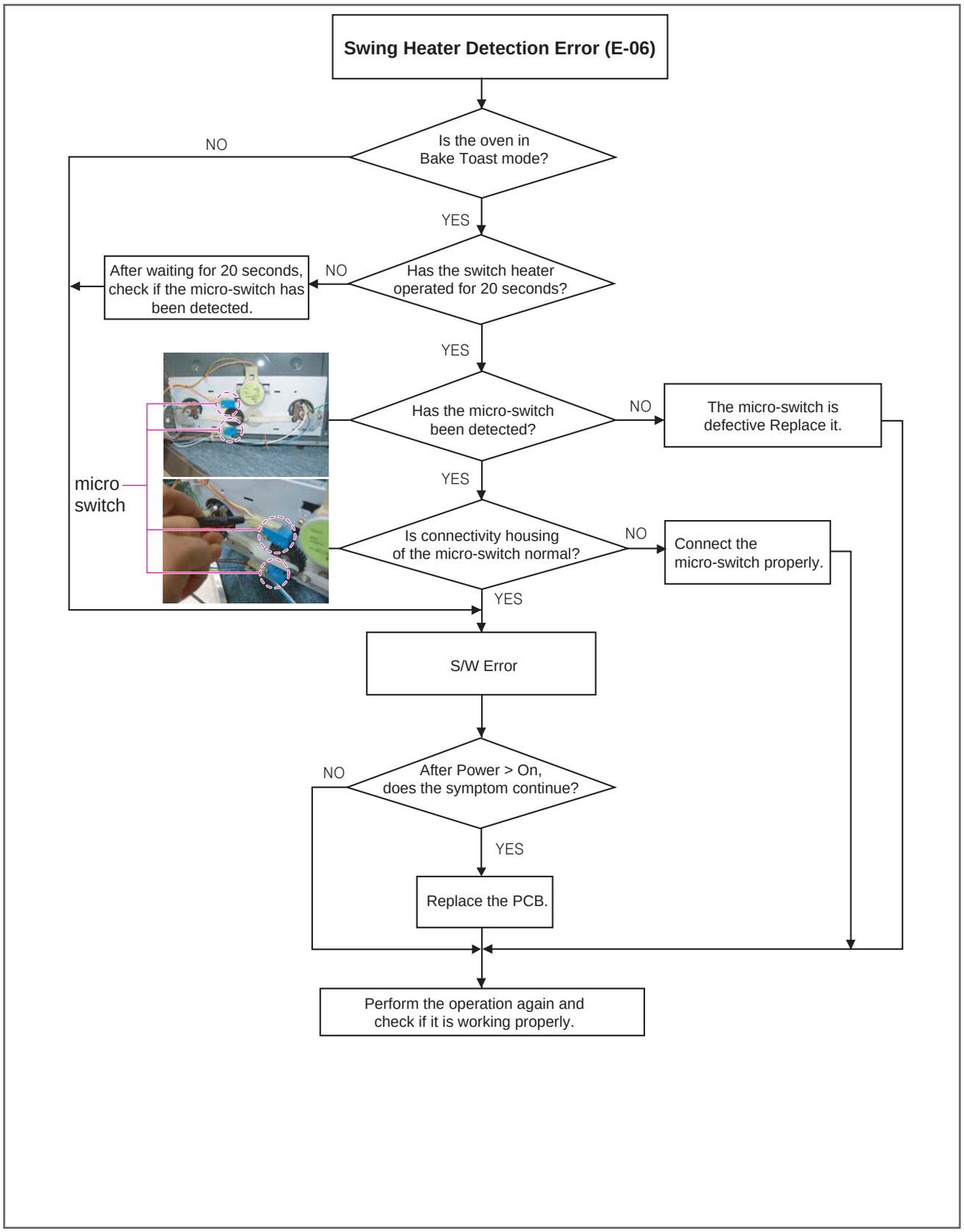
4-4-14 E-24



4-4-15 E-25



4-4-16 E-06



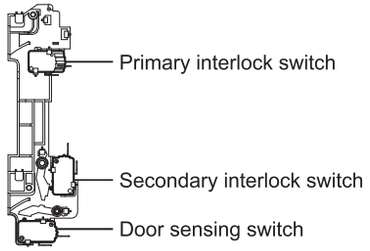
4-4-17 If oven malfunction

Oven does not operate.

***Inspection method**

Caution
1. Be careful of high voltage circuits.
2. Discharge high voltage capacitor.

Is Fuse OK?
- NO → Is Primary interlock switch normal?
  - NO → Make sure to inspect the power relay after replacing primary interlock switch, secondary interlock switch and door sensing switch.

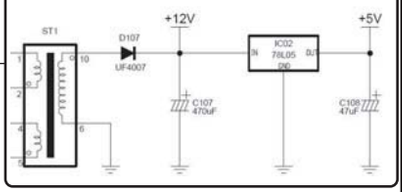


< Latch switch assembly >

  - YES → Is Power Relay normal?
    - NO → Replace Relay
- YES

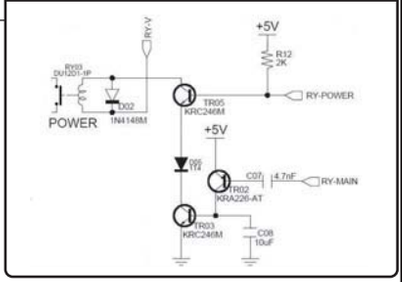
Is the magnetron temperature switch normal?
- NO → Replace switch
  - NO → Check a fan motor after replacing switch
- YES

Is SMPS power supply cirduit normal?
- NO → Do check power supply circuit
  - NO → Power supply circuit check point



- YES

Is the IC01 output of PCB normal?
- NO → Do check Relay control circuit
  - NO → Relay control circuit check point



- YES

Checking high voltagecircuts
- Is high voltage dioed normal?
  - NO → Is high voltage dioed normal?
    - NO → In case any of high voltage parts is damaged, check all parts related to high votlage.
    - YES → Is high voltage capacitor normal?
      - NO → In case any of high voltage parts is damaged, check all parts related to high votlage.
      - YES → Is magnetron normal?
        - NO → In case any of high voltage parts is damaged, check all parts related to high votlage.

4-4-18 If button malfunction

Buttons of the control panel do not work.

***Inspection method**

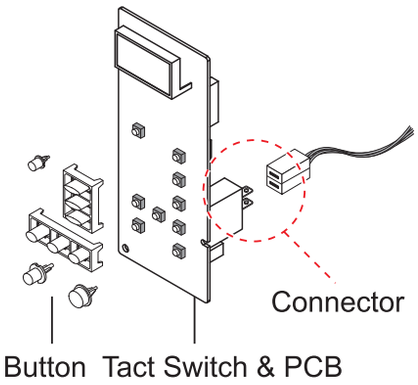
Are button pressed in the correct order?

NO → Refer to User Manual

YES

Is the connector of the control panel normal?

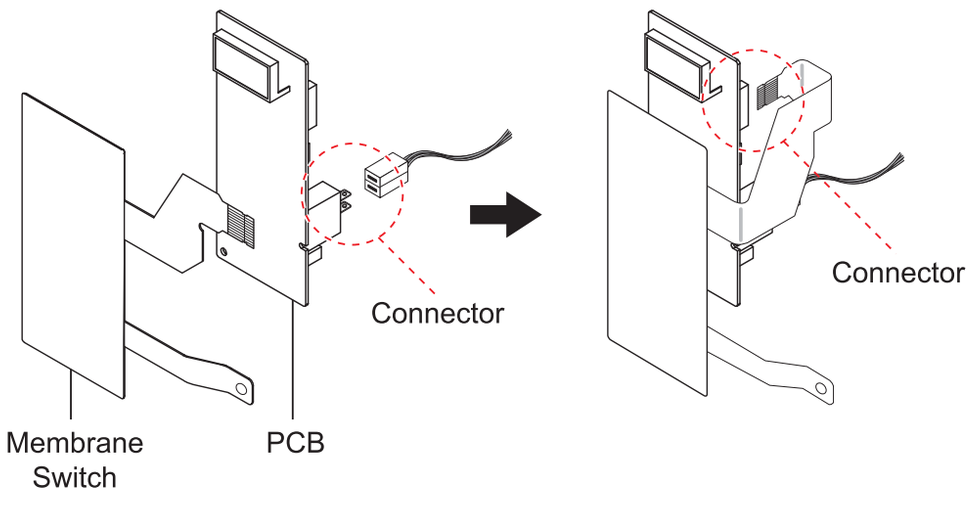
NO → Tact type



YES

Replace PCB.

Menbrane type



4-4-19 If food is not heated even though an oven works

Food is not heated even though an oven works.

***Inspection method**

Is the latch switch operating normally?

NO

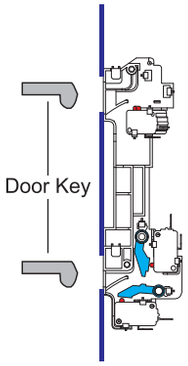
Method to control latch switch

YES

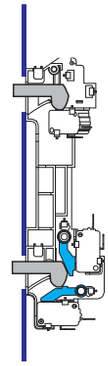
Checking high voltage circuits

Refer to "Checking high voltage circuits" on the previous page.

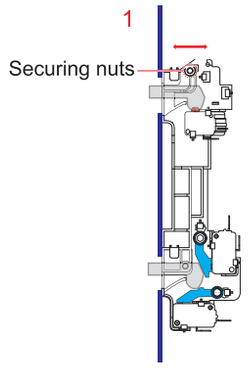
*Door open



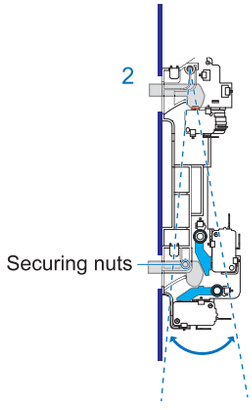
*Door closed



Method to control latch switch

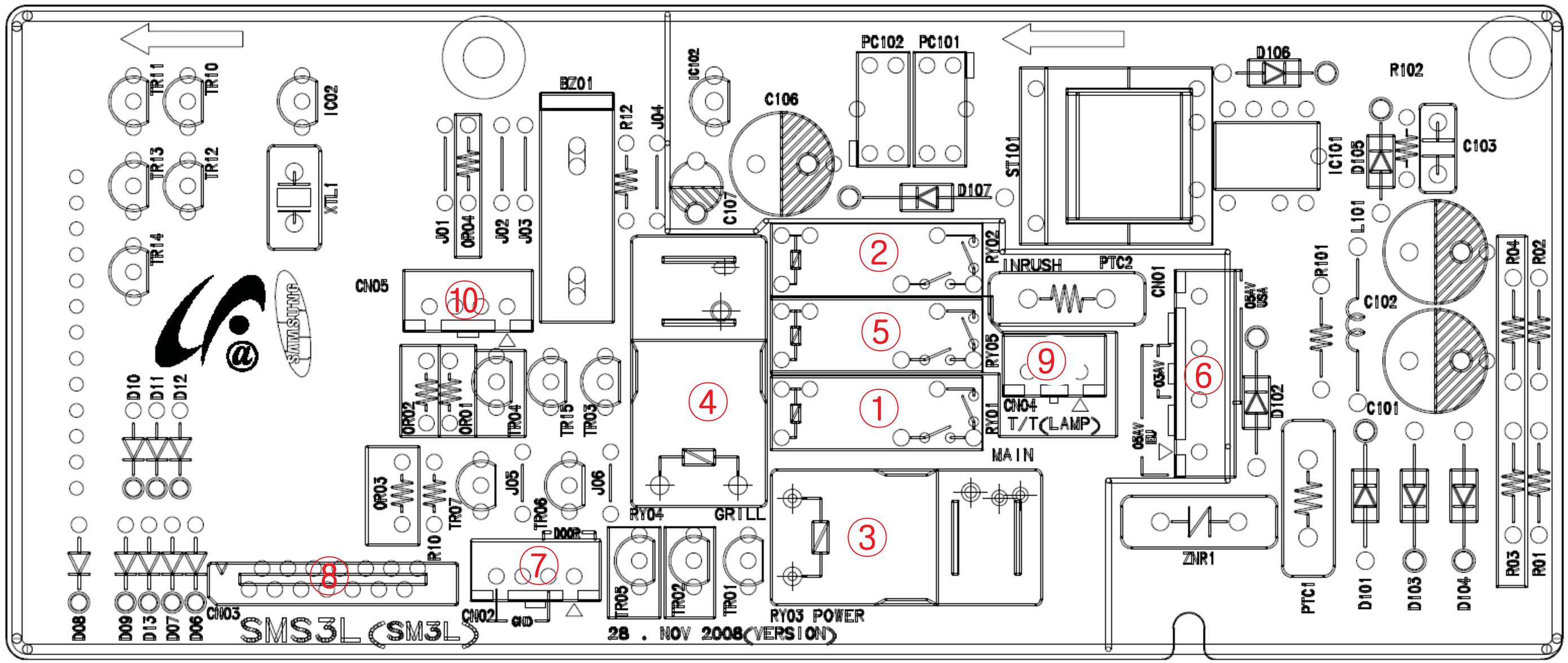


1. Loosenly tighten the nuts to check whether the primary interlock switch works by slightly moving latches to right and left.
Then firmly tighten nuts.



2. Loosenly tighten the nuts to check whether the secondary interlock switch and door sensing switch works by slightly moving latches to right and left.
Then firmly tighten nuts.

5-1 PCB Diagrams



No.	Parts Number	Part Name	Function and Rule
1	RY01	Main Relay	Fan, Lamp, T/T Control
2	RY02	Inrush Relay	Inrush Electric Current Decrease
3	RY03	Power Relay	MW Power Control
4	RY04	Grill Heater Relay	Grill Heater Control
5	RY05	T/T Relay	Turn Table Motor Control (model option)
6	CN01	Power & Relay Connector	A Terminal for Connecting with Power supply & Relay Contact(Load Control)
7	CN02	Door switch Sensing Connector	A Terminal for Connecting with Door Switch
8	CN03	Membrane switch Connector	A Terminal for Connecting with Membrane Switch
9	CN04	T/T Connector	A Terminal for Connecting with T/T Connector
10	CN05	PH Sensor	A Terminal for Connecting with PH Sensor

5-2 PCB Diagrams

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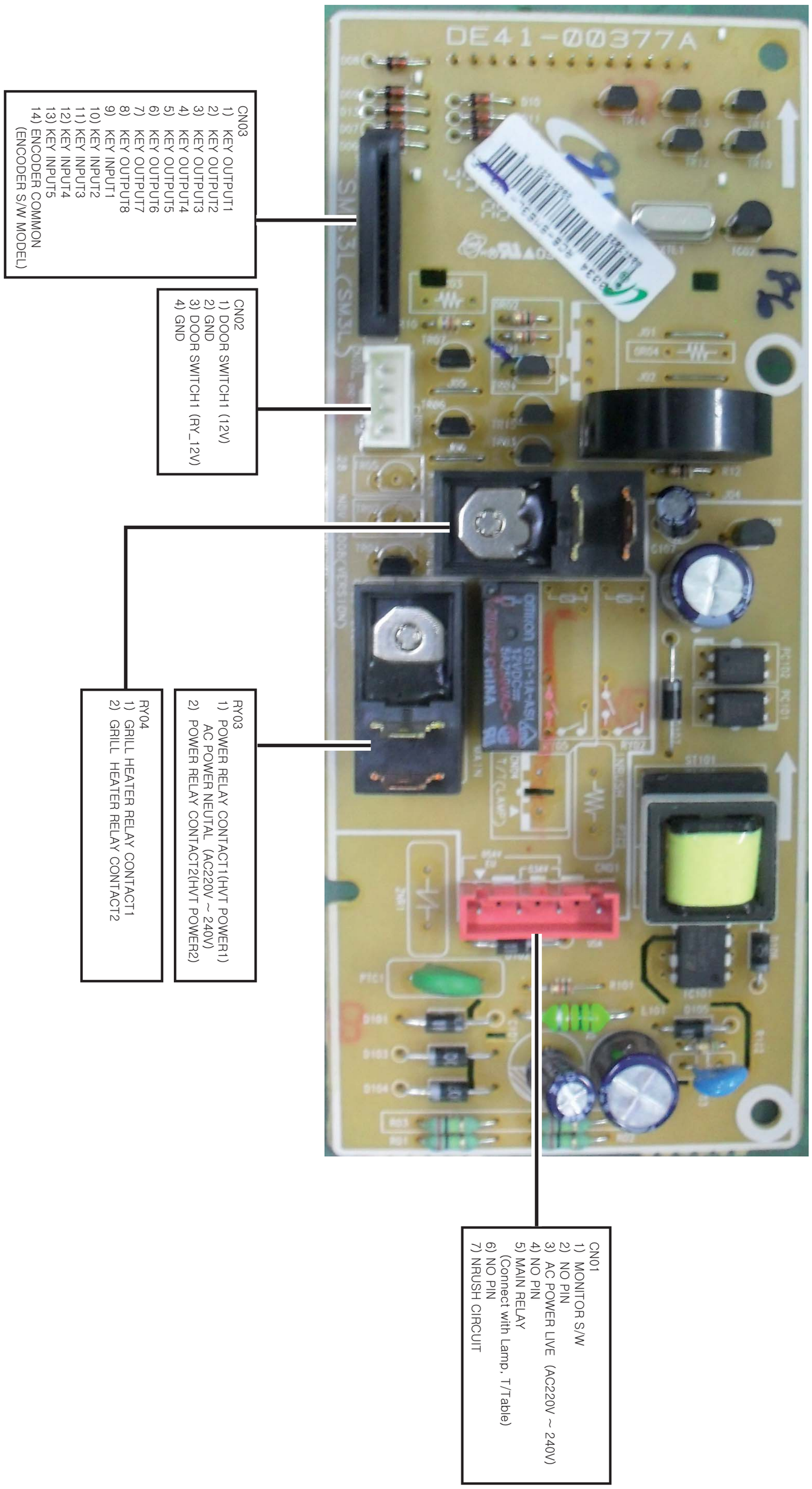

6-1 Wiring Diagrams

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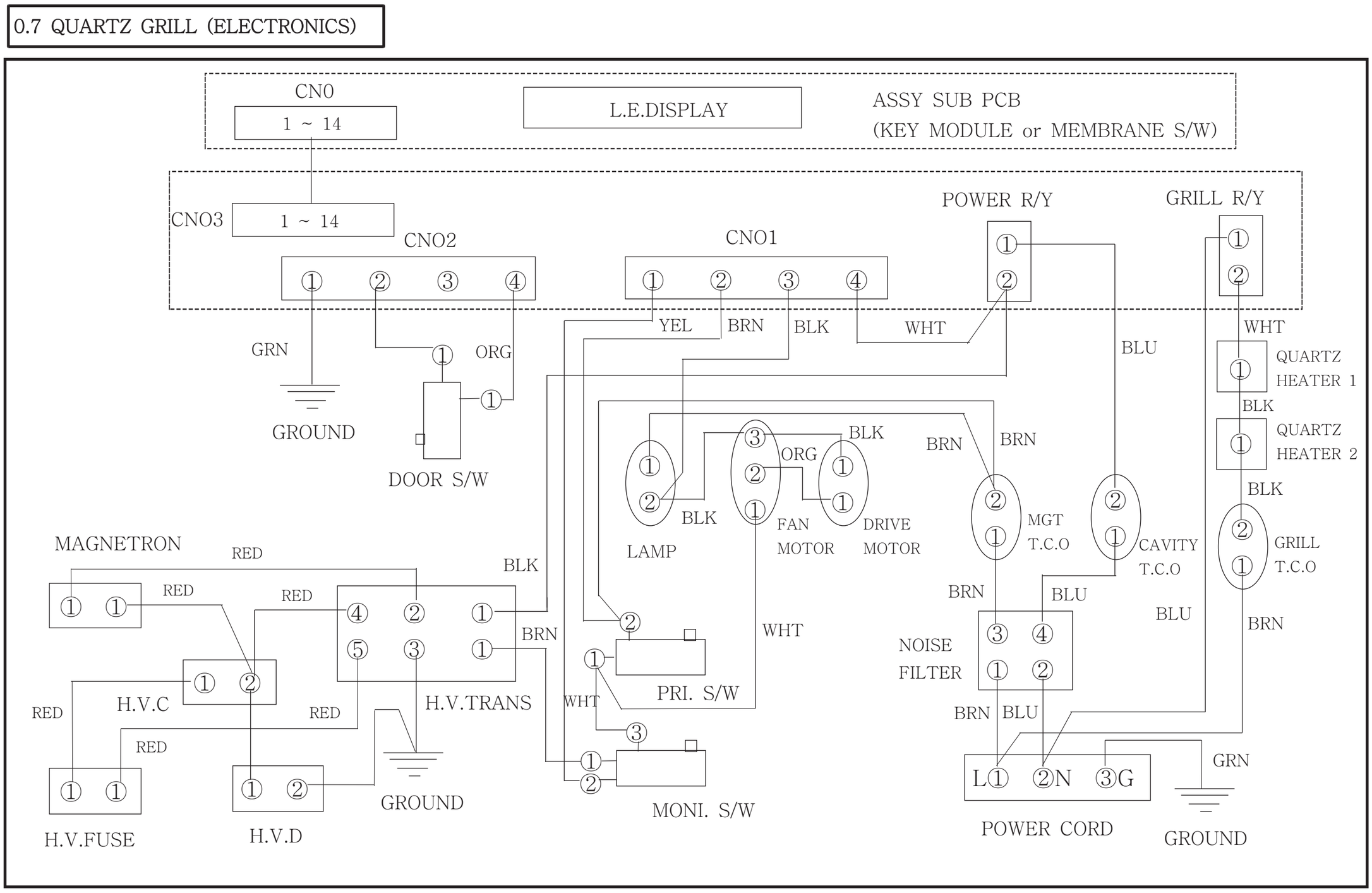

6-1 Wiring Diagrams

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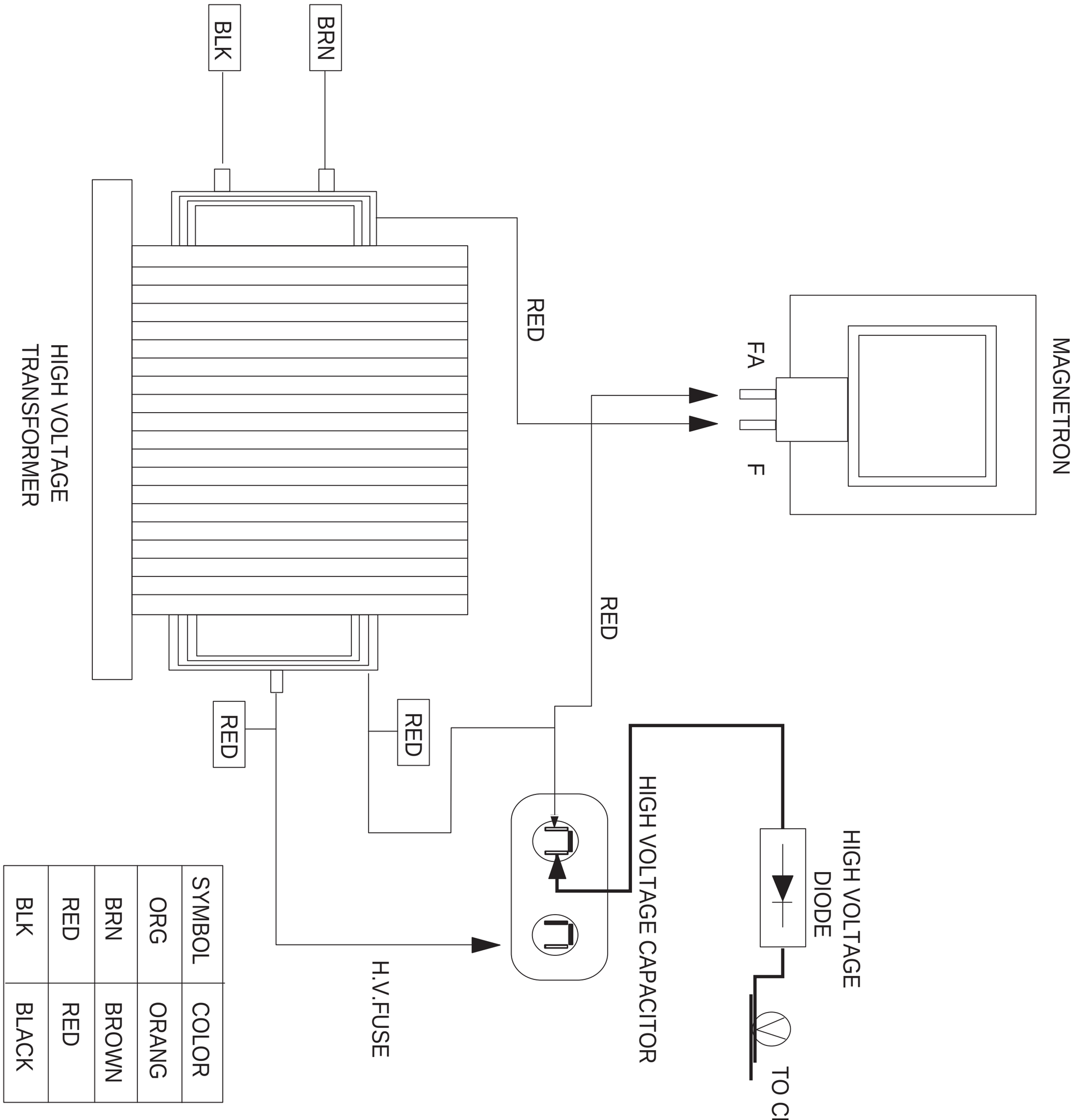

SYMBOL	COLOR
ORG	ORANG
BRN	BROWN
RED	RED
BLK	BLACK

7-1 Schematic Diagrams

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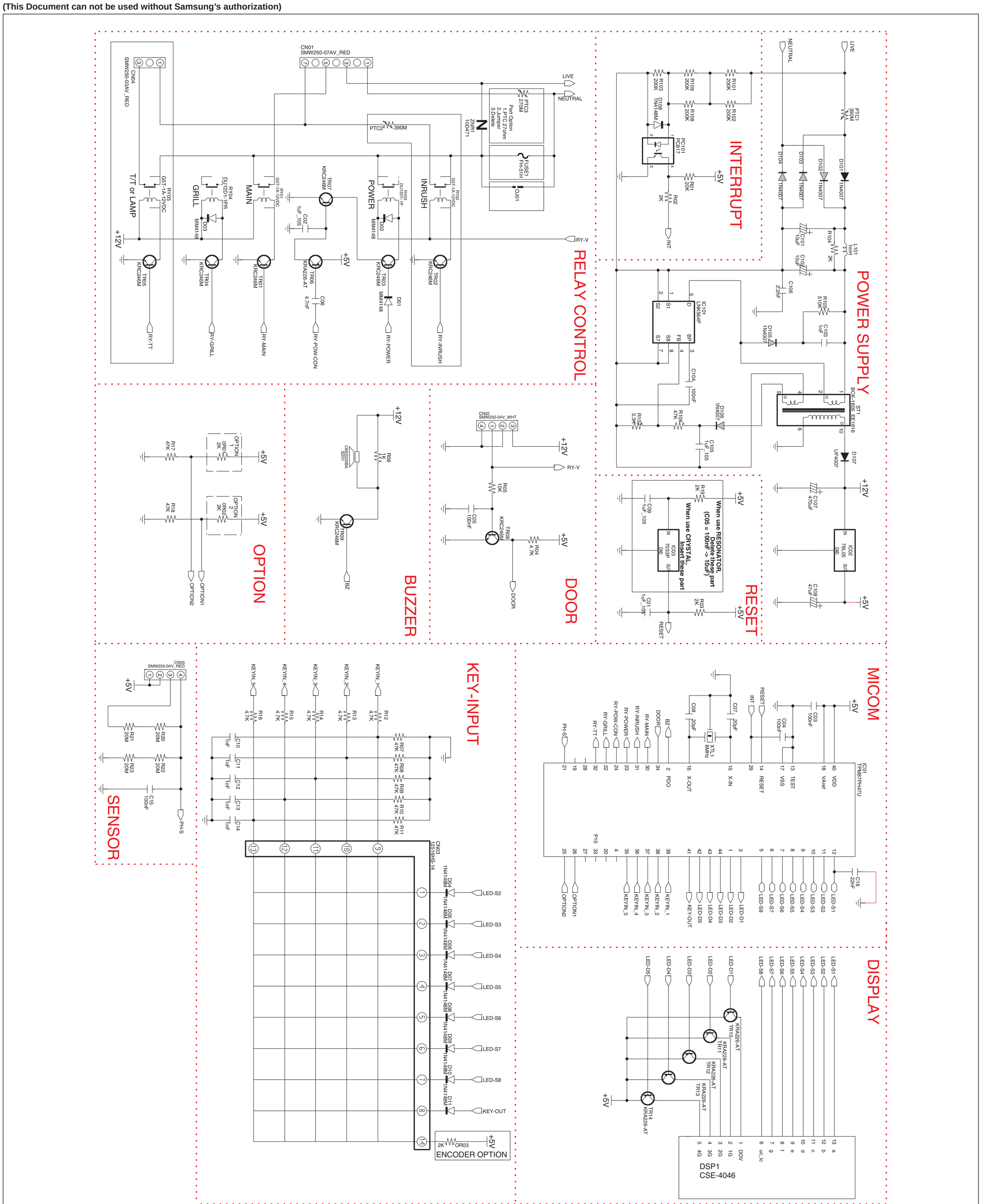

SAMSUNG ELECTRONICS

GSPN (GLOBAL SERVICE PARTNER NETWORK)

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