MICROWAVE OVEN

SERVICE MANUAL

CAUTION

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

1 SAFETY

1.1 Danger

Repairs may be carried out by an electrician only!

Improper repairs may endanger and injure the user!

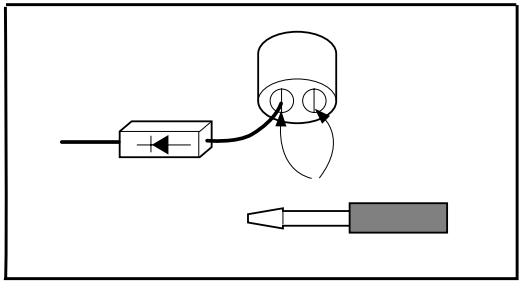
To prevent electric shocks, always comply with the following information:

- Do not touch the housing and frame if the appliance is faulty, the housing and frame may be live!
- Do not touch any modules in the appliance, even modules can be live!
- Before commencing repairs, always disconnect the appliance from the power supply!
- Discharge the high-voltage capacitor by shorting across the two terminals with an insulated srewdriver when replacing or checking, because an electric charge remains in the high-voltage capacitor for 30 seconds after the oven stops.
- If tests have to be performed while the appliance is live, always use a residual-current-operated circuit-breaker!
- The protective conductor connection must not exceed the standard values! This connection is extremely important for personal safety and function of the appliance!
- When repairs are complete, conduct a test in accordance with VDE 0701 or national regulations!
- When repairs are complete, conduct a function test!
- When repairs are complete, conduct a leak rate test!

1.2 Caution!

Always comply with the following instructions to prevent damage to the appliance or to components:

- Comply with ESD instructions!
- Never attempt repairs by randomly replacing components!
- Always proceed systematically and follow the troubleshooting instructions!
- Do not test the high-voltage circuit while the appliance is running – Danger of death!
- Discharge the high-voltage capacitor before testing!



1.3 Leak test (leak detection measurement)

The leak rate is the microwave energy which escapes despite the intact sealing systems.

The leak rate is measured as an energy density with suitable measuring instruments at a distance of 5 cm. The unit of measurement is mW/cm^2.

The limiting values for the permitted measured values, as well as the measurement conditions, have been specified in the VDE regulation 0700/Part 25 and are as follows:

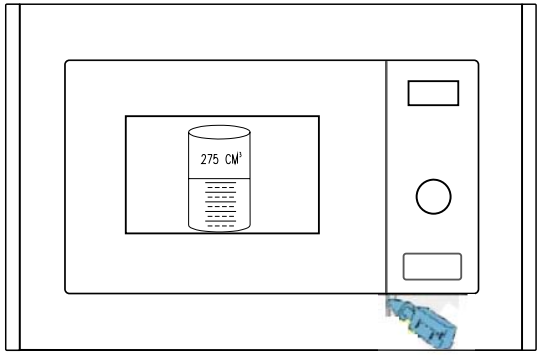
1.3.1 Normal operation with load

Setting: maximum power setting of the appliance

Load: 275 cm^3 water

Permitted limiting value: 5 mW/cm^2

Measurement distance: 5 cm



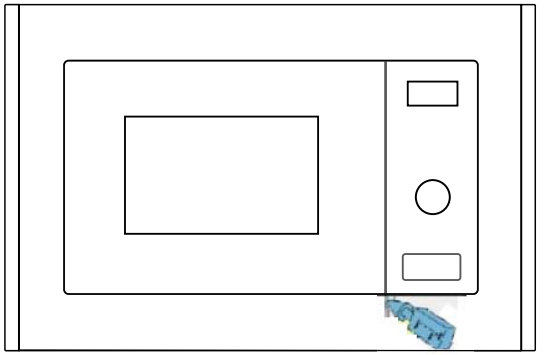
1.3.2 Abnormal operation (no-load operation)

Setting: maximum power setting of the appliance

Load: none (no-load operation)

Permitted limiting value: 10 mW/cm^2

Measurement distance: 5 cm



2 COMPONENTS

2.1 High-voltage diode

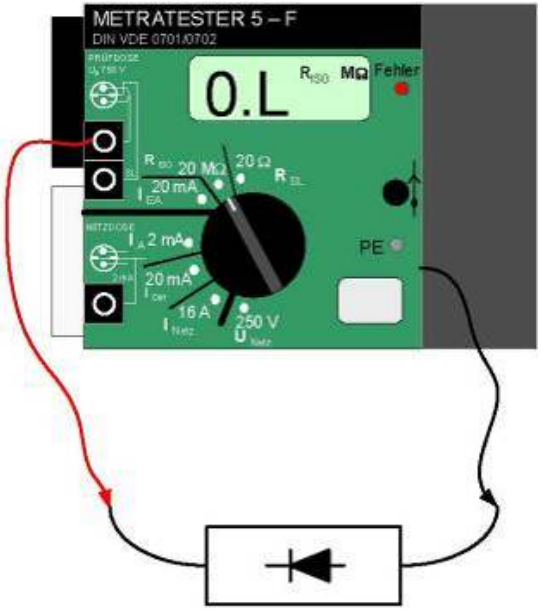
The high-voltage diode can be tested like a standard diode.

Use an EHG tester for this.

- Full continuity in conducting direction.
- Infinite in blocking direction.

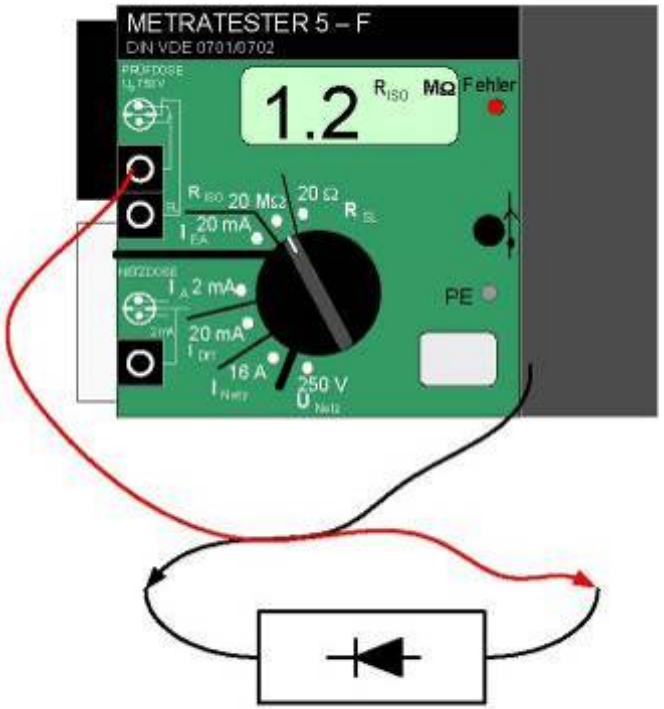
Set to insulation resistance.

Conducting direction = full continuity.



Set to insulation resistance.

Blocking direction = infinite.



2.2 High-voltage capacitor

The high-voltage capacitor can be tested by ‘ohmic’ measurement’ (resistance measurement range 20 MΩ).

A correctly functioning capacitor indicates transient continuity.

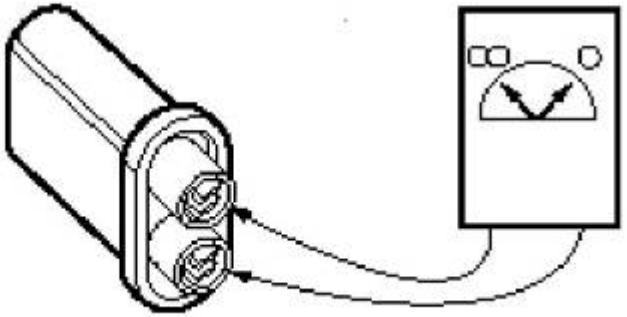
The resistance then increases proportionally with the load.

A defective capacitor (e.g. short-circuit) indicates permanent continuity.

The measuring instrument must indicate infinitely between the connection and housing.

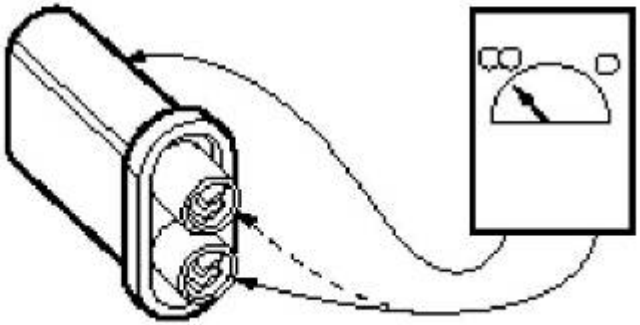
Resistance measurement range 20 MΩ

Briefly continuity.
Then proportional increase of the resistance.



Resistance measurement range 20 MΩ

Between connection and housing = infinite.

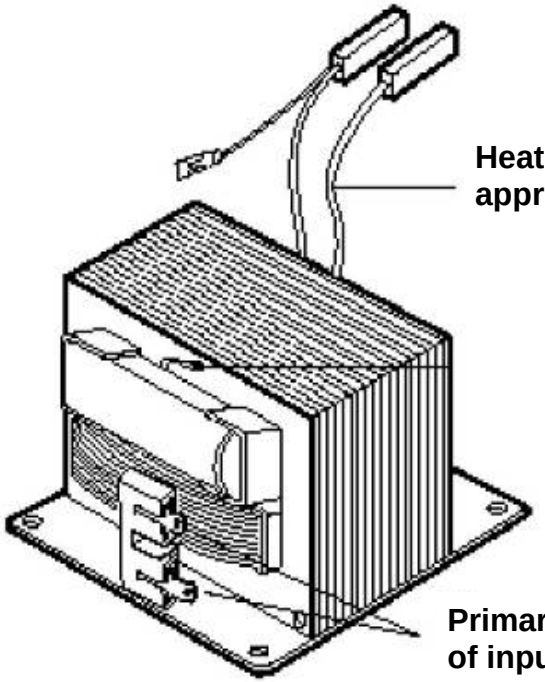


2.3 High-voltage transformer

This transformer supplies the heater voltage for the magnetron and the operating voltage for doubling the voltage.

- Input voltage 230 V
- Heater voltage approx. 3.3 V
- Operating voltage approx. 2300 V

The operating voltage cannot be measured!!



2.4 Magnetron

The magnetron can be tested by ‘ohmic’ measurement´ only.

The volume resistance of the terminals F and FA should be less than 1 Ω.

The insulation resistance between the two terminals and the housing should be infinite.

Measure the resistance with an EHG tester.

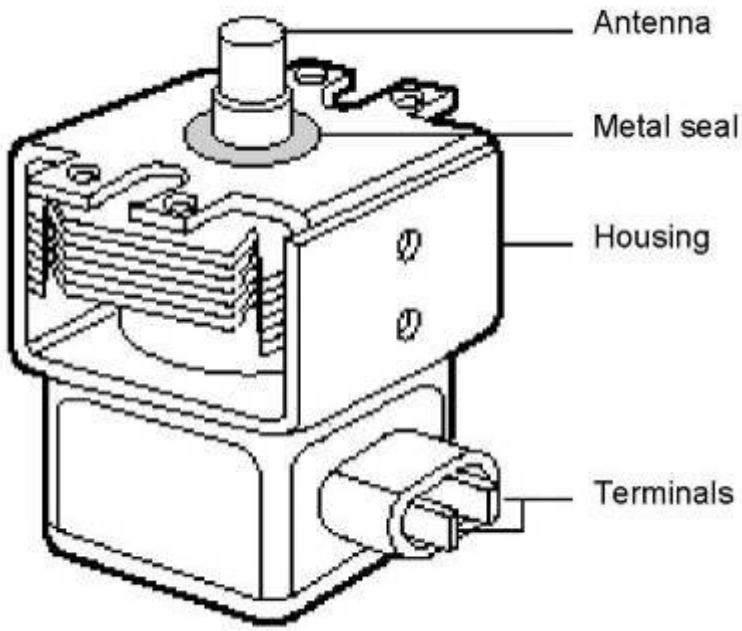
Note:

An internal flashover (short-circuit between cathode and anode) cannot usually be established by taking a measurement.

This is not indicated until the appliance is switched on when high voltage is applied to the magnetron.

It may also be possible to detect the fault by loud humming noises.

Before installing the magnetron, ensure that the metal seal is ok and is seated correctly.



2.5 Safety switches

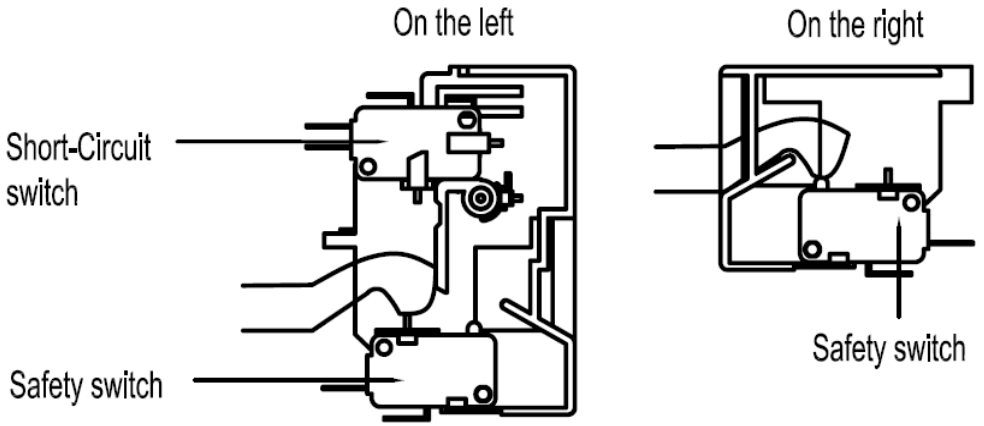
Microwave ovens usually feature at least three safety switches.

These switches are supported by the switch brackets.

The basic function of these switches is to interrupt microwave generation as soon as the door is opened.

One of the three switches is the short-circuit switch. It monitors one of the two other switches and actuates the appliance safety device if the monitored switch does not function.

In this case the appliance is disconnected from the power supply and can no longer be switched on.



2.5.1 Switching sequence

Each door switch independently switches off the power supply for the microwave oven when the door is opened.

The switching sequence is specified by the arrangement and is as follows.

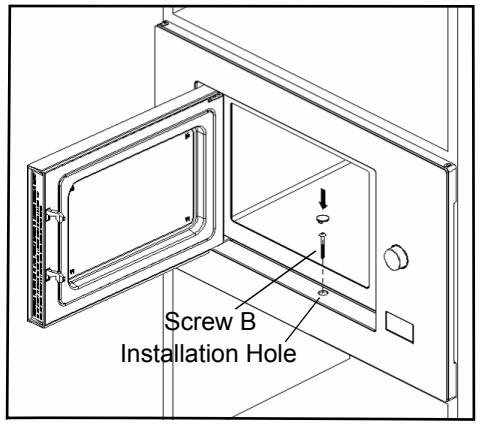
Switching sequence	Open door	Close door
1.)	Safety switch on right	Short-circuit switch
2.)	Safety switch on left	Safety switch on left
3.)	Short-circuit switch	Safety switch on right

3 REPAIR

Caution!: Discharge the high-voltage capacitor before testing!

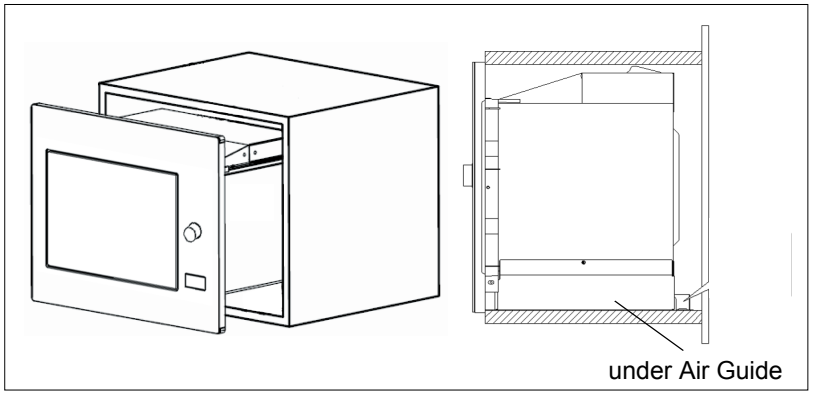
3.1 Removing Trim Assembly

1. Open the door, remove the Screw B from the installation hole.
2. Pull the Microwave oven out.
3. Remove the screws holding the Trim Assembly to the Cavity Assembly.



3.2 Removing Under Air Guide

1. Remove the screws holding the under Air Guide to Cavity Assembly.



3.3 Removing Outer Case

1. Disconnect the power supply cord from the outlet.
2. Remove the screws from the rear and along side edges of the case. The outer case must be moved backward to be lifted off.

3.4 Removing Power Supply Cord

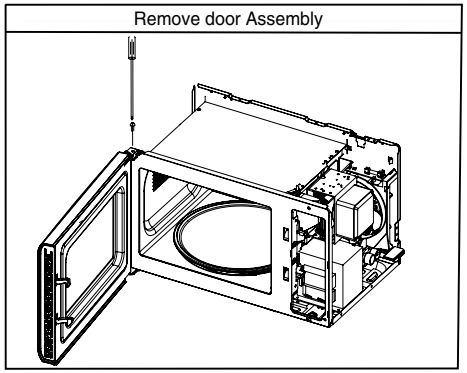
1. Remove the outer case.
2. Disconnect two terminals, and remove one screw of the earth terminal.

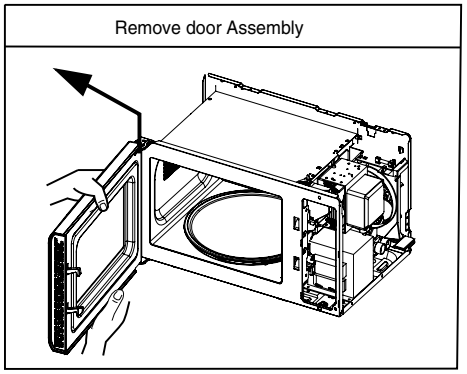
3.5 Removing Control Panel Assembly

1. Disconnect the leadwire from the PCB sub assemble.
2. Remove the screws for securing the control panel.
3. Lift control panel assemble from the oven by the tab unhooked.

3.6 Removing Door Assembly

1. Open the door.
2. Remove two screws holding the Hinge to the cavity Assembly.
   CAUTION : Be careful not to damage Door C by screwdriver.
3. Lift up and pull the door.





3.7 Removing High-Voltage Transformer

1. Discharge the high voltage capacitor.
2. Disconnect the leadwire from magnetron, high voltage transformer, and capacitor.
3. Remove the screw holding the high voltage transformer to the baseplate.

3.8 Removing Orifice Assembly

1. Discharge the high voltage capacitor.
2. Disconnect the leadwire from fan motor, noise filter and high voltage capacitor.
3. Remove the two screws holding the orifice assembly to the oven cavity and remove the high voltage diode earth screw.
4. Remove the screw of the capacitor bracket.
5. Remove the two screws holding the fan motor assembly to the Orifice Assembly.

3.9 Removing High-Voltage Capacitor and Diode

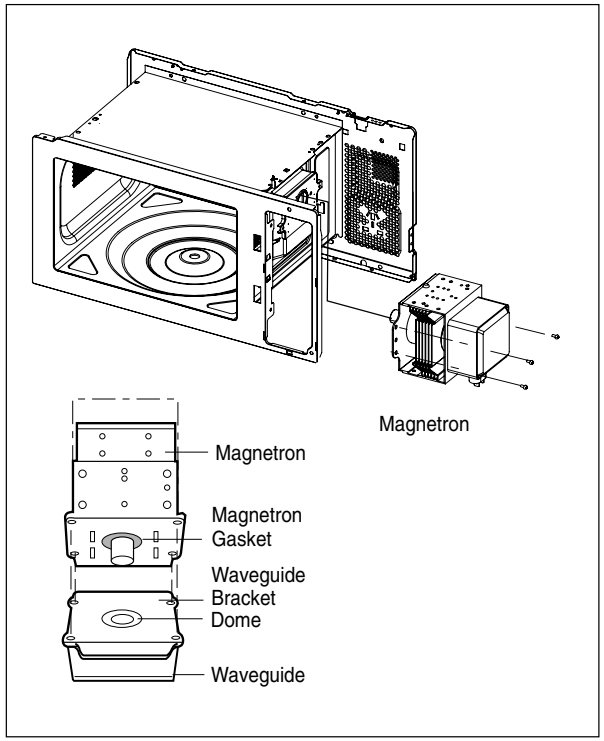
1. Discharge the high voltage capacitor.
2. Disconnect the leadwire from fan motor, noise filter and high voltage capacitor.
3. Remove the screw holding the Orifice Assembly to the oven cavity and remove the high voltage diode earth screw.
4. Remove the screw holding the high voltage capacitor bracket.

3.10 Removing Air Guide Assembly

1. Disconnect the leadwire from lamp, A.C Relay and monitor resistor and magnetron.
2. Remove the screw to the cavity.

3.11 Removing Magnetron

1. Disconnect the leadwire from the high voltage transformer and high voltage capacitor.
2. Remove the air guide.
3. Carefully remove the mounting screws holding the magnetron and the waveguide.
4. Remove the magnetron until the tube is clear from the waveguide.



3.12 Removing PCB Assembly

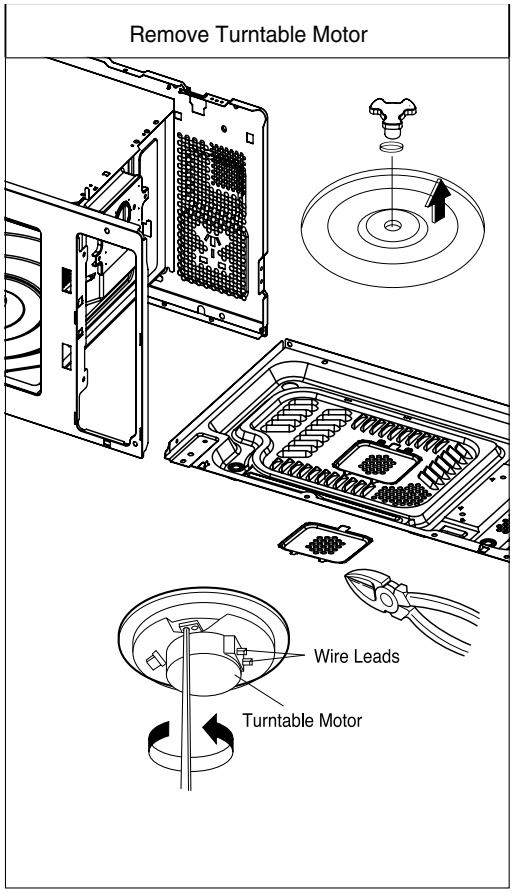
1. Remove the control panel assembly from the cavity.
2. Remove the screws which hold the PCB to the control panel.
3. Diconnect the flat cable from the PCB and take off the PCB.

3.13 Removing Turntable Motor

1. Remove the glass tray.
2. Remove the pully shaft VERY CAREFULLY.
3. Lay the unite down on its back.
4. Remove the turntable motor cover.
   The turbtable base cover is easily removed by pinching the six parts with a wire cutting.
5. Disconnect the leadwire from the turntable motor terminals.
6. Remove the screw securing the turntable motor to the oven cavity assembly.
7. After replacing the motor, rotate the removed turntable motor cover.
8. Fit the turntable motor cover's projecting part to the base plate slit.

NOTE:

1. Remove the wire lead from the turntable motor VERY CAREFULLY.
1. Be sure to grasp the connector, not the wires, when removing.



4 FAULT DIAGNOSTICS

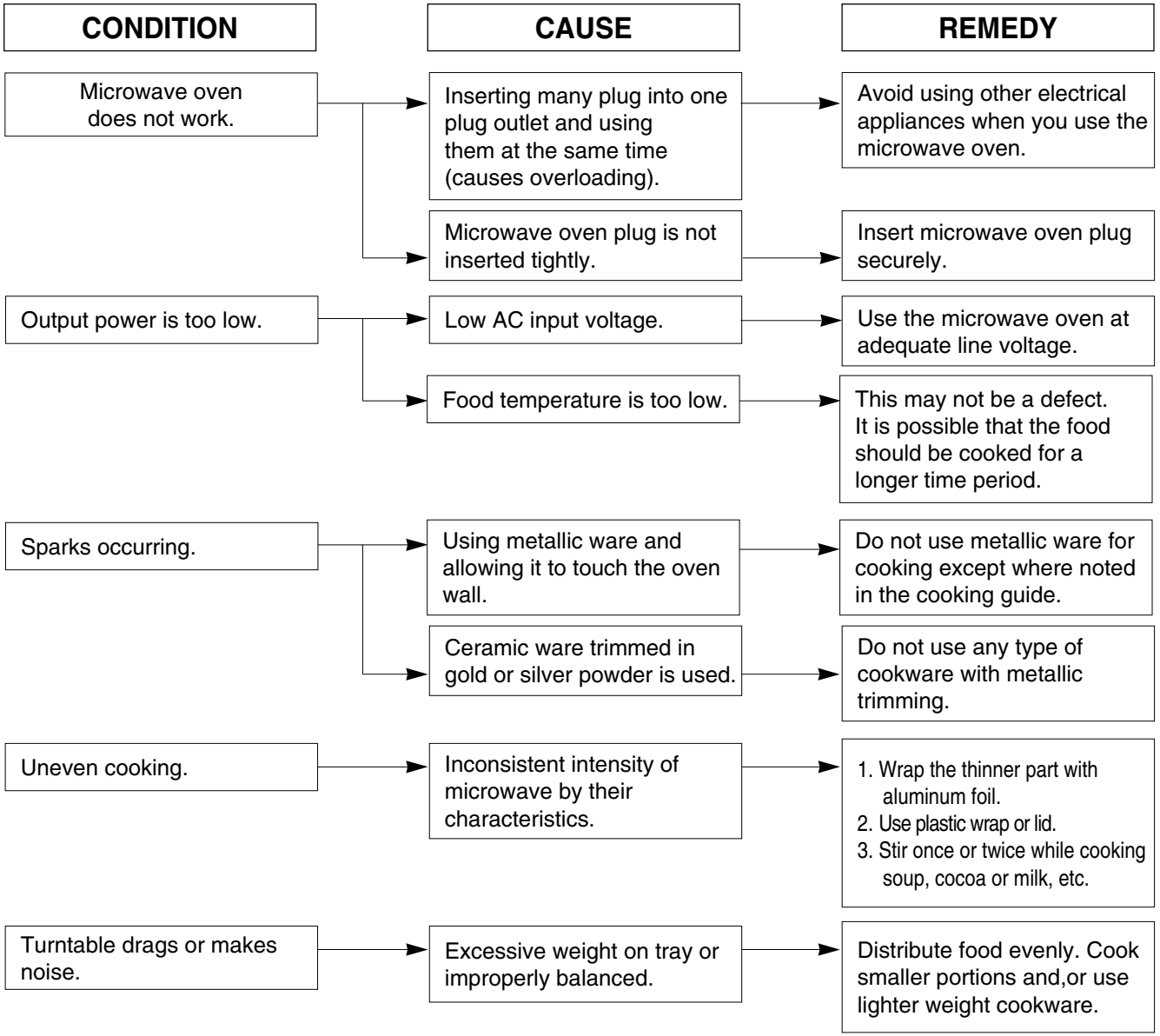
4.1 Troubleshooting plan - when getting a complaint

When you get a complaint from your customer, evaluate the complaint carefully. If the following sysmptoms apply, please instruct the customer in the proper use of the microwave oven. This can eliminate an unnecessary service call.

CAUTIONS

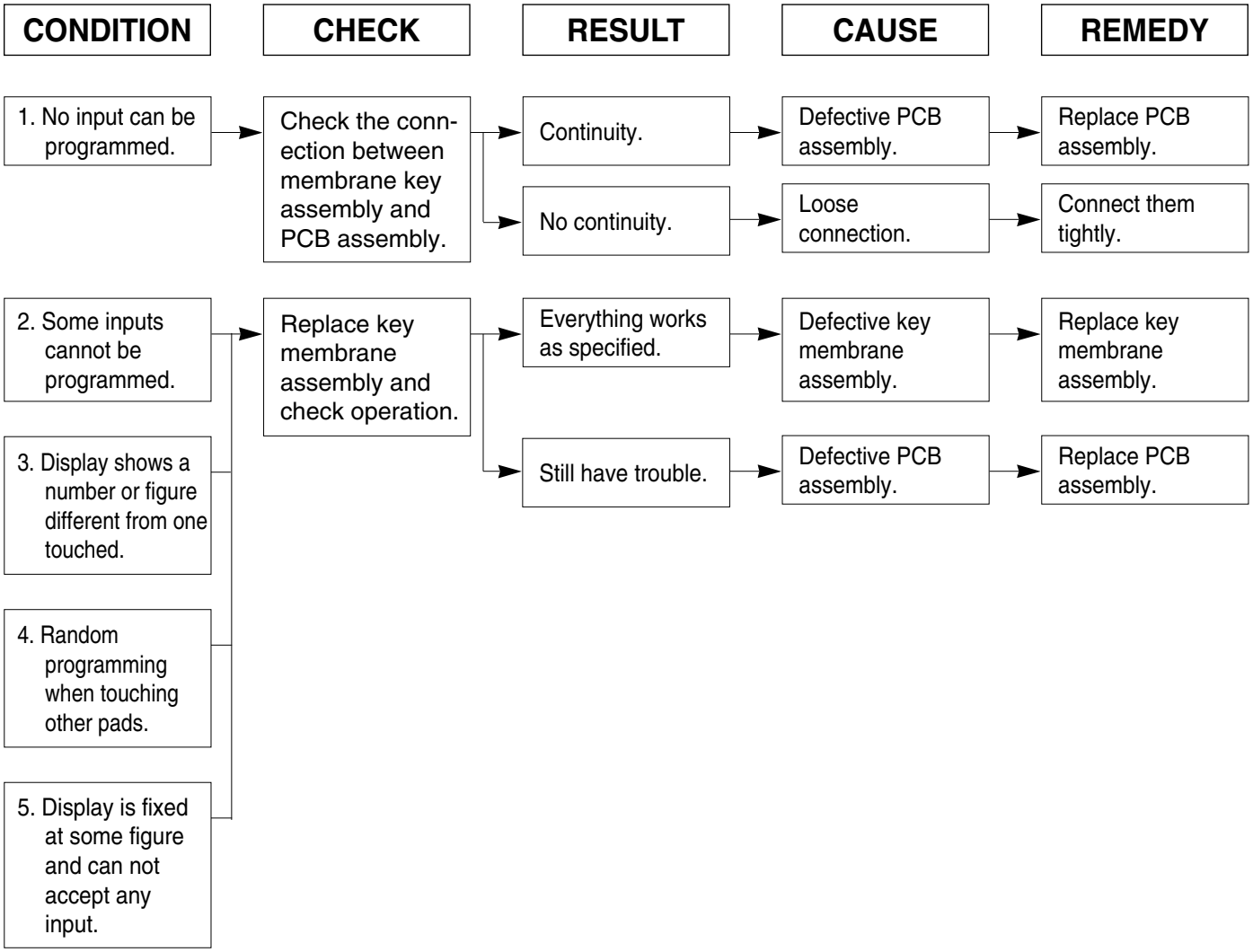
1. Check grounding before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge the high voltage capacitor. (See page 2)
4. When checking the continuity of the switches or of the high voltage transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
5. Do not touch any part of the circuitry on the digital programmer circuit since static electric discharge may damage this control panel.
   Always touch yourself ground while working on this panel to discharge any static charge built up in your body.

4.1 Troubleshooting plan - when getting a complaint



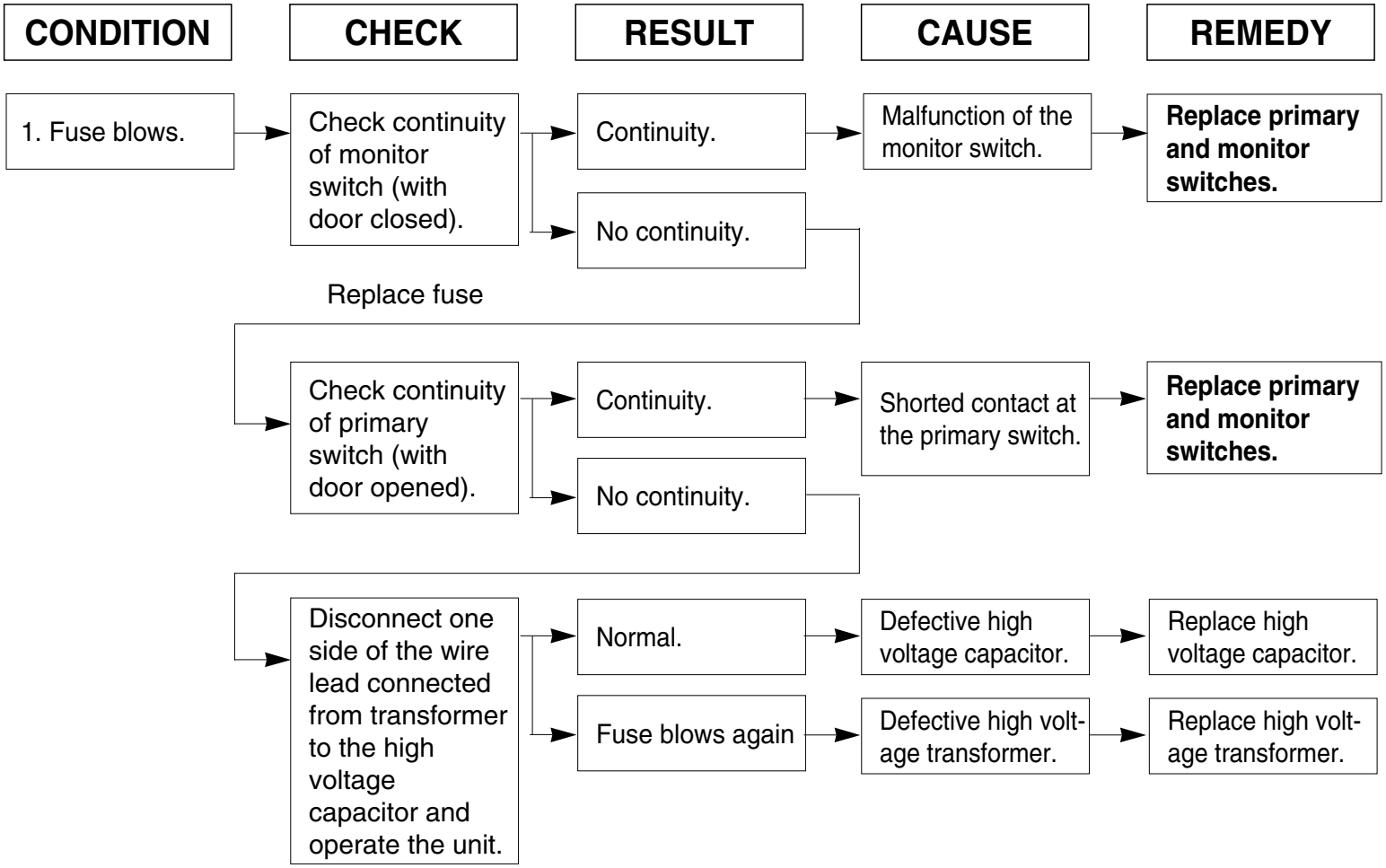
4.2 Troubleshooting plan - Probable defective control circuit

The following visual conditions indicate a probable defective control circuit.

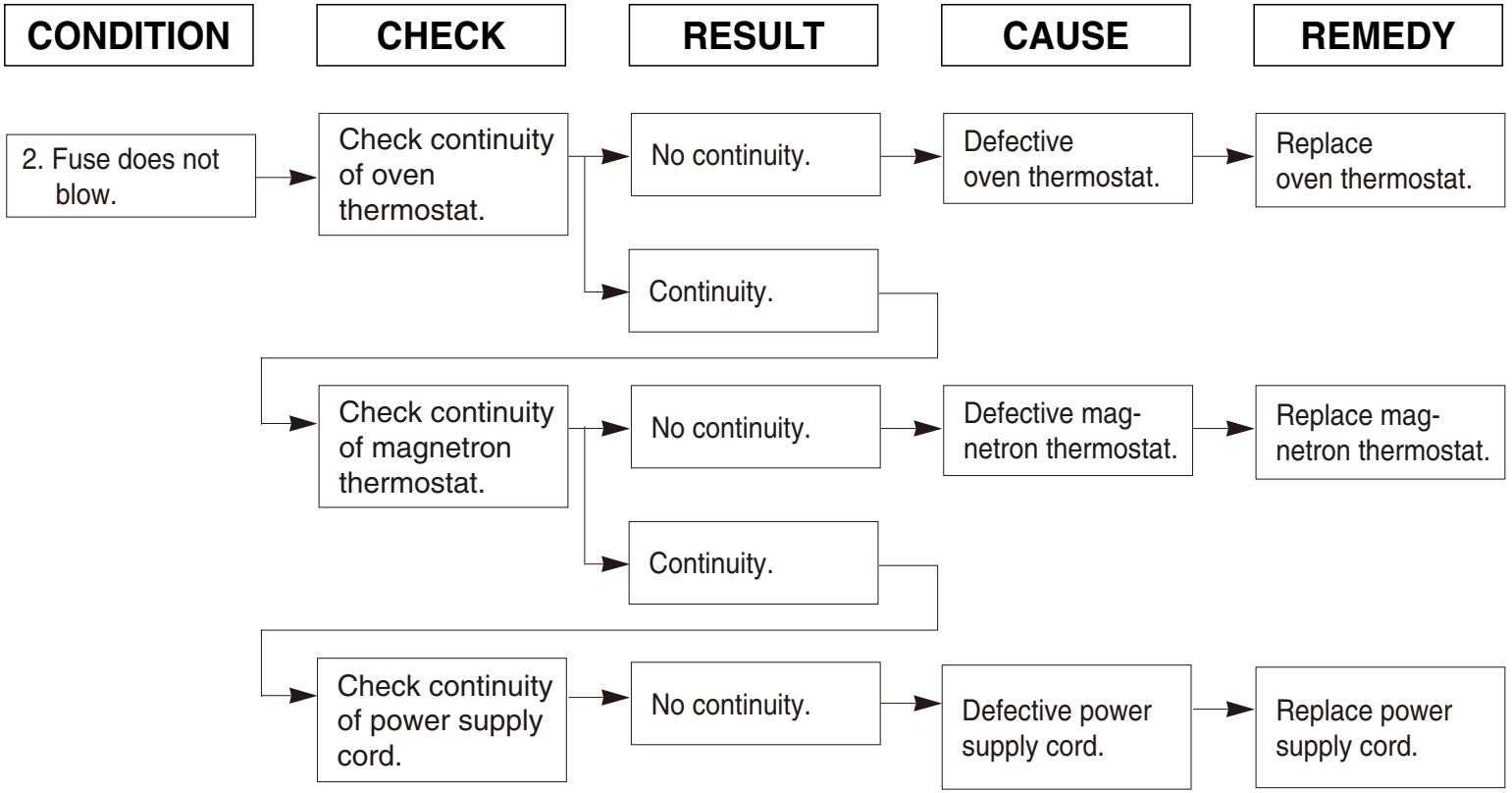


4.3 Troubleshooting plan - Oven does not operate at all

Oven does not operate at all, display window does not display any figures and no input is accepted.

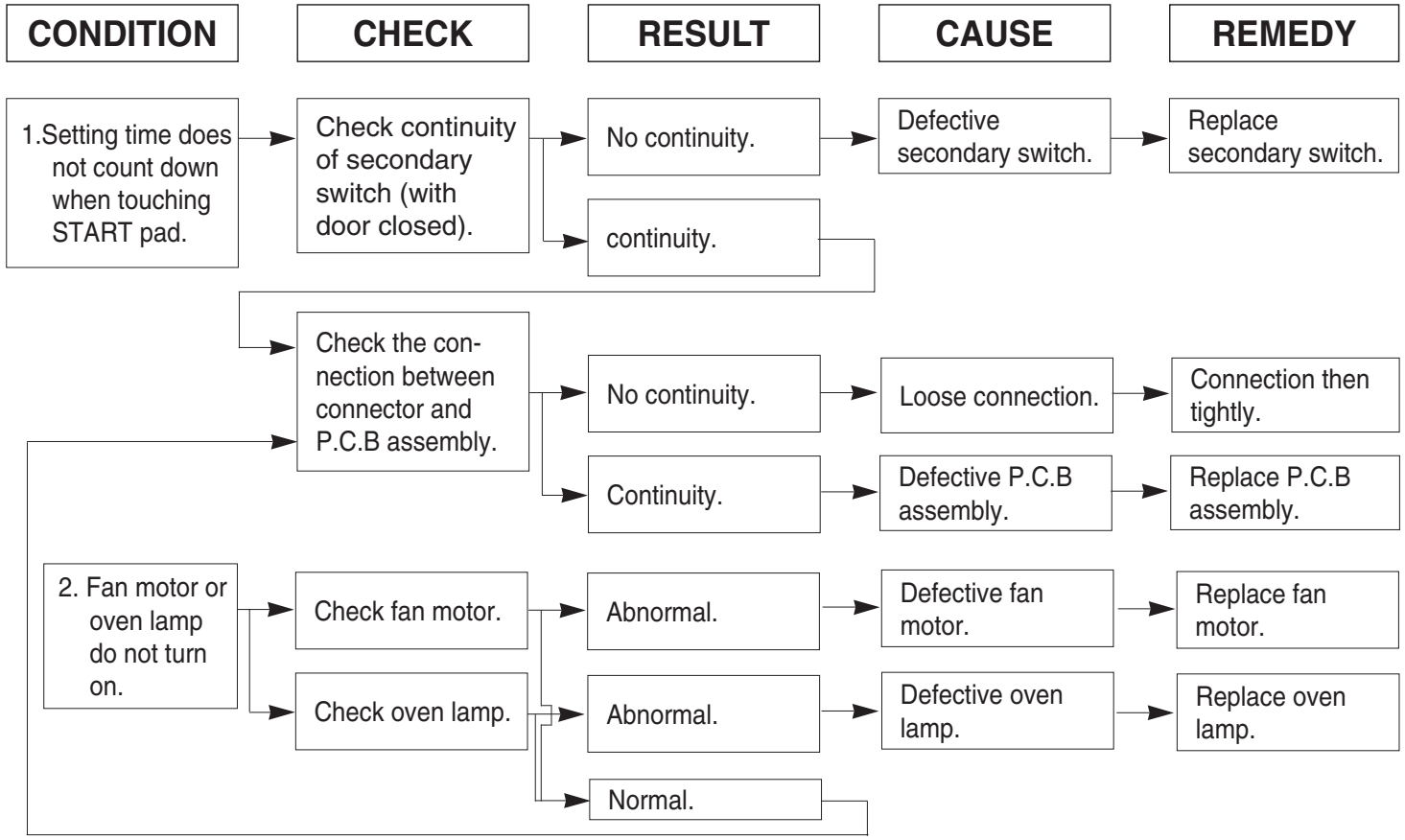


4.3 Troubleshooting plan - Oven does not operate at all



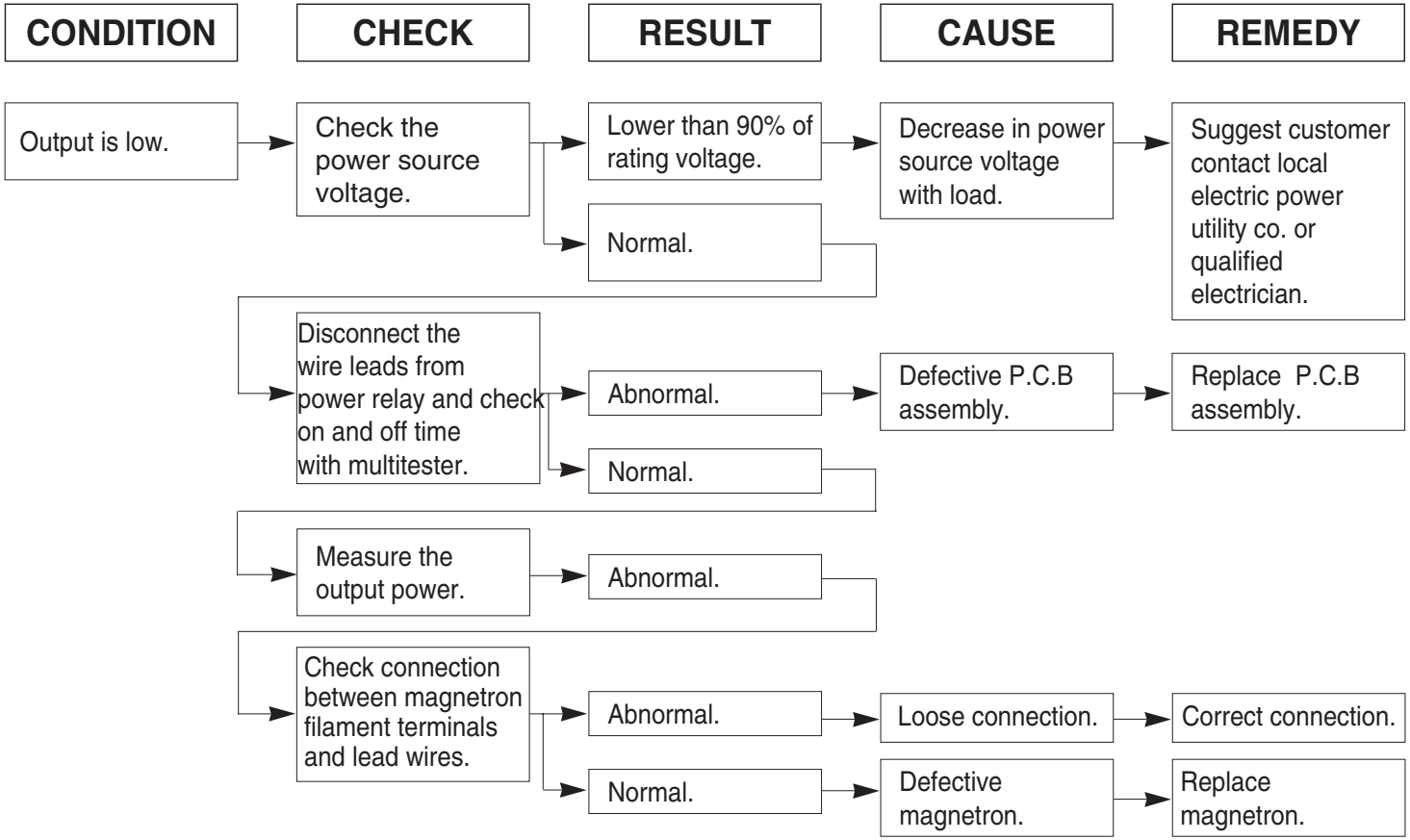
4.4 Troubleshooting plan - Oven does not start cooking

Display shows all figures set, but oven does not start cooking while desired program times are set and START pad is touched.



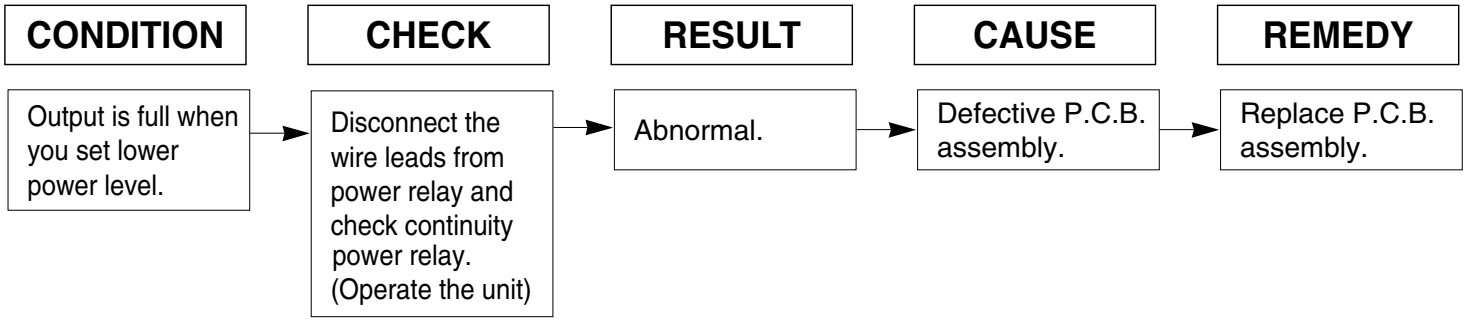
4.5 Troubleshooting plan - Output power is low

Oven seems to be operation but output is low.

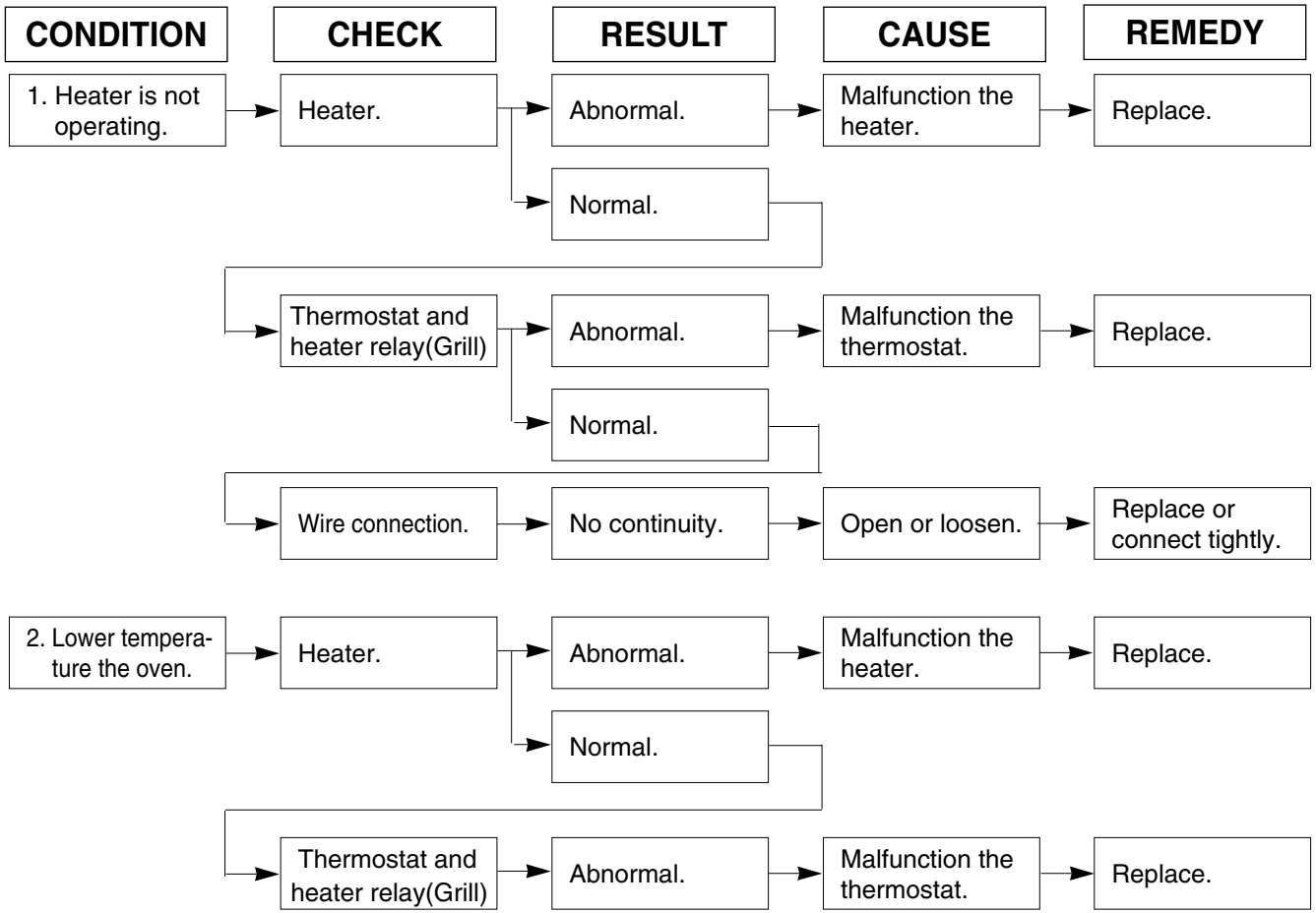


4.6 Troubleshooting plan - Oven does not cook properly

Oven does not cook properly when programmed for the set power level (Operates properly in HIGH)



4.7 Troubleshooting plan - Grill



NOTE: * Make sure the wore leads correct position.
* When removing the wire leads from parts be sure to grasp the connector not the wires.
* When removing the magnetron, be sure to install the magnetron gasket in the correct position and in good condition.