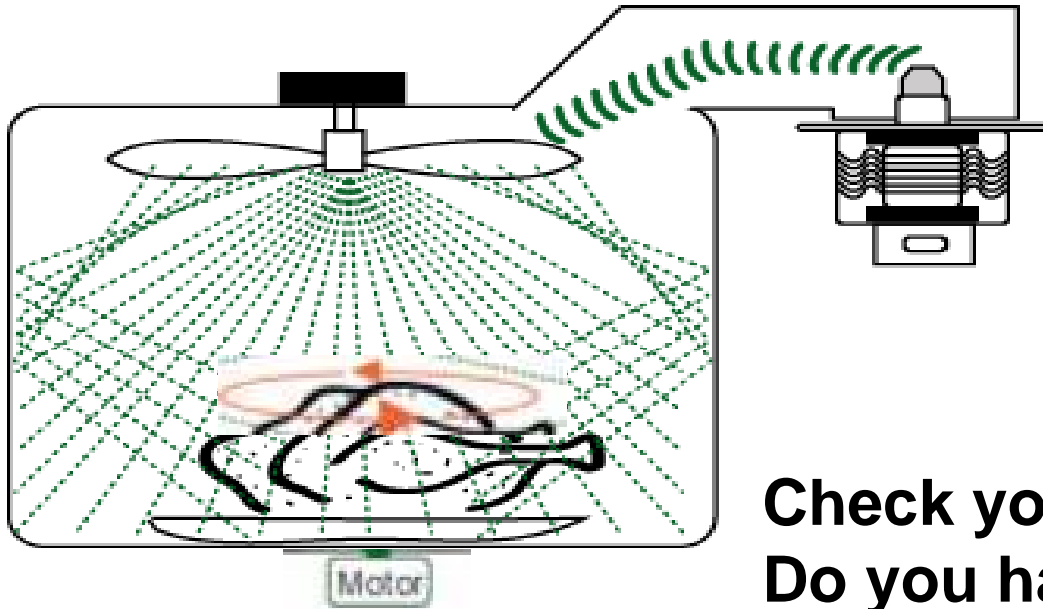






Microwaves



Wiring diagrams are available on GSPN, they are not with the product.

Check your tools

Do you have a M/W Survey Meter?

Check your Calibration Date?

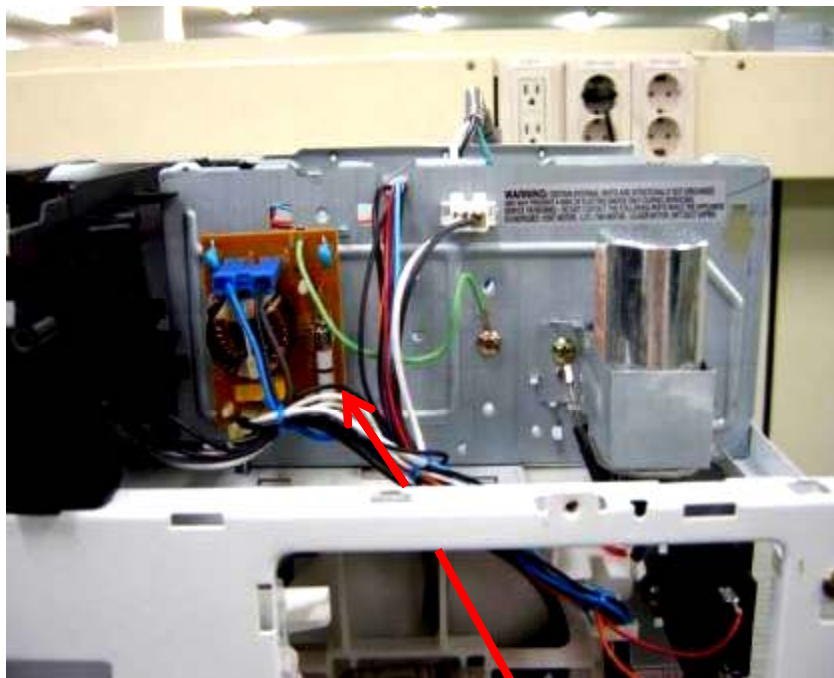
Check if the leakage of microwave exceeds 5mW/cm² before returning the oven to customers.

Microwave Cooking Wattage Test

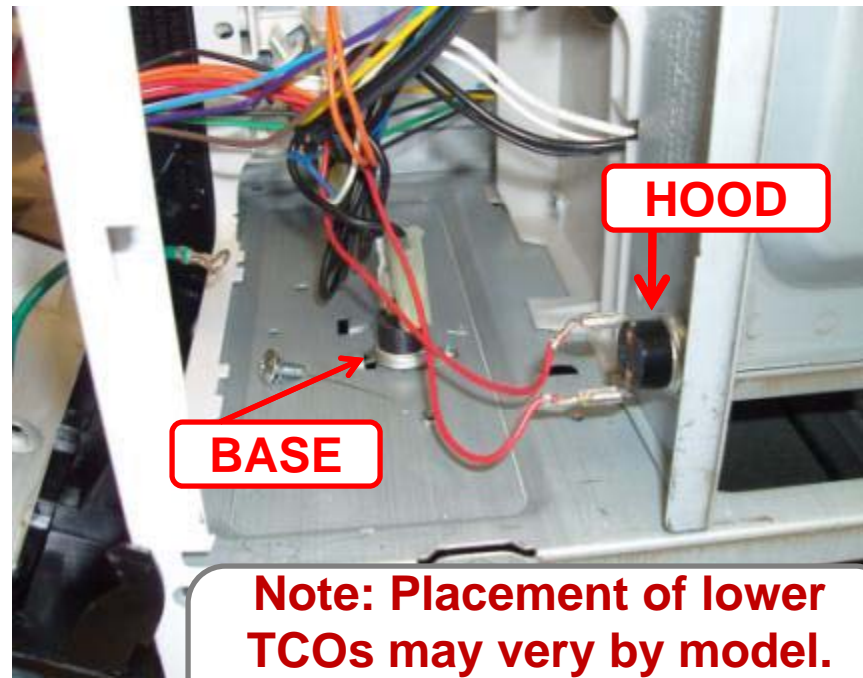
- Fill a 1L plastic room temperature container with cool tap water, temperature of the water should be 55-65 degrees
- Stir water with a thermometer and record the water temperature, remove thermometer.
- Place the container in the center of the lowest shelf or center of the bottom of the microwave.
- For units less than 1550 watts, operate the oven on high for exactly 63 seconds.
- Using the thermometer, stir the water to check the temperature of the water.
- Subtract the starting temperature from the final temperature; this will be the temperature rise.
- **NOTE: Check line voltage under load, lower line voltage will lower the power output.**

Temp Rise	Output	Temp Rise	Output
5	194	23	891
6	232	24	930
7	271	25	969
8	310	26	1007
9	349	27	1046
10	387	28	1085
11	426	29	1124
12	464	30	1162
13	504	31	1201
14	542	32	1240
15	581	33	1279
16	620	34	1317
17	659	35	1356
18	697	36	1395
19	736	37	1434
20	775	38	1472
21	814	39	1511
22	852	40	1550

Access to the fuse(s) and base TCO on most models can be gained through opening when the control panel is removed. Some units may have two fuses and all units will have two lower TCOs. One is the Hood TCO and is N/O (104/158 °F) and the other is a Thermal Cut Out and is N/C (opens at 248 °F) If both the fuse and TCO check good, the unit will have to be removed from cabinet for further diagnosing. To check Cavity and Magnetron TCOs proceed to pp3 for location and test procedure.
CAUTION : Always be aware of capacitor location and discharge to prevent electrical shock.

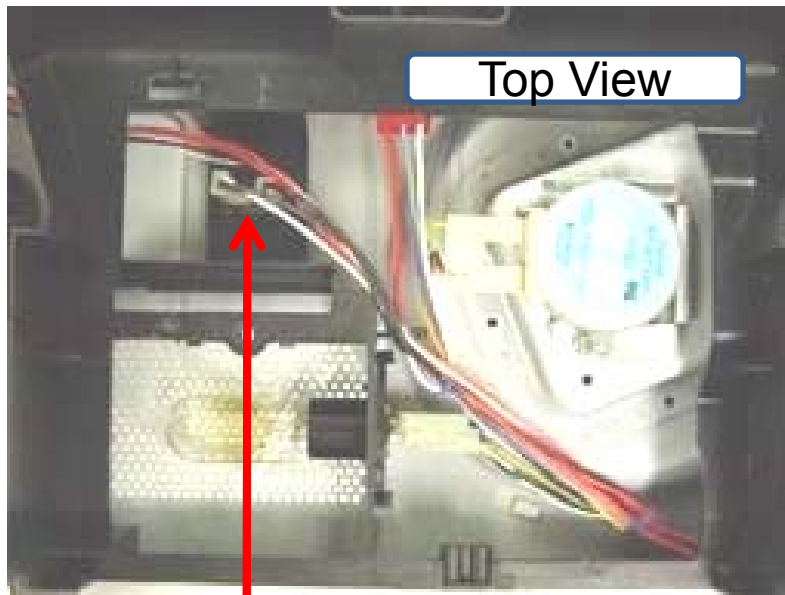


FUSE

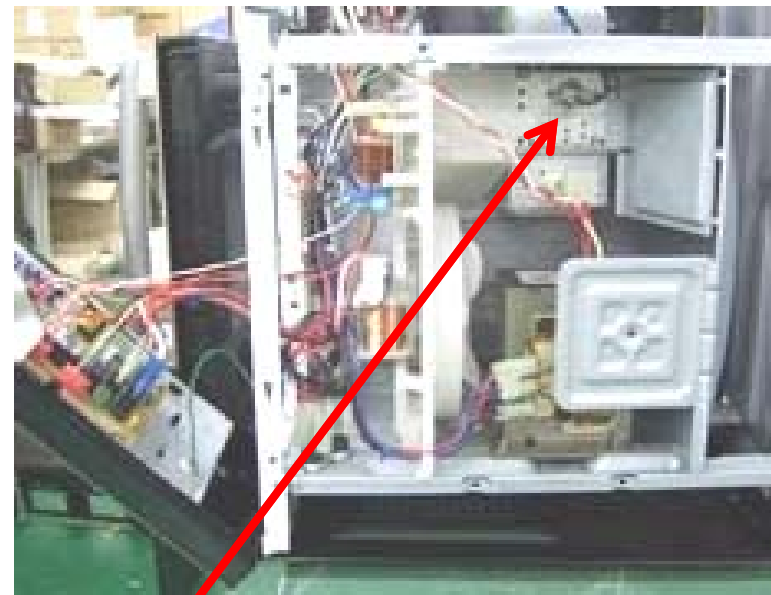


Note: Placement of lower TCOs may vary by model. Remember one is N/O and the other N/C

Once the unit is removed from cabinet remove the case to access Magnetron TCO. Remove the top access panel to reach the cavity TCO. Replace the parts as needed. Model specific component testing and location can be found in the service manual on GSPN.



Cavity TCO can be found at the top in the area of the light and stirrer motor on all models



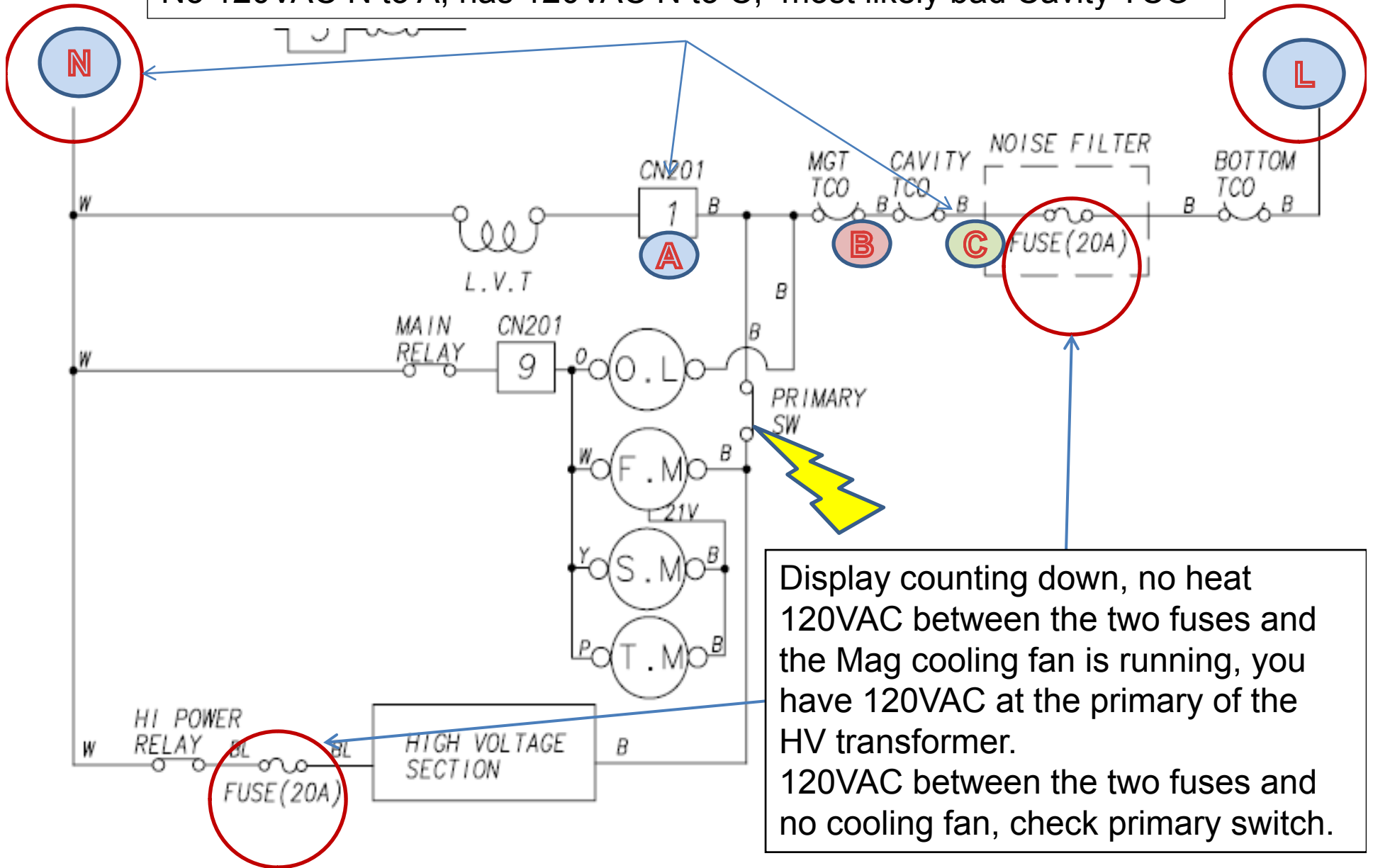
Mag TCO is N/C and will open at approx 300 °F and reset at approx 145 °F . The Base and cavity TCO are not resettable

The Basics of Microwaves

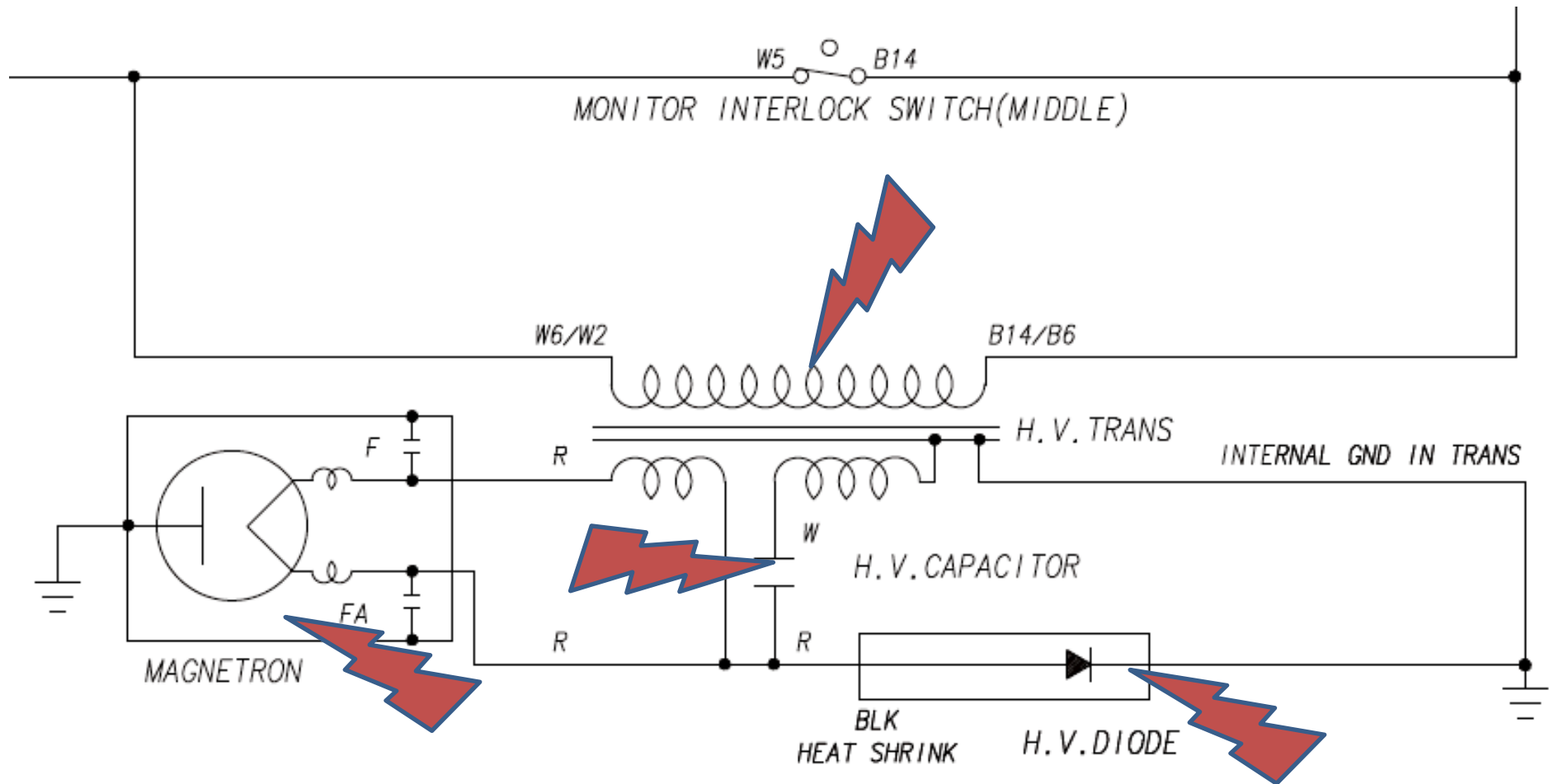
- Here is a quick check for the next “no heat” microwave repair.
- Check for the 120VAC at the primary of the high voltage transformer, in the cook mode. If you have no 120VAC at the transformer, the problem is in the low voltage section. Check the door switches, wiring, and verify the relay is activating on the main PCB.
- If there is 120VAC at the primary, check the high voltage transformer primary & secondary resistances, the capacitor, the diode, the magnetron tube, and loose or broken wires
- This procedure will keep you focused on the proper section, low voltage/high voltage, and reduce service time.

* DO NOT touch the Magnetron Antenna as this will damage the device when high voltage is applied

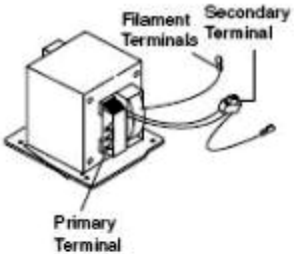
Dead, no Display
120VAC N to A, bad main PCB
No 120VAC N to A, has 120VAC N to C, most likely bad Cavity TCO

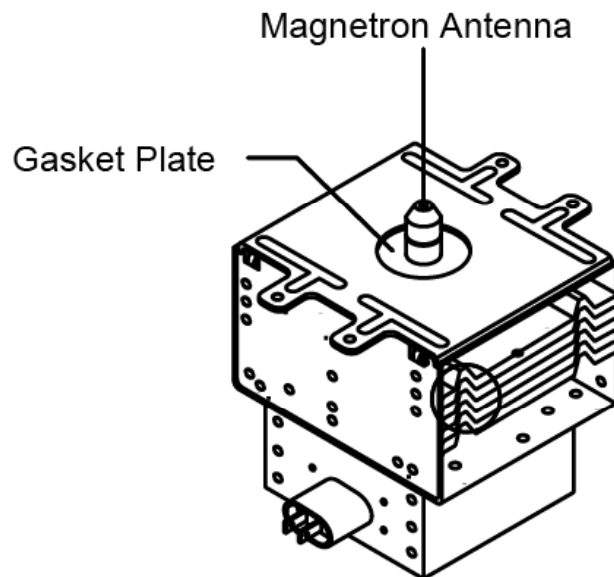


Wiring Diagram Testing components



Transformer & Magnetron Testing

Components	Test	Results
Transformer 	<ol style="list-style-type: none"> Remove wire leads. Measure resistance. (ohm meter scale: Rx1) <ul style="list-style-type: none"> Primary winding Secondary winding Filament winding Measure resistance. (ohm meter scale: Rx1000) <ul style="list-style-type: none"> Primary winding to ground Filament winding to ground 	<p>Approx. 0.410+2% ohm. 0.475+2% ohm.</p> <p>Approx. 129.5+2% ohm. 0 ohm.</p> <p>Normal: Infinite. Normal: Infinite.</p>



*** DO NOT touch the Magnetron Antenna as this will damage the device when high voltage is applied**

Remove wire leads

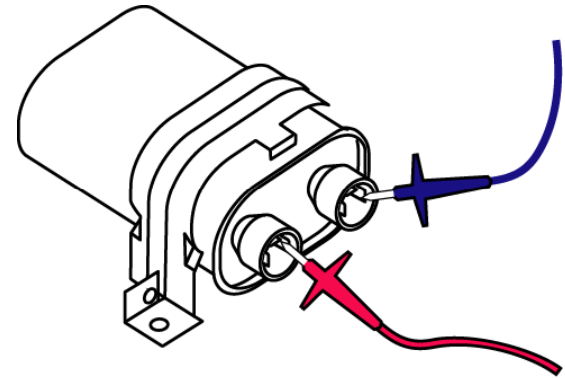
1. A resistance check between input terminals of the magnetron indicates 1Ω or is normal, ∞ is an open filament

2. A resistance check between the case of magnetron and one of input terminals of magnetron indicates ∞ (unlimited) is normal, any resistance is defective.

Capacitor and Diode Testing

High Voltage Capacitor

1. Check continuity of the capacitor with the meter set at the highest resistance scale.
2. Once the capacitor is charged, a normal capacitor shows continuity for a short time, and then indicates $9M\Omega$.
3. A shorted capacitor will show continuous continuity.
4. An open capacitor will show $9M\Omega$ constantly.
5. Resistance between each terminal and chassis should read infinite.



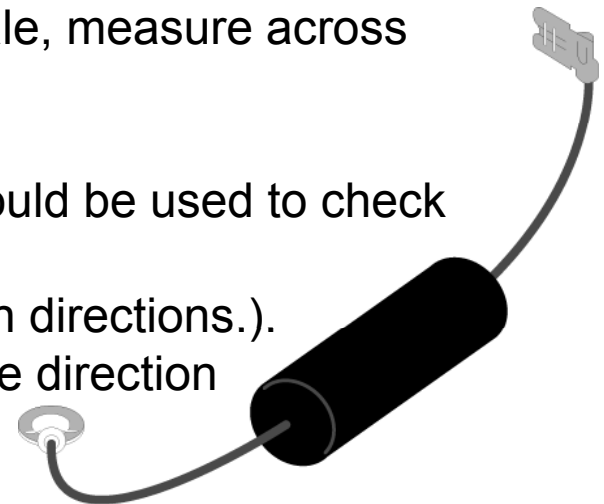
High Voltage Diode

1. Isolate the diode from the circuit by disconnecting its leads.
2. With the ohm-meter set at the highest resistance scale, measure across the diode terminals.
3. Reverse the meter leads and read the resistance.

A meter with **6V, 9V or higher voltage batteries** should be used to check the front- to back resistance of the diode.

(Otherwise, an infinite resistance may be read in both directions.)

4. The resistance of a normal diode will be infinite in one direction and several hundred $K\Omega$ in the other direction.



Microwaves

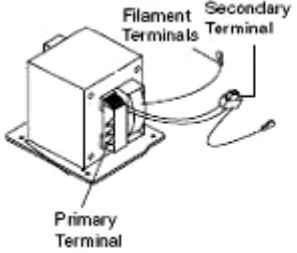
- Unit Quits after 5 – 30 seconds
 - Check for Fan blade off Magnetron tube cooling fan motor
 - Order Motor/Blade
 - Glue blade on shaft **after roughing shaft**
- Display has flashing and quits in a few seconds
 - Check for Magnetron tube leaking

Testing Components

Precaution

1. High voltage is present at the high voltage terminals during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components or wiring, always unplug the oven from its power source and discharge the high voltage capacitor.

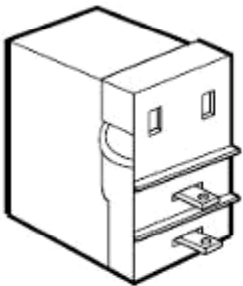
High Voltage Transformer

Components	Test	Results
Transformer 	1. Remove wire leads. 2. Measure resistance. (ohm meter scale: Rx1) <ul style="list-style-type: none"> • Primary winding 	Approx. 0.410+2% ohm. 0.475+2% ohm.
	<ul style="list-style-type: none"> • Secondary winding • Filament winding 	Approx. 129.5+2% ohm. 0 ohm.
	3. Measure resistance. (ohm meter scale: Rx1000) <ul style="list-style-type: none"> • Primary winding to ground • Filament winding to ground 	Normal: Infinite. Normal: Infinite.

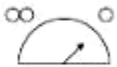

Testing Components

∞ = Open \bigcirc = Closed

Power Relay



1. Measure continuity.
(ohm meter scale: Rx1)
2. Remove the lead wires and operate
oven at power level 1 through power
level 10.

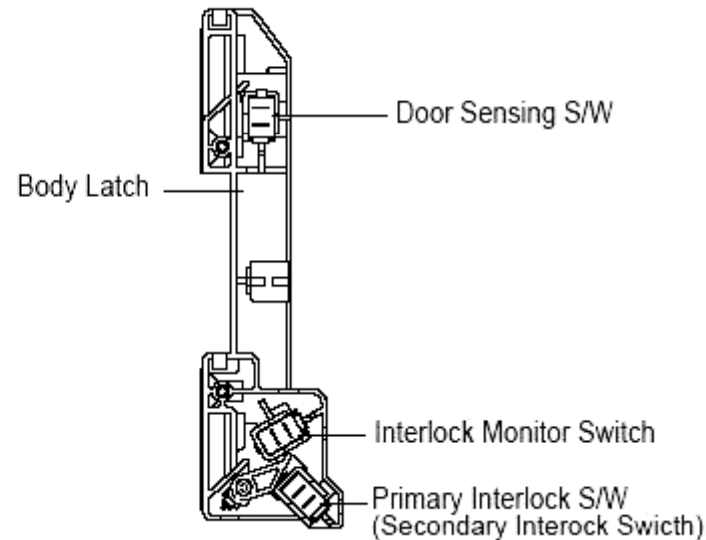
Power Level	∞  \bigcirc	∞  \bigcirc
1	4 Sec	26 Sec
2	7 Sec	23 Sec
3	10 Sec	20 Sec
4	13 Sec	17 Sec
5	16 Sec	14 Sec
6	19 Sec	11 Sec
7	22 Sec	8 Sec
8	25 Sec	5 Sec
9	28 Sec	2 Sec
10	30 Sec	0 Sec

Testing Components

Adjustment of Primary switch, Door sensing switch and monitor switch Precaution

For continued protection against radiation hazard, replace parts in accordance with the wiring diagram and be sure to use the correct part number for the following switches : Primary and secondary interlock switches, and the interlock monitor switch (Replace all together). Then follow the adjustment procedures below. After repair and adjustment, be sure to check the continuity of all interlock switches and the interlock monitor switch.

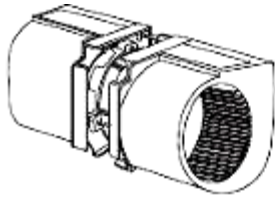
1. When mounting Primary switch and Interlock Monitor switch to Latch Body, consult the figure.
2. No specific adjustment during installation of Primary switch and Monitor switch to the latch body is necessary.
3. When mounting the Latch Body to the oven assembly, adjust the Latch Body by moving it so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the Latch Body to the oven assembly.
4. Reconnect to Monitor switch and check the continuity of the monitor circuit and all latch switches again by following the components test procedures.
5. Confirm that the gap between the switch housing and the switch actuator is no more than 0.5mm when door is closed.
6. Interlock Switch Replacement - When replacing faulty switches, be sure switch mounting tabs are not bent, broken or otherwise deficient in their ability to secure the switches in place.



	Door Open	Door Closed
Primary Interlock switch	∞	0
Monitor switch(COM-NC)	0	∞
Monitor switch(COM-NO)	∞	0
Door Sensing S/W (Secondary Interlock S/W)	∞	0

Testing Components

Ventilation Motor

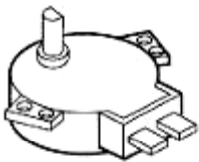


1. Remove wire leads.
 2. Measure resistance.
(ohm meter scale: Rx1)
- Turbo: Azure and white wire
Hi: Violet and white wire
Lo: Yellow and white wire

Turbo:
Approximately 21.0 Ω
Hi:
Approximately 45.5 Ω

Synchronous Motor (Stirrer and Turntable Motor)

Synchronous Motor



1. Remove wire leads.
2. Measure resistance.
(ohm meter scale: Rx1000)

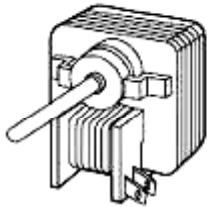
Normal:
Approximately

Stirrer	T/T
120 Ω \pm 10%	120 Ω \pm 5%

Abnormal:
Infinite Ω

Testing Components

Fan Motor



1. Remove wire leads.
2. Measure resistance.
(ohm meter scale: Rx1)

Normal:
Approximately

Fan
$32\Omega \pm 7\%$

m

Abnormal:

Infinite Ω

MWO Error Codes part 1

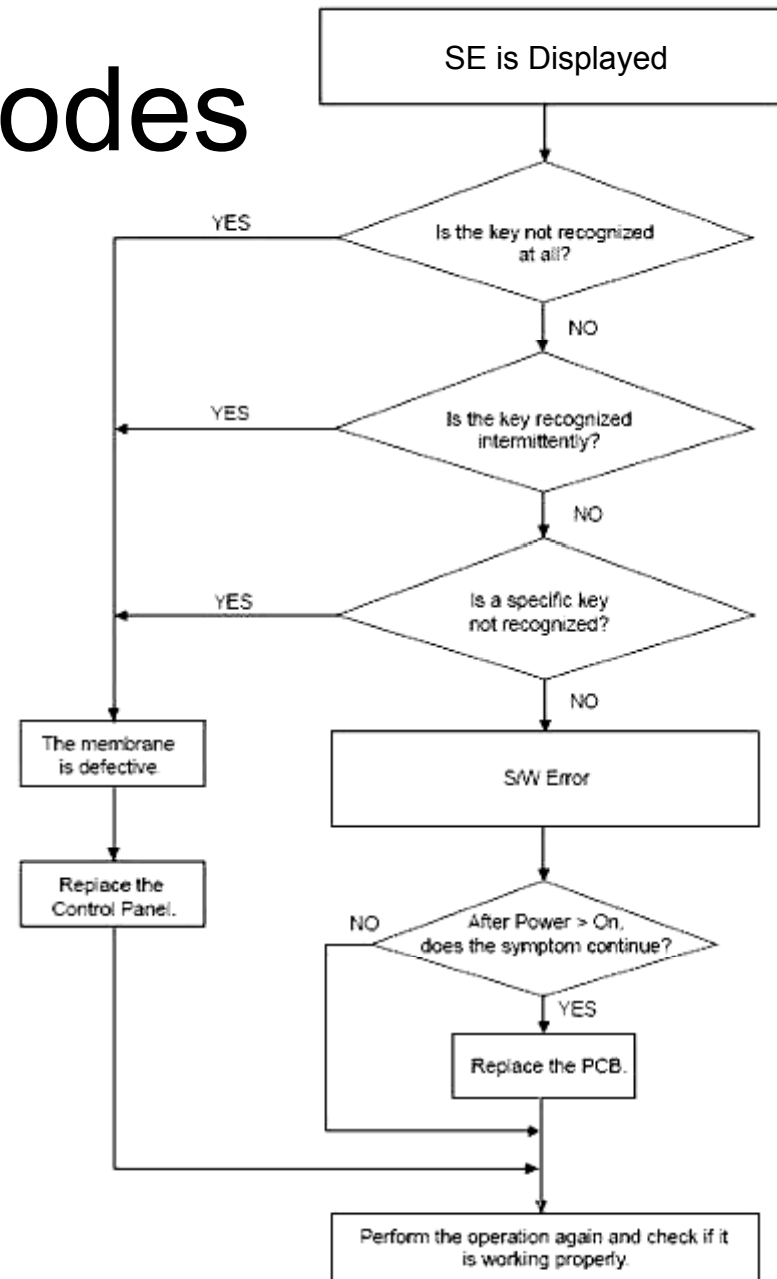
<u>Failure Code</u>	<u>Cause</u>
<p>E-11 Open E-12 Short E-13 T1 Max Time Error E-14 Dry Up / No Load</p>	<p>Error Code Gas Sensor Error Case (E-1X)</p>
<p>E-21 Open E-22 Short E-23 T1 Max Time Error (Preheating not completed) E-24 Over temperature error E-25 Abnormal temperature is sensed at Micro Cook E-26 Temperature is not over the fixed AD in first 3 minutes after cooking by heater starts.</p>	<p>Error Code Temp. Sensor Error Case (E-2X)</p>
<p>E-31 Open (When value of HEX is above "FF" for 5 seconds) E-32 Short E-33 The initial value of HEX is under "14" for 30 seconds while a weight sensor in operation. E-34 The initial value of K calculated by a weight sensor is above and under "±28" as value of HEX. E-35 The value of A is "-" as a weight sensor calculates. E-36 In case the door opens during sensor cooking.</p>	<p>Error Code Gas Sensor Error Case (E-1X)</p>
<p>E-41 Open E-42 Short E-43 T1 Max Time Error E-44 Dry Up E-45 Cooling Error (3minutes) E-46 Primary Open Error(3minutes) E-47 The door opens during cooking</p>	<p>Error Code Easy/PH Sensor Error Case (E4)</p>

MWO Error Codes part 2

<u>Failure Code</u>	<u>Cause</u>
E-51 Open (Sense Failure) E-53 Read/Write Error E-54 Zero not to be set	Error Code EEPROM Error Case (E-5X)
E-61 Open E-62 Short E-63 T1 Max Time Error	Error Code Humidity Sensor Error Case (E-6X)
-SE- Key Short Error (10 seconds) E-01 Door opens when the door should not be opened. E-02 Cooking Time Setting Over Error (MWO) 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. E-08 In case function of MWO starts with spit inserted into cavity inside. E-09 The damper is not set to be positioned for 2 minutes.	Error Code Others (E-0X, Letter)

Error Codes

KEY	General Functions
-SE-	Key short Error (10 seconds). Replace the touch pad



Error Codes



DEVICE

0- Others

1- Gas Sensor

2- Temp. Sensor

3- Weight Sensor

4- Easy/PH Sensor

5- EEPROM

ERROR CASE

1- Open

2- Short

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Checking For M/W Leakage

Procedure for measurement of microwave energy leakage

1. Pour ≈ 10 Oz. of water at 68° F in a microwave safe container and place in the center of the oven.
2. Start to operate the oven and measure the leakage by using a microwave energy survey meter.
3. Set survey meter with dual ranges to 2,450MHz.
4. When measuring the leakage, always use the 2 inch spacer cone with the probe.
Hold the probe perpendicular to the cabinet door.
Place the spacer cone of the probe on the door and/or cabinet door seam and move along the seam. The door viewing window and the exhaust openings moving the probe in a clockwise direction at a rate of 1 inch/sec.
If the leakage test of the cabinet door seam is taken near a corner of the door, keep the probe perpendicular to the areas making sure that the probe end at the base of the cone does not get closer than 2" to any metal. If it is closer than 2", erroneous readings may result.
5. Measured leakage must be less than $4\text{mW}/\text{cm}^2$ after repair and adjustment.

Maximum allowable leakage is $5\text{mW}/\text{cm}^2$.

$4\text{mW}/\text{cm}^2$ is used to allow for measurement and meter accuracy.

Microwave Recall

Description	Model	Part Number (One Tail)	Part Number (Two Tail)
Service Tip # ASC20040521001	MR9432W	DE34-00059C	DE34-00059M
	MR7492W01		
	MR7491G	DE34-00059B	DE34-00059L
	MR7491G01		
	MR7493G	DE34-00059D	
	MR7493G01		
	MR5492W	DE34-00013Y	DE34-00199B
	MR5492W01		
	MR5494W	DE34-00069B	
	MR5494W01		
	MR5491G	DE34-00013X	DE34-00199A
	MR5491G01		
	MR5493G	DE34-00013Z	
	MR5493G01		
	MR1031WB	DE34-00045V	DE34-00190L
	MR1032B	DE34-00045W	DE34-00190M
	MR1033SB	DE34-00045X	DE34-00190N
	MR1351WB	DE34-00112D	DE34-00112F
	MR1352BB	DE-00112E	DE34-00112G
Service Bulletin # ASC2004052001	MR1031WB	DE34-00190L	N/A
	MR1032BB	DE34-00190M	
	MR1033SB	DE34-00190N	
	MR1351WB	DE34-00112F	
	MR1352BB	DE34-00112G	