



Fast Track Trouble shooting

Model: ME21H9900



IMPORTANT SAFETY NOTICE – “For Technicians Only” This service data sheet is intended for use by persons having electrical, electronic, and mechanical experience and knowledge at a level generally considered acceptable in the appliance repair trade. Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible, nor assume any liability for injury or damage of any kind arising from the use of this data sheet.

Support Information:

Production Date 12/30/14 JW

HELP: 1-888-751-4086 (Tech Sup. – ASC/SSD)

1-866-894-0637 (Tech Sup. - FE/ME)

GSPN: <http://gspn3.samsungcsportal.com/main.jsp>

PLUS ONE: <http://my.plus1solutions.net/clientPortals/samsung>

SERVICE TIPS

- If fuse is blown by the Monitor Switch, replace the PRIMARY , DOOR SENSING , MONITOR SWITCH & POWER RELAY
- Checking continuity of switches or transformer, make sure the power is OFF, and one of the lead wires is disconnected
- **High Voltage Warning!** Do not attempt to measure any of the voltages on the high voltage side

Capacity		2.1 cu.ft	
Power	Power Source	120V~60Hz	
	Output Power (Microwave)	ME21H9900AS/AA	1,000W
		ME21H9900AS/AC	950W
	Power Consumption	ME21H9900AS/AA	1,700W
ME21H9900AS/AC		1,500W	
Output Power		100W/1100W (IEC-705)	
Operation frequency		2450MHz	
Cooling Method		Cooling fan Motor	
Sensor		GAS	
Display		ICE BLUE	
Control Method		GLASS TOUCH	
Door Open Mechanism		SIDE SWING	
MW Distribution Mechanism		SIDE FEEDING	

Procedure for measurement of microwave energy leakage

1. Pour 275±15cc of 20±5°C(68±9°F) water in a beaker which is graduated to 600cc, and place the beaker 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 testing 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 5 cm to any metal. If gets closer than 5 cm, erroneous readings may result.
5. Measured leakage must be less than 4mW/cm2 after repair and adjustment.

Maximum allowable leakage is 5mW/cm2. 4mW/cm2 is used to allow for measurement and meter accuracy.

*****It is always recommended to discharge a microwave's capacitor prior to commencing any service**

Magnetron Test

1. Continuity checks can indicate only an open filament or a shorted magnetron
2. Disconnect magnetron from the circuit
3. A continuity check across the magnetron terminals should read 1 ohm or less
4. A continuity check between each terminal and the case/ground should read open

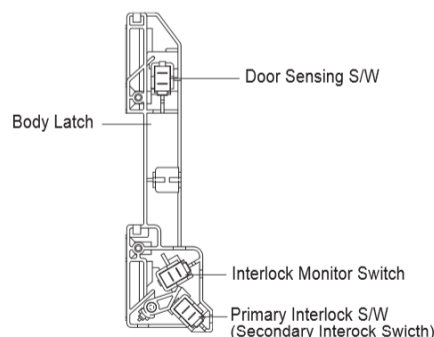
Interlock Switch Test

IMPORTANT! There is NO adjustment on the door switches

	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

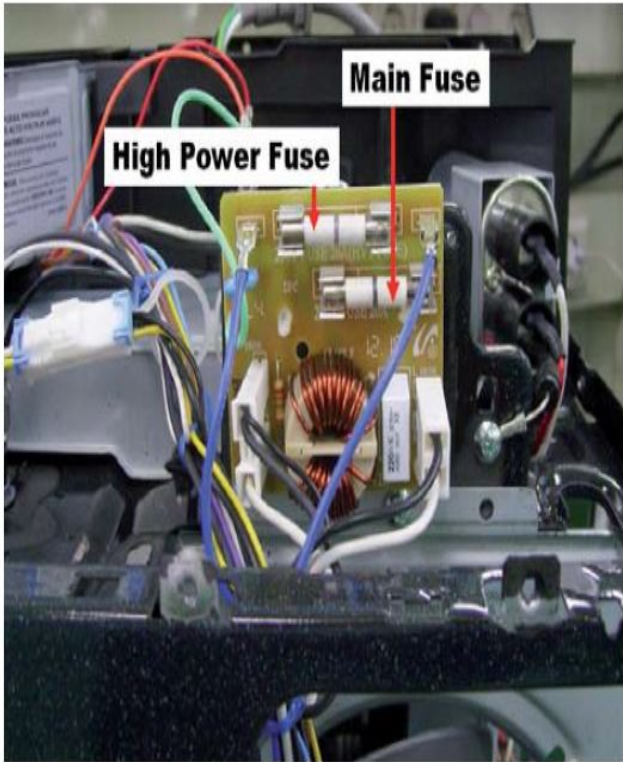
High Voltage Transformer Test

Components	Test	Results
	1. Remove wire leads.	
	2. Measure resistance. (ohm meter scale: Rx1)	Approx. 0.55 + 2% ohm.
	■ Primary winding ■ Secondary winding ■ Filament winding	Approx. 159.5 + 2% ohm.
	3. Measure resistance. (ohm meter scale: Rx1000)	0 ohm.
	■ Primary winding to ground ■ Filament winding to ground	Normal: Infinite.
		Normal: Infinite.



Error Codes

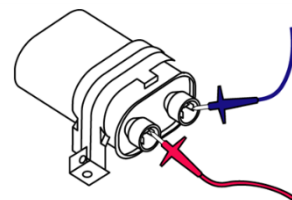
Error Code	Others (E-0X, Letter)	Solution
E-11	OPEN ERROR' of gas sensor.	Sensor open error. Check unplugged sensor, wiring or smart board. If necessary, replace sensor. If error code appears when starting sensor function, replace smart board.
E-12	SHORT ERROR' of gas sensor.	Sensor short error. Check shorted sensor or smart board. If necessary, replace sensor. If error code appears when starting sensor function, replace smart board.
E-83	Communication Error between Main PCB and Sub PCB.	Replace Communication Wire or Replace Control Circuit Board.
TE	Touch Communication Error (10seconds).	Replace Control Circuit Board.

Parts	Explanation Photo	Explanation
Fuse		The fuse is located on the noise filter. 1. Disconnect power and remove grille. 2. Replace the fuse. 3. When 20A fuse blows out by the operation of interlock monitor switch failure, replace the primary interlock switch, secondary interlock switch, door sensing switch, interlock monitor switch and power relay. 4. When the above four switches operate properly, check if any other part such as the control circuit board, blower motor or high voltage transformer is defective.

*****It is always recommended to discharge a microwave's capacitor prior to commencing any service**

High Voltage Capacitor Test

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 9MΩ.
3. A shorted capacitor will show continuous continuity.
4. An open capacitor will show constant 9MΩ.
5. Resistance between each terminal and chassis should read infinite.



High Voltage Diode Test

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. 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). The resistance of a normal diode will be infinite in one direction and several hundred KΩ in the other direction.

Main Relay & Power Control Relay Test

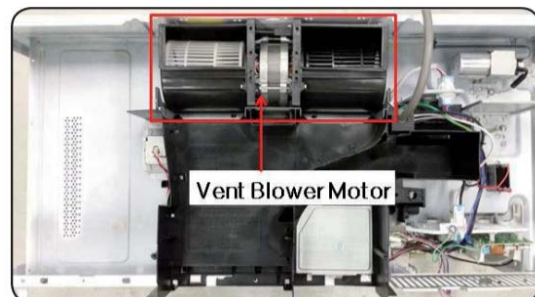
1. The relays are located on the PCB Ass'y. Isolate them from the main circuit by disconnecting the leads.
2. Operate the microwave oven with a water load in the oven. Set the power level to high.
3. Check continuity between terminals of the relays after the start pad is pressed.

Vent Exhaust/Blower Motor Test

The run capacitor is located behind the top grill above the control area. The capacitor is used for more torque and electrical phasing. Without the capacitor the blower might run but would be much slower

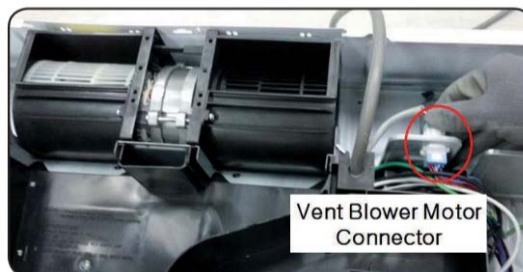
To Test Capacitor

1. Remove grill, discharge capacitor and disconnect one capacitor lead.
2. Make appropriate capacitor check (with analog meter needle should rise then fall, cap is charging then discharging).



To Test Blower Windings

1. Disconnect power and remove grill.
2. Open control panel and discharge capacitor.
3. Disconnect two wires to run capacitor. Continuity test across the two wires should be approximately 50 ohms of resistance. This test allows you to read across all three windings at the same time.



To Test TCO's (Thermal Cut Outs)

There are 4 different thermal cutouts in this unit with 4 different purposes. They are :

1. Oven thermal cutout (flame sensor), on cavity top.
2. Hood thermal cutout, inside control area on duct.
3. Bottom thermal cutout, on floor of control area.
4. Magnetron thermal cutout, on magnetron.

1. Oven Thermal Cut Out Open at 248F/120C non resettable - NORMALLY CLOSED
2. Hood Thermal Cut Out close at 158F/70C. Open at 104F/40C. Resettable - NORMALLY OPEN
3. Bottom Thermal Cut Out open at 248F/120C non resettable – NORMALLY CLOSED
4. Magnetron Thermal Cut out open at 302F/150C & close at 140F/60C. Resettable – NORMALLY CLOSED

Sensor Testing

The Sensor Cooking Function uses a special gas sensor which detects both humidity(steam) and hydrocarbons(food odors) during the cooking process. Before conducting either of the sensor tests below, ensure the unit is plugged into a wall outlet for at least 5 minutes. If already plugged in, proceed. The sensor is a plug-in device located in the vent area at the top left hand corner of the cavity behind the grill.

SENSOR TEST (QUICK TEST)

1. With 2 fingers touch and hold the following pads at the same time : **Auto Defrost** and **Popcorn**
2. Observe diagnostic number in display (Numbers approximate).
 - 15-185 (Normal-verify with "detection test")
 - 213 or Higher (Sensor failed to open, sensor unplugged, wiring or smart board.)
 - Less then 6 (shorted sensor, or smart board).

NOTE : Only heater terminals (H ; Black and Red leads) can be checked with ohmmeter(30Ω).

CAUTION : DO NOT ATTEMPT TO CHECK SENSOR TERMINALS (White and Orange leads).
 ♣ CAN DAMAGE SENSOR.



Trouble Shooting – Checking Parts

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
Fan Motor		10 ~ 99 Ω	100 MΩ exceed

Microwave Cooking Wattage Test

Fill a 1000ml 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

Safety Precautions

Some semiconductor ("solid state") devices are easily damaged by static electricity. Such components are called **Electro statically 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.

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

WARNING: It is critical to route wires and wire harness identical to the way they were, to prevent electromagnetic interference causing possible fault codes.

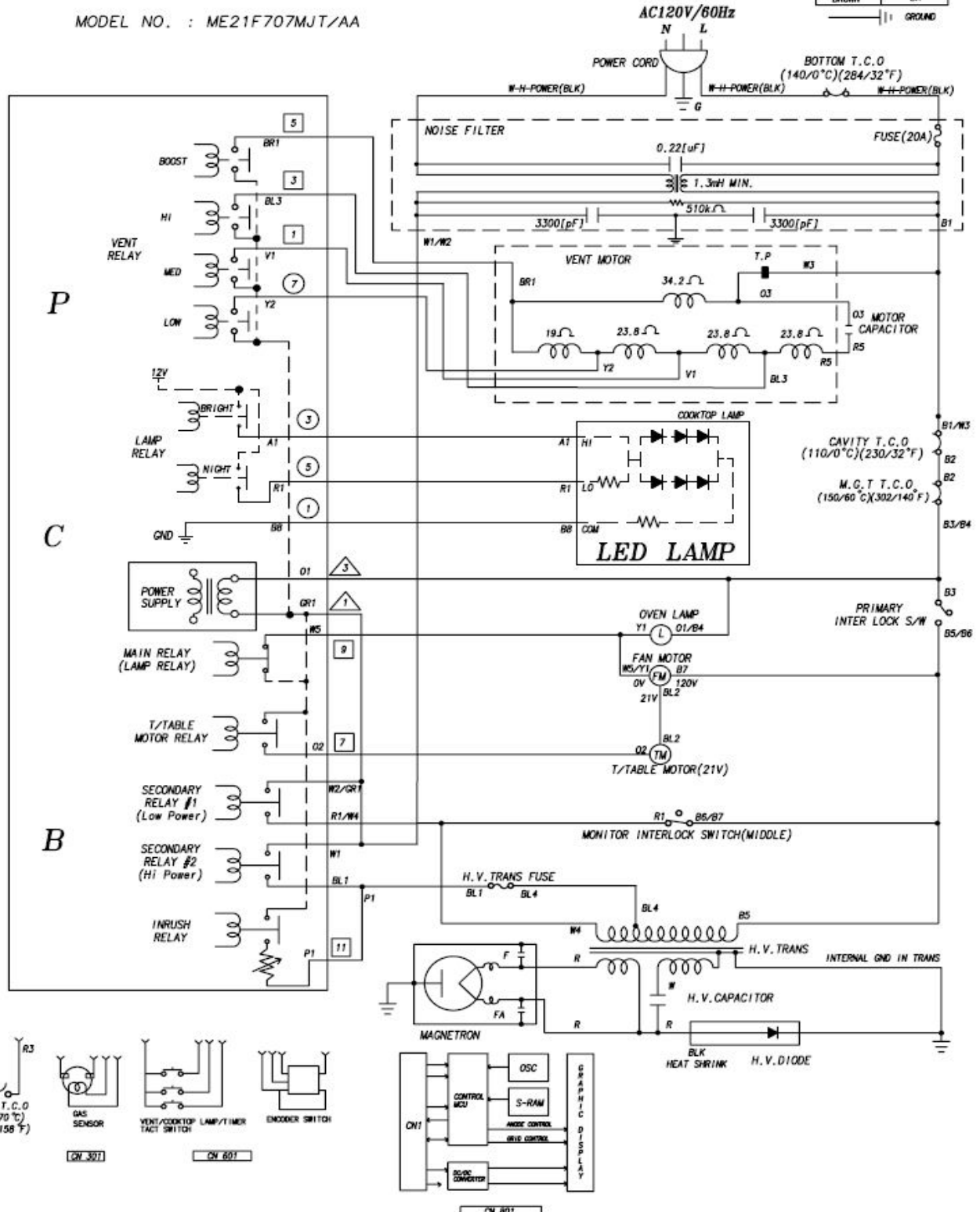
SCHEMATIC DIAGRAM

WARNING

POWER MUST BE DISCONNECTED
BEFORE SERVICING THIS APPLIANCE

COLOR	SYMBOL
GRAY	GR
WHITE	W
BLACK	B
RED	R
BLUE	BL
ORANGE	O
YELLOW	Y
GREEN	G
PINK	P
AZURE	A
VIOLET	V
BROWN	BR

MODEL NO. : ME21F707MJT/AA



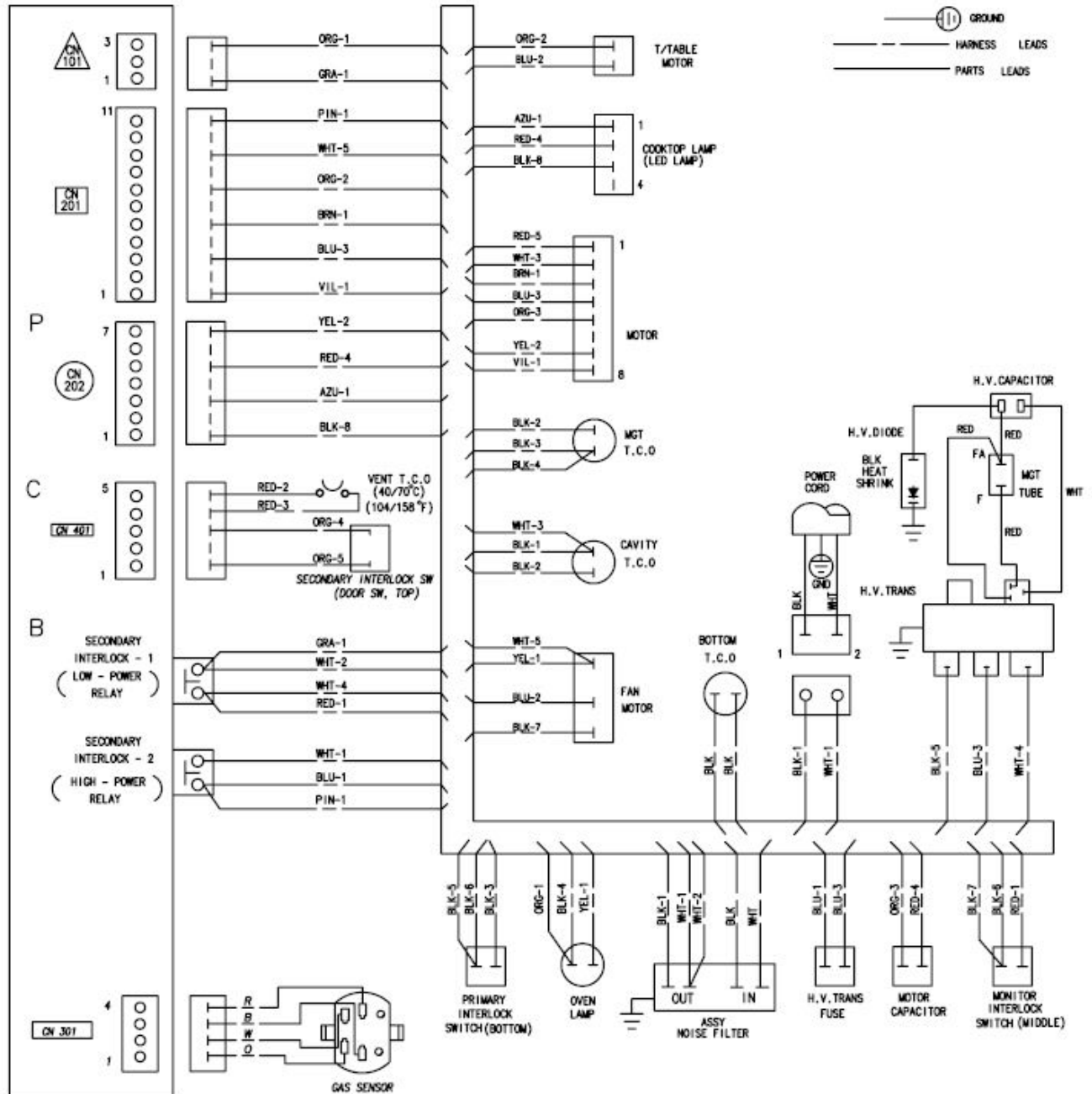
WIRING DIAGRAM

WARNING

POWER MUST BE DISCONNECTED
BEFORE SERVICING THIS APPLIANCE

MODEL NO. : ME21F707MJT/AA

COLOR	SYMBOL
GRAY	GRA
WHITE	WHT
BLACK	BLK
RED	RED
BLUE	BLU
ORANGE	ORG
YELLOW	YEL
GREEN	GRN
PINK	PIN
AZURE	AZU
VIOLET	VIL
BROWN	BRN



NOTE: FOR SERVICING REPLACEMENT USE THE APPROPRIATE
THERMOPLASTIC COVERED WIRE EXCEPT FOR
HIGH VOLTAGE LEADS OR AS NOTED ON SPECIAL LEADS.