oven cavity by means of the convection fan which is driven by the convection motor. It then enters the inside of the oven through the vent holes provided on the left side of the oven. Next, the hot air heats the food on the turntable and leaves the oven cavity through the vent in the center of the oven cavity left side wall.
Without leaving the oven, this hot air is reheated by the heating element, passes through the convection passage and enters the inside of the oven cavity again, in a continuing cycle.
In this way, the hot air circulates inside the oven cavity to raise its temperature and, at the same time, comes into contact with the food being cooked.
When the temperature inside the oven cavity reaches the selected temperature, the heating element is de-energized.
When the temperature inside the oven cavity drops below the selected temperature, the heating element is energized again. In this way, the inside of the oven cavity is maintained at approximately the selected temperature.
When the convection time reaches 0, the heating element is de-energized and the convection fan stops operating and the oven shuts off.

DAMPER OPEN-CLOSE MECHANISM

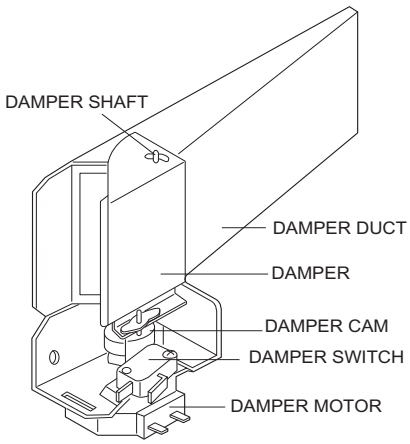
Usually, the damper is in the open position except during convection cooking. Damper position is set automatically by damper motor, damper switch, motor cam and damper shaft. These components are operated by a signal that judges if microwave cooking or convection cooking operation is selected by the control unit.

Microwave Cooking:
Damper is in the open position, because a portion of cooling air is channelled through the cavity to remove steam and vapors given off from the heating foods.
It is then exhausted at the top of the oven cavity into a condensation compartment.
Convection Cooking:
Damper is in the closed position, so that no hot air will be allowed to leak out the oven cavity.

Damper Operation
1. When power supply cord is plugged in:
   1-1. When power supply cord is plugged in, a signal is sensed in the control unit, and operates shut-off relay (RY4).
   1-2. Contacts of shut-off relay (RY4) close, the damper motor is energized, opening the damper door.
   1-3. When the damper is moved to the open position by the damper cam the damper switch is closed (ON position).
   1-4. The signal from damper switch is re-sensed in the control unit and shut-off relay (RY4) is turned off.
   1-5. The 120 volts A.C. to the damper motor is removed and the motor turns off.
2. When oven is microwave cooking:
   Damper is in the open position.
3. When oven is convection cooking:
   3-1. Damper motor is energized by touching the convection, temperature and START pads.
   3-2. When damper is in the closed position (damper switch is OFF), its signal is sensed by the control unit, and shut-off relay (RY4) is de-energized.
   3-3. The damper is held in the closed position during the convection cooking operation.
   3-4. At the end of the convection cooking, shut-off relay (RY4) is energized, and the damper is returned to the open position.

NOTE: If the damper door is not in the proper position, closed during convection or open during microwave, the control unit will stop oven operation after 1 minute.

Figure D-2. Damper Mechanism



TROUBLESHOOTING GUIDE

When troubleshooting the microwave oven, it is helpful to follow the Sequence of Operation in performing the checks. Many of the possible causes of trouble will require that a specific test be performed. These tests are given a procedure letter which will be found in the “Test Procedure”section.

IMPORTANT: If the oven becomes inoperative because of a blown monitor fuse, check the monitor switch, relay (RY1), door sensing switch and primary interlock switch before replacing the monitor fuse. If monitor fuse is replaced, the mintor switch must also be replaced at the same time. Use part FFS-BA012WRK0 as an assembly.

TEST PROCEDURE	CONDITION / PROBLEM / POSSIBLE CAUSE AND DEFECTIVE PARTS	OFF CONDITION					COOKING CONDITION				(MICROWAVE)					(CONVECTION)						(SENSOR COOKING)
		Home fuse blows when power cord is plugged into wall receptacle.	Monitor fuse blows when power cord is plugged into wall receptacle	88:88 does not appear in display when power cord is first plugged into wall receptacle.	Display does not operate properly when STOP/CLEAR pad is touched. (The time of day should appear on the display with beep sound.)	Oven lamp does not light with door opened.	Oven lamp does not light in cook cycle. (It light when door is opened).	Cooking cycle runs 1 minute then shuts down.	Oven lamp light, but turntable motor does not operate.	Turntable motor operates normally but cooling fan motor does not operate.	Oven does not go into a cook cycle, when START pad is touched.	Low or no power is produced during microwave cooking (The food is heated incompletely or not heated at all)	Extremely uneven heating is produced in oven load (food).	Function of variable cooking does not operate properly except HIGH power.	Function of AUTO DEFROST does not operate properly.	CONV indicator lights, but oven does not go into cook cycle when START pad is touched.	CONV indicator lights, but heating element does not heat.	Temperature in the oven cavity is lower or higher than preset.	Cooling fan motor runs intermittently or all the time.	Convection cycle runs 4 minutes and 15 seconds then shuts down.	Oven in the sensor cooking condition but AH sensor does not end or AH sensor turns off about max. 30 min. after start.
A	MAGNETRON											○									
B	POWER TRANSFORMER											○									
C	H.V. RECTIFIER ASSEMBLY											○									
D	HIGH VOLTAGE CAPACITOR											○									
E	PRIMARY INTERLOCK SWITCH										○	○				○	○				
F	SECONDARY INTERLOCK SYSTEM				○	○					○										
G	MONITOR SWITCH		○																		
H	MONITOR FUSE			○																	
I	OVEN THERMAL CUT-OUT								○		○					○	○				
I	CONVECTION CUT-OUT			○																	
J	CONVECTION HEATER															○	○	○			
K	THERMISTOR																	○	○	○	
L	DAMPER MOTOR							○													
M	DAMPER SWITCH							○													
N	TOUCH CONTROL PANEL		○	○	○	○	○	○		○	○	○		○	○	○	○	○	○	○	○
O	NOISE FILTER		○	○																	
P	RELAY RY-1		○			○	○									○	○			○	
P	RELAY RY-2											○		○							
P	RELAY RY-3															○	○	○		○	
P	RELAY RY-4							○													
P	RELAY RY-5																	○			
P	RELAY RY-6									○									○		
Q	AUTO DEFROST														○						
Replace	OVEN LAMP OR SOCKET					○															
Replace	FAN MOTOR									○									○		
Replace	TURNTABLE MOTOR								○				○								
Replace	CONVECTION MOTOR																	○			
Check	LOOSE WIRING		○	○	○	○		○	○	○	○	○	○			○	○	○	○	○	○
Check	SHORTED IN POWER CORD	○		○																	
Check	NO POWER AT OUTLET			○																	
Check	LOW VOLTAGE																	○			
R	AH SENSOR																				○

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
A	**MAGNETRON ASSEMBLY TEST**

HIGH VOLTAGES ARE PRESENT DURING THE COOK CYCLE, SO EXTREME CAUTION SHOULD BE OBSERVED.

DISCHARGE THE HIGH VOLTAGE CAPACITOR BEFORE TOUCHING ANY OVEN COMPONENTS OR WIRING.

To test for an open filament, isolate the magnetron from the high voltage circuit. A continuity check across the magnetron filament leads should indicate less than 1 ohm.

To test for a shorted magnetron, connect the ohmmeter leads between the magnetron filament leads and chassis ground. This test should indicate an infinite resistance. If there is little or no resistance the magnetron is grounded and must be replaced.

Power output of the magnetron can be measured by performing a water temperature rise test. This test should only be used if above tests do not indicate a faulty magnetron and there is no defect in the following components or wiring: silicon rectifier, high voltage capacitor and power transformer. This test will require a 16 ounce (453cc) measuring cup and an accurate mercury thermometer or thermocouple type temperature tester. For accurate results, the following procedure must be followed carefully:

1. Fill the measuring cup with 16 oz. (453cc) of tap water and measure the temperature of the water with a thermometer or thermocouple temperature tester. Stir the thermometer or thermocouple through the water until the temperature stabilizes. Record the temperature of the water.
2. Place the cup of water in the oven. Operate oven at POWER HI(HIGH) selecting more than 60 seconds cook time. Allow the water to heat for 60 seconds, measuring with a stop watch, second hand of a watch or the digital read-out countdown.
3. Remove the cup from the oven and again measure the temperature, making sure to stir the thermometer or thermocouple through the water until the maximum temperature is recorded.
4. Subtract the cold water temperature from the hot water temperature. The normal result should be 22 to 43°F(12.2 to 23.8°C) rise in temperature. If the water temperatures are accurately measured and tested for the required time period the test results will indicate if the magnetron tube has low power output (low rise in water temperature) which would extend cooking time or high power output (high rise in water temperature) which would reduce cooking time. Because cooking time can be adjusted to compensate for power output, the magnetron tube assembly should be replaced only if the water temperature rise test indicates a power output well beyond the normal limits. The test is only accurate if the power supply line voltage is 117 volts and the oven cavity is clean.

B	**POWER TRANSFORMER TEST**

DISCHARGE THE HIGH VOLTAGE CAPACITOR BEFORE TOUCHING ANY OVEN COMPONENTS OR WIRING.

Disconnect the primary input terminals and measure the resistance of the transformer with an ohmmeter. Check for continuity of the coils with an ohmmeter. On the R x 1 scale, the resistance of the primary coil should be less than 1 ohm and the resistance of the high voltage coil should be approximately 84.4 ohms; the resistance of the filament coil should be less than 1 ohm.

(HIGH VOLTAGES ARE PRESENT AT THE HIGH VOLTAGE TERMINAL, SO DO NOT ATTEMPT TO MEASURE THE FILAMENT AND HIGH VOLTAGE.)

C	**HIGH VOLTAGE RECTIFIER TEST**

DISCHARGE THE HIGH VOLTAGE CAPACITOR BEFORE TOUCHING ANY OVEN COMPONENTS OR WIRING.

Isolate the rectifier from the circuit. Using the highest ohm scale of the meter, read the resistance across the terminals and observe, reverse the leads to the rectifier terminals and observe meter reading. If a short is indicated in both directions, or if an infinite resistance is read in both directions, the rectifier is probably defective and should be replaced.

D	**HIGH VOLTAGE CAPACITOR TEST**

DISCHARGE THE HIGH VOLTAGE CAPACITOR BEFORE TOUCHING ANY OVEN COMPONENTS OR WIRING.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

If the capacitor is open, no high voltage will be available to the magnetron. Disconnect input leads and check for short or open between the terminals using an ohmmeter.
Checking with a high ohm scale, if the high voltage capacitor is normal, the meter will indicate continuity for a short time and should indicate approximately 10 MΩ once the capacitor is charged. If the above is not the case, check the capacitor with an ohmmeter to see if it is shorted between either of the terminals and case. If it is shorted, replace the capacitor.

E **PRIMARY INTERLOCK SWITCH AND THIRD DOOR SWITCH TEST**

Isolate the switch and connect the ohmmeter to the common (COM.) and normally open (NO) terminal of the switch. The meter should indicated an open circuit with the door open and a closed circuit with the door closed. If improper operation is indicated, replace the switch.

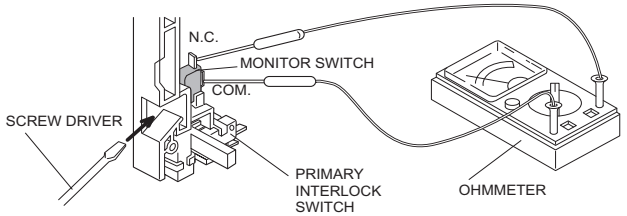
F **SECONDARY INTERLOCK SYSTEM TEST**

DOOR SENSING SWITCH
Isolate the switch and connect the ohmmeter to the common (COM.) and normally open (NO) terminal of the switch. The meter should indicated an open circuit with the door open and a closed circuit with the door closed. If improper operation is indicated, replace the door sensing switch.

SECONDARY INTERLOCK RELAY
Disconnect two (2) wire leads from the tab terminal of the secondary interlock relay (RY2). Check the state of the relay contacts using a ohmmeter. The relay contacts should be open. If the relay contacts are closed, replace the circuit board entirely or the relay itself.

G **MONITOR SWITCH**

Disconnect the oven from power supply.
Before performing this test, make sure that the primary interlock switch and the secondary interlock relay are operating properly, according to the above Test Procedures. Disconnect the wire lead from the monitor switch (NC) terminal. Check the monitor switch operation by using the ohmmeter as follows. When the door is open, the meter should indicate a closed circuit. When the monitor switch actuator is pushed by a screw driver through the lower latch hole on the front plate of the oven cavity with the door opened (in this condition the plunger of the monitor switch is pushed in), the meter should indicate an open circuit. If improper operation is indicated, the switch may be defective. After testing the monitor switch, re-connect the wire lead to the monitor switch (NC) terminal and check for continuity of monitor circuit.



H **BLOWN MONITOR FUSE**

If the monitor fuse is blown when the door is opened, check the primary interlock switch, door sensing switch relay (RY1) and monitor switch according to the "TEST PROCEDURE" for those switches before replacing the blown monitor fuse.

CAUTION: IF THE MONITOR FUSE IS BLOWN BY IMPROPER SWITCH OPERATION, THE MONITOR FUSE AND SWITCH MUST BE REPLACED WITH "MONITOR FUSE AND SWITCH ASSEMBLY" PART NUMBER FFS-BA012WRK0, EVEN IF THE MONITOR SWITCH OPERATES NORMALLY. THE MONITOR FUSE AND SWITCH ASSEMBLY IS PACKED WITH 20 AMPERE FUSE AND SWITCH.

I **OVEN THERMAL CUT-OUT (on the side of steam duct)**

A continuity check across the thermal cut-out terminals should indicate a closed circuit unless the temperature of the oven thermal cut-out reaches approximately 302°F (150°C). The thermal cut-out reset automatically at approximately 266°F (130°C). If the thermal cut-out has operated under the normal condition, replace the thermal cut-out. An open thermal cut-out indicates overheating of the oven cavity.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

MAGNETRON THERMAL CUT-OUT (on the waveguide)

A continuity check across the thermal cut-out terminals should indicate a closed circuit unless the temperature of the thermal cut-out reaches approximately 257°F (125°C).
An open thermal cut-out indicates overheating of the magnetron. Check for restricted air flow to the magnetron through the vent holes of the oven cavity, especially the cooling duct and cooling fan.

CAUTION: IF THE THERMAL CUT-OUT INDICATES OPEN CIRCUIT AT ROOM TEMPERATURE, REPLACE THE THERMAL CUT-OUT.

CONVECTION CUT-OUT (on side of the heater duct)

A continuity check across the thermal cut-out terminals should indicate a closed circuit unless the temperature of thermal cut-out reaches 302°F (150°C). The thermal cut-out resets automatically at approximately 266°F (130°C). If the thermal cut-out has operated under the normal condition, replace the thermal cut-out. An open thermal cut-out indicates overheating of heater unit, check for restricted air flow to the heater unit through the vent hole of the oven cavity, especially the heater duct and convection fan.

J HEATING ELEMENT TEST

Make sure the heating element is fully cooled and test as follows;

a. Disconnect wire leads and measure the resistance with an ohmmeter. On the R x 1 scale, the resistance between the heating element terminals should be approximately 10.2Ω.
b. Disconnect wire leads and measure the insulation resistance with 500V - 100MΩ insulation resistance meter. The insulation resistance between heating element terminal and cavity should be more than 0.5MΩ.

K THERMISTOR TEST

Disconnect connector-E from the control unit. Measure the resistance of the thermistor with an ohmmeter. Connect the ohmmeter leads to Pin No's E-3 and E-4.

Room Temperature	Resistance
68°F(20°C) - 86°F(30°C)	Approx. 350kΩ - 155KΩ

If the meter does not indicate above resistance, replace the thermistor

L DAMPER MOTOR TEST

When the power cord is plugged into the wall receptacle and 117 volts A.C. is supplied to the damper motor, the motor operates until the damper is opened and the damper switch closes. Then the damper motor stops operation.
If the damper motor does not operate, check for A.C. voltage with a voltmeter at the motor.

1. Disconnect the power cord from the wall receptacle.
2. Disconnect the wire leads of motor and connect the meter leads to the wire leads of main wire harness.
3. Re-connect the power cord into the wall receptacle.
   If 117 volts A.C. is indicated at the wire leads, replace the motor and if 117 volts A.C. is not indicated, check the wire harness and control unit.

M DAMPER SWITCH TEST

Disconnect the wire leads from the switch terminals and connect ohmmeter leads to the common (COM.) and normally open (N.O.) terminals of the switch.

1. When switch actuator is pushed by the damper motor cam, the meter should be indicated a closed circuit.
2. When power cord is plugged into the wall receptacle, the damper motor operates and damper cam will start to rotate. When the switch actuator is released, the meter should be indicated an open circuit. If improper operation is indicated, replace the damper switch.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

CHECKING TEMPERATURE IN THE CONVECTION MODE

It is difficult to measure the exact temperature in the convection oven. An accurate thermocouple type temperature tester must be used. A low priced bi-metal type thermometer is not reliable or accurate. The temperature should be checked with outer case cabinet installed, approx. 5 minutes after preheat temperature is reached (audible signal sounds four times). The temperature experienced may be approx. 30°F more or less than indicated on the display, however, in most cases the food cooking results will be satisfactory.
Difference in power supply voltage will also affect the oven temperature. The Household power supply voltage may sometimes become lower than the rated voltage (117 V) and cause under-cooking. If the power supply voltage is 10% lower than the rated voltage, longer cooking time is required by 10% to 20%.

N **TOUCH CONTROL/TOUCH GLASS TEST**

1. Key Unit.
   Please note that key unit is projected capacitive touch technology. Touching the keyglass surface changes a key pad sensor's local electric field to activate a key action. The amount of finger flesh's needed to trigger key activation is ~10mm diameter surface contact to the glass surface. You should not press hard to active a key; only a light touch is needed to change the pad's local electric field.
   a) Run the oven and check all functions.
   The following symptoms indicate a defective key unit.
   b) When lightly touching a fingertip to any pad and one or more keys do not respond.
   c) When lightly touching a fingertip to any pad and only nearby keys respond.
   d) When any pad only responds when touch with excessive flesh like a large thumb (more than 20mm diameter of surface contact to the glass surface).
2. Control Unit
   The following symptoms indicate a defective control unit.

2-1 In connection with pads.
   a) when touch any keypad and there is no key response. Check if key cable is unplugged between control unit and key unit. Check if key cable end is fully seating into the key unit's connector.

2-2 In connection with indicators
   a) At a certain digit, all or some segments do not light up.
   b) At a certain digit, brightness is low.
   c) Only one indicator does not light.
   d) The corresponding segments of all digits do not light up; or they continue to light up.
   e) Wrong figure appears.
   f) A certain group of indicators do not light up.
   g) The figure of all digits flicker.

2-3 Other possible problems caused by defective control unit.
   a) Buzzer does not sound or continues to sound.
   b) Clock does not operate properly.
   c) Cooking is not possible.

3. If the Key unit or the Control unit is defective.
   1) Disconnect the power supply cord, and then remove outer case.
   2) Open the door and block it open.
   3) Discharge high voltage capacitor.
   4) Replace the Control unit assembly.
   5) Reconnect all leads removed from components during testing.
   6) Re-install the outer case (cabinet).
   7) Reconnect the power supply cord after the outer case is installed.
   8) Run the oven and check all functions.

TEST PROCEDURES

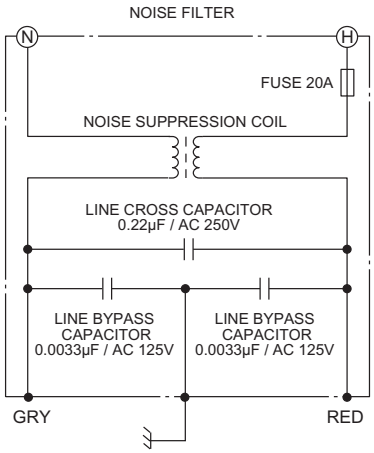
PROCEDURE LETTER	COMPONENT TEST

O NOISE FILTER TEST

Disconnect the oven from power supply.
Disconnect the lead wires from the terminal the noise filter. Using an ohmmeter, check between the terminals as described in the following table.

MEASURING POINT	INDICATION OF OHMMETER
Between N and H	Open circuit.
Between terminal N and GRAY	Short circuit.
Between terminal H and RED	Short circuit.

If incorrect reading are obtained, replace the noise filter.



P RELAY TEST

Remove the outer case and check voltage between Pin Nos. 7 and 9 of the 9- pin connector (A) on the control unit an A.C. voltmeter. The meter should indicate 120 volts, if not check the oven circuitry.

Shut-off, Cook and Heater Relay Test
These relays are operated by D.C. voltage
Check voltage at the relay coil with a D.C. voltmeter during the microwave cooking operation or convection cooking operation.
DC. voltage indicated ..... Defective relay.
DC. voltage not indicated ..... Check diode which is connected to the relay coil. If diode is good, control unit is defective.

RELAY SYMBOL	OPERATIONAL VOLTAGE	CONNECTED COMPONENTS
RY1	Approx. 19.0V D.C.	Oven lamp / Turntable motor
RY2(COOK)	Approx. 18.0V D.C.	Power transformer
RY3(HEATER)	Approx. 18.0V D.C.	Heating element
RY4	Approx. 19.0V D.C.	Damper motor
RY5	Approx. 19.0V D.C.	Convection motor
RY6	Approx. 19.0V D.C.	Cooling fan motor

Q AUTO DEFROST TEST

(1) Place one cup of water in the center of the turntable tray in the oven cavity.
(2) Close the door, touch "AUTO DEFROST" pad, then number pads "1" and "5" (Defrost, Ground Meat, 0.5lbs). Finally touch the "START" pad..
(3) After 2 sec. Now the oven is in AUTO DEFROST cooking condition.
(4) The oven will operate as follows.

WEIGHT	1ST STAGE		2ND STAGE		3RD STAGE		4TH STAGE	
	LEVEL	TIME	LEVEL	TIME	LEVEL	TIME	LEVEL	TIME
0.5lbs	70%	47sec.	0%	52sec.	50%	32sec.	30%	40sec.

(5) If improper operation is indicated, the control unit is probably defective and should be checked.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

R **AH SENSOR TEST**

Checking the initial sensor cooking condition

(1) The oven should be plugged in at least two minutes before sensor cooking.
(2) Room temperature should not exceed 95°F (35°C).
(3) The unit should not be installed in any area where heat and steam are generated. The unit should not be installed, for example, next to a conventional surface unit. Refer to the "INSTALLATION Instructions".
(4) Exhaust vents are provided on the back of the unit for proper cooling and air flow in the cavity. To permit adequate ventilation, be sure to install so as not to block these vents. There should be some space for air circulation.
(5) Be sure the exterior of the cooking container and the interior of the oven are dry. Wipe off any moisture with a dry cloth or paper towel.
(6) The Sensor works with food at normal storage temperature. For example, chicken pieces would be at refrigerator temperature and canned soup at room temperature.
(7) Avoid using aerosol sprays or cleaning solvents near the oven while using Sensor settings. The sensor will detect the vapour given of by the spray and turn off before food is properly cooked.
(8) After 30 minutes if the sensor has not detected the vapour of the food, ERROR will appear and the oven will shut off.

Water load cooking test

Make sure the oven has been plugged in at least five minutes before checking sensor cook operation. The cabinet should be installed and screws tightened.
(1) Fill approximately 200 milliliters (7.2 oz) of tap water in a 1000 milliliter measuring cup.
(2) Place the container on the center of tray in the oven cavity.
(3) Close the door.
(4) Touch "BAKED POTATO" then "START". "BAKED POTATO SENSOR COOK" will appear in display.
(5) The oven will operate for the first 16 seconds, without generating microwave energy.

When the AH sensor is defective (open or short), Error will appear in the display after 16 seconds cleaning time.
If ERROR appears check sensor wire connections and/or AH sensor.
NOTE: ERROR will appear if the door is opened or STOP/CLEAR pad is touched during first stage of sensor cooking.
(6) After approximately 16 seconds, microwave energy is produced, and the display should start to count down the remaining cooking time and oven should turn off after water is boiling (bubbling).
If the oven does not turn off, replace the AH sensor or check the control unit, refer to explanation below.

TESTING METHOD FOR AH SENSOR AND/OR CONTROL UNIT

To determine if the sensor is defective, the simplest method is to replace it with a new replacement sensor.
(1) Disconnect oven from power supply and remove outer case.
(2) Discharge the high voltage capacitor.
(3) Remove the AH sensor.
(4) Install the new AH sensor.
(5) Re-install the outer case.
(6) Reconnect the oven to the power supply and check the sensor cook operation proceed as follows:
6-1. Fill approximately 200 milliliters (7.2 oz) of tap water in a 1000 milliliter measuring cup.
6-2. Place the container on the center of tray in the oven cavity.
6-3. Close the door.
6-4. Touch "BAKED POTATO" then "START".
6-5. Touch Start pad. The oven will operate for the first 16 seconds, without generating microwave energy.
6-6. After approximately 16 seconds, microwave energy is produced, and the display should start to count down the remaining cooking time and oven should turn off after water is boiling (bubbling).
If new sensor dose not operate properly, the problem is with the control unit.

TEST PROCEDURES

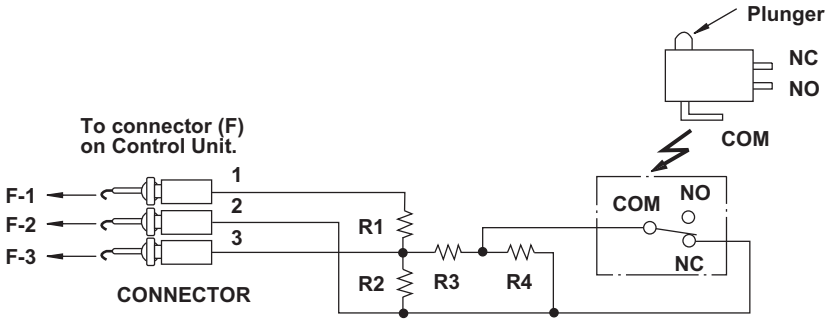
PROCEDURE LETTER	COMPONENT TEST

CHECKING CONTROL UNIT

(1) Disconnect oven from power supply and remove outer case.
(2) Discharge the high voltage capacitor.
(3) Disconnect the wire leads from the cook relay.
(4) Disconnect the sensor connector that is mounted to lower portion of control panel.
(5) Then connect the dummy resistor circuit (see fig.) to the sensor connector of control panel.
(6) Reconnect the oven to the power supply and check the sensor cook operation proceed as follows:
6-1. Touch "BAKED POTATO" then "START".
6-2. Touch Start pad. The control panel is in the sensor cooking operation.
6-3. After approximately 20 seconds, push plunger of select switch for more than 3 seconds. This condition is same as judgement by AH sensor.
6-4. After approximately 3 seconds, the display shows " X X . X X " which is the remaining cooking time, and the display count down.

If the above is not the case, the control unit is probably defective.
If the above is proper, the AH sensor is probably defective.

R1,R2 : 22Ω ± 1% 1/2W
R3 : 4.3kΩ ± 5% 1/4W
R4 : 1MΩ ± 5% 1/4W

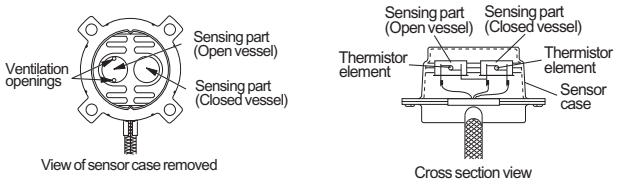


Sensor Dummy Resistor Circuit

ABSOLUTE HUMIDITY SENSOR CIRCUIT

(1) Structure of Absolute Humidity Sensor

The absolute humidity sensor includes two thermistors as shown in the illustration. One thermistor is housed in the closed vessel filled with dry air while another in the open vessel. Each sensor is provided with the protective cover made of metal mesh to be protected from the external airflow.

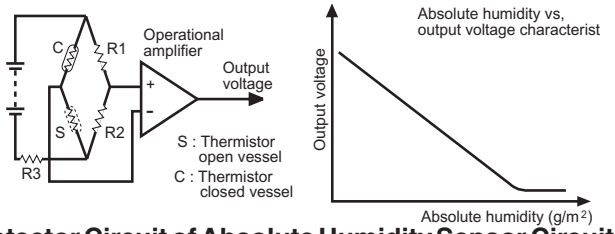


(2) Operational Principle of Absolute Humidity Sensor

The figure below shows the basic structure of an absolute humidity sensor. A bridge circuit is formed by two thermistors and two resistors (R1 and R2).

The output of the bridge circuit is to be amplified by the operational amplifier.

Each thermistor is supplied with a current to keep it heated at about 150°C (302°F), the resultant heat is dissipated in the air and if the two thermistors are placed in different humidity conditions they show different degrees of heat conductivity leading to a potential difference between them causing an output voltage from the bridge circuit, the intensity of which is increased as the absolute humidity of the air increases. Since the output is very minute, it is amplified by the operational amplifier.



(3) Detector Circuit of Absolute Humidity Sensor Circuit

This detector circuit is used to detect the output voltage of the absolute humidity circuit to allow the LSI to control sensor cooking of the unit. When the unit is set in the sensor cooking mode, 16 seconds clearing cycle occurs than the detector circuit starts to function and the LSI observes the initial voltage available at its AN6 terminal. With this voltage given, the switches SW1 to SW5 in the LSI are turned on in such a way as to change the resistance values in parallel with R50-1. Changing the resistance values results in that there is the same potential at both F-3 terminal of the absolute humidity sensor and AN7 terminal of the LSI. The voltage of AN6 terminal will indicate about -2.5V. This initial balancing is set up about 16 seconds after the unit is put in the Sensor Cooking mode. As the sensor cooking proceeds, the food is heated to generate moisture by which the resistance balance of the bridge circuit is deviated to increase the voltage available at AN6 terminal of the LSI.

Then the LSI observes that voltage at AN6 terminal and compares it with its initial value, and when the comparison rate reaches the preset value (fixed for each menu to be cooked), the LSI causes the unit to stop sensor cooking; thereafter, the unit goes in the next operation automatically.

When the LSI starts to detect the initial voltage at AN6 terminal 16 seconds after the unit has been put in the Sensor Cooking mode, if it is not possible to balance, of the bridge circuit due to disconnection of the absolute humidity sensor, ERROR will appear on the display and the cooking is stopped.

1) Absolute humidity sensor circuit