

TECHNICIAN MANUAL

G.E. MONOGRAM

1992 BUILT-IN
ELECTRIC CONVECTION
WALL OVENS

REF92 Pub. No. 31-1450

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1992 BUILT-IN CONVECTION WALL OVEN

A new series of GE Built-In Wall Ovens with Convection Feature was introduced in the 2nd quarter of 1992. The models use the 27" flush look structure introduced in the 3rd quarter of 1991 (Reference Technician Manual Pub No. 31-0297). The Models and Features are as follows:

	GE		MONOGRAM			
FEATURES	SINGLE OVEN	DOUBLE OVEN * JKP54GP1 * JKP55WP1		SINGLE OVEN * ZEK736GP1 * ZEK737WP1	DOUBLE OVEN * ZEK756GP1 * ZEK757WP1	
	* JKP16GP1 * JKP17WP1	11 1 11			UPPER OVEN	LOWER OVEN
BAKE	X	Х	Х	Х	Х	Х
BROIL	Х	Х	Х	Х	Х	Х
SELF CLEAN	Х	Х	Х	Х	Х	χ
TEMPERATURE PROBE	Х	Х		Х	Х	
CONVECTION BAKE	Х	Х		Х	Х	Х
CONVECTION ROAST	Х	Х		Х	Х	Х
STOP TIME	Х	Х	Х	Х	Х	Х
COOK TIME	Х	Х	Х	Х	Х	Х
CHILD LOCK	Х	Х	Х	Х	Х	Х

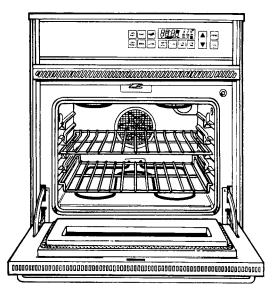
^{*} Only difference between models in each grouping is color.

RATING PLATE

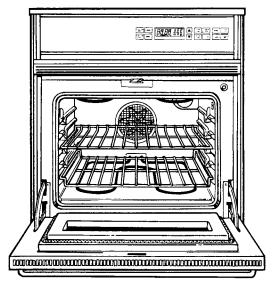
The Model and Serial No. is located on the Rating Plate behind the oven door on the oven front frame.

MINI-MANUAL & SCHEMATIC/WIRING DI-AGRAM

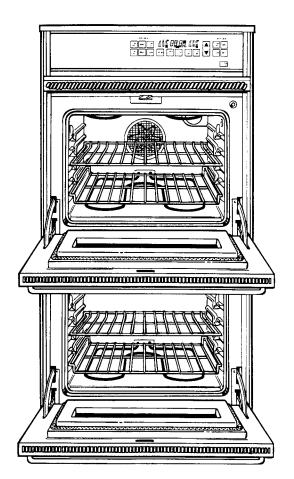
The Mini-Manual & Schematic Wiring Diagram is located in the component compartment behind the control panel assembly on the left side.



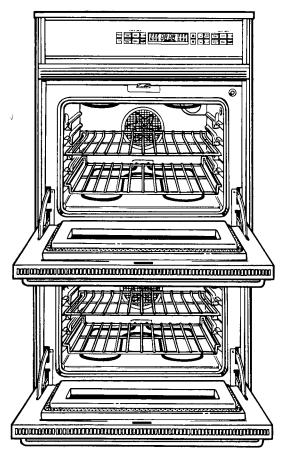
JKP16GP1 JKP17WP1



ZEK736GP1 ZEK737WP1



JKP54GP1 JKP55WP1



ZEK756GP1 ZEK757WP1

CONVECTION COOKING

Convection cooking is the movement of heated air in the oven cavity. This is accomplished by a fan mounted on the rear wall of the oven cavity. The fan runs anytime one of the convection cooking modes is selected and the oven door is closed. This provides for a more even heat distribution during the cooking operations. As a result of even heat distribution the food browns more evenly and temperature can be reduced by as much as 25°F for some foods. Cooking times of more 15 minutes do not require preheating of the oven.

WHEN TO USE CONVECTION BAKE OR ROAST

CONVECTION BAKE

- Ideal for baked foods when more than one shelf is being used.
- · Large quantities of baked foods.
- Cookies, biscuits, muffins, cupcakes, bread, ETC. (Layer cakes have more level top crust when not baked with convection heat).

CONVECTION ROAST

- Large tender cuts of meats uncovered.
- Roasting pans with low sides to allow air movement around food.

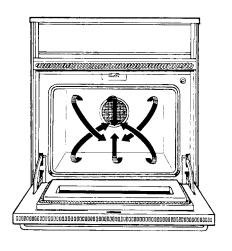
COOKWARE FOR CONVECTION COOKING

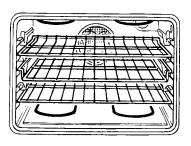
Cookware must leave room for air to circulate in oven. When cooking with several pans make sure they do not touch.

CONVECTION OVEN CONTROL

The control is similar to the RS4800 single oven control used on the ZEK734, and the RS5800 double oven control used on JKP44.

The Convection Oven Controls contain all the same functions & features as described in Technician Manual Pub No. 31-0297 (Bake, Broil, Clean, Temperature Probe, Delay Start, Stop Time, Child Lockout, Oven Light, Clock, Timer, End Of Cycle Tone and Oven Calibration) plus the added features of Convection Bake and Convection Roast.





MULTIPLE SHELVES



SINGLE OVEN CONTROL



DOUBLE OVEN CONTROL



CONTROL OPERATION

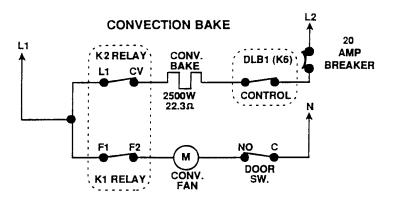
The controls on the convection oven operate the same as the RS4800 & RS5800 controls with the exception of the two new features, Convection Bake and Convection Roast. Only the operation of these two new features will be covered (See Pub No. 31-0297 or Use & Care for other program operations).

CONVECTION BAKE

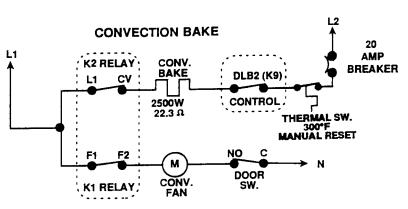
Convection Bake Mode uses a third heating element located on the back wall of the oven cavity. When convection bake is selected the element is energized. The convection fan circulates air across the element and then through out the oven cavity.

To Convection Bake:

- 1. Place the food in the oven making sure pans do not touch.
- 2. Touch Convection Bake Pad.
 - Control will "BEEP"
 - Audible "Click" of Double Line Break Relay closing. (Provides "L2" to Convection Bake Unit).
 - SET --- and CONV BAKE will appear in Display.
- 3. Touch Increase or Decrease Pad.
 - Previously baking temperature will appear.
 - NOTE: At initial power up or after power failure 170°F will be displayed.
- 4. Select desired temperature using Increase or Decrease Pad.
 - After about 5 seconds, Audible "CLICK" will be heard of Convection Fan Relay closing followed by the Convection Bake Relay contacts closing. (Provides "L1" to Convection Bake Unit and Convection Fan Motor).
- 5. "ON" appears in display. After 25 to 30 seconds the word SET will disappear from display and Selected Temperature will change to oven temperature and begin rising in 5° increments until selected temperature is reached. Display will show 100°F until oven reaches 100°F.



SINGLE & UPPER OVEN



LOWER OVENS WITH CONVECTION BAKE

With the Double Line Break and Convection Bake relay contacts closed, 240 volts are supplied to the Convection Bake Element.

CONTROL OPERATION CONTINUED

Once the pre-selected temperature is reached, control will give three short "beeps", the convection bake relay will open cycling the element "OFF".

When the oven temperature cools below the pre-selected temperature the convection bake relay will close completing the circuit to the convection bake element again.

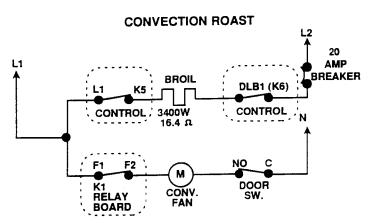
<u>NOTE:</u> The Convection Fan will continue to run even when the convection bake element cycles "OFF".

CONVECTION ROAST

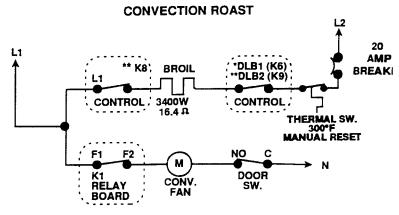
The Convection Roast Mode of operation uses the conventional broil unit in the top of the oven along with the convection fan. The fan circulates the air in the oven cavity providing for a more even heat distribution.

To Convection Roast:

- 1. Place the food in the oven making sure cookware does not touch.
- 2. Touch Convection Roast Pad.
 - Control will "BEEP"
 - Audible "Click" of Double Line Break Relay closing. (Provides "L2" to Broil Unit).
 - SET --- and CONV ROAST will appear in Display.
- 3. Touch Increase or Decrease Pad.
 - Previously roasting temperature will appear.
 NOTE: At initial power up or after power failure 170°F will be displayed.
- 4. Select desired temperature using Increase or Decrease Pad.
 - After about 5 seconds, Audible "CLICK" will be heard of Convection Fan Relay closing followed by the Broil Relay contacts closing. (Provides "L1" to Broil Unit and Convection Fan Motor).
- 5. "ON" appears in display. After 25 to 30 seconds the word SET will disappear from display and Selected Temperature will change to oven temperature and begin rising in 5° increments until selected temperature is reached. Display will show 100°F until oven reaches 100°F.



SINGLE & UPPER OVEN



LOWER OVENS WITH CONVECTION ROAST

CONTROL OPERATION CONTINUED

With the Double Line Break and Broil relay contacts closed, 240 volts are supplied to the Broil Element.

Once the pre-selected temperature is reached the control will give three short "beeps" and the broil relay will open cycling the element "OFF".

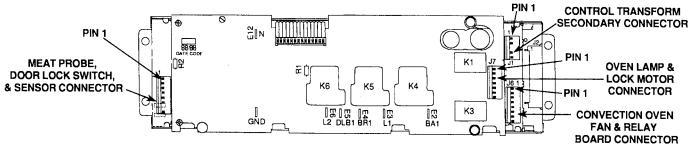
When the oven temperature cools below the pre-selected temperature the "broil relay will close completing the circuit to the broil element again.

NOTE: The Convection Fan will continue to run even when the broil element cycles "OFF".

CONVECTION OVEN CONTROL SYSTEM

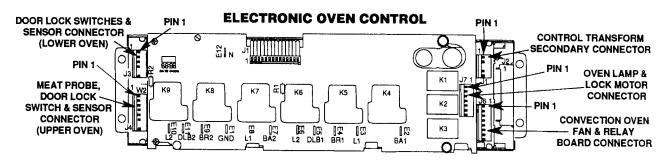
Two Convection Oven controls exist - Single Oven and Double. The convection controls are identical except for lower oven relays & connectors on double oven control. The back of the SINGLE OVEN control has 5 relays, a series of $\frac{1}{3}$ " terminals, and 5 connectors for the Control Transformer Secondary, Oven Lamp & Lock Motor, Sensor/Lock Switch & Meat Probe, Ribbon Cable and Convection Fan & Relay Board.

ELECTRONIC OVEN CONTROL



SINGLE OVEN CONTROL

The back of the **DOUBLE OVEN** control has 9 relays, a series of ½" terminals, and 6 connectors for the Control Transformer Secondary, Oven Lamp & Lock Motor(s), Upper Oven Sensor/Lock Switch & Meat Probe, Lower Oven Sensor/Lock Switch, Ribbon Cable and Convection Fan & Relay Board.



DOUBLE OVEN CONTROL

RELAY CONTACT OPERATION:

The Relays control the operation of the bake, broil, convection bake, convection roast and clean functions along with the motorized lock motor and oven light switch. Audible "RELAY CLICKS" can be heard when the relay contacts open and close during their various modes of operation.

The Audible CLICKS can be used to determine if the Control is functioning correctly.

SINGLE & UPPER OVEN RELAY DESCRIPTION

DOUBLE LINE BREAK RELAY (DLB1, K6) - L2 SIDE of LINE to BAKE and BROIL UNITS.

BAKE RELAY (K4) - L1 SIDE of LINE to BAKE UNIT.

BROIL RELAY (K5) - L1 SIDE of LINE to BROIL UNIT.

LOCK MOTOR RELAY (K1) - DRIVES the LOCK MOTOR to LOCKED OR UNLOCK POSITION.

OVEN LIGHT SWITCH (K3) - Turns Oven Light(s) On & Off.

LOWER OVEN RELAY DESCRIPTION

DOUBLE LINE BREAK RELAY (DLB2, K9) - L2
SIDE of LINE to BAKE and BROIL UNITS.
BAKE RELAY (K7) - L1 SIDE of LINE to BAKE
UNIT.
BROIL RELAY (K8) - L1 SIDE of LINE to
BROIL UNIT.
LOCK MOTOR RELAY (K2) - DRIVES the LOCK
MOTOR to LOCKED OR UNLOCK POSITION.

RELAY CONTACT VOLTAGE TEST SINGLE & UPPER OVEN

RELAY	TERMINALS	VOLTAGE MODE
* K6 LINE BREAK RELAY	L1 to DLB1	
K4 OVEN BAKE	BA1 to DLB1	240VAC SEE STRIP CIRCUITS
K5 OVEN BROIL	BR1 to DLB1	
K3 OVEN LAMP	CONNECTOR J7 PIN 7 to El2 (N)	OVEN LIGHT IS ON ANYTIME RELAY CONTACTS CLOSED OR OVEN DOOR OPEN
K1 LOCK MOTOR	CONNECTOR J7 PIN 1 to N	120VAC LOCKING OR UNLOCKING

* NOTE: If 0 or 120V is read, "Press CLEAR/OFF", check L2 to N. If 120V is not present check 20 AMP CIRCUIT BREAKER (See page 11).

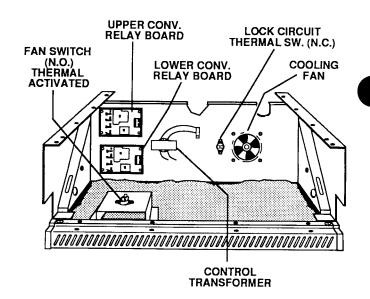
LOWER OVEN

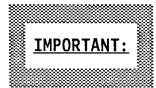
	RELAY	TERMINALS	VOLTAGE	MODE
**	K9 LINE BREAK RELA	Y L1 to DLB2		
	K7 OVEN BAKE	BA2 to DLB2	240VAC	SEE STRIP CIRCUITS
	K8 OVEN BROIL	BR2 to DLB2		
	K2 LOCK MOTOR	CONNECTOR J7 PIN 3 to N	120VAC	LOCKING OR UNLOCKING

** NOTE: If O or 120V is read, "Press CLEAR/OFF", check L2 to N. If 120V is not present check Thermal Switch located on vent box between ovens. If OK Check 20 AMP CIRCUIT BREAKER (Only models with lower oven convection). See Page 11.

CONVECTION FAN & RELAY BOARD

A separate circuit board is used to operate the convection fan and convection bake element. The circuit board (Double Oven models with convection feature in both ovens have two boards) are located on the left side of the upper fan support. The circuit board contains two relays, one relay (K2) supplies L1 to the convection bake element and the other relay (K1) supplies L1 to the convection fan. A 4 pin plug and harness is used to connect the relay board to the control (J6 connector).





4 Pin connectors from control to relay board must be aligned so that Pin 1 on the Single or Upper Oven Relay Board connects with Pin 1 on the J6 connector on the control. Pin 1 on the Lower Oven Relay Board must connect with Pin 5 of the J6 connector on the control. IF ANY OF THE CONNECTORS ARE MISALIGNED OR WIRING REVERSED IT WILL DESTROY THE CONTROL.

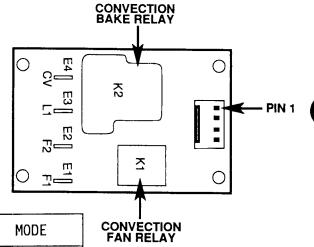
CONVECTION FAN & RELAY BOARD CHECKS:

RELAY BOARD VOLTAGE CHECKS:

RELAY	TERMINALS	VOLTAGE	MODE
Convection Pake Polary	L1 to N	120 V	Constant
Convection Bake Relay	CV to N	120V	Convection Bake
Convention For Dolay	F1 to N	120V	Constant
Convection Fan Relay	F2 to N	120V	Convection Bake & Roast

RELAY BOARD RESISTANCE CHECKS:

RELAY	TERMINALS	OHMS
Convection Bake Relay	PIN 1 to 2	660Ω
Convection Fan Relay	PIN 3 to 4	1430Ω



CONTROL TRANSFORMER

The Control Transformer is a separate component from the Electronic Control and is mounted on the fan support behind the Control Panel.

SENSOR

The Control monitors the oven temperature through the oven temperature sensor. The sensor is mounted to the upper rear wall of the oven cavity.

To Test the Sensor and Circuit:

- 1. **DISCONNECT POWER** to Oven and open control panel.
- 2. Disconnect Sensor from control and check resistance across sensor terminals should read approximately 1100Ω @ 75°F room.
- If Sensor reads Open or Shorted, remove 4 screws mounting convection bake element and fan cover and pull out.
- 4. Remove 2 screws mounting sensor to oven cavity and pull into oven.
- 5. Cut sensor loose from harness leads at wire connectors near sensor.

 NOTE: Crimp connectors are used to attach sensor to harness. Re-connect using ceramic wire nuts.
- 6. Measure resistance across sensor should read 1100Ω @ $75^{\circ}F$ room.
- 7. If sensor tests OK, check sensor harness between control and sensor.

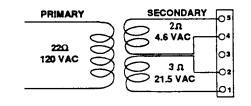
KEY PANEL

The Key Panel (Control Panel) and Electronic Control are separate components and must be tested individually.

Key Panel Test:

Depress each pad on the key panel followed by the CLEAR/OFF pad. If the Key Panel is functioning properly the following should occur:

- Bake, Broil, Convection Bake, Convection Roast, Clean, Timer, Clock, Stop Time and Cook Time Modes Audible tone plus display showing mode of operation selected.
- Clear / Off Audible tone and display shows time of day.



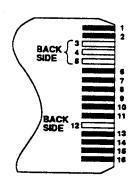
- Probe Audible tone if probe is plugged in and display will show probe.
- Oven Light Oven light turns on. No audible tone except light relay.
- Increase / Decrease Pad No audible tone. Can only be used after another function has been selected.

If some of the pads work and some don't the problem is probably the key panel. To verify that the key panel is the problem perform the Ohm Test. If the Ohm Meter reads ∞ Ω when depressing the pad or shows some resistance without depressing the pad the key panel is bad.

Ohm Meter Test:

Set Ohm Meter on scale that will read approximately 5000 Ω . Connect leads to ribbon cable as indicated in chart for each function. Depress function pad. Meter should read less than ∞ Ω if switch contact is working.

CINOLE A LIDDED OVEN					
SINGLE & UPPER OVEN					
FUNCTION	CONDUCTORS	FUNCTION	CONDUCTORS		
BAKE	3 to 8	TIMER	3 to 9		
BROIL	4 to 8	CLOCK	4 to 9		
CLEAN	5 to 8	STOP TIME	5 to 9		
CLEAR/OFF	1 to 12	COOK TIME	6 to 9		
CONV. BAKE	6 to 8	OVEN LIGHT	5 to 10		
CONV. ROAST	7 to 8	INCREASE PAD	16 to 15		
PROBE	3 to 10	DECREASE PAD	16 to 14		
LOWER OVEN					
BROIL	4 to 11	BAKE	3 to 11		
CLEAN	5 to 11	CLEAR/OFF	1 to 13		
CONV. BAKE	6 to 11	CONV. ROAST	7 to 11		



CONVECTION BAKE ELEMENT & FAN AS-SEMBLY

The Convection Bake Element and Fan Blade are located on the back wall of the oven liner behind the panel with the screen in the center.

To Access Convection Bake Element & Fan Blade:

- 1. DISCONNECT POWER TO THE RANGE, remove oven door and oven racks.
- 2. Remove 4 screws mounting panel (2 on each side) and pull panel forward.

To Remove Convection Bake Element: Remove 3 screws mounting element to back wall and pull forward and disconnect leads.

To Service Convection Fan Motor:

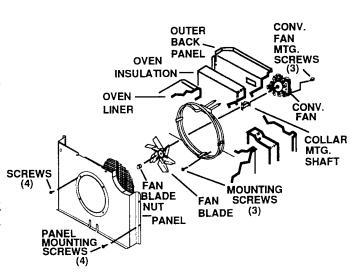
Fan Blade can be replaced from inside oven cavity. Oven must be removed from installation to access Convection Fan Motor. Fan motor resistance can be checked from wire connected to F2 terminal on fan & relay board & N (Approximately 15Ω). Note: When checking for convection fan motor not running, also check door switch located in oven front frame. Contacts C to NO should be made for the fan to run.

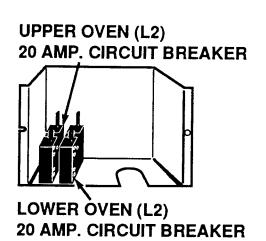
20 AMP CIRCUIT BREAKER(S)

Single and Upper Oven models with convection feature have a 20 AMP Circuit Breaker in the "L2" side of the line. Double Oven Models with Convection Feature in both ovens have a second 20 AMP Circuit Breaker in the L2 line for the lower oven. The circuit breaker(s) are located in a metal box on the back of the oven where the main power leads conduit cable attaches. Oven must be removed from installation to access or reset breaker(s).

<u>NOTE:</u> If Breaker Trips look reason -

- More than one heating element on at a time
- Oven not insulated properly
- Shorted component





CONTROL SYSTEM continued

<u>LOCK CIRCUIT - THERMAL SWITCH (Single & Upper Oven)</u>

The thermal switch is in the lock switch circuit in the normally closed position. If the thermal switch opens during:

1. Oven Temperature Below 600°F.

- a. Bake, Broil or Convection Cooking the heating element will cycle
 "OFF", the lock motor will run and
 the word lock will appear in display
 along with the cooking function and
 temperature. "ON" will disappear
 from display.
 - If the thermal switch closes while the lock motor is in the unlocking phase of operation the unit will resume cooking.
 - If the thermal switch closes while the lock motor is in the locking phase of operation the program will be cancelled and return to time of day.
- b. Clean Mode Program is cancelled when thermal switch opens.
- 2. Oven Temperature Above 600°F.
 Any mode of operation control will go to -F2- failure code.

When this condition exists, check fan operation (look for obstructions), inspect oven installation (make sure grill areas are not blocked), oven insulation and lock circuit.

Thermal Switch Location Switch is located on fan partition behind control panel.

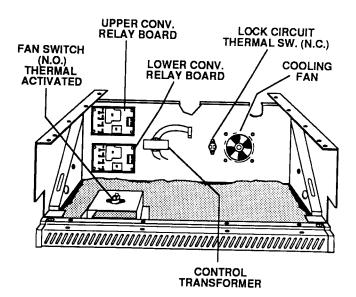
> Switch Opens - 216°F Switch Closes - 177°F

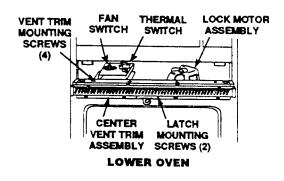
Lower Oven Thermal Limit Switch

The thermal limit switch is in the "L2" side of the line for the lower oven. If the switch opens during any mode of operation it will break power to the lower oven heating elements. The control will continue to display what ever was programed. The only indication will be no heat in the oven

Thermal Switch Location
Switch is located on the vent box for the lower oven.

Switch Opens - 300°F MANUAL RESET





ELECTRONIC CONTROL FAILURE CODES

FAILURE CODE	<u>MEANING</u>	CORRECTION
-F0- -F8- -FF-	Failed Component on Electronic Control Board	Determine mode of operation when initial Failure Code occurred. Repeat mode of operation. If failure re-occurs replace control.
-F1- -F7-	Double Line Break Relay is "ON" in a non-cooking /clean mode or failed com- ponent on Control.	 Keys Pads are separate from Control (Part of Control Panel). Determine if problem is with the Key Panel or Control by: Pushing CLEAR/OFF pad Disconnecting Ribbon Cable from control and wait at least 32 seconds to see if Code Re-occurs. If code re-occurs problem is in the Control. If code does not re-occur problem is with the Key Panel.
-F2-	Oven Over Temp. Door Unlocked - Oven exceeded 600°F. Door Locked - Oven exceeded 925°F.	Actual over Temperature condition occurs: • Look for welded relay contacts on the bake or broil relays.
	REMEMBER Control measures resistance of sensor circuit, and not actual oven temperature.	 Over Temperature did not occur: Look for a high resistance connection or other cause in the sensor circuit. (Intermittent Sensor or Sensor Circuit)
	DURING CLEAN	 Open thermal switch on rear wall of control compartment. Switch is normally closed and will open if area overheats due to inoperative cooling fan. Check fan operation. Both Lock switch 1 & 2 Closed at the same time.

ELECTRONIC CONTROL FAILURE CODES

Continued

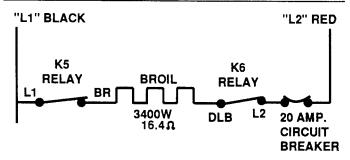
		oon time a
FAILURE	<u>MEANING</u>	CORRECTION
-F3- -F4-	Open Sensor Circuit Shorted Sensor Circuit	 Measure Sensor Circuit Resistance at sensor / Lock Switch Connector J3 or J4 (should read approx. 1100Ω at room temperature). Measure each lead to chassis ground (Should read ∞Ω). If Open / Shorted Circuit look for: Open / Shorted Sensor - measure directly across sensor (pull sensor wires into oven to access sensor in line connector). Remove sensor from circuit at in-line connector. Cut or pinched sensor harness wire. Loss of terminal contact at Control. One or both sensor leads shorted to ground. If Circuit Appears to be Normal (Approx. 1100Ω): Re-install sensor disconnect plug to Control
		and measure sensor resistance at solder joints on back of Control circuit board. If circuit is open problem is in the connector block. Remove terminals from block and reform to restore contact pressure.
-F9-	Both Lock Switch 1 & 2 are closed at the same time.	Check wiring to both door lock and unlock switches. Check for stuck lock switch.
door	Oven Door switch is in the "C" to "NC" position or Lock Motor does not turn.	Oven Door is either open, or the door switch is indicating that the door is open. • Check door switch operation: - Model has a plunger switch located on front frame. Door Motor Not Turning - Check: • Lock Motor and Lock Relay • Lock Motor Circuit and Lock Switch Circuits
-Fd-	Shorted Meat Probe	Oven Door switch is in the "C" to "NC" position. Make the following checks: • Make sure J4 Plug is plugged in the correct
[direction and connected to the Control.Check wiring and probe receptacle for short.

SINGLE & UPPER OVEN

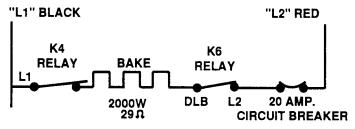
BAKE & TIME BAKE "L1" BLACK "L2" RED K4 RELAY K6 RELAY BAKE BA 2000W DLB L2 20 AMP. 29 N K5 RELAY CIRCUIT BROIL* **BREAKER** BR 3400W **16.4 Ω**

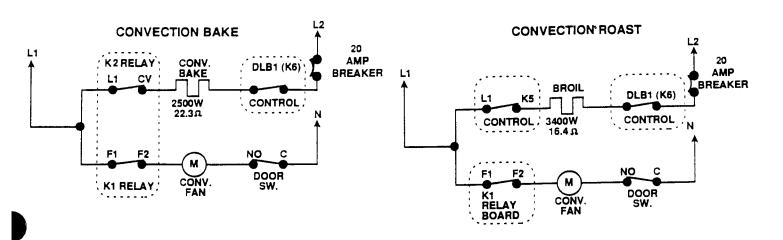
*APPROXIMATELY 25% ON TIME IN BAKE. K4 & K5 relays cannot be on at same time. BAKE ONLY during first (pre-heat) cycle.

BROIL & ** CLEAN-UNTIL FIRST OFF CYCLE

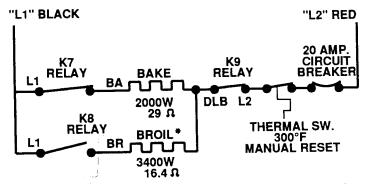


** CLEAN-REMAINDER OF CYCLE



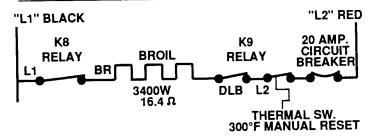


LOWER OVEN BAKE & TIME BAKE

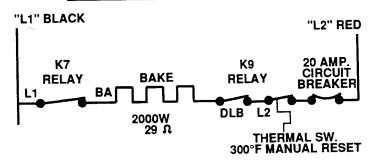


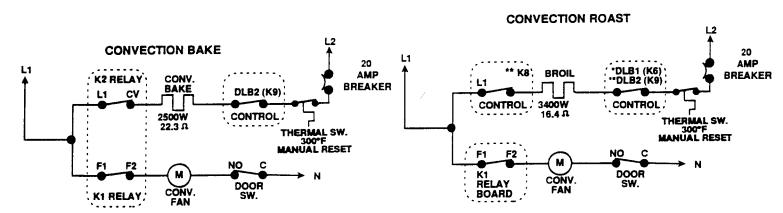
* APPROXIMATELY 25% ON TIME IN BAKE. K7 & K8 relays cannot be on at same time. BAKE ONLY during first (pre-heat) cycle.

BROIL & ** CLEAN-UNTIL FIRST OFF CYCLE



** CLEAN-REMAINDER OF CYCLE





LOWER OVENS WITH CONVECTION BAKE

LOWER OVENS WITH CONVECTION ROAST

SCHEMATIC WIRING DIAGRAM INDEX

MODEL NO.	DRAWING NO.	PAGE NO.
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