SERVICE DATA SHEET 318047482 (1106) Rev. B

Appliance with Electronic Oven Control

NOTICE

This service data sheet is intended for use by persons having electrical and mechanical training and a level of knowledge of these subjects generally considered acceptable in the appliance repair trade. **The manufacturer cannot be responsible, nor assume any liability, for injury or damage of any kind arising from the use of this data sheet.**

SAFE SERVICING PRACTICES

To avoid the possibility of personal injury and/or property damage, it is important that safe servicing practices be observed. The following are some, but not all, examples of safe practices.

1. Do not attempt a product repair if you have any doubts as to your ability to complete it in a safe and satisfactory manner.
2. Before servicing or moving an appliance, remove power cord from electric outlet, trip circuit breaker to Off, or remove fuse.
3. Never interfere with the proper installation of any safety device.
4. USE ONLY REPLACEMENT PARTS SPECIFIED FOR THIS APPLIANCE. SUBSTITUTIONS MAY DEFEAT COMPLIANCE WITH SAFETY STANDARDS SET FOR HOME APPLIANCES.
5. GROUNDING: The standard color coding for safety ground wires is GREEN OR GREEN WITH YELLOW STRIPES. Ground leads are not to be used as current carrying conductors. IT IS EXTREMELY IMPORTANT THAT THE SERVICE TECHNICIAN REESTABLISH ALL SAFETY GROUNDS PRIOR TO COMPLETION OF SERVICE. FAILURE TO DO SO WILL CREATE A POTENTIAL HAZARD.
6. Prior to returning the product to service, ensure that:
   - All electric connections are correct and secure.
   - All electrical leads are properly dressed and secured away from sharp edges, high-temperature components, and moving parts.
   - All uninsulated electrical terminals, connectors, heaters, etc. are adequately spaced away from all metal parts and panels.
   - All safety grounds (both internal and external) are correctly and securely reassembled.
   - All panels are properly and securely reassembled.

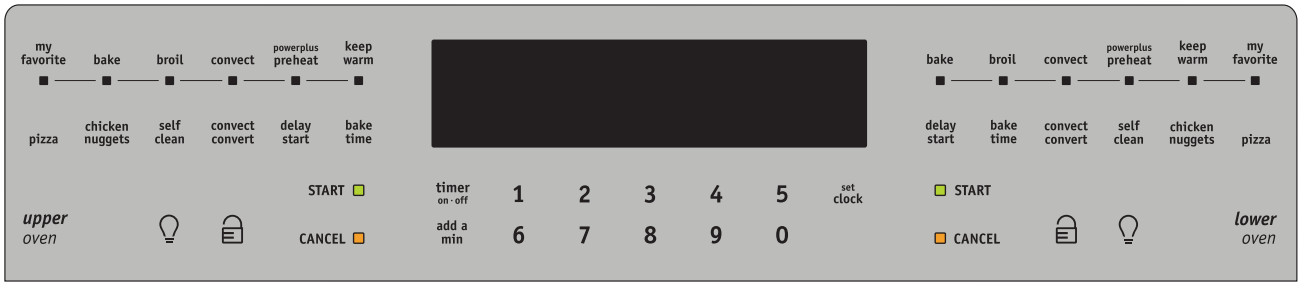
IMPORTANT NOTES

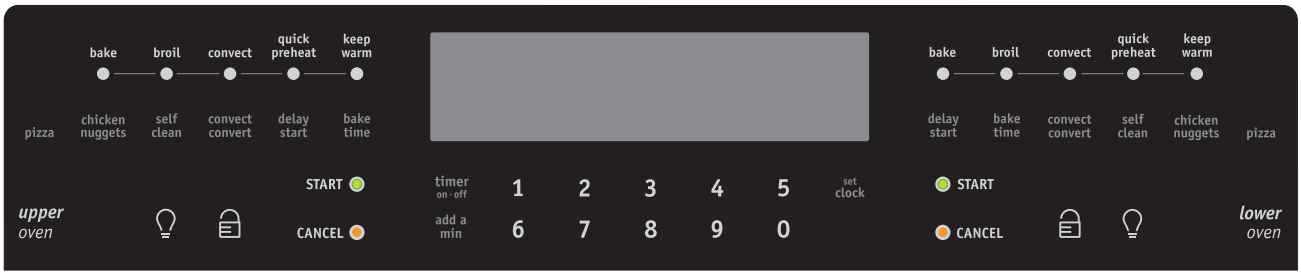
1. This unit includes an *EOC - Relay Board* and an *EOC - Display Board*.
2. The included board is not field repairable.
3. The oven temperature can be calibrated, see Use and Care Manual.
4. The ■ pin on board connectors indicates pin number 1.

DATA SHEET ABBREVIATIONS AND TERMINOLOGY

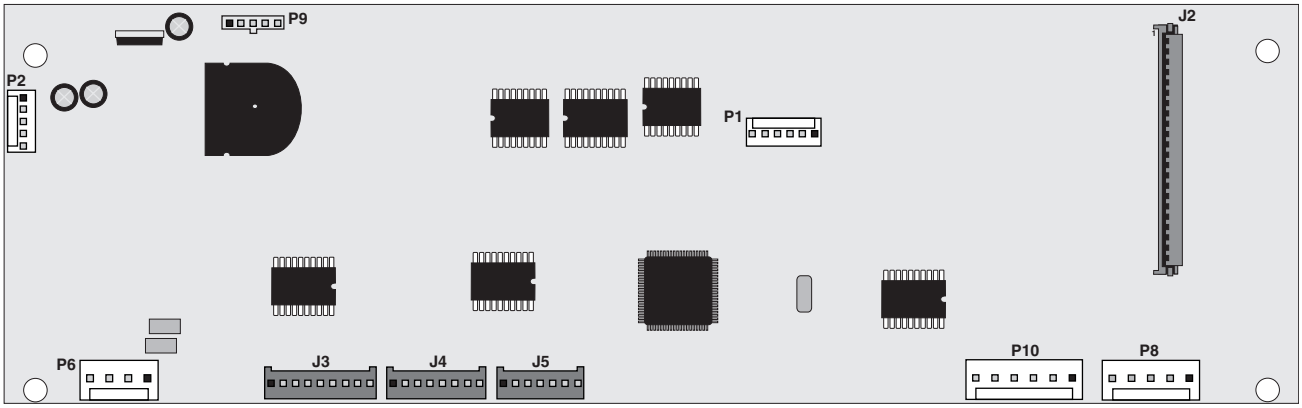
EOC : Electronic Oven Control
LED : Light-Emitting Diode
MDL : Motor Door Latch
DLB : Double Line Break
RTD : Resistance Temperature Detector / Oven Probe

ILLUSTRATION OF OVEN CONTROLS





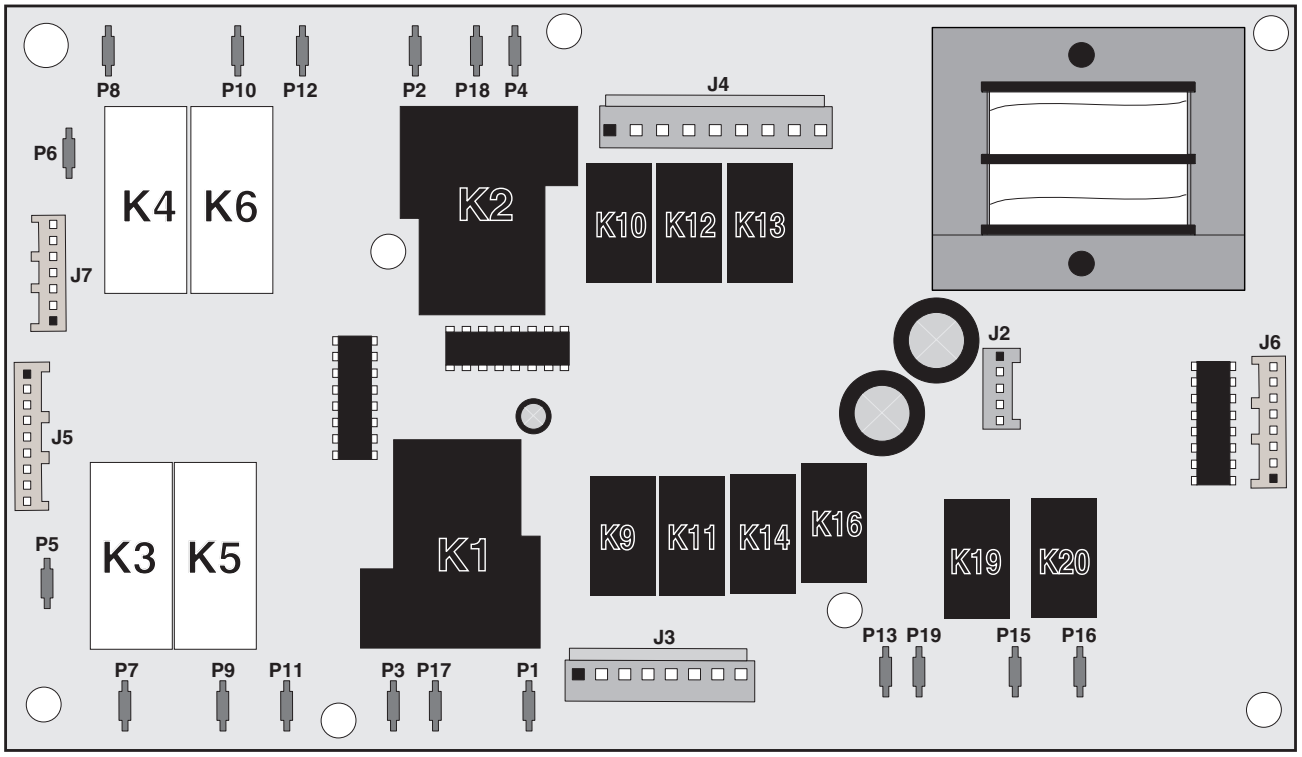
ELECTRONIC OVEN CONTROL (EOC) - DISPLAY BOARD



Display Board Legend:

J2 Keyboard connection.
P1 Micro programming (not used).
P2 DC power input.
J3 Relays control outputs (bake & broil elements, light, MDL, DLB, convection element, convection fan) for upper oven.
J4 Relays control outputs (cooling fan) for both ovens.
J5 Relays control outputs (bake & broil elements, light, MDL, DLB, convection element, convection fan) for lower oven.
P6 Temperature probe inputs.
P8 Door switch and MDL switch for upper oven.
P9 Cooling fan speed sensor input and supply.
P10 Door switch and MDL switch for lower oven.

ELECTRONIC OVEN CONTROL (EOC) - RELAY BOARD



Relay Board Legend:

P1 Double line break (L2 out), upper oven.
P2 Double line break (L2 out), lower oven.
P3 L2 in, upper oven.
P4 L2 in, lower oven.
P5 L1, upper oven.
P6 L1, lower oven.
P7 Broil, upper oven.
P8 Broil, lower oven.
P9 Bake, upper oven.
P10 Bake, lower oven.
P11 Not used.
P12 Not used.
P13 Convection element, upper oven.
P15 L1 in
P16 Convection element, lower oven.
P17 Not used.
P18 Not used.
P19 Not used.

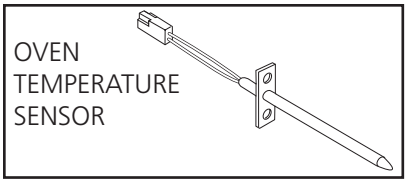
K1 Double line break relay, upper oven.
K2 Double line break relay, lower oven.
K3 Broil relay, upper oven.
K4 Broil relay, lower oven.
K5 Bake relay, upper oven.
K6 Bake relay, lower oven.
K9 Convection fan, upper oven.
K10 Convection fan, lower oven.
K11 Motor door latch relay, upper oven.
K12 Motor door latch relay, lower oven.
K13 Oven light relay, lower oven.
K14 Oven light relay, upper oven.
K16 Cooling fan.
K19 Convection element, upper oven.
K20 Convection element, lower oven.

J2 DC power output to display board.
J3 AC power outputs (motor door latch, light, cooling fan, convection fan) for upper oven.
J4 AC power outputs (motor door latch, light, convection fan) for lower oven.
L1 and Neutral input.
J5 Relays control inputs (bake & broil elements, light, motor door latch, DLB, convection fan) for upper oven.
J6 Relays control inputs (cooling fan, convection element upper / lower oven).
J7 Relays control inputs (bake & broil elements, light, motor door latch, DLB, convection fan) for lower oven.

RTD SCALE		
Temp. °F	Temp. °C	Resistance (ohms)
32 ± 1.9	0.0 ± 1.1	1000 ± 4.0
75 ± 2.5	23.9 ± 1.4	1091 ± 5.3
250 ± 4.4	121.1 ± 2.4	1453 ± 8.9
350 ± 5.4	176.7 ± 3.0	1654 ± 10.8
450 ± 6.9	232.2 ± 3.8	1852 ± 13.5
550 ± 8.2	287.8 ± 4.6	2047 ± 15.8
650 ± 9.6	343.3 ± 5.3	2237 ± 18.5
900 ± 13.6	482.2 ± 7.6	2697 ± 24.4

ELECTRICAL RATING		
	27" Model	30" Model
Broil Element Wattage	3400W / 2554W	4000W / 3004W
Bake Element Wattage	1450W / 1089W	2200W / 1652W
Convection Element Wattage	350W	350W or 500W♦
KW Rating 240/208V	See serial plate	

♦ Models with dual convection fans.



UPPER OVEN CIRCUIT ANALYSIS MATRIX

	On Relay Board								On Display Board
	ELEMENTS			Conv Fan	Oven Light	Door Motor	DLB	Cooling Fan	
	Bake P9	Broil P7	Conv P13	J3-4	J3-6	J3-5	L2 out P1	J3-7	Door Switch P8-3 / P8-5
Bake	X	X	X*	X*			X	X	
Broil		X					X	X	
Convection Bake	X	X	X	X			X	X	
Convection Roast	X	X	X	X			X	X	
Convection Broil		X		X			X	X	
Clean	X	X					X	X	
Locking / Unlocking						X			
Light					X				
Door Open					X				
Door Closed									X

LOWER OVEN CIRCUIT ANALYSIS MATRIX

	On Relay Board								On Display Board
	ELEMENTS			Conv Fan	Oven Light	Door Motor	DLB	Cooling Fan	
	Bake P10	Broil P8	Conv P16	J4-5	J4-7	J4-6	L2 out P2	J3-7	Door Switch P10-3 / P10-6
Bake	X	X	X*	X*			X	X	
Broil		X					X	X	
Convection Bake	X	X	X	X			X	X	
Convection Roast	X	X	X	X			X	X	
Convection Broil		X		X			X	X	
Clean	X	X					X	X	
Locking / Unlocking						X			
Light					X				
Door Open					X				
Door Closed									X

Relay will operate in this condition only

* Convection fan and element used during the first rise of temperature.

ELECTRONIC OVEN CONTROL (EOC) FAULT CODE DESCRIPTIONS

Note: Generally speaking "F1x" implies a control failure, "F3x" an oven probe problem, and "F9x" a latch motor problem.

Code	Condition/ Cause	Suggested Corrective Action
F10	Control has sensed a potential runaway oven condition. Control may have shorted relay, RTD sensor probe may have a gone bad.	- Check RTD sensor probe and replace if necessary. If oven is overheating, disconnect power. If oven continues to overheat when power is reapplied, replace the *EOC-Display Board*.
F11	Shorted Key: a key has been detected as pressed (for a long period) will be considered a shorted key alarm and will terminate all oven activity.	- Press Clear or Cancel key. - If fault returns, replace the keyboard (membrane). - If the problem persists, replace the *EOC- Display Board*.
F13	Control's internal checksum may have become corrupted.	- Press CLEAR key. - Disconnect power, wait 10 seconds ad reapply power. If fault returns upon power-up, replace *EOC- Display Board*.
F14	Misconnected keyboard cable.	- Disconnect power. Verify the flat cable connection between the keyboard membrane and the *EOC- Display Board* on J2. - If the problem persists, replace the *EOC- Display Board*. - If the connection is good but the problem persists, replace the keyboard (membrane switch).
F15	Controller self check failed.	- Replace the *EOC- Display Board*.
F30	Open RTD sensor probe/ wiring problem. Note: EOC may initially display an "F10", thinking a runaway condition exists.	- Check wiring in probe circuit for possible open condition. - Check RTD resistance at room temperature (compare to probe resistance chart). If resistance does not match the chart, replace the RTD sensor probe. - Let the oven cool down and restart the function - If the problem persists, replace the *EOC- Display Board*.
F31	Shorted RTD sensor probe / wiring problem.	
F43	The cooling fan speed, as read by the tachometer input of the EOC-display board, is abnormally too slow.	Determine first if the problem appears to be caused by a cooling fan not turning or turning slowly or by a problem with the sensing of the fan speed. Start a Bake and check during the first 15 seconds if the fan is turning (should feel air flowing through the vent above the upper oven door).
		If the fan does not appear to be turning or turn slowly check the 120VAC at the fan. If 120VAC is present at the fan motor but the fan does not turn replace the fan motor. If 120VAC is not present at the fan motor when a Bake is started check the connection to the relay board (J3 pin 7) and Neutral: is there 120VAC on J3 pin 7? Does it reach the fan motor? Is the other terminal of the fan motor connected to Neutral? If the harness or relay board are faulty replace them.
		If the fan appears to be normally turning but an F43 error code is generated, it means there is a problem with the reading of the fan speed sensor. Make sure the connection of the fan speed sensor is properly made (refer to wiring diagram), between the sensor on the fan and the EOC-display board.
		For trouble-shooting purposes, it is possible to enter a test mode that will indicate on the display the reading of the fan speed in RPM: to enter the test mode, power-up the unit and within 30 seconds press and hold the upper oven Bake and Broil keys for 3 seconds (until you see all segments in the screen illuminated). Once in the test mode, pressing the upper oven Light key once will display the fan speed in RPM. In normal client mode the F43 error is generated for a fan speed below approximately 700 RPM.
		If the connection of the sensor is good but there is still an F43 error code generated the problem can be caused by the fan+sensor assembly or by the EOC- display board. Check the fan sensor (located near shaft of the fan, next to connector) for damage. If problem persists replace both the fan+sensor assembly and the EOC-display board.

ELECTRONIC OVEN CONTROL (EOC) FAULT CODE DESCRIPTIONS

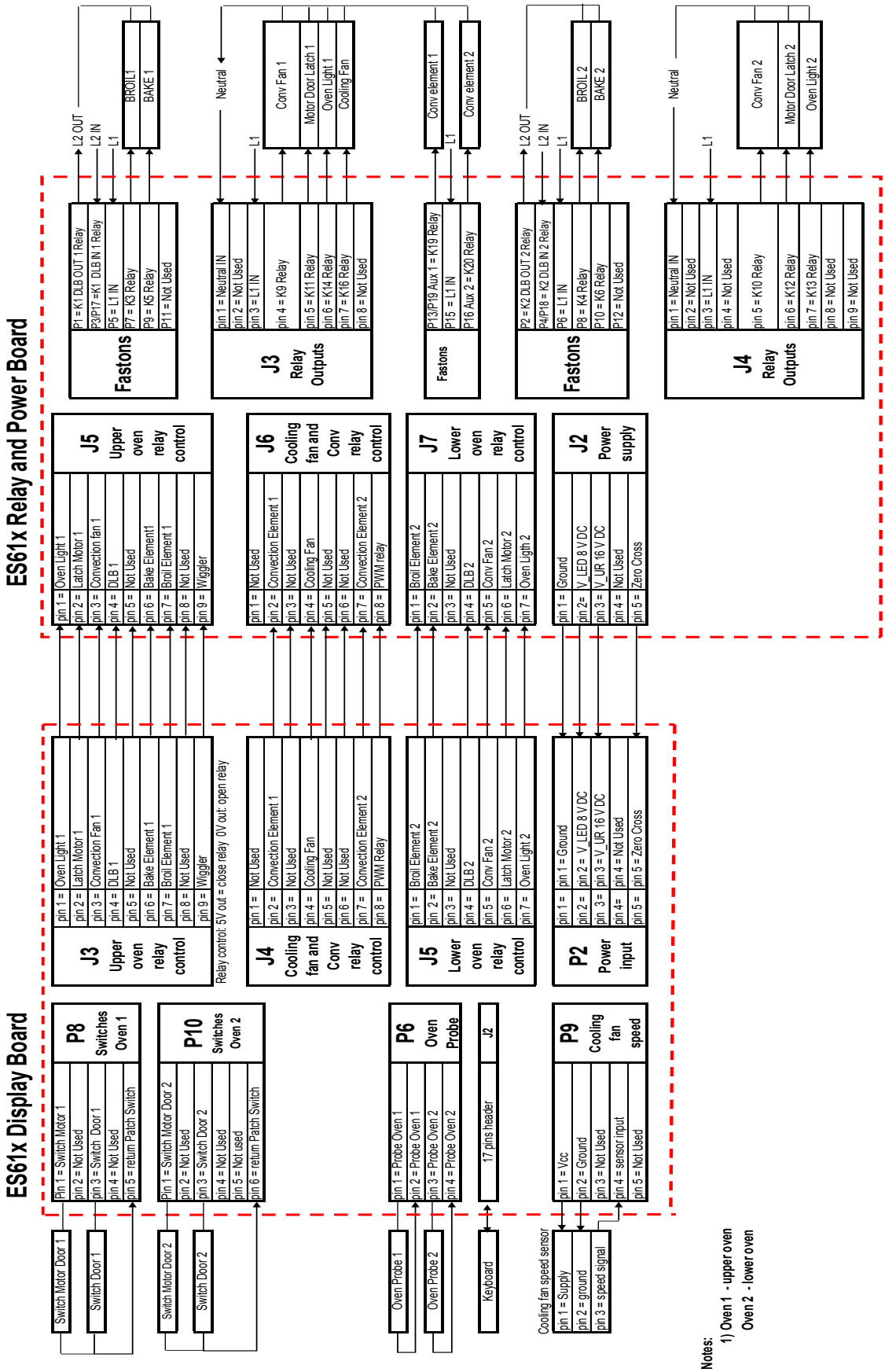
F44	The cooling fan speed, as read by the tachometer input of the EOC-display board, is abnormally too fast.	Inspect the cooling fan. Does it appear to be turning normally (air flow, noise)? Verify the fan blade is well assembled.
		Verify there is nothing blocking the air flow of the fan (that could make the fan turn faster).
		Check the 120VAC voltage on the fan. A voltage higher than 120VAC + 10% could make it go too fast.
		Make sure the connection of the fan speed sensor is properly made (refer to wiring diagram), between the sensor on the fan and the EOC-display board.
		For trouble-shooting purposes, it is possible to enter a test mode that will indicate on the display the reading of the fan speed in RPM: to enter the test mode, power-up the unit and within 30 seconds press and hold the upper oven Bake and Broil keys for 3 seconds (until you see all segments in the screen illuminated). Once in the test mode, pressing the upper oven Light key once will display the fan speed in RPM. In normal client mode the F44 error is generated for a fan speed above approximately 2500 RPM.
		If problem persists replace both the fan+sensor assembly and the EOC-display board.
F62	Missing zero-cross signal.	- The 60Hz synchronization signal (zero-cross) is sent by the *EOC-Relay Board* to the *EOC-Display Board*. Verify first the connection between the *EOC-Relay Board* on connector J2 pin 5 and the *EOC-Display Board* on connector P2 pin 5 (check for continuity). - If wiring is good, replace the *EOC-Relay Board*. - If problem persists, replace the *EOC- Display Board*.
F90	Door motor mechanism failure. The controller does not see the motor rotating.	- Press CLEAR key. - If CLEAR key does not eliminate problem, turn off power for 30 seconds, then turn on power. - Check wiring of Lock Motor, Lock Switch and Door Switch circuits. - Unplug the lock motor from the board and apply power (L1) directly to the Lock Motor. If the motor does not rotate, replace Lock Motor Assembly. - Check Lock Switch for proper operation (do they open and close, check with ohmmeter). The Lock Motor may be powered as in above step to open and close Lock Switch. If the Lock Switch is defective, replace Motor Lock Assembly. - If all above steps fail to correct situation, replace the *EOC- Display Board* or the *EOC- Relay Board* in the event of a motor that does not rotate.

COOLING FAN & FAN SPEED SENSOR

This double wall oven is equipped with a cooling fan located on top of the upper cavity. The fan is controlled by the EOC. The cooling fan is activated anytime the oven is used for cooking or cleaning. It may also remain ON for some time after the oven has been used, until the oven cavity has cooled down enough. The fan motor is energized using relay K16 on the EOC-relay board.

The oven is equipped with a sensor that monitors the speed of the cooling fan. The sensor is connected to the EOC - display board, where the speed is read. Anytime the cooling fan is supposed to be active, the EOC checks the speed against a "speed too low" and a "speed too high" threshold. If the speed falls out of range, the EOC will generate an F43 error code (detecting fan is turning too slowly or not turning) or F44 error code (detecting fan is turning too fast).

OVEN BLOCK DIAGRAM FOR MODEL



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