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# SERVICE DATA SHEET

Appliance with Electronic Oven Control

318204811 (0911) Rev. B

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## 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

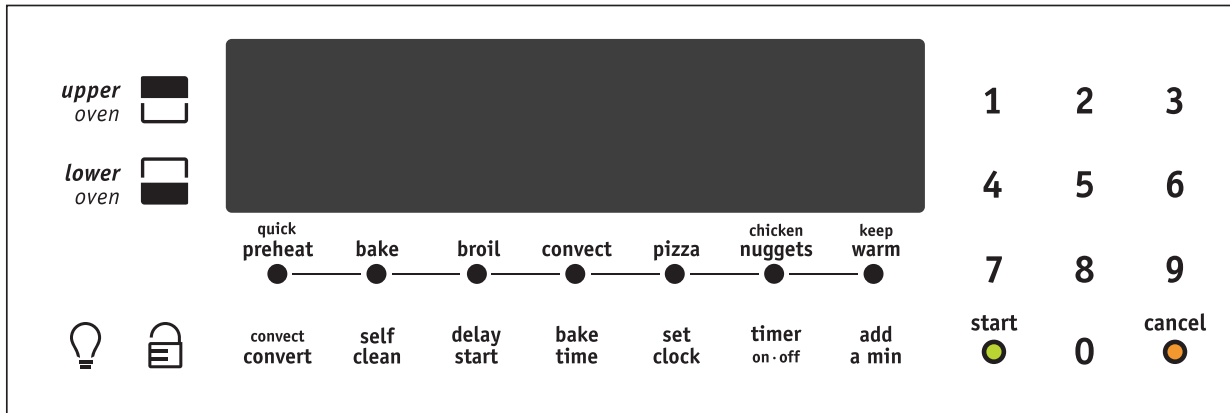
1. This unit includes an *EOC - Relay Board*, an *EOC - Display Board*, an *ESEC-UIB*, an *ESEC-Relay Board* and an *ESEC-RHIB*.
2. The included board is not field repairable.
3. The oven temperature can be calibrated, see Use and Care Manual.
4. The ■ pin on board connectors indicates pin number 1.

## DATA SHEET ABBREVIATIONS AND TERMINOLOGY

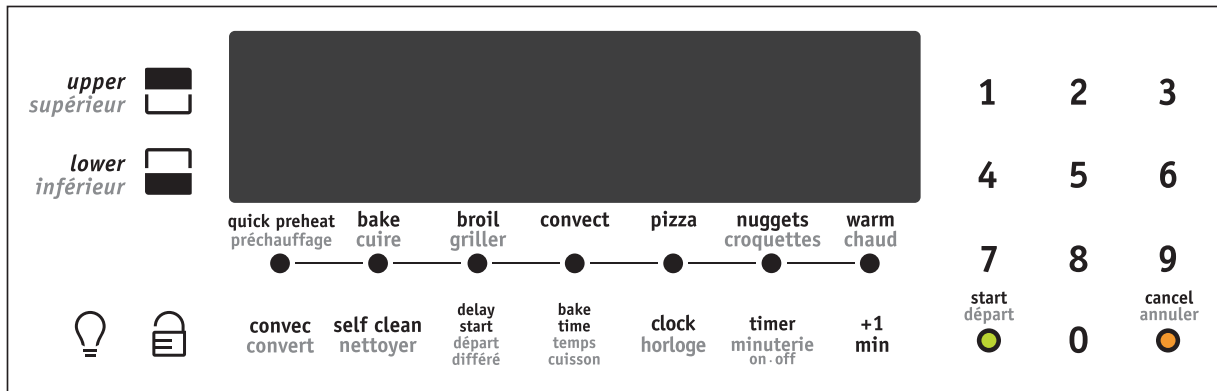
EOC : Electronic Oven Control  
LED : Light-Emitting Diode  
MDL : Motor Door Latch  
DLB : Double Line Break  
RTD : Resistance Temperature Detector / Oven Probe

## ILLUSTRATION OF OVEN CONTROLS

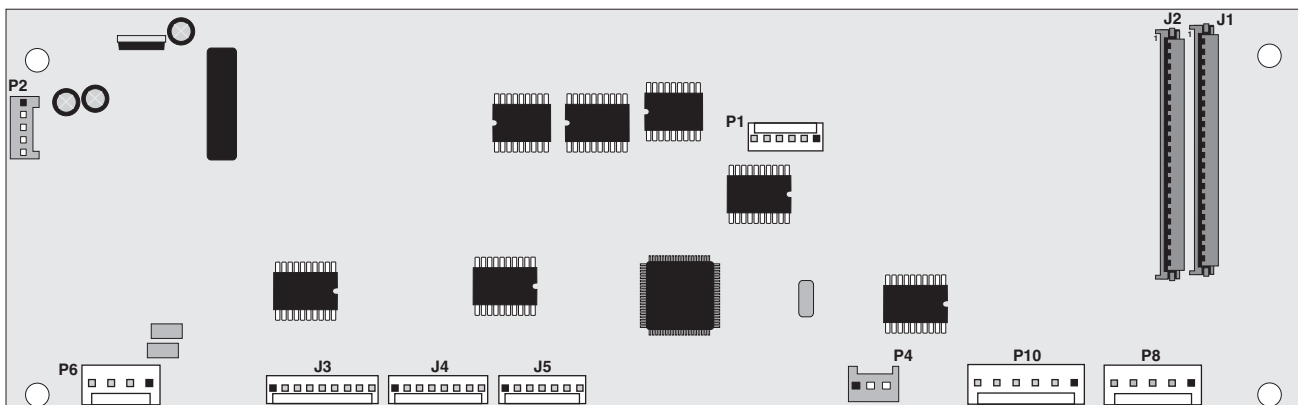
### American Model



### Canadian Model



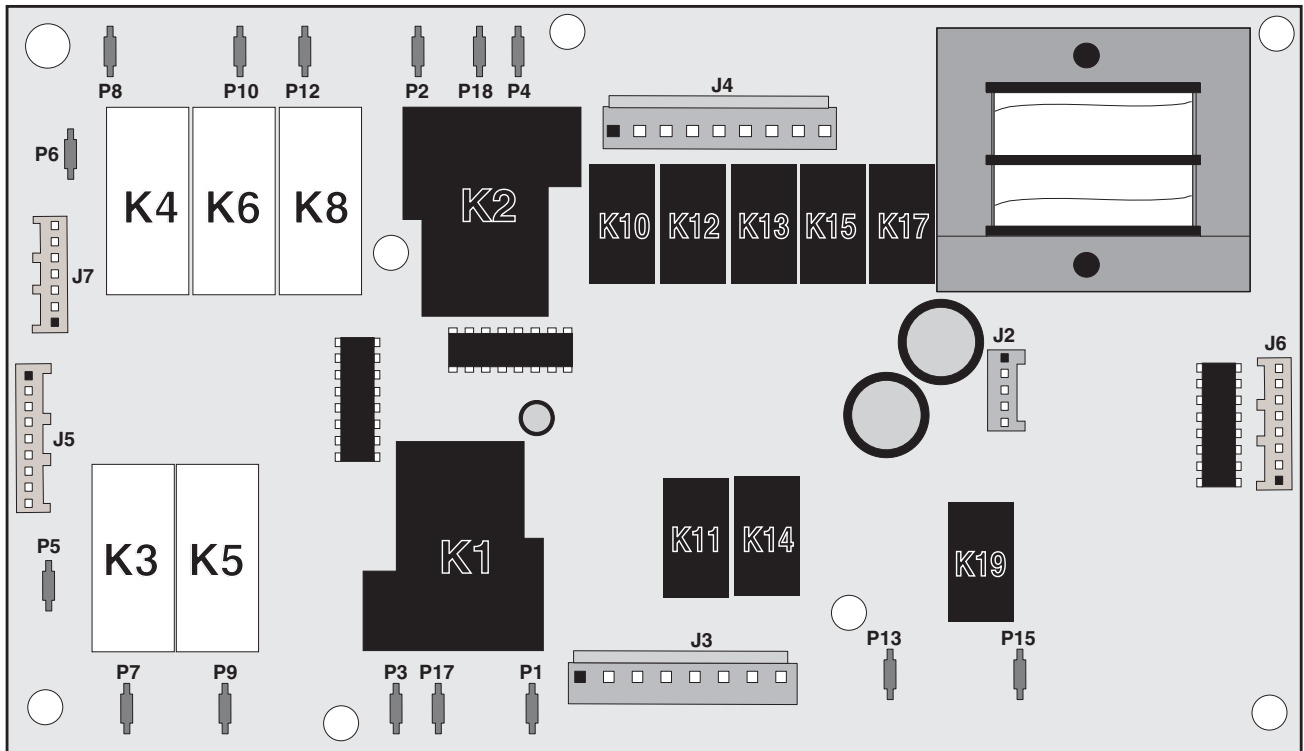
## ELECTRONIC OVEN CONTROL (EOC) - DISPLAY BOARD



### Display Board Legend:

- J1** External LEDs connection.
- J2** Keyboard connection.
- P1** Micro programming (not used).
- P2** DC power input.
- J3** Relays control outputs (bake & broil elements, light, MDL, DLB) for upper oven.
- J4** Relays control outputs (cooling fan) for lower oven and warmer zone element.
- J5** Relays control outputs (bake, broil and convection elements, light, MDL, DLB, convection fan) for lower oven.
- P4** Communication with the ESEC control (P7)
- P6** Temperature probe inputs.
- P8** Door switch and MDL switch for upper oven.
- P10** Door switch and MDL switch for lower oven.

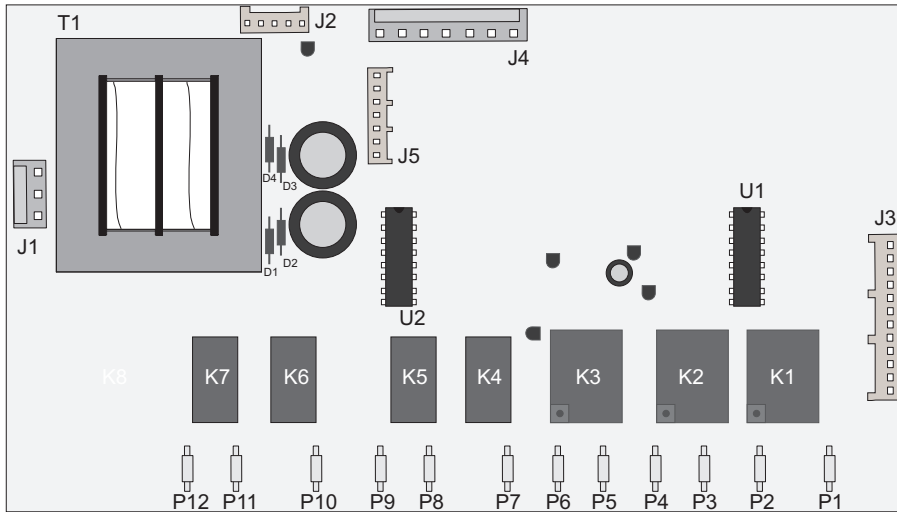
## ELECTRONIC OVEN CONTROL (EOC) - RELAY BOARD



### Relay Board Legend:

- |   |   |
|---|---|
| <b>P1</b> Double line break (L2 out), upper oven.   | <b>K1</b> Double line break relay, upper oven.        |
| <b>P2</b> Double line break (L2 out), lower oven.   | <b>K2</b> Double line break relay, lower oven.        |
| <b>P3</b> L2 in, upper oven.  | <b>K3</b> Broil relay, upper oven.                    |
| <b>P4</b> L2 in, lower oven.  | <b>K4</b> Broil relay, lower oven.                    |
| <b>P5</b> L1, upper oven.   | <b>K5</b> Bake relay, upper oven.                     |
| <b>P6</b> L1, lower oven.   | <b>K6</b> Bake relay, lower oven.                     |
| <b>P7</b> Broil, upper oven.  | <b>K8</b> Convection element relay, lower oven.       |
| <b>P8</b> Broil, lower oven.  | <b>K10</b> Convection fan, lower oven.                |
| <b>P9</b> Bake, upper oven.   | <b>K11</b> Motor door latch relay, upper oven.        |
| <b>P10</b> Bake, lower oven.  | <b>K12</b> Motor door latch relay, lower oven.        |
| <b>P12</b> Convection element, lower oven.  | <b>K13</b> Oven light relay, lower oven.              |
| <b>P13</b> Warmer zone element  | <b>K14</b> Oven light relay, upper oven.              |
| <b>P15</b> L1 in, warmer zone   | <b>K15</b> Cooling fan, low speed relay, lower oven.  |
| <b>P17</b> Not used.  | <b>K17</b> Cooling fan, high speed relay, lower oven. |
| <b>P18</b> Not used.  | <b>K19</b> Aux1 / Warmer zone relay.                  |
| <b>J2</b> DC power output to display board.   |   |
| <b>J3</b> AC power outputs (motor door latch, light) for upper oven. L1 and Neutral input.                              |   |
| <b>J4</b> AC power outputs (motor door latch, light, cooling fan, convection fan) for lower oven. L1 and Neutral input. |   |
| <b>J5</b> Relays control inputs (bake & broil elements, light, motor door latch, DLB) for upper oven.                   |   |
| <b>J6</b> Relays control inputs (cooling fan) for lower oven, warmer zone element.                                      |   |
| <b>J7</b> Relays control inputs (bake & broil elements, light, motor door latch, DLB, convection fan) for lower oven.   |   |

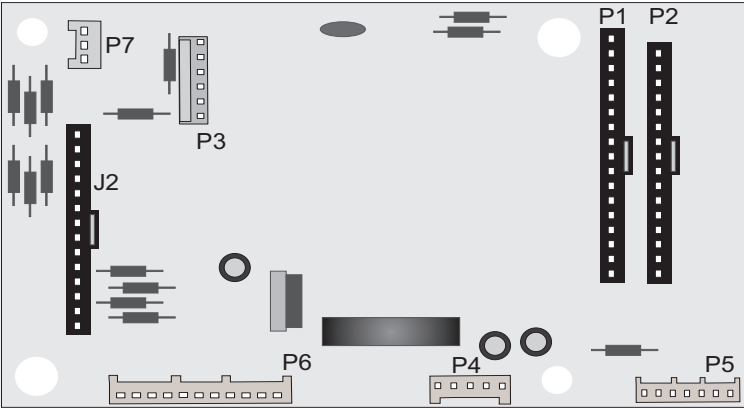
## ELECTRONIC SURFACE ELEMENT CONTROL - RELAY BOARD



### ESEC Relay Board Legend:

Connector	Description	Relay
P1	Right Front Inner Element Connection	K1
P2	L2 In	
P3	L2 In	
P4	Left Front Outer Element Connection	K2
P5	Left Rear Element Connection	K3
P6	L2 In	
P7	Right Front Outer Element Connection	K4
P8	L2 In	
P9	Not used	K5
P10	Right Rear Element Connection	K6
P11	L2 In	
P12	Left Front Inner Element Connection	K7
J1	Line Voltage Input (120V, Neutral)	
J2	Low Voltage Supply Output for UIB	
J3	Surface Element Relay Control Inputs	
J4	Hot Surface Inputs (from surface element)	
J5	Hot Surface Output to UIB	

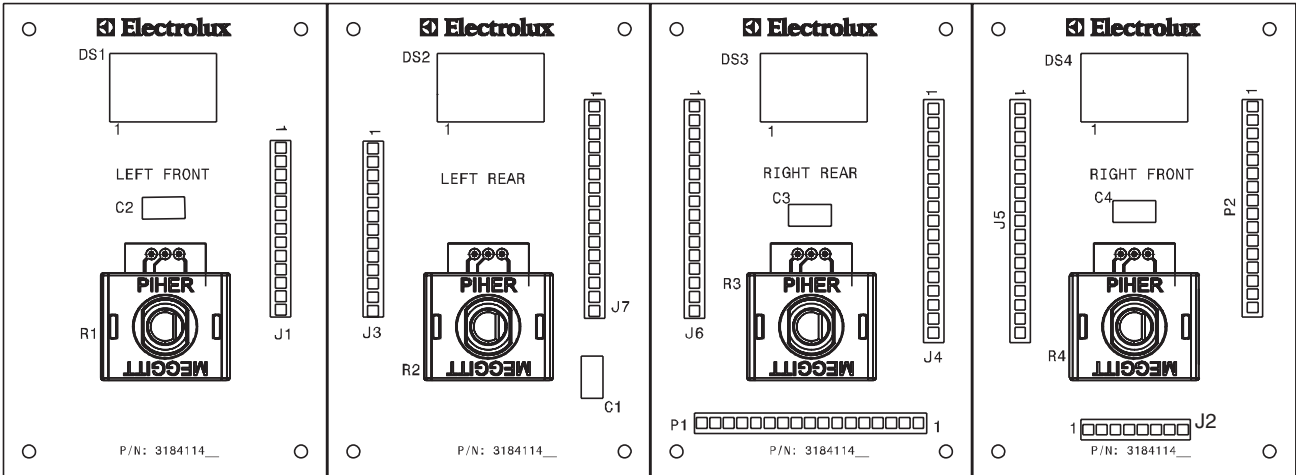
## ELECTRONIC SURFACE ELEMENT CONTROL - USER INTERFACE BOARD



**User Interface Board (UIB) Legend:**

- J2. Connector for Potentiometer read state on ESEC RHIB.
- P1. Connector for left side LEDs and Display Indicators on ESEC RHIB.
- P2. Connector for right side LEDs Display Indicators on ESEC RHIB.
- P3. Micro Programming Header (Not Used)
- P4. Power Supply Input
- P5. Hot Surface Input
- P6. Surface Elements Relay Controls
- P7. Communication with EOC- Display Board (P4)

## ELECTRONIC SURFACE ELEMENT CONTROL - ROTARY HUMAN INTERFACE BOARD

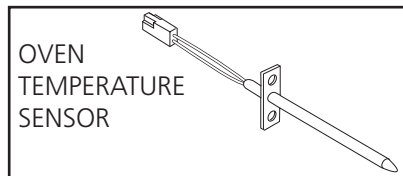


**ESEC - Rotary Human Interface Board Legend:**

- J1. Connected to J3
- J2. Connected to J2 - ESEC20 UIB
- J3. Connected to J1
- J4. Connected to J5
- J5. Connected to J4
- J6. Connected to J7
- J7. Connected to J6
- P1. Connected to P1 - ESEC20 UIB
- P2. Connected to P2 - ESEC20 UIB

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		
	Lower Oven	Upper Oven
<b>Broil Element Wattage</b>	3400W / 2553W	3000W / 2253W
<b>Bake Element Wattage</b>	2500W / 1878W	2200W / 1652W
<b>Convection Element Wattage</b>	350W	N/A
<b>KW Rating</b>	See serial plate	



UPPER OVEN CIRCUIT ANALYSIS MATRIX							
	On Relay Board					On Display Board	
	ELEMENTS			Oven Light J3-6	Door Motor J3-5	DLB L2 out P1	Door Switch P8-3 / P8-5
	Bake P9	Broil P7					
Bake	X	X			X		
Broil		X			X		
Clean	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 J4-5	Oven Light J4-7	Door Motor J4-6	DLB L2 out P2	Cooling Fan Low Speed J4-8	Cooling Fan High Speed J4-9	Door Switch P10-3 / P10-6
	Bake P10	Broil P8	Conv P12							
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	X	
Locking / Unlocking					X					
Light					X					
Door Open					X					
Door Closed										X

Relay will operate in this condition only

## 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.	<b>1)</b> 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 <i>EOC-Display Board</i> .
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.	<b>1)</b> Press Clear or Cancel key. <b>2)</b> If fault returns, replace the keyboard (membrane). <b>3)</b> If the problem persists, replace the <i>EOC- Display Board</i> .
F13	Control's internal checksum may have become corrupted.	<b>1)</b> Press CLEAR key. <b>2)</b> Disconnect power, wait 10 seconds and reapply power. If fault returns upon power-up, replace <i>EOC- Display Board</i> .
F14	Misconnected keyboard cable.	<b>1)</b> Disconnect power. Verify the flat cable connection between the keyboard membrane and the <i>EOC- Display Board</i> on J2. <b>2)</b> If the problem persists, replace the <i>EOC- Display Board</i> . <b>3)</b> If the connection is good but the problem persists, replace the keyboard (membrane switch).
F15	Controller self check failed.	<b>1)</b> Replace the <i>EOC- Display Board</i> .
F20	Control has detected a problem with the communication link with the ESEC.	<b>1)</b> Check connection between P4 on EOC and P7 on ESEC-UIB. <b>2)</b> If problem persist, replace ESEC-UIB. <b>3)</b> If all above steps failed to correct situation, replace EOC.
F30	Open RTD sensor probe/ wiring problem. Note: EOC may initially display an "F10", thinking a runaway condition exists.	<b>1)</b> Check wiring in probe circuit for possible open condition. <b>2)</b> Check RTD resistance at room temperature (compare to probe resistance chart). If resistance does not match the chart, replace the RTD sensor probe. <b>3)</b> Let the oven cool down and restart the function. <b>4)</b> If the problem persists, replace the <i>EOC- Display Board</i> .
F31	Shorted RTD sensor probe / wiring problem.	
F62	Missing zero-cross signal.	<b>1)</b> The 60Hz synchronization signal (zero-cross) is sent by the <i>EOC-Relay Board</i> to the <i>EOC-Display Board</i> . Verify first the connection between the <i>EOC-Relay Board</i> on connector J2 pin 5 and the <i>EOC-Display Board</i> on connector P2 pin 5 (check for continuity). <b>2)</b> If wiring is good, replace the <i>EOC-Relay Board</i> . <b>3)</b> If problem persists, replace the <i>EOC- Display Board</i> .
F90	Door motor mechanism failure. The controller does not see the motor rotating.	<b>1)</b> Press CLEAR key. <b>2)</b> If CLEAR key does not eliminate problem, turn off power for 30 seconds, then turn on power. <b>3)</b> Check wiring of Lock Motor, Lock Switch and Door Switch circuits. <b>4)</b> 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. <b>5)</b> 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. <b>6)</b> If all above steps fail to correct situation, replace the <i>EOC- Display Board</i> or the <i>EOC- Relay Board</i> in the event of a motor that does not rotate.

## ELECTRONIC SURFACE ELEMENT CONTROL (ESEC) FAULT CODE DESCRIPTIONS

<b>E013</b>	Bad EEPROM.	Replace <i>ESEC-UIB</i> .
<b>E014</b>	Loss of Display tail #0.	Check connection P1 on <i>ESEC-UIB</i> and P1 on ESEC Rotary HI Board (RR).
	Loss of Display tail #1.	Check connection P2 on <i>ESEC-UIB</i> and P2 on ESEC Rotary HI Board (RF).
	Loss of Keyboard Tail.	Check connection J2 on <i>ESEC-UIB</i> and J8 (RF).
<b>E015</b>	ESEC self test failed.	An E015 error code may indicate the <i>ESEC-UIB</i> is not receiving a synchronization signal from the <i>ESEC-Relay Board</i> . Check first if J2 pin 5 on the <i>ESEC-Relay Board</i> is wired to P4 pin 5 on the <i>ESEC-UIB</i> . If wiring is good and the problem is still there, replace the <i>ESEC-UIB</i> . If the problem persists, replace the <i>ESEC-Relay Board</i> .

