

SERVICE DATA SHEET

Electric Range with ES 585 Electronic Oven Control & Pan Sensing

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 examples, but without limitation, of such practices.

- Before servicing or moving an appliance remove power cord from electrical outlet, trip circuit breaker to OFF, or remove fuse.
- Never interfere with the proper installation of any safety device.
- 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 safety hazard.**
- 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.

Oven Calibration

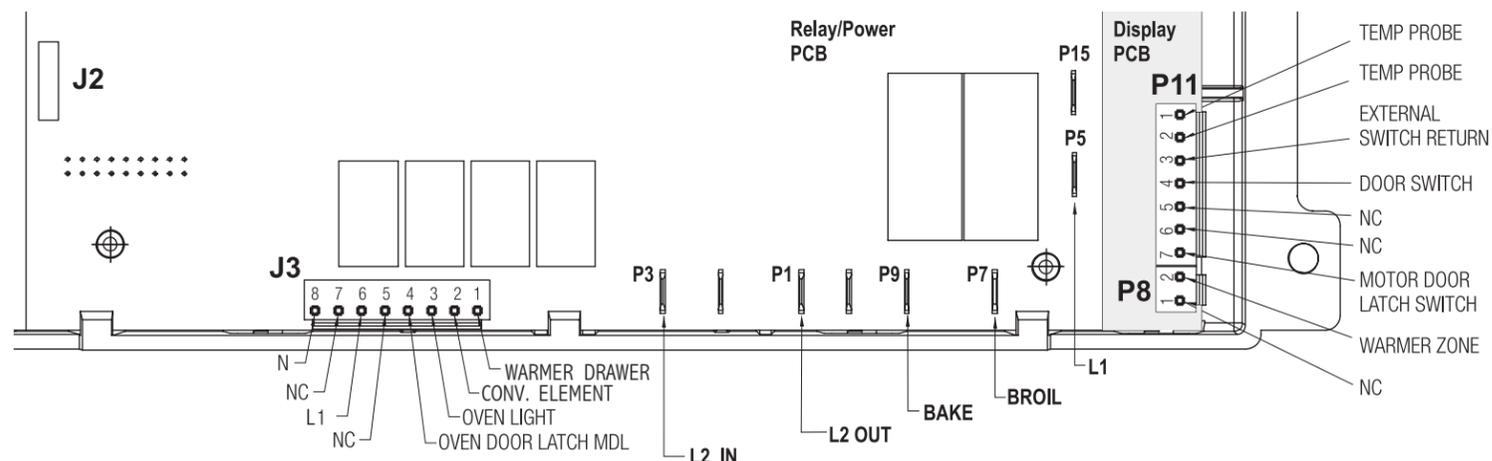
Set the electronic oven control for normal baking at 350°F. Obtain an average oven temperature after a minimum of 5 cycles. Press **STOP** or **CLEAR** keypad to end Bake mode.

Temperature Adjustment

- While in a non-cooking mode, press and hold the **BAKE** key pad for 6 seconds.
- The current calibration offset (temperature adjustment) should appear in the temperature display.
- Use the number key pads (0-9) to enter the desired amount of adjustment (up to 35°F).
- Press the **CLEAN** key pad to change the sign of the adjustment to a (-) if necessary. A positive adjustment will not display a sign.
- Once the desired adjustment (-35° to 35° F) has been entered, press the **START** key pad to accept the change or the **STOP** or **CLEAR** key pad to reject the change.

Note: Changing calibration affects all Baking modes. The adjustments made will not change the self-cleaning temperature.

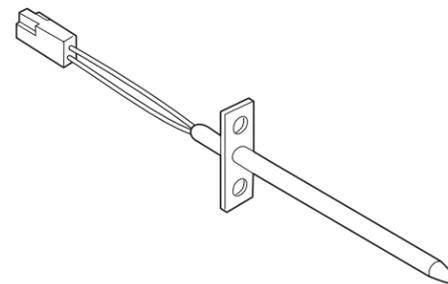
Electronic Oven Control & Jumper Connections (EOC Rear View)



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 WIRING DIAGRAMS AND SERVICE
 INFORMATION ENCLOSED
REPLACE CONTENTS IN BAG

p/n 316519919 (0708) EN

Resistance Temperature Detector (RTD)



Resistance Temperature Detector Scale

RTD SCALE	
Temperature (°F)	Resistance (ohms)
32 ± 1.9	1000 ± 4.0
75 ± 2.5	1091 ± 5.3
250 ± 4.4	1453 ± 8.9
350 ± 5.4	1654 ± 10.8
450 ± 6.9	1852 ± 13.5
550 ± 8.2	2047 ± 15.8
650 ± 9.6	2237 ± 18.5
900 ± 13.6	2697 ± 24.4

Electronic Oven Control Fault Code Descriptions

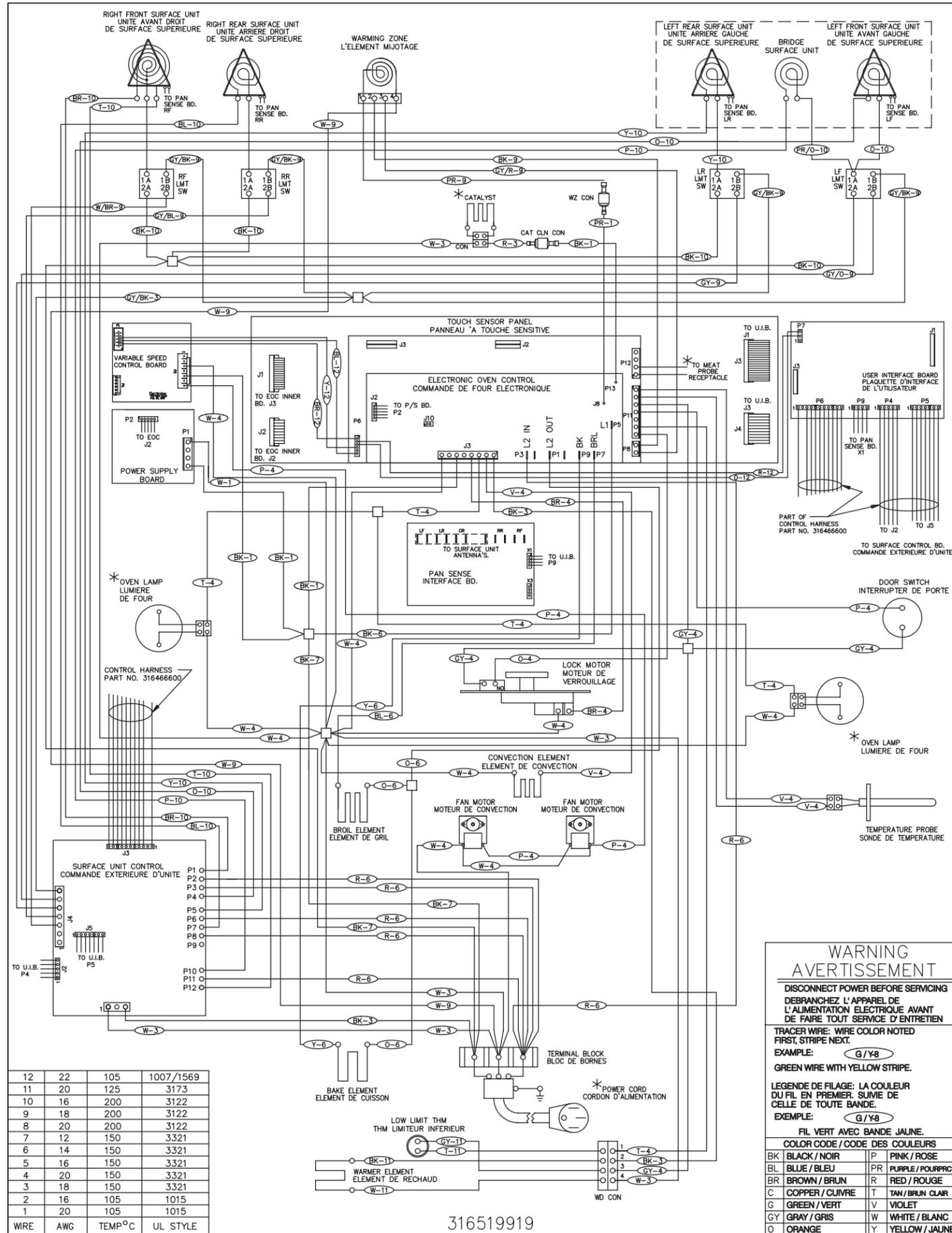
Fault Code	Likely Failure Condition/Cause	Suggested Corrective Action
F10	Runaway Temperature.	1. (F10 only) Check RTD Sensor Probe & replace if necessary. If oven is overheating, disconnect power. If oven continues to overheat when the power is reapplied, replace EOC. Severe overheating may require the entire oven to be replaced should damage be extensive. 2. (F11, 12 & 13) Disconnect power, wait 30 seconds and reapply power. 3. (F11, 12 & 13) If fault returns upon power-up, replace EOC.
F11	Shorted Keypad.	
F12	Bad Micro Identification.	
F13	Bad EEPROM Identification/Checksum error.	
F20	Communication failure between EOC & ESEC system <i>(for electric range models ONLY)</i>	1. Test harness/connections P4 (EOC) & P7 (Surface Element Control Board) 2. If harness checks O.K. failure can be caused by faulty UIB, Surface Element Control Board or EOC.
F26	Communication failure with Mini Oven Control Board. <i>(for models equipped with Bake-n-Warm™ ONLY)</i>	1. Check harness & connectors from the EOC to Mini Oven Control Board. Check for 15VDC to Mini Oven Control Board (red & gray wires). If harness and voltage are good replace Mini Oven Control Board. If fault returns replace the EOC.
F30	Shorted Probe connection.	1. (F30 or F31) Check resistance at room temperature & compare to RTD Sensor resistance chart. If resistance does not match the RTD chart replace RTD Sensor Probe. Check Sensor wiring harness between EOC & Sensor Probe connector. 2. (F30 or F31) Check resistance at room temperature, if less than 500 ohms, replace RTD Sensor Probe. Check for shorted Sensor Probe harness between EOC & Probe connector.
F31		
F90	Maximum oven door unlock time exceeded.	1. (F90) Check the wiring between EOC & Lock Motor Micro Switch. 2. (F90) Replace the Motor Door Latch assembly if necessary. 3. (F90) Check for binding of the Latch Cam, Lock Motor Rod & Lock Motor Cam. 4. (F90) Check to see if Lock Motor Coil is open. If open, replace Lock Motor Assembly. 5. (F90) Lock Motor continuously runs - if Micro Switch is open, replace Lock Motor Assembly. 6. (F90) Check oven door Light Switch - if open, replace Switch. 7. If all situations above do not solve problem, replace EOC.
F91	Maximum oven door unlock attempts exceeded.	
F92	Maximum oven door open time exceeded.	
F93	Maximum oven door lock time exceeded.	
F94	Maximum oven door lock attempts exceeded.	
F95	Door Latch	

Circuit Analysis Matrix

	EOC Relays				Door Switch COM-NO	Warmer Drawer Lock Switch (Motor Door Latch)
	L1 to Bake	L1 to Broil	L1 to Motor Door Latch	L1 to Conv/Speed Bake Fan		
Bake/Time Bake	X	X*				X
Conv/Speed Bake	X	X*		X		X
Broil		X				X
Clean	X					
Unlocked						X
Locking			X			X
Locked						
Unlocking			X			X
Door Open						
Door Closed					X	
Cooktop Active						

Note: X=Check listed circuits. *=Alternates with Bake element.

General Troubleshooting Diagram



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Electric Smoothtop Ranges with ESEC20 and Pan Sensing

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3. **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 safety hazard.**
4. Prior to returning the product to service, ensure that:
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ELECTRONIC SURFACE ELEMENT CONTROL (ESEC)

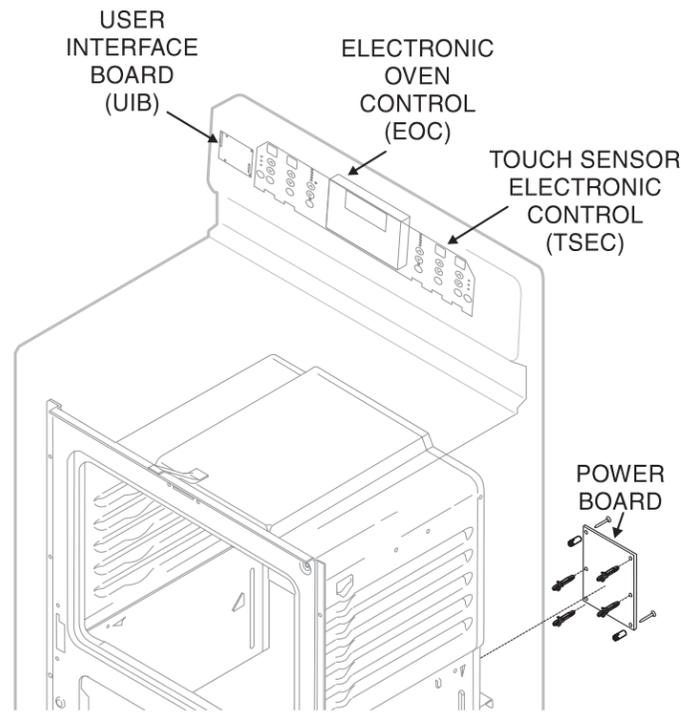
This range is equipped with an Electronic Surface Element Control (ESEC), which precisely controls the smoothtop cooking elements at multiple settings. (The Warming Zone element is not controlled by the ESEC). For the user, the elements are operated by pressing the touch pads for the surface elements located on the control panel for the desired settings. The control settings are shown in 2 digital displays.

Hot Surface Indicator Lights - If any of the surface elements are hot, the "Hot Surface" indicator lights will glow and remain ON until the cooktop becomes sufficiently cool.

ESEC Lockout Feature (" - ") - The electronic oven control's Clean and Lock features will not operate when a surface element is ON. Conversely, the surface elements controlled by the ESEC will not operate when an oven control Clean or Cooktop Lockout mode is active. When the oven control is in a Clean or Cooktop Lockout mode, "- -" will appear in the ESEC displays to signify that the surface elements are locked out.

ESEC System Components

- The ESEC system consists of the following components:
- **Power Board.** The control board mounted is mounted with standoffs and 2 screws on the lower back of the range.
 - **UIB** or User Interface Board. This circuit board is mounted with 4 screws in the backguard.
 - **TSEC** or Touch Sensor Electronic Control. The TSEC controls the touch pads for all surface element controls.
 - **ESEC Harness** connects the ESEC system components and communicates with the EOC (Electronic Oven Control).
 - **Pan Sense Interface Board.** Circuit board is mounted in the backguard and communicates pan pressure to UIB.



Notes on Replacing Parts

Replacing the Power Board* - When replacing the main control board (power board) on the back of the range, do not over-tighten the 2 screws that secure the Power Board. A torque of only 10 in.-lbs. is required to tighten the screws. Over-tightening the screws can damage the plastic standoffs and possibly the board itself.

Replacing the TSEC - The Touch Sensor Electronic Control includes several parts and must be replaced as an assembly.

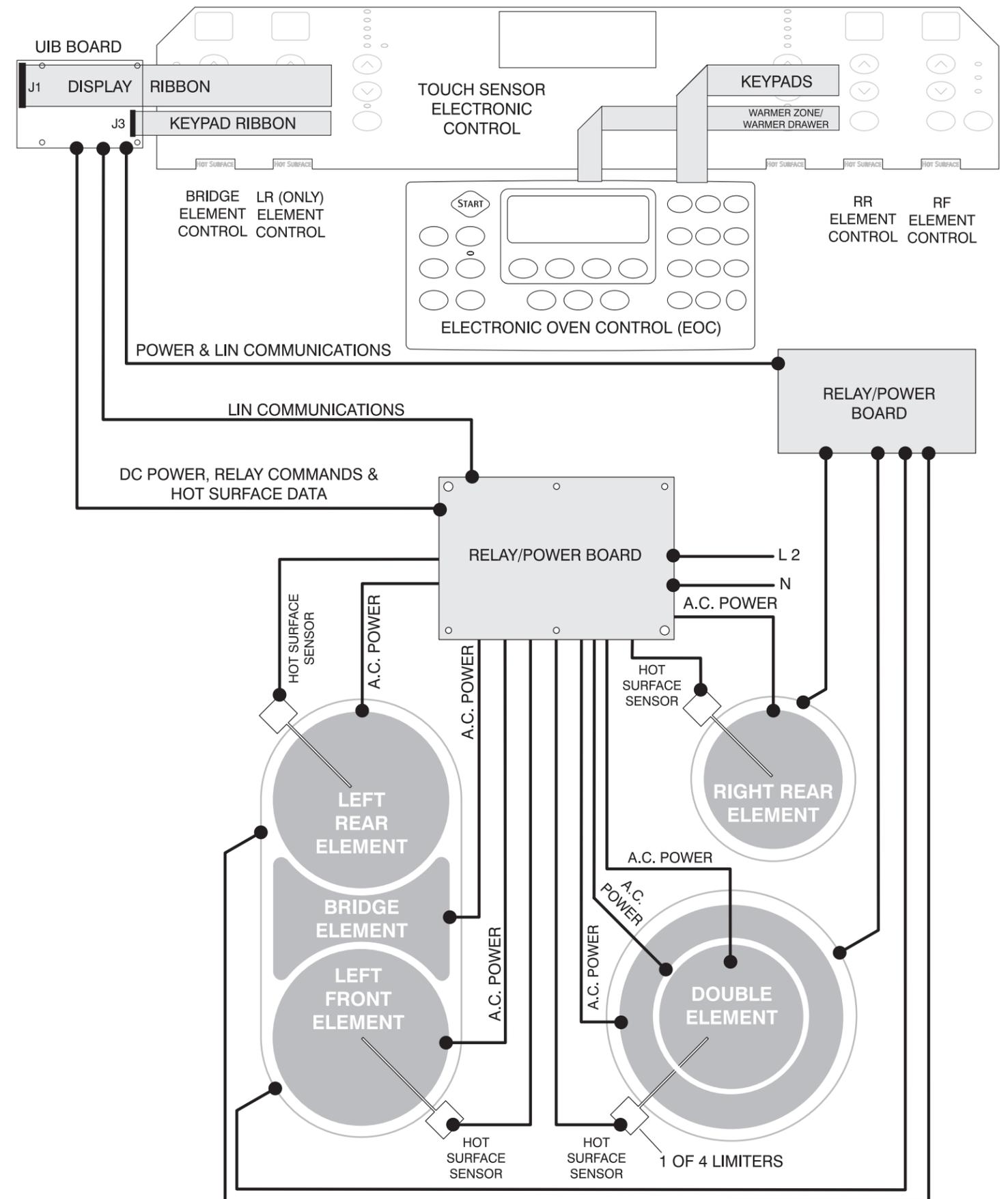
Replacing the UIB* - When replacing the User Interface Board located in the backguard, do not over-tighten the 4 screws that secure the UIB. To secure the UIB use NO MORE THAN 20 in. - lbs. Over-tightening these screws can possibly damage the UIB board.

* NOTE: Electronic boards are very sensitive to static electricity. Static electricity can permanently damage electronic boards. Before handling these parts, be sure to drain static electricity from your body by properly grounding yourself.

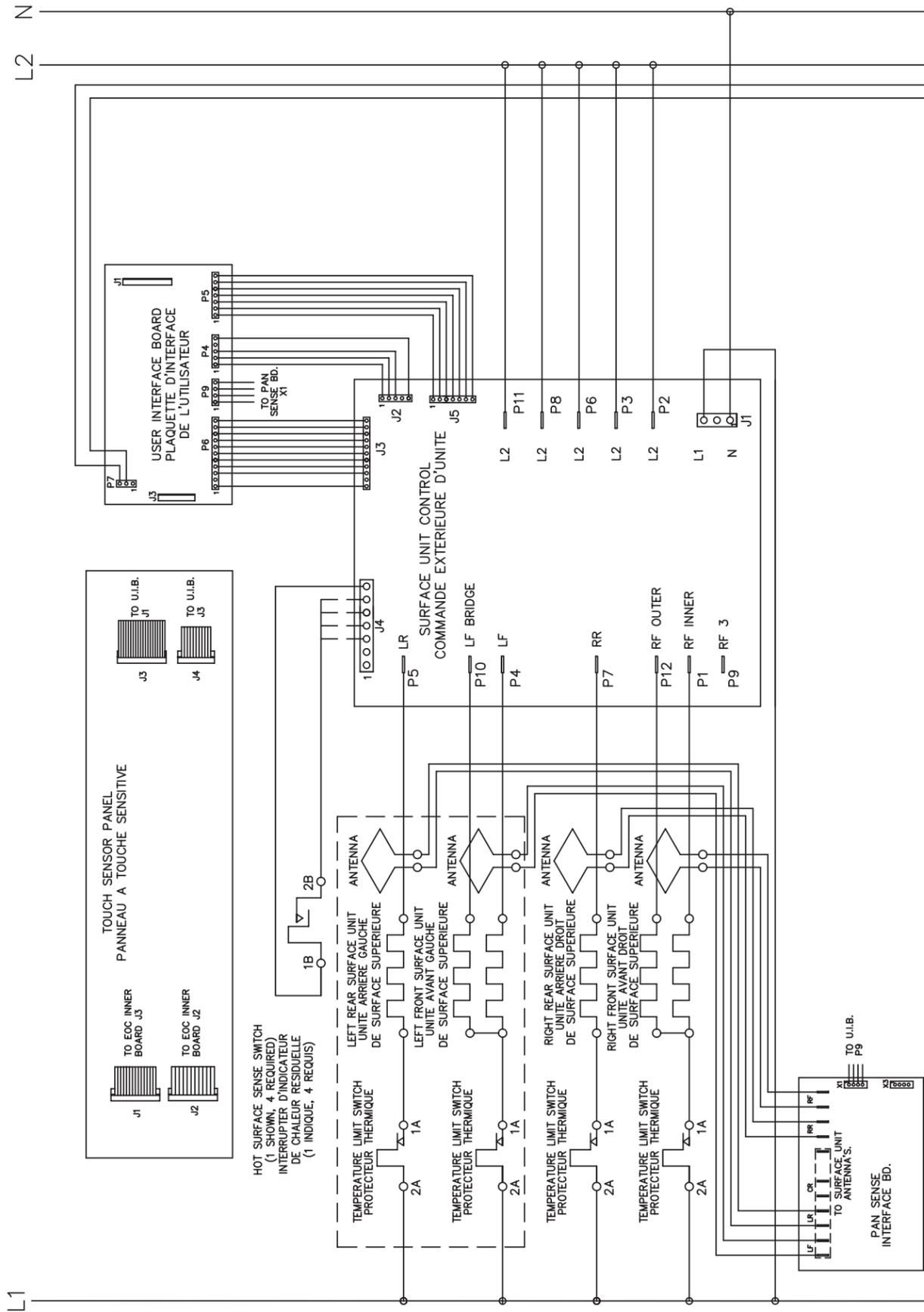
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Electric Smoothtop Ranges with ESEC20 and Pan Sensing

ESEC SYSTEM DIAGRAM



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ELECTRONIC SURFACE ELEMENT CONTROL (ESEC20) TROUBLESHOOTING GUIDE

Symptom	Likely Failure Condition/Cause	Suggested Corrective Action
"E0 13" in displays	EEPROM Failure. 1. Bad EEPROM.	1. Replace UIB.
"E0 15" in displays	FMEA (Failure Mode Effects Analysis). 1. Bad UIB.	1. Replace UIB.
"E0 20" in displays	Communication break between ES500 and UIB. 1. Bad ESEC wire harness 2. Damaged UIB/Power Board/ES500 connector. 3. UIB bad. 4. Power Board bad. 5. ES500 bad.	1. Check ESEC harness connections make sure that they are all connected properly. If they are all good connections you have bad harness - Replace harness. 2. Check if UIB/Power Board/ES500 connectors have been damaged in assembly. If damaged - replace UIB/Power Board/ES500. 3. Replace UIB. 4. Replace Power Board. 5. Replace ES500.
"E0 14" in displays	UIB-TSEC Display Cable problem. 1. Display cable not properly seated in UIB connector. 2. Damaged UIB connector. 3. UIB bad. 4. TSEC bad.	1. Re-seat display cable in UIB connector. 2. Check if UIB connectors have been damaged in assembly. If damaged - replace UIB. 3. Replace UIB. 4. Replace TSEC.
"E0 11" in displays	UIB-Shorted keypad problem. 1. Keypad cable not properly seated in UIB connector. 2. Damaged UIB connector. 3. UIB bad. 4. TSEC bad.	1. Re-seat keypad cable in UIB connector. 2. Check if UIB or Pan Sense connectors have been damaged in assembly. 3. Replace UIB. 4. Replace TSEC.
"E0 21" in displays	Communication break between UIB and Pan Sense Board. 1. Bad wire harnesses. 2. Damaged UIB/Pan Sense connector. 3. UIB bad. 4. Pan Sense Board bad.	1. Check UIB to Pan Sense Board harness connections. 2. Check if UIB connectors have been damaged in assembly. If damaged - replace UIB. 3. Replace UIB. 4. Replace TSEC.
Missing segments in displays	Missing the same segment in all displays - UIB bad. Missing segment in only one display -TSEC bad.	Missing same segment in all displays - Replace UIB. Missing segment in only one display - Replace TSEC.
Surface Element hot, but Hot Surface Indicator Lights do not glow	Power Board does not see Hot Surface signal (from element's hot surface limiter) at P12 connector. 1. Five-wire connector from surface element harness not properly connected to Power Board P12 connector. 2. Miswiring of surface element harness. 3. Bad surface element or Power Board.	1. Check the five-wire connector and seat properly to Power Board P12 connector. 2. Check surface harness for correct wiring from each element's hot surface limiter - correct wiring or replace harness if necessary. 3. Turn on all elements to Hi. Wait a while to ensure all surfaces are hot. Check the continuity from each input pin to common at P12 - if one of them does NOT read continuity and the wiring from that element is correct, replace that surface element or Power Board.
All displays blank	1. ESEC wire harness not connected to UIB or Power Board. 2. Power Board not receiving power from harness. 3. Bad ESEC wire harness. 4. Bad Power Board or UIB. 5. Disconnected display ribbon or bad TSEC.	1. Check harness connections and reseat. 2. Verify that Neutral (white wire) is connected at terminal P1 and that L2 (red wire) is connected at terminal P2 on the Power Board. Correct wiring or replace harness if necessary. 3. Check continuity of ESEC harness connections. Replace harness if necessary. 4. If connections and harness are okay, replace Power Board. 5. Re-power appliance & listen for audible beeps. If beeps are heard, check ribbon cables and TSEC. If no beeps are heard, replace UIB.
Element does not come on	1. Miswiring at surface elements. 2. Miswiring at Power Board. 3. Bad Power Board.	1. Check wiring to surface elements. Correct wiring if necessary. 2. Check connections to Power Board terminals near relays & correct. 3. If wiring is correct, replace power board.
"SD" in displays	Appliance set for Display Mode.	Re-power the appliance. Within 60 seconds touch and hold the Oven Cook Time pad until "PF" appears in the displays. Touch any ESEC ON/OFF touch pad to reset displays for normal use.