

SERVICE DATA SHEET

Electric Ranges with ES3000 and Induction Smoothtop

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.

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. For the user, the elements are operated by pressing the touch pads located on the control panel for the desired settings. The control settings are shown in 1-digit displays.

Hot Surface indication - If any of the induction elements are hot, a hot surface light will remain ON until the cooktop cools.

ESEC lockout feature - The electronic oven control's self-clean and Cooktop Lockout 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 self-clean or Cooktop Lockout mode is active. When the oven control is in a self-clean or Cooktop Lockout mode, will appear in the oven control display to signify that the surface heating elements are locked out.

ESEC system components -

The ESEC system consists of the following components:

ES3000 oven/cooktop control (EOC) - circuit boards mounted in plastic chassis.

Induction control assembly - circuit boards in plastic housings mounted under the cooktop on a metal tray with six screws.

Notes on replacing parts

Replacing an induction generator board – When replacing an induction generator board under the cooktop, do not over-tighten the 2 screws that secure each board to the range. Over-tightening the screws can damage the plastic housings holding the circuit boards.

Replacing an induction element

Ensure correct coil location.

IMPORTANT

DO NOT REMOVE THIS BAG

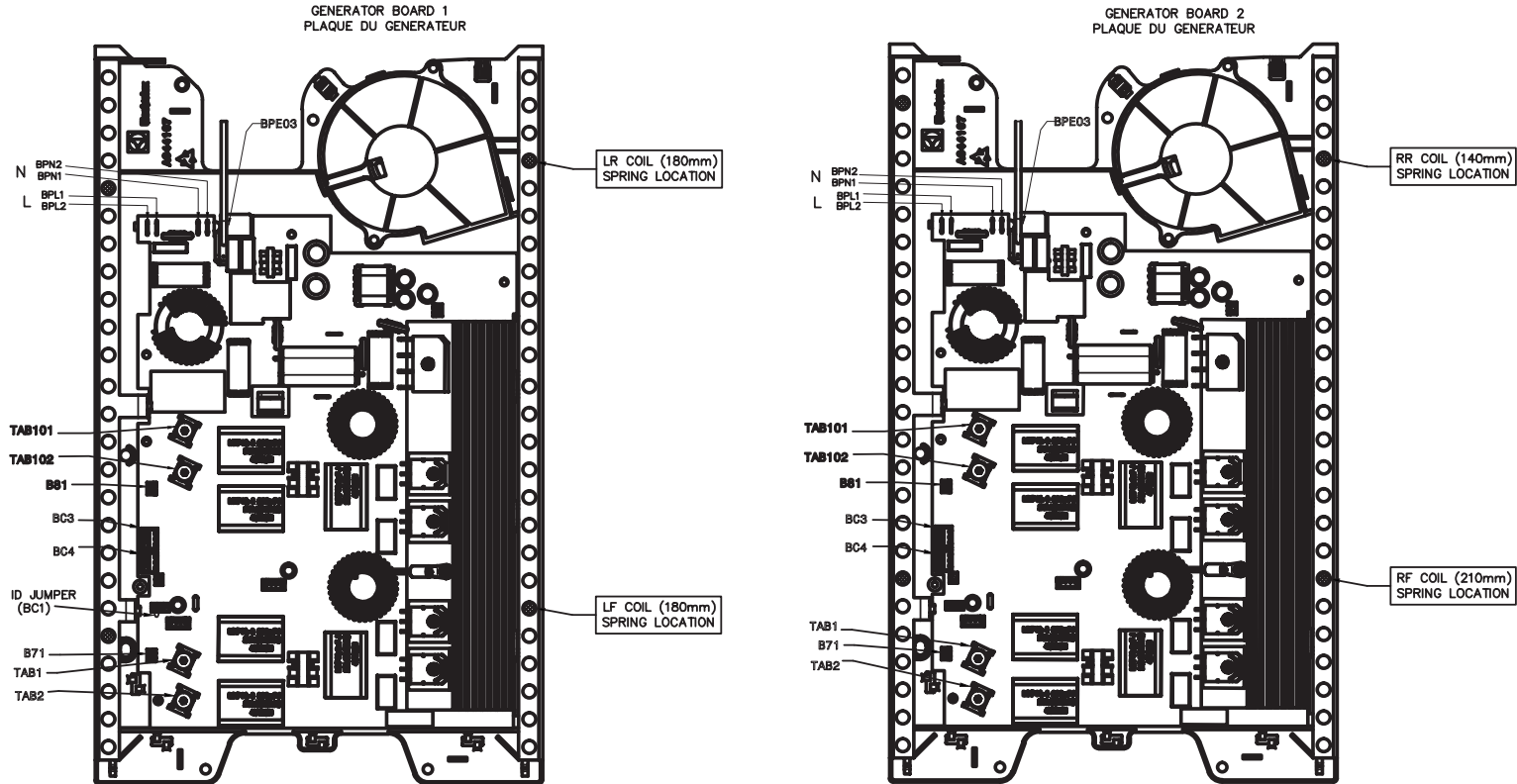
OR DESTROY THE CONTENTS

WIRING DIAGRAMS AND SERVICE

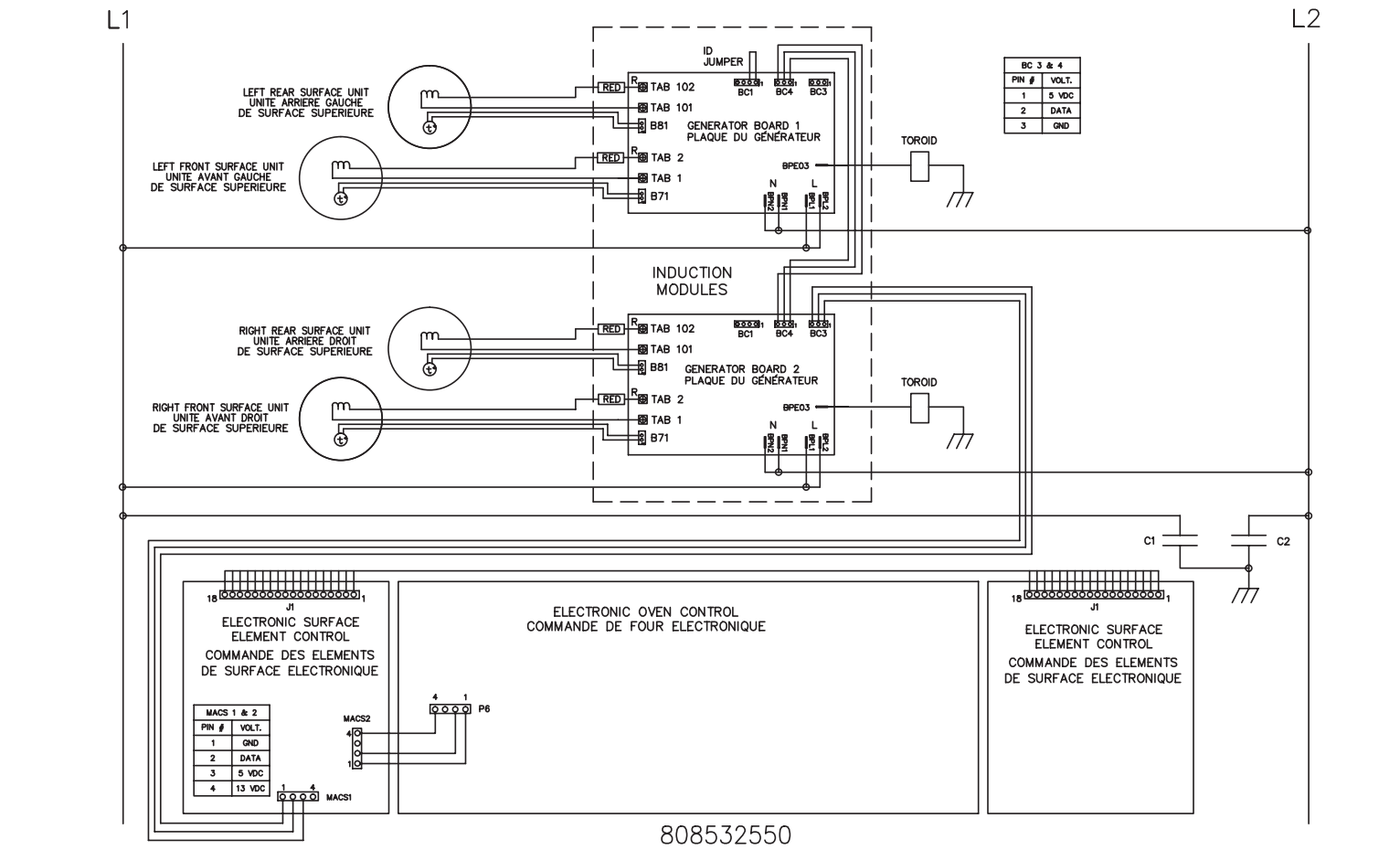
INFORMATION ENCLOSED

REPLACE CONTENTS IN BAG

SCHEMATIC DIAGRAM - Induction Controls Wiring/Connections

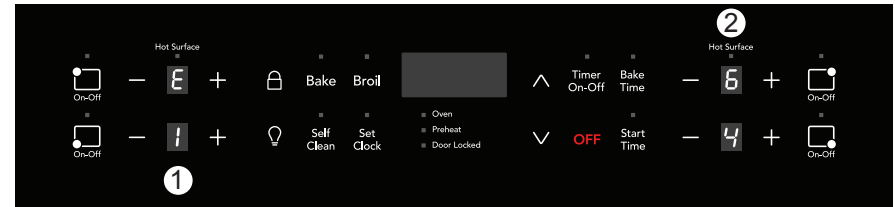


SCHEMATIC DIAGRAM - ESEC with Induction Cooktop



Error notification in an induction system

Induction related alarms are displayed using all 4 displays of the user interface. The Rear Left display is used to notify the user that the message being displayed is an error and is represented with an “E” in the display. The Front Left display is used to show which induction generator board is generating the error.



- The Front Left display showing “1” above indicates that the left generator board is producing the error. If display shows a “2”, this indicates that the right generator board is producing the error. If display shows a “0”, this indicates that the issue was generated by the cooktop control and not the induction generator.
- The Front Right and Rear Right displays display the actual error. An example of a stuck cooling fan on the left induction generator board (E164) is shown above.

Replacing the ES3000 control* – When replacing the oven/cooktop control in the backguard, DO NOT over tighten the screws that secure it. Upper and lower support brackets should be reinstalled.

*** Please 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.

Electronic Surface Element Control System (ESEC) Error Code Descriptions

When a specific error condition occurs in the ESEC system, a code will be displayed in the electronic control panel as shown in the error notification in an induction system section. For each Error Code there is a listing of the likely cause or failure condition, as well as suggested corrective actions to be taken. Always reset the power by disconnecting or turning off the power supply for 30 seconds to see if the failure condition will clear. If the error code returns perform the steps one at a time in the order listed below to correct the specific failure condition. **NOTE: If multiple changing error codes are displayed check for disconnected wires or cables.**

Tech Sheet Abbreviations and Terminology		
EOC = Electronic Oven Control	ESEC = Electronic Surface Element Control	TST = Touch Sensor Technology (touch control glass panel)
UIB = User Interface Board	TSEC = Touch Sensor Electronic Control	RTD = Resistance Temperature Device. (Temp Probe or Temp Sensor)
VSC = Variable Speed Control	PS = Power Supply board (PS1 , PS2, etc.)	TCO = Thermal Cut Out also “Thermo Disc” or “Thermal Limiter”

Error Code	Likely Cause or Failure Con- dition	Suggested Corrective Action
011	Stuck key	1. If a key was pressed inadvertently for a long time this error code will be displayed. Make sure there is nothing (water, utensils) in contact with the keyboard. The fault code should go away once the key is released and the Stop key is pressed. If the F011 error comes back when a key is pressed it means the error condition is still there. If the F011 error does not come back it means the error condition is gone and the oven can be used. 2. If the fault code cannot be cleared, replace the oven/cooktop control.
012	Keyboard configuration error	1. Verify the unit has the proper cooktop user interface board based on the model number and parts catalog. 2. Replace the oven/cooktop control if incorrect or the issue persists.
013	Non-volatile memory alarm	1. Disconnect power, wait 30 seconds and reapply power. If fault returns upon power-up, replace oven/cooktop control.
020	Loss of communication between cooktop UI and oven UI	1. Check all harness connections between user interface board and generator board, including all jumper connections (see schematic). 2. If problem persists, check continuity of harness between each control board and user interface. 3. If problem persists, check low voltage (refer to wiring diagram) between the oven control and user interface board. If loss of communica- tion is detected, verify low voltage going in and out of boards and harnesses. 4. If problem persists, replace the oven/cooktop control.
022	Loss of communication between generator board and user interface board.	1. Check all harness connections between user interface board and generator board, including all jumper connections (see schematic). 2. If problem persists, check continuity of harness between each control board and user interface. Replace harness if defective. 3. If problem persists check low voltage (refer to wiring diagram) between the oven control and oven/cooktop control. Also, check for low voltage between the oven/cooktop control and Induction boards 1 and 2. If loss of communication is detected, verify low voltage going in and out of boards and harnesses. 4. If harness is good and problem persists, replace induction generator board 1. 5. If problem persists, reinstall original induction generator board 1 and replace induction generator board 2.
126 226	Macs communication mismatch	1. Disconnect power to the unit, wait 30 seconds, then reapply power. 2. If fault persists, replace oven/cooktop control.
035	ON indicator display failure: the displays cannot display the LEDs properly, the mechanism for the displays has failed.	1. Disconnect power to the appliance, wait 30 seconds before reconnecting power. 2. If problem persists, replace oven/cooktop control.
149 249	Induction generator board configu- ration compatibility error.	1. Cycle power to the appliance, wait 30 seconds before reconnecting power. 2. Has the appliance been recently serviced? If so, verify the part numbers of the replaced components. Incorrect replacement parts will cause software errors. 3. If parts check correctly and the problem persists, replace the induction board indicated by the error code. 4. If problem persists, replace the oven/cooktop control.
051	Unable to read cancel key/tail sense error	1. Disconnect power to the unit, wait 30 seconds, then reapply power. 2. Test wiring harness between left and right cooktop UI's (J1 connector on each board). 4. If fault persists, replace the oven/cooktop control.
157 257	MAINS (power supply) relay stuck on induction powerboard.	1. Cycle power to the appliance, wait 30 seconds before reconnecting power. 2. If problem persists, replace the induction board indicated by the error code.
158 258	400v detection error on induction powerboard.	1. Cycle power to the appliance, wait 30 seconds before reconnecting power. 2. If problem persists, replace the induction board indicated by the error code.
159 259	Too low mains voltage detected on induction generator board	1. Check line voltage coming into the appliance. 2. If problem persists, replace the induction board indicated by the error code.
161 261	15v supply out of window on induction generator board	1. Cycle power to the appliance, wait 30 seconds before reconnecting power. 2. If problem persists, replace the induction board indicated by the error code.
164 264	Cooling fan on the induction generator board is blocked or otherwise unable to turn.	1. Check for interference, blockages, debris, dust, or anything else that would physically prevent the fan from moving. 2. If problem persists, replace the induction board indicated by the error code.
165 265	Open temperature sensor on induction coil.	1. Verify that induction coil temperature sensor is connected to generator (B71 & B81). 2. Test resistance of each sensor for ± 100K ohms at room temperature. Replace coil if sensor is open or shorted. 3. If problem persists replace the induction generator board indicated by the error code.
167 267	Loss of communication between control and power micros on induction generator board	1. Check all harness connections between user interface board and generator board, including all jumper connections (see schematic). 2. If problem persists, check continuity of harness between each control board and user interface. Replace harness if defective. 3. If problem persists check low voltage (refer to wiring diagram) between the oven control and user interface board. Also, check for low voltage between the user interface board and Induction boards 1 and 2. If loss of communication is detected, verify low voltage going in and out of boards and harnesses. 4. If harness is good and problem persists, replace induction generator board 1. 5. If problem persists, reinstall original induction generator board 1 and replace induction generator board 2.

Error Code	Likely Cause or Failure Condition	Suggested Corrective Action
168 169 268 269	Failure check found inconsistent voltage or current measurement between the two induction generator board microprocessors.	1. Cycle power to the appliance, wait 30 seconds before reconnecting power. 2. If problem persists, replace the induction board indicated by the error code
170 270	Failure check found inconsistent power frequency detection between the two induction generator board microprocessors.	1. Cycle power to the appliance, wait 30 seconds before reconnecting power. 2. If problem persists, replace the induction board indicated by the error code.
171 271	Failure check found inconsistent power currents between the drive circuit for the coils (IGBT) and the main power current on the induction generator board.	1. Cycle power to the appliance, wait 30 seconds before reconnecting power. 2. If problem persists, replace the induction board indicated by the error code.
172 272	Internal syncing error between the two induction generator board microprocessors	1. Cycle power to the appliance, wait 30 seconds before reconnecting power. 2. If problem persists, replace the induction board indicated by the error code.
173 273	Failure check found too-high temperature on induction generator board.	1. Cycle power to the appliance, wait 30 seconds before reconnecting power. 2. If problem persists, replace the induction board indicated by the error code.
174 274	Heat sink sensor open or shorted.	1. Check that the sensor is installed correctly, measure approximately 100K Ohm for NTC.. 2. If problem persists, replace the induction board indicated by the error code.
175 275	Failure check found a bad sensor or a shorted circuit on the induction generator board.	1. Check the sensor connections on the induction board indicated by the error code. 2. If problem persists, replace the induction board indicated by the error code.
180 280	Power supply and/or frequency lost on the induction generator board.	1. Cycle power to the appliance, wait 30 seconds before reconnecting power. 2. If problem persists, replace the induction board indicated by the error code.
181 281	Cooling fan not connected on induc- tion generator board.	1. Check cooling fan connections on the induction board indicated by the error code. 2. If problem persists, replace the induction board indicated by the error code.

Additional Failure Conditions			
Symptom or Failure	Control Display	Possible Cause or Condition	Suggested Corrective Action
Pan does not heat up.	Normal operation	Pan too small for proper pan detection and only works with low power.	Use larger pan or this pan on a smaller cooking zone. Refer to owners guide for proper pan selection.
	Flashing power level Display and pan does not heat.	Pan not detected.	Check whether the pots or pans are suitable for induction. Refer to owners guide for proper pan selection.
		Induction surface unit not correctly connected or surface unit open.	Check the surface unit wire terminal connections. Ensure that they are properly connected and tightened. Test continuity of element (should be less than 1 ohm).
		Distance between surface unit and glass ceramic too large.	Check whether the surface unit is properly positioned and touching the glass cooktop surface.
Individual buttons cannot be used or cannot always be used.	None	1. Test cables and connections. 2. Membrane control panel defective. 3. EOC defective.	1. Follow instructions for proper use of controls. 2. Verify membrane tail connections between EOC and ESEC. Replace if defective or damaged. 3. Replace EOC.
Cooking power too low or shuts down prematurely.	None	Fluids spilled or object lying on control panel keypads.	Clean up spills or remove objects. Restart cooktop in normal manner.
	Normal Operation	Ventilation slots obstructed.	Clear vent openings.
		Unsuitable pots (bottom bent).	Follow owner's guide for proper pan selection.
		Distance between surface unit and glass ceramic too large.	Check whether the surface unit is properly positioned and touching the glass cooktop surface.
		Fan does not start.	1. With two cook zones operating, verify that the fan runs at a slow speed. If fans do not run, check for foreign objects or stuck fan motor. 2. Test continuity of motor windings. Replace motor if open. 3. Replace induction control assembly.
Steady "Hot surface" indicator light when cooking zone is cold and switched off.	"Hot surface" indicator light	Induction coil temperature sensor failure	1. Test surface unit RTD approx. 100K ohms at room temperature. Replace surface unit if resistance is not correct. 2. Replace induction generator board.
Cooktop does not initialize/operate.	Blank No display No beep	EOC not powered.	Verify installation and harness connections to EOC.
		Defective EOC.	Replace EOC.