

SERVICE DATA SHEET

318047458 (0905) Rev. A

Electric Wall Oven with ES630 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.**

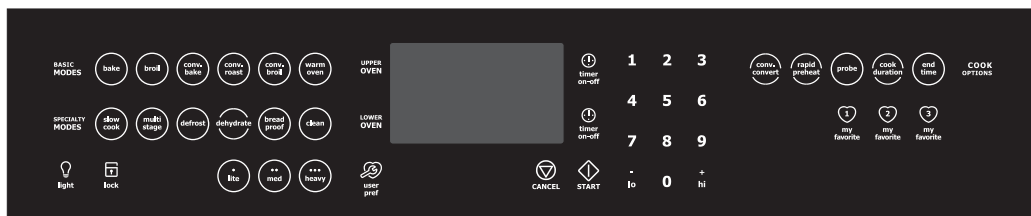
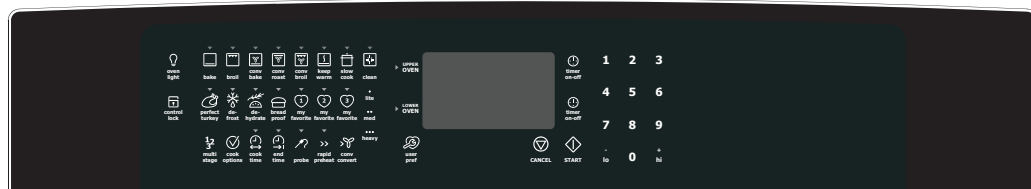
SAFE SERVICING PRACTICES

To avoid the possibility of personal injury and/or property damage, it is important that safe servicing practices be observed. The following are examples, but without limitation, of such 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 and turn off gas supply.
3. Never interfere with the proper installation of any safety device.
4. USE ONLY REPLACEMENT PARTS CATALOGED 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 non-insulated 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.

ELECTRONIC OVEN CONTROL (DOUBLE WALL OVEN)

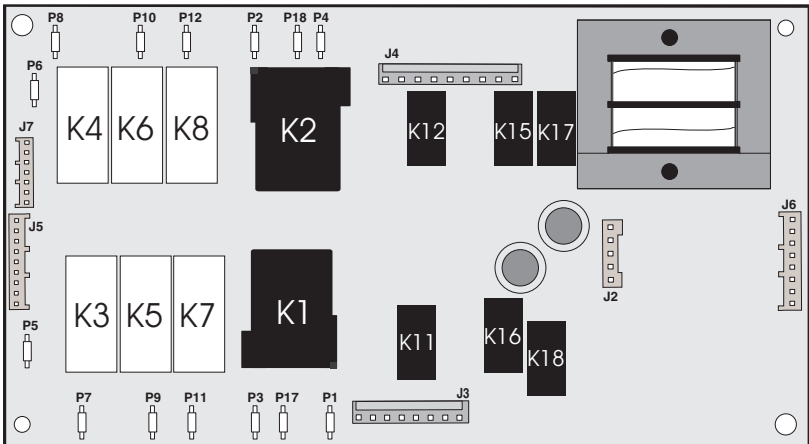
1. This self-cleaning controller offers Bake, Broil, Convection Bake, Convection Roasting and Convection Broil modes, Dehydrating, Defrosting, Temperature Probe, Perfect Turkey (some models), Bread Proof, Keep Warm and Cleaning functions.
2. Convection operates with an element and a fan dedicated to convection.
3. This controller includes a *display board*, a *relay board*, a *convection fan and oven light control board* and a *switch interface board*.



NOTE: The controllers are not field repairable. Only temperature settings can be changed. See oven calibration.
Printed in the United States

ELECTRONIC DOUBLE WALL OVEN CONTROL

Electronic oven control relay board for double wall oven



This relay board serves to energize the upper and lower oven heating elements, door lock motor and cooling fan.

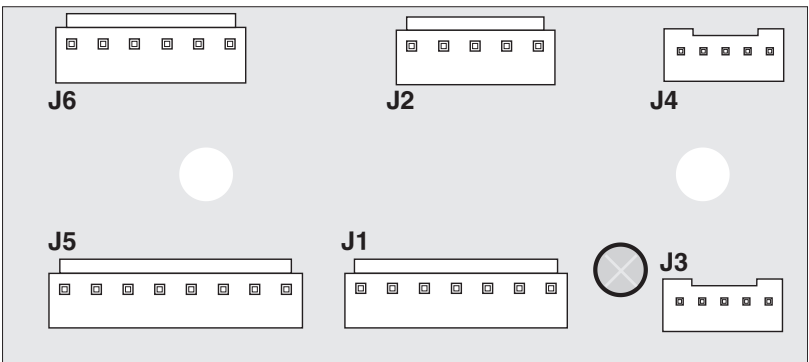
- P1 - L2 Out, Upper Oven
- P2 - L2 Out, Lower Oven
- P3 - L2 In, Upper Oven
- P4 - Not Used
- P5 - L1, Upper Oven
- P6 - L1, Lower Oven
- P7 - Broil, Upper Oven
- P8 - Broil, Lower Oven
- P9 - Bake, Upper Oven
- P10 - Bake, Lower Oven
- P11 - Convection Element, Upper Oven
- P12 - Convection Element, Lower Oven
- P17 - Not Used
- P18 - L2 In, Lower Oven

- J2 -DC Power Output To Display Board
- J3 -AC Power Output (motor door latch, cooling fan) For Upper Oven
- J4 -AC Power Output (motor door latch, cooling fan) For Lower Oven and Power Input (L1, Neutral)
- J5 -Relay Control Inputs (bake and broil elements, motor door latch, DLB) For Upper Oven
- J6 -Relay Control Inputs (cooling fan, conv element) For Both Ovens
- J7 -Relay Control Inputs (bake and broil elements, motor door latch, DLB) For Lower Oven

Relay Board Legend:

- K1. Double Line Break - Upper Oven
- K2. Double Line Break - Lower Oven
- K3. Broil Relay - Upper Oven
- K4. Broil Relay - Lower Oven
- K5. Bake Relay - Upper Oven
- K6. Bake Relay - Lower Oven
- K7. Convection Element Relay - Upper Oven
- K8. Convection Element Relay - Lower Oven
- K11. Motor Door Latch - Upper Oven
- K12. Motor Door Latch Relay - Lower Oven
- K15. Cooling Fan Relay Low Speed - Lower Oven
- K16. Cooling Fan Relay Low Speed - Upper Oven
- K17. Cooling Fan Relay High Speed - Lower Oven
- K18. Cooling Fan Relay High Speed - Upper Oven

Switch Interface Board

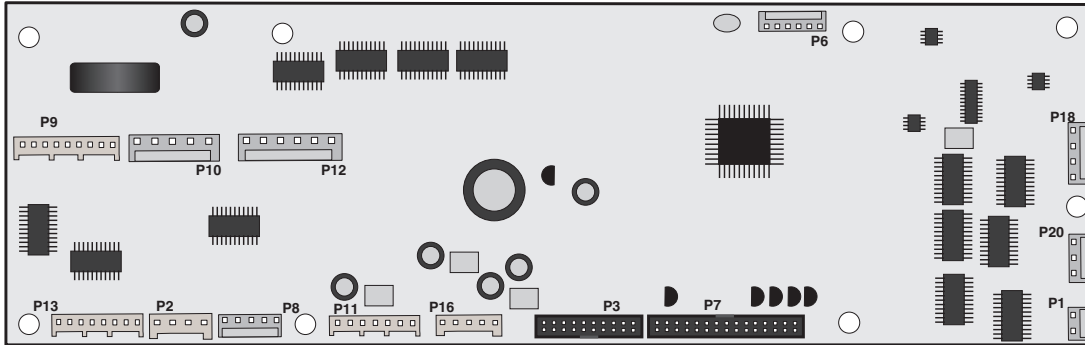


This board isolates the signals going IN and OUT of the switches from the display board.

- J1 - Upper oven switches connections to display board.
- J2 - Connections to upper oven switches (motor door latch, door and rack switches).
- J3 - DC power supply output to display board.
- J4 - DC power supply input from relay board.
- J5 - Lower oven switches connections to display board.
- J6 - Connections to lower oven switches (motor door latch, door and rack switches).

ELECTRONIC DOUBLE WALL OVEN CONTROL

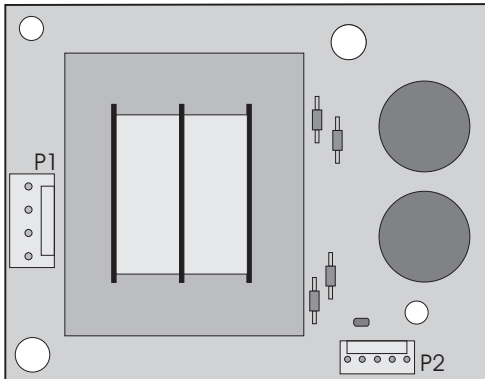
Electronic oven display board for double wall oven.



Connector Legend:

- P1 - Upper Oven Probe Input
- P2 - Communication with Convection Fan and Oven Light Control Board
- P3 - Keyboard (touch panel)
- P6 - Microprocessor Programming (not used)
- P7 - Touch Panel LEDs
- P8 - Power Supply Input for Touch Panel LEDs
- P9 - Relay Control Output (heating elements, DLB, motor door latch) for Upper Oven
- P10 - Switches Input (motor door latch switch, door switch, rack switch) for Upper Oven
- P11 - Relay Control Output (heating elements, DLB, motor door latch) for Lower Oven
- P12 - Switches Input (motor door latch switch, door switch, rack switch) for Lower Oven
- P13 - Relay Control Output (cooling fans) for Upper and Lower Ovens
- P16 - DC Power Supply Input
- P18 - Upper and Lower Oven Meat Probe Input
- P20 - Lower Oven Probe Input

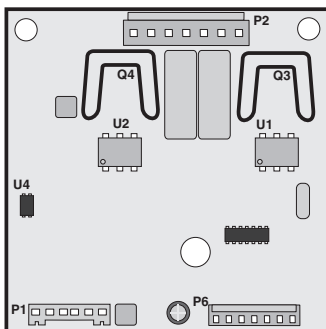
Power supply board for double wall oven



This board provides power to the oven control display.

- P1 - AC Power Input (L2 and Neutral)
- P2 - DC Power Output

Convection fan and oven lights control board








*This board control the power output of the convection fan and oven lights.
The double wall oven is equipped with 2 of these variable convection boards.
One for each oven.*

- P1 - Communication with display board and power supply input
- P2 - AC power output for convection fan and oven lights, power inputs (L1, neutral)
- P3 - Microprocessor programming (not used)

CONVECTION MODE

The convection oven uses the addition of a fan and an element to heat and to move the air already in the oven. Moving the heated air helps to destratify the heat and cause uniform heat distribution. The air is drawn in through a fan shroud and the element located on the rear wall of the oven. It is then discharged around the outer edges of this shroud. The air circulates around the food and then enters the shroud again. As with conventional electric wall ovens, there is still an oven vent which discharges above the door. In preheat of non-convection cooking modes, the convection fan will be operating until the oven has reached the target temperature.

To set the control in convection mode, follow these steps:

1. On a double wall oven: Select oven by pressing either **UPPER OVEN** ^{UPPER} or **LOWER OVEN** ^{LOWER}.
2. Press **CONVECTION BAKE**  or **CONVECTION ROAST**  or **CONVECTION BROIL** .
3. Press **START** . The oven will automatically start and the fan will begin to run.
4. Press **CANCEL**  to stop or cancel the Convection feature at any time.

NOTE: The fan runs continuously while in the convection mode. The fan will stop if the door is opened while convection baking/roasting/broiling. The convection element will stop operating if the door is opened. The speed of the convection fan will vary depending on which cooking function is used. Convection Roast uses a fast fan speed, while convection bake uses a slower fan speed.

CONVECTION FAN MOTOR

The 120V fan motor is located on the outside of the rear of the oven.

The fan motor runs continuously while in convection mode unless the door is opened.

It is normal to see the fan speed changing depending on the cooking function that is used. This appliance uses the optimum fan speed for each convection function.

It is the Convection Fan and Oven Lights Control Board that modulates the speed of the convection fan. It uses the fan speed information communicated by the display board.

On a double wall oven there are two Convection Fan and Oven Lights Control Boards, one for each cavity.

If the fan does not operate, check the following:

- The oven control display will give you an indication on when the convection fan should be on: rotating fan blades in the display means the fan should be ON. No rotating blades mean the convection fan is purposely not used.
- Verify proper operation of the door switch. If the control thinks the door is opened the convection fan will not work. If the oven light turns on when the door is opened and turn off when the door is closed then it's a good indication the door switch is good.
- If you are getting an F23 or F24 error code it means the display board is not able to communicate with the Convection Fan and Oven Lights Control Board, thus the convection fan will not operate. Check connections between the display board and the Convection Fan and Oven Lights Control Board. Refer to the fault code section for corrective actions.
- Check connections on the Convection Fan and Oven Lights Control Board. On connector P2: pin 3 should be Neutral, pin 5 should be L1 (120VAC) and pin 7 should go to the convection fan motor. The other terminal of the convection fan motor should be connected to Neutral.
- Fan motor coil resistance should be 15.0 ohm +/- 10%
- When the fan is ON you should see between 20 and 120VAC on the motor, depending on the fan speed.
- If there is no error code, the wiring is good and the fan coil is good then replace the Convection Fan and Oven Lights Control Board.

OVEN CALIBRATION

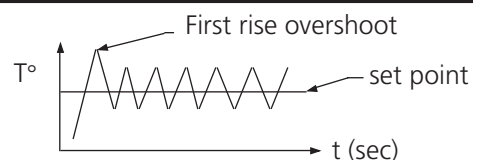
Set the electronic oven control for normal baking at 350°F. Obtain an average oven temperature after a minimum of 5 cycles.

The oven calibration can be modified using the oven control display. Please refer to the Owner's Guide manual.

Note: Changing calibration affects all the cooking modes but not the clean and the broil modes.

FIRST RISE

It is normal to see a temperature overshoot in the first rise of all modes when you monitor the temperature.



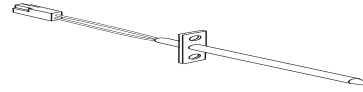
ELECTRONIC OVEN CONTROL (FAULT CODES)

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.	
Failure 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.	<ul style="list-style-type: none"> - Check RTD sensor probe and replace if necessary. If oven is overheating, disconnect power. If oven continues to overheat when power is reapplied, replace relay board and/or display board.
F11 Shorted Key: a key has been detected as pressed for a long period and will be considered a shorted key alarm and will terminate all oven activity.	<ul style="list-style-type: none"> - Press any key to clear the error. - If fault returns, replace the keyboard (touch panel). - If the problem persists, replace the display board.
F13 Control's internal checksum may have become corrupted.	<ul style="list-style-type: none"> - Press any key to clear the error. - Disconnect power, wait 30 seconds and reapply power. If fault returns upon power-up, replace display board.
F14 Misconnected keyboard cable	<ul style="list-style-type: none"> - Verify connection between display board and touch panel (2 ribbon cables). Make sure the cables are well connected at both ends. - If the cables are good, replace the touch panel. - If the problem persists, replace the display board.
F15 Controller self check failed.	<ul style="list-style-type: none"> - Verify wiring between J2 on the relay board and J4 on the switch interface board. - Verify wiring between J3 on the switch interface board and P16 on the display board. - Verify that the relay board receives 120VAC between J4 pin 1 and 3. - If wiring is good, replace the display board. - If problem persists, replace the relay board. - If problem persists, replace the switch interface board.
F23 The controller failed to communicate with the (upper) convection fan and oven lights control board.	<ul style="list-style-type: none"> - Verify wiring between P2 on the display board and P2 on the convection fan and oven lights control board. - If wiring is good, replace convection fan and oven lights board. - If the problem persists, replace the display board.
F24 The controller failed to communicate with the lower convection fan and oven lights control board. (On double wall oven)	<ul style="list-style-type: none"> - Verify wiring between P2 on the display board and P2 on the convection fan and oven lights control board. - If wiring is good, replace convection fan and oven lights board. - If the problem persists, replace the display board.
F25 No zero cross signal detected on the upper or lower convection fan and oven lights control board.	<ul style="list-style-type: none"> - Make sure L1 and Neutral are connected to the convection fan and oven lights control board on connector P2 (P2 pin 3= neutral / P2 pin 5 = L1). - If problem persists, replace the upper and/or lower oven convection fan and oven lights control board.
F26 Missing lower oven select signal on the lower oven convection fan and oven lights control board (double wall oven only).	<ul style="list-style-type: none"> - The lower oven conv. fan and oven lights board is supposed to receive 5V on pin 5 of connector P1. This voltage originates from the display board (connector P2 pin 4), check wiring. - If problem persists, replace the con. fan and oven lights control board.
F30 Open RTD sensor probe/ wiring problem. Note: EOC may initially display an "F10", thinking a runaway condition exists.	<ul style="list-style-type: none"> - 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.
F31 Shorted RTD sensor probe / wiring problem. Note: F30 or F31 is displayed when oven is in active mode or an attempt to enter an active mode is made.	<ul style="list-style-type: none"> - Let the oven cool down and restart the function. - If the problem persists, replace the display board.
F90 Door motor mechanism failure.	<ul style="list-style-type: none"> - Press any key to clear the error. - If it does not eliminate the 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 display board and/or the relay board in the event of a motor that does not rotate. - If all the above steps fail to correct the situation, replace the display board in the event of a motor that rotates endlessly.

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			
Kw Rating 240/208V	See Nameplate	Bake Element Wattage	2200W/1653W
Broil Element Wattage	27" Models 3400W/2554W 30" Models 4000W/3004W	Convection Element Wattage	Electrolux models 2500W/1879W Electrolux/ICON Models 1600W/1202W

OVEN
TEMPERATURE SENSOR



UPPER OVEN CIRCUIT ANALYSIS MATRIX

	On Relay Board ELEMENTS			Door Motor J3-5	On Convection Fan and Oven Lights Control Board		On Display Board Door Switch P8-3 / P8-5	DLB L2 out P1	On Relay Board	
	Bake P9	Broil P7	Conv. P13		Light P2-1	Convection Fan P2-7			Cooling Fan Low speed J3-7	Cooling Fan High speed J3-8
Bake	X	X	X*			X*		X	X	
Keep Warm	X							X	X	
Broil		X						X		X
Conv. Bake	X	X	X			X		X	X	
Conv. Roast	X	X	X			X		X	X	
Conv. Broil		X	X			X		X	X	
Clean	X	X	X**			X**		X	X	X
Locking				X						
Locked										
Unlocking				X						
Unlocked										
Light					X					
Door Open					X		X			
Door Closed										
Bread Proof	X								X	X

LOWER OVEN CIRCUIT ANALYSIS MATRIX

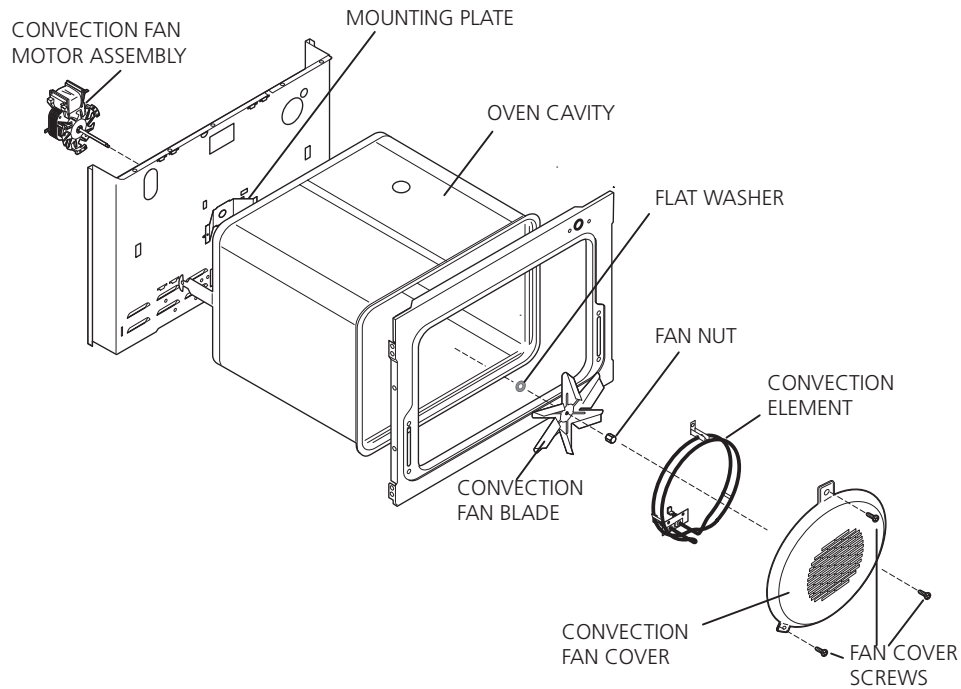
	On Relay Board ELEMENTS			Door Motor J4-6	On Convection Fan and Oven Lights Control Board		On Display Board Door Switch P10-3 / P10-6	DLB L2 out P2	On Relay Board	
	Bake P10	Broil P8	Conv. P16		Light P2-1	Convection Fan P2-7			Cooling Fan Low speed J4-8	Cooling Fan High speed J4-9
Bake	X	X	X*			X*		X	X	
Keep Warm	X							X	X	
Broil		X						X		X
Conv. Bake	X	X	X			X		X	X	
Conv. Roast	X	X	X			X		X	X	
Conv. Broil		X	X			X		X	X	
Clean	X	X	X**			X**		X	X	X
Locking				X						
Locked										
Unlocking				X						
Unlocked										
Light					X					
Door Open					X					
Door Closed							X			
Bread Proof	X								X	X

Relay will operate in this condition only

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

** Convection element & fan are used during the cleaning cycle on the Electrolux/ICON models.

EXPLODED VIEW OF CONVECTION SYSTEM



FAN BLADE

The fan blade is mounted in the rear of the unit and has a "D" shaped mounting hole. Only minimum clearance exists between the oven back, fan blade, and fan shroud. Be careful not to bend blade when removing or installing.

Access to the fan blade is gained by removing the fan shroud, held in place by three screws, from the inside of the oven.

The fan blade is held in place with a hex nut that has **left handed** threads. When removing this nut, gently hold the fan blade, and turn the nut clockwise. If one of the blades becomes deformed, it may be bent back into shape using a flat surface as a reference.

A flat washer is located on the motor shaft between the snap ring on the shaft and the fan blade.

NOTE: If the fan blade is bent and motor vibrations increase, the noise made by the fan will be greater.

MOUNTING PLATE OVEN

The fan motor on the rear of the unit is mounted to the main back (with three screws). There is a mounting plate held in place between the main back (with 2 screws) and the rear oven wall (with 2 screws). Should it be necessary to replace the oven cavity, you must remove the 2 screws located inside the unit at the rear of the oven cavity.

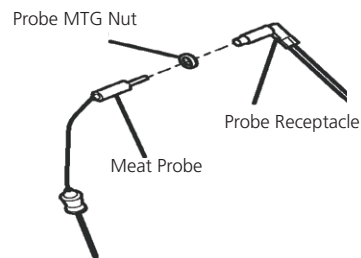
COOLING FAN MOTOR

The 120 volt fan motor is located on the outside of the rear of the oven. The cooling fan has 2 speed options, which are driven by the oven controller. The high speed mode is used on self-clean when the temperature gets over 575F. The high speed is also used anytime the broil function is used. The cooling fan may remain at high speed after the broil function is cancelled to allow better cooling of the oven. On double wall ovens, the blower in both ovens will start when using one of the ovens in self-clean mode.

MEAT PROBE RESISTANCE

Meat Probe Temperature VS Resistance Table

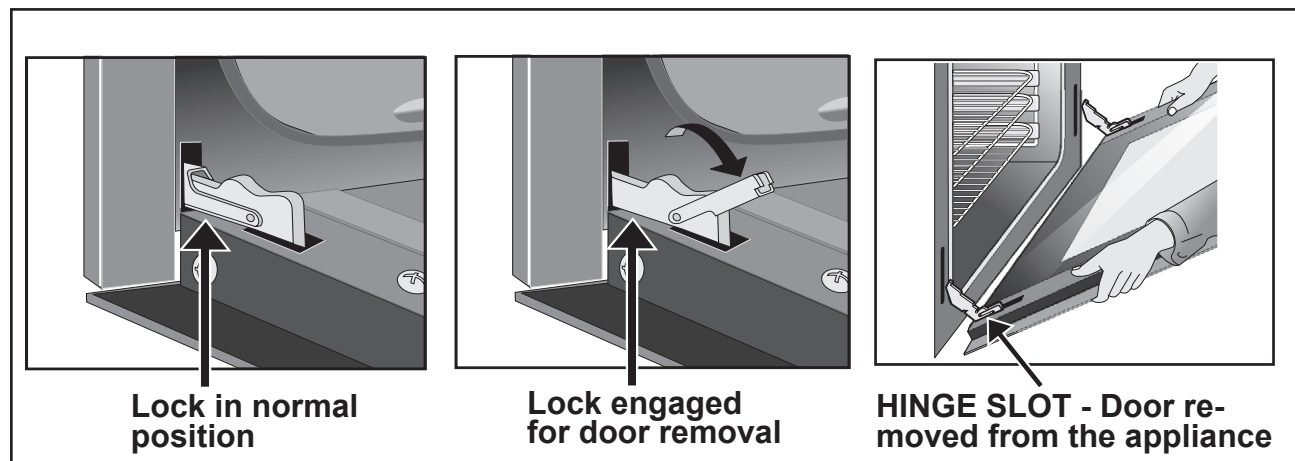
Temp. Celsius	Temp. Fahrenheit	Probe Resistance
25°C	77°F	49.478 Kohm +/- 7%
50°C	122°F	17.737 Kohm +/- 4.9%
80°C	176°F	6.107 Kohm +/- 3.3%
100°C	212°F	3.264 Kohm +/- 4.6%



OVEN DOOR REMOVAL AND REPLACEMENT

To Remove and Replace Oven Door

1. Open the door to the fully opened position.
2. Pull up the lock located on each hinge support toward front of range. You may have to apply a little upward pressure on the lock to pull it up.
3. Grasp the door by the sides, pull the bottom of the door up and toward you to disengage the hinge supports. Keep pulling the bottom of the door toward you while rotating the top of the door toward the appliance to completely disengage the hinge levers.
4. Proceed in reverse to re-install the door. Make sure the hinge supports are fully engaged before unlocking the door.



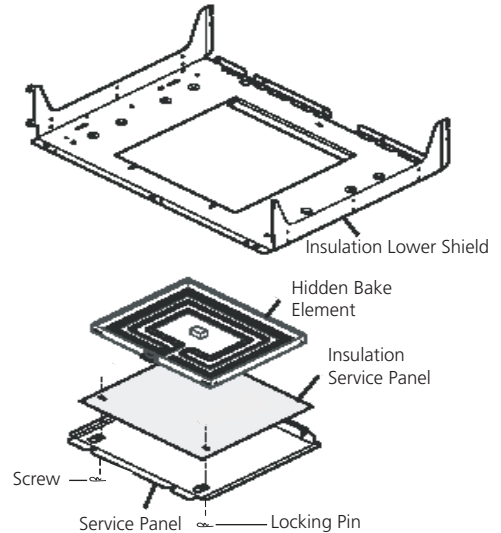
TRUE HIDDEN BAKE ELEMENT REMOVAL - SINGLE AND DOUBLE WALL OVENS

Follow the steps below in order to replace the through hidden bake element on a single wall oven and the lower through hidden bake element of a double wall oven.

1. Remove the lower decorative trim (2 screws).
2. Using a pair of long nose pliers, remove the cutter pins and the screw which are holding the true hidden bake element service panel in place (under the oven liner).
3. Disconnect the two bake element wires.
4. Slide the true hidden bake service panel and element out of its operational emplacement.

The steps below are to follow in order to replace a double wall oven's upper true hidden bake element only.

5. Remove the center trim. You may use a flat screwdriver in order to pull the center trim out.
6. Remove the door lock assembly.
7. Follow the same steps as for the single wall oven (2-4 above).



DOOR LOCK MECHANISM

The appliance is equipped with an electronic oven control and has an auto locking door latch feature. When the self clean cycle is programmed, the door is locked by a motor operated latch system. The interior of oven doesn't need to heat up to 500°F/260°C before the door locks. However, until the temperature inside oven reaches 500°F/260°C, the self-clean program can be canceled and door will unlock immediately. After oven reaches temperatures over 500°F/260°C, the door will not unlock until temperature drops below 500°F/260°C.

If a problem appears and the door stays locked it is possible for the **servicer** to unlock the door without removing the appliance from its place. Follow the steps below:

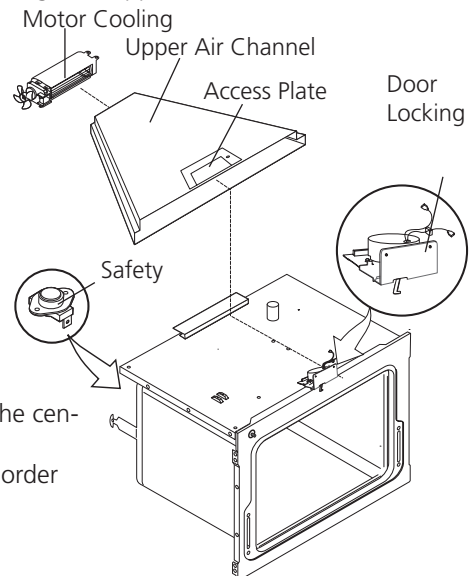
1. Trip the circuit breaker to **OFF** position.
2. Remove the 2 screws, which are fixing the oven door latch, located between the control panel and the oven door.
3. When the screws are removed it is possible to unlock the latch with a flat screwdriver, or one of the tools supplied with the wall oven which are used to take off the oven from the cabinet. Insert the tool tip through the slot on top of the oven door. During this step it's important to take care to not damage the appliance.
4. As soon as the latch is in the unlock position, you can open the door.
5. Replace the motor latch:

Upper Oven:

1. To have access to the door latch assembly, remove the 3 screws under the control panel which are fixing it.
2. Remove the electronic plate located on the access plate.
3. Remove the access plate located on the upper air channel by removing the screw.
4. Replace the motor latch with a new one and reassemble in opposite order and manner of removal.

Lower Oven:

1. Pull out the appliance approximately 4" from the cabinet.
2. Remove the 4 screws which are fixing the center trim and remove the center trim by pulling it from both extremities.
3. Replace the motor latch by a new one and reassemble in opposite order and manner of removal.



OVEN LIGHT

This appliance is equipped with electronics that control the intensity of the oven lights. This is done with the Convection Fan and Oven Lights Control Board that modulates the AC voltage going to the 120V halogen lamps. When the light key is pressed or when the oven door is opened the display board communicates with the Convection Fan and Oven Lights Control Board to specify the required light intensity. The Convection Fan and Oven Lights Control Board also add a "theater-like" effect on the light: the light intensity is gradually ramp-up or ramp-down as the light is turned on or off.

On a double wall oven there are two Convection Fan and Oven Lights Control Boards, one for each cavity. The upper and lower cavity lights will turn ON and OFF at the same time. That is, if the light key is pressed, the light of both ovens will turn ON.

If the oven lights do not operate, check the following:

- If you are getting an F23 or F24 error code it means the display board is not able to communicate with the Convection Fan and Oven Lights Control Board, thus the oven light will not operate. Check connections between the display board and the Convection Fan and Oven Lights Control Board. Refer to the fault code section for corrective actions.
- If the lights are always ON (even with the door closed), it could be because the control mistakenly thinks the door is opened. Verify door switch and its wiring.
- Check connections on the Convection Fan and Oven Lights Control Board. On connector P2: pin 3 should be Neutral, pin 5 should be L1 (120VAC) and pin 1 should go to the oven lights. The other terminal of the light should be connected to Neutral.
- Verify if light bulbs need to be replaced.
- If there is no error code, the wiring is good and still the oven lights are not working then replace the Convection Fan and Oven Lights Control Board.

BLOCK DIAGRAM AND SYSTEM INTERCONNECTIONS

