

SERVICE DATA SHEET

318127006 (0108) Rev. A

Electric & Dual Fuel (Gas Cooktop - Electric Oven) Slide-in Range with ES400 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.

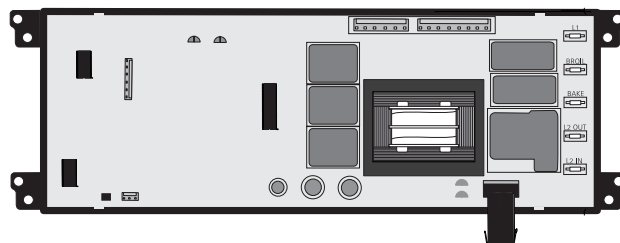
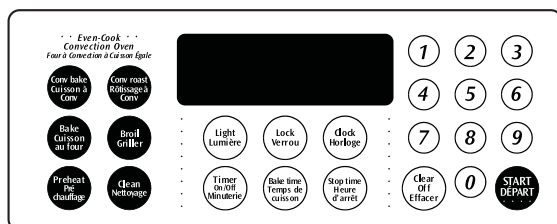
1. Do not attempt a product repair if you have any doubts as to your ability to complete it in a safe and satisfactory manner.
2. Before servicing or moving an appliance, remove power cord from electric outlet, trip circuit breaker to Off, or remove fuse and turn off gas supply.
3. Never interfere with 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.

ES400 ELECTRONIC OVEN CONTROL

The ES400 electronic oven control is similar to the ERCIII control with a few exceptions.

1. This self-cleaning controller offers Bake, Broil, Preheat, Convection Bake and Convection Roasting modes, Timed and Delayed Baking, and Cleaning functions.
2. Convection operates with an element and a fan dedicated to convection.
3. Slew and dial are replaced by a digit key pad.
4. No external relays.

NOTE: The controller's are not field repairable. Only temperature settings can be changed. See oven calibration.



NOTE: Depending on model, the size and shape of touch pads may vary (for example round instead of elliptical). (Some models may also have round push buttons instead of touch pads).

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. Cooking times can be reduced by as much as 30%. The air is drawn in through a fan cover and the element located on the rear wall of the oven. It is then discharged around the outer edges of this cover. The air circulates around the food and then enters the cover again. As with conventional electric ranges, there is still an oven vent which discharges through the rear of the cooktop.

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

1. Press the **CONV. BAKE** or **CONV. ROAST** pad.
2. Enter the desired temperature on the keypad (setpoint).
3. Press the **START** pad.

The oven will automatically start and the fan will begin to run. To cancel the convection baking/roasting function, press the **CANCEL** pad.

NOTE: The fan runs continuously while in the convection mode. The fan will stop if the door is opened while convection baking/roasting. The bake element will continue to operate if the door is opened.

CONVECTION MODE OVEN TEMPERATURES

Convection Bake/Roast

Because heat is more evenly distributed in convection mode, foods can be cooked in less time.

BAKE

During a bake mode, the oven uses bake element to reach the controller set point. The element uses full power when it's on. When the set point is reached, the controller adds top heat by cycling the broil element on for 6 to 9 seconds per minute. The bake element is on for the remaining time of the minute.

PREHEAT

During a preheat mode, the controller preheats the oven with the bake element. When the desired temperature in the oven is reached, the controller adds top heat by cycling the broil element on for 6 to 9 seconds per minute. The bake element is on for the remaining time of the minute. Both elements use full power when they are on but they are never on at the same time.

CLEAN

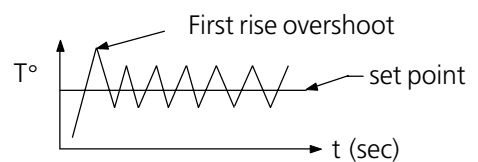
During a cleaning process, the oven uses bake element.

CLEAN AND TIMED CLEAN

When these modes are called, the door locks right after start button is pushed.

FIRST RISE

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



OVEN CALIBRATION

Set the electronic oven control for normal baking at 350°F/177°C. Obtain an average oven temperature after a minimum of 5 cycles. Press Cancel to end bake mode.

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

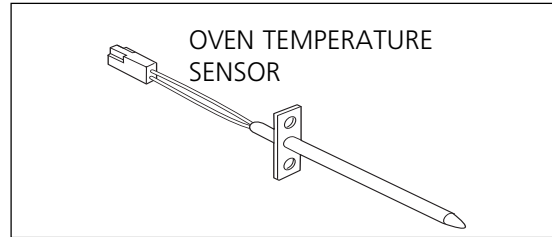
ELECTRONIC OVEN CONTROL

ELECTRONIC OVEN CONTROL FAULT CODE DESCRIPTIONS

Note: Only three families of fault codes are displayed by this control "F1", "F3", and "F9". Generally speaking "F1" implies an internal control failure, "F3" an oven probe problem, and "F9" a latch motor problem. In all occurrences the alarm is accompanied by a display of the error code.

Fault Code	Likely Failure Condition/Cause	Suggested Corrective Action
F1	<ol style="list-style-type: none"> 1. Shorted keypad. 2. Control's internal checksum may have become corrupted. 3. Control has sensed a potential runaway oven condition. Control may have shorted relay, RTD sensor probe may have gone bad. 	<ol style="list-style-type: none"> 1. Press CLEAR or CANCEL pad. 2. Disconnect power, wait 30 seconds and reapply power. If fault returns upon power-up, replace EOC. 3. Check RTD sensor probe and 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.
F3	<ol style="list-style-type: none"> 1. Open RTD sensor probe/ wiring problem. Note: EOC may initially display an "F1", thinking a runaway condition exists. 2. Shorted RTD sensor probe / wiring problem. Note: "F3" is displayed when oven is in active mode or an attempt to enter an active mode is made. 3. Abusive operation (safety thermostat). 4. Safety thermostat opened, or cooling fan stalled. 	<ol style="list-style-type: none"> 1. Press CLEAR or CANCEL pad. 2. Check wiring in probe circuit for possible open or short condition. Check RTD resistance at room temperature (compare to probe resistance chart). If resistance does not match the chart, replace the RTD sensor probe. 3. Let the oven cool down and restart the function 4. Look for stalled cooling fan, broken safety thermostat (opens).
F9	<ol style="list-style-type: none"> 1. Door motor failure / jammed. Latch motor switch failure. 2. Control software failure, or component failure (relay stuck). 3. Wiring Problem. 	<ol style="list-style-type: none"> 1. Press CLEAR key. 2. If CLEAR key does not eliminate problem, turn off power for 30 seconds, then turn on power. 3. Check wiring of Lock Motor, and Lock Switch A and B, and Door Switch circuits. 4. Apply power (L1) directly to the Lock Motor, if the motor does not rotate, replace Lock Motor Assembly. 5. Check Lock Switch A, and B 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 Switches. If the Lock Switches are defective, replace Motor Lock Assembly. 6. If all above steps fail to correct situation, replace control.

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
200 ± 3.8	93.3 ± 2.1	1135 ± 7.8
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	482.8 ± 7.6	2697 ± 24.4



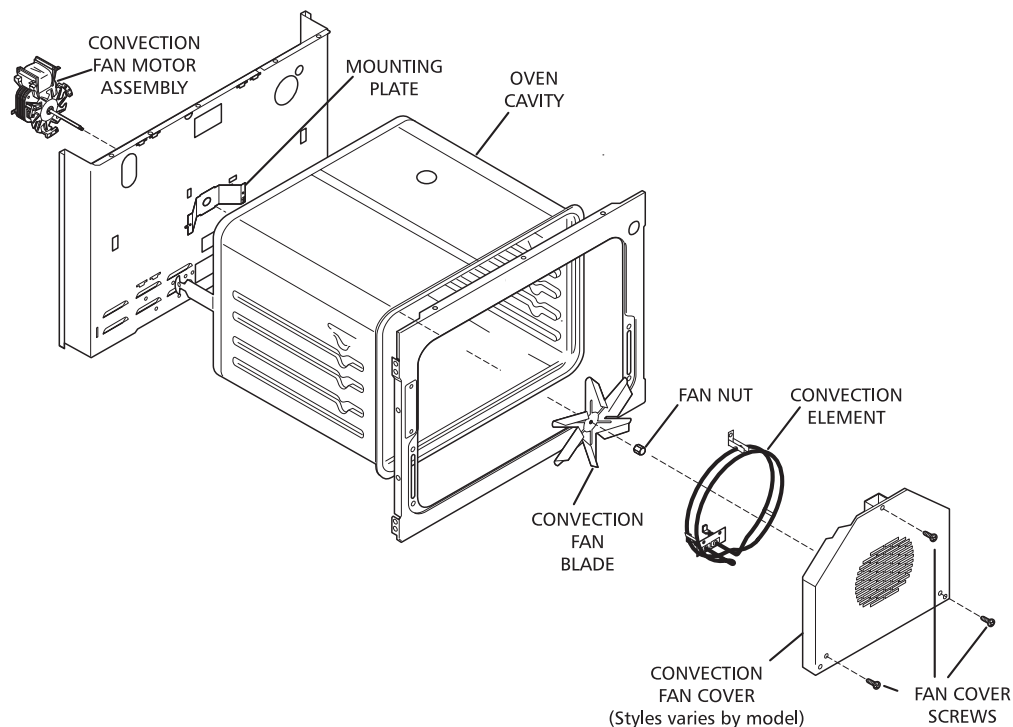
CIRCUIT ANALYSIS MATRIX										
	Elements				Light P5 - 4	Door motor P5 - 6	Lock Motor Switches			Door Switch COM-NO
	Bake P3	Conv P5-7	Broil P2	Conv. Fan P5 - 7			P5-10 & -11	A P5-10 & -13	B Cooling Fan	
Bake	X		X*							
Broil			X							
Conv. Bake	X*	X	X*	X						
Conv. Roast	X*	X	X*	X						
Clean	X									
Locking						X				
Locked							X		X	
Unlocking						X				
Unlocked								X		
Light					X					
Door Open					X					X
Door Closed										

* Denotes Heating with Assistance Element only

Relay will operate in this condition

ELECTRICAL RATING			
Kw Rating 240/208 V	See nameplate	Bake Element Wattage	3000W/2253W
Broil Element Wattage	2750W/2065W	Convection Element Wattage	350W/263W
Warmer Drawer Element	450W/120V		

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.

FAN MOTOR

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

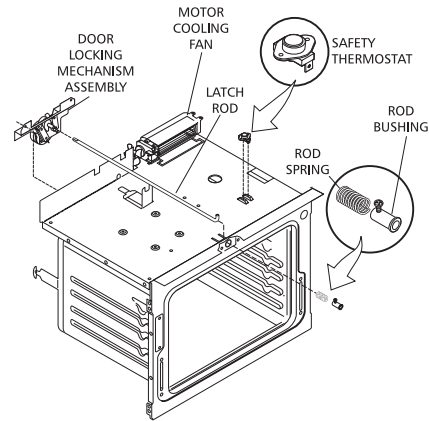
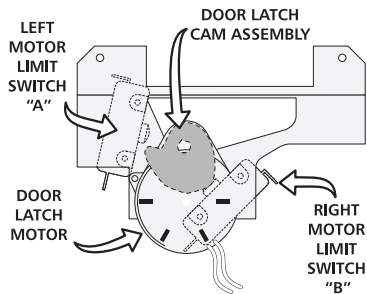
FAN RELAY

The fan motor runs continuously while in the convection mode unless the door is opened. If the fan does not operate, check the following:

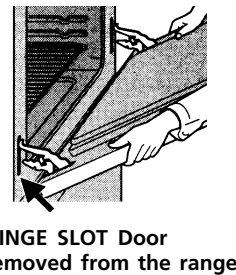
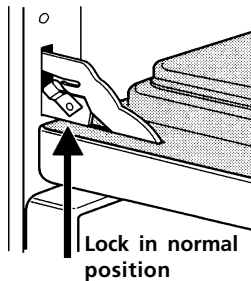
- Fan icon on display.
- Voltage output between terminals P5-7 and neutral (120v).
- 120 Volts available at fan motor.
- Fan motor coil resistance 35 ohms \pm 10%.
- Door/light switch.

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 does'nt need to heat up to 520°F before the door locks. However, until the temperature inside oven reaches 520°F, the self-clean program can be canceled and door will unlock immediately. After oven reaches temperatures over 520°F, the door will not unlock until temperature drops below 490°F.



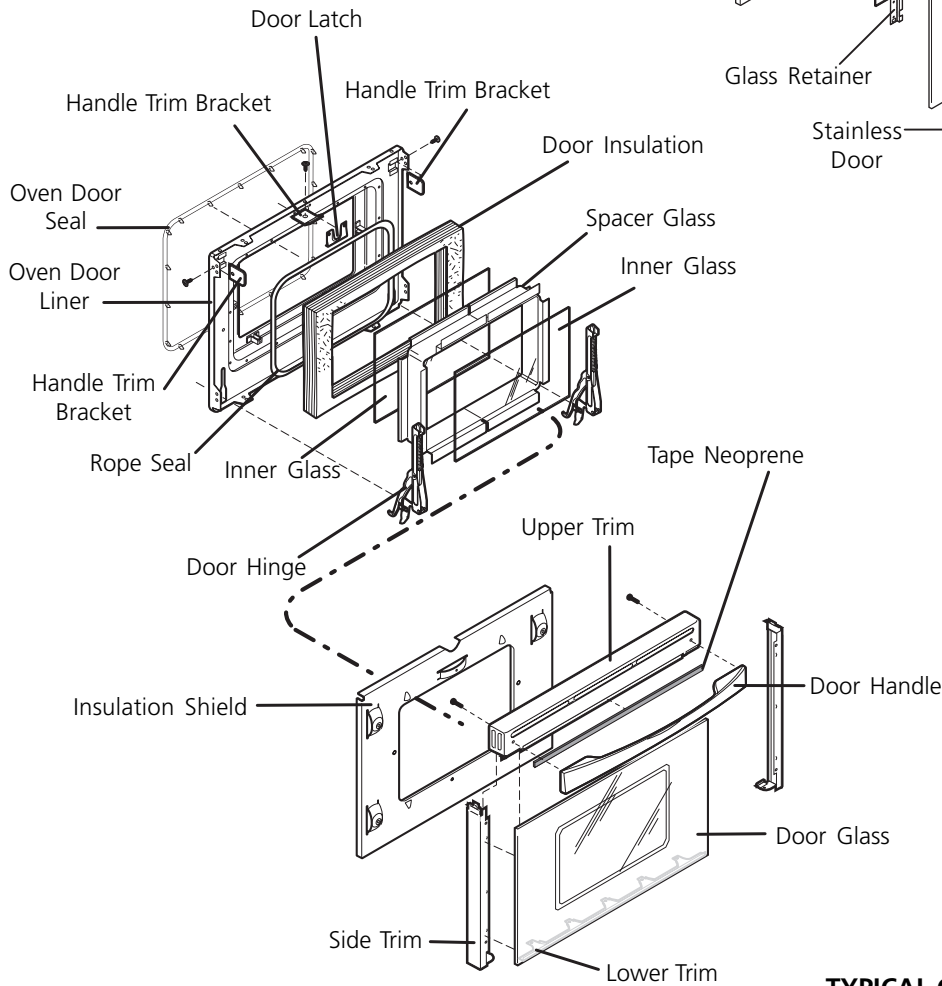
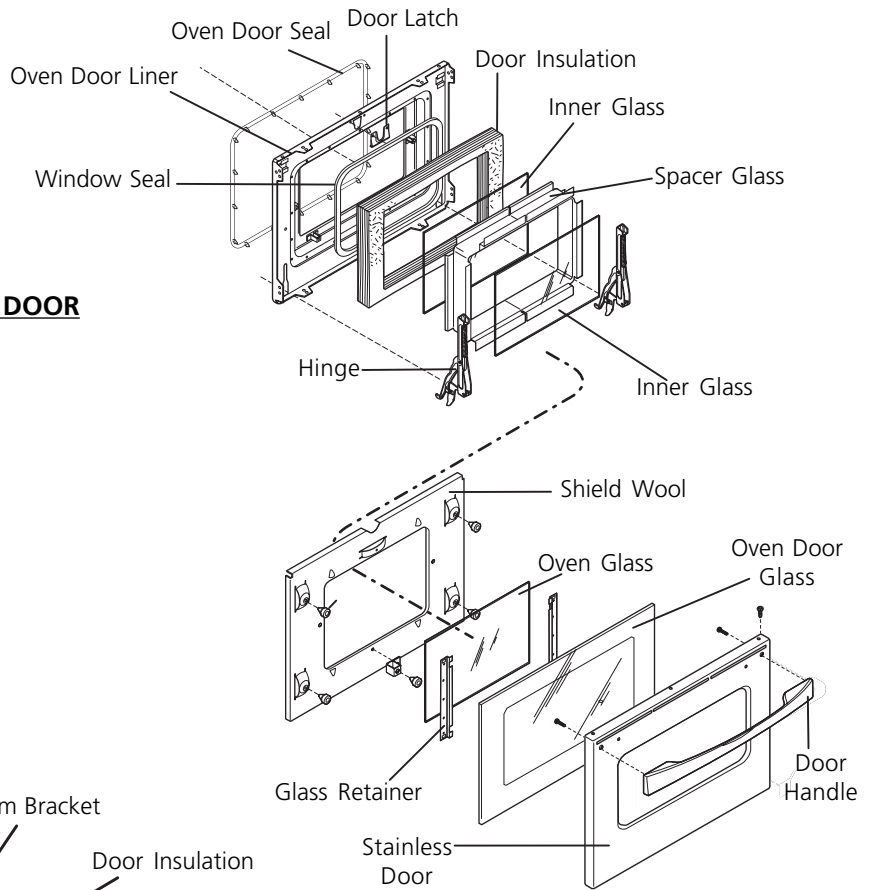
OVEN DOOR REMOVAL AND REPLACEMENT



1. Disconnect range from electrical supply
2. Open door to fully opened position.
3. Pull up the lock located on each hinge support and engage it in the hook of the hinge lever. You may have to apply a little downward pressure on the door; pull the locks fully over hooks.
4. Grasp door by sides, pull bottom of door up and toward you while rotating the top of door toward range to completely disengage the hinge levers.
5. To reinstall reverse procedure. Make sure hinge supports are fully engaged before unlocking the hinge levers.

EXPLODED VIEW

TYPICAL STAINLESS STEEL DOOR



TYPICAL GLASS DOOR

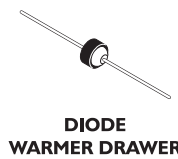
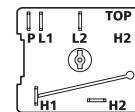
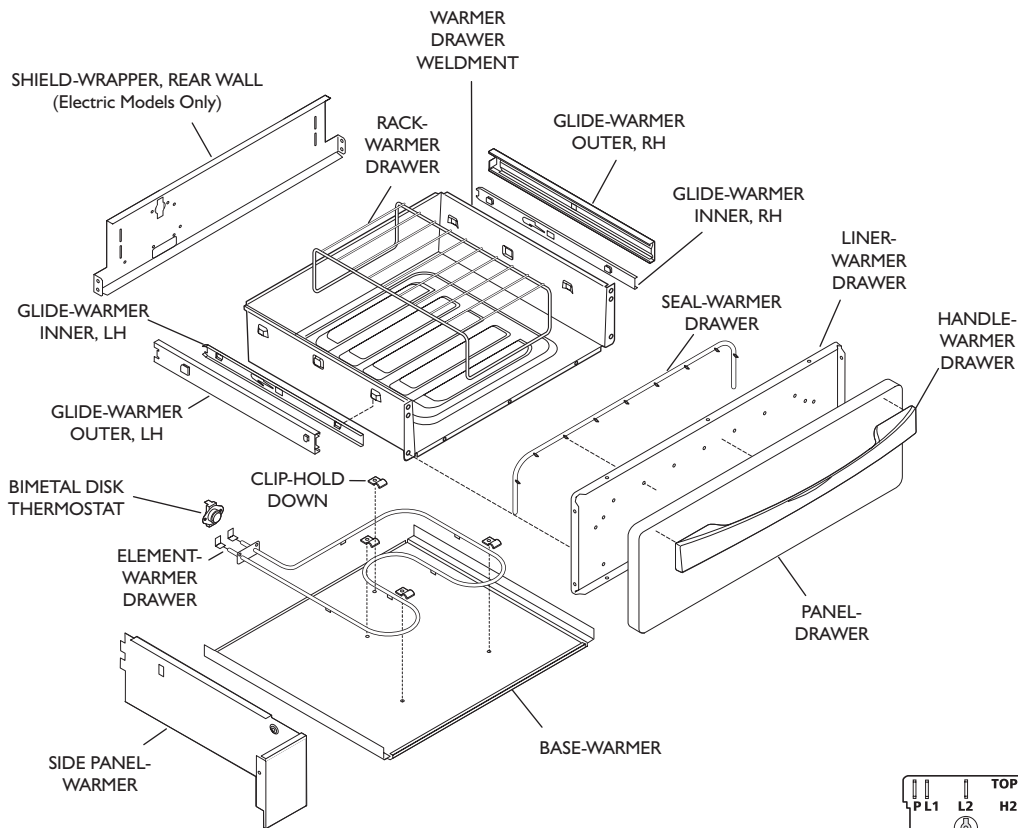
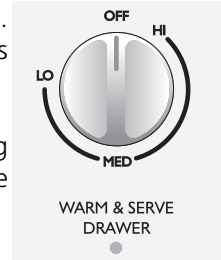
WARM AND SERVE DRAWER (SOME MODELS)

The Warm and Serve Drawer is designed to keep prepared food warm until it is time to serve. This feature is available on select gas and electric models. The Warm and Serve Drawer is electrically operated on both gas and electric models.

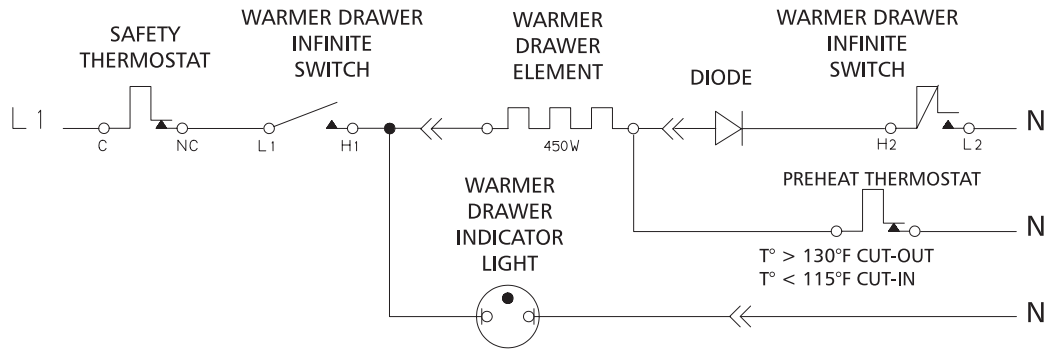
Ranges featuring the Warm and Serve Drawer feature are equipped with heavy duty ball bearing drawer glides. These glides not only support the weight more effectively, they also allow the drawer to be opened to its full depth.

The warmer control is an infinite heat switch mounted to the control panel. A 450 watt, 120 volt element is secured to a metal base located just below the Warm and Serve Drawer. A preheat thermostat (bimetal disk) is located at the left rear corner of the range, directly above the element terminals. The system also contains a diode, indicator lamp, and safety thermostat. The diode is located in the wiring harness a short distance from the safety thermostat.

The safety thermostat is mounted to the rear insulation panel and is actuated during the self-clean cycle. It is used to open the circuit to the heating element so the warming drawer will not function during the self-clean cycle.

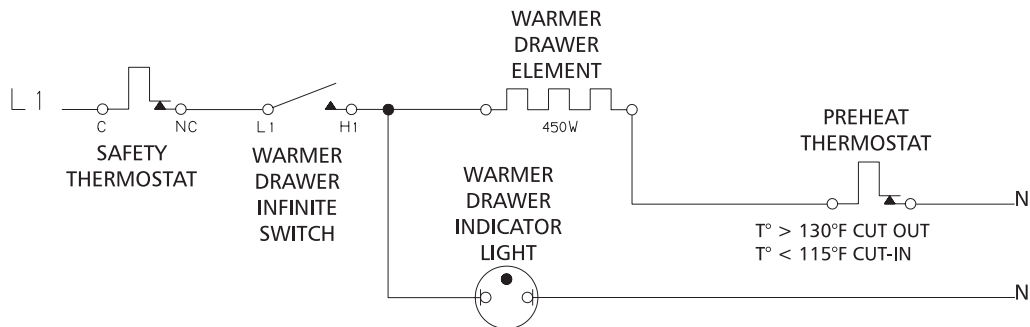


WARM AND SERVE DRAWER COMPLETE CIRCUIT (SOME MODELS)



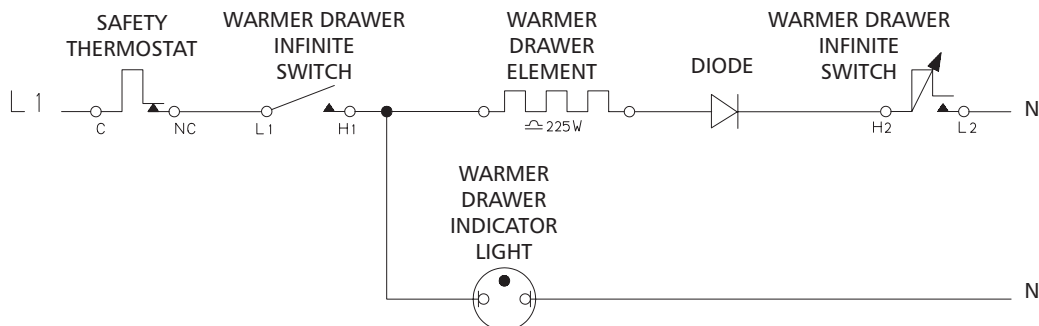
When the temperature at the preheat thermostat reaches 130°F the thermostat opens. This forces the current to flow through the parallel circuit which contains the diode. The diode allows only half power (every other pulse of electricity or pulsating DC) to flow through the element, resulting in lower heat output by the element. The infinite heat control switch will cycle as necessary to maintain the temperature in the drawer as indicated by the control switch setting. If the control is placed on a lower setting, it is possible for the temperature in the drawer to drop enough to allow the preheat thermostat to close again which will allow the element to reenter the "Preheat" mode at full power.

WARM AND SERVE DRAWER PREHEAT CIRCUIT (SOME MODELS)



When the Warm and Serve Drawer is first turned on, a "Preheat" circuit is established to provide full power (120 volts) through the lock switch, L1 to H1 of the warmer switch, the warmer element and the preheat thermostat.

WARM AND SERVE DRAWER AFTER CUT-OUT CIRCUIT (SOME MODELS)



An indicator lamp wired in parallel with the element is illuminated whenever the control switch is turned on.

GAS COOKTOP REMOVAL

1. Shut off gas to range.
2. Disconnect power.
3. Remove gas supply line at the regulator. If necessary, move range out of the cabinet opening.
4. Remove grates, burner covers, knobs and seals, inspect burners.
5. Remove screws securing burner pans. Inspect electrode, cleanliness, etc.
Note: The electrode can not be removed from the pan.
6. Remove left and right screws on each side of range securing panel top to body.
Note: Screws are located 1/1/2" from console and 3" from back of range.
7. Remove machine screw on manifold side of range (2-3/4" from cooktop) securing manifold to cooktop.
8. Remove glass top and gasket.
9. To reassemble cooktop, reverse procedure.

