

! WARNING

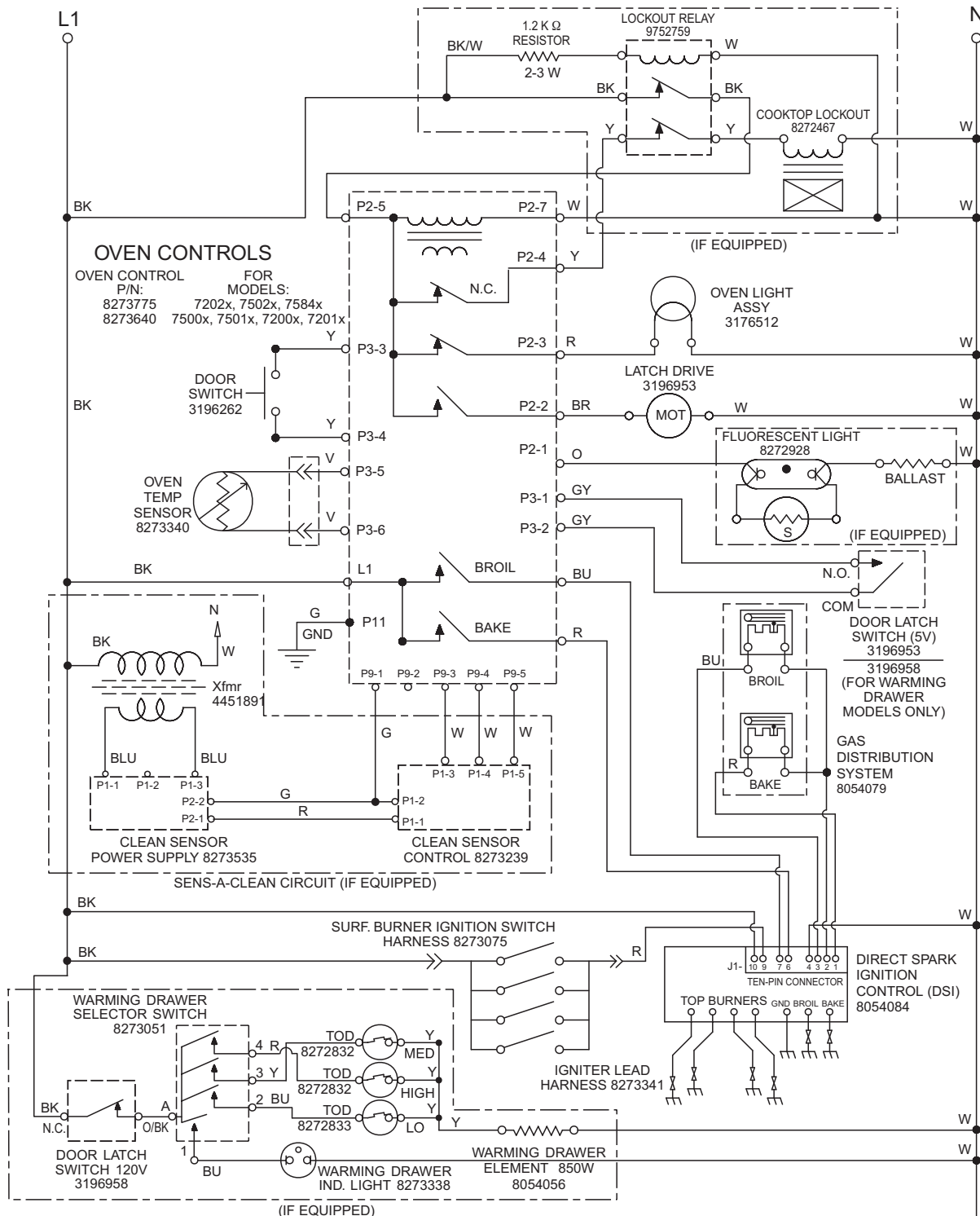


Electrical Shock Hazard
Disconnect power before servicing.
Replace all panels before operating.
Failure to do so can result in death or electrical shock.

Caution: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.
 Verify proper operation after servicing.

NOTE: Schematic shows door latch switch in the cook position with the oven door open, and elements off.

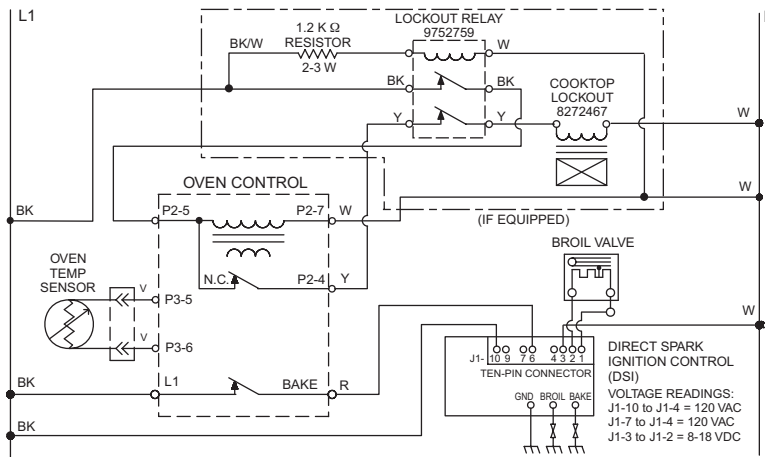
MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U. S. PATENTS:
 3,659,578 3,877,460 4,467,184
 3,788,300 4,102,322 4,565,967
 3,832,988 4,364,589 4,613,739
 OTHER PATENTS PENDING.



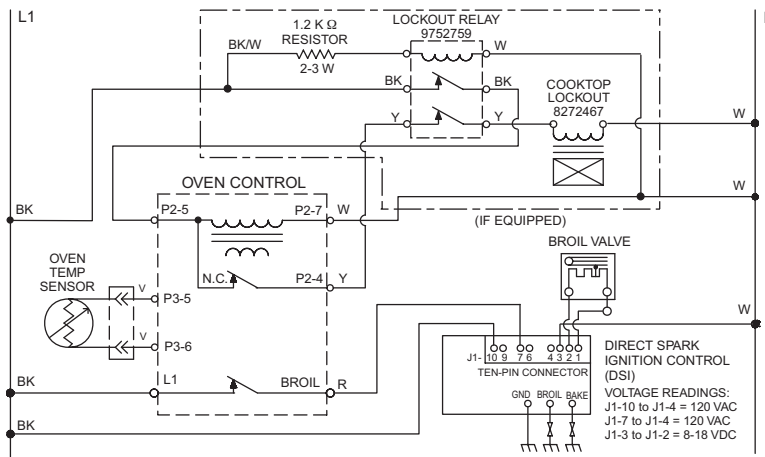
STRIP CIRCUITS

The following individual circuits are for use in diagnosis.
Before starting diagnosis, check the line voltage and for blown fuses.

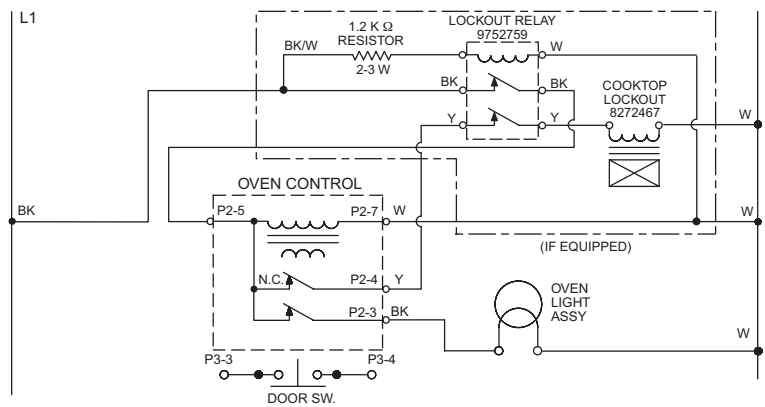
BAKE AND TIME BAKE



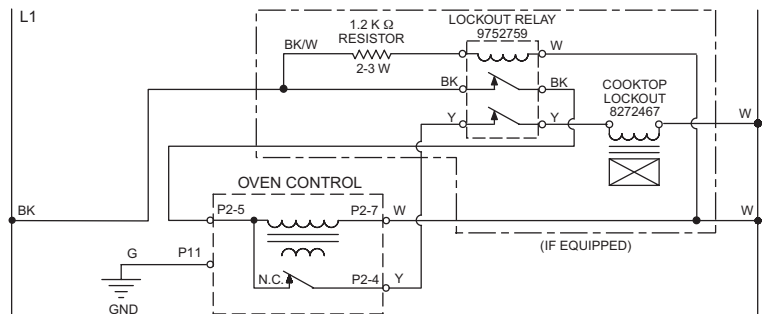
BROIL



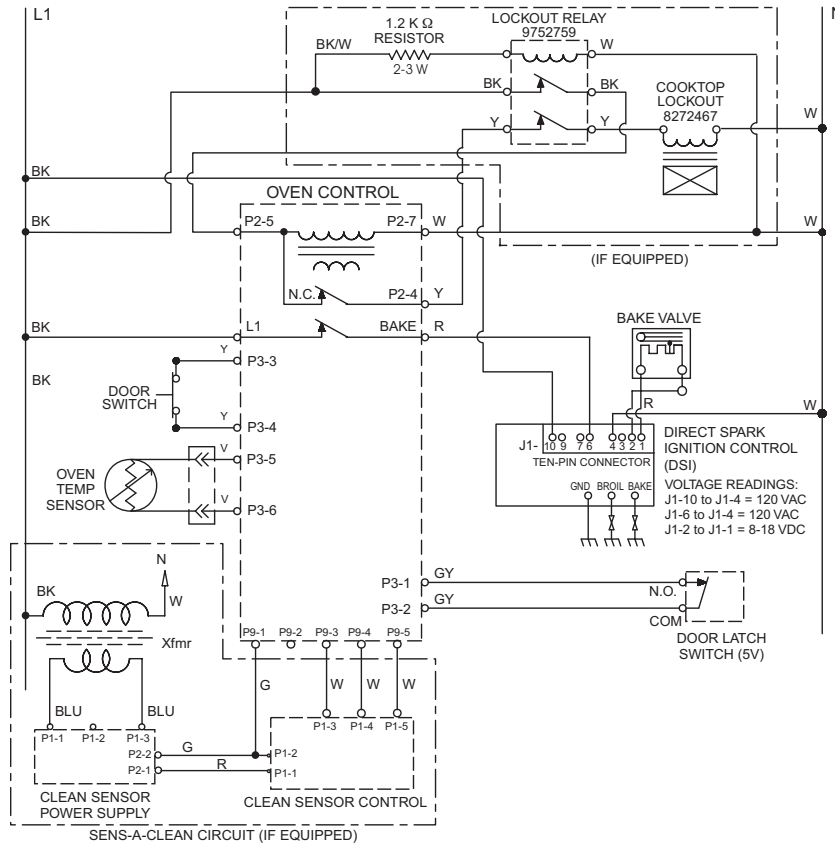
OVEN LIGHT



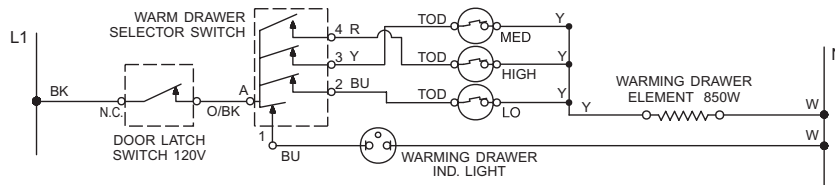
CONTROL POWER



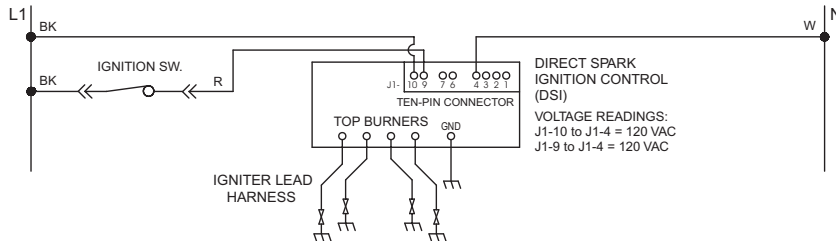
CLEAN



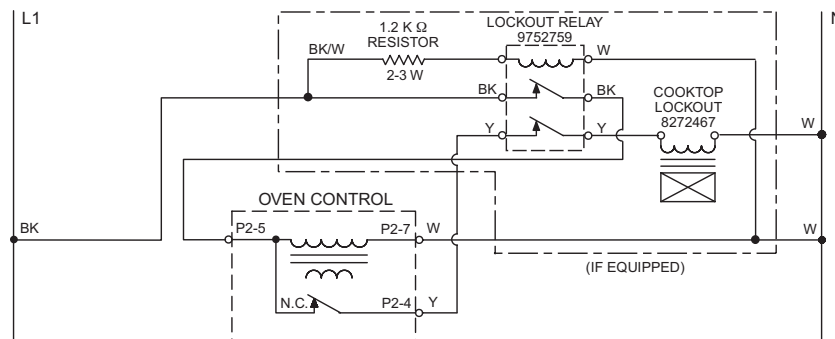
WARMING DRAWER
(IF EQUIPPED, ON MEDIUM SETTING)



SURFACE UNIT
(TYPICAL)



COOKTOP LOCKOUT
(SOLENOID)



DIAGNOSTICS

- All diagnoses of this range must begin with normal check of line voltage, blown fuses, and failed components.
- All units that have failed during the first few days of use should be checked for loose connections or miswiring.
- All checks should be made with a meter having a sensitivity of 20,000 ohms per volt or greater.

FAILURE/ERROR DISPLAY CODES

4 DIGIT DISPLAY	3 DIGIT DISPLAY	LIKELY FAILURE CONDITION	SUGGESTED CORRECTIVE ACTION PROCEDURE
F1	E0	EEPROM communications	<ol style="list-style-type: none"> Verify failure if not displayed, using CANCEL/OFF key. Press key for 5 seconds until last error code is displayed. Disconnect power longer than 30 seconds. Re-apply power and observe for longer than 1 minute. If failure remains, disconnect power, replace control.
	E1	EEPROM checksum failure	
F1	E3	Fuel type (gas/electric) select failure	<ol style="list-style-type: none"> Verify failure if not displayed, using CANCEL/OFF key. Press key for 5 seconds until last error code is displayed. Verify fuel type using START/ENTER key. Press key for 5 seconds until fuel type is displayed. The first digit in the time display should read either "9" or "E". An "E" is displayed for an electric oven. A "9" is displayed for a gas oven. Disconnect power longer than 30 seconds. Re-apply power and repeat steps 1 and 2. If fuel type changed since last power up, disconnect power and replace control, or poor baking/cleaning performance will result.
	E0	Key held down too long or shorted key	
F2	E1	Key tail unplugged or damaged	<ol style="list-style-type: none"> Verify failure if not displayed, using CANCEL/OFF key. Press key for 5 seconds until last error code is displayed. Disconnect power longer than 30 seconds. Unlock keytail connector. Inspect connector locking tabs and keytail end for damage. Ensure locking tabs are not bent or broken and keytail is not creased or torn. Reinsert keytail into connector. Ensure keytail is fully seated before locking down the connector. Once locked, tug keytail slightly to ensure lock. Re-apply power and observe for longer than 1 minute. If any false key presses occur or the failure remains, disconnect power, and replace keypad. Repeat steps 3-6. If failure repeats, disconnect power and replace control.
	E6	Cancel key failure	
	E0	Oven sensor opened	
F3	E1	Oven sensor shorted	<ol style="list-style-type: none"> Measure sensor value (between connector pins) between 1000 Ω @ 32° F and 2697 Ω @ 900° F (room temperature approx. = 1080 Ω). If measurement does not correlate to real temperature, disconnect power, replace sensor and refer to steps 3-5. Also measure from sensor connector to sensor casing for possible short. Trace wires and connectors to sensor, from control, then from sensor back to control. If all connections made and no wire damage, refer to step 3. Disconnect power longer than 30 seconds. Re-apply power and press BAKE and START/ENTER. Observe for longer than 1 minute. If failure remains, disconnect power, replace control, then go back to step 4.
	E2	Bake range over temp	
	E3	Clean range over temp	
	E0	Door and latch switches do not agree (condition exists when door switch is open indicating an open door and latch switch is closed indicating a locked door)	
F5	E0	Door latch not operating	<ol style="list-style-type: none"> If door latched <ol style="list-style-type: none"> Disconnect power from unit. Check wires and connectors from control to door switch, then from door switch to control. If no damage to wires and all connectors okay, proceed to step C. Replace door switch. Reapply power. Press CANCEL to clear F5 failure code from memory. Program and start the Clean mode. Observe for 1 minute to ensure that operation is normal. If door not latched <ol style="list-style-type: none"> Disconnect power from unit. Check wires and connectors from control to latch switch then from latch switch to control. If no damage to wires and all connectors okay, proceed to step C. Repeat steps A) and B) for door switch. Measure door switch (door open = switch open small low voltage terminals). Measure latch switch (unlatch = switch open, oven light contacts are closed). If corrections are made in any step, reconnect power to control. Press CANCEL to clear F5 failure code from memory. Program and start the Clean mode. Observe for 1 minute to ensure that operation is normal. If failure remains, disconnect power and replace control.
	E1	Door latch not operating	

HIDDEN EOC FUNCTIONS

User activates all hidden E.O.C. functions by pressing and holding the appropriate key for 5 seconds. Below is a list of hidden functions or features:

HIDDEN FUNCTIONS	KEY
Temperature calibration offset	Bake
°F to °C	Broil
Recall last failure code	Off/Cancel
Disable/Enable all tones except end-of-timer and error tones	Cook Time
Disable/Enable cycle and timer-end repeating tones	Timer Set
Audible signal pitch control	Delay Start Time
Software revision number	Start/Enter *
Sales Demonstration Mode	Timer Off

* Press after activating "Recall last failure code" feature, or while a failure code is displayed.

OVEN TEMPERATURE ADJUSTMENT

- Press and hold BAKE pad for five (5) seconds. Current offset, if any, is shown in 3-digit display. CAL is shown in 4-digit display (3 digits on right).
- Pressing the TEMP pad "up" arrow (▲) adjusts the temperature in 10° F increments in the following sequence: 0°; 10°; 20°; 30°; -30°; -20°; -10°; 0°; and so on.
- Press START/ENTER pad to activate the desired temperature adjustment. If the START/ENTER pad is not pressed within 5 minutes, adjustment is ignored.
- BAKE temperature adjustment cannot result in operating temperatures higher than 525° F or lower than 170° F, as measured at oven cavity center.
- Once BAKE temperature has been adjusted, BROIL temperatures are automatically offset to the same degree.
- CLEAN temperature is also offset automatically when BAKE temperature is adjusted. If BAKE temperature has been raised, CLEAN temperature is offset +5° F. If BAKE temperature has been lowered, CLEAN temperature is offset -5° F.

REMOVING/REINSTALLING OVEN DOOR

Before removing the door:

1. Use a putty knife or screwdriver and insert it at the bottom corner of the door stop clip. See Figure 1.
2. Pry door stop clip free and remove it from front frame hinge slot. Take care not to chip porcelain.

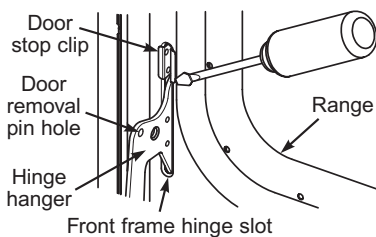


Figure 1

3. Repeat procedure for other door stop clip.

To remove oven door:

1. See Figure 2. Open oven door approximately halfway and insert a hinge pin into the door removal pin hole on each side of the door. Do not remove hinge pins while the door is removed from the range.

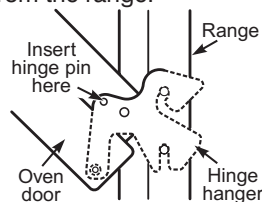


Figure 2

2. Carefully close the door as far as the hinge pins will allow.

3. Grasp the door on the sides with your fingers on the front of the door and your thumbs on the inside surface.

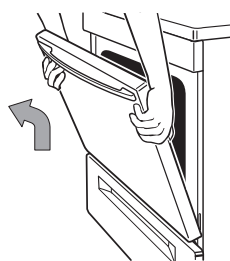


Figure 3

4. See Fig. 3. Pull door straight up until it stops, then rotate the door toward the floor, and pull it toward you. Hinge hangers will slide out of front frame hinge slots.

IMPORTANT: Do not use the door handle to lift the door.

To reinstall oven door:

1. Grasp the door on the sides with your fingers on the front of the door and your thumbs on the inside surface.
2. Hold oven door so that the top edge of each hinge hanger is horizontal. Insert hinge hangers into the front frame hinge slots. see Figure 4.

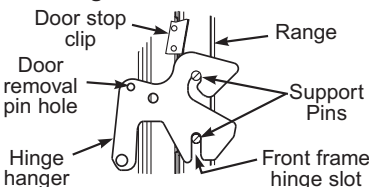


Figure 4

3. Rotate top of door toward range. Slide hinge hangers down onto front frame support pins. **NOTE:** Make sure the hinge hangers are fully seated and engaged on the support pins.

4. See Figure 5. Insert the door stop clip with the angled surface at the top of the

frame hinge slot. Push clip in until flanges are flush with the front frame.

5. Open the door completely and remove the hinge pins, then close the door.

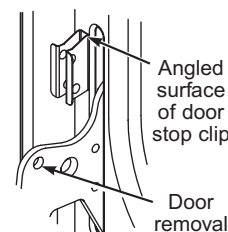


Figure 5

ADJUSTING LOW FLAME ON SURFACE BURNERS

1. Push in and turn each cooktop burner control knob from LITE to LO setting quickly. The low flame should be a minimum, steady blue flame. If the low flame needs to be adjusted:

2. Turn control knob to LO setting and remove control knob.

3. Insert a small flat-blade screwdriver into the valve stem. See Figure 6.

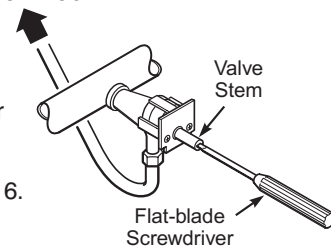


Figure 6

4. Turn the valve screw to obtain the smallest flame that will not go out when the control of a cold burner is quickly turned from HI to LO.

5. Repeat for other cooktop burners as needed.

DOOR LATCH MECHANISM

See Figure 7. The door latch mechanism is operated by a geared motor connected to a cam, located at the rear of the range.

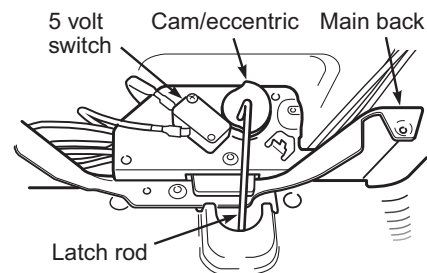


Figure 7

When the oven control is programmed and started for the Clean mode, the EOC operates the motor. The cam in turn moves the door latch, via a rod, to the locked position at which time the cam activates the switch that causes the motor to stop. The latch remains in the locked position until the oven temperature drops to approximately 500° F at the end of the Clean cycle. The EOC then once again operates the motor and the latch is unlocked. The cam releases the switch plunger and the motor stops.

L.P. GAS CONVERSION

Gas conversion from Natural gas to L.P. gas must be done by a qualified installer.

! WARNING



Fire Hazard

Shut off gas supply line valve.

Make all conversions before turning gas supply valve back on.

Failure to follow these instructions could result in explosion, fire or other injury.

1. Shut off main gas supply line, then disconnect power cord.

2. Remove storage drawer or warming drawer and oven racks. Locate pressure regulator at back of range.

NOTE: Models with warming drawer must have access cover located in the center back of the compartment removed to access regulator. **Do not remove the pressure regulator.**

3. Pressure regulator: See Figure 8. Remove plastic cover. Turn cap marked "N" on front of pressure regulator counterclockwise with a wrench to remove. **Do not remove the spring beneath the cap.** Turn the cap over and reinstall cap on regulator so that the hollow end faces out and the letters "L.P." are visible.

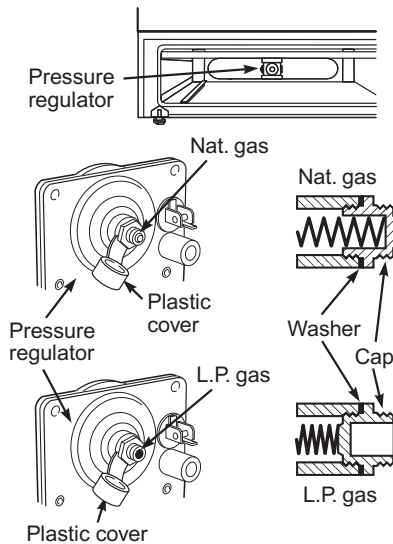


Figure 8

4. Surface burners: Remove burner caps. Use a Phillips or Quadrex screwdriver to remove the screws holding the burner head down. See Figure 9.

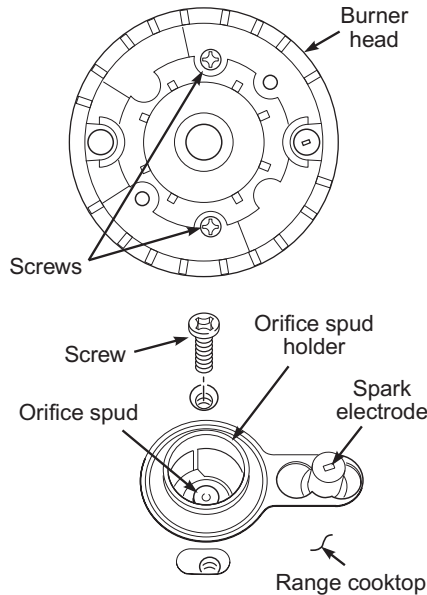


Figure 9

Lift the burner head off the cooktop to uncover the orifice spud holder. The orifice spud is recessed in holder.

NOTE: Reinstall one of the screws through range cooktop to hold orifice spud holder in place while removing and replacing orifice spuds.

5. Remove the cardboard orifice spud holder located on the back of the range near gas inlet. See Figure 10. Orifice spuds are stamped with a number, marked with two color dots, and have a groove in hex area. Apply masking tape to the end of a 5/16 nut driver to fit snugly over the orifice spud. Press driver down onto the spud of the left front burner and remove by turning spud counter-clockwise and lifting it out.

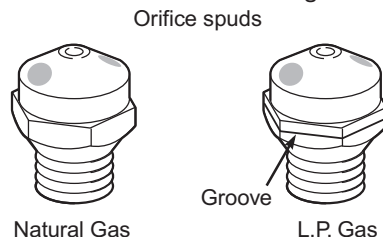


Figure 10

Replace the Natural gas spud with the correct L.P. gas spud shown in the table below for the model being converted.

L.P. Gas Spud			Where Used by Model		
Propane Rate (BTU/hr)	Color Marking	Orifice Spud Number	72002 75002 72004 75004	72012 75012 72014 75014	72022 75022 72024 75024 72029 75029 75842 75844 75849
5,000	Green/Brown	L65	Right Rear	Right Rear	Right Rear
8,000	Green/Lt. Blue	L80	Left Rear Right Front	Left Rear	Left Rear Right Front
11,000	Green/Yellow	L99	Left Front	Left Front Right Front	—
12,000	Green/Magenta	L103	—	—	Left Front

Continue to place the remaining spuds one at a time. Place Natural gas orifice spuds in cardboard spud holder and reattach to range back for future use. Replace burner caps, screws, and grates.

6. Oven burner: See Figure 11. Use 1/2" combination wrench to turn the orifice hood down snug onto pin (approximately 2 to 2-1/2 turns).

Do not overtighten.

The burner flame cannot be properly adjusted if this conversion is not made.

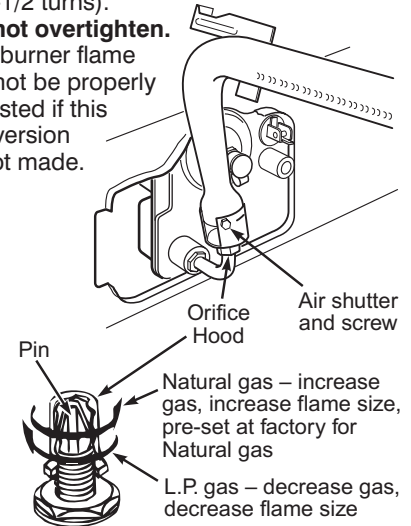


Figure 11

7. Broil burner: See Figure 12. Use 1/2" combination wrench to turn the orifice hood down snug onto pin (approximately 2 to 2-1/2 turns). **Do not overtighten.** The burner flame cannot be properly adjusted if this conversion is not made.

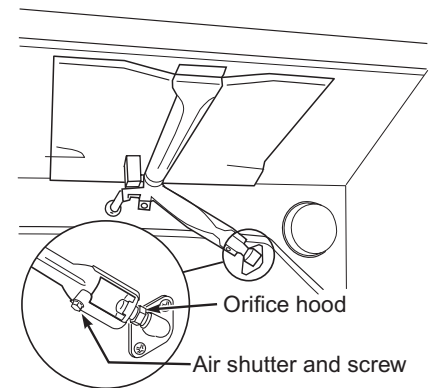


Figure 12

8. Reinstall the storage drawer or warming drawer.

CHECK OPERATION OF COOKTOP

When a cooktop control knob is turned to the LITE position, the system creates a spark to light the burner. This sparking continues until the control knob is turned to the desired setting.

Check each cooktop burner for proper flame:

1. After air has been purged from gas line, push in and turn each surface unit control knob to LITE position. The flame should light within 4 seconds. After burner lights, turn control knob to HI.

2. The small inner cone should have a very distinct blue flame 1/4" to 1/2" long. The outer cone is less distinct. If flame doesn't appear this way, adjust the low flame. See "Adjusting Low Flame on Surface Burners" on Page 5.

CHECK OPERATION OF OVEN BURNER

When the oven control is set to the desired setting, a series of sparks lights the oven burner. Sparking stops when the burner gas lights. Sparking will again occur to re-light the burner every time the burner cycles back on. **NOTE:** If electrical supply is not available, solenoid valve in gas line to manifold will be closed and cooktop burners will not operate.

1. Open oven door.

Remove oven bottom:

2. Remove 2 screws at the rear of the oven bottom. Lift the rear of the oven bottom up and back until the front of the panel is away from the front frame. Remove from oven (refer to Figure 13).

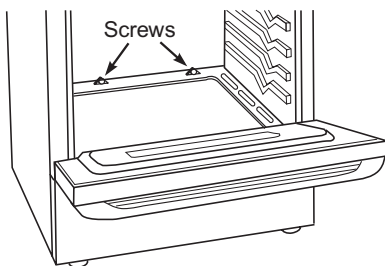


Figure 13

3. Check the burner flame by removing the flame spreader (refer to Figure 14). To remove the flame spreader, remove 2 screws from the front tabs of the flame spreader. Lift front of spreader and pull forward to remove tabs from rear of oven.

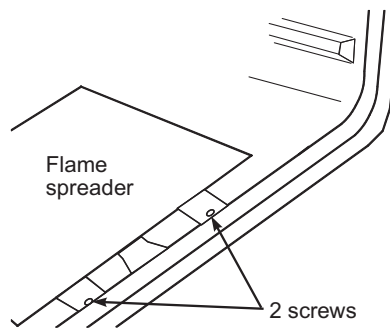


Figure 14

4. Press the "BAKE" pad.

- The "BAKE" indicator will light.
- "350°F" will appear in the display.

5. Press the "START/DELAY" pad.

- "Pre" will appear in the display.
- "HEAT" and "ON" indicators will light.

NOTE: A faint ticking sound will be heard while the oven burner lights. The oven burner should light within 8 seconds.

Check oven burner for proper flame:

6. The flame should be 1/2" long, with inner cone of bluish-green, and outer mantle of dark blue, and should be clean and soft in character with no yellow tips, blowing or lifting of flame.

If burner does not light, check that the regulator shutoff valve is in the ON position. See Figure 15.

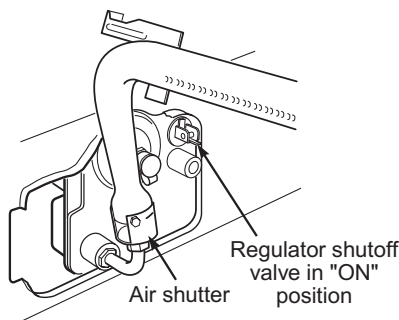


Figure 15

If oven flame needs adjusting:

7. See Figure 15. Locate the air shutter close to the pressure regulator. Loosen screw and adjust the air shutter until the proper flame appears. Tighten screw.

8. Press OFF/CANCEL. Replace flame spreader, oven bottom and oven racks.

CHECK OPERATION OF OVEN BROIL BURNER

1. Press the "BROIL" pad.

- "HI" will appear in the display.
- The "BROIL" indicator will light.

2. Press the "START/DELAY" pad.

- "HEAT" and "ON" indicators will light.

3. Check the broil burner for proper flame. The flame should be 1/2" long, with inner cone of bluish-green, and outer mantle of dark blue, and should be clean and soft in character with no yellow tips, blowing or lifting of flame.

If broil flame needs adjusting:

4. See Figure 12. Loosen the lock screw on the air shutter located at the rear of the broil burner. Adjust the air shutter as needed. Tighten lock screw.

5. Press OFF/CANCEL. Reattach spud holder to range for possible future use.

NOTE: Instructions for converting from L.P. gas back to Natural gas are in the Installation Instructions shipped with this product.

WARMING DRAWER

The warming drawer feature is controlled by a 3 position power switch (HI, MED, LOW) that is mounted on the control panel. There are also 3 thermo-discs (TODs) arranged in a vertical column behind the warming drawer. The three TODs are activated by different operating temperatures (see Strip Circuit, page 3).

- The bottom TOD controls the LOW setting. This LOW TOD (blue wire) opens at 38°C (100°F).
- The middle TOD controls the HIGH (red wire) setting and opens at 60°C (140°F).
- The top TOD controls the MEDIUM (yellow wire) setting and opens at 60°C (140°F).

The warming drawer element circuit includes the power switch and the TODs. When the power switch is turned to LOW, current will flow through the switch and through the LOW rated TOD. As the temperature rises, the TOD opens and disconnects the electrical supply. The Medium and High circuits use the same operating method.

The mounting locations and wiring of the TODs must remain as specified to obtain proper temperature control in the warming drawer.

SENS-A-CLEAN CYCLE

The Sens-a-Clean circuit consists of a step-down transformer that converts 120 volts AC to 24.8 volts AC supplied to the Clean Sensor Power Supply (CSPS). The CSPS in turn converts the 24.8 volts AC to 5 volts DC which is required to operate the Clean Sensor Control (CSC). All three of these components are located at the back of the range. The CSPS and the CSC are located inside the control panel and the transformer is located just below the lower wire cover on the rear of the range (see Strip Circuit, page 3).

The Sens-a-clean circuit monitors Carbon Monoxide that is exhausted from the oven during the self-clean cycle. A small tube at the oven exhaust vent carries fumes from the vent to the CSC where the carbon monoxide is monitored and the cleaning time is calculated. The control does not measure CO in parts per million (PPM). It uses a light sensor that monitors CO within the tube. The timing of the cycle is a measurement of "more than before" or "less than before" within the tube.

The main control monitors the number of BAKE cycles between each clean cycle and monitors the time between cleanings. The main control uses these measurements to determine a default cleaning time if the sensor fails.

NOTE: A flashing white light (seen inside the sensor tube flashing at approx. one second intervals) indicates the range is in a self clean cycle and the required 5 VDC is available at the CSC. The white light will also flash twice over a 24 hour period when the Sens-a-clean system calibrates itself. This reference calibration is used to ensure accurate monitoring of the CO during the next clean cycle.

COOKTOP LOCKOUT FEATURE (SOLENOID)

A normally closed (N.C.) electrical solenoid is located on the back of the range that will provide a means of shutting off the gas supply to the cooktop burners. This 120 volt solenoid is connected across the L1 and Neutral sides of the line and controlled by a relay on the microcomputer board (see Strip Circuit, page 3). The solenoid is held open to allow gas to flow to the cooktop burners. If a customer wants to "Lockout" the operation of the cooktop burners, they can hold down the TOP/TOP LIGHT keypad on the control panel for 5 seconds (see Use and Care Guide). This will open the relay and disconnect the electrical supply to the solenoid. Once the electrical supply is disconnected from the solenoid, the solenoid will close and stop

DIRECT SPARK IGNITION ELECTRONIC BOARD

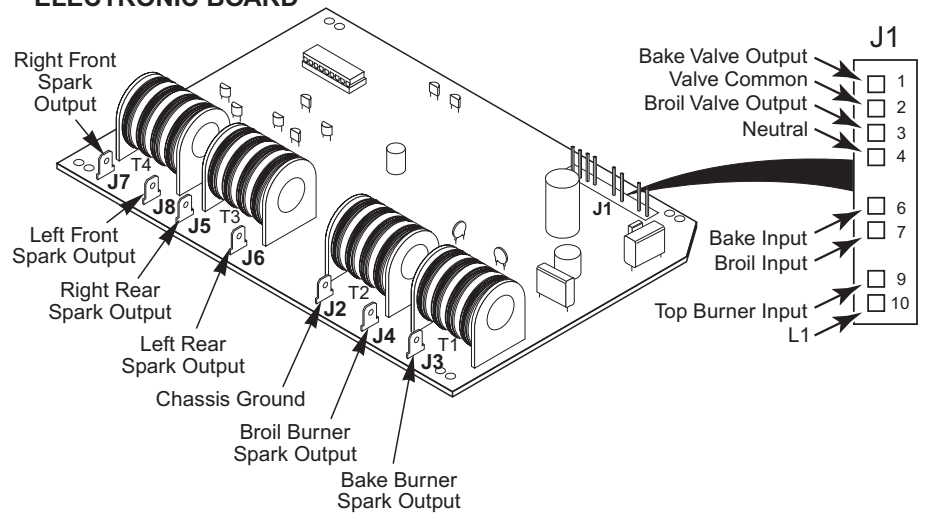


Figure 16

gas flow to the cooktop. In the event of a power outage, the gas supply to the cooktop burners will be shut off.

GAS RANGE IGNITION SYSTEM

The ignition system for the cooktop burners consists of a gas distribution valve, and a direct spark ignition board. See Figure 16. These components interface with the range electronic control board and the spark ignitor switches to create, maintain and supervise the flames anytime during a cooking operation.

The gas distribution valve replaces the oven safety valve used on previous ranges, and the electronic spark ignition board replaces the spark module.

To operate cooktop burners:

Turn the control valve to the LITE position which will send 120 volts AC to the Direct Spark Ignition Board (DSIB). The DSIB then provides enough power to generate a spark at the rate of 3 sparks per second at the cooktop burners. 120 VAC is provided to the board across pins 9 (black) and 4 (white).

To operate the oven burners:

The electronic range control must be programmed to close the bake or broil relay (Bake or Broil operation selected). 120 volts are supplied to the DSIB across pins 6 to 4 (Bake) and 7 to 4 (Broil). The DSIB provides 8-18 VAC to the gas distribution valve to open and release gas into the oven. The DSIB also sends a spark to the oven ignitor

through the spark output, and creates and maintains an oven flame.

Testing the DSI Control:

At the J1 connector, with power supplied to the unit, use a voltmeter, and touch the test probes to the following J1 connector pins:

J1 PINS	VOLTAGE READINGS
1 & 2 =	8-18 VDC with bake valve on
2 & 3 =	8-18 VDC with broil valve on
4 & 6 =	120 VAC when bake is programmed
4 & 7 =	120 VAC when broil is programmed
4 & 10 =	120 VAC
4 & 9 =	0 VAC with the top burners off (120 VAC with the top burners on)

NOTES:

- If polarity is reversed (L1 and Neutral interchanged), the unit will light but will not detect flame and will go into the lockout mode.
- When the unit is plugged in, there will be a 40-second delay before the oven system is operational. (The timer will count down, but the ignition system will not operate.)

PART NO. 8274176

NOTE: This sheet contains important Technical Service Data

**FOR SERVICE TECHNICIAN ONLY
DO NOT REMOVE OR DESTROY**