



GE Appliances Service Training

TECHNICIAN MANUAL

GENERAL ELECTRIC 30 INCH SLIDE-IN GAS RANGES

MODELS:

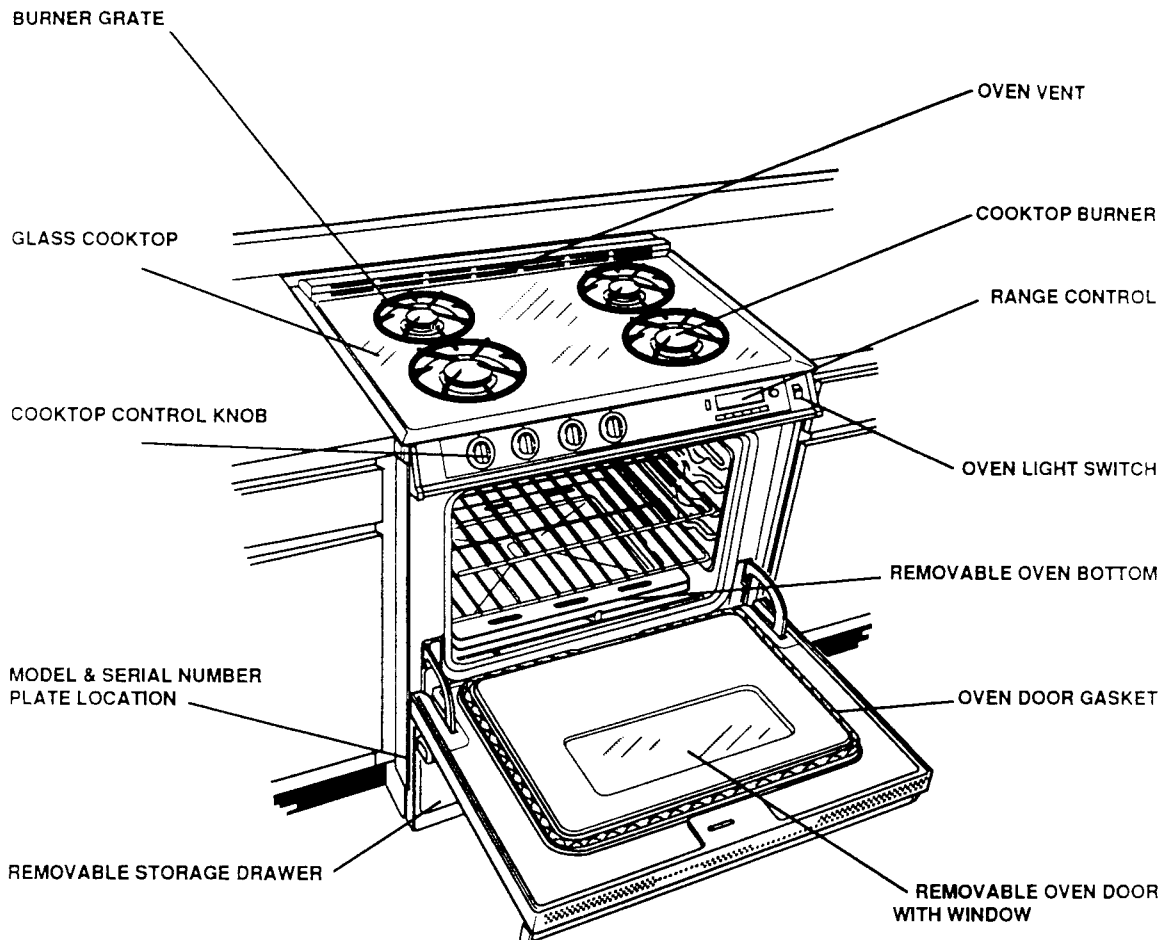
JGSP20GEP
JGSP21GEP
JGSP20GER
JGSP21GER

JGSP30GEP
JGSP31GEP
JGSP30GER
JGSP31GER

RGF92
Pub. No. 31-1453

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1. SPECIFICATIONS

MODEL NUMBER	OPERATING PRESSURES	TYPE	TOP BURNERS		ORIFICE	TOP BURNER ELECTRODES
			BTU/HR			
JGSP20GEP1,2	NAT 4" LP 10"	CONVENTIONAL	3 @ 9000 1 @ 12000	NAT #54 NAT #52	LP #66 LP #60	STANDARD
JGSP20GER1	NAT 4" LP 10"	CONVENTIONAL	3 @ 9000 1 @ 12000	NAT #54 NAT #52	LP #66 LP #60	STANDARD
JGSP21GEP1,2	NAT 4" LP 10"	CONVENTIONAL	3 @ 9000 1 @ 12000	NAT #54 NAT #52	LP #66 LP #60	STANDARD
JGSP21GER1	NAT 4" LP 10"	CONVENTIONAL	3 @ 9000 1 @ 12000	NAT #54 NAT #52	LP #66 LP #60	STANDARD
JGSP30GEP1,2,3,4	NAT 6" LP 10"	SPILLPROOF	2 @ 10000 2 @ 6000	NAT 1.44 NAT 1.10	LP .98 LP .73	SHORT
JGSP30GEP5	NAT 6" LP 10"	SPILLPROOF	2 @ 10000 2 @ 6000	NAT 1.44 NAT 1.10	LP .98 LP .73	SOME SHORT SOME LONG
JGSP30GER1	NAT 6" LP 10"	SPILLPROOF	2 @ 10000 2 @ 6000	NAT 1.44 NAT 1.10	LP .98 LP .73	LONG
JGSP31GEP1,2,3,4,5	NAT 6" LP 10"	SPILLPROOF	2 @ 10000 2 @ 6000	NAT 1.44 NAT 1.10	LP .98 LP .73	SHORT
JGSP31GEP6	NAT 6" LP 10"	SPILLPROOF	2 @ 10000 2 @ 6000	NAT 1.44 NAT 1.10	LP .98 LP .73	SOME SHORT SOME LONG
JGSP31GER1	NAT 6" LP 10"	SPILLPROOF	2 @ 10000 2 @ 6000	NAT 1.44 NAT 1.10	LP .98 LP .73	LONG

1. SPECIFICATIONS, CONTINUED

BURNER	OVEN BURNERS		LP CONV. KIT	CONTROL TYPE	REAR FILLER STRIP USE	SCHEMATIC/WIRING DIAG.
	BTU/HR	ORIFICE SIZE				
BAKE BROIL	18000 16000	NAT #46 LP #56 NAT #48 LP #57	NOT NEEDED	ERC-I	OPTIONAL *	PAGE 60
BAKE BROIL	18000 16000	NAT #46 LP #56 NAT #48 LP #57	NOT NEEDED	ERC-II	OPTIONAL *	PAGE 61
BAKE BROIL	18000 16000	NAT #46 LP #56 NAT #48 LP #57	NOT NEEDED	ERC-I	OPTIONAL *	PAGE 60
BAKE BROIL	18000 16000	NAT #46 LP #56 NAT #48 LP #57	NOT NEEDED	ERC-II	OPTIONAL *	PAGE 61
BAKE BROIL	18000 16000	NAT #49 LP #55 NAT #52 LP #56	JXA069 WB16M2	ERC-I	REQUIRED & SUPPLIED	PAGE 62
BAKE BROIL	18000 16000	NAT #49 LP #55 NAT #52 LP #56	JXA069 WB16M2	ERC-I	REQUIRED & SUPPLIED	PAGE 62
BAKE BROIL	18000 16000	NAT #49 LP #56 NAT #52 LP #57	JXA070	ERC-II	REQUIRED & SUPPLIED	PAGE 63
BAKE BROIL	18000 16000	NAT #49 LP #55 NAT #52 LP #56	JXA039 WB16M1	ERC-I	REQUIRED & SUPPLIED	PAGE 62
BAKE BROIL	18000 16000	NAT #49 LP #55 NAT #52 LP #56	JXA039 WB16M1	ERC-I	REQUIRED & SUPPLIED	PAGE 62
BAKE BROIL	18000 16000	NAT #49 LP #56 NAT #52 LP #57	JXA040	ERC-II	REQUIRED & SUPPLIED	PAGE 63

* An optional rear filler strip kit or backguard kit are available through sales. These kits can be used with these models but are not required. See INSTALLATION section of this manual for additional information on models requiring the strip.

2. INSTALLATION AND REMOVAL

1. INSTALLATION

Slide-in models are designed to slide in to a counter between two cabinets.

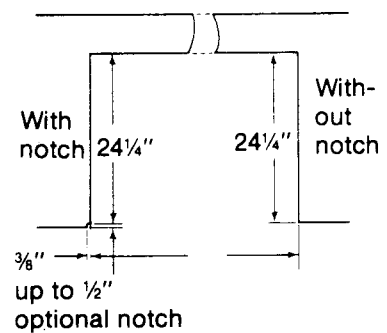
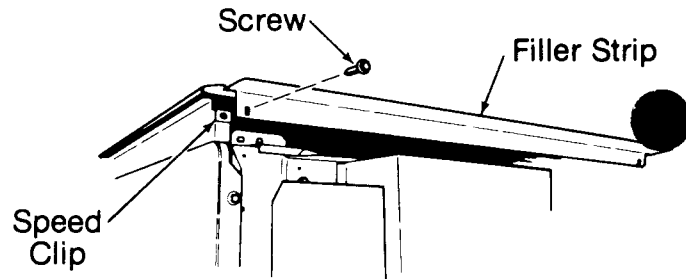
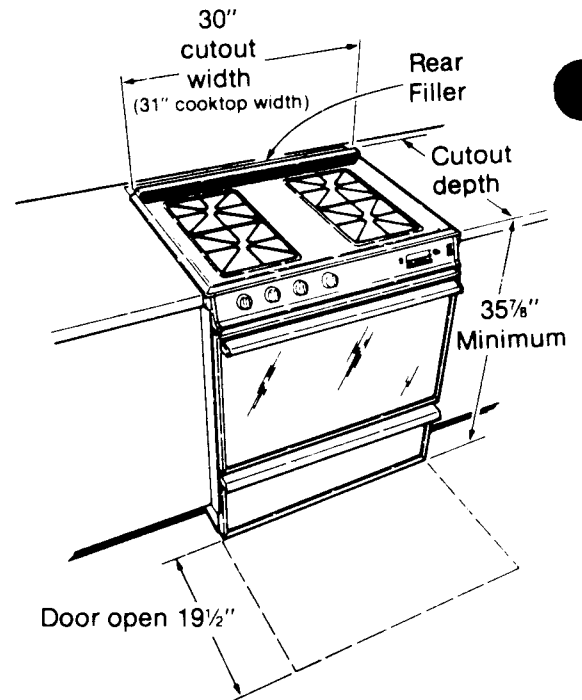
The cooktop portion (maintop) overlaps the adjacent countertop on both sides of the range.

It is important to properly adjust the appliance leveling legs so the weight of the range is supported by the leveling legs and not by the overlapping maintop. Hanging the weight of the range on the overlapping maintop will bend the maintop upward resulting in a mis-alignment of the oven flue (vent) and the flue opening in the rear of the maintop. The mis-alignment of the flue and flue opening will cause the flue to vent under the maintop which will have a negative effect on top burner operation when the oven is in use. Also, on models with conventional burners, the burners will be positioned too low in relation to the maintop and the burner bowls will discolor (turn blue) from the resulting heat.

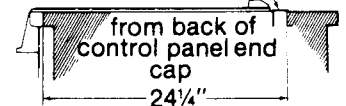
The range must not be installed over carpeting or installed in any other manner that would block air flow across the lower front of the range between the leveling legs. Blocking air flow in this area will restrict the air flow to the oven burner.

IMPORTANT - Models with spill-proof burners require a 5/8" gap be maintained between the back of the range and the counter top behind the range. The dimensions specified in the installation instructions allow for the gap. The gap is covered by a filler strip which is supplied with the range. Failure to maintain the gap can result in the counter top being scorched in areas where the oven flue contacts the counter top.

An optional 4 inch backsplash, available through Sales, can be used in place of the filler strip in installations where the counter top has been cut all the way to the rear wall.



1 1/2" or 1 1/4" Rear Filler
(must overlap counter at least 1/8")



2. INSTALLATION AND REMOVAL, CONT.

2. ELECTRICAL & GAS REQUIREMENTS

The installation instructions require the incoming gas line to be a minimum of 3/8" in diameter and have a manual shut-off valve in the line located behind the range.

The range must be plugged into a grounded outlet for the spark ignition circuits to work properly.

3. ANTI-TIP DEVICE

An anti tip device is shipped with the range.

When installed, the device will prevent the range from tipping in the event of excessive weight being placed on the open oven door.

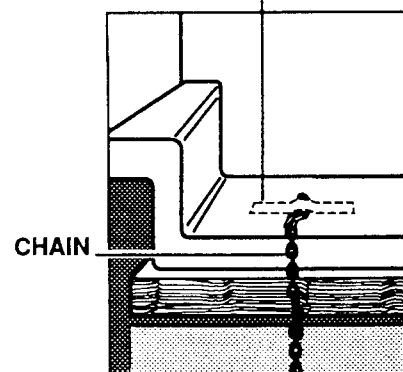
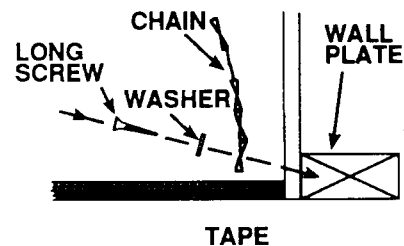
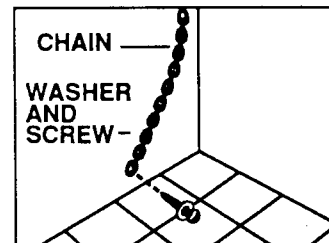
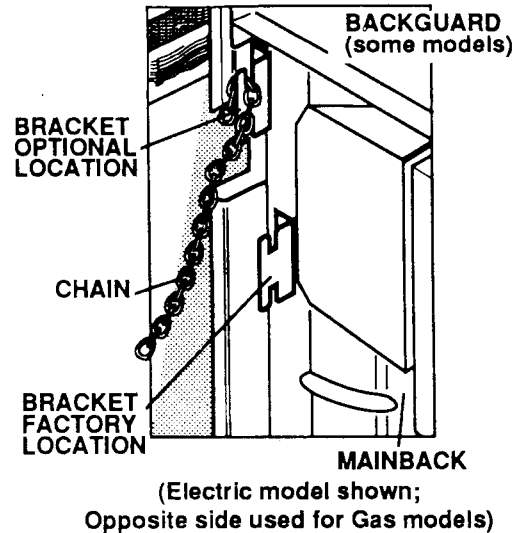
These models are secured by a chain, which is screw mounted to the floor or wall behind the range and hooked into a bracket mounted to the upper, back of the range.

To remove the range from its installation, move the range forward as much as the chain will allow.

Reach behind the range and unhook the chain from the bracket.

Use a piece of tape or a weight to secure the chain to an adjacent counter top to prevent the chain from falling behind the range.

When repairs have been completed, **ALWAYS RE-CONNECT THE ANTI-TIP DEVICE.** Make sure the chain is pulled as tight as possible before hooking the chain into the bracket.



3. OVEN CONTROL AND DOOR LOCK SYSTEMS

A. ELECTRONIC RANGE CONTROL (ERC-I REV 4)

Section Contents

1. SYSTEM COMPONENTS
2. PROGRAMMING CLOCK AND TIMER FUNCTIONS
3. TONES
4. SYSTEM OPERATION; POWER-UP, BAKE, BROIL & CLEAN
5. BAKE TEMPERATURE CALIBRATION
6. MOTORIZED DOOR LOCK OPERATION
7. COMPONENT TEST PROCEDURES
8. PROGRAMMED ERC FAILURE CODES

1. SYSTEM COMPONENTS

SYSTEM EXPLANATION

The oven is controlled by an ELECTRONIC RANGE CONTROL (ERC) System. The basic system consists of the ERC, relay circuit board, oven temperature sensor, door lock assembly and door lock switches.

ELECTRONIC RANGE CONTROL (ERC) - The ERC functions as a thermostat, selector switch and clock/timer. It is powered by a step-down transformer which is located on the relay circuit board. The transformer has two secondary windings providing 3.2 V.A.C. filament voltage to light the ERC display and 21 V.A.C. which the control uses to power the coils of the oven and door lock relays.

RELAY CIRCUIT BOARD - Contains a total of three relays with 24 VDC coils. One of the relays is used to apply power (120 Volts) to the bake ignitor circuit. Another applies power to the broil ignitor circuit and the third relay applies power to the motorized door lock.

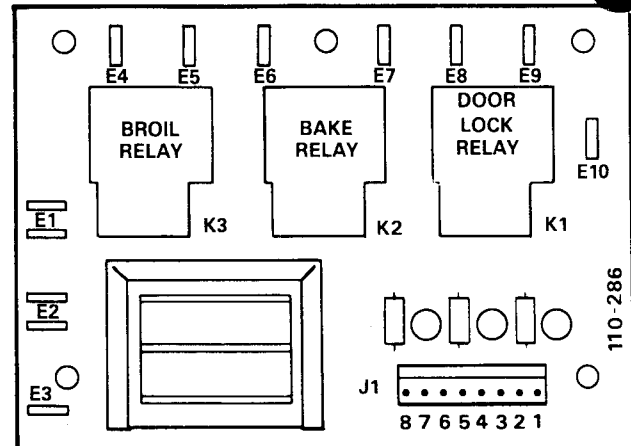
A step down transformer used to supply power to the ERC is located on the relay circuit board.

OVEN TEMPERATURE SENSOR - The ERC monitors the oven temperature through the oven temperature sensor. The sensor is mounted on the rear wall of the oven interior. The sensor changes in electrical resistance value with changes in oven temperature. The ERC translates this change in sensor resistance into oven temperature readings and cycles the BAKE or BROIL relay to maintain the desired setting.

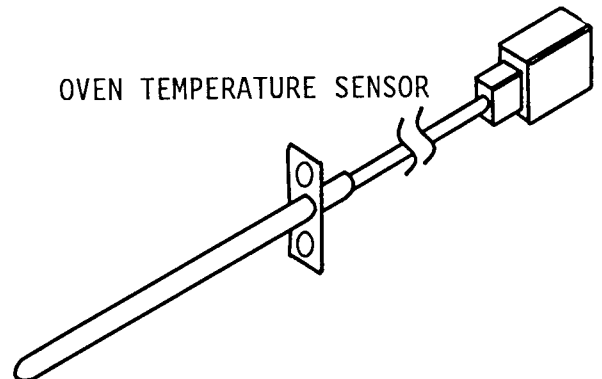
ELECTRONIC RANGE CONTROL (ERC)



RELAY CIRCUIT BOARD



OVEN TEMPERATURE SENSOR

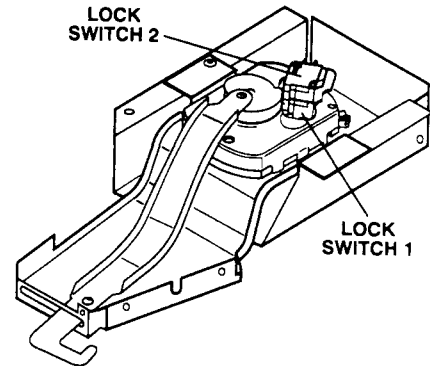


OVEN CONTROL AND DOOR LOCK SYSTEMS

A. ELECTRONIC RANGE CONTROL (ERC-I REV 4), CONT.

1. SYSTEM COMPONENTS, CONT.

DOOR LOCK ASSEMBLY AND LOCK SWITCHES - The motorized door lock assembly is used to lock the oven door during the clean cycle. The lock motor is powered through the lock relay located on the relay circuit board. Two door lock switches monitor the position of the door lock and interrupt power to the door lock motor at the proper interval (fully locked or fully unlocked).



2. PROGRAMMING CLOCK AND TIMER FUNCTIONS

TO SET THE CLOCK

1. Push **CLOCK** button.
2. Turn **SET** knob to correct time of day.

TO SET MINUTE/SECOND TIMER

1. Push **TIMER** button.
2. Turn **SET** knob to desired amount of time (up to 9 hours and 59 minutes). Timer will begin to count down within a few seconds.
3. When time is up the End-of-Cycle Tone (3 long beeps) will sound and display will return to time of day.

NOTE: The control displays both minutes and seconds for the first hour.

TO CANCEL THE TIMER

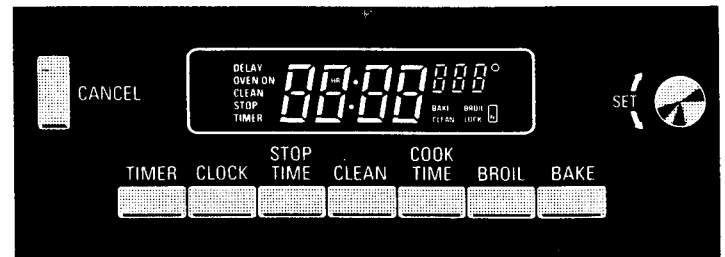
Push and hold **TIMER** button for three seconds.

TO USE AUTOMATIC OVEN TIMER

A. Start Immediately and Stop Automatically

1. Push **COOK TIME** button.
2. Turn **SET** knob to set length of baking time.
3. Push **BAKE** button.
4. Turn **SET** knob to set desired temperature.

When cook time is complete, the End-of-Cycle Tone will sound and the oven will shut off.



3. OVEN CONTROL AND DOOR LOCK SYSTEMS

A. ELECTRONIC RANGE CONTROL SYSTEM (ERC-I REV 4), CONT.

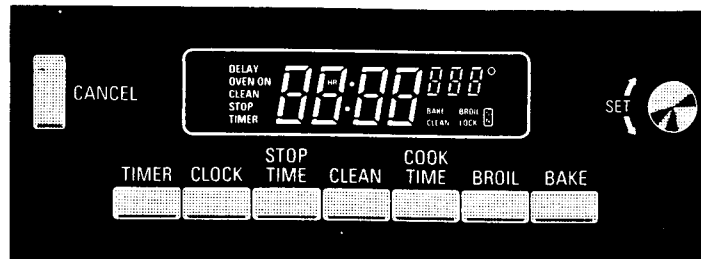
2. PROGRAMMING CLOCK AND TIMER FUNCTIONS (CONT)

B. To Start and Stop Automatically

1. Push **COOK TIME** button.
2. Set desired cook time with **SET** knob.
3. Push **STOP TIME** button.
4. Turn **SET** knob to time of day baking should be complete.
5. Push **BAKE** button.
6. Turn **SET** knob to desired temperature.

The control will calculate what time to automatically turn the oven on in order to complete the selected amount of **COOK TIME** by the selected **STOP TIME**.

When cook time is complete, the End-of-Cycle Tone will sound and the oven will shut off.



TO SET A DELAYED START CLEAN CYCLE

1. Push **STOP TIME** button.
2. Turn **SET** knob to time of day when you wish cleaning to be completed (must be more than 3 1/2 hours later than current time of day.)
3. Push the **CLEAN** button.
4. Turn **SET** knob clockwise about 1/2 turn.

The door will lock immediately and remain locked until the clean cycle has ended and the oven has cooled.

The words **DELAY CLEAN** & **CLEAN LOCK** will be lit in the display until the clean cycle starts. After the clean cycle starts, the words **CLEAN** and **LOCK** will be on in the display.

HOW TO CHANGE A PROGRAM

A programmed function can be changed at any time by pressing the function button and turning the set knob.

3. OVEN CONTROL AND DOOR LOCK SYSTEMS

A. ELECTRONIC RANGE CONTROL SYSTEM (ERC-I REV 4), CONT.

3. TONES

END-OF-CYCLE TONE (3 long beeps - one second on, one second off): indicates a timed oven operation has reached **STOP TIME** or that the Minute/Second Timer has counted down.

ATTENTION TONE (series of short beeps, 1/4 second on, 1/4 second off, until proper response is given): will sound if oven has only been partially programmed. For example, if you have selected a cook time but no temperature, you will hear the Attention Tone until you select a temperature or push oven CANCEL.

PRE-HEAT NOTIFICATION TONE (single, one-second beep): indicates oven has stabilized at selected temperature. This tone occurs at the first off cycle of the bake relay.

KEY TONE (single 1/10 second beep): sounds when any button is pushed.

TO CANCEL OR RESTORE THE KEY TONE To cancel or restore the audible tone when you push a button, push and hold the oven CANCEL button until you hear a short tone. To activate the tones again, push and hold the oven CANCEL button once more until you hear a short tone. Cancelling or activating the tones should only be done when there is no oven operation programmed.

FAILURE CODE/TONE (series of very rapid beeps, 1/8 second on, 1/4 second off): display will show a failure code. Cancel Failure code/tone by pushing the oven CANCEL button. If the Failure code & tone starts again (after about 15 seconds), see the fail code explanation chart in this section of the manual.

Pushing the oven CANCEL button will clear all functions except the Clock and Minute/Second Timer and some failure codes.

3. OVEN CONTROL AND DOOR LOCK SYSTEMS

A. ELECTRONIC RANGE CONTROL SYSTEM (ERC-1 REV 4), CONT.

4. SYSTEM OPERATION; POWER-UP, BAKE, BROIL & CLEAN

POWER-UP

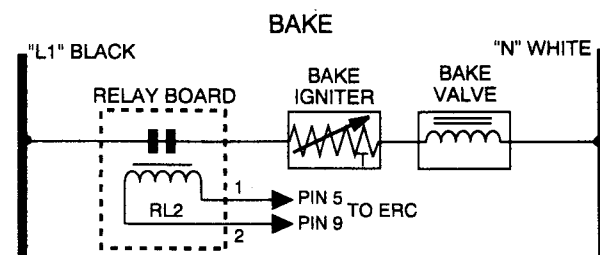
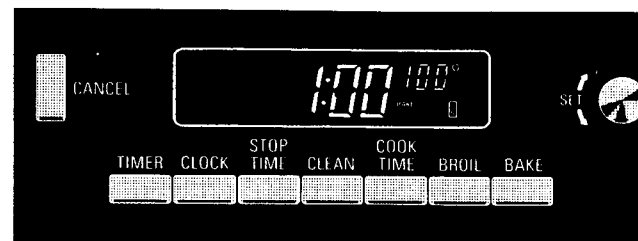
At power-up, the ERC will immediately lock then unlock the door. If the oven door is open at power-up, the word "DOOR" will flash on the display for 10 minutes or until the door is closed. An open sensor circuit at power-up will result in the door locking and remaining locked.

BAKE OPERATION

SERVICE TIP - The cause of a no bake, broil or poor cleaning complaint can be narrowed down to the electronic or non electronic components by listening to the audible click of the appropriate relays. The sequence of events for the bake, broil and clean cycle are covered in detail on the following pages and indicate when and how many relays should be heard.

TO BAKE:

1. Push the **BAKE** button.
2. Turn the SET knob until desired temperature is displayed. The BAKE relay closes about 3 seconds after the SET knob is released (audible click). The bake glow bar ignitor will begin to glow with bake burner ignition within 30 to 60 seconds.
3. The temperature display initially shows 100 degrees and will rise in 5 degree steps as the oven temperature climbs above 100 degrees.
4. The ERC will sound a pre-heated signal (one single tone) in conjunction with the first off cycle of the BAKE relay. The BAKE ignitor and burner will remain off until the ERC cycles the bake relay to begin the next heating cycle.
5. Once the oven reaches the selected temperature, the ERC will continue to display the selected temperature and will not change to reflect the normal temperature swing above and below the selected temperature.
7. When finished baking push **CANCEL**.



3. OVEN CONTROL AND DOOR LOCK SYSTEMS

A. ELECTRONIC RANGE CONTROL SYSTEM (ERC-I REV 4), CONT.

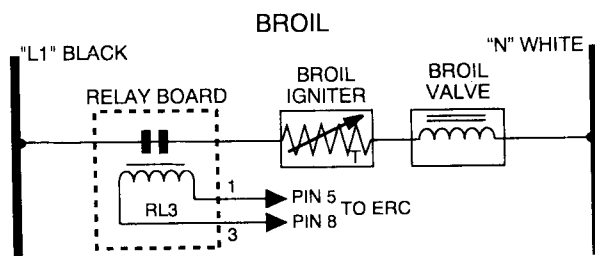
4. SYSTEM OPERATION; POWER-UP, BAKE, BROIL & CLEAN, CONT.

BROIL OPERATION

1. Push **BROIL** button.
2. Turn SET knob until HI broil or LO broil is visible on the display.
The BROIL relay will close about 3 seconds after the SET knob is released (audible click). The broil glow bar ignitor will begin to glow with broil burner ignition within 30 to 60 seconds.

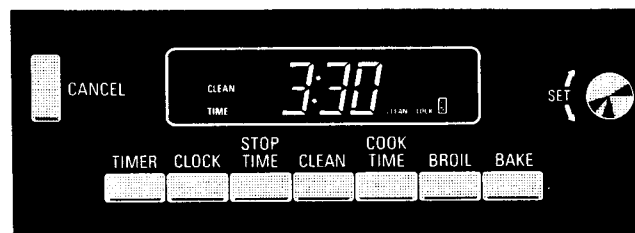
NOTE: HI broil allows a maximum oven temperature of 550 degrees.
LO broil allows a maximum oven temperature of 450 degrees.

4. When finished broiling, push **CANCEL** button.



SELF CLEAN OPERATION

1. Push the **CLEAN** button and display shows _ _ _ _ (four dashes).
2. Turn the set knob about 1/2 turn; display shows 3:30 (three hours, thirty minutes). The clean time cannot be changed from 3:30.
3. The door lock relay energizes (audible click) applying power to the door lock and cooling fan. The door will lock within 7 to 10 seconds (SEE MOTORIZED DOOR LOCK OPERATION for a detailed explanation).
4. Once the door has locked, the broil relay energizes to begin the clean cycle.
5. BROIL ONLY is powered during the first 30 minutes of clean, followed by BAKE ONLY during the remaining 3 hours.
6. The oven temperature will average 865 degrees during the clean cycle.
7. After the clean cycle has ended, the ERC will display the time of day. The word "LOCK" will remain illuminated in the display until the oven has cooled to approximately 375 degrees. At approximately 375 degrees, the door will unlock and the cooling fan will stop.



TO INTERRUPT THE CLEAN CYCLE

1. Press the oven **CANCEL** button.
2. Wait until the oven has cooled below unlock temperature (about 20-30 minutes) and the word **LOCK** is off in the display.

3. OVEN CONTROL AND DOOR LOCK SYSTEMS

A. ELECTRONIC RANGE CONTROL SYSTEM (ERC-I REV 4), CONT.

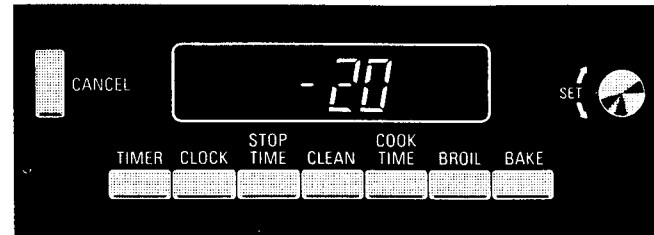
5. BAKE TEMPERATURE CALIBRATION

The bake temperature is preset at the factory but can be changed by the following procedure.

TO ADJUST TEMPERATURE:

1. Push the **BAKE** button.
2. Select any temperature between 500° and 550° with the SET knob.
3. Quickly (within two seconds) push and hold the **BAKE** button until "00" or the previously entered calibration change is displayed. If the control beeps and flashes, push the **CANCEL** button and start over.
4. Turn the SET knob to adjust the temperature in 5° steps. You can raise it 35° or lower it 35°. A minus sign (-) before the number means that the oven will be cooler by the displayed amount of degrees.
5. When you have made the necessary adjustment, push the **CLOCK** or **CANCEL** button to lock in the adjustment and go back to the time of day display.

NOTE: The adjustment described above will not change the self-clean or broil temperatures and is not affected by a loss of power to the oven.



3. OVEN CONTROL AND DOOR LOCK SYSTEMS

A. ELECTRONIC RANGE CONTROL SYSTEM (ERC-I REV 4), CONT.

6. MOTORIZED DOOR LOCK OPERATION

LOCKING THE DOOR

Once CLEAN has been selected and the set knob has been turned about 1/2 turn, the ERC will energize the lock relay, closing relay contacts E8 to E9 (C to NO).

The closed relay contacts complete a 120 Volt circuit to the door lock motor and the cooling fan.

The lock motor begins to turn and rotates a cam mounted on the end of the lock motor shaft.

As the cam rotates approximately 1/2 turn, the cam movement does the following:

- o Pulls the lock arm to the locked position securing the oven door.
- o Switches the contacts within lock switch #2 from C to NC to C to NO. This opens the circuit to the lock motor and the lock motor stops revolving.
- o Closes lock switch #1 which illuminates the word "LOCK" on the control display.

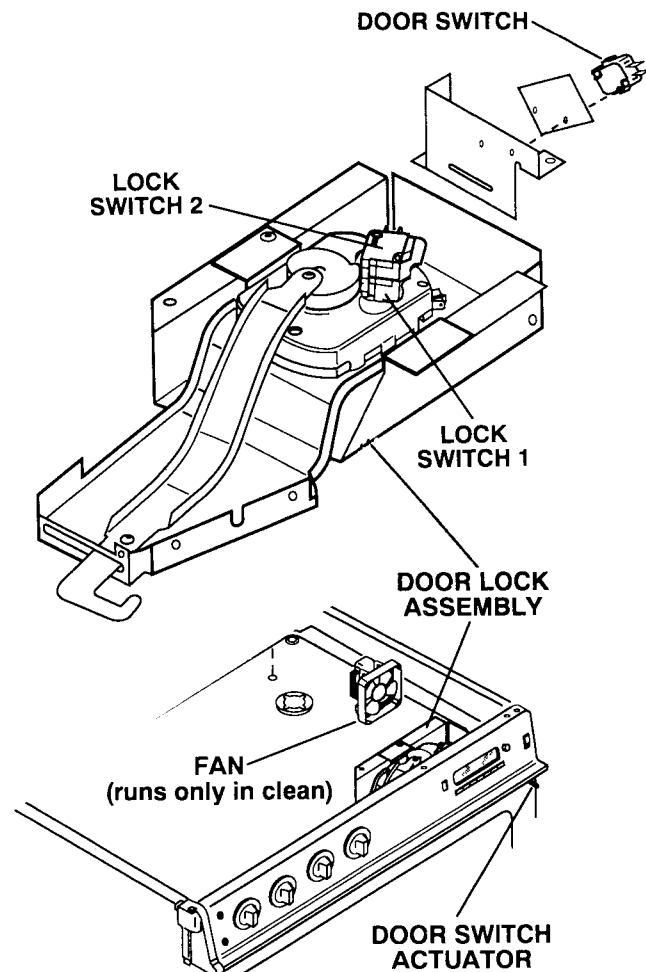
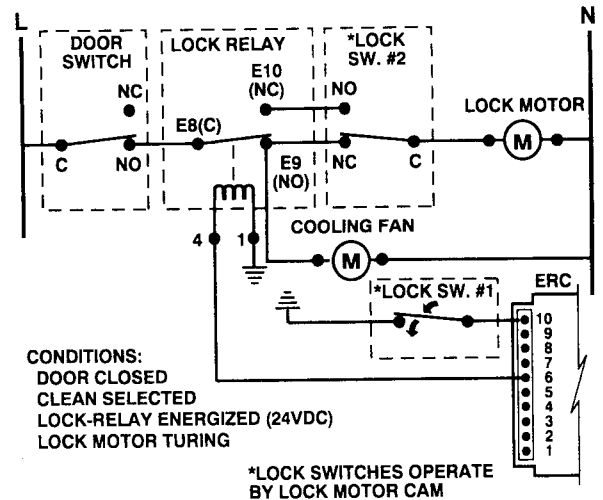
Once the door has locked, the ERC energizes the broil relay to begin the clean cycle. Broil only will operate during the first 30 minutes of clean followed by bake only during the last 3 hours.

The lock relay will remain energized during the entire clean cycle.

NOTE: The ERC will display the word "DOOR" if the door has not locked within 15 seconds after clean has been selected. This means lock switch #1 has not closed to "tell" the control the door is locked.

To isolate the problem, listen for the cooling fan. If the fan is running, the problem is "downstream" of the lock relay (check lock motor, lock switch, etc). If the cooling fan is not running, check the door switch, lock relay coil circuit and lock relay contacts.

1. LOCKING



3. OVEN CONTROL AND DOOR LOCK SYSTEMS

A. ELECTRONIC RANGE CONTROL SYSTEM (ERC-I REV 4), CONT.

6. MOTORIZED DOOR LOCK OPERATION, CONTINUED

UNLOCKING THE DOOR

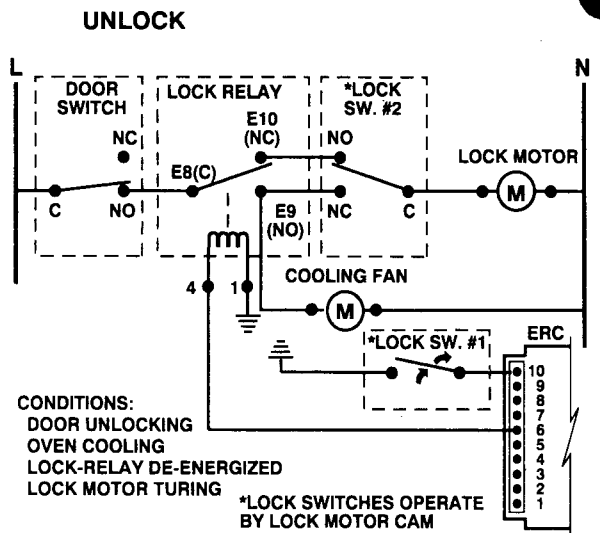
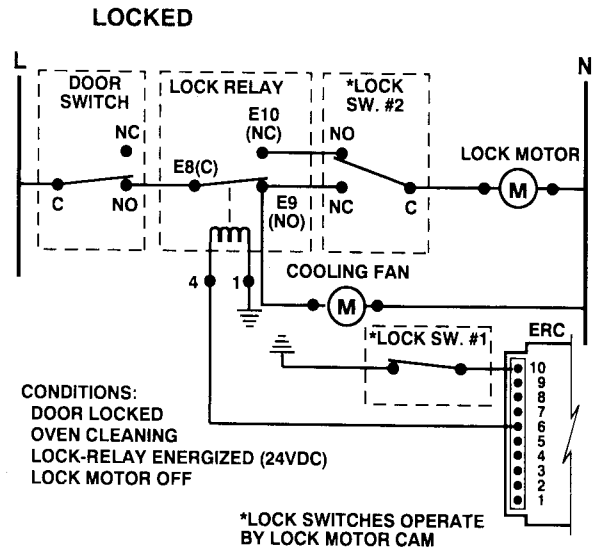
After the clean cycle, the door will remain locked until the oven temperature cools to approximately 375 degrees.

At 375 degrees, the ERC removes power from the coil of the lock relay. This opens lock relay contacts E8 to E9 (C to NO) and closes relay contacts E8 to E10 (C to NC).

A 120 Volt circuit is now complete from relay contact E10 (NO), through lock switch #2 terminals NO to C to the lock motor. As the cam on the end of the lock motor shaft rotates approximately 1/2 turn, the cam movement does the following:

- o Pulls the lock arm to the unlocked position unlocking the oven door.
- o Opens lock switch #1 causing the word "LOCK" to disappear from the ERC display.
- o Switches the contacts within lock switch #2 from C to NO to C to NC. This opens the circuit to the lock motor and the lock motor stops turning.

The circuit to the cooling fan is also opened by the de-energizing of the lock relay.



3. OVEN CONTROL AND DOOR LOCK SYSTEMS

A. ELECTRONIC RANGE CONTROL SYSTEM (ERC-I REV 4), CONT.

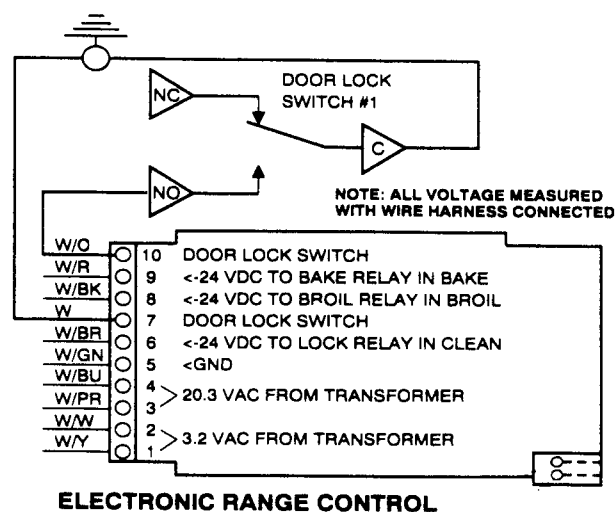
7. COMPONENT TEST PROCEDURES

ERC INPUT AND OUTPUT VOLTAGES

For the ERC to operate, it must receive the proper voltages from the step-down transformer located on the relay circuit board.

To make the voltage checks below, REMOVE POWER TO RANGE, remove ERC and position ERC to allow power to be restored safely. All harness connectors must be connected. Make the voltage measurements shown below on the main 10 pin harness connector. Place the meter leads on the exposed tabs on the side of the 10 pin harness connector.

CIRCUIT	PIN(S)	VOLTAGE
INCOMING POWER FROM TRANSFORMER	1 to 2	3.2 VAC AT ALL TIMES
INCOMING POWER FROM TRANSFORMER	3 to 4	21 VAC AT ALL TIMES
ERC GROUND	5 to GND.	NEAR 0 VOLTS AT ALL TIMES
LOCK RELAY COIL	6 to 5	-24 VDC IN CLEAN
BROIL RELAY COIL	8 to 5	-24 VDC IN BROIL
BAKE RELAY COIL	9 to 5	-24 VDC IN BAKE
DOOR LOCK SWITCH NUMBER 1	10 to 7	TEST WITH OHM METER INFINITE RESISTANCE UNLOCKED; 0 OHMS LOCKED



3. OVEN CONTROL AND DOOR LOCK SYSTEMS

A. ELECTRONIC RANGE CONTROL SYSTEM (ERC-I REV 4), CONT.

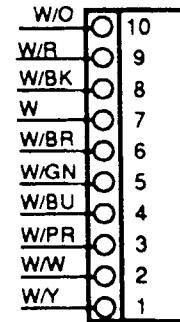
7. COMPONENT TEST PROCEDURES (CONTINUED)

RELAY CIRCUIT BOARD TEST PROCEDURES

METHOD 1, MEASURED FROM ERC

WITH POWER REMOVED FROM RANGE, remove the ERC main 10 pin connector and make the resistance measurements from the exposed tabs on the side of the connector.

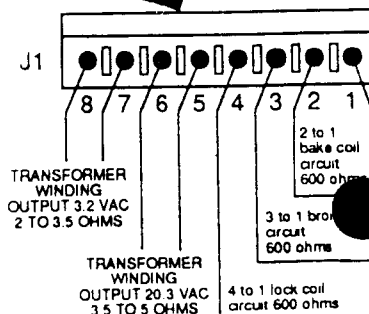
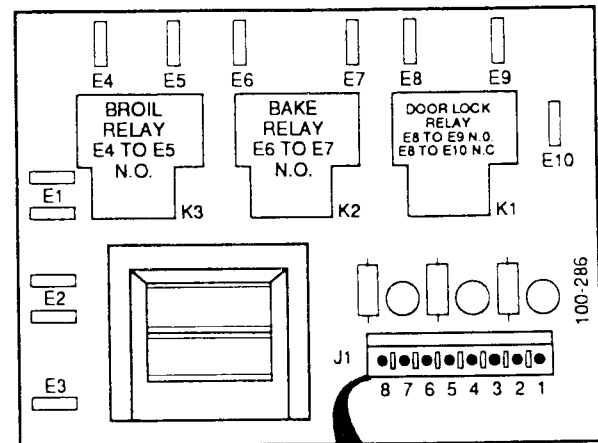
CIRCUITS	PINS	OHMS
TRANSFORMER SECONDARY	1 to 2	8 to 9
TRANSFORMER SECONDARY	3 to 4	5 to 6
LOCK RELAY COIL	6 to 5	550 to 600
BROIL RELAY COIL	8 to 5	550 to 600
BAKE RELAY COIL	9 to 5	550 to 600
LOCK SWITCH #1	10 to 7	0 locked; infinite unlocked



RELAY CIRCUIT BOARD LOCATED BEHIND STORAGE DRAWER IN CONTROL BOX.

METHOD 2, MEASURED DIRECTLY ON RELAY BOARD

CIRCUITS	PINS	OHMS	VOLTAGE
RELAY COIL GROUND	1 to GROUND	0	
BAKE RELAY COIL	1 to 2	550 to 600	-24 VDC FROM ERC
BROIL RELAY COIL	1 to 3	550 to 600	-24 VDC FROM ERC
LOCK RELAY COIL	1 to 4	550 to 600	-24 VDC FROM ERC
TRANSFORMER SECONDARY	5 to 6	5 to 6	21 VAC OUTPUT
TRANSFORMER SECONDARY	7 to 8	2 to 3	3.2 VAC OUTPUT
TRANSFORMER PRIMARY	L1 to N	130 to 150	120 VAC INPUT



3. OVEN CONTROL AND DOOR LOCK SYSTEMS

A. ELECTRONIC RANGE CONTROL SYSTEM (ERC-I REV 4), CONT.

7. COMPONENT TEST PROCEDURES (CONTINUED)

RELAY CONTACTS OPERATION TEST

RELAY	TERMINALS	VOLTAGE/MODE
BAKE	E6 to E7	120 IN OFF, 0 IN BAKE
BROIL	E4 to E5	120 IN OFF, 0 IN BROIL
DOOR LOCK	E8 to E9	120 IN OFF, 0 IN CLEAN

Sensor Circuit Components

The sensor circuit consists of the:

- o Oven Sensor
- o Sensor Wiring & Wire Harness connectors

The resistance of the sensor will range from 1100 ohms @ 75°F. (room temperature) to 2650 ohms @ 865°F. (self clean temperature).

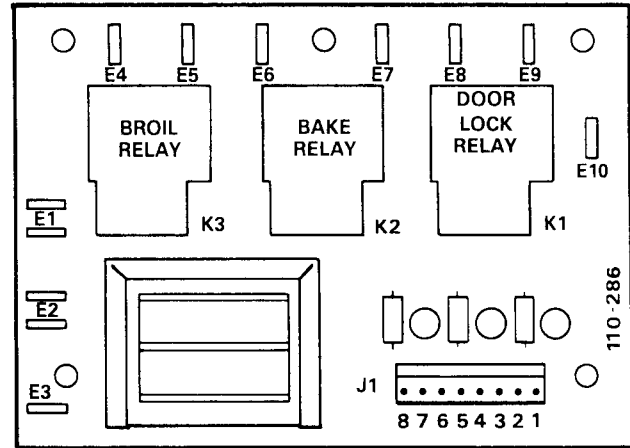
The sensor circuit is a series circuit from the ERC, through the sensor then back to the ERC.

SENSOR RESISTANCE TEST FROM ERC

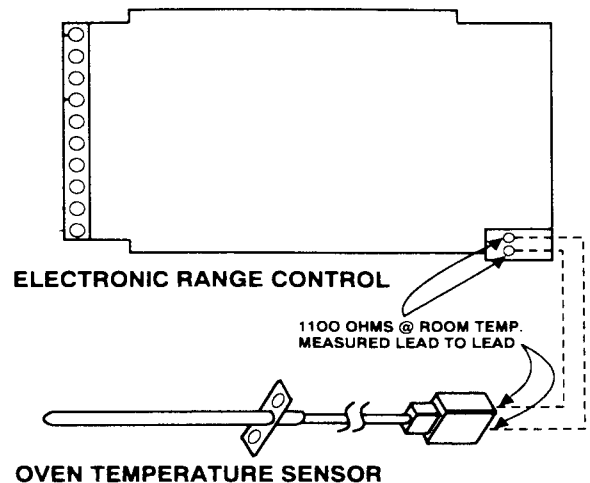
1. REMOVE POWER FROM RANGE.
2. Remove sensor harness disconnect from ERC (2 wire disconnect on right side of ERC).
3. With Ohmmeter set for RX100, check the resistance across the two sensor leads by placing the Ohm meter leads on the exposed tabs on the side of the connector plug. Do not insert the Ohm meter leads into the sensor disconnect plug as damage to the wiring terminals within the plug will result.

The sensor resistance should be approximately 1100 Ohms with oven at room temperature. If sensor circuit reads open or shorted, test sensor resistance directly across sensor at oven disconnect to determine if problem is in sensor or sensor harness.

If sensor reading at ERC connector checks good (appx. 1100 Ohms), re-connect the sensor plug to ERC and make same Ohm meter test by placing meter leads on the solder pin joints on the back of the ERC circuit board. If open, remove and repair the connector terminals in the disconnect plug as described on next page.



RELAY CIRCUIT BOARD



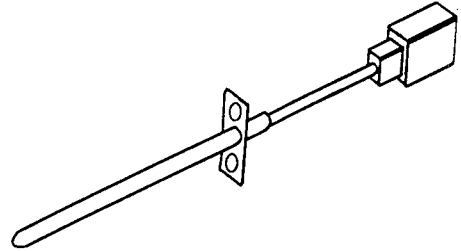
3. OVEN CONTROL AND DOOR LOCK SYSTEMS

A. ELECTRONIC RANGE CONTROL SYSTEM (ERC-I REV 4), CONT.

7. COMPONENT TEST PROCEDURES (CONTINUED)

SENSOR RESISTANCE TEST DIRECTLY ACROSS SENSOR

1. REMOVE POWER FROM RANGE.
2. Remove 2 screws securing oven sensor to upper right corner of oven cavity back.
3. Gently pull sensor forward until sensor wire harness disconnect is accessible.
4. Using a small screwdriver to unlock the connector, disconnect sensor from sensor harness and resistance test sensor. The resistance measured across the two sensor leads should be approximately 1100 ohms at room temperature. If sensor checks open or shorted replace the sensor.



If sensor checks good, examine all sensor harness connections (2 at ERC and 2 at oven cavity). If the connector behind the oven cavity is in question, eliminate the connector by using ceramic wire nuts to connect the sensor leads to the sensor harness (the sensor is non polarized).

NOTE: When re-installing sensor, be sure sensor disconnect or wire nuts are pushed all the way through the oven cavity and main back, keeping the sensor disconnect visible from the rear of the range. If improperly positioned against oven cavity, the sensor disconnect will melt during the clean cycle.

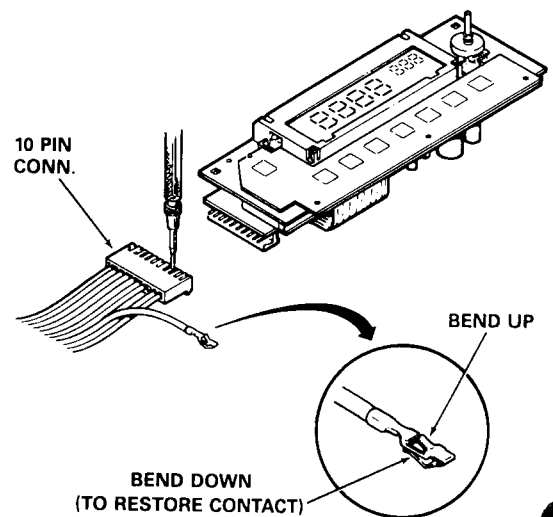
CAUTION: When ohmmeter testing at harness connector, be sure meter probes do not bend terminals within the connectors.

SENSOR & ERC HARNESS CONNECTOR REPAIR

Low voltage connections can be easily damaged, resulting in loss of contact or intermittent contact. To ensure good contact, remove the terminal from the connector by depressing the terminal retaining tab. Pull the terminal out of the connector and examine the terminal contact area.

Bend the contact area down to improve the tension of the terminal.

Carefully bend the terminal retaining pin up and insert terminal back into connector.



3. OVEN CONTROL AND DOOR LOCK SYSTEMS

A. ELECTRONIC RANGE CONTROL SYSTEM (ERCI-REV 4), CONT.

8. PROGRAMMED ERC FAILURE CODES

FAILURE CODE	MEANING	CORRECTION
F0	<ul style="list-style-type: none">o Failed Transistor in Control	<ul style="list-style-type: none">o Replace Control
F1	<ul style="list-style-type: none">o Failed Transistor in Control	<ul style="list-style-type: none">o Replace Control
F2	<ul style="list-style-type: none">o Oven exceeded 590°F with door in unlocked position or exceeded 990°F with door locked.o High resistance connection within sensor circuit. (ERC reads sensor resistance, not actual oven temperature)o Interference from cordless telephone, ham radios or other sources of electrical Disturbance.o Improper Ground	<ul style="list-style-type: none">o Test operation of relay contacts.o See NOTE below.o Oven and Cordless Phone cannot be on same circuit.o Check appliance ground.
F3	<ul style="list-style-type: none">o Open sensor or open sensor circuit.o Sensor lead shorted to groundo *Intermittent Sensor harness connections	<ul style="list-style-type: none">o Test resistance of sensor circuit, both lead to lead and each lead to ground at ERC.o See NOTE below.
F4	<ul style="list-style-type: none">o Shorted sensor or short in sensor harnesso Melted sensor connector due to connector being positioned against back of oven cavity. The sensor connector must be positioned outside of the oven back, keeping the connector visible from the rear of the range.	<ul style="list-style-type: none">o Test resistance of sensor circuit, both lead to lead and each lead to ground at sensor disconnect at ERC.

***NOTE:** Connections can be intermittent due to a corrosive build-up between the connections or due to the terminals within the harness connections being bent by the insertion of an ohmmeter probe, etc.

3. OVEN CONTROL AND DOOR LOCK SYSTEMS

A. ELECTRONIC RANGE CONTROL SYSTEM (ERC-I, REV 4), CONT.

8. PROGRAMMED ERC FAILURE CODES (CONTINUED)

FAILURE CODE	MEANING	CORRECTION
F5	o Failed Transistor in Control	o Replace Control
F6	o Problem within time keeping circuits due to fluctuation of the 60 Hz power supply	o Reset time and/or cooking operation if applicable.
F7	o Stuck function switch or button (BAKE, BROIL, CLEAN, etc.) on ERC.	o Test operation of buttons to ensure they move freely. If problem cannot be found, remove lens from ERC and determine if problem is in button section of lens or in ERC.
F8	o Component failure detected within ERC affecting temperature processing circuits.	o Replace Control
F9	o Problem with door lock circuit such as a pinched wire between ERC & door lock switches	o Check operation of door switch #1 and its wiring.
DOOR	o Door not locked for clean cycle or did not unlocked after clean.	o Check lock position. SEE NOTE BELOW
	o Door not closed at power-up	o With door open at power-up, the ERC will display "DOOR" for 10 minutes. After 10 minutes, the ERC will operate normally.
	o Problem in door switch circuit.	o Check door switch circuit.
	o Problem in door lock switch #1 circuit.	o Check lock switch #1 circuit

NOTE: An open sensor circuit will result in the ERC keeping the door locked at power-up or after the clean cycle.

3. OVEN CONTROL AND DOOR LOCK SYSTEMS

B. ELECTRONIC RANGE CONTROL II (ERC-II)

Section Contents

1. SYSTEM COMPONENTS
2. PROGRAMMING CLOCK AND TIMER FUNCTIONS
3. TONES
4. SYSTEM OPERATION; BAKE & BROIL
5. BAKE TEMPERATURE CALIBRATION
6. SELF CLEAN & MOTORIZED DOOR LOCK OPERATION
7. COMPONENT TEST PROCEDURES
8. PROGRAMMED ERC FAILURE CODES

1. SYSTEM COMPONENTS

SYSTEM EXPLANATION

The oven is controlled by an ELECTRONIC RANGE CONTROL, VERSION II. (ERC-II). The basic system consists of the ERC, oven temperature sensor, motorized door lock assembly and door lock switches.

ELECTRONIC RANGE CONTROL II (ERC-II)

The ERC-II functions as a thermostat, selector switch and clock/timer.

It is a one piece assembly consisting of the ERC and the relay circuit board.

Touch pads are used for all function selections, replacing the knob and buttons used on previous controls.

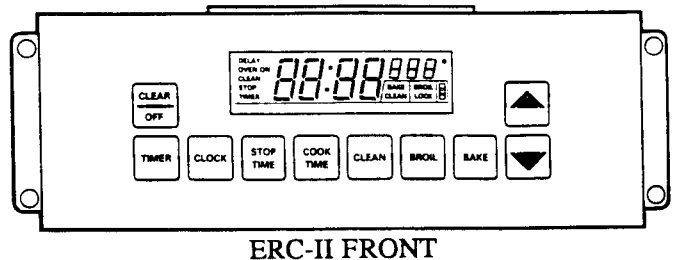
OVEN TEMPERATURE SENSOR

The ERC-II monitors the oven temperature through the use of an oven temperature sensor. This is the same sensor as used with ERC-I. The sensor is mounted on the rear wall of the oven cavity. The sensor increases or decreases in electrical resistance with oven temperature changes. The ERC translates the resistance changes into oven temperature readings and cycles the relays controlling power to the ignitors to maintain the average oven temperature at the selected setting.

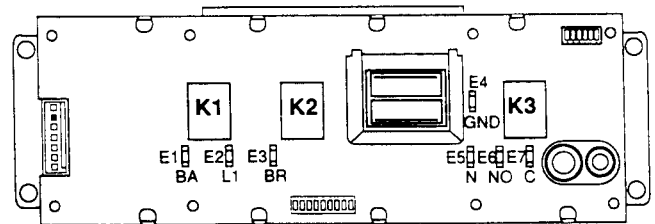
DOOR LOCK ASSEMBLY AND LOCK SWITCHES

The motorized door lock assembly is used to lock the oven door during the self clean cycle. The lock motor is powered through the lock relay located on the back of the ERC.

The two door lock switches mounted on the lock assembly monitor the position of the door lock. Lock switch #1 closes to "tell" the ERC the door is locked and lock switch #2 closes to "tell" the ERC the door is unlocked. This differs from ERC-I where door switch #2 is used to directly interrupt power to the lock motor.



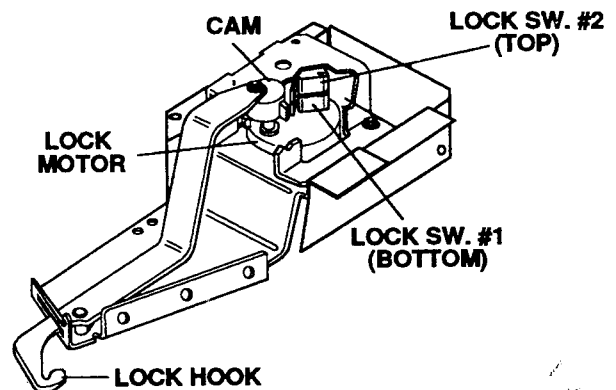
ERC-II FRONT



ERC-II REAR



SENSOR



MOTORIZED DOOR LOCK

3. OVEN CONTROL AND DOOR LOCK SYSTEMS

B. ELECTRONIC RANGE CONTROL II (ERC-II)

2. PROGRAMMING CLOCK AND TIMER FUNCTIONS

TO SET THE CLOCK

1. Press CLOCK pad.
2. Press the UP or DOWN ARROW.
Hold the UP or DOWN ARROW for rapid time changes. Tap the UP or DOWN ARROW for slow time changes.

TO SET THE TIMER

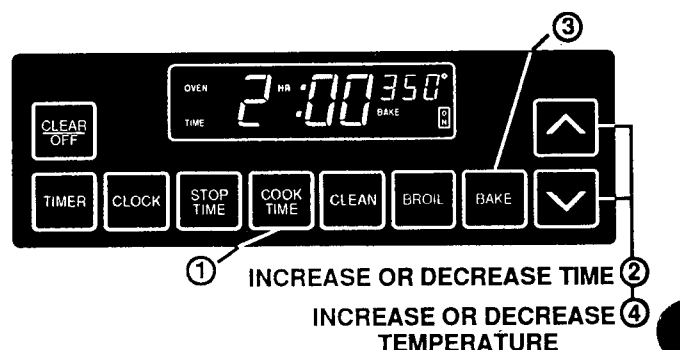
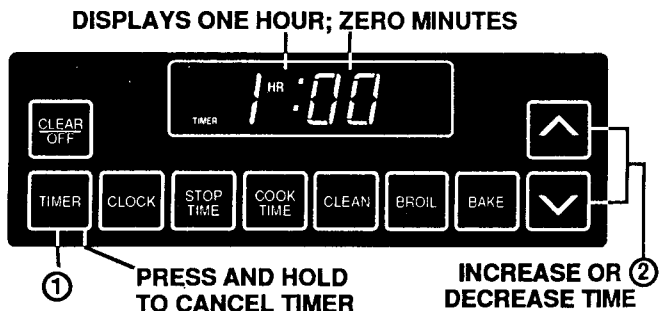
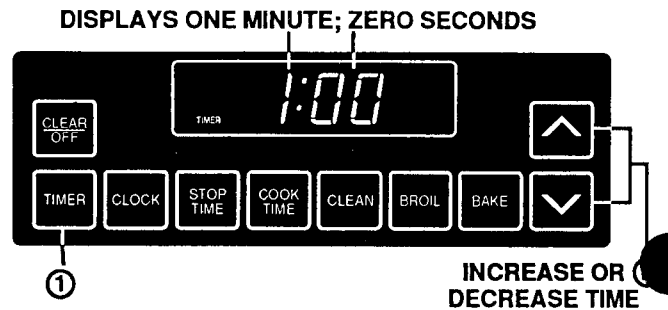
NOTE: Timer does not control the oven.

1. Press TIMER pad.
2. Press the UP or DOWN ARROW to select the amount of time desired, up to 9 hours and 55 minutes.
Holding the UP or DOWN arrow advances the time rapidly. Tapping the arrows advances timer slowly.
3. The timer automatically begins to count down a few seconds after the UP or DOWN ARROW is released.
To cancel the timer before it has counted down, press and hold the TIMER pad for 4 seconds or until clock returns to time of day.
4. As the timer counts down to "00", the ERC will sound an end of cycle tone (3 one second tones) followed by a *reminder tone (1 one second tone) every 6 seconds until the TIMER function is cancelled by pushing the CLOCK pad.

*The reminder tone can be eliminated permanently by pressing and holding the CLEAR/OFF pad for approximately 10 seconds, until a short tone is emitted to indicate the change has occurred. The reminder tone can be restored by using the same procedure.

AUTOMATIC OVEN TIMER

- A. To Start immediately and stop automatically:
1. Press COOK TIME pad
 2. Press UP or DOWN ARROW to set the desired baking time.
 3. Press BAKE.
 4. Press UP or DOWN ARROW to set the desired baking temperature.

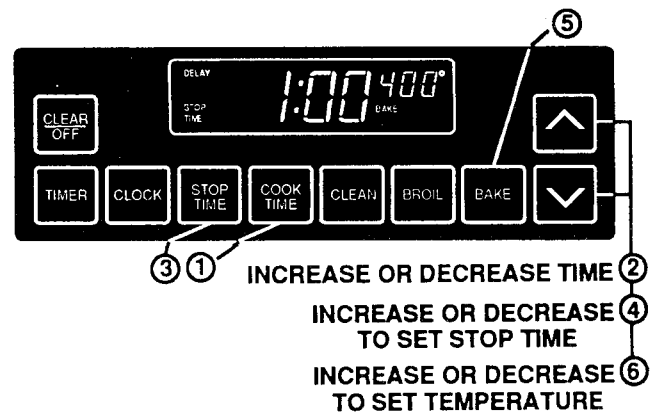


3. OVEN CONTROL AND DOOR LOCK SYSTEMS

B. ELECTRONIC RANGE CONTROL II (ERC-II)

2. PROGRAMMING CLOCK AND TIMER FUNCTIONS, CONTINUED

- B. To Start and Stop Automatically:
1. Press COOK TIME pad
 2. Press UP or DOWN ARROW to set the desired baking time.
 3. Press STOP TIME pad.
 4. Using the UP or DOWN ARROW, select the desired time of day for cooking to be completed.
 5. Press BAKE.
 6. Press UP or DOWN ARROW to set the desired baking temperature.



TO SET A DELAYED START CLEAN CYCLE

1. Press the CLEAN pad and display shows - - - - (four dashes).
2. Press the UP or DOWN ARROW to select the desired clean time. Clean time is adjustable from 2 to 4 hours.
3. Press STOP TIME pad.
4. Set the desired time of day for cleaning to end.
The ERC will automatically calculate the start time.
5. The door will lock immediately and the words CLEAN, DELAY & LOCK will appear on the ERC display.



3. TONES

END-OF-CYCLE TONE - 3 long beeps - one second on, one second off followed by a reminder tone every 6 seconds until the CLOCK pad is pressed. This tone indicates a timed oven operation has reached **STOP TIME** or that the Minute/Second Timer has counted down. The reminder tone can be permanently eliminated or restored by pressing and holding the CLEAR/OFF pad for approximately 10 seconds, until a short tone is heard to acknowledge the change.

ATTENTION TONE - series of short tones, 1/4 second on, 1/4 second off, until proper response is given. This tone will sound if oven has only been partially programmed. For example, if you have selected a cook time but no temperature, you will hear the Attention Tone until you select a temperature or push over CLEAR/OFF.

PRE-HEAT NOTIFICATION TONE - five rapid 1/10 second tones: indicates oven has stabilized at selected temperature. This tone occurs at the first off cycle of the bake relay.

KEY TONE (single 1/10 second beep): sounds when any function pad is pushed except for the up or down arrows.

FAILURE CODE/TONE (series of very rapid beeps, 1/8 second on, 1/4 second off): display will show a failure code. Cancel Failure code/tone by pushing the oven CLEAR/OFF pad. If the Failure code & tone starts again (after about 15 seconds), see the fail code explanation chart in this section of the manual.

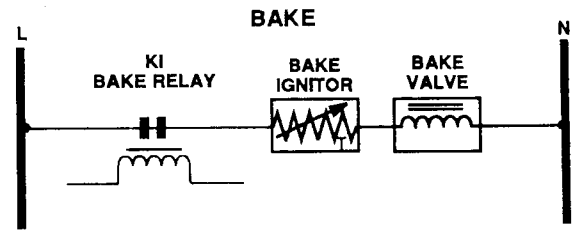
3. OVEN CONTROL AND DOOR LOCK SYSTEMS

B. ELECTRONIC RANGE CONTROL II (ERC-II)

4. SYSTEM OPERATION

To Bake:

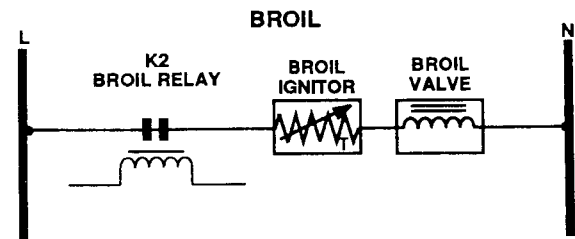
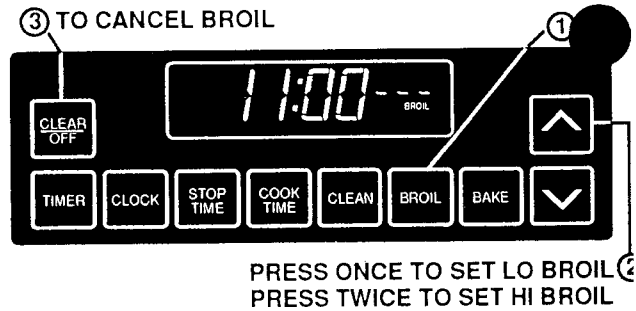
- o Press BAKE.
- o Press the up or down arrow next to the BAKE pad to increase or decrease the temperature selection.
- o Bake relay closes (audible "click"). The BAKE ignitor begins to glow with BAKE burner ignition within 30 to 60 seconds.
- o The temperature display shows the oven temperature as it increases in 5 degree steps.
- o As the oven reaches the selected temperature, a pre-heat notification tone of 5 short tones is sounded and the bake relay soon cycles off (audible "click").
- o Once pre-heated, the display will show the selected temperature through the entire BAKE cycle and will not change to show the normal temperature swing of the oven.
- o Press the CLEAR/OFF pad to turn the oven off.



TO BROIL:

- o Press BROIL pad.
- o Press the UP arrow to select LO or HI BROIL.
- o BROIL relay closes (audible "click").
- o BROIL ignitor begins to glow with BROIL burner ignition within 30 to 60 seconds.
- o Press the CLEAR/OFF pad to turn the oven off.

NOTE: During HI BROIL the burner cycles off at 550 degrees.
 During LO BROIL the burner cycles off at 450 degrees.
 The oven door must be closed when broiling.



SELF CLEAN OPERATION see "SELF CLEAN & MOTORIZED DOOR LOCK OPERATION".

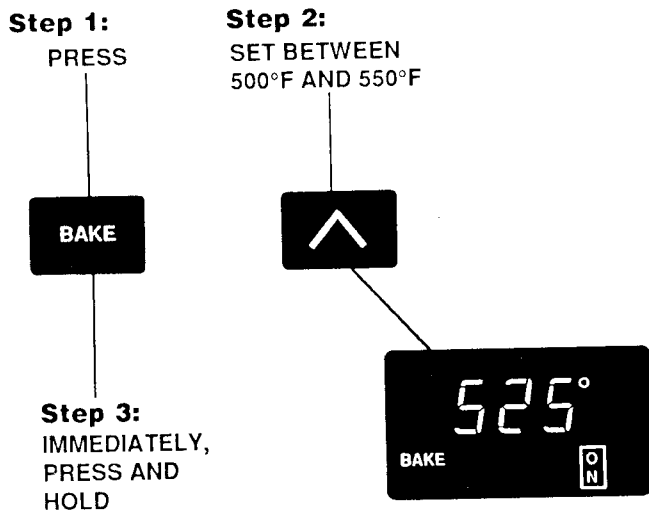
3. OVEN CONTROL AND DOOR LOCK SYSTEMS

B. ELECTRONIC RANGE CONTROL II (ERC-II)

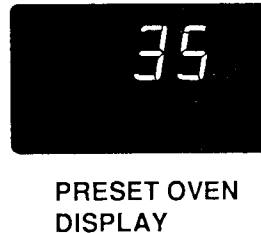
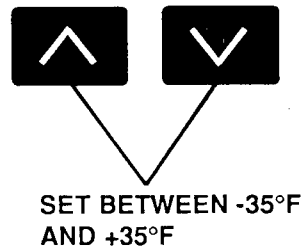
5. BAKE TEMPERATURE CALIBRATION

- o Press BAKE pad.
- o Select any temperature above 500 degrees.
- o **QUICKLY** press and hold BAKE pad approximately 5 seconds until "00" or previously entered change is displayed.
- o Release BAKE pad. Tap up or down arrow to change the oven temperature +/- 35 degrees in 5 degree steps.
- o Press CLOCK or CLEAR/OFF pad to return control to normal operation.

The calibration change will remain in the control memory and is not affected by power interruptions.



Step 4:



NOTE: This adjustment will not affect Broil or Clean temperatures. It will be remembered when power is removed.

Continue to hold **BAKE** until the display changes to show the preset oven temperature adjustment.



Step 5:

CLOCK



The diagram shows the CLOCK button being pressed to return the oven to normal operation.

3. OVEN CONTROL AND DOOR LOCK SYSTEMS

B. ELECTRONIC RANGE CONTROL II (ERC-II)

6. SELF CLEAN & MOTORIZED DOOR LOCK OPERATION

LOCK CIRCUITS

There are two circuits controlling the locking and unlocking of the door. These are the LOCK MOTOR circuit and the LOCK SWITCH circuit.

The LOCK MOTOR circuit applies voltage (120 VAC) to the lock motor. This circuit is from L, through the door switch, lock relay, lock motor to Neutral.

For this circuit to be complete, the lock relay must be energized by the ERC and the door must be closed. (An open oven door results in an open door switch. This will result in the word "DOOR" appearing on the display approximately 8 to 10 seconds after the control has been programmed for clean.)

The LOCK SWITCH circuit "tells" the control if the lock motor is in the unlocked or locked position or somewhere in between. There are two lock switches mounted next to and operated by a cam on the lock motor assembly.

The lock switch circuit is from the ERC, through one of the lock switches (switch 2 for unlocked or switch 1 for locked) back to the ERC.

CLEAN CYCLE AND LOCK SEQUENCE

1. Program the Clean Cycle:

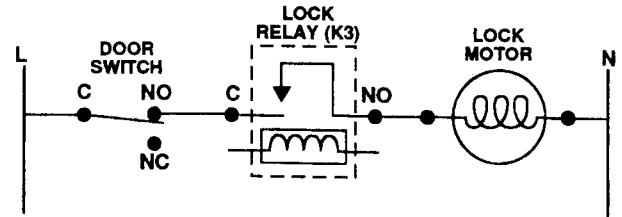
- o Press "CLEAN" pad. Four dashes (----) appear on the time display. "CLEAN TIME" will be illuminated in green.
- o Press up or down arrow and 3:00 (3 hours) appears on the time display. (Cleaning time can be changed from the 3 hour starting point by pressing the up or down arrow.)
- o The word "CLEAN" illuminates in red to indicate the cycle has begun.

2. Locking of the Door:

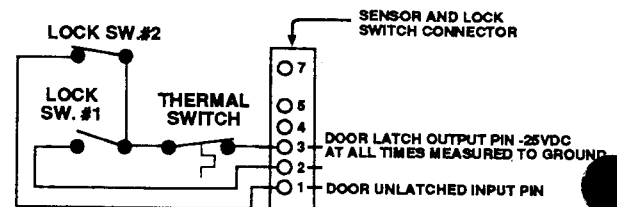
- o Within 5 seconds after programming the clean cycle, the control energizes the lock relay. Voltage (120 VAC) is applied to the lock motor circuit. (Oven door must be closed before lock motor can run.)

CONDITIONS: DOOR: CLOSED
LOCK: UNLOCKED

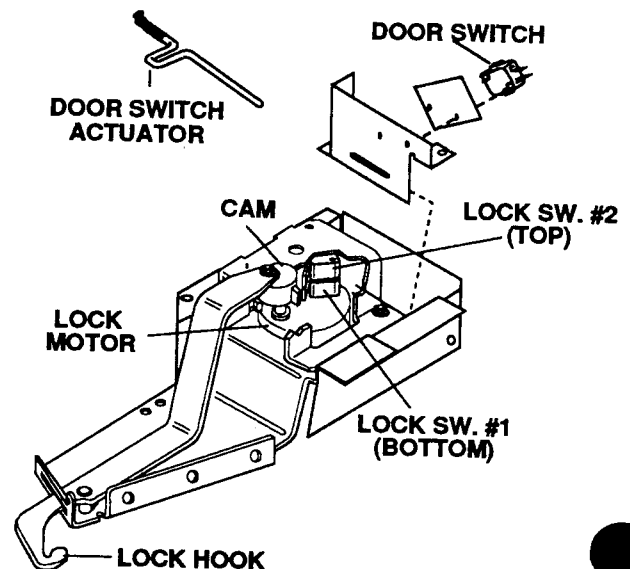
LOCK MTR. CIRCUIT



LOCK SW. CIRCUIT



DOOR LOCK ASSEMBLY



3. OVEN CONTROL AND DOOR LOCK SYSTEMS

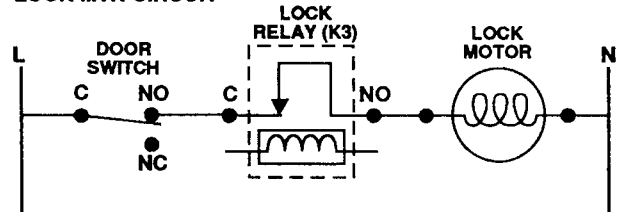
B. ELECTRONIC RANGE CONTROL II (ERC-II)

6. SELF CLEAN & MOTORIZED DOOR LOCK OPERATION, CONTINUED

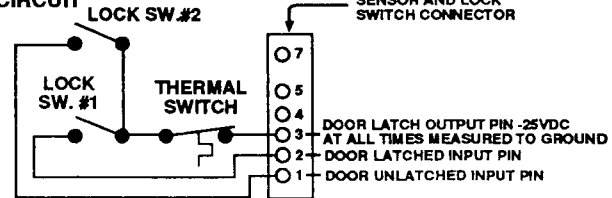
- o The lock motor begins to revolve and turns a cam mounted to the lock motor shaft.
- o The word "LOCK" will flash on and off in the display any time the lock motor is in motion and neither lock switch is closed.
- o As the cam revolves about 1/2 revolution (approximately 12 seconds), it has moved the lock "hook" into a corresponding slot in the oven door which secures the door.
- o The movement of the cam has also closed lock switch 1 which "tells" the control the door is locked. The control then removes power from the lock motor circuit by de-energizing the lock relay.
- o The lock motor stops and lock switch 1 is held closed by the cam throughout the clean cycle.
- o The word "LOCK" stops flashing and remains illuminated in the display.
- o The word "ON" illuminates in the display.

**CONDITIONS: DOOR: CLOSED
LOCK: LOCKING
(OR UNLOCKING)**

LOCK MTR CIRCUIT

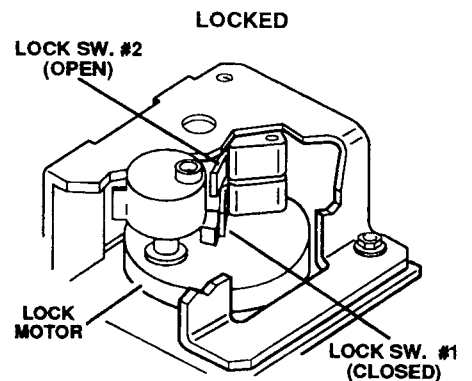


LOCK SW. CIRCUIT



3. During the Clean Cycle:

- o The BROIL relay closes (audible "click") and the broil ignitor begins to heat with broil burner ignition within 30 to 60 seconds. The broil burner only will operate during the first 30 minutes of the clean cycle followed by the bake burner only during the remaining time.
- o As the clean cycle progresses and the temperature of the oven control area rises, a cooling fan in the control area is activated by the closing of a normally open, disc type thermal switch. This thermal switch is mounted on the floor of the control compartment behind the ERC.



3. OVEN CONTROL AND DOOR LOCK SYSTEMS

B. ELECTRONIC RANGE CONTROL II (ERC-II)

6. SELF CLEAN & MOTORIZED DOOR LOCK OPERATION, CONTINUED

o A second normally closed thermal switch is mounted on a bracket in front of the cooling fan. This switch is in the lock switch circuit and will open the lock switch circuit in the event of an over temperature condition in the control area (caused by a stalled fan, fan switch failure or similar condition).

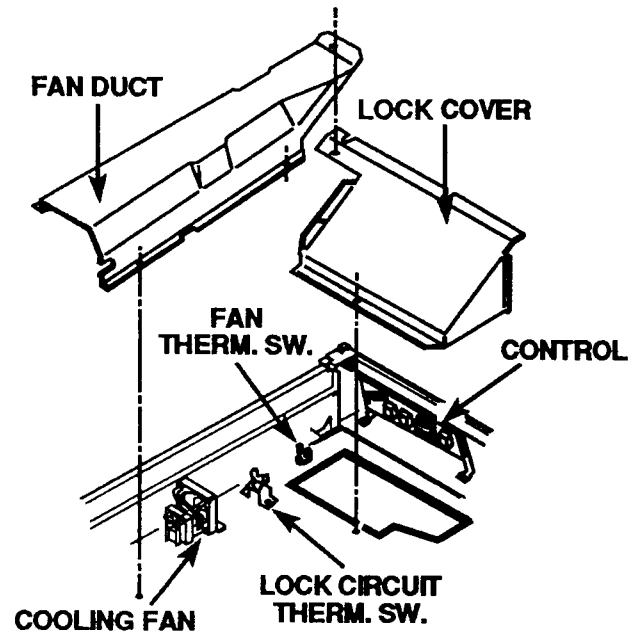
Depending on the temperature of the oven, the opening of the thermal switch in the lock circuit will result in one of three conditions:

1. An -F2- (over temperature) failure code will appear on the control if this switch opens while the oven is above 600 degrees.
2. With the oven between 400 to 600 degrees, the clean cycle will be cancelled by the opening of the switch and the control will revert to the time-of-day mode. The word "LOCK" will be flashing on the control display.
3. Below 400 degrees, the lock motor will revolve continuously and the "LOCK" word will flash on the display until the lock switch circuit is re-established by the closing of the thermal switch.

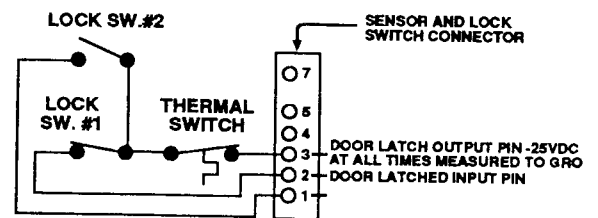
o The ERC will cycle the oven relays to maintain an average clean temperature of 870 degrees F.

4. After the Clean Cycle:

- o Clean time has counted down to "00" and the oven begins to cool. The word "CLEAN" disappears from the display. The time of day and the word "LOCK" will be displayed
- o As the oven cools to approximately 400 degrees (unlock temperature) the ERC energizes the lock relay.
- o The lock motor begins to revolve and turns the cam mounted to the lock motor shaft.



LOCK SW. CIRCUIT



3. OVEN CONTROL AND DOOR LOCK SYSTEMS

B. ELECTRONIC RANGE CONTROL II (ERC-II)

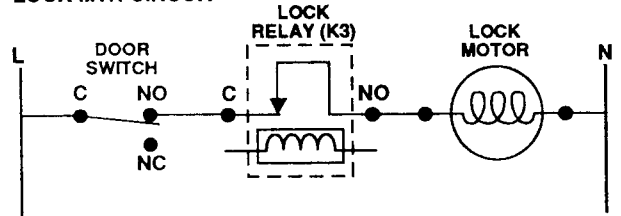
6. SELF CLEAN & MOTORIZED DOOR LOCK OPERATION, CONTINUED

- o The cam rotation immediately opens lock switch 1 and the "LOCK" word begins to flash in the display. Further rotation moves the lock "hook" out of the door slot which unlocks the door.
- o As the cam revolves about 1/2 turn, lock switch 2 closes and "tells" the control the door has unlocked. (The time display will momentarily blink as switch 2 closes.)
- o The control removes power from the lock motor circuit by de energizing the lock relay. The word "LOCK" disappears from the display.
- o The lock motor stops and lock switch 2 is held closed by the cam until the next clean cycle.

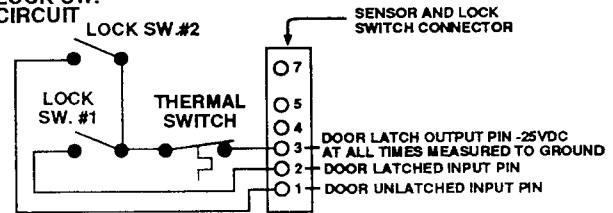
NOTE: The cooling fan will continue to run after the clean cycle has ended and may continue after the door has unlocked.

**CONDITIONS: DOOR: CLOSED
LOCK: LOCKING
(OR UNLOCKING)**

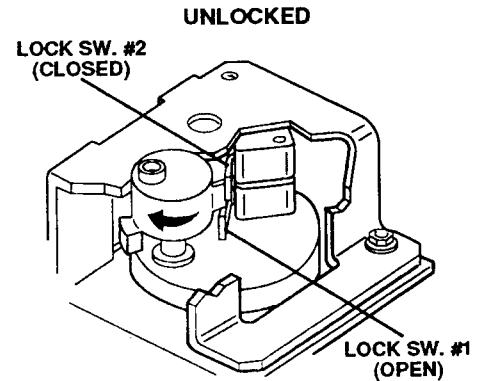
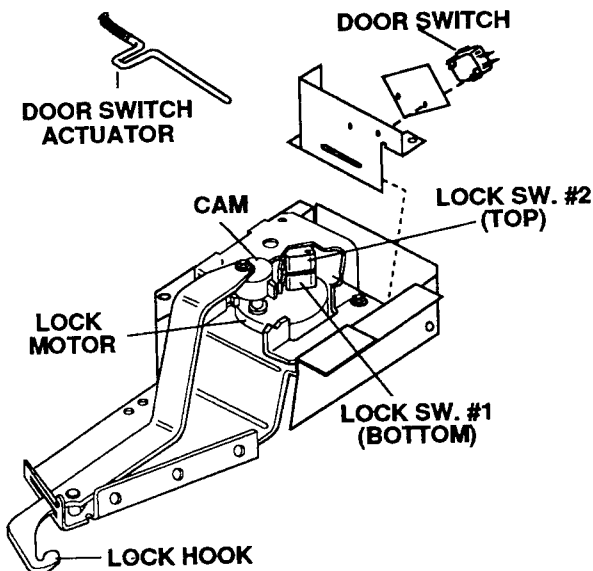
LOCK MTR CIRCUIT



LOCK SW. CIRCUIT



DOOR LOCK ASSEMBLY



3. OVEN CONTROL AND DOOR LOCK SYSTEMS

B. ELECTRONIC RANGE CONTROL II (ERC-II)

7. COMPONENT TEST PROCEDURES

OVEN TEMPERATURE SENSOR

The ERC monitors the oven temperature through the use of the an oven temperature sensor mounted in the upper corner of the oven cavity.

The electrical resistance value of the sensor changes with changes oven temperature.

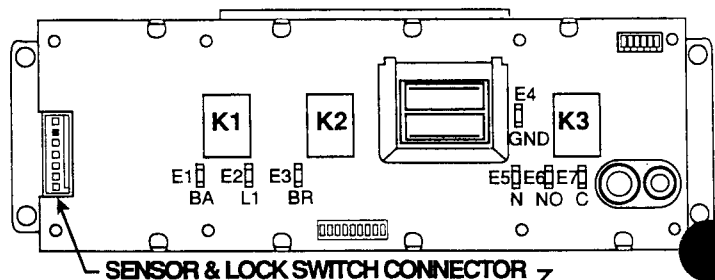
The range of resistance varies from 1100 Ohms at room temperature (75 degrees) up to 2650 Ohms at clean temperature (up to 865 degrees).

The sensor circuit is a series circuit from the ERC, through the sensor and back to the ERC.

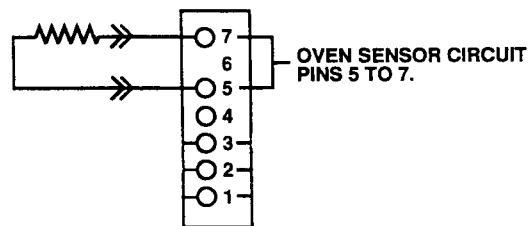
SENSOR CIRCUIT OHM METER TEST

Test 1; From ERC

- o Remove power from oven.
- o Gain access to the back of the ERC.
- o Remove the 7 wire, sensor and lock switch connector from the ERC.
- o With Ohm meter set to R x 100, measure the resistance from terminals 5 to 7 of the 7 terminal connector. When measuring the resistance, place the meter leads on the exposed portion of the terminals on one side of the connector. **DO NOT** place meter leads inside the connector as damage to the terminals resulting in loss of contact may result.
- o The resistance of the sensor measured from terminals 5 to 7 should be approximately 1100 Ohms with oven at room temperature.
- o Measure the resistance from terminal 5 to chassis ground and 7 to chassis ground. Infinite resistance should be read from each terminal to ground.
- o If sensor circuit checks open or shorted, measure sensor resistance directly across sensor as described on the next page.



OVEN TEMP. SENSOR
1100 Ohms at room temp.
2650 Ohms at clean temp.



3. OVEN CONTROL AND DOOR LOCK SYSTEMS

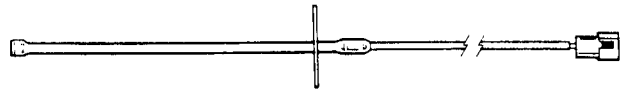
B. ELECTRONIC RANGE CONTROL II (ERC-II)

7. COMPONENT TEST PROCEDURES, CONTINUED

SENSOR CIRCUIT OHM METER TEST, CONT.

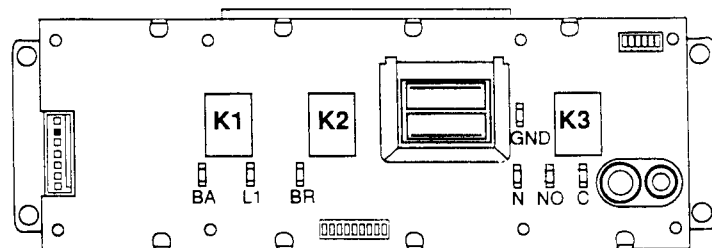
Test 2; Directly Across Sensor

- o Remove power from oven.
- o Remove sensor mounting screws
- o Pull sensor forward into oven cavity far enough to expose the sensor disconnect, crimp connections or wire nuts (approximately 10 inches).
- o Disconnect sensor leads from sensor wire harness.
- o Measure resistance of sensor directly across the two sensor leads. Normal resistance at room temperature is approximately 1100 Ohms.



IMPORTANT When re-installing sensor into oven, the sensor connector or wire nuts must be pushed all the way through the insulation and away from the oven cavity. The sensor connector will melt if positioned against the oven cavity and exposed to clean temperature.

If the sensor leads were cut for testing, ceramic wire nuts are recommended to re-connect sensor leads to sensor wire harness.



RELAY CONTACT OPERATION

Normally, the opening and closing of the relay contacts can be tested by pressing the bake, broil or clean pad, selecting a temperature and listening for the audible "click" of the relay contacts. In some cases, it may be necessary to make an actual voltage measurement to be sure the contacts are closing or opening.

RELAY CONTACT OPERATION; VOLTAGE TEST

- o Remove power to oven.
- o Gain access to back of ERC
- o Depending on the relay being tested, remove the wire from the "BA" (bake) or "BR" (broil) terminal on the relay circuit board.
- o Position wires and control to allow voltage to be safely restored to the oven.
- o With power restored, Measure the voltage available to the terminal and compare voltage readings to the chart.
- o Replace the ERC if the correct voltages are not observed.

RELAY	TERMINALS	VOLTAGE*	MODE
K1 BAKE	BA to N	120 VAC	*BAKE
K2 BROIL	BR to N	120 VAC	*BROIL
K3 LOCK	C to N	120 VAC	ALL
K3 LOCK	NO to N	120 VAC	LOCKING OR UNLOCKING

* Temperature and mode selection necessary for operation of relay contacts.

3. OVEN CONTROL AND DOOR LOCK SYSTEMS

B. ELECTRONIC RANGE CONTROL II (ERC-II)

8. PROGRAMMED ERC FAILURE CODES

The cause of a no bake, broil or clean condition can be isolated to either the ERC or non ERC circuits by listening for the audible "click" of the relay when a bake, broil or clean function is selected. The "click" will occur approximately 3 to 5 seconds after the function has been programmed and the temperature has been selected.

If the audible "click" is heard, look for the cause of the problem "down stream" of the ERC, starting with the oven ignitor if it is a no heat complaint.

In most cases, a failure within the ERC-II system will be denoted by a failure code or word being displayed on the ERC display along with the sounding of a failure tone.

If you cannot duplicate the problem while in the home, ask the customer what failure code or word was displayed. Knowing the fail code number will direct you to the problem area.

FAILURE CODE	MEANING	CORRECTION
F0 F1 FF	o Failed Transistor in Control	o If code cannot be canceled Replace Control
F2	o Oven exceeded 590°F with door in unlocked position or exceeded 990°F with door locked. o High resistance connection within sensor circuit. (ERC reads sensor resistance not actual oven temperature) o Interference from cordless telephone, ham radios or other sources of electrical disturbance. o Improper Ground	o If over temperature condition occurred, test relay operation. Look for "welded" contacts. o See NOTE below. o Oven and cordless phone cannot be on same circuit. o Check appliance ground.
-F2- IN CLEAN	o See above plus: o Open lock circuit thermal switch.	o Check cooling fan operation or other conditions that could cause control area to overheat.
	o Lock switches 1 and 2 closed at the same time.	o Check operation of door lock switches.
F3	o Open sensor or open sensor circuit. o Sensor lead shorted to ground o Intermittent Sensor harness connections	o Test resistance of sensor circuit, both lead to lead and each lead to ground at ERC. o See NOTE below.

NOTE: Connections can be intermittent due to a corrosive build-up between the connections or due bent terminals within the harness connectors.

3. OVEN CONTROL AND DOOR LOCK SYSTEMS

B. ELECTRONIC RANGE CONTROL II (ERC-II)

8. PROGRAMMED ERC FAILURE CODES, CONTINUED

<u>FAILURE CODE</u>	<u>MEANING</u>	<u>CAUSE OR CORRECTION</u>
F4	<ul style="list-style-type: none">o Shorted sensor or short in sensor circuit	<ul style="list-style-type: none">o Test resistance of sensor circuit, both lead to lead and each lead to ground.o Melted sensor connector due to connector being positioned against back of oven cavity. The sensor connector must be positioned outside of the oven back, keeping the connector visible from the rear of the range.
F8	<ul style="list-style-type: none">o Component failure detected within ERC affecting temperature processing circuits.	<ul style="list-style-type: none">o Replace Control
F9	<ul style="list-style-type: none">o Lock switches 1 and 2 closed at the same time.	<ul style="list-style-type: none">o Test operation of switches.
DOOR	<ul style="list-style-type: none">o Door lock did not advance within 8 to 10 seconds after setting clean cycle.	<ul style="list-style-type: none">o Door not closed with CLEAN selected.o Door switch not operating correctlyo Lock switch 2 (unlocked) stuck in closed position.o Lock motor open.o Lock relay contacts not closing.
LOCK FLASHING	<ul style="list-style-type: none">o Lock switch circuit open. (Normal condition while locking or unlocking)	<ul style="list-style-type: none">o Open Thermal switch in lock switch circuit due to overheating of control area.o Check fan operation.o Check lock switches.

4. OVEN BURNERS

DESIGN INFORMATION

All models use the same basic oven design with separate bake and broil burners.

Each burner uses a glow bar ignitor for ignition. The glow bars are the round, Carborundum brand ignitors.

A "dual" gas valve (safety valve) supplies gas to both burners. The valve is located in the control box behind the storage drawer.

The BTU rates of the burners for all models are 18000 for bake and 16000 for broil.

Model Differences:

The differences in oven designs between models are as follows:

Models with conventional top burners:

JGSP20 and JGSP21

Operate on 4" Water Column Pressure (WCP) with natural gas.

Have convertible lp/nat orifices for bake and broil burners.

Models with Spill-Proof surface burners:

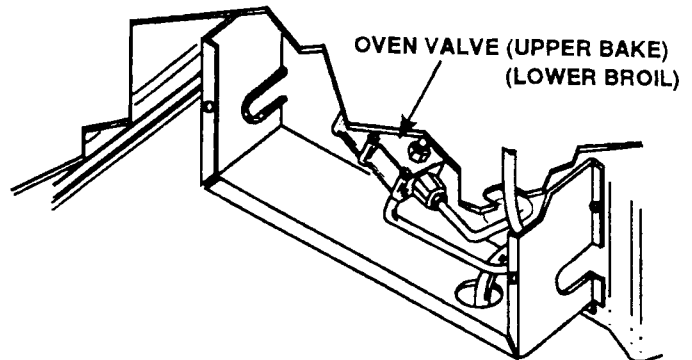
JGSP30 and JGSP31

Operate on 6" WCP on natural gas.

Have fixed, non adjustable orifices set for natural gas on the surface and oven burners. These must be replaced with fixed orifices included in the kit for conversion to lp gas.

All models

Operate on 10" WCP when converted for use on LP (propane) gas.



4. OVEN BURNERS

GLOW BAR IGNITION SYSTEM

SYSTEM OPERATION

The glow-bar ignition system consists of three main components:

1. The bake or broil relay.
2. The glow-bar ignitor.
3. The oven gas valve (also called the safety valve).

The relay, ignitor and gas valve are wired in series.

The relay contacts close to apply power (120 Volts) to the circuit.

With power applied, the ignitor begins to heat. The electrical resistance of the ignitor will decrease as the surface temperature of the ignitor increases.

The current flowing in the series circuit increases in proportion to the drop in ignitor resistance.

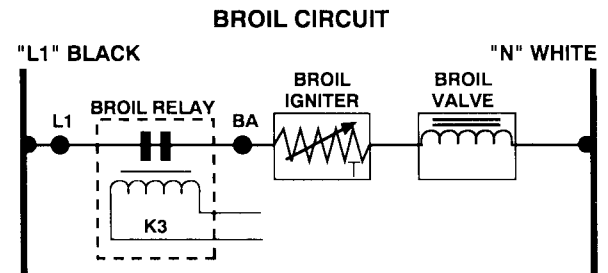
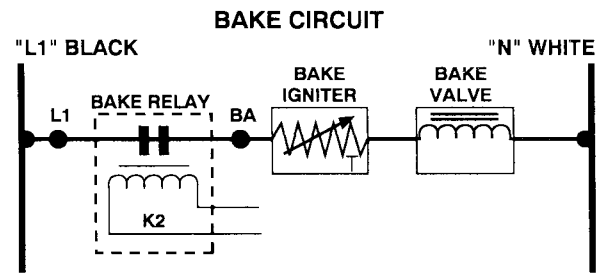
As the current flows through the oven gas valve, it passes through a series of heater wires.

The heater wires are wrapped around a bi-metal arm which will flex and open the valve as the arm is heated to the flexing temperature.

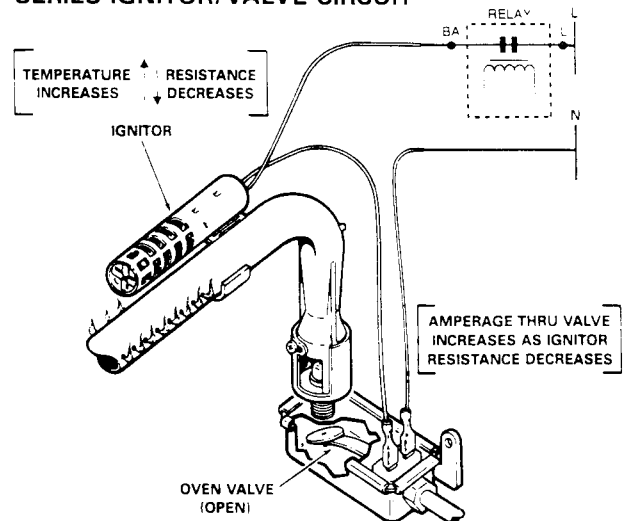
The increasing current flow in the circuit raises the amount of heat produced by the heater wires. The bi-metal arm will reach flexing temperature and open the valve when the current flow approaches its peak which is 2.5 to 3 Amps.

By the time the current has risen high enough to open the valve, the surface temperature of the ignitor is between 1800 to 2500 degrees F.

The gas flows out of the valve and into the burner. As the gas exits the burner, a portion of the gas flows across the hot ignitor and ignition occurs.

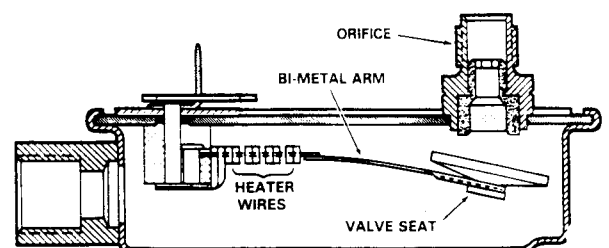


SERIES IGNITOR/VALVE CIRCUIT



NOTE: ILLUSTRATION DEMONSTRATES CIRCUIT OPERATION ONLY. THE VALVE ON THE PRODUCT IS DIFFERENT IN APPEARANCE THAN SHOWN.

GAS VALVE



4. OVEN BURNERS

GLOW BAR IGNITION SYSTEM

System Operation, cont.

The ignitor side of the burner is lit first. The flame then travels to the other side of the burner by way of a cross-over slot to ignite the other side of the burner. (Some models have a series of holes across the burner instead of a cross over slot).

The ignitor will remain energized at all times when the burner is lit. Once the oven reaches the selected temperature, the relay contacts will open and remove power from the ignitor/valve circuit. The bi-metal arm within the valve will cool and flex to close off the valve. After a few seconds, the burner flame will go out.

Glow Bar Mounting

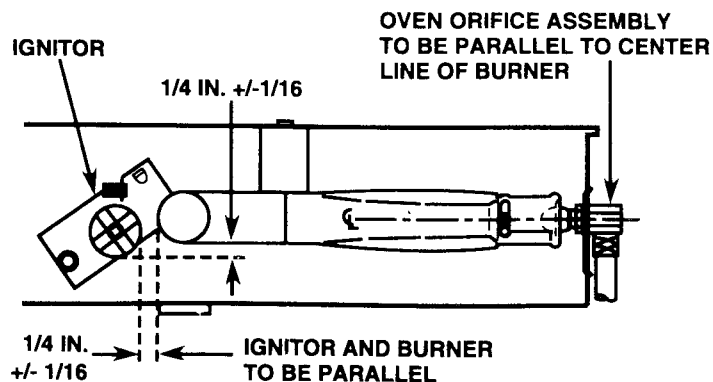
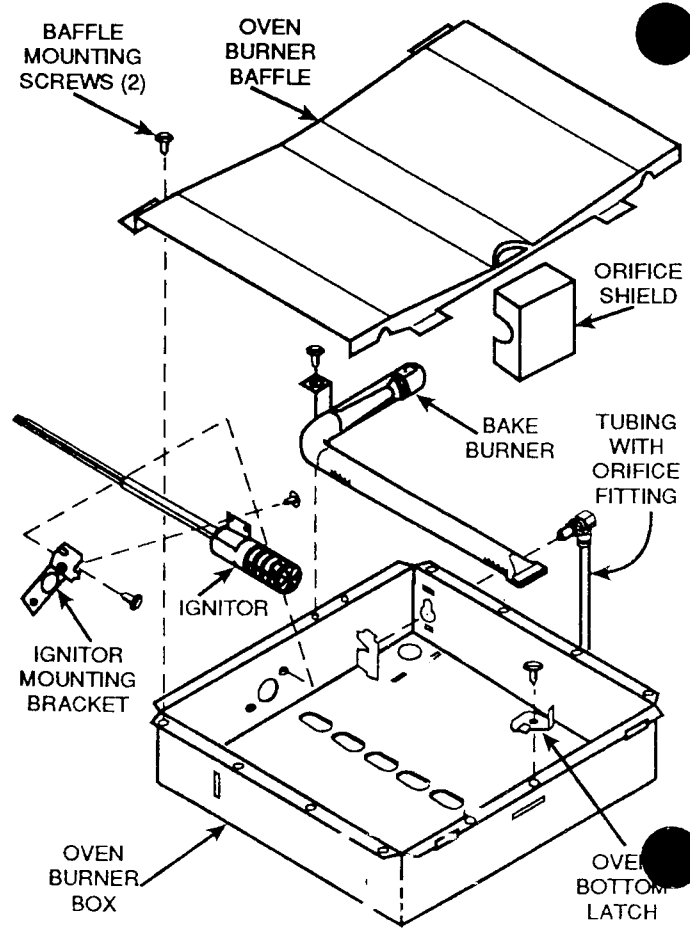
The glow bars are mounted to a mounting bracket and not to the burner itself.

It is **extremely important**, when replacing an ignitor, to mount the ignitor correctly.

The broil ignitor mounting bracket can only be mounted one way. The concern is with the bake ignitor mounting bracket. The bake ignitor mounting bracket can be incorrectly mounted up-side-down which places the ignitor too far from the burner. This can result in delayed ignition of the bake burner. Be sure the mounting bracket is mounted with the ignitor mounting screw **ABOVE** the ignitor as shown.

The bake and broil ignitors must be mounted parallel to the burner and kept 1/4" away and 1/4" below the burner as shown. (Bake ignitor shown but broil ignitor requires the same dimensions.) The ignitor mounting bracket can be bent to achieve the required dimensions.

Ceramic wire nut connectors are used to connect the high temperature ignitor wires to the range wiring. When replacing the ignitor, always push the ceramic wire nuts through back wall of the oven cavity and past the oven insulation. This will protect the range wiring from exposure to the high temperatures of the self clean cycle.



4. OVEN BURNERS

GLOW BAR IGNITION PROBLEM SOLVING

A. IGNITOR DOESN'T GLOW

1. Select BAKE or BROIL, select a temperature and listen for the relay contacts to "click" within 3 to 5 seconds.

If relay contacts do not "click", look for a problem in the ERC system (see section 3, "OVEN CONTROL SYSTEMS").

2. If relay "click" is heard, remove power to the range and remove the ignitor. Measure ignitor resistance. Resistance should be between 50 and 150 Ohms. (The value of the resistance is not important as long as the ignitor is not open or shorted.)
3. Position the ignitor leads to allow power to be safely restored. Measure the voltage applied across the ignitor leads. Measure from lead to lead and each lead to ground.

If line voltage is measured from lead to lead, the ignitor is open and needs to be replaced.

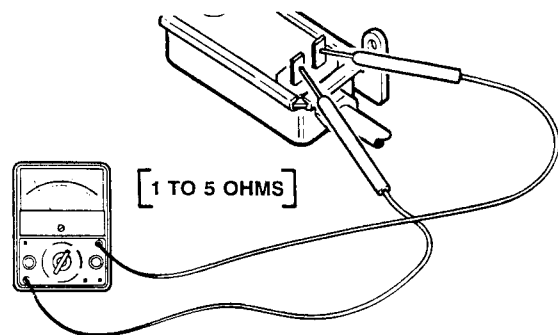
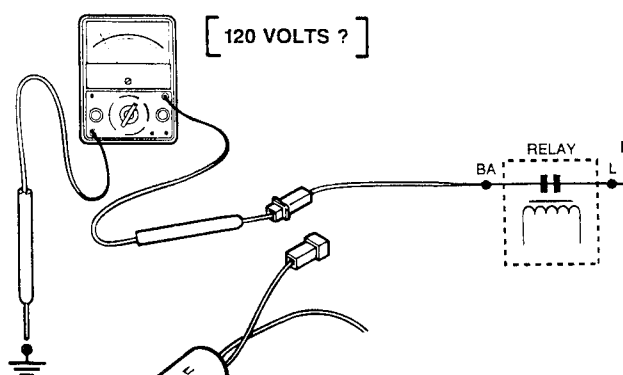
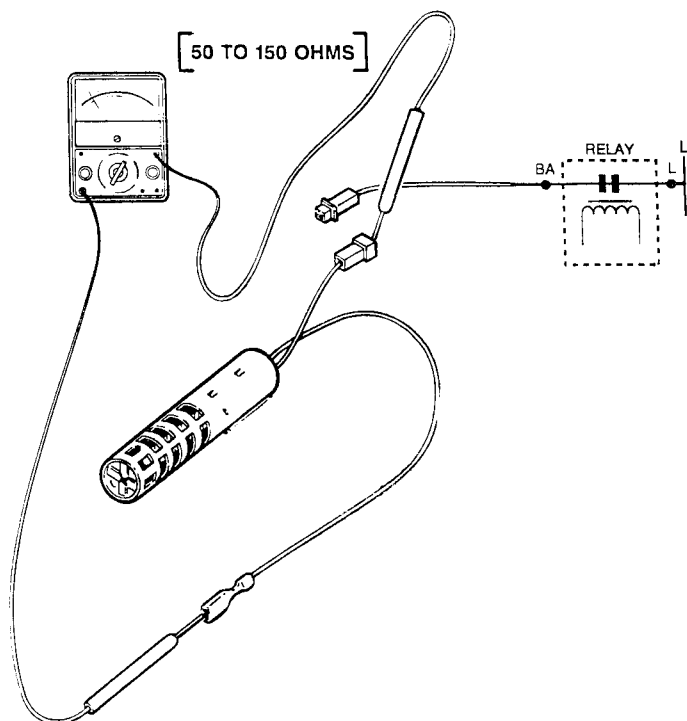
If line voltage is measured from one ignitor lead to ground but not from lead to lead, remove power to the range and measure the resistance across the gas valve (safety valve). Normal resistance across the gas valve is 1 to 5 Ohms. If valve is open, replace valve and ignitor.

If line voltage cannot be measured on either lead to ground, refer to section 3 "OVEN CONTROL SYSTEMS" for information on testing the operation of the relay contacts and ERC.

B. IGNITOR GLOWS BUT VALVE WON'T OPEN

1. Oven shut-off valve in closed position. See section 5, "OVEN SHUT OFF VALVE" (Neither oven burner will ignite if the valve is closed.)
2. Ignitor has aged or is cracked and will no longer allow enough current flow for the valve to open.

NOTE: When measuring the current flow through the ignitor circuit, shut the gas off to the oven at either the main shut-off for the range or at the oven (only) shut-off shown in section 5, "OVEN SHUT OFF VALVE".



4. OVEN BURNERS

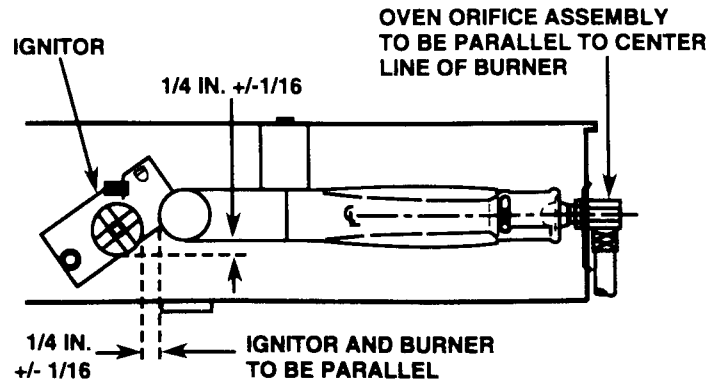
GLOW BAR IGNITION PROBLEM SOLVING, CONT.

C. DELAYED OR SLOW OVEN IGNITION

Slow ignition can be caused by one or more of the following conditions:

BAKE OR BROIL BURNER

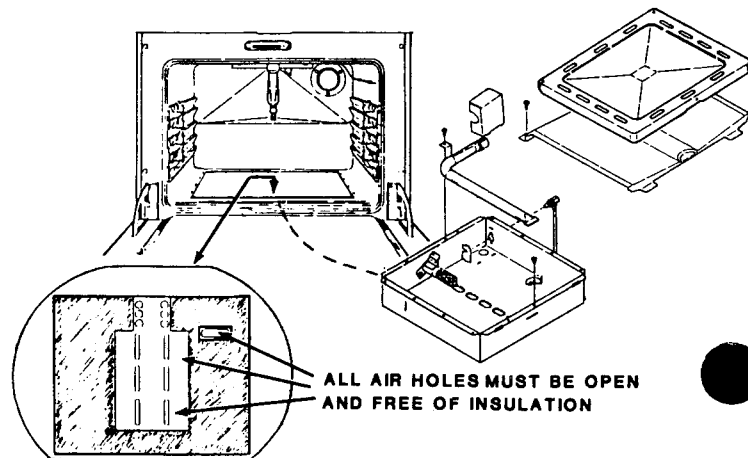
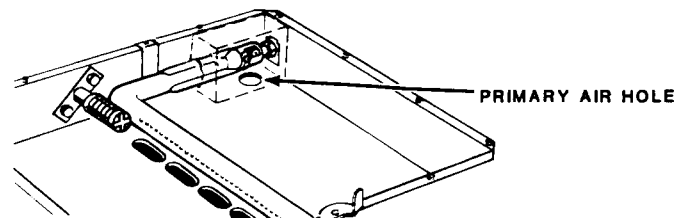
1. Improper Alignment of Ignitor - Distance between ignitor and burner must be as shown.
2. Improper Alignment of Orifice Hood and Burner - Orifice must be pointing straight into burner venturi. If adjustment is needed, use a small adjustable wrench placed over the end of the orifice hood as a handle. Gently, bend the hood and tubing to correct the alignment.
3. Improper Air/Gas Adjustment - Burner should have a clean burning, steady blue flame without soot or yellow tips. Adjustment of the air shutter will usually provide the desired flame.
4. Blockage of Burner Crossover Slot - Crossover slot must be open and free of burrs.
5. Blockage of Oven Vent - Oven vent (flue) cannot be blocked or partially blocked with insulation or other material. Use a flashlight to examine flue opening from inside oven.



BAKE BURNER ONLY

1. Blockage of Primary Air Intake - Hole beneath bake orifice hood must be open and free of insulation. Blockage of this hole may also result in a complaint of a strong odor during the first 15 minutes of oven use.
2. Blockage of Secondary Air Intake Holes Blockage of these holes will result in delayed ignition after the oven has pre-heated and begins to cycle to maintain temperature. Remove oven burner box (galvanized box surrounding oven burner) and inspect the two rows of secondary air holes beneath box for signs of blockage.

NOTE: The factory places screws to serve as spacers between the oven burner box, the storage compartment ceiling and the baffle in between the two. The spacers prevent the panels from flexing and closing off air flow.



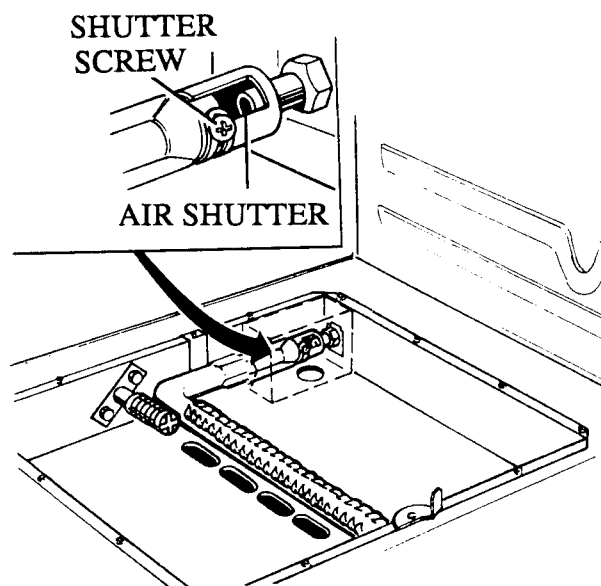
4. OVEN BURNERS

Burner Adjustments

As covered under "Design Information" on the first page of this section, some slide-in models have convertible (nat/lp) orifices and some models have fixed, non adjustable orifices.

All models have adjustable air shutters on both burners.

Adjustments to improve the burner flame characteristics are accomplished by adjusting the air shutter and/or adjusting or replacing the orifice.



BAKE BURNER ADJUSTMENT

- o Remove oven bottom, flame spreader (burner baffle) and orifice shield..
- o Set the oven for BAKE.
- o Observe the burner flame for both flame length and flame quality.

The flame should be approximately 3/4 to 1" in total length with an inner cone approximately 1/2" in length. There should be no yellow tips on natural gas and very little to no yellow tipping on LP gas (some LP gas has additives that will cause yellow tips).

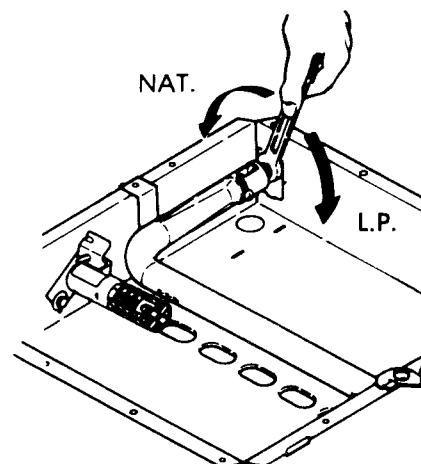
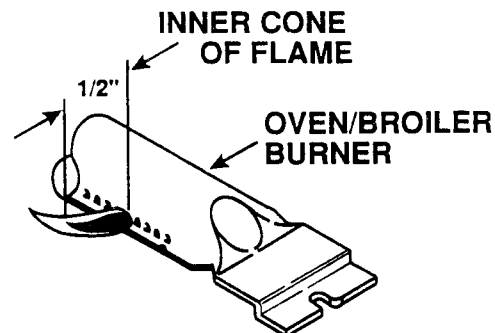
Harsh blowing flames indicate too much primary air is being mixed with the gas. Reduce the air shutter opening until flames settle.

Yellow or fluttering flames indicate too little primary air. The air shutter needs to be opened more. If condition cannot be corrected by opening the air shutter, adjust the orifice (on models with convertible orifices) as described below.

Excessive flame length. THE FLAME MUST NOT EXTEND BEYOND THE EDGE OF THE FLAME SPREADER.

With the flame spreader removed, the length of the flame can be easily determined by examining the heat pattern on the burner side of the spreader. If the pattern extends to the edge of the spreader, the flame is too long and must be adjusted.

With the flame spreader removed, set the oven for BAKE. Turn the orifice hood (models with convertible orifices) in the LP direction while observing the flame. Turn the orifice hood until the total flame length is 3/4 to 1".



4. OVEN BURNERS

BAKE BURNER ADJUSTMENTS, CONTINUED

Install flame spreader and observe the flame to be sure the flame does not extend past the edge of the spreader.

If the size of the flame cannot be reduced to the proper length by turning the orifice hood in the LP direction, or if the range has non-convertible orifices, the orifice hood must be replaced with one of a smaller size as shown in the chart.

BROIL BURNER ADJUSTMENT

- o Set the oven for BROIL.
- o Observe the burner flame for both flame length and flame quality.

The flame should extend to almost to the edge of the flame spreader with no yellow tips on natural gas and very little to no yellow tipping on LP gas (some LP gas has additives that will cause yellow tips).

Harsh blowing flames indicate too much primary air is being mixed with the gas. Reduce the air shutter opening until flames settle.

Yellow or fluttering flames indicate too little primary air. Open the air shutter more. If condition cannot be corrected by air shutter adjustments, reduce the gas flow to the burner by adjusting the orifice as described below.

Excessive flame length. THE FLAME MUST NOT EXTEND BEYOND THE EDGE OF THE FLAME SPREADER.

To reduce the flame size, set the oven for BROIL. Turn the orifice hood (models with convertible orifices) in the LP direction while observing the flame. Continue turning the orifice hood until the flame no longer extends past the edge of the flame spreader.

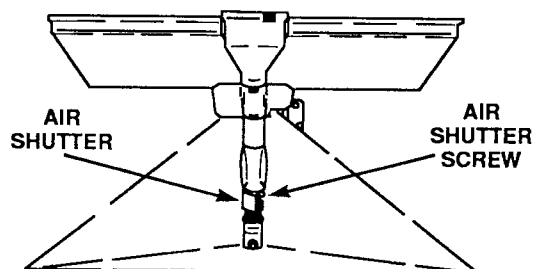
If the size of the flame cannot be reduced to the proper length by turning the orifice hood in the LP direction or if the model has non convertible orifices, the orifice hood must be replaced with one of a smaller size as shown in the charts.

OVEN ORIFICE SIZES

ALL JGSP20 AND JGSP21 MODELS (4" WCP)		
BAKE BURNER		
	NATURAL GAS	*LP GAS
ORIGINAL SIZE	#46 WB13K5017	#56 WB13K5027
1 SIZE SMALLER	#47 WB13K5018	#57 WB13K5028
2 SIZE SMALLER	#48 WB13K5019	#58 WB13K5029
BROIL BURNER		
	NATURAL GAS	*LP GAS
ORIGINAL SIZE	#48 WB13K5019	#57 WB13K5028
1 SIZE SMALLER	#49 WB13K5020	#58 WB13K5029
2 SIZE SMALLER	#50 WB13K5021	#59 WB13K5030

ALL JGSP30 AND JGSP31 MODELS (6" WCP)		
BAKE BURNER		
	NATURAL GAS	*LP GAS
ORIGINAL SIZE	#49 WB13K5020	#55 WB13K5026
1 SIZE SMALLER	#50 WB13K5021	#56 WB13K5027
2 SIZE SMALLER	#51 WB13K5022	#57 WB13K5028
BROIL BURNER		
	NATURAL GAS	*LP GAS
ORIGINAL SIZE	#52 WB13K5023	#56 WB13K5027
1 SIZE SMALLER	#53 WB13K5024	#57 WB13K5028
2 SIZE SMALLER	#54 WB13K5025	#58 WB13K5029

* WHEN INSTALLING A FIXED LP ORIFICE, REMOVE OR CUT THE LP PIN BENEATH THE ORIGINAL ORIFICE.



5. OVEN (ONLY) SHUT-OFF VALVE

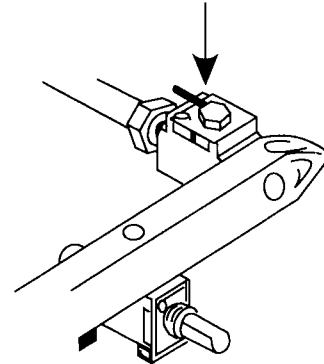
All models feature an oven (only) shut-off valve. The valve will shut-off the gas to the oven burners only and has no effect on the gas supply to the top burners.

Models With Conventional Top Burners (JGSP20, JGSP21) - The shut-off valve is located under the range top near the top burner valves. This type valve can be accidentally turned off or partially turned off by the consumer when cleaning the burner box area.

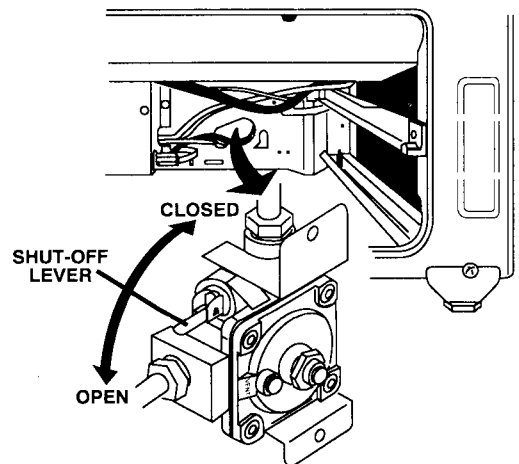
Models With Spill-Proof Top Burners (JGSP30, JGSP31) - The shut-off valve is built into the pressure regulator. It is accessible by removing the storage drawer and reaching through an opening in the rear wall of the lower compartment. A spring loaded lever on the side of the regulator controls the gas flow. With the lever in the horizontal position, the valve is open.

NOTE: Two different brands of regulators have been used on Spill-proof models. For either brand, the lever must be in the horizontal position for the shut-off valve to be open.

OVEN SHUT-OFF VALVE
IN OPEN POSITION



MODELS WITH CONVENTIONAL TOP BURNERS
JGSP20 & JGSP21



MODELS WITH SPILL-PROOF TOP BURNERS
JGSP30 & JGSP31

6. SURFACE BURNERS

A. SPILL-PROOF BURNERS

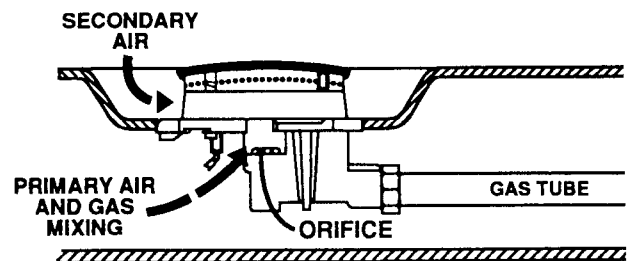
SECTION CONTENTS:

Burner Design Information
Burner Specifications
Burner Adjustments
Low (simmer) Flame Adjustment
Top Burner Ignition System
Ignition System Components
Ignition System Problem Solving

BURNER DESIGN INFORMATION

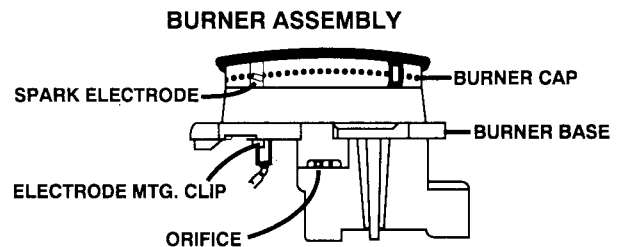
Spill-proof burners are designed to operate with less secondary air surrounding the burner than required by conventional burners. The reduced secondary air requirement eliminates the need for the large opening surrounding the burner used for secondary air flow with conventional burners. By eliminating this opening and mounting the burner directly to the range top, spill overs can no longer enter the burner box, thus the name "Spill-Proof".

The design of the spill-proof burner places the mixing point where air and gas are mixed at the base of the burner. Primary air needed for the mixing process enters the burner box from the various openings in the rear of the burner box.



BURNER SPECIFICATIONS

- o The burner is a two piece system consisting of a burner base and removable burner cap.
- o The gas metering orifice is non-adjustable.
- o There are no air shutters on spill-proof burners.
- o Each burner has its own individual spark electrode.
- o The ignition system is a flame-sensing, auto-relight system.



6. SURFACE BURNERS

A. SPILL-PROOF BURNERS

BURNER ADJUSTMENTS

Standard adjustments to the air shutters and gas metering orifices are not possible on spill proof burners. If burner flames appear to be abnormal, check the following:

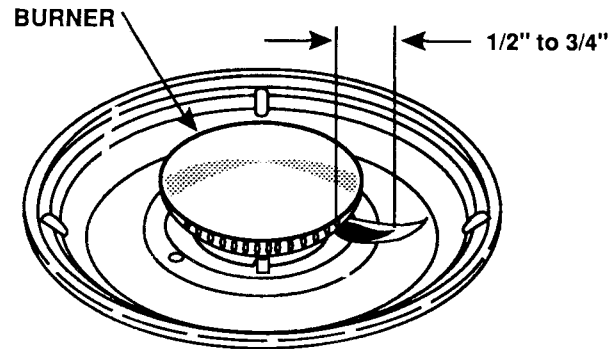
- o Check gas pressure available to the burners. The required operating pressure is 6" W.C.P. for natural gas and 10" W.C.P. for LP (propane) gas.
- o Check for drafts entering the burner box from behind the range. Strong drafts beneath the maintop can extinguish the burners and/or cause erratic burner flames.
- o Check for blockage or partial blockage of the orifice opening.
- o Be sure the range is set for the type of gas being used. If converted for use on LP gas, double check to be sure the conversion was done correctly.
- o If abnormal flames occur only when the oven is in operation, be sure the leveling legs were adjusted correctly as covered under the "INSTALLATION & REMOVAL" section of this manual.

Examine the length of the oven burner flames being sure the flames do not extend beyond the edges of the flame spreader (burner baffle).

If problems is corrected by pushing against the top of the oven door, the door gasket is not sealing properly and must be corrected.

Be sure customer broils with the door closed.

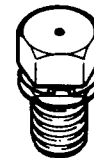
Smaller Orifices are available for yellow tipping, sparking problems or high altitudes as shown in the chart.



NOTE: ORIFICE REMOVAL REQUIRES EITHER A 7 MILLIMETER OR 9/32" NUT DRIVER.

6" NATURAL GAS	
ORIG SIZE	1 SIZE SMALLER
LG BRNR 1.44	1.38 PT NO WB28K0024
SM BRNR 1.10	.98 PT NO WB19K5007

10" LP GAS	
ORIG SIZE	1 SIZE SMALLER
LG BRNR .98	.91 PT NO WB19K5015
SM BRNR .73	.67 PT NO WB19K5016



6. SURFACE BURNERS

A. SPILL-PROOF BURNERS

LOW (SIMMER) FLAME ADJUSTMENT

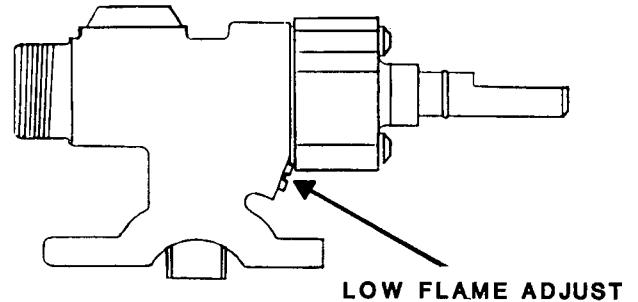
NOTE: When adjusting the low flame setting, two other burners must be in operation on a medium to high setting. This will prevent the low setting from being set too low resulting in the flame being extinguished when other burners are turned on.

The low (simmer) adjustment screw is located on the valve body. To adjust:

- o Turn valve to ignite the burner, then turn to Low.
- o Remove the control knob and locate the brass color adjustment screw at the base of the valve stem on the valve body. (The spark switch makes the adjustment screw difficult to see.)
- o With two other burners on a medium to high setting, turn the adjustment screw to achieve the desired low flame setting.
- o When properly adjusted, the low flame will remain lit when the burner is quickly turned from High to Low with two other burners operating on a Medium to High setting.

NOTE: With low flame set too low, random sparking of the spark ignitor will occur.

IMPORTANT - After adjusting the low flame, open and close the oven door several times to be sure the low flame is not extinguished by the vacuum created by the door movement. If extinguished, the low flame is too low and must be increased then tested again.



6. SURFACE BURNERS

A. SPILL-PROOF BURNERS

TOP BURNER IGNITION SYSTEM

Design Information

The top burner ignition system is a flame sensing, re-ignition spark system.

A special spark module with the ability to sense the presence of the burner flame is used on spill-proof models. The flame sensing ability of the module relies on two properties of electricity:

1. A flame is a good conductor of electricity.
2. A flame acts like a diode, that is, when AC current is passed through a flame, it is changed to DC current.

When a burner control knob is turned from the off position, the spark module sends high voltage pulses to all 4 spark electrodes to create the sparks for ignition.

The spark module applies another voltage to the electrode of the selected burner only. This second voltage is for flame recognition. This is an AC voltage and current which is converted to DC as it passes through the burner flame to ground. Once the burner is lit, the module senses the change in the circuit from AC to DC and stops sparking. As long as the circuit remains DC, the module will not spark.

Ignition System Components

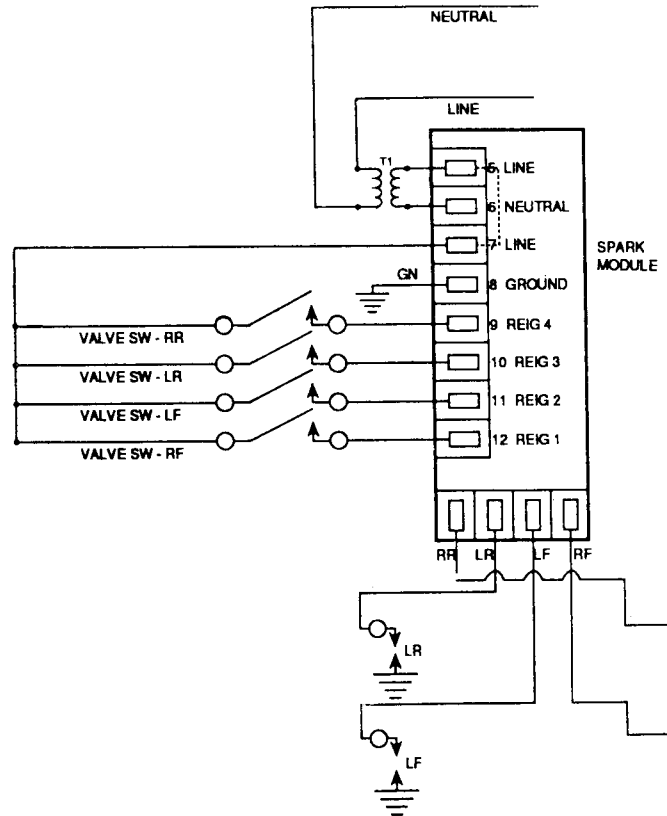
Spark Switches

Four spark switches, one on each top burner control valve, are used to complete one of four 120 volt input circuits to the spark module.

The switches are open in the OFF position and will close and remain closed when the burner control valve is in any position except OFF.

Spark Module

The spark module is located in the control box behind the storage drawer.



6. SURFACE BURNERS

A. SPILL-PROOF BURNERS

TOP BURNER IGNITION SYSTEM, CONT.

Isolation Transformer

All spill-proof "P" models (JGSP30GEP, JGSP31GEP) have an isolation transformer in the spark module circuit. The transformer does not significantly change the voltage to the spark module. The purpose of the transformer is to:

- 1 Help prevent random sparking of the burner electrodes.
- 2 Filter out electrical interference generated by the spark module that could effect the operation of the ERC.

The resistances of the transformer primary and secondary windings are approx. 650 to 750 Ohms.

External Spark Module Resistors

All Spill-proof "R" models (JGSP30GER, JGSP31GER) use two 1500 Ohm wire-wound resistors in place of an isolation transformer.

The resistors are attached to the "L" and "N" terminals of the spark module and are wired in series between the module and the incoming power. The resistors have plug-in terminals on each end and can be replaced independent of the spark module.

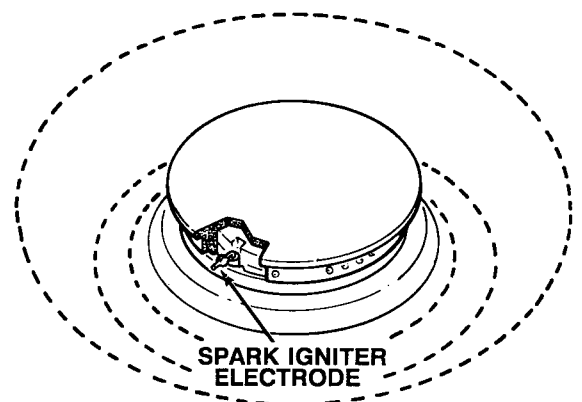
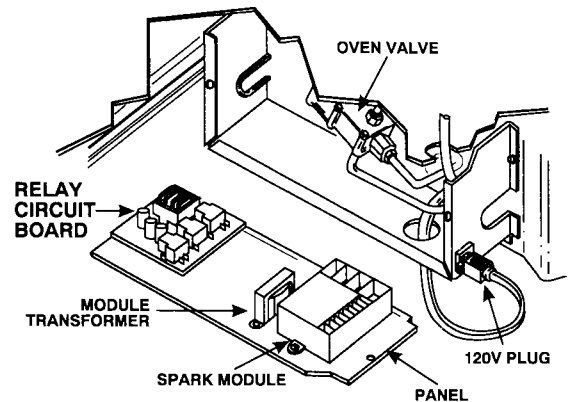
The wire wound resistors act as filters to filter out electrical interference generated by the spark module that could effect the operation of the Electronic Range Control (ERC).

Spark Electrodes

Each top burner has a spark electrode mounted to the burner base. As covered under "Design Information" (preceding page) the spark electrodes serve two purposes:

- 1 Emit sparks to light the burners.
- 2 Serve as part of the flame recognition circuit that senses the presence of the flame and stops the sparking.

Two types of spark electrodes have been used. The primary difference between the two types is the length of the portion of the electrode that extends into the flame.



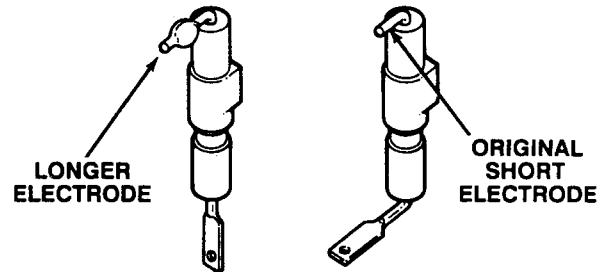
6. SURFACE BURNERS

A. SPILL-PROOF BURNERS

Spark Electrodes, cont.

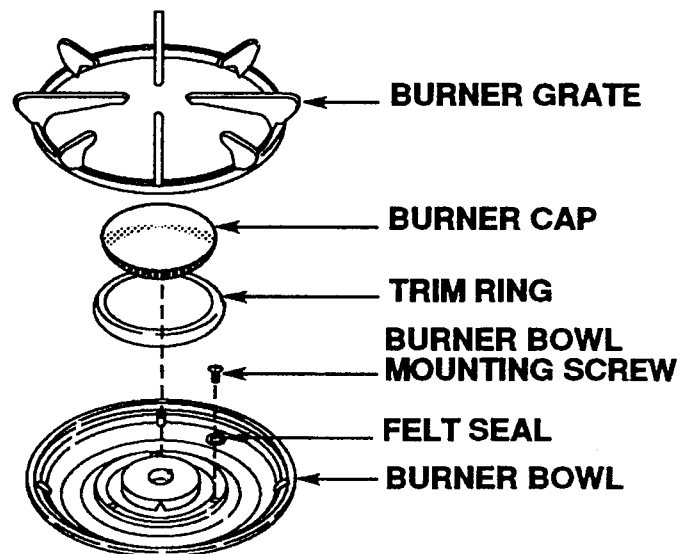
The longer electrodes were found to perform better with the flame recognition system by extending the recognition circuit further into the flame. The extra length drastically reduces "nuisance sparking" which occurred when the burner flame was displaced out of the flame sensing gap by an oversize pot, too high of a flame setting and various other causes.

The "SPECIFICATIONS" section in the front of the manual lists the type electrode used on each model. Also, Service Bulletin RA6-92 gives information on retro-fitting the longer electrode on models built with short electrodes as well as other information on solving nuisance sparking complaints. The majority of the information in bulletin RA6-92 is contained on the next 4 pages.



Spark Electrode Removal

1. Remove power to range.
2. Remove main top from range by removing the mounting screws from all 4 burners and lifting the top from the range.
3. Disconnect electrode lead from the electrode.
4. Remove electrode mounting clip by pressing bottom of "V" shaped clip up against the burner base and sliding clip off of electrode and burner base.
5. Rotate electrode 90°, then lift electrode out of burner base.



Spark Circuit Wiring

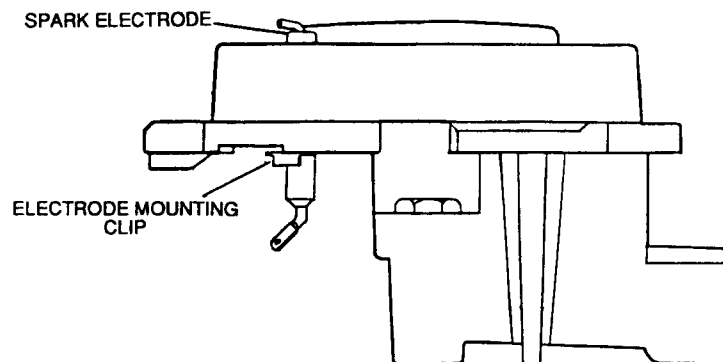
IMPORTANT:

Because of the re-ignition (flame recognition) circuitry, the termination of the wires heading to and exiting from the spark module must be kept as originally wires.

Cross wiring any two wires in the ignition system will result in constant sparking after the burner is lit.

EXAMPLE: Power from the R.R. valve switch must enter the module on Terminal 9, exit the module on terminal "RR" and supply power to the right rear ignitor.

Refer to the wiring diagram on the product for proper wire color.



6. SURFACE BURNERS

A. SPILL-PROOF BURNERS

AUTO-RELIGHT IGNITION SYSTEM PROBLEM SOLVING

THE PROBLEM SOLVING CHART ON THE NEXT 4 PAGES IS FROM SERVICE BULLETIN RA6-92.

MOST CAUSES OF SPARKING COMPLAINTS CAN BE IDENTIFIED AND CORRECTED USING THE PROBLEM SOLVING CHART.

EDUCATING THE CUSTOMER WILL SOLVE MANY COMPLAINTS. MOST CUSTOMERS DON'T KNOW THE APPLIANCE HAS A REIGNITION FEATURE OR DON'T UNDERSTAND HOW IT WORKS. TAKE THE TIME TO EXPLAIN THE FEATURE TO THE CUSTOMER AND STRESS THE IMPORTANCE OF MATCHING THE FLAME SIZE TO THE SIZE OF THE COOKING UTENSIL. THE FLAME SHOULD BE 1/2 INCH IN DIAMETER SMALLER THAN THE DIAMETER OF THE COOKING UTENSIL.

TO USE THE PROBLEM SOLVING CHART, DETERMINE IF THE SPARKING IS:

SECTION 1, OCCASIONAL SPARKING FOR NO APPARENT REASON

SECTION 2, CONSTANT SPARKING

SECTION 3, SPARKING ONLY UNDER CERTAIN CONDITIONS

SECTION 4, SPARKING WHEN ALL VALVES ARE IN THE OFF POSITION

SECTION 1: OCCASIONAL SPARKING FOR NO APPARENT REASON:

<u>POSSIBLE CAUSE</u>	<u>CHECK:</u>	<u>POSSIBLE SOLUTION</u>
1A DRAFTS BLOWING THE FLAME OUT OF THE GAP BETWEEN THE ELECTRODE AND THE BURNER. (RESULTS IN AN OPEN FLAME RECOGNITION CIRCUIT).	1A CHECK FOR DRAFTS AROUND THE APPLIANCE AFFECTING THE FLAME. DRAFTS FLOWING BEHIND A RANGE CAN ALSO CAUSE SPARKING.	1A ELIMINATE THE SOURCE OF THE DRAFT IF POSSIBLE. ADVISE CUSTOMER OF CAUSE OF PROBLEM. SPARKING DUE TO DRAFTS DISPLACING THE FLAME IS NORMAL AND NOT THE FAULT OF THE APPLIANCE. FOR MODELS WITH SHORT ELECTRODES, INSTALLING LONGER ELECTRODES, PT NO *WB2X9839, MAY REDUCE THE SPARKING. (SEE "SPECIFICATIONS" SECTION OF THIS MANUAL FOR ORIGINAL ELECTRODE LENGTH INFORMATION.)
1B ELECTRODE BENT OR GAPPED IMPROPERLY.	1B EXAMINE THE POSITION OF THE ELECTRODE. SHUT OFF THE GAS AND TURN ON ANY BURNER. OBSERVE THE DIRECTION OF THE SPARK FROM EACH ELECTRODE. THE SPARK MUST JUMP FROM THE ELECTRODE DOWN TO THE BURNER BASE.	1B CENTER THE ELECTRODE (SIDE TO SIDE) IN THE OPENING WITH A GAP SLIGHTLY LESS THAN THE THICKNESS OF A NICKEL BETWEEN THE ELECTRODE AND THE BURNER BASE.

* AFTER INSTALLING LONGER ELECTRODES, ADVISE THE CUSTOMER TO USE CAUTION NOT TO BEND THE ELECTRODES WHEN CLEANING THE APPLIANCE.

6. SURFACE BURNERS

A. SPILL-PROOF BURNERS

SECTION 1 (CONTINUED) OCCASIONAL SPARKING:

POSSIBLE CAUSE

CHECK:

POSSIBLE SOLUTION

1C IMPROPER OR MISSING GROUND CIRCUIT AT WALL RECEPTACLE, SPARK MODULE OR FROM THE BURNER TO THE APPLIANCE CHASSIS.

1C BE SURE RANGE IS PLUGGED INTO A PROPERLY GROUNDED OUTLET.

1C IF RANGE IS PLUGGED INTO AN IMPROPERLY GROUNDED RECEPTACLE, INSTRUCT CUSTOMER TO CONTACT AN ELECTRICIAN AND HAVE PROBLEM CORRECTED.

CHECK CONTINUITY FROM THE BURNER BASE TO THE GROUND PRONG OF THE POWER CORD.

IF NO CONTINUITY FROM THE BURNER BASE TO THE POWER CORD GROUND PRONG, MEASURE CONTINUITY FROM THE BURNER BASE TO APPLIANCE CHASSIS. ADD A GROUND WIRE, IF NECESSARY, FROM THE BURNER BASE MOUNTING SCREW TO THE APPLIANCE CHASSIS.

SECTION 2: CONSTANT SPARKING (AFTER BURNER HAS IGNITED)

2A TWO OR MORE CROSS WIRED SPARK CIRCUITS. (RESULTS IN CONSTANT SPARKING IN ALL FLAME SETTINGS).

2A BECAUSE OF THE FLAME SENSING CIRCUITS, THE SPARK CIRCUIT FOR EACH INDIVIDUAL BURNER MUST BE TREATED AS A SEPARATE CIRCUIT, INDEPENDENT OF THE SPARK CIRCUITS CONTROLLING THE OTHER BURNERS. CHECK EACH BURNER, ONE AT A TIME, TO DETERMINE WHICH BURNERS CONTINUE TO SPARK AFTER IGNITION.

2A REFER TO THE WIRING DIAGRAM ON THE APPLIANCE. BE SURE THE COLOR CODED SPARK SWITCH LEADS FOR THE BURNERS IN QUESTION ARE CONNECTED TO THE CORRECT INPUT TERMINALS OF THE SPARK MODULE. ALSO, THE COLOR CODED ELECTRODE LEADS MUST BE CONNECTED TO THE CORRECT OUTPUT TERMINALS OF THE SPARK MODULE AND TO THE CORRECT SPARK ELECTRODES.

2B ONE OR MORE ELECTRODES OR ELECTRODE LEADS SHORTED TO GROUND

2B TURN ON THE BURNERS ONE AT A TIME TO DETERMINE WHICH BURNER OR BURNERS CONTINUE TO SPARK AFTER IGNITION.

2B AFTER ISOLATING THE BURNER OR BURNERS WITH CONSTANT SPARKING, EXAMINE THE ELECTRODES AND ELECTRODE LEADS FOR A SHORT TO RANGE CHASSIS GROUND.

6. SURFACE BURNERS

A. SPILL-PROOF BURNERS

SECTION 3: SPARKING ONLY UNDER CERTAIN CONDITIONS

CHECK:

POSSIBLE SOLUTION

3A CONDITION 1
SPARKING IN
"LO" ONLY.
("LO" FLAME
TOO LOW)

3A CHECK EACH BURNER, ONE AT A TIME, ON THE "LO" SETTING TO DETERMINE WHICH BURNER OR BURNERS ARE TOO LOW.

THE FLAME RECOGNITION CIRCUIT CANNOT DETECT THE FLAME IF IT IS SET TOO LOW.

3A WITH BURNER ON "LO", REMOVE KNOB AND LOCATE THE LOW FLAME ADJUST SCREW ON THE CONTROL VALVE BODY NEXT TO THE BASE OF THE VALVE STEM.
WITH TWO OTHER BURNERS BURNING ON "MED", ADJUST THE LOW SETTING. TEST THE SETTING BY TURNING THE BURNER FROM "HI" TO "LO" RATHER QUICKLY. IF FLAME GOES OUT WHEN TURNED TO "LO", INCREASE THE "LO" FLAME HEIGHT AND TEST AGAIN.

IMPORTANT - After adjusting the low flame, open and close the oven door several times to be sure the low flame is not extinguished by the vacuum created by the door movement.

3B CONDITION 2
SPARKING WITH
POT IN PLACE

3B SELECTED FLAME SETTING TOO HIGH ALLOWING FLAME TO EXTEND UP THE SIDES OF THE COOKWARE.
DIAMETER OF FLAME MUST BE KEPT AT LEAST 1/2 " SMALLER THAN THE DIAMETER OF THE BOTTOM OF THE COOKWARE

3B ADVISE CUSTOMER OF IMPORTANCE OF PROPER FLAME SIZE. EXCESSIVE FLAME SIZE WILL PULL THE FLAME OUT OF THE FLAME SENSING GAP RESULTING IN SPARKING.
EXCESSIVE FLAME SIZE ALSO WASTES HEAT AND CAN DAMAGE COOKWARE.

3C CONDITION 3
SPARKING IN
"HI" ONLY,
WITH OR
WITHOUT A POT
IN PLACE.

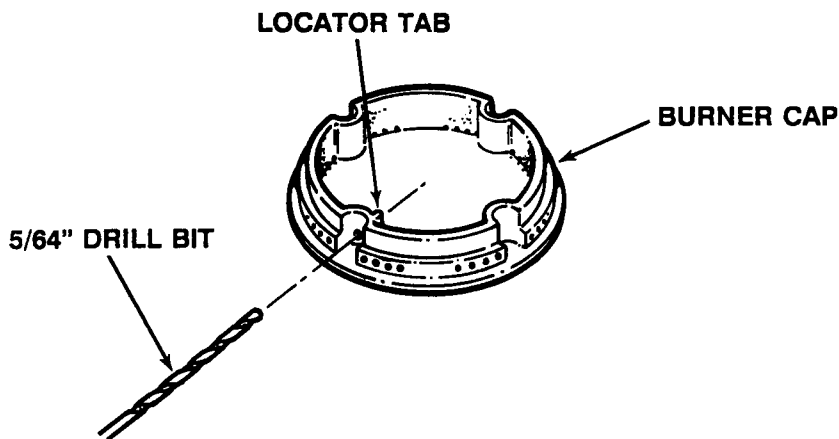
3C CHECK LOCATION OF FLAME IN SPARK GAP BETWEEN ELECTRODE TIP AND BURNER BASE.

3C ORDER AND INSTALL A SMALLER ORIFICE TO DE-RATE THE BURNER SLIGHTLY (SEE ORIFICE SIZE REDUCTION CHART ON PAGE 42 OF THIS MANUAL).
DE-RATING THE BURNER WILL PULL THE FLAME BACK INTO THE SPARK GAP TO ALLOW THE FLAME RECOGNITION CIRCUITS TO SENSE THE PRESENCE OF THE FLAME.

IF RANGE HAS SHORT ELECTRODES, ORDER AND INSTALL LONGER ELECTRODES, PT NO WB2X9839.

THE EXTRA LENGTH OF THE ELECTRODES WILL EXTEND THE FLAME RECOGNITION CIRCUIT FURTHER INTO THE FLAME.

CLEAN THE SMALL GAS PORT IN THE BURNER CAP DIRECTLY BEHIND THE SPARK ELECTRODE USING A 5/64 DRILL BIT AND DRILL. DO NOT USE A DRILL BIT LARGER THAN 5/64".



6. SURFACE BURNERS

A. SPILL-PROOF BURNERS

SECTION 3 (CONTINUED) SPARKING ONLY UNDER CERTAIN CONDITIONS:

	<u>CHECK:</u>	<u>POSSIBLE SOLUTION</u>
3D <u>CONDITION 4</u> SPARKS WHEN INITIALLY TURNED ON, BUTS STOPS SPARKING AS BURNER WARMS UP.	3D CHECK FLAME. DOES FLAME BLOW OFF OF BURNER WHEN INITIALLY TURNED ON, THEN SETTLE ONTO BURNER WHEN BURNER WARMS? DOES FLAME PULL AWAY FROM BURNER WHEN A POT IS PUT IN PLACE? LOOK FOR A PINCHED SPARK SWITCH WIRE. PAY CLOSE ATTENTION TO THE ROUTING OF THE WIRING IN THE GAS MANIFOLD AREA NEAR THE TOP BURNER VALVES.	3D IF FLAME BLOWS OFF OF BURNER WHEN INITIALLY TURNED ON OR WHEN A POT IS PUT IN PLACE, DE-RATE THE BURNER SLIGHTLY USING AN ORIFICE WITH A SMALLER DIAMETER OPENING (SEE ORIFICE SIZE REDUCTION CHART ON PAGE OF THIS MANUAL). INSTALLING LONGER ELECTRODES, PT NO *WB2X9839, CAN ALSO SOLVE PROBLEM. FREE ANY PINCHED WIRE FOUND.
3E <u>CONDITION 5</u> REAR BURNERS SPARK WITH OVEN IN OPERATION (SLIDE-IN MODELS LISTED BELOW ONLY.)	3E DETERMINE IF BY-PRODUCTS FROM OVEN VENT ARE BLOWN TOWARDS REAR BURNERS.	3E ORDER AND INSTALL VENT FLUE DEFLECTOR AND GASKET KIT, PT NO WB50K5006.

MODELS: JGSP30GEP1, JGSP30GEP2, JGSP30GEP3
JGSP31GEP1, JGSP31GEP2, JGSP31GEP3, JGSP31GEP4

* AFTER INSTALLING LONGER ELECTRODES, ADVISE THE CUSTOMER TO USE CAUTION NOT TO BEND THE ELECTRODES WHEN CLEANING THE APPLIANCE.

SECTION 4: PERIODIC SPARKING WHEN ALL VALVES ARE IN THE OFF POSITION

4A SHORTED SPARK SWITCH	4A REMOVE POWER AND CONTINUITY TEST THE SPARK SWITCHES.	4A REPLACE SHORTED SPARK SWITCH.
4B V O L T A G E APPLIED TO SPARK MODULE IS TOO HIGH.	4B MEASURE THE OUTPUT VOLTAGE FROM THE ISOLATION TRANSFORMER (IF EQUIPPED) USED TO SUPPLY POWER TO THE MODULE. THE OUTPUT VOLTAGE SHOULD BE BETWEEN 110 TO 132 VOLTS.	4B IF TRANSFORMER SECONDARY VOLTAGE IS IN EXCESS OF 132 VOLTS, REPLACE THE TRANSFORMER.

6. SURFACE BURNERS

B. CONVENTIONAL BURNERS

All JGSP20 and JGSP21 models have conventional (non-spillproof) top burners.

The burners used on these models have the long, external venturis with adjustable air shutters.

The top burner (and oven burner) orifices are the coaxial type made up of a orifice hood sized for natural gas and an orifice needle beneath the hood sized for LP (propane) gas.

These models operate on 4" water column pressure (WCP) for natural gas and 10" WCP for LP gas.

The right front burner is a 12000 BTU burner and is different in appearance from the other burners which are 9000 BTU burners.

2+0 IGNITION SYSTEM

The system consists of 4 spark switches, one mounted on each burner valve, one spark module located in the control box behind the storage drawer, and 2 spark electrodes located under the range top on the burner support brackets.

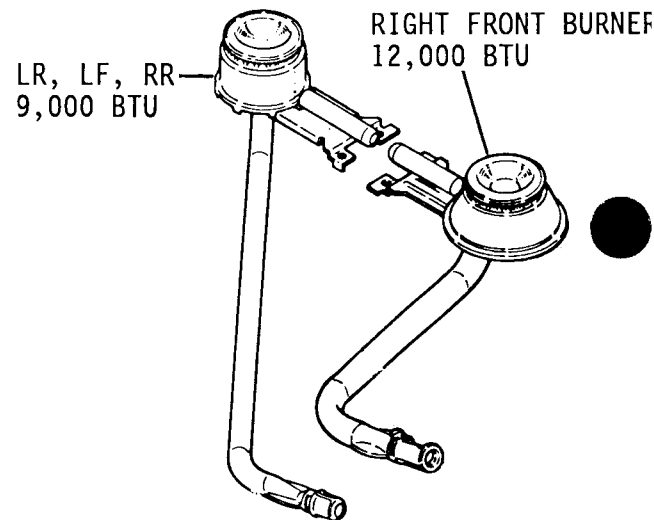
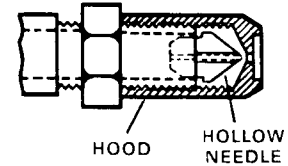
Top burner ignition is controlled manually. The control knob is manually turned to the "LITE" position for ignition and manually turned out of the "LITE" position after ignition has occurred.

Turning the burner control knob into the "LITE" position closes the contacts of the spark switch, applying 120 Volts to the primary of the spark module. The module transforms the 120 Volt input into approximately 15000 Volts and applies the high voltage to the electrode leads in pulses at the rate of approximately 2 pulses per second. The spark needed for ignition occurs as the 15000 volt pulses cause a spark to jump across the 1/10" gap from the tip of the spark electrode to the grounded bracket above the electrode. Ignition should occur within 6 to 10 sparks.

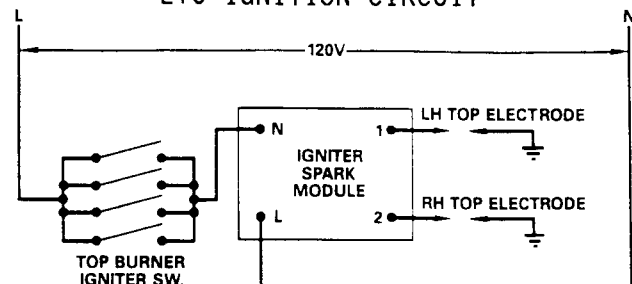
Both electrodes will spark, regardless of which burner knob is in the "LITE" position.

NOTE: The polarity of the spark module primary is intentionally reversed to prevent electrical interference generated by the module from affecting the operation of the ERC.

COAXIAL ORIFICE/NEEDLE



2+0 IGNITION CIRCUIT



6. SURFACE BURNERS

B. CONVENTIONAL BURNERS

BURNER ADJUSTMENTS

IMPORTANT: Before making any adjustments to the burners, check the height of the burners in relation to the grate. The dimension from the highest point on the burner to the top of the grate must be $\frac{3}{4}$ " as shown in the illustration. The burner can be formed (bent) to achieve this dimension.

High Flame Adjustments:

- o Light burner and turn burner to "HI".
- o Examine the flame quality and flame length. Harsh Blowing Flames indicate too much primary air.

Turn the air shutter towards the closed position until the flame settles.

With air shutter adjusted for the best flame possible, examine the length of the flame. The inner blue portion of the flame should be approximately $\frac{3}{4}$ " in length with no *yellow tips.

If inner cone of flame is in excess of $\frac{3}{4}$ " or if flames have yellow tips, turn the orifice hood in the LP direction while watching the flame. This will reduce the gas flow to the burner and should reduce both the flame length and the yellow tips. Re-adjust air shutter if needed.

Soft Yellow Flames indicate too little primary air.

Open air shutter more until *yellow tipping disappears.

With air shutter adjusted for the best flame possible, examine the length of the flame. The inner blue portion of the flame should be approximately $\frac{3}{4}$ " in length with no *yellow tips.

If flames seem too small, check the following:

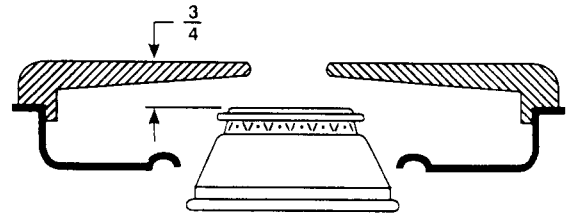
Natural Gas Installations:

- o Be sure orifices were not mistakenly turned down in the LP position.
- o Measure the gas pressure available to the top burners. There must be 4" WCP available

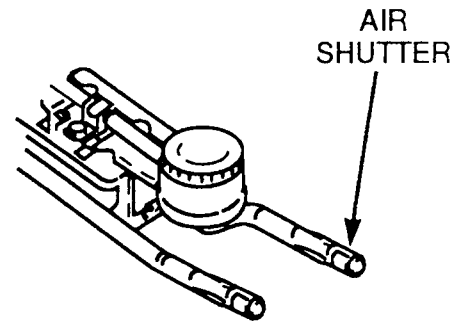
LP (propane) Installations:

- o Be sure regulator was converted for LP use. (see "CONVERSION TO LP" section).
- o Be sure there is 10" WCP pressure available to the burner
- o Orifice hoods may have been tightened too much and LP pins are damaged. Replace with fixed hoods sized for lp use covered in section 8, CONVERSION TO LP (PROPANE) GAS.

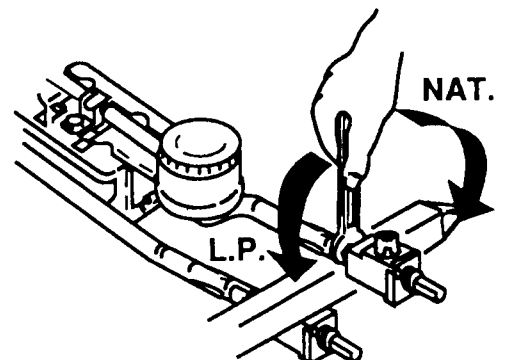
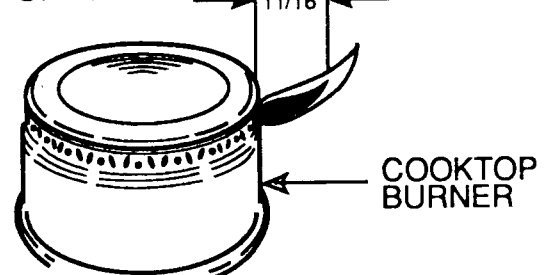
* Some LP gas contains additives that produce yellow tips



SURFACE BURNER HEIGHT



INNER CONE OF FLAME



6. SURFACE BURNERS

B. CONVENTIONAL BURNERS

BURNER ADJUSTMENTS, CONTINUED

Simmer (Low Flame) Adjustments

To adjust the low flame size, light the burner and turn the knob to the LO position. Remove the knob and locate the adjustment screw in the center of the valve stem.

Hold the valve stem with pliers or an adjustable wrench and turn the adjustment screw until the burner flame size decreases to the desired LO flame size. Place the knob back on the shaft and turn the burner rather quickly from HI to LO several times. If the burner flame goes out when turned from HI to LO, the low flame setting is too low and needs to be adjusted higher then tested again.

IMPORTANT: After adjusting the LO flame setting, open and close the oven door several times to be sure the lo flame is not extinguished by the vacuum created by the door movement. If extinguished, the low flame is too low and must be increased then tested again.

IGNITION PROBLEM SOLVING

No burners will light - Check:

- Gas available to range ?
- Power available to range ?
- Power available to spark module with knob in LITE position ?
- Replace spark module.

One or two burners won't light - Check:

- o Debris blocking ports on side of burner(s) ?
- o Sparking at electrode ?

If yes, check:

- Alignment of electrode to flash tubes.
- Debris in flash tube(s).

If no, check:

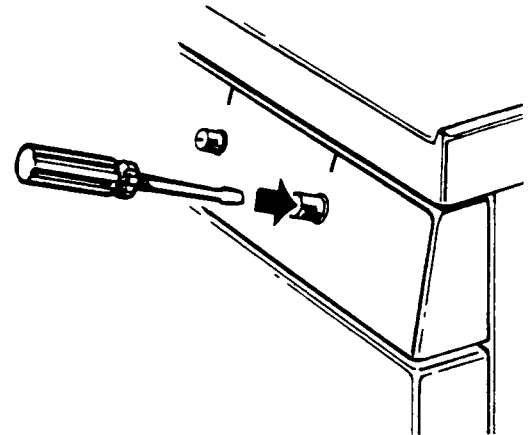
- Spark gap at electrode tip.
- Electrode lead shorted or open.
- Spark switch on valve not operating.
- Replace spark module.

Top Burners Won't Light With Oven In Operation

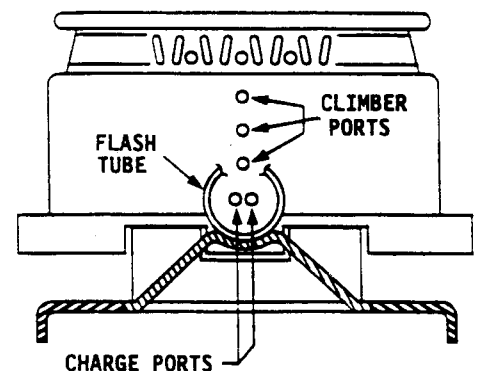
Check:

- o Flame on oven burner too large. Oven burner flame cannot extend beyond edges of flame spreader.
- o Oven installed improperly (see INSTALLATION & REMOVAL section 2.

SIMMER ADJUST SCREW



CLIMBER PORTS AND CHARGE PORTS MUST BE CLEAN



7. COOLING FAN OPERATION

All models use a cooling fan to keep the electronic control cool.

The cooling fan is located under the range top on the right side of the burner box and is covered by an air duct.

COOLING FAN CIRCUITS

A. "P" Models

On "P" models (JGSP20GEP, JGSP21GEP, JGSP30GEP, and JGSP31GEP) the fan is powered only during the self clean cycle. The cooling fan receives power through the door lock relay. The fan comes on immediately once the clean cycle has been selected.

There are no thermal devices to monitor the operation or failure of the cooling fan on these models.

All "P" models use the ERC-I control system.

B. "R" Models

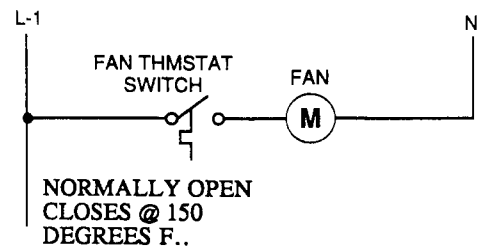
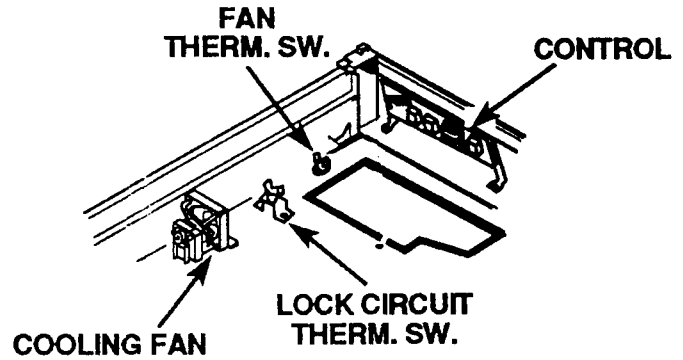
On "R" models (JGSP20GER, JGSP21GER, JGSP30GER and JGSP31GER) the cooling fan is controlled by a thermally operated switch and will operate as needed during bake, broil and self clean.

As shown in the illustration, the fan thermal switch is located in front of the fan on the floor of the burner box bottom. The switch contacts close to turn on the fan when it senses temperatures of 150 degrees and open to turn the fan off when it cools to 125 degrees.

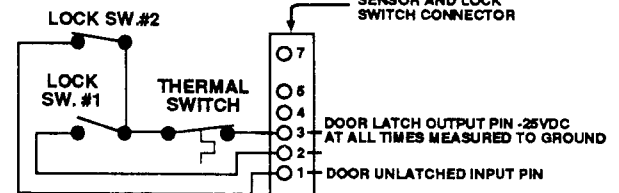
If the cooling fan should fail or if any other condition exists that would cause the control area to overheat, a second thermal switch will trip (open) and shut down all oven operations.

The second thermal switch is also physically located in front of the cooling fan. Electrically, it is in the lock switch circuit (lock circuit thermal switch in illustration). If the lock circuit thermal switch opens, the ERC no longer knows what position the door lock is in. Depending on the temperature of the oven when the switch opens, the ERC will react in one of three ways as shown in the matrix.

All "R" models use the ERC-II control system.



LOCK SW. CIRCUIT



ERC REACTION TO OPENING OF LOCK CIRCUIT THERMAL SWITCH

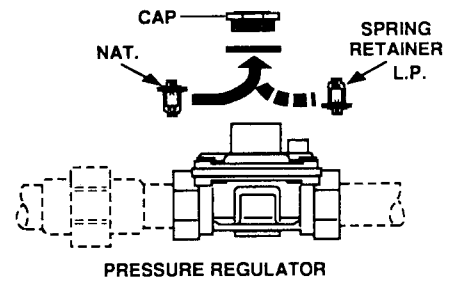
OVEN TEMP	ERC WILL DISPLAY
OVER 600	-F2- failure code
400 to 600	Time of day displayed & function (bake, broil or clean) cancelled
BELOW 400	Time of day shown. Function Cancelled. Word "LOCK" flashing in display. Lock motor will revolve continuously.

8. CONVERSION TO LP (PROPANE) GAS

A. MODELS WITH CONVENTIONAL SURFACE BURNERS (JGSP20, JGSP21)

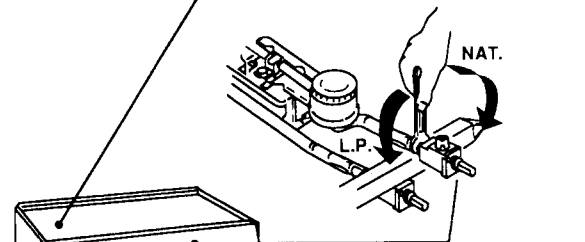
Step 1 - Convert the Regulator:

- o Raise the range top and locate the regulator in the left rear of the burner box.
- o Remove the spring retainer cap from the center of the regulator.
- o Pull the spring retainer from the spring retainer cap. Turn spring retainer up side down and snap it back into the cap. The letters "LP" should be visible on the end of the retainer furthest from the cap.
- o Screw the cap back onto the regulator.



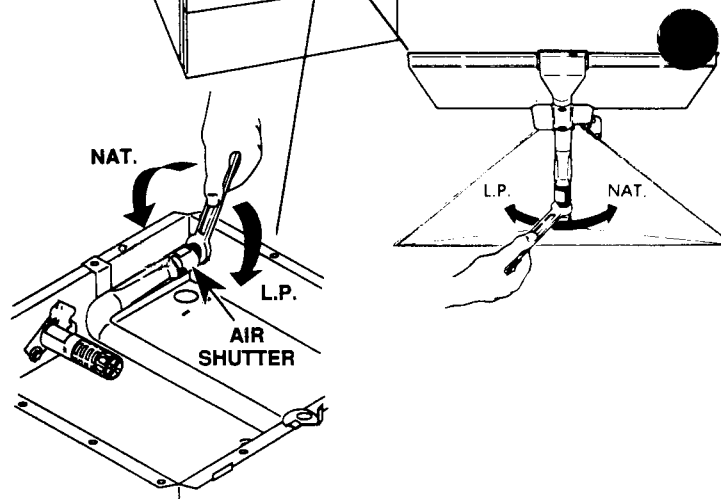
Step 2 - Convert the Surface Burner Orifices

- o Using an open end 1/2" wrench, turn the brass orifice hoods in the LP direction approximately 2 1/2 turns or until snug. DO NOT OVER TIGHTEN THE HOODS as the LP pins beneath the hoods can be easily damaged.



Step 3 - Convert the Oven Burner Orifices

- o Using an open end 1/2" wrench, turn the brass oven burner orifice hoods in the LP direction approximately 2 1/2 turns or until snug. DO NOT OVER TIGHTEN as the LP pins beneath the hoods can be easily damaged.



Step 4 - Air Shutter Adjustments

- o Light the burners, one at a time, and adjust the air shutters as described in the OVEN BURNERS and SURFACE BURNERS sections of this manual.

NOTE: If the LP orifice pins have been damaged, they will have to be replaced with fixed hoods sized for LP as shown. Be sure to either remove the damaged pin or cut it off before installing fixed hoods.

REPLACEMENT LP ORIFICE HOODS

MODELS JGSP20, JGSP21 (10" WCP ON LP)		
BAKE BURNER	SIZE 56	WB13K5027
BROIL BURNER	SIZE 57	WB13K5028
RIGHT FRONT RR, LR, LF	SIZE 60 SIZE 66	*NOT AVAILAB WB13K503

*Use #61, pt no. WB13K5031

8. CONVERSION TO LP (PROPANE) GAS

B. MODELS WITH SPILL-PROOF SURFACE BURNERS (JGSP30, JGSP31)

These models require kits for converting the range for use on LP gas.

The chart shows the correct kit number for the model.

There are a total of 4 kits listed in the chart. Two of the kits are for the "P" models. One "P" model kit has gray burner caps and the other has black caps. This is the only difference between the 2 "P" model kits.

Likewise, there are 2 kits listed for the "R" models. Again, one "R" model kit has gray caps and the other has black caps.

The difference between the "P" kits and the "R" kits is the regulator and the oven burner orifices.

The "P" kits contain an LP regulator and the "R" kit does not. The regulator on the "R" model is convertible for use with LP where the "P" models use a non convertible regulator

The oven burner orifices were each reduced by one size in the "R" kits as compared to the "P" kits.

LP CONVERSION KITS FOR "SPILL-PROOF" MODELS

MODEL NUMBER	KIT NUMBER	PART NUMBER
JGSP30GEP*	JXA069	WB16M0002
JGSP31GEP*	JXA039	WB16M0001
JGSP30GER*	JXA070	#
JGSP31GER*	JXA040	#

* INCLUDES ALL ENGINEERING DIGITS

Part numbers not released at printing time.

INSTALLATION INSTRUCTIONS FOR CONVERSION KITS

CAUTION: Disconnect or turn off all electrical power and gas supply before installing the conversion kit.

"P" model kits JXA039 and JXA069 contain:

QUANTITY	DESCRIPTION	PART NUMBER
2	Air Shutter (small)	WB21K5006
2	Screws	WB01K5049
2	Large top burner orifices, .98mm	WB19K5007
2	Small top burner orifices, .73mm	WB19K5006
1	Regulator	WB19K5009
2	Large Burner Caps, Black	WB13K5040 (JXA069)
OR	Large Burner Caps, Gray	WB13K5041 (JXA039)
1	Broil Burner Orifice #56	WB13K5042
1	Bake Burner Orifice #55	WB13K5043
1	Conversion Plate JGSP30GEP	WB06K5011 (JXA069)
OR	Conversion Plate JGSP31GEP	WB06K5010 (JXA039)
1	Label For Regulator	WB06K5006
1	7mm Nut Driver	WB13K5044
1	Installation Instruction	WB06K5008

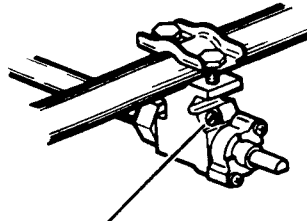
8. CONVERSION TO LP (PROPANE) GAS

B. MODELS WITH SPILL-PROOF SURFACE BURNERS (JGSP30, JGSP31)

"R" model kits JXA040 and JXA070 contain:

QUANTITY	DESCRIPTION	PART NUMBER
2	Air Shutter (small)	WB21K5006
2	Screws	WB01K5049
2	Large top burner orifices, .98mm	WB19K5007
2	Small top burner orifices, .73mm	WB19K5006
2	Large Burner Caps, Black	WB13K5040 (JXA070)
OR	Large Burner Caps, Gray	WB13K5055 (JXA040)
1	Broil Burner Orifice #57	WB13K5028
1	Bake Burner Orifice #56	WB13K5042
1	Conversion Plate	
OR	Conversion Plate	
1	Label For Regulator	WB06K5006
1	7mm Nut Driver	WB13K5044
1	Installation Instruction	

- STEP 1 - Be sure all electrical power is disconnected from the appliance.
- STEP 2 - Be sure gas supply is turned off by closing manual shut-off valve.
- STEP 3 - Remove top grates and burner caps.
- STEP 4 - Remove valve knobs.
- STEP 5 - Screw the brass low flame adjustment screws (valve bypass screws) fully into the valve bodies (clockwise rotation). See FIG. 1.



Valve Bypass Screw

FIG. 1

- STEP 6 - Remove natural gas orifices from large burners and replace with L.P. orifices (marked #98) in the kit. Use 7mm tool supplied. See FIG 2.

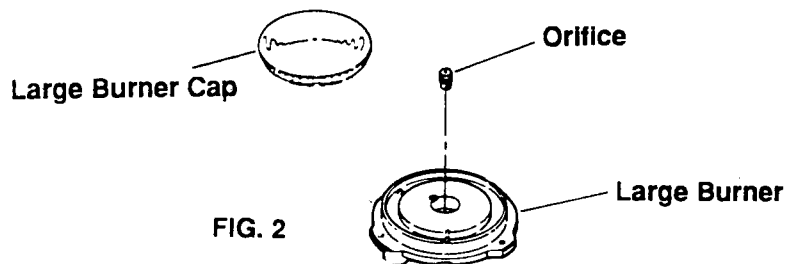


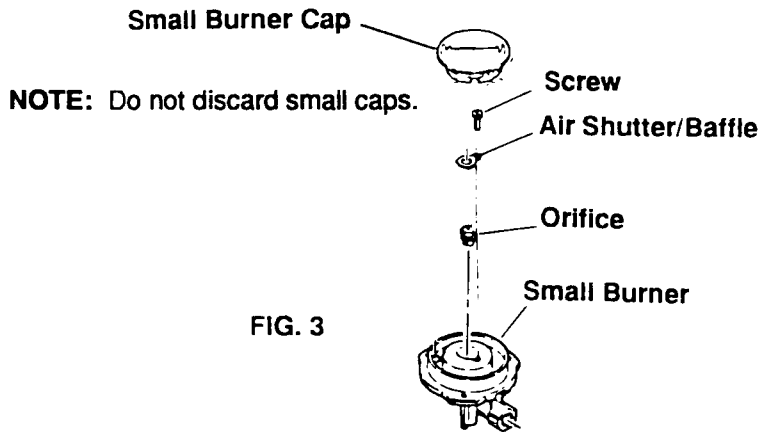
FIG. 2

- STEP 7 - Discard the two original large burner caps and replace with the caps from the kit (marked L.P.).

8. CONVERSION TO LP (PROPANE) GAS

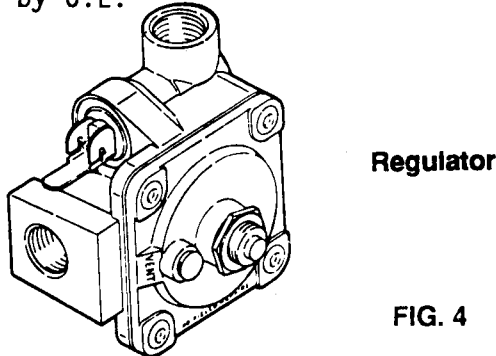
B. MODELS WITH SPILL-PROOF SURFACE BURNERS (JGSP30, JGSP31)

STEP 8 - Remove the natural gas orifices from the small burners and replace with the L.P. orifices (marked #73) from the kit. Use the 7mm nut driver supplied. Attach air shutters/baffles on small burners using screws supplied. Reinstall small burner caps. See FIG 3.



STEP 9 - KITS JXA039 & JXA069 ONLY (MODELS JGSP30GEP & JGSP31GEP)

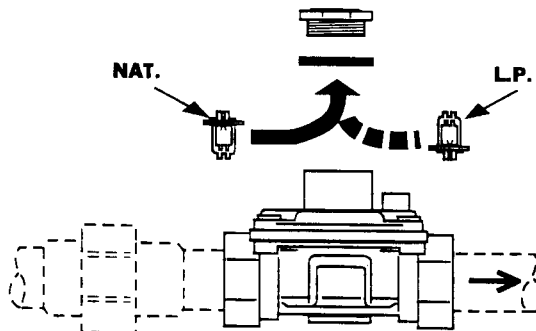
Remove natural gas regulator and install L.P. regulator furnished in kit. See FIG 4. Be sure to use pipe sealant that is resistant to L.P. gas and recognized by U.L.



STEP 10 - KITS JXA040 & JXA070 ONLY (MODELS JGSP30GER & JGSP31GER)

See FIG 5 Convert pressure regulator for L.P. use by:

- Remove the spring retainer cap from the center of the regulator.
- Pull the spring retainer from the spring retainer cap. Turn spring retainer up side down and snap it back into the cap. The letters "LP" should be visible on the end of the retainer furthest from the cap.
- Screw the cap back onto the regulator.



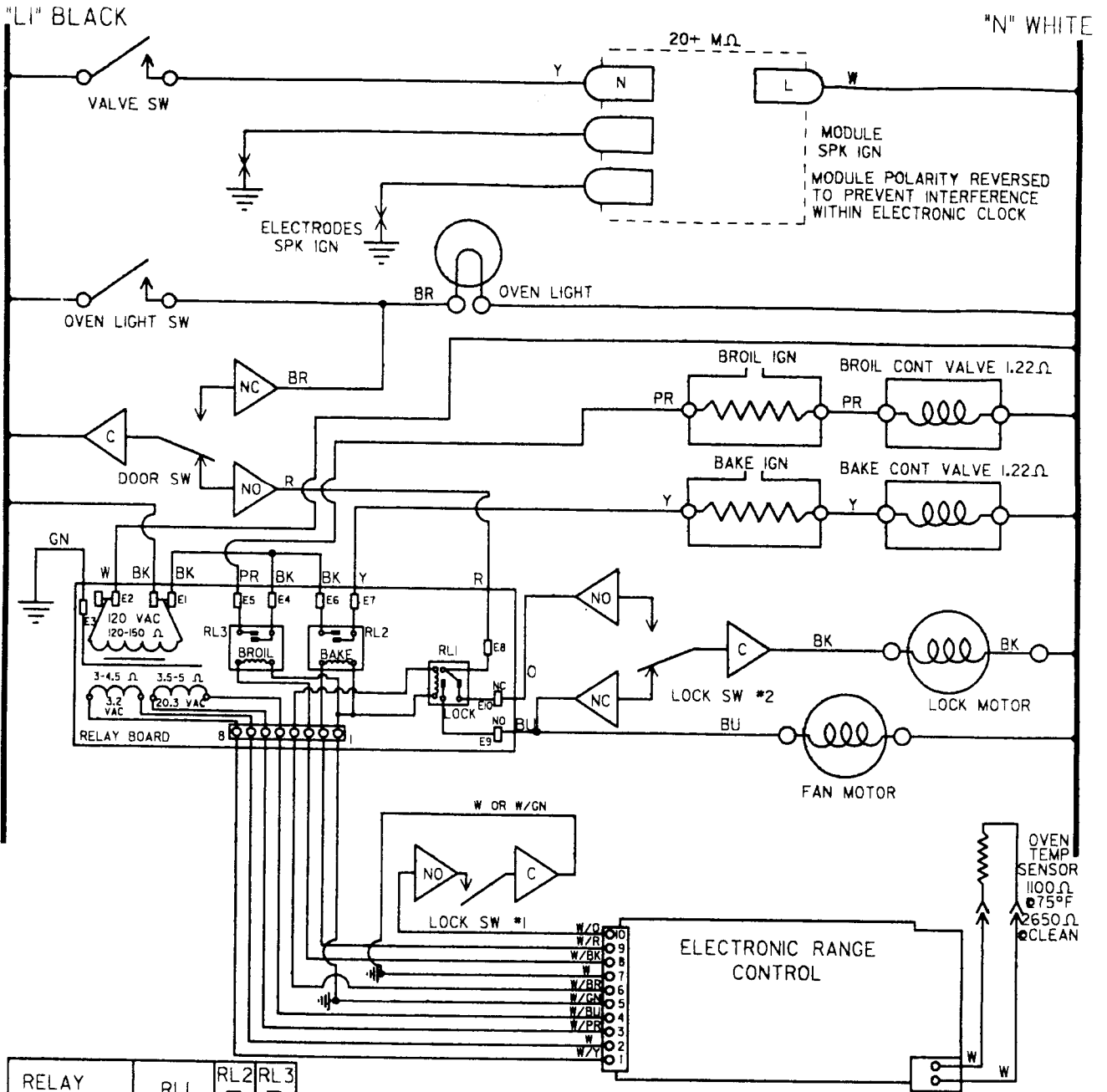
8. CONVERSION TO LP (PROPANE) GAS

B. MODELS WITH SPILL-PROOF SURFACE BURNERS (JGSP30, JGSP31)

- STEP 11 - Replace bake and broil orifices with orifices supplied in kit.
Kits JXA039 & JXA069 use #56 orifice for broil & #55 for bake.
Kits JXA040 & JXA070 use #57 orifice for broil & #56 for bake.
- STEP 12 - Attach the regulator label to the back of the range next to the regulator.
- STEP 13 - Fill in the blanks on the conversion plate. Open the storage drawer and locate the model and serial plate. Apply the adhesive backed conversion plate near the model and serial plate.
- STEP 14 - Turn on the gas. If regulator was replaced, apply a soap solution to all of the regulator connections and check for leaks. If a leak is found, turn the gas off before repairing the leak.
- STEP 15 - Turn on the electricity.
- STEP 16 - Check top burner flames. Turn all top burners on full and examine the flames. Flames should be stable and blue in color with little or no yellow tipping (Some L.P. gas has additives that can cause minor yellow tipping). For instructions on correcting excessive yellow tipping or blowing burners, see SURFACE BURNERS section 3-A of this manual.

9. SCHEMATIC DIAGRAMS

MODELS JGSP20GEP & JGSP21GEP



RELAY CONTACTS MADE	RL1 LOCK NC NO	RL2 BAKE	RL3 BROIL
OFF	*		
BAKE/TIMED	*	*	
BROIL	*		*
CLEAN		*	**

* - CYCLING CONTACTS.
 ** - IN THE CLEAN CYCLE BROIL BURNER CYCLES FOR THE FIRST 30 MINUTES AND BAKE BURNER CYCLES DURING THE REMAINDER OF THE CLEAN CYCLE.

COMPONENT SYMBOLS DO NOT REFLECT TRUE CONFIGURATION. ALL FEED LINE COLORS ARE AS NOTED. ALL COMPONENTS SHOWN IN 'OFF' OR 'RELAXED' POSITION.

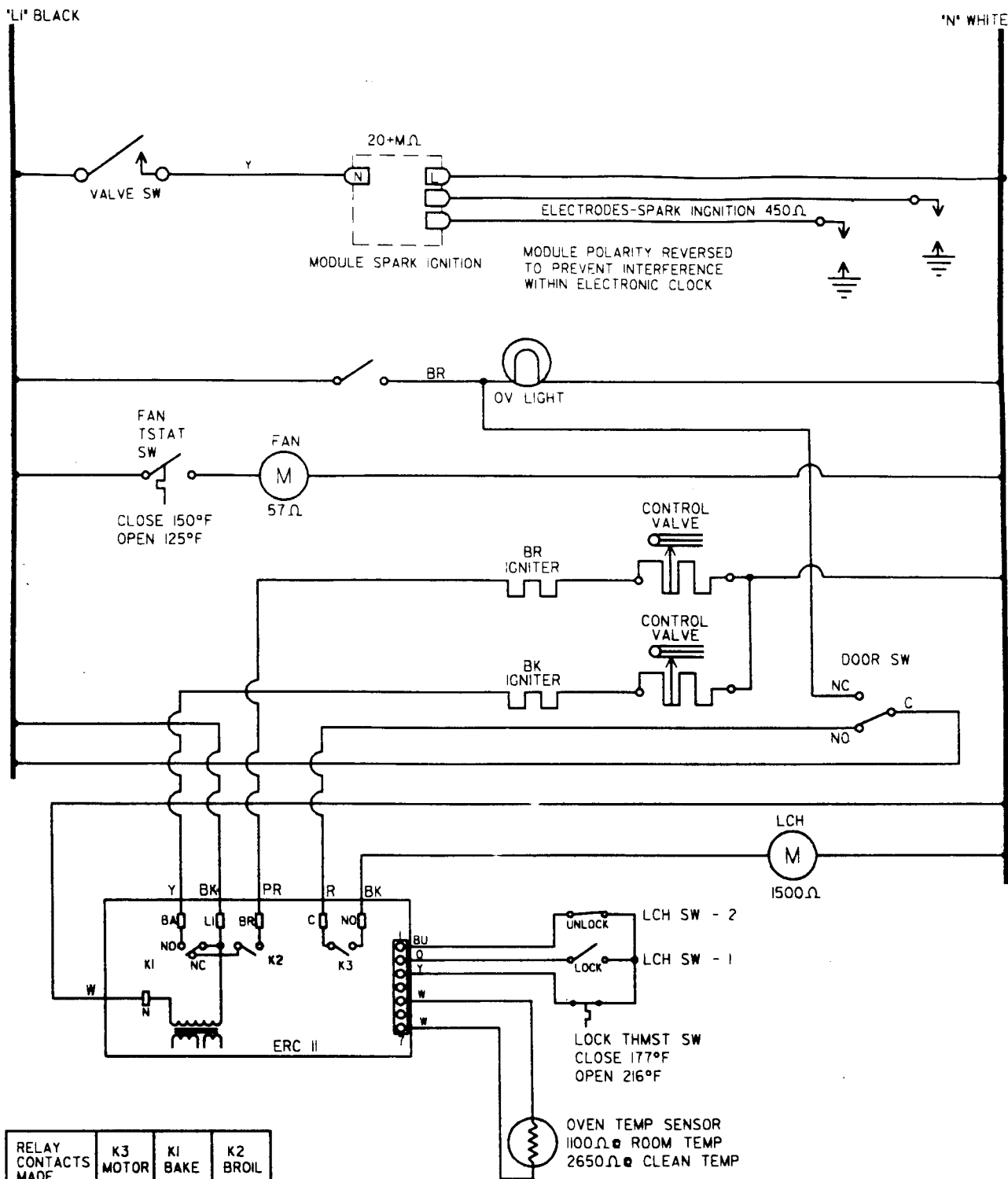
DOOR POSITION	LOCK SW#1	LOCK SW#2	DOOR SW
OPEN		C-NC	C-NC
CLOSED		C-NC	C-NO
LOCKED	C-NO	C-NO	C-NO

PT.NO. LBW074-1

9. SCHEMATIC DIAGRAMS

MODELS JGSP20GER & JGSP21GER

PT.NO. LBW224-1



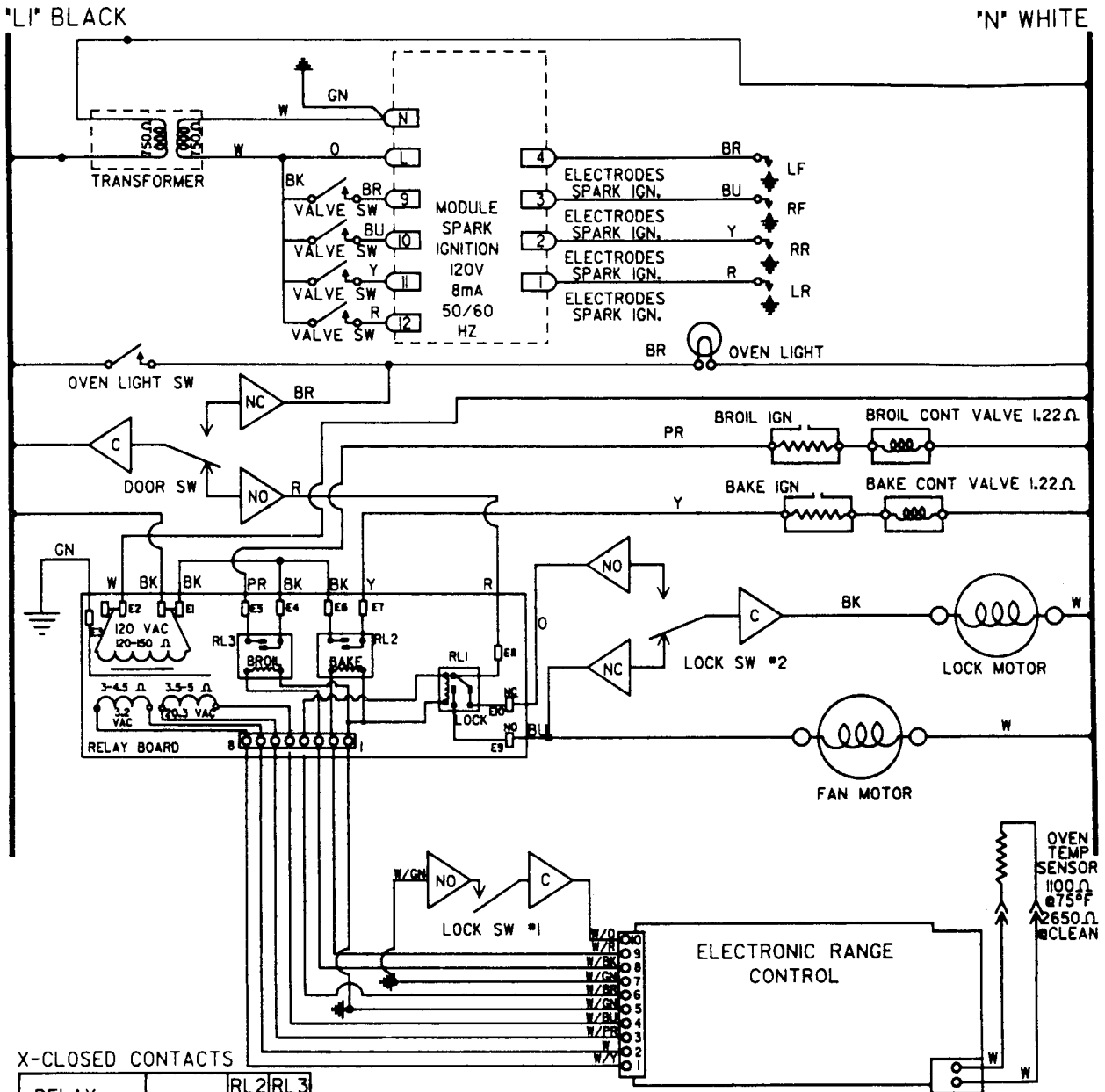
RELAY CONTACTS MADE	K3 MOTOR	K1 BAKE	K2 BROIL
OFF		-	-
BAKE		*	-
BROIL		-	*
CLEAN	X	**	**

X - CONTACTS MADE AT BEGINNING AND END OF CLEAN CYCLE ONLY.
 * - CYCLING CONTACTS.
 ** - IN THE CLEAN CYCLE BROIL BURNER CYCLES FOR THE FIRST 30 MINUTES AND BAKE BURNER CYCLES DURING THE REMAINDER OF THE CLEAN CYCLE.

DOOR POSITION	LCH SW-1	LCH SW-2	DOOR SW
OPEN	NO	NC	NC
CLOSED	NO	NC	NO
LOCKED	NC	NO	NO

9. SCHEMATIC DIAGRAMS

MODELS JGSP30GEP & JGSP31GEP



X-CLOSED CONTACTS

RELAY CONTACTS MADE	RL1 LOCK NC NO	RL2 BAKE	RL3 BROIL
OFF	X		
BAKE/TIMED	X	*	
BROIL	X		*
CLEAN		X	***

* - CYCLING CONTACTS.
 ** - IN THE CLEAN CYCLE BROIL BURNER CYCLES FOR THE FIRST 30 MINUTES AND BAKE BURNER CYCLES DURING THE REMAINDER OF THE CLEAN CYCLE.

COMPONENT SYMBOLS DO NOT REFLECT TRUE CONFIGURATION. ALL FEED LINE COLORS ARE AS NOTED. ALL COMPONENTS SHOWN IN 'OFF' OR 'RELAXED' POSITION.

DOOR POSITION	LOCK SW #1	LOCK SW #2	DOOR SW
OPEN		C-NC	C-NC
CLOSED		C-NC	C-NO
LOCKED	C-NO	C-NO	C-NO

PT. NO. LBW005-4

9. SCHEMATIC DIAGRAMS

MODELS JGSP30GER & JGSP31GER

"LI" BLACK

"N" WHITE

