

**MAYTAG**

# **Magic Chef**

## **Gas Range New Generation Cooking Service Manual**

16000400  
Issued 3/93

# **SAFETY PRECAUTIONS**

**THIS SERVICE INFORMATION IS INTENDED TO BE USED BY A MAYCOR AUTHORIZED SERVICE TECHNICIAN WHO IS FAMILIAR WITH PROPER SAFETY PROCEDURES AND POSSESSES HIGH QUALITY TESTING EQUIPMENT, ASSOCIATED WITH MICROWAVE, GAS AND ELECTRICAL APPLIANCE REPAIR.**

**ALL INDIVIDUALS ATTEMPTING REPAIRS, THROUGH IMPROPER REPAIR OR ADJUSTMENT, SUBJECT THEMSELVES AND OTHERS TO THE RISK OF SERIOUS OR FATAL INJURY.**

***USE ONLY GENUINE FACTORY REPLACEMENT COMPONENTS.***



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# INTRODUCTION

The *New Generation Cooking Appliances* feature a totally new designed product with front serviceability as a key element. All doors are the lift-off type with easily changed door seals attached to the door liner with dart clips. Backguards are 4, 10, 11, or 12 inches (height), and all that contain clocks or electrical components are easily serviced from the front. Tops are either flat or upswept, and all models other than those with sealed burners are of the lift up/prop up type. Spark modules on non-sealed burner models are located in the right rear corner of the burner box for easy access.

This manual pertains to New Generation domestic gas cooking appliances produced in Cleveland, Tennessee. While it does not address individual models, it deals with systems representative of the sizes and operations typical of the entire spectrum of models produced.

This manual is designed to aid in the diagnosis, troubleshooting and repair of any *New Generation Cooking Appliance* should such conditions occur.

## **Model Series covered in this manual:**

(Magic Chef plus brands and private label as indicated in the Key To Model #'s.)

3100

3200

3400

### **NOTE**

Example diagrams are used in this manual. Always refer to diagram on range when trouble shooting.



# RECORD OF CHANGES

This publication was issued February, 1993.

SUBJECT	SECTION/PAGE	CHANGE #	DATE ISSUED





# SECTION 1. GENERAL INFORMATION

## MODEL NUMBER IDENTIFICATION (Freestanding Gas Ranges)

—	3 4	4	5X	P	A	-XX
BRAND	SERIES ID	BACKGUARD	FEATURES	SEQ. INTRO.	COLOR CODES	SPEC CODES: CAN USE MULTI- PLES
D = Dixie	11 = 20" Range	0 = Base Model In Series	0 = No Clock, Std. Burner		A = Almond	G = GSA
H = Hardwick	31 = 30" Range	1 = 10", No Insert	1 = TOD Clock, Std. Burner		W = White	K = Spark Ignition where not Std.
N = Norge	32 = 30" Continuous Clean	2 = 10", Decorative Insert	2 = Auto Clock, Std. Burner		S = Brushed Chrome / Black Sides	S = Sealed Burners where not Std.
<b>PRIVATE LABEL</b>	34 = 30" Self Clean	3 = 11", Branded Version	3 = Full Electronic, Std. Burner		B = Black	U = Uncrated
CG = Crosley	41 = 36" Range	4 = 11", Decorative Insert			V = White on White	X = All Black Front Where Not Std.
	42 = 36" Continuous Clean	5 = Misc. Built-In Griddle Model (36")	4 = Unused			Z = Floating Special Inst.
	51 = 30" Drop-In	6 = 11", High Style Decorative Inserts	5 = Unused			1 = 110V 50 Hz.
	52 = 30" Drop-In, Continuous Clean	7 = 11", Deluxe, Branded Version	6 = No Clock, Sealed			2 = 220V 50 Hz./60 Hz.
	61 = 30" Slide-In	8 = 12", Decorative Inserts, Lighted	7 = TOD Clock, Sealed			3 = 220V 60 Hz.
	62 = 30" Slide-In, Continuous Clean	9 = Misc., B.I. & Microwave Upper Oven on Eyelevel	8 = Auto Clock, Sealed			4 = 220V 50 Hz. Only
	64 = 30" Slide-In, Self Clean		9 = Full Electronic, Sealed			Note: Dash is for humans & printing only. It is not part of the computer record when 10 digits are exceeded.
	71 = 30" Eye Level		<b>DOOR</b>			
	74 = 30" Eye Level W/Self Clean Lower Oven		P = Plain Panel			
			W = Window Panel			
			K = Black Painted			
			X = Black Glass w/Window			
			S = Black Glass Solid			
			V = Color of Range Glass w/Window			

Examples: Gas Range.

3100PPA = 30" Base Model in Almond

3489XRW = 30" Top of Line in White

### MODEL/SERIAL PLATE

The Model/Serial plate is located at the bottom left side of the broiler/service drawer on the front frame. The model number is very important to the technician for ordering proper parts both in and out of warranty. Always be sure to use the **complete** model number when ordering parts.

A wiring diagram/schematic is supplied with the unit. It is attached to the rear of the service drawer, or in the backguard or manifold panel. Please return the diagram to the range for future use.

## MODEL NUMBER IDENTIFICATION (Built-In Gas Ranges)

—	9 4	9	4X	R SEQ. INTRO.	B
BRAND	SERIES ID	Size & Configuration	FEATURES		COLOR CODES
D = Dixie	Wall Ovens	1 = 24" Single Oven	0 = No Clock		A = Almond
H = Hardwick		2 = 24" Double Oven	1 = T.O.D. Clock, Analog		W = White
N = Norge	91 = Gas Std.	3 = 24" Combo Microwave	2 = T.O.D. Digital Clock		S = Brushed Chrome / Black Sides
	92 = Gas Contin- uous Clean	4 = 27" Single Oven	3 = Automatic Analog		B = Black
	94 = Gas Self Clean	5 = 27" Double Oven	4 = Automatic Digital		V = White on White
		6 = 27" Combo Microwave			
		7 = 30" Single Oven	<b>DOOR</b>		
		8 = 30" Double Oven	P = Plain Panel		
		9 = 30" Combo Microwave	W = Window Panel		
			K = Black Painted		
			X = Black Glass w/Window		
			S = Black Glass Solid		
			V = Color of Range Glass w/Window		

## COOKTOPS

81 Gas 24"	1 = Standard Burners	0 = Pilot Gas
82 Gas 30"	2 = Standard w/Griddle	1 = Spark
83 Gas 36"	4 = Sealed Burners	
84 Gas 36" Downdraft	5 = Sealed Burners w/griddle	

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## GENERAL SAFETY

### CAUTION

**REMOVE ELECTRICAL POWER PRIOR TO SERVICING.**

#### ELECTRICAL CONNECTION

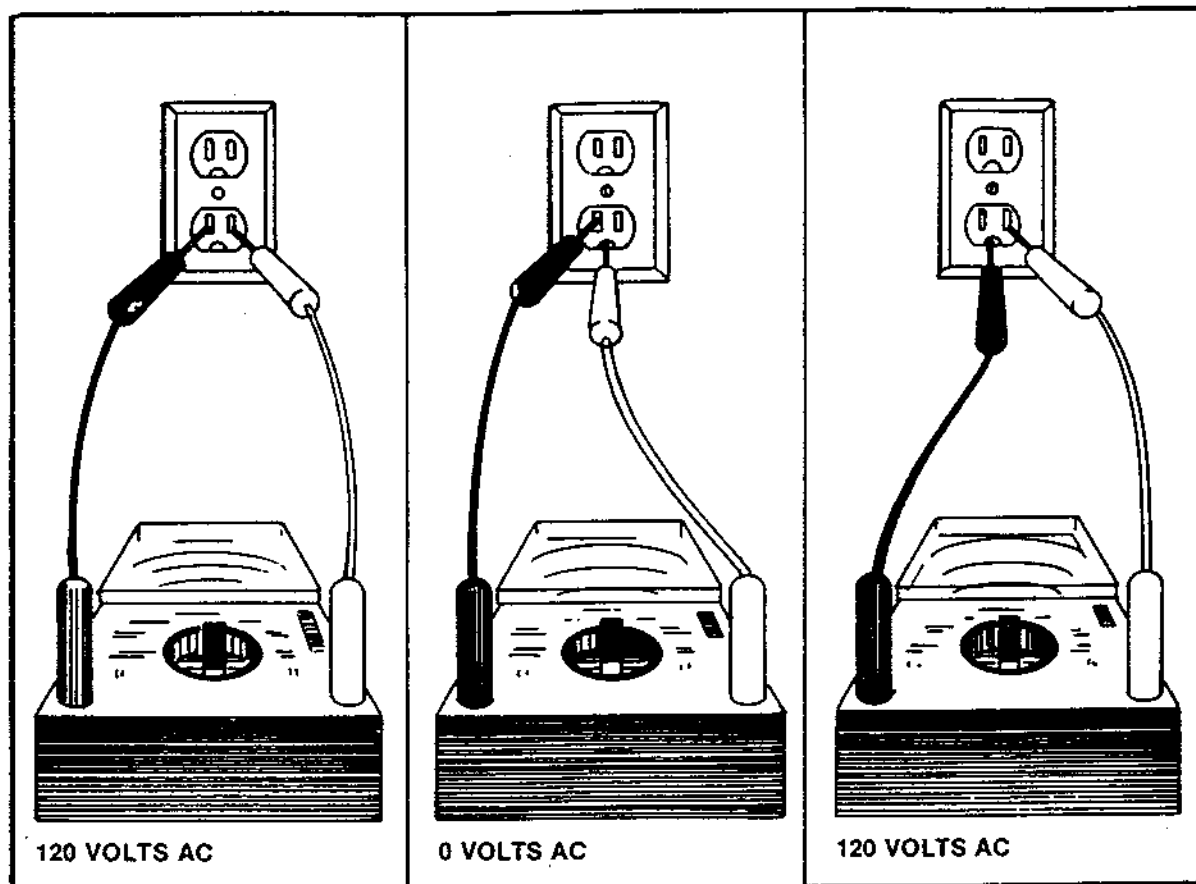
Appliances which require electrical power are equipped with a three-prong grounding plug which must be plugged directly into a properly grounded and correctly polarized three-hole electrical outlet.

**Note:** If an ungrounded, two-hole or other type electrical outlet is encountered, it is the personal responsibility of the appliance owner to have such receptacle replaced with a properly grounded and polarized three-hole electrical outlet.

### WARNING

The grounding prong of the plug should never be cut off or removed. If the grounding prong is cut off or removed or if the appliance is connected to a wall outlet not properly grounded, any person who touches the appliance runs the risk of severe electrical shock. The purpose of the grounding prong is to prevent potential electrical shock if any component develops a short. It is a safety feature which must be maintained.

There are several devices in the market place which may be used to check an outlet properly. They vary from test lights to plug in circuit testers to meters. These devices may be purchased from a variety of stores or electrical suppliers, or from Maycor Parts Distributors.



**BEFORE OPERATING, TESTING, OR REPAIRING, INSURE THAT THE WALL OUTLET IS PROPERLY POLARIZED AND GROUNDED.**

## **CAUTION**

Shut off gas supply prior to removal of any gas component. Test for leaks after replacement of any gas components. Whenever gas components are replaced, it is important you use a joint compound that is resistant to the action of liquified petroleum gas.

## **CAUTION**

Some service and testing may require the use of electricity and/or gas. If either is used, you must exercise utmost caution.

# CAUTION

## GAS SELF-CLEAN OVEN CONTROL, CAPILLARY AND BULB NaK CAUTION.

Bulb and capillary are filled with liquid metal fluid called NaK. Material is dangerous to eyes, skin, clothing, and combustibles. If this material comes into contact with the skin, immediately scrape it from the skin with a dry spatula or similar utensil. **Do Not Rub.** Then flush the skin thoroughly with water.

In the event of a system rupture at room ambient, leakage will be quite slow because there is no internal pressure in the system. Seal system by crimping shut with pliers on each side of break. Flush crimped ends thoroughly with running water. Place crimped off units in a covered metal container, free of combustible materials, for disposal.

## SPECIFICATIONS

All ranges requiring electricity operate with 120 VAC 60Hz. Each range should have its own 15 amp protective circuit breaker or fuse. The combination range with a microwave requires 120 VAC 60 Hz and a 20 amp protective circuit breaker or fuse. BTU ratings may be found on the serial data plate on the unit. All ranges use a three prong plug and must be connected to a correctly polarized and grounded outlet.

<u>Conventional</u> 120 Volts, 60Hz, 5 Amp.		<u>Self Clean</u> 120 Volts, 60Hz, 5 Amp.	
<u>Sealed Surface Burners</u>			
<u>Natural</u>		<u>Natural</u>	
2 @ 12,000 BTU		2 @ 12,000 BTU	
2 @ 9,200 BTU		2 @ 9,200 BTU	
or 4 @ 9,200 BTU		or 4 @ 9,200 BTU	
<u>LP</u>		<u>LP</u>	
2 @ 8,500 BTU		4 @ 8,000 BTU	
2 @ 8,000 BTU			
or 4 @ 8,000 BTU			
<u>Uniburners</u>			
Natural - 4 @ 9000 BTU		Natural - 4 @ 9000 BTU	
LP - 4 @ 8000 BTU		LP - 4 @ 8000 BTU	
<u>Oven Burners</u>			
N/LP @ 18,000 BTU		Bake N/LP @ 18,000 BTU	
		Broil N @ 13,000 BTU	
		Broil LP @ 14,000 BTU	

**Note:** Always refer to the rating plate on the unit.

## CONVERSION / GAS PRESSURE / INSTALLATION

### General:

Although there are many differences in gas ranges, there are many basic similarities. All have pressure regulators, burners, and a means of controlling the amount of gas allowed to flow. Gas ranges operate on the principle of combining a mixture of natural gas or liquified petroleum (LP) and air. Proper gas pressure and an appropriate quantity of air are prerequisite to normal and desired operation. Additionally, all burners (surface and oven) must be kept clean with all ports and openings free and clear of foreign matter for proper and safe operation.

### Checking Manifold Gas Pressure:

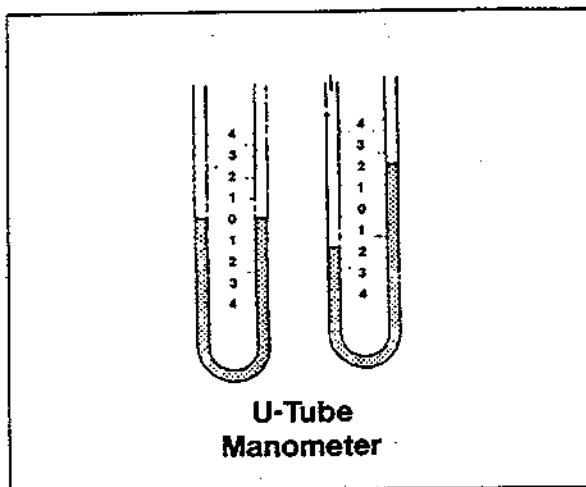
If it should be necessary to check the manifold gas pressure, connect manometer (water gauge) or other pressure device to burner orifice farthest from the manifold inlet and turn burner valve on. For an accurate pressure check have at least two (2) other top burners burning. Be sure the gas supply pressure is at least one inch (1") above specified range manifold pressure.

### Gas Pressure

#### U-Tube Manometer (Water Column Gauge)

Example: The left hand picture (in illustration) shows zero (atmospheric) pressure on both sides of the manometer. The water level in both legs is at zero. The right hand picture shows a pres-

sure applied to the manometer. In the left leg of the manometer, the water column is two (2) inches below the zero point, while in the right leg the water level is two (2) inches above the zero point. The gas pressure being read is thus four (4) inches of water column ( $2 + 2 = 4$ ).



### Conversion

All domestic gas ranges are designed to operate on four (4) inches of water column when being used on natural gas and ten (10) inches of water column if used on LP-gas. Hence, most ranges leave the factory set to operate as follows:

- Set for use with natural gas but easily convertible for use with LP.

"Easily convertible" means that no additional parts are required, merely minor adjustments to several components on the range. Universal orifices and convertible pressure regulators make this possible. Should there be any doubt as to which type of gas the range is pre-set for, or whether or not it is convertible, refer to the rating (name) data plate on the range.

### **Conversion Functions:**

1. Shut off gas supply.
2. Convert pressure regulator.
3. Tighten or loosen all orifice hoods (surface and oven) approximately 1½ to 2 turns with a ½" wrench.
4. Change *select-a-gas* key on pilot ignition thermostats.

Cooktops will only require converting the pressure regulator and the surface burner orifice hoods. Self cleaning gas ranges have dual oven valves, hence two (2) orifice hoods to be converted, bake and broil.

**Note:** If a range adjusted for use on natural gas, is connected to LP, you may expect long yellow burner flames that result in extreme sooting.

### ***Top Burner Valve Adjustment***

Some ranges have top valves that are adjustable. They may be called proportional or linear flow, but may be recognized by the fact that they rotate greater than 90° (generally 270°). To adjust the flame height:

1. Turn burner on high and allow to warm up for a few minutes.
2. Turn burner to its lowest setting.
3. Remove handle (knob), secure stem and adjust with a small screwdriver in the recessed slot in the stem. Adjust so as to have a small stable flame with a cold burner. For sealed burners, check adjustment with a pot in place.

### ***Installation***

**Note:** Follow actual installation instructions with the range.

Check the range model number plate to see if the range is approved for installation in mobile homes and/or recreational vehicles. If approved the following items are applicable.

### **MOBILE HOMES**

The installation of a range designed for mobile home installation must conform with the Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280 (formerly the Federal Standard for Mobile Home Construction and Safety, Title 24 HUD, Part 280) or, when such standard is not applicable, the Standard for Manufactured Home Installations, ANSI A225.1/NFPA 501A-1987, or with local codes.

In Canada the range must be installed in accordance with the current CSA Standard C22.1 - Canadian Electrical Code Part 1 and Section Z240.4.1 - Installation Requirements for Gas Burning Appliances in Mobile Homes (CSA Standard CAN/CSA - Z240MH).

### **RECREATIONAL VEHICLES**

The installation of a range designed for recreational vehicles must conform with state or other codes or, in the absence of such codes, with the Standard for Recreational Vehicles, ANSI A119.2 - latest edition.

In Canada the range must be installed in accordance with Section C22.2 No. 148/CAN/CSA - Z240.6.2 - Electrical Requirements for R.V.'s (CSA Standard CAN/CSA - Z240 RV Series) and Section Z240.4.2 - Installation Requirements for Propane Appliances and Equipment in R.V.'s (CSA Standard CAN/CSA - Z240 RV Series).



## LOCATING THE RANGE

Do not set range over holes in the floor or other locations where it may be subject to strong drafts. Any opening in the wall behind the range and in the floor under the range should be sealed. Make sure the flow of combustion or ventilation air is not obstructed.

**Note:** A range should NOT be installed directly over kitchen carpeting unless an insulating pad or 1/4 inch thick piece of plywood is placed between the range and carpet.



## ANTI-TIP DEVICE INSTALLATION INSTRUCTIONS

**Note:** A risk of range tip over exists if the appliance is not installed in accordance with the installation instructions provided. The proper use of this device minimizes the risk of TIP-OVER. In using this device the consumer must still observe the safety precautions as stated in the USE and CARE MANUAL and avoid using the oven door and/or lower drawer as a step stool.

Installation instructions are provided for wood and cement in either floor or wall. Any other type of construction may require special installation techniques as deemed necessary to provide adequate fastening of the ANTI-TIP bracket to the floor or wall.

### STEP 1 - Locating The Bracket

- A. Mark the floor or wall where either the right or left "EDGE" of the 30" opening is to be located.
- B. Place the BRACKET SIDE, (see figure 2) 15/16" from the marked "EDGE" toward center of opening and against the back wall.
- C. Use the bracket as a template and mark the required holes, as shown in figure 2, for the type of construction you will be using.

### STEP 2 - Anti-Tip Bracket Installation

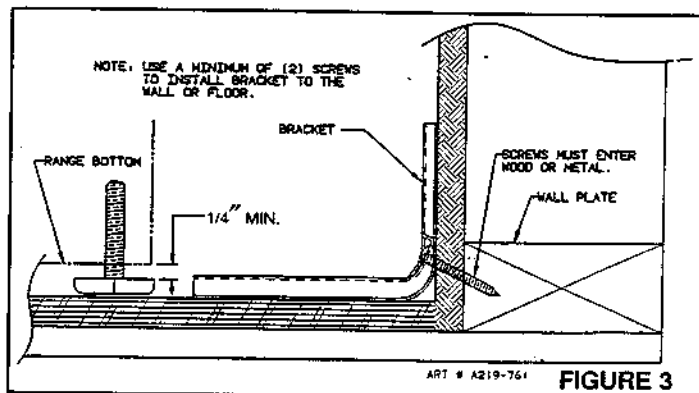
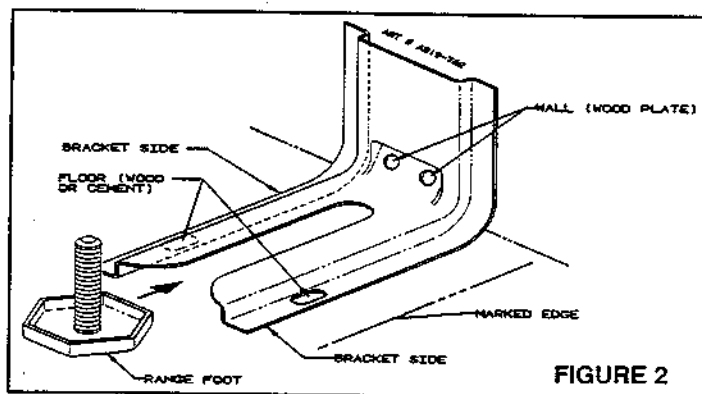
- A. Wood Construction:
  1. Floor: Locate the center of the two holes identified in figure 2 as "FLOOR-WOOD". Drill a 1/8" pilot hole in the center of each hole (a nail or awl may be used if a drill is not available). Secure the ANTI-TIP bracket to the floor with the two screws provided. Proceed to STEP 3.
  2. Wall: Locate the center of the two holes identified in figure 2 as "WALL-PLATE". Drill an angled 1/8" pilot hole in the center of each hole as shown in figure 3. (A nail or awl may be used if a drill is not available). Secure the ANTI-TIP bracket to the wall with the two screws provided as shown in figure 3. Proceed to STEP 3.

**B. Cement or Concrete Construction:**

1. Suitable screws for concrete construction can be obtained at the hardware store. Drill the required size hole for the hardware obtained into the concrete at the center of the holes identified in figure 2 as "FLOOR-CEMENT". Secure the ANTI-TIP bracket to the floor. Proceed to STEP 3.

**STEP 3 - Range Installation**

- A. Place the range in its designated location and slide it back into position. Note: A minimum clearance of 1/4" is required between the range and the leveling foot that will engage the ANTI-TIP bracket, see figure 3.



- B. For SAFETY CONSIDERATIONS as well as optimum performance adjust the range so that it is level. This may be checked by placing a spirit level or a large pan of water on the cooktop or the oven rack. If an adjustment is required pull the range forward, tip the range and rotate the leveling feet as required.

- C. To check the range for proper installation of the anti-tip bracket: Use a flashlight and look underneath the bottom of the range to see that one of the rear leveling legs is engaged in the bracket slot.

- D. Proceed with the remainder of the installation instructions.

**CONNECTING THE RANGE**

**ELECTRIC SUPPLY**

The range must be installed in accordance with Local and National Electric Code (NEC) ANSI/NFPA No. 70 - latest edition.

In Canada the range must be installed in accordance with the current CSA Standard C22.1 - Canadian Electrical Code Part 1.

**1. ELECTRICAL SUPPLY CONNECTION:**

The range requires 120 volts, 60 cycle alternating current from an outlet capable of supplying 15 amperes.

## **WARNING**

### **ELECTRICAL GROUNDING INSTRUCTIONS**

This appliance is equipped with a (three-prong) grounding plug for your protection against shock hazard and should be plugged directly into a properly grounded receptacle. Do not cut or remove the grounding prong from this plug.

## **WARNING**

**DISCONNECT ELECTRICAL SUPPLY BEFORE SERVICING THE APPLIANCE.**

### **GAS SUPPLY**

Installation of this range must conform with local codes or, in the absence of local codes, with the National Fuel Gas Code, ANSI Z223.1-latest edition.

In Canada the range must be installed in accordance with the current CGA Standard CAN/CGA-B149-Installation Codes for Gas Burning Appliances and Equipment and/or local codes.

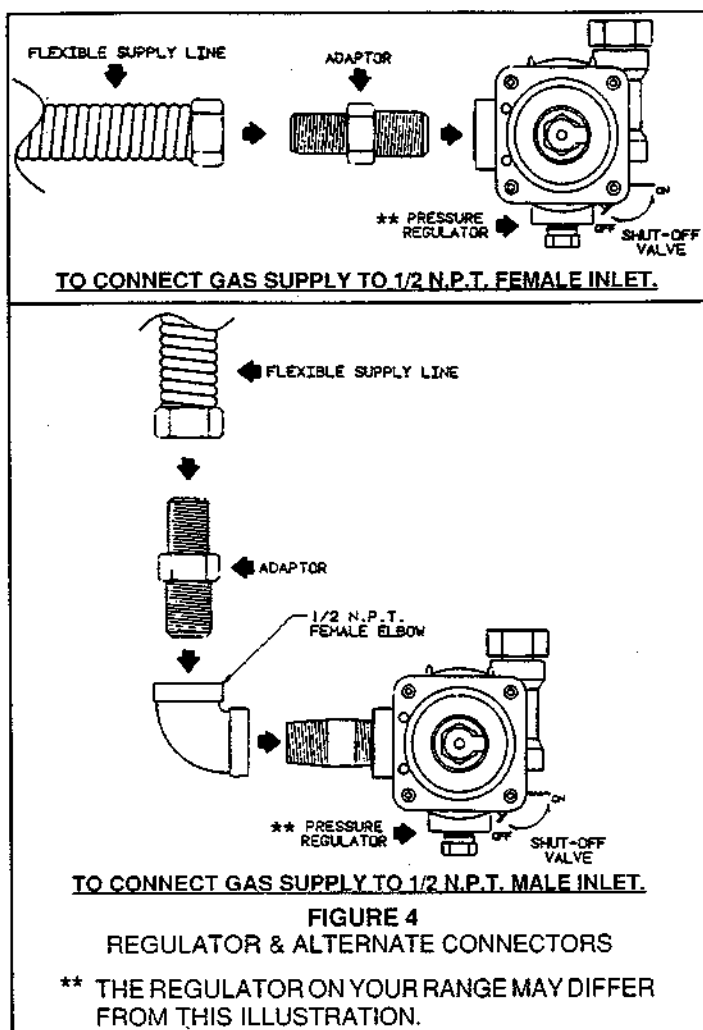
2. **GAS SUPPLY CONNECTION:** (see figure 4) **A TRAINED SERVICEMAN MUST MAKE THE GAS INSTALLATION.**
  - a. A GAS CUTOFF VALVE SHOULD BE PUT IN AN ACCESSIBLE LOCATION IN THE SUPPLY LINE AHEAD OF THE RANGE, FOR TURNING ON AND TURNING OFF GAS SUPPLY. If range is to be

connected to house piping with flexible or semi-rigid metal connectors for gas appliances, **CONNECTOR NUTS MUST NOT BE CONNECTED DIRECTLY TO PIPE THREADS. THE CONNECTORS MUST BE INSTALLED WITH ADAPTORS PROVIDED WITH THE CONNECTOR.**

- b. The house piping and/or range connector used to connect the range to the main gas supply must be clean, free of metal shavings, rust, dirt and liquids (oil or water). Dirt and other contaminants in the supply lines can work their way into the range manifold and in turn cause failure of the gas valves or controls and clog burners and/or pilot orifices.

**CAUTION: DO NOT LIFT OR MOVE RANGE BY DOOR HANDLES, OR BACKGUARD.**

- c. Turn off all pilots and main gas valve of other gas appliances.
- d. Turn off main gas valve at meter.
- e. Before connecting range, apply pipe thread compound approved for LPG to all threads.
- f. Connect range to gas supply at regulator using adaptors supplied with flexible connector. Rigid pipe may also be used. See rating plate for type of gas range has been manufactured for.
- g. Turn on main gas valve at meter, and re-light pilots at other gas appliances.



- h. Apply soap suds to gas connection at range and check for leakage. Check for leakage at all gas connections and fittings in the range.

**Note:** USE OF A MANOMETER TO CHECK FOR GAS LEAKAGE IS ACCEPTABLE.

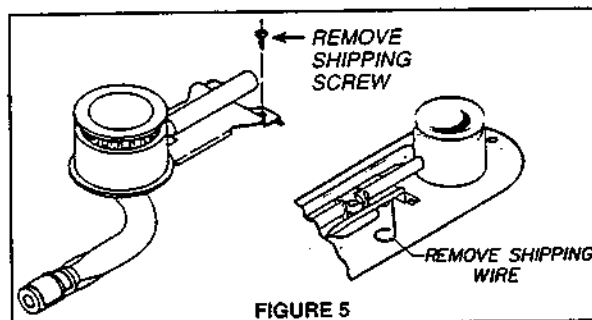
**CAUTION:**  
NEVER CHECK FOR LEAKS WITH A FLAME. WHEN LEAK CHECK IS COMPLETE, WIPE OFF ALL SOAP RESIDUE.

- i. Remove shipping wire or screw for ALL top burners. (Conventional top burner models only). This is to hold the burners in place on the burner bracket for

shipping purposes. (See figure 5).

- j. Connect electric supply cord to wall receptacle 120 volt 60 cycle alternating current, at 15 amperes.
- k. Adjust burner air shutter to the widest opening that will not cause the flame to lift or blow off the burner when cold.

**Note:** Correctly adjusted sealed burners will blow off without a pot over the burner. These should be adjusted with a pot in place.



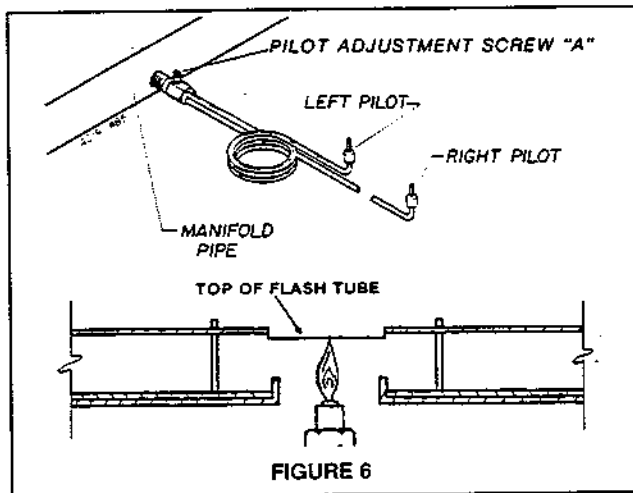
## CHECKING PRESSURE OF HOUSE PIPING SYSTEM

1. The appliance and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 lbs./sq.in. (3.5kPa) (13.8 inch water column).
2. The appliance must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to less than 1/2 lbs./sq.in. (3.5kPa) (13.8 inch water column).

## **RANGE ADJUSTMENTS TOP SECTION - GAS TOP PILOT ADJUSTMENT** (See figure 6)

Purge all air from supply by turning on one top burner valve. Then turn off valve and adjust top pilot flame using adjusting screw "A" (figure 6) so that flame is even with top of flash tube. To light the burner, push and turn top burner knob to the LITE position.

**Note:** Some models have ONLY one pilot adjustment at the manifold pipe.



## **TOP SECTION - ELECTRIC IGNITION**

To operate, push and turn top burner knob to the LITE position. The top burner will light. To turn OFF spark after the top burner has ignited turn knob to HI setting.

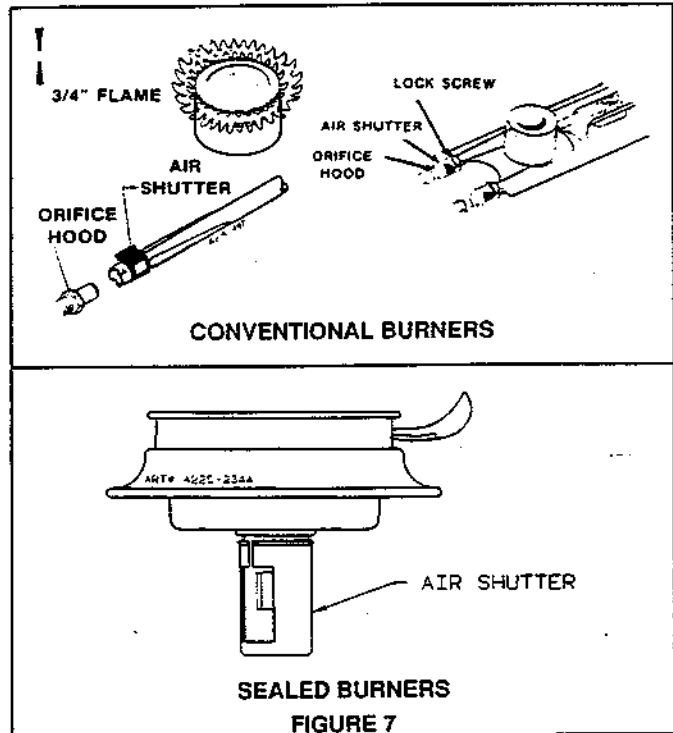
## **TOP BURNER ADJUSTMENT**

### **ALL TOP BURNER VALVES:**

The approximate height of the flame at the high or full-on position is shown below.

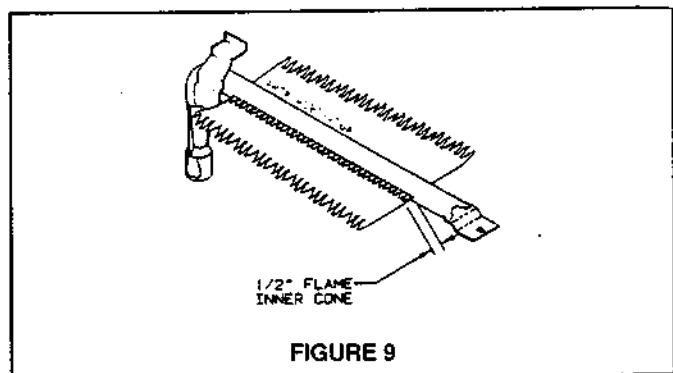
Adjust burner air shutter to the widest opening that will not cause the flame to lift or blow off the burner when cold.

**Note:** Correctly adjusted sealed burners will blow off without a pot over the burner. These should be adjusted with a pot in place.



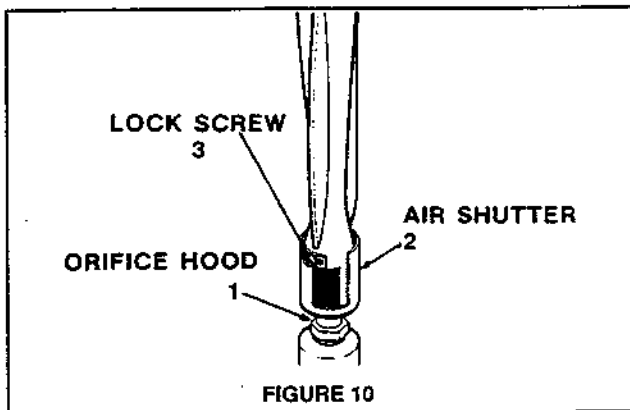
## **AIR SHUTTER - OVEN BURNER**

- The approximate length of the flame of oven burner is a 1/2 inch distinct inner blue flame, figure 9.



- Oven burner flame can be checked as follows:

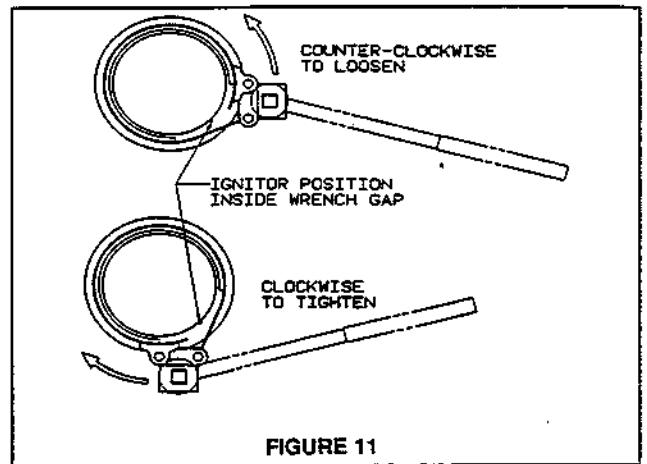
1. Yellow flame on burner - open air shutter "2" on figure 10.
  2. Distinct blue flame but lifting - close air shutter "2" on figure 10.
- c. The oven burner air shutter adjustment is the same on ranges with a gas pilot or electric ignition.



#### REMOVING SEALED BURNER FOR ADJUSTMENT OR SERVICE:

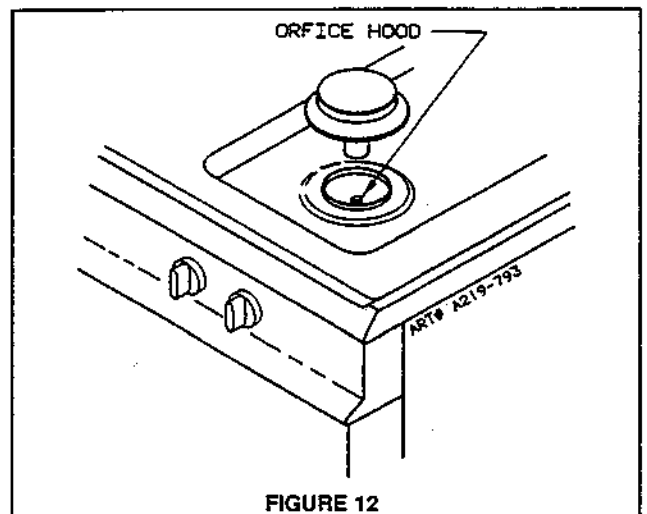
Mark ignitor location relative to main top with pencil. This mark on the main top is used as a reference point when replacing the burner assembly to insure that the burner is tightened to its original position.

Place burner wrench (part no. 8312D075-60, available from your dealer or authorized service contractor\*) over surface burner assembly with ignitor positioned inside gap in wrench ring (figure 11). This prevents ignitor from being crushed when wrench tightens on burner assembly. Rotate burner assembly approximately one-eighth turn counter-clockwise and lift from main top (figure 12).



**TO REASSEMBLE:** Replace burner assembly in main top and rotate approximately one-eighth turn clockwise using burner wrench until burner locks into position with ignitor aligned with reference mark on main top.

\* If burner wrench is not available locally, contact Maycor Appliance Parts and Service, 240 Edwards Street, Cleveland, TN 37311. (615-472-3333).



## GAS CONVERSION

### GENERAL

All ranges and cooktops are equipped with double coaxial (universal) orifices and with a convertible gas regulator. The unit model number plate states which gas it was adjusted for at the factory. To convert the unit to either Natural gas or LP gas will require adjustment of the surface burner orifice hoods, adjustment of the oven orifice/air shutter and replacement and/or adjustment of the pressure regulator converter cap.

Inlet pressure to the regulator should be as follows for both operation and checking of regulator setting:

<u>INLET PRES- SURE</u>	<u>NAT. GAS</u>	<u>LP GAS</u>
Minimum	5 inches	11 inches w.c.
Maximum	14 inches	14 inches w.c.

### REGULATOR CONVERSION

The unit regulator must be set to match the type gas supply used. If converting from natural gas to LP gas, the regulator must be converted to regulate LP gas. If converting from LP gas to natural gas, the regulator must be converted to regulate natural gas.

TO CONVERT THE PRESSURE REGULATOR FROM ONE GAS TO ANOTHER, DO EITHER (1), (2) OR (3) BELOW: YOUR UNIT WILL BE EQUIPPED WITH ONE OF THE THREE REGULATOR TYPES SHOWN BELOW.

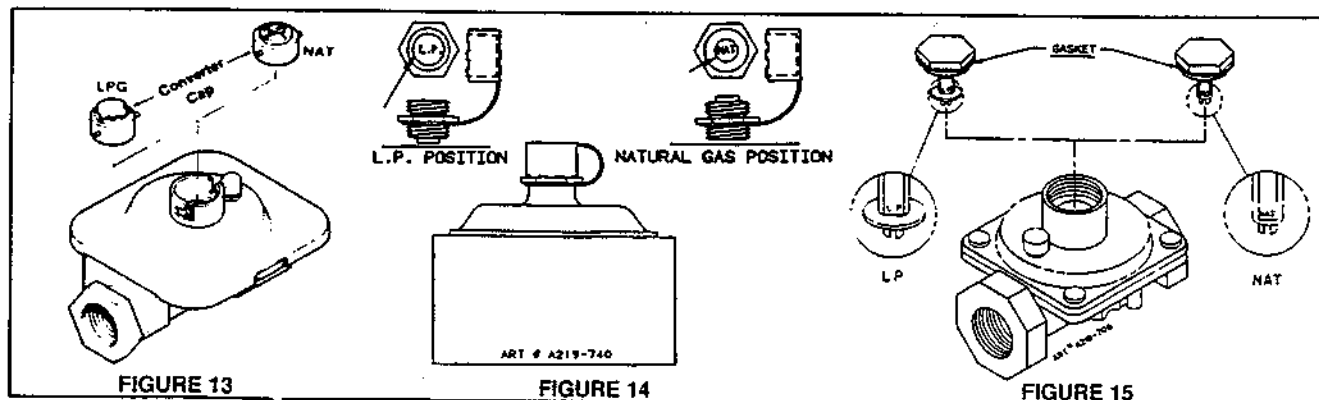
1. Remove the cap, push down and turn counter-clockwise. Turn the cap over and reinstall (figure 13).

**Note:** THE GAS TYPE YOU ARE CONVERTING TO MUST BE VISIBLE ON THE INSTALLED REGULATOR CAP.

2. Remove plastic dust cover from cap nut on top of regulator. Remove cap nut from regulator (plastic dust cover comes off with nut). **IMPORTANT:** Remove plastic dust cover from cap nut and reinstall on opposite side of cap nut. Reinstall cap nut to regulator and replace dust cover. **CAUTION:** Be sure marking for the type of gas to which regulator has been converted is visible in top of cap nut before replacing plastic dust cover. See figure 14.

3. Remove cap and forcibly snap out plastic plunger from bottom of cap. Turn plunger over and forcibly snap back in original location. (figure 15).

**Note:** PLUNGER MUST SNAP INTO POSITION: THE GAS TYPE YOU ARE CONVERTING TO MUST BE VISIBLE ON LOWER SIDE OF PLUNGER.



the oven control is turned on, pilot gas is increased allowing the standing pilot to grow to the heater pilot. The heater pilot heats the capillary. After a 30-45 second delay, the safety valve is opened, allowing main gas to the oven burner and its ignition. Once the oven reaches the set temperature, the oven control decreases the flow of gas to the oven pilot. As a result, the heater pilot reduces, the capillary bulb is cooled and the safety valve closes. The oven burner cycles off. As the oven temperature falls a few degrees, the oven control again increases gas flow to the pilot, initiating the cycle to maintain oven temperature.

---

### Spark Ignition System

#### (2 + 0) and (4 + 0), For Surface Burners

The spark ignition system is used on cooktops and for surface burners on those ranges that use the glow bar oven ignition system. The primary components of the spark ignition system are **spark module, surface ignitors, and top burner valve switches.**

This system operates on standard 120 VAC electricity. When a top burner is turned on, the ignitor switch is closed allowing the module's step up transformer to send periodic DC pulses to all ignitors generating sparks for burner ignition. Correct polarity and a good, continuous path to ground are required.

Should there be a power outage, the surface burners may be lighted with a match.

---

### Glow Bar (Oven Only)

#### Major Components:

- Electric Oven Control
- Glow Bar
- Electric Oven Valve

#### Typical Operation:

The glow bar system is completely reliant upon electricity. When the oven control is turned on, 120 VAC is provided to the glow bar ignitor and the gas valve circuit. The high resistance of the glow bar ignitor limits current flow through the ignitor - gas valve. Continual current flow through the circuit causes the glow bar ignitor to glow brighter and the resistance of the ignitor decreases which increases the current flow through the ignitor-gas valve circuit. This increases the amount of heat generated by the heater which causes the bi-metal to bend. At a point the ignitor resistance will have decreased to provide approximately 3.5 amps of current flow through the ignitor gas valve circuit. In approximately 45 seconds, the glow bar ignitor temperature will have increased to approximately 2650°F. The voltage drop across the gas valve terminals will have increased to about three (3) volts AC which will indicate enough current flow to provide enough bi-metal heat to cause the gas valve to open providing gas flow to the oven burner. The heat from the glow bar ignites the gas. The sensing element of the oven control then cycles contacts within the oven control, opening and closing to cycle the glow bar, safety valve and burner to maintain the desired (set) temperature.

**Note:** *This system cannot be operated without electricity.*



## ORIFICE CONVERSION

### 1. FROM NATURAL GAS TO LP/PROPANE GAS:

- Change the pressure regulator from natural to LP setting. (See figure 13, 14, or 15).
- Screw the burner orifice hoods down tight against the pins. (See figure 16B).
- Models with standing pilots: Adjust top burner pilots. (See figure 6). Turn the selector switch on the face of the thermostat to the LP position.
- Adjust burner air shutter to the widest opening that will not cause the flame to lift or blow off the burner when cold.

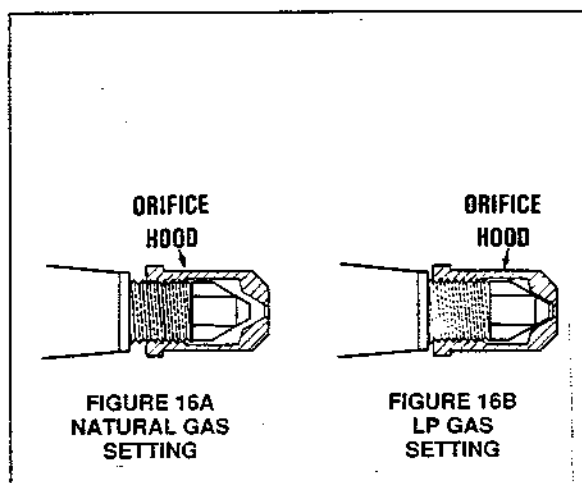
**Note:** Correctly adjusted sealed burners will blow off without a pot over the burner. These should be adjusted with a pot in place.

### 2. FROM LP/PROPANE GAS TO NATURAL GAS:

- Change the pressure regulator from LP to natural setting. (See figure 13, 14 or 15).

- Screw the burner orifice hoods away from the pins. (See figure 16A).
- Models with standing pilots: Adjust top burner pilots. (See figure 6). Turn the selector switch on the face of the thermostat to the Nat. position.
- Adjust burner air shutter to the widest opening that will not cause the flame to lift or blow off the burner when cold.

**Note:** Correctly adjusted sealed burners will blow off without a pot over the burner. These should be adjusted with a pot in place.



## IGNITION SYSTEMS / OPERATIONS

### QUICK REFERENCE IGNITION SYSTEMS OVERVIEW

#### Pilot

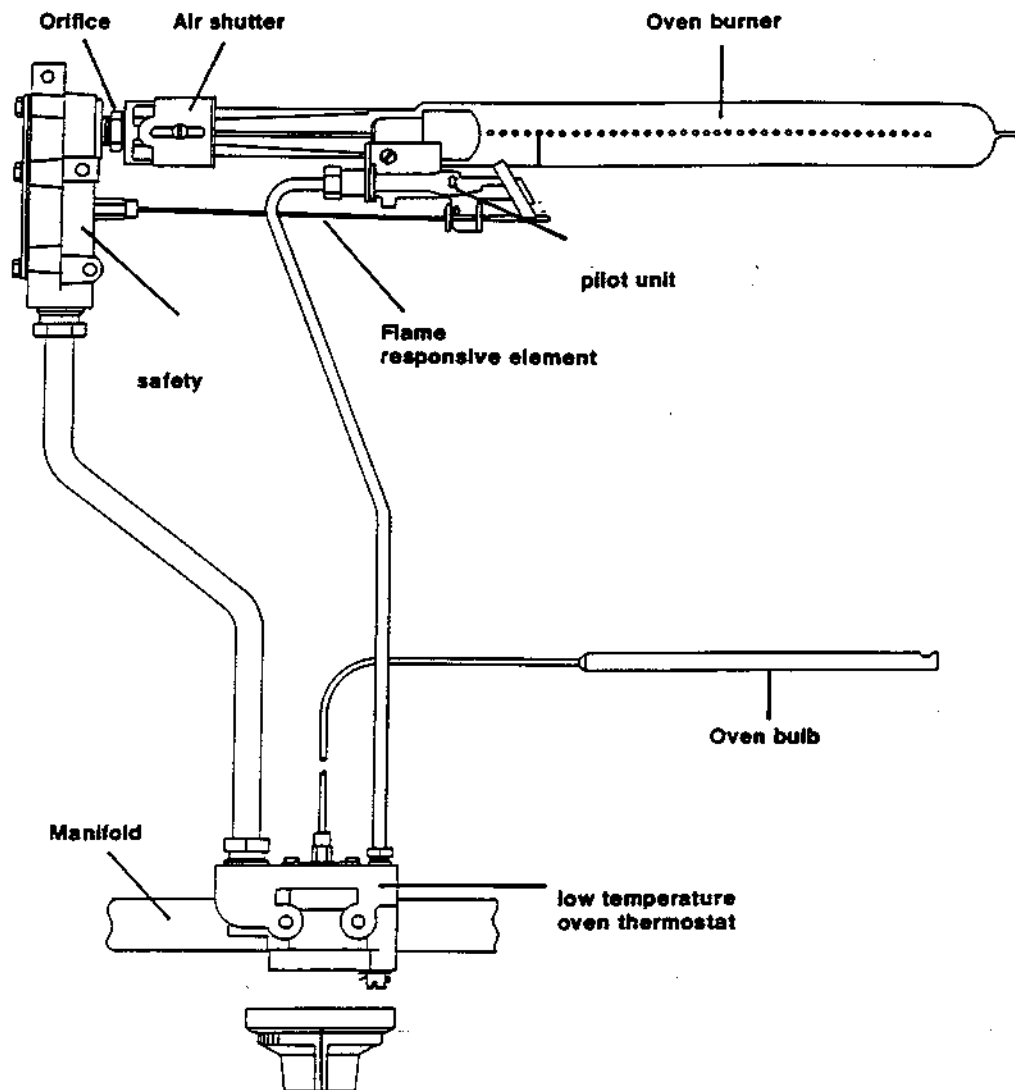
#### Major Components:

- Oven Control
- Pilot Burner
- Safety Valve

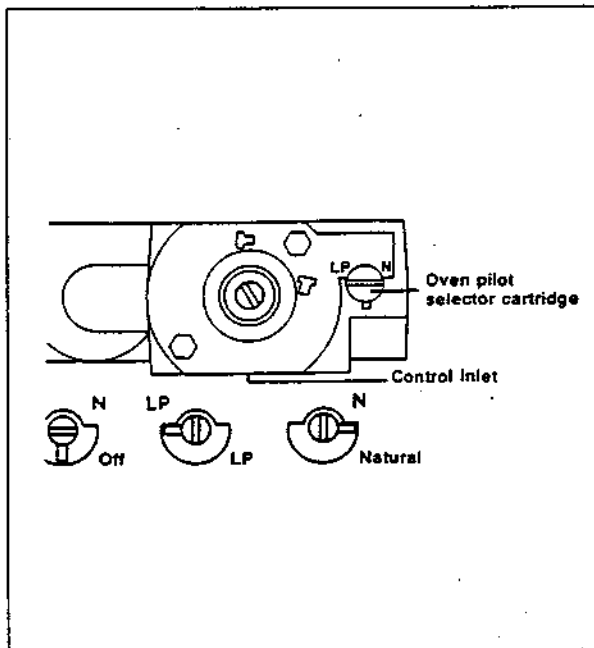
#### Typical Operation:

The oven control serves as a master on/off switch for main gas to the safety valve. Once the oven pilot is lighted, there is a continuous flow of gas to the pilot with oven control on or off. When

## PILOT IGNITION SYSTEM



Note: Surface pilot tubing and adjusting set screw not illustrated.



**Nat./ LP Selector**

## OVEN SYSTEM OPERATION

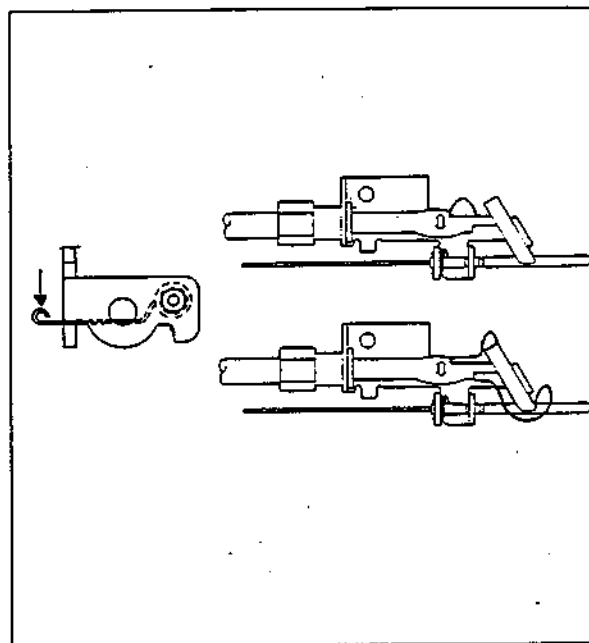
In the "off" position gas is always supplied to the constant pilot. When the thermostat knob is turned on to any temperature setting from 140° to 550°, gas flow to the pilot is increased. The heater pilot portion of the pilot flame heats the flame responsive element of the safety valve. When it has been heated for 30 to 60 seconds, the safety valve will open and allow gas to flow to the oven burner, where it will be lighted by the pilot.

When the set temperature is reached, the thermostat reduces the flow of gas to the pilot, the flame responsive element cools, and the safety valve closes shutting off the gas to the oven burner. As the oven temperature cools,

the thermostat will increase the flow of gas to the pilot - warming the element, opening the safety valve and re-lighting the oven burner. This cycle will continue until the oven control knob is turned off.

In the broil position, the heater pilot remains on at all times, as does the oven burner. After a period of time, the oven burner (in Broil) will modulate to a lower flame but will not cycle off.

**Note:** The pilot ignition thermostat should not be calibrated in the field.



**Pilot Lighter**

The safety valve heat responsive element is secured to the pilot lighter by a spring clip. To remove, push down on the spring clip loop and pull the element out. To replace, insert the element in the pilot bracket and push until the element is locked into place.

## GLOW BAR IGNITION

### Components and Operation

The primary components of this ignition system are:

- electric thermostat
- silicon carbide ignitor
- electric oven valve

These components are all wired in series and although the oven control and glow bar require 120 VAC, 60 Hz., the oven valve operates on low voltage - about 3 volts. **Therefore, 120 VAC should never be applied directly to the oven valve terminals.** The glow bar is the power source for the oven valve.

#### OPERATING PARAMETERS

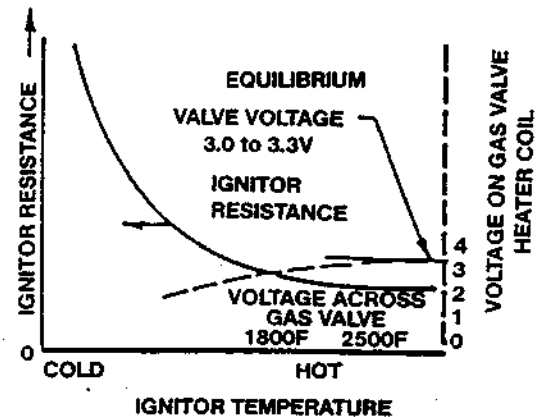
<i>Glow Bar Ignitor</i>	
Electrical	120 VAC, 60 Hz.
Max Temperature	2650°F.
Amps	3.2 to 3.6 at 116 VAC
Resistance	50 to 400 ohms (cold) ambient temp. 75°F.
<i>Oven Valve</i>	
Electrical rating	3.2 amps at 2.94 volts AC 3.6 amps at 3.3 volts AC

#### Valve & Ignitor

Electrical steady state current through series connected ignitor and valve circuit is between 3.2 and 3.6 amps at 120 VAC.

#### OPERATION:

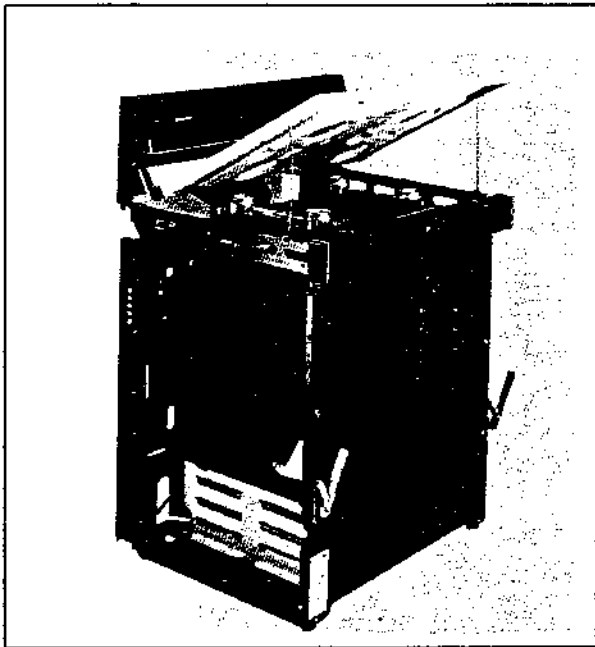
1. When thermostat is turned on, cycling contacts are made and the series ignitor-valve is energized.
2. As current begins to flow, the ignitor starts to heat and its resistance decreases.



3. As the ignitor resistance decreases, the current flow through the low resistance heater coil of the special gas valve increases. (This is represented in the diagram by a gas valve voltage drop curve.)
4. The gas valve opens and ignition occurs when three (3) volts are developed across the gas valve heater coil. The gas valve does not open until after the ignitor has reached gas ignition temperature.
5. As the ignitor approaches its maximum temperature of 2650°F. its resistance now starts to increase. The limiting or equilibrium current flow is approximately 3.5 amps.
6. When oven reaches temperature the thermostat cycling contacts open, the electrical circuit is broken. The gas valve shuts off the gas flow and the ignitor cools.
7. To maintain oven temperature, the previous operating cycle repeats.

**Note:** The electric thermostat used for glow bar ignition cannot be calibrated in the field.

## COMPONENTS

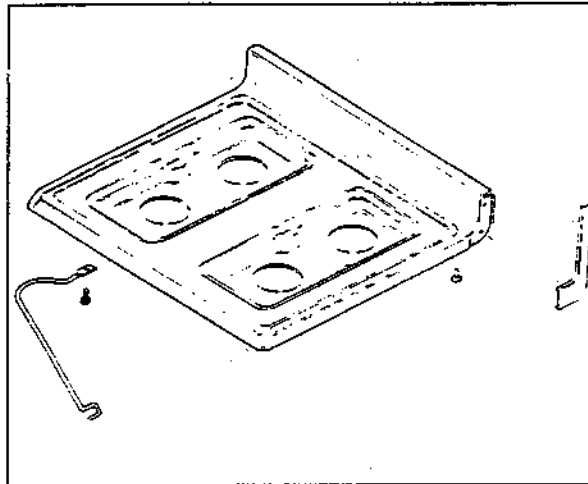


**Note:** Certification plate is located on the left front frame. Self clean ranges may have rating plate split between left and right front frames.

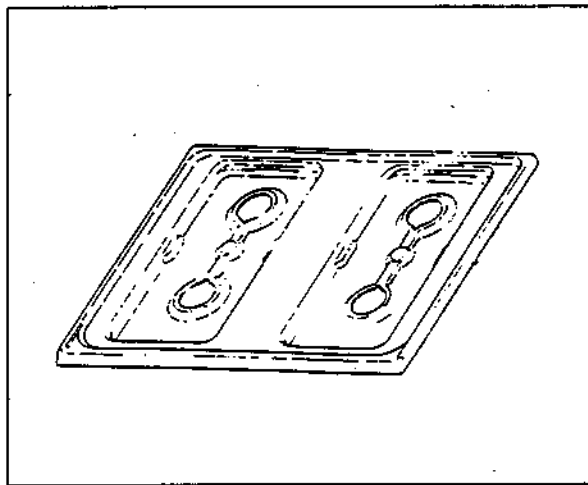
- Certification plates are located on the front frame behind the broiler door or storage drawer.
- Schematics will be located within a plastic bag attached to the backside of the storage drawer. For those ranges (gas) that do not have a storage drawer, but have electrical components in the backguard, the schematic will be in the backguard. Gas ranges with 4" backguards, or any size backguard without electrical components will have the schematic inside the manifold panel in the thermostat area.

## Tops

Tops are either upswept or flat.

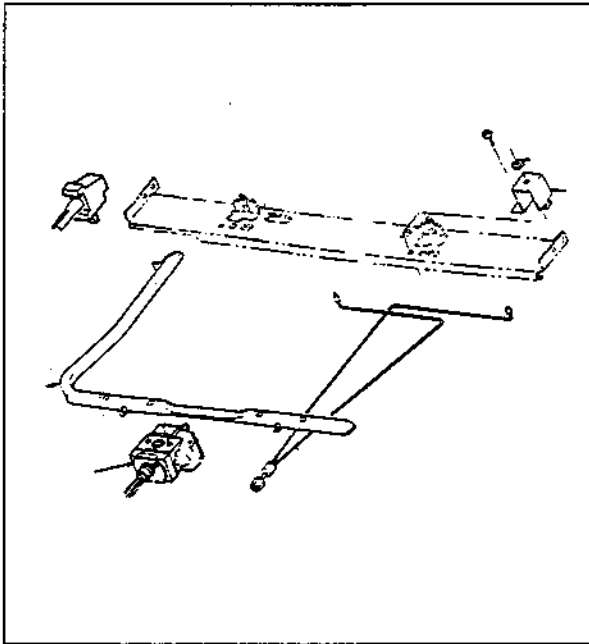


Upswept tops with prop and end trim.

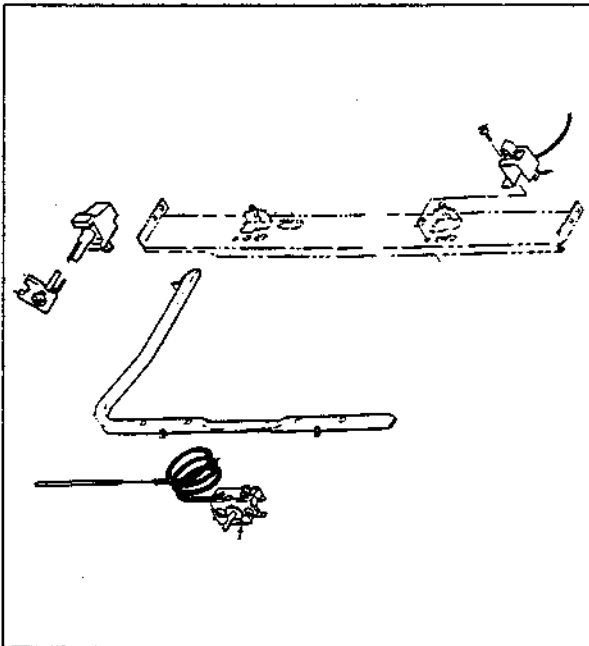


Flat Top

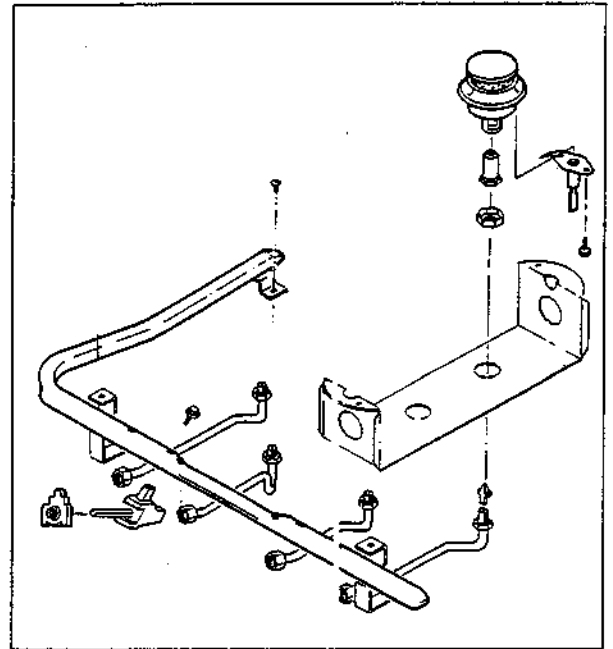
## Manifolds



Pilot ignition manifold with thermostat, top valve, pilot tubing.

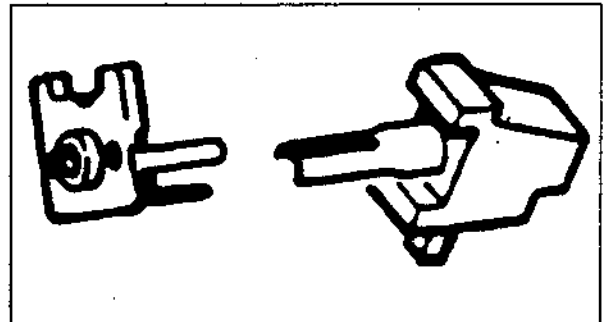


Electric ignition manifold with thermostat, top valve, top valve switch, and surface ignitor



Sealed burner manifold with top valve, top valve switch, sealed burner and ignitor, and burner tubing.

## Top Valves and Switches

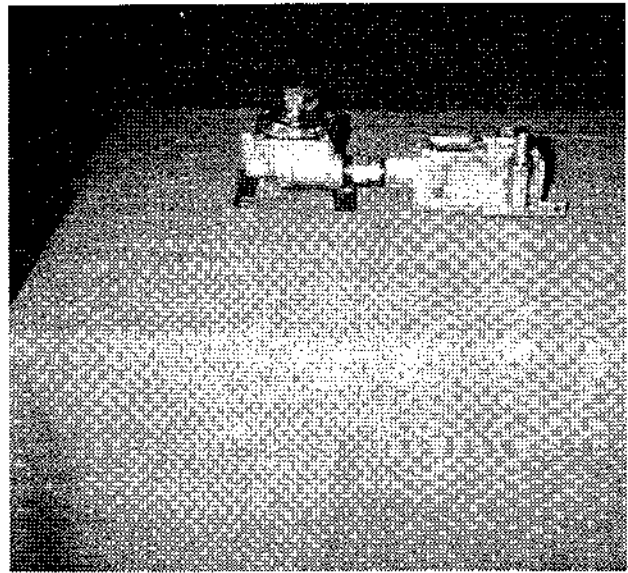
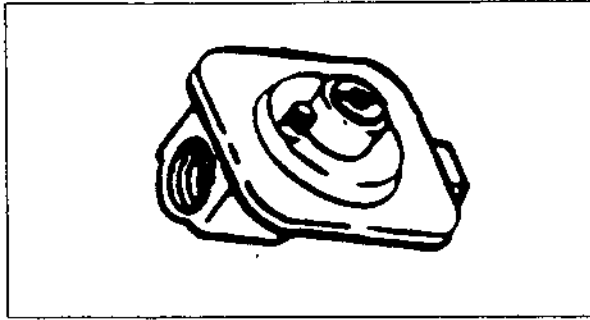


Top burner valve and switches are of two types:

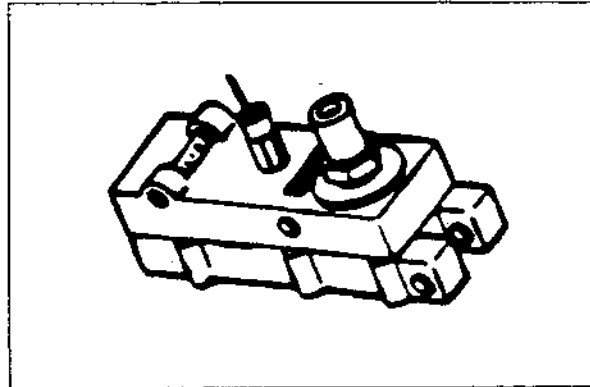
- 90° Turn
- 270° Turn

The 270° turn valve may be adjusted for flame height.

## Regulators and Safety Valves

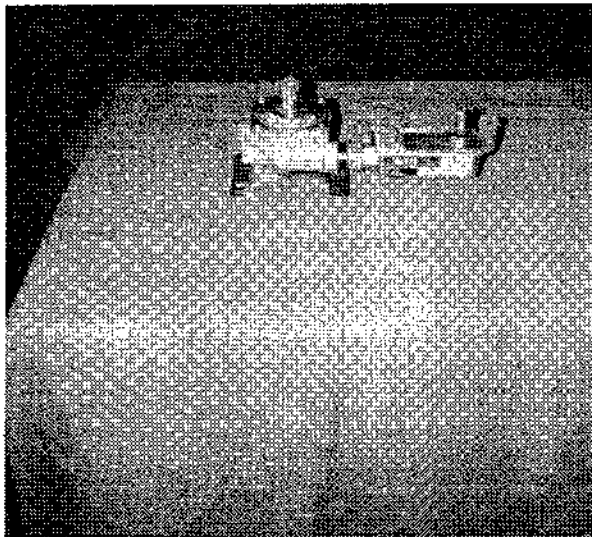


Self Cleaning range regulator  
and dual safety valve



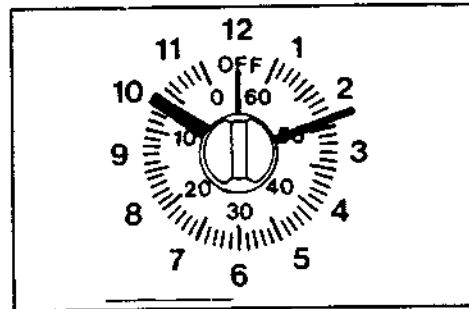
Regulator and safety valve  
for pilot ignition ranges.

**Note:** This type regulator may also be  
used on some electric ignition ranges.

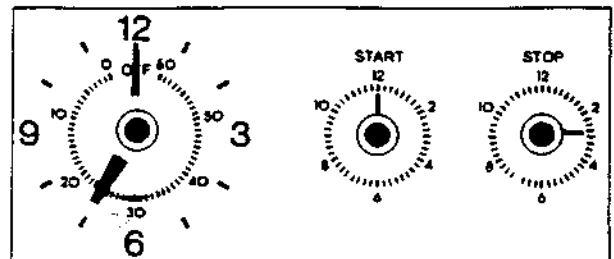


Electric ignition regulator and safety valve

## Clocks



Analog Clock & Timer



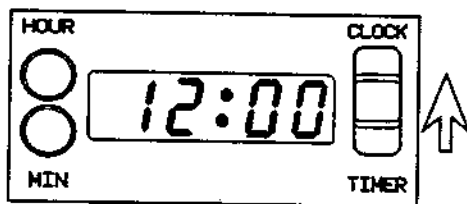
Self Cleaning

## Clocks (Electronic TOD)

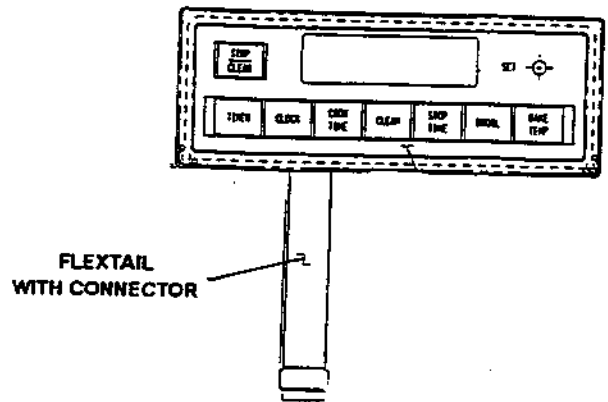
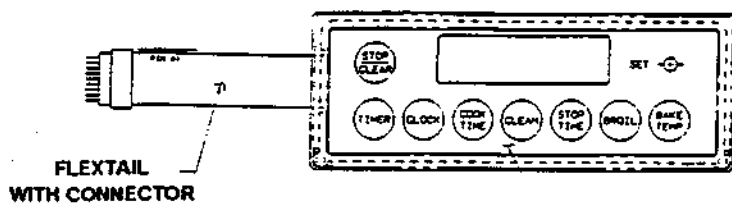
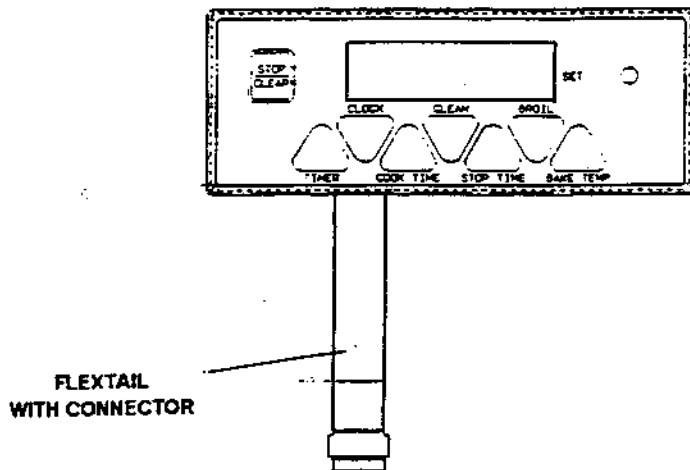
—DESIGN 1—



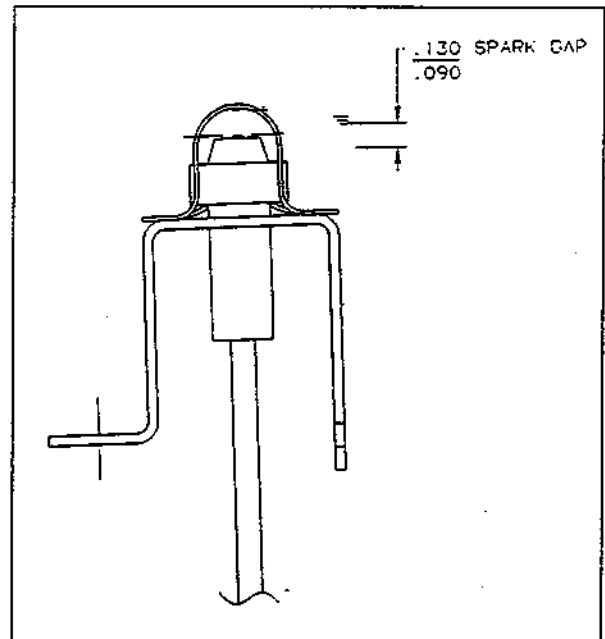
—DESIGN 2—



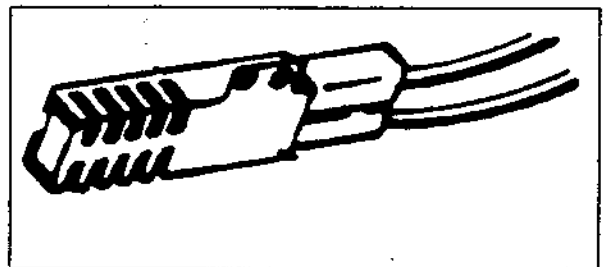
## Types of "T" Clock Membrane Switches



## Ignitors



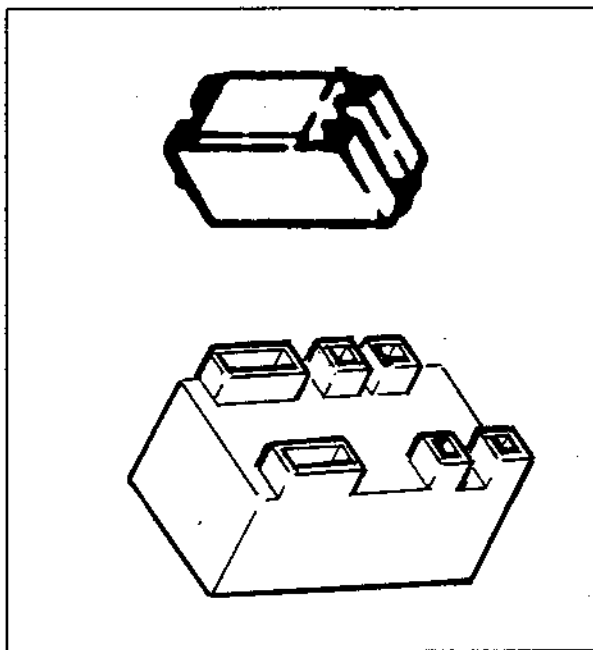
Surface Ignitor



Oven Glow Bar Ignitor



## Spark Modules

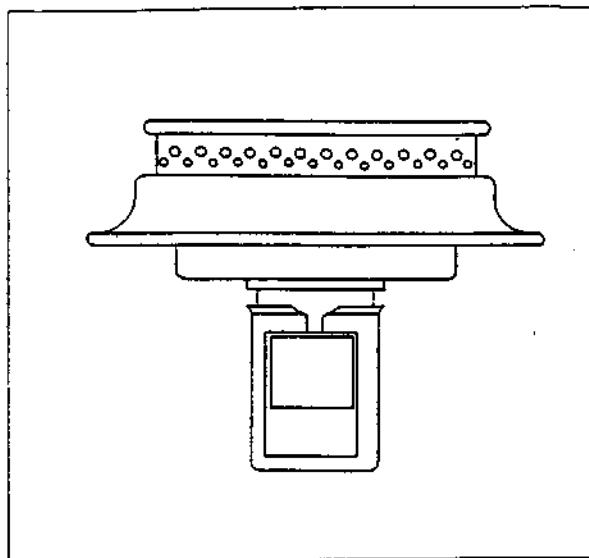
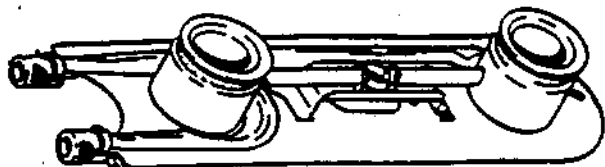


2 or 4 output terminals

### Module Locations:

- Lift off tops (3100/3400 Series) - Rt. Rear of Burner Box
- Sealed Burner (3100 Series) - Rt. Rear of Burner Box
- Sealed Burner (3400 Series) - Rear of Storage Drawer

## Surface Burners



Sealed Top Burner, Type C

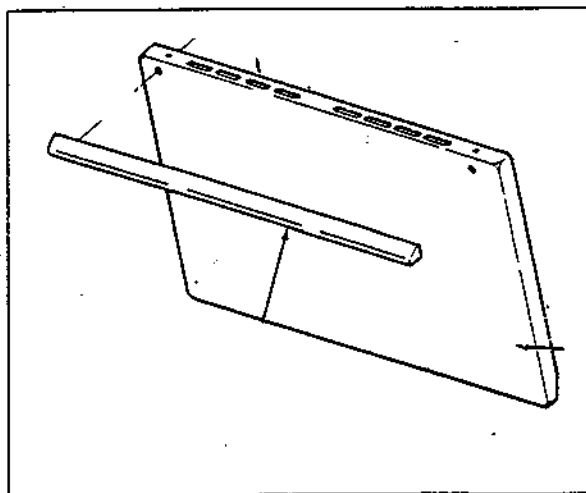
## Types of Doors

### Self Clean

- Glass door with window
- Glass door without window
- Panel door without window

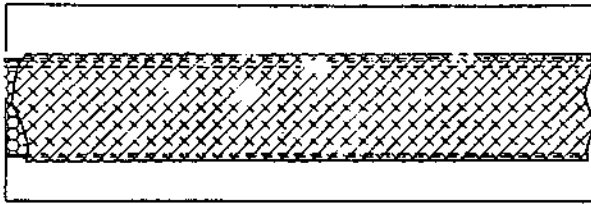
### Conventional

- Panel door without window
- Panel door with window
- Glass door without window
- Glass door with window

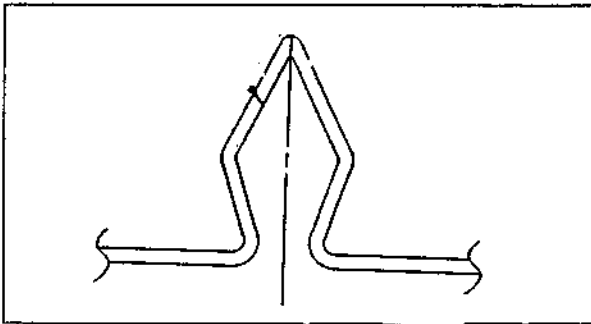


Panel Door

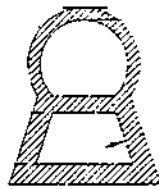
## Door Seals



Fiberglass Braid-Self Clean Door Seal



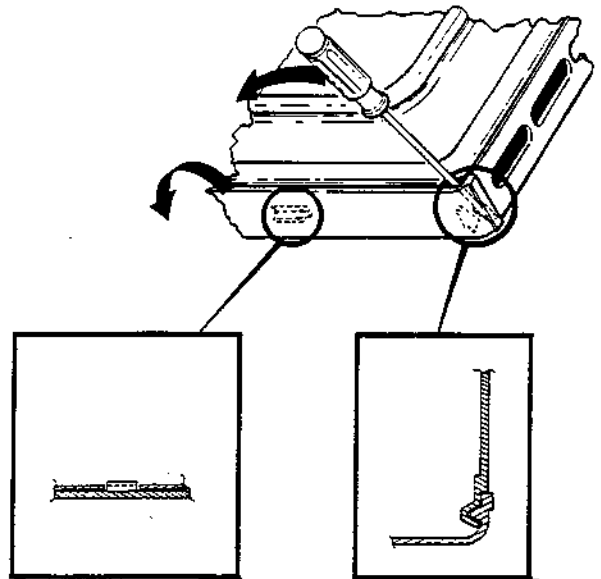
Magnified dart clip that holds seal to door liner



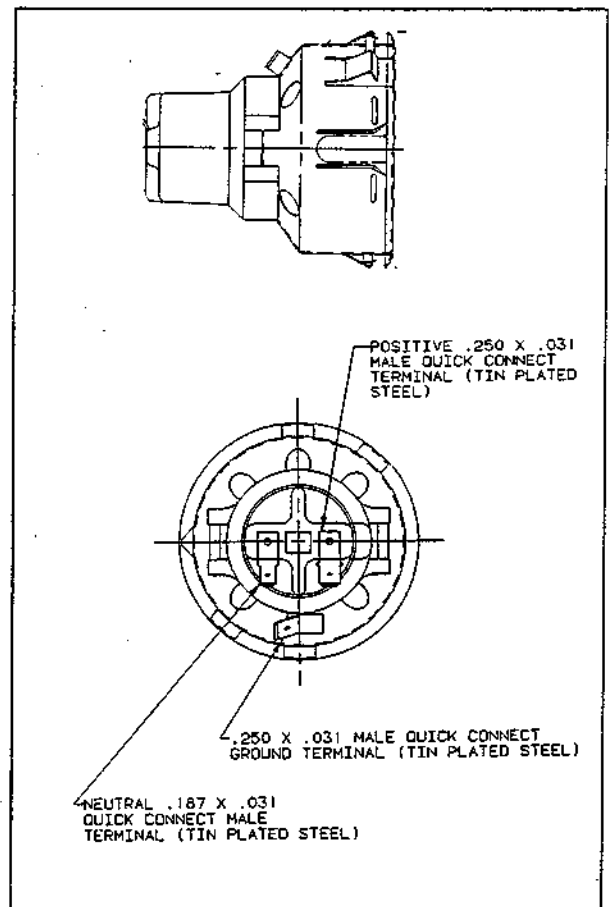
Magnified cross section of elastic seal for conventional range

## Door Frames

Some door frames are constructed of molded plastic held together by tabs, slots and groves. The frame may be easily taken apart by removing the door, laying it down (liner up) and placing a small flat blade screwdriver at one of the lower corners and applying pressure as illustrated in the following diagram.

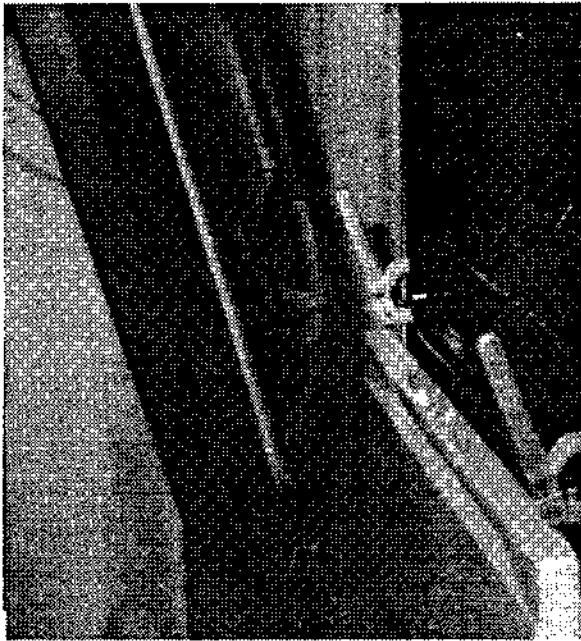


## Light Socket and Terminals

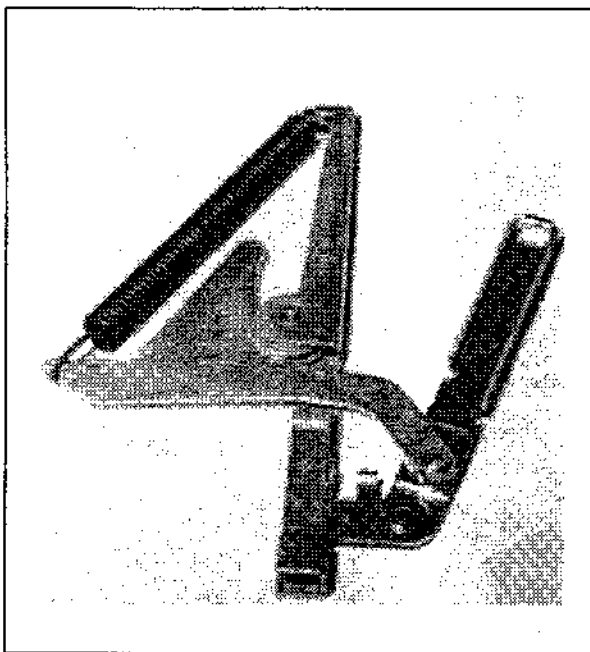


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## Hinges

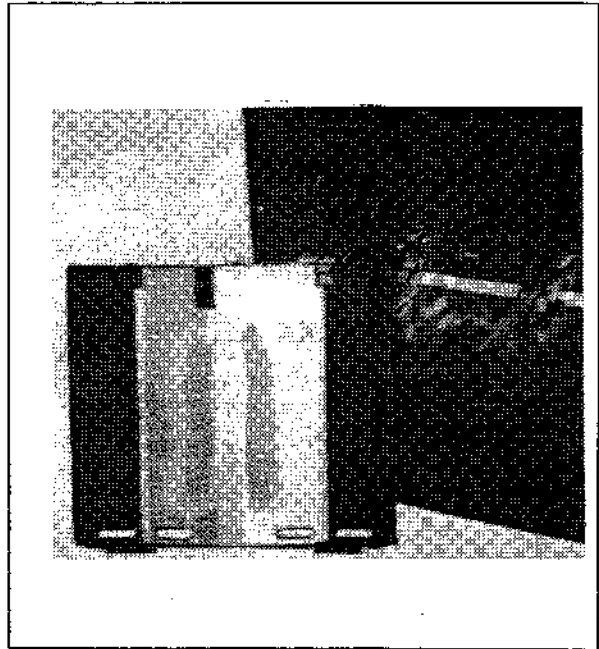


Door Hinge: A self contained design. Note the hole at top of hinge. Should it ever be necessary to adjust the height of the door upward, use a #6A X .625 inch sheet metal screw. *Used on Non-Self Clean models only.*



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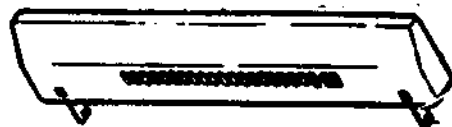
## Oven Bottom



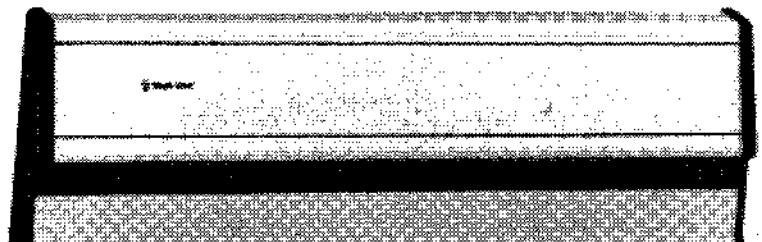
Removable oven bottom with attached flame spreader.

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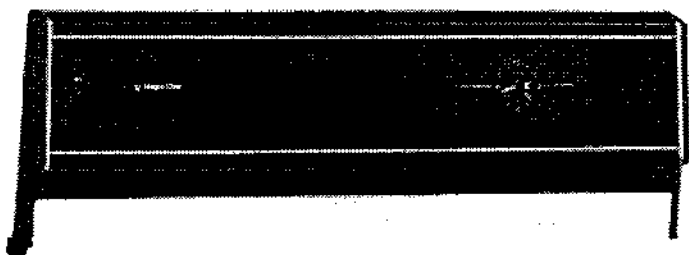
## Backguards and Clocks



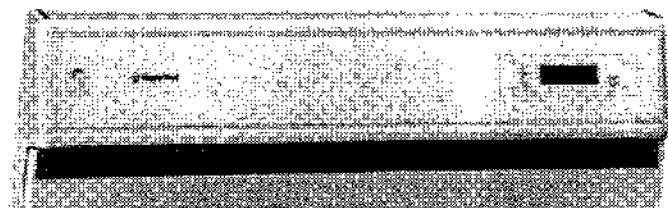
4" Backguard



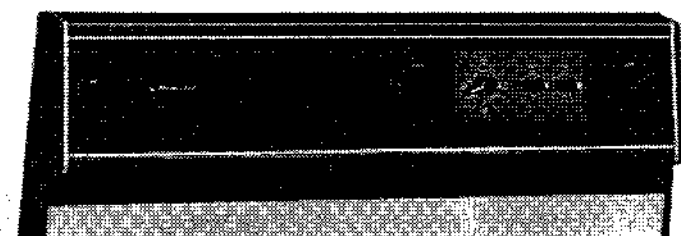
Plain Panel Backguard



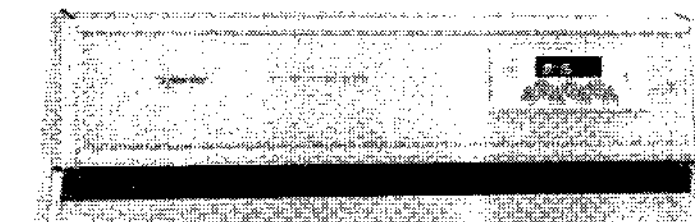
**Conventional Clock**



**Electronic TOD Clock**



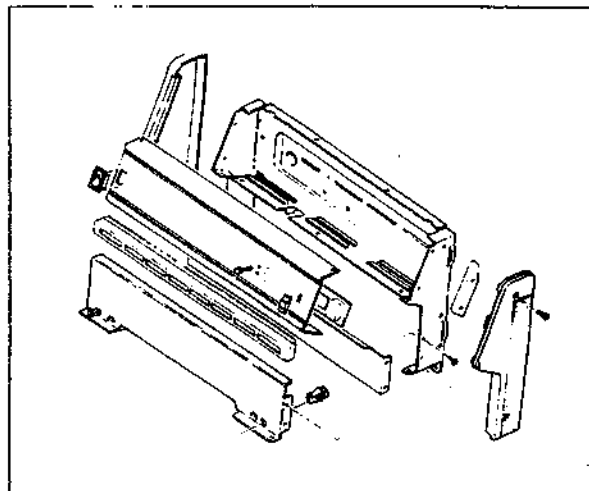
**Conventional 3 Stem Clock  
for Self Clean Range**



**Electronic Control ("T" Clock)**

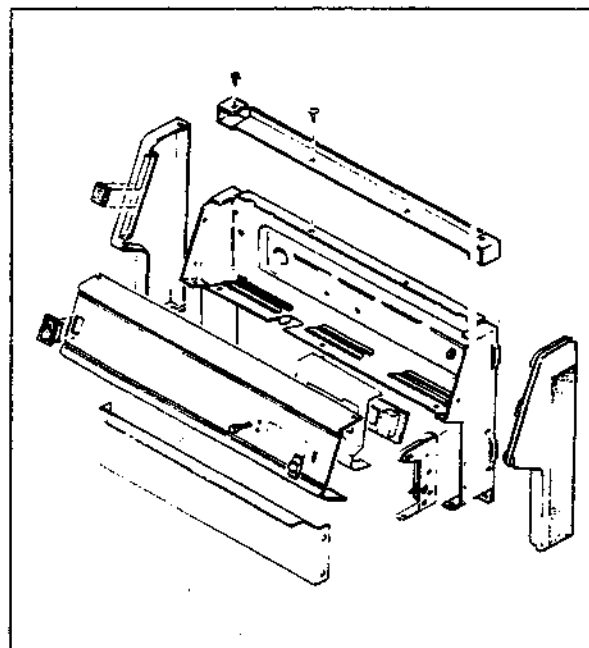
### **Access To Components In The Backguard**

Access to components in backguards is either by removing 2 or 3 screws in each end cap, lifting top of backguard from rear lip and pulling forward.



Or remove one screw from each end of backguard top and bottom, pull rear of top of the backguard over lip and tilt forward. Backguards having light bulbs require lifting the light cover prior removing the two screws at each end of the top panel.

**Note:** Always place a protective cover between main top and face of backguard.





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## **SECTION 2. TYPES OF GAS COOKING PRODUCTS**

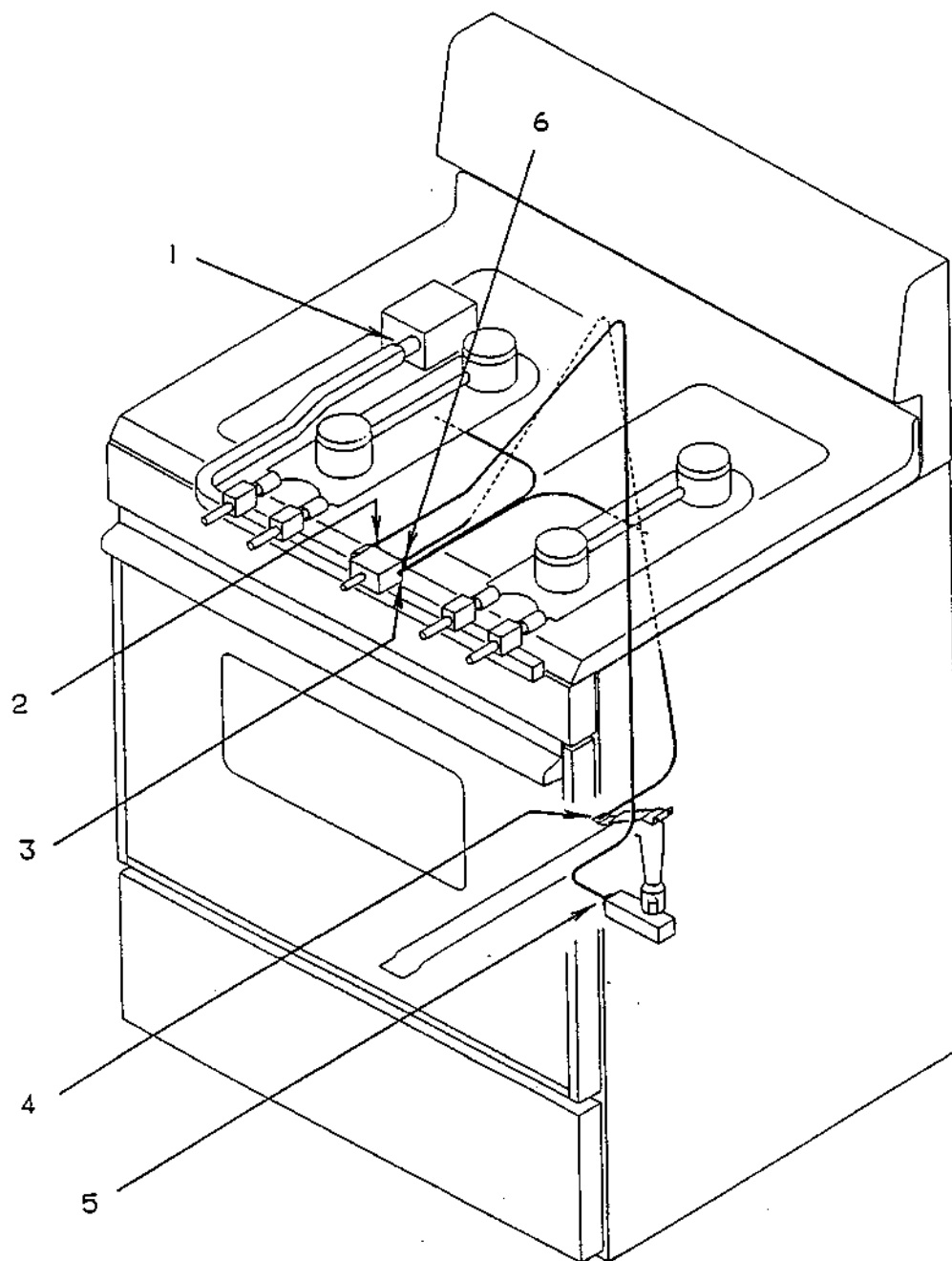
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### **1. 30" FREESTANDING**

## Types of Ignition Systems

3110

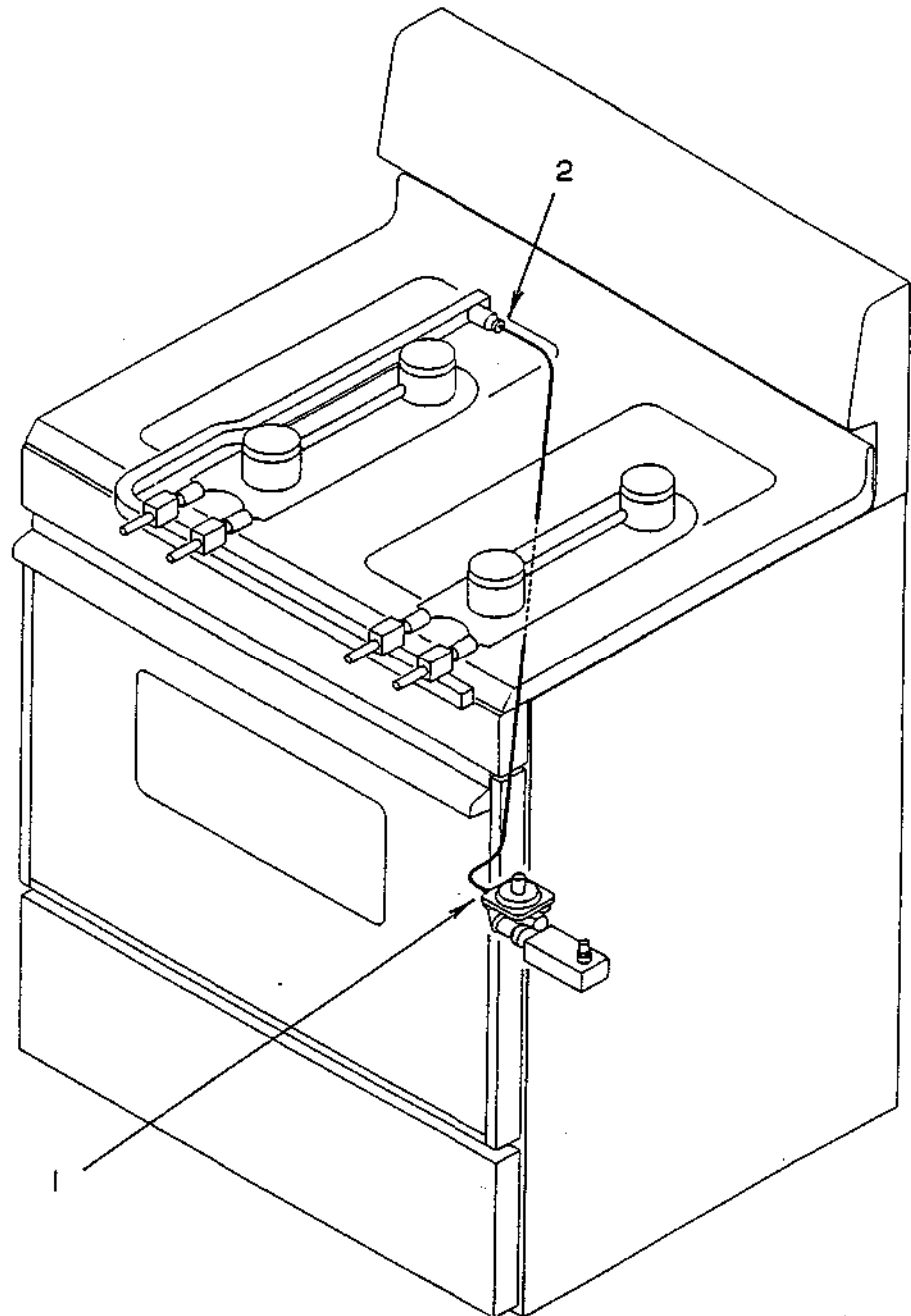
1. REGULATOR TO MANIFOLD PIPE.
2. MAIN FEED TUBING TO THERMOSTAT.
3. UNIBURNER PILOT TUBING TO THERMOSTAT.
4. OVEN PILOT TUBING TO PILOT.
5. MAIN FEED TUBING TO OVEN VALVE.
6. OVEN PILOT TUBING TO THERMOSTAT.



**PILOT IGNITION TUBING**

1. MANIFOLD TUBING TO REGULATOR.
2. MANIFOLD TUBING TO MANIFOLD PIPE.

3121

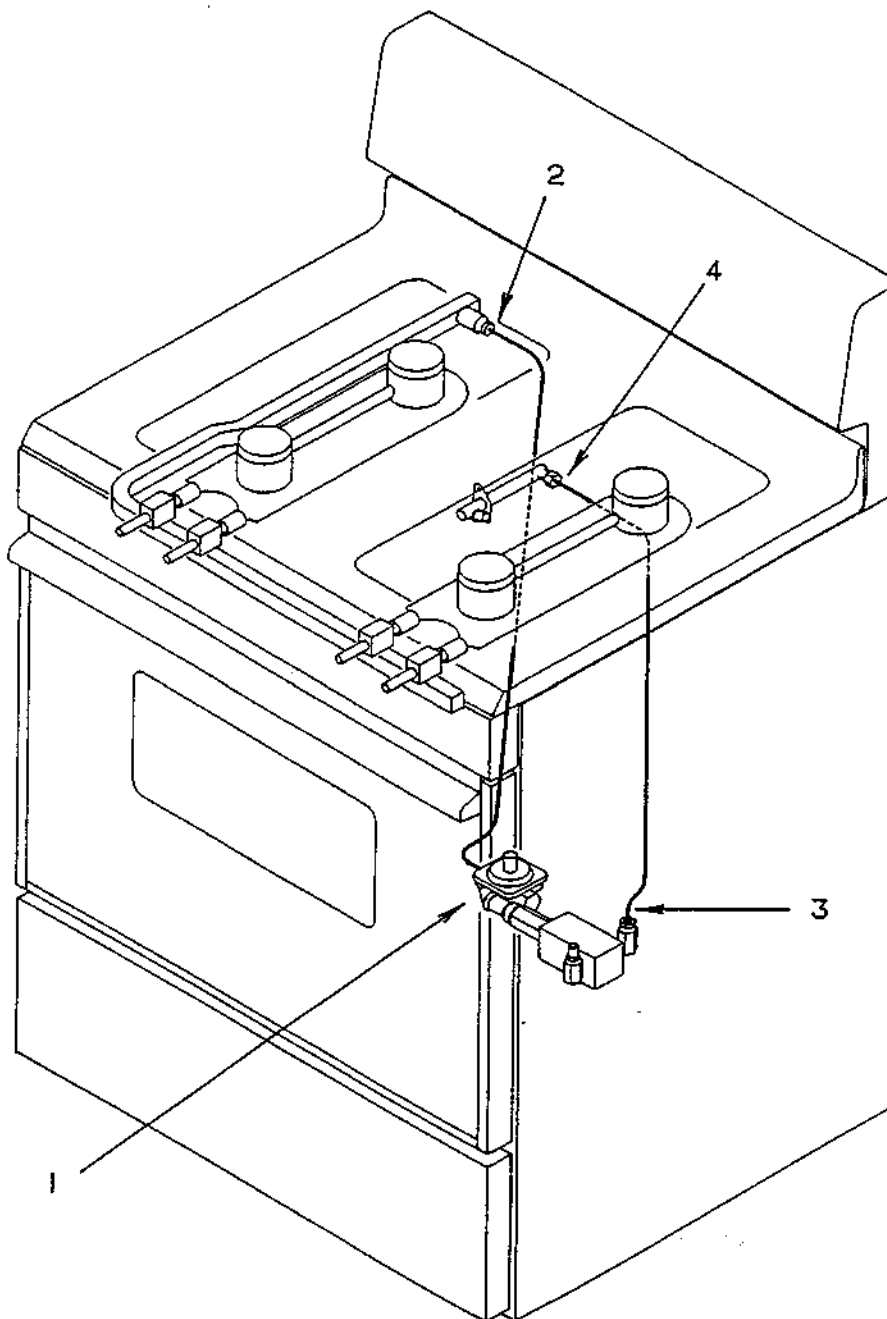


**GLOW BAR IGNITION TUBING**



1. MANIFOLD TUBING TO REGULATOR.
2. MANIFOLD TUBING TO MANIFOLD PIPE.
3. BROIL TUBING TO OVEN VALVE.
4. BROIL TUBING TO BROIL ORIFICE FITTING.

3442

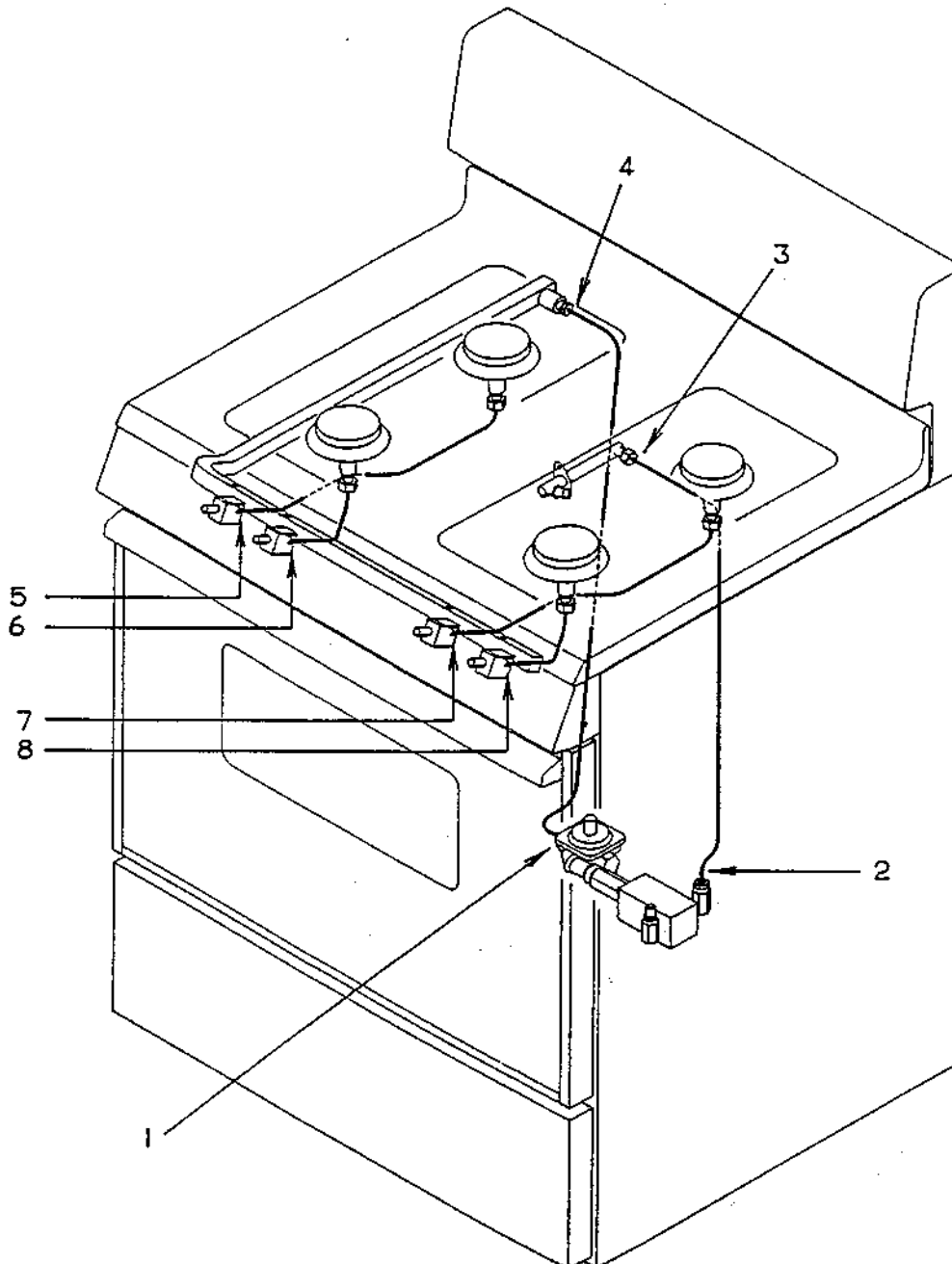


**GLOW BAR IGNITION (SELF CLEAN) TUBING WITH UNIBURNERS**

1. MANIFOLD TUBING TO REGULATOR.
2. BROIL TUBING TO OVEN VALVE.
3. BROIL TUBING TO BROIL ORIFICE FITTING.
4. MANIFOLD TUBING TO MANIFOLD PIPE.
5. LEFT REAR BURNER TUBING TO VALVE.
6. LEFT FRONT BURNER TUBING TO VALVE.
7. RIGHT REAR BURNER TUBING TO VALVE.
8. RIGHT FRONT BURNER TUBING TO VALVE.

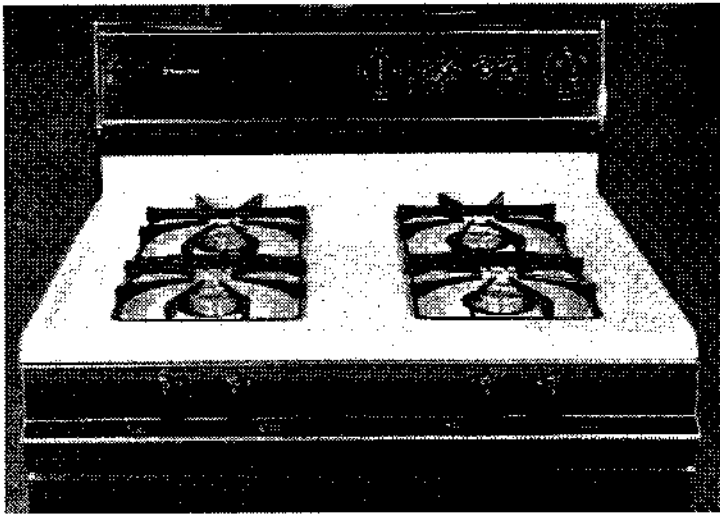
3448

3488



**GLOW BAR IGNITION (SELF CLEAN) TUBING WITH SEALED BURNERS**

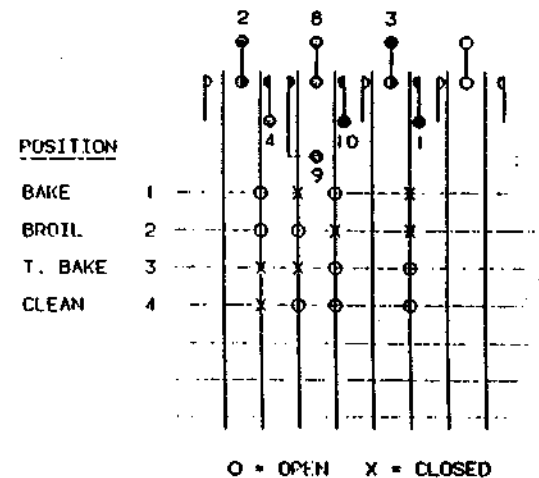
## 30" SELF CLEAN WITH UNIBURNERS & CONVENTIONAL CLOCK



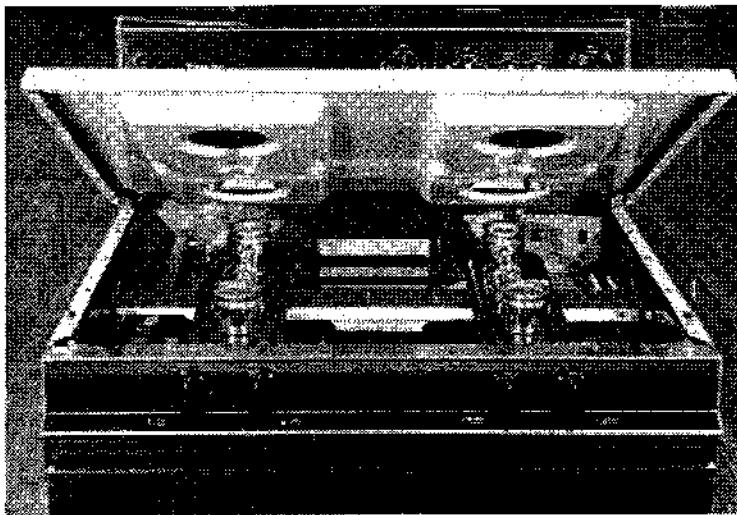
**Note:** The thermostat on this type range cannot be calibrated. Also note NaK caution at front of this manual.

### Selector Switch

Self Clean ranges with conventional clocks and thermostats have a selector switch. It's contact positions are as follows:



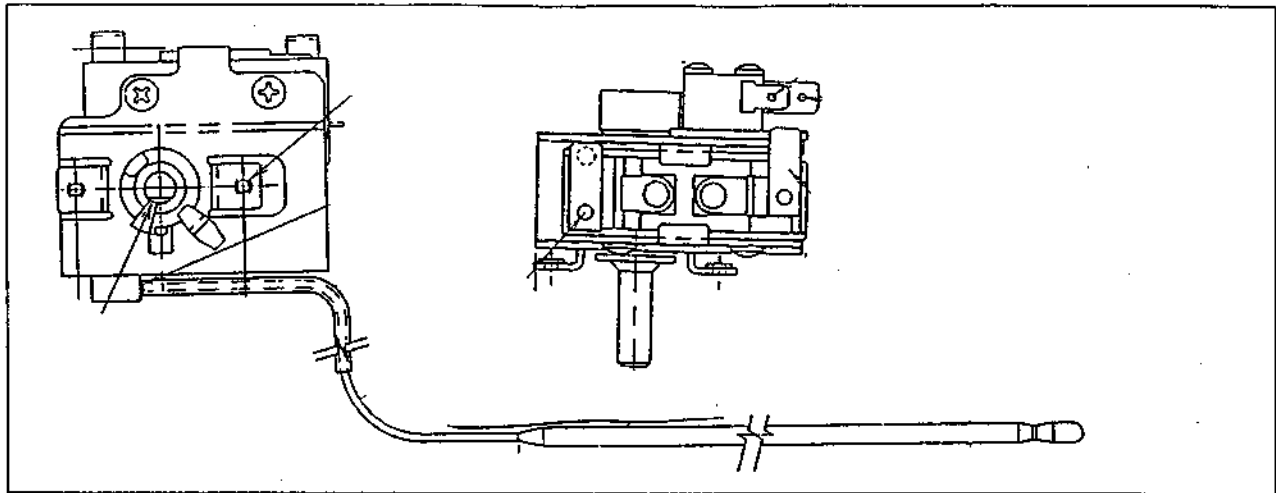
Self Cleaning range with conventional clock and uniburners



Main top raised and held up with props  
(Spark Module in right rear of burner box).  
Module is also located here on non self clean  
ranges with sealed burners.

### SELECTOR SWITCH

RATING: 8 AMP. 120-240 VAC



Thermostat for self clean range with conventional clock.

**Note:** This control cannot be calibrated in the field. Also note NaK caution at front of this manual.

### Self Clean Thermostat

Electrical Rating	120 VAC / 60Hz., 5Amp
Bake	200-500°F.
Broil	550°F.
Clean	875°F.

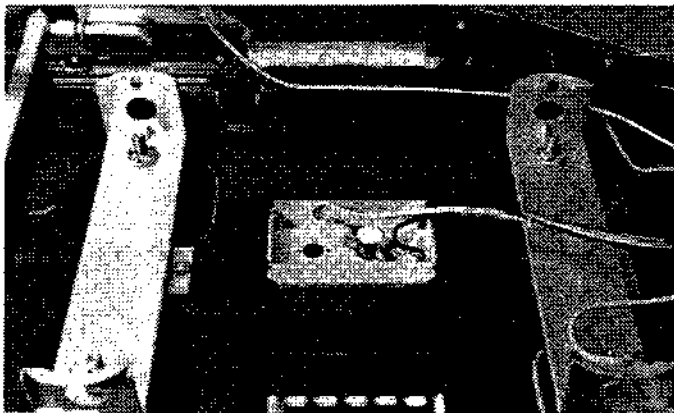
#### *No field calibration*

#### Door Lock Assembly

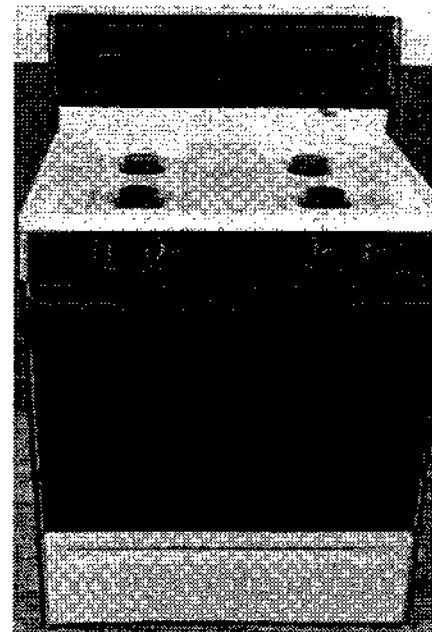
Oven Temp Lock	370°
Oven Temp Un-Lock	470°

Shown are the four (4) sealed burner orifice hoods and the thermal disc (center). It opens at 250°F.  $\pm$  7°F., and closes at 160°F.  $\pm$  9°F.

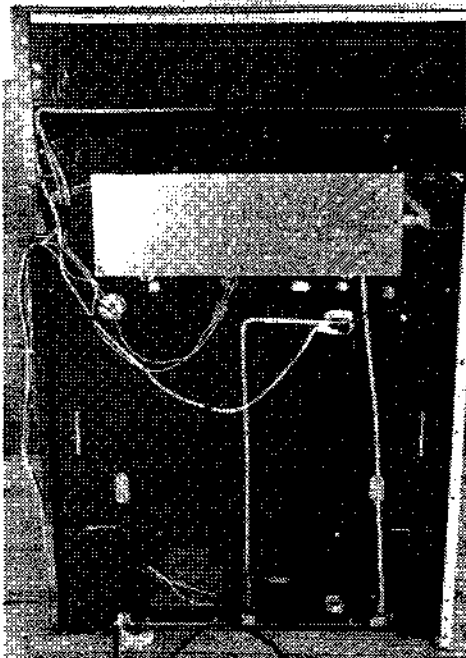
### 30" SELF CLEAN WITH "T" CLOCKS & SEALED BURNERS



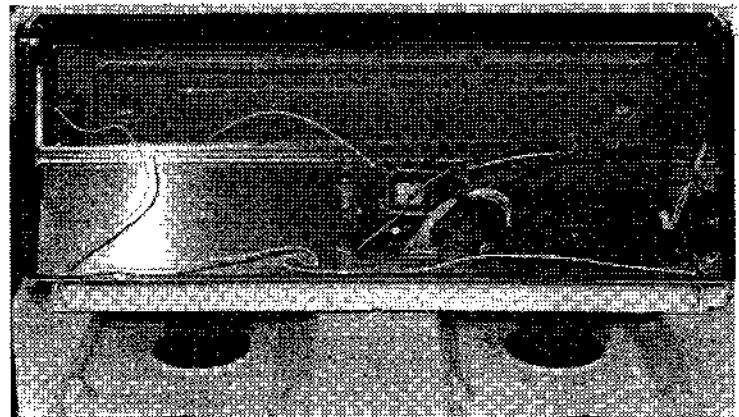
Burner box of Self Cleaning range with conventional clock and sealed burners Type "C".



Self Clean With "T" Clock & Sealed Burners



Rear of self clean range (wire cover removed) showing manifold and broil burner tubing. Broil ignitor wiring, light socket, sensor connection and regulator connection.



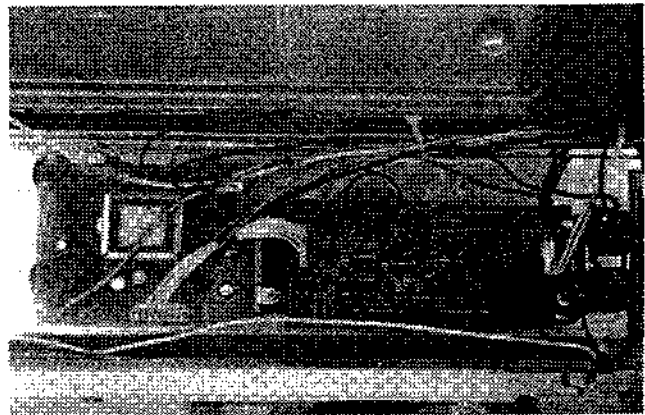
Control panel pulled forward showing clock and relay board. Ballast is at left end.

### "T" Clock Control Panel

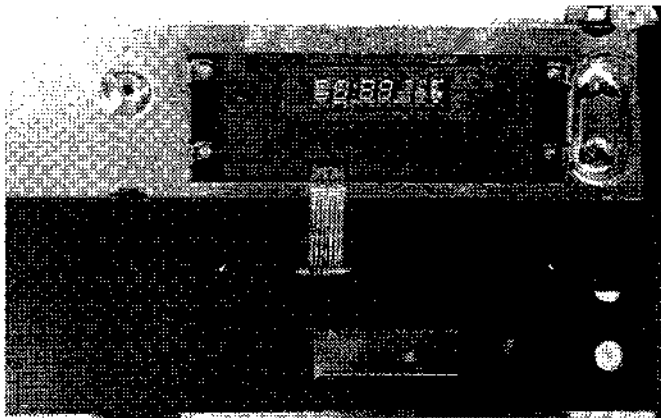


"T" Clock control panel

Access by lifting light cover, removing screw at each end of backguard top panel and one screw underneath each end of the backguard. Then lift top panel over lip and pull forward. Lay control panel on protective covering.

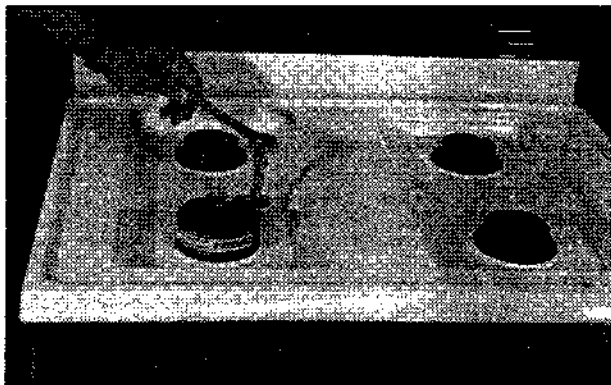


Enlargement of Type "C" clock and relay board. Circled is the membrane connector.

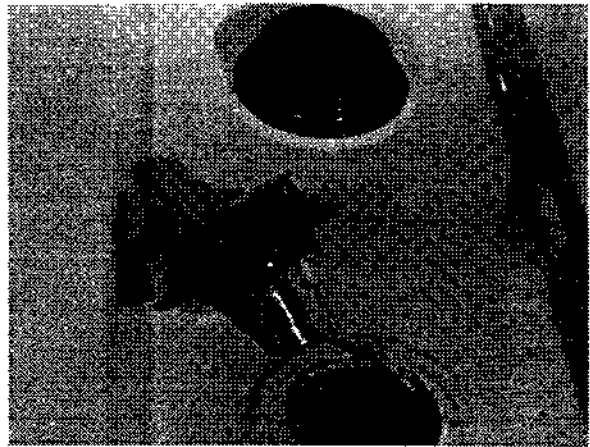


Glass panel (only) removed showing membrane flextail to Type "C" clock.

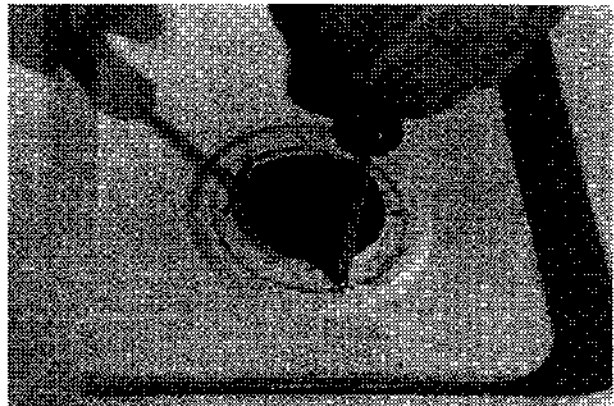
### Sealed Burner Top Removal



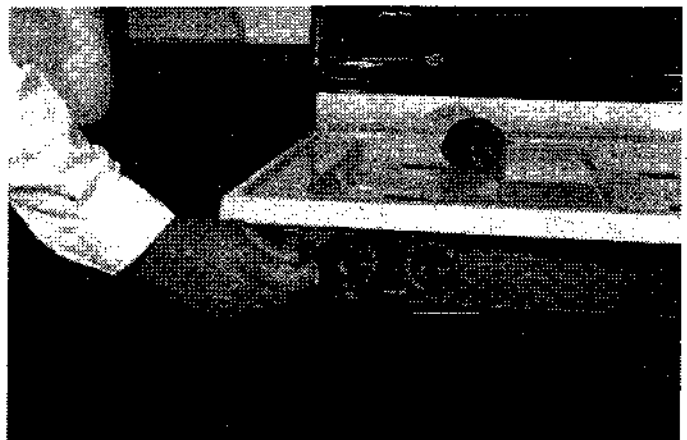
Use burner wrench part # 8312D075-60 to remove torque on sealed burner. Be sure gap in wrench is positioned so as not to crush the ignitor.



With torque removed, lift off burner.

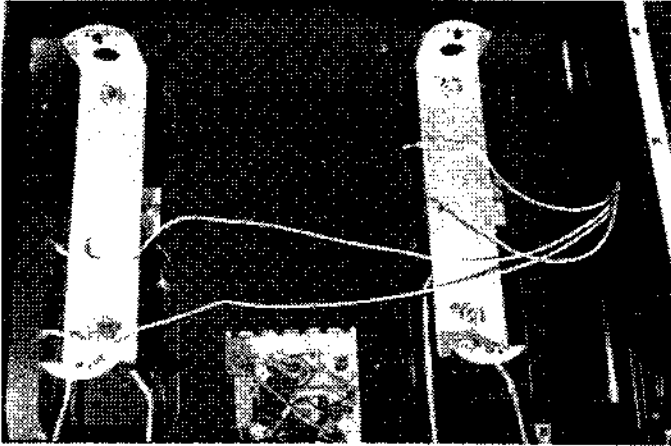


Remove the screw from each burner opening.



After all four burners have been removed and screws removed from

each burner opening, use a putty knife to depress the two spring clips on the manifold panel. The clips are about 4" inboard from each end (front) of the main top.



Main top removed showing burner supports, orifice hoods, ignitor wires, and door lock assembly.

### Door Lock Assembly

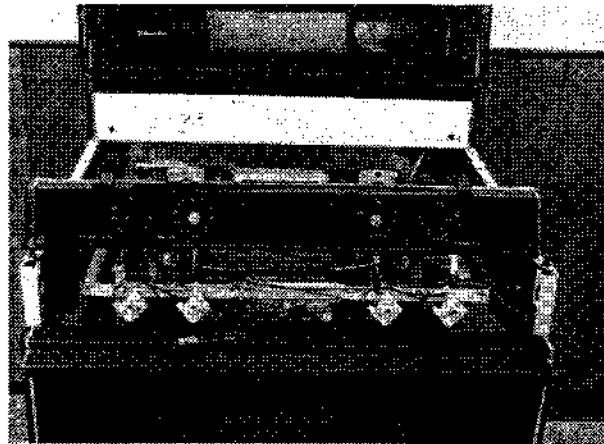


Oven Temp Locks.....370°F.  
Oven Temp Unlocks.....470°F.

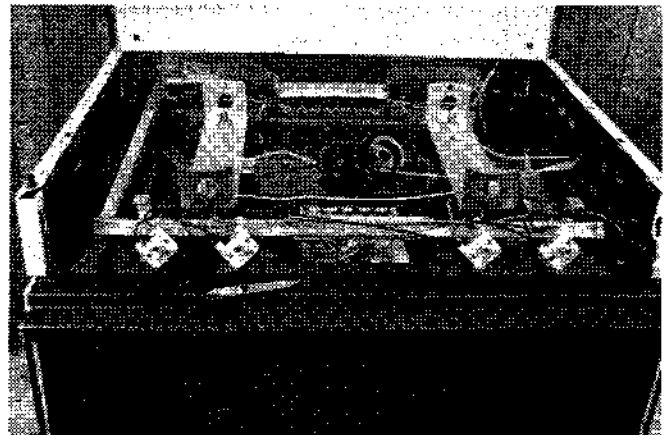
### Burner Valve Switches

Access to burner valve switches and valves, (slant manifold panel and recessed knobs).

1. Pull off knobs.
2. Remove manifold panel (after top is removed).
3. Remove knob skirts by squeezing two prongs on inside of skirt.



Top and manifold panel removed. Manifold panel on top of side panels.



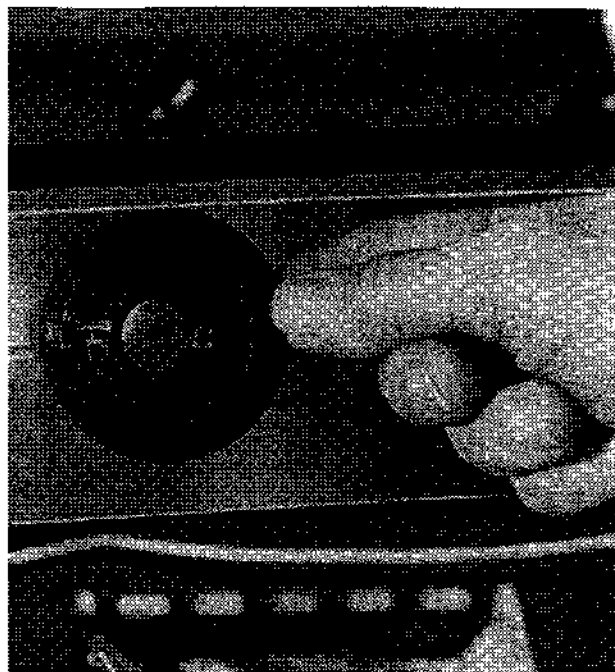
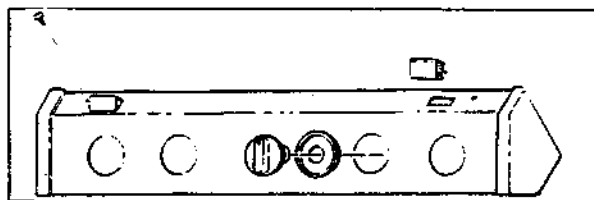
Manifold panel removed.

Visible is the manifold pipe, top burner valve switches, door lock assembly and

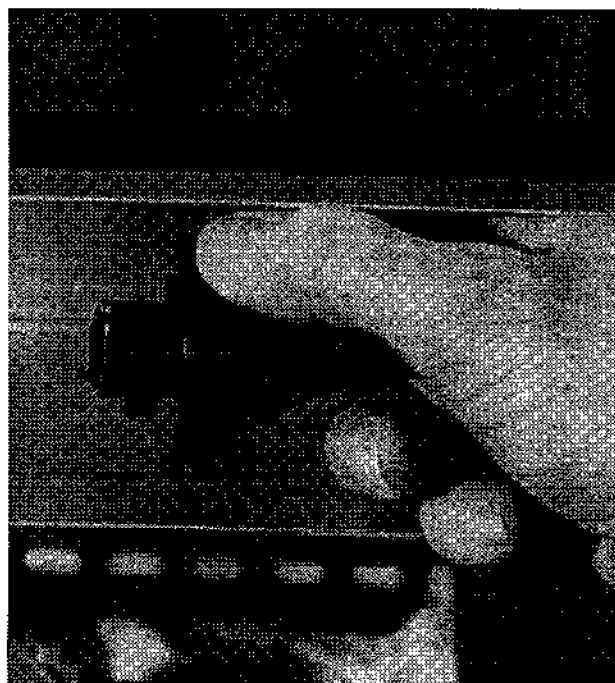
handle, and the burner supports. Note position of switches and wiring.

To replace manifold panel, skirts and knobs:

1. Replace manifold panel.
2. Guide skirts into offset openings in panel to match with 2 holes/slots on the switch, snap in.
3. Replace knob.

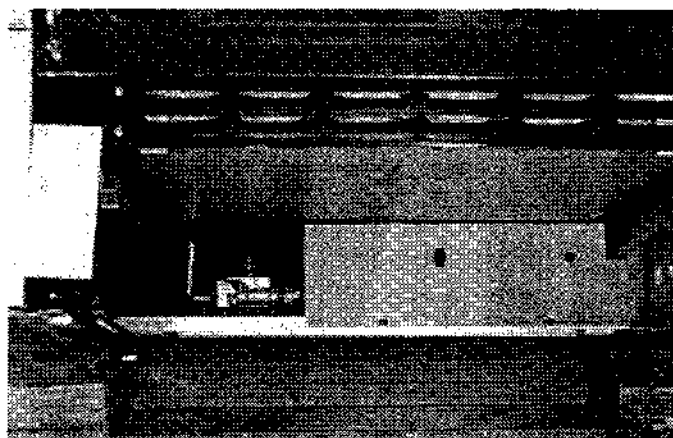


Bottom view of skirt



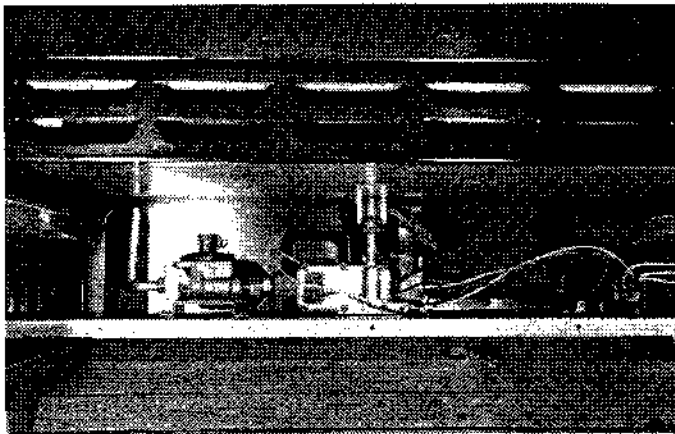
Side view of knob skirt showing prongs.

### Pressure Regulator and Safety Valve



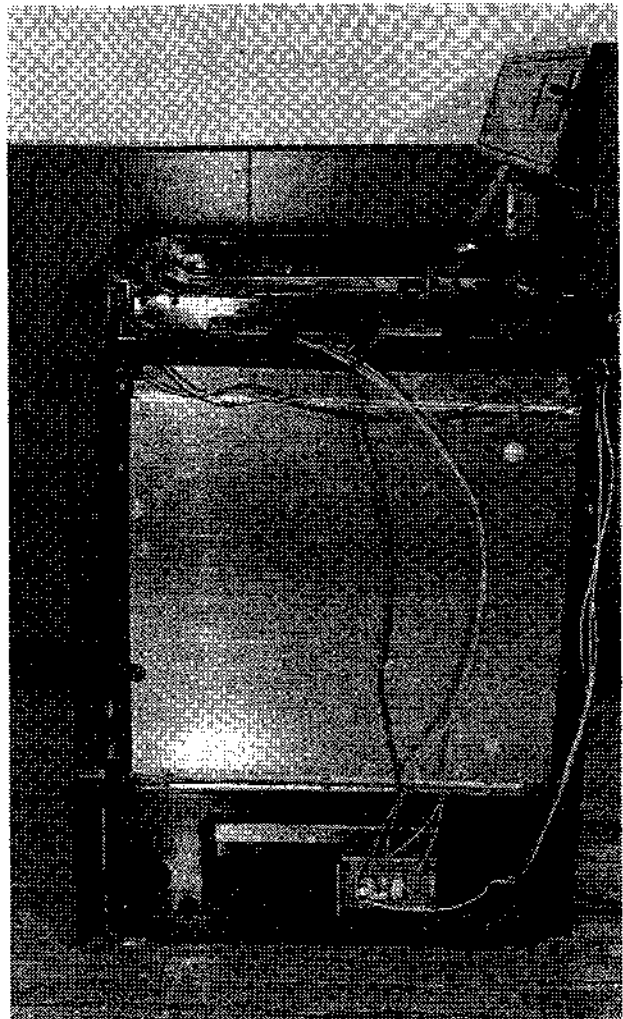
View of rear of storage compartment showing pressure regulator. Cover at right is for spark module.



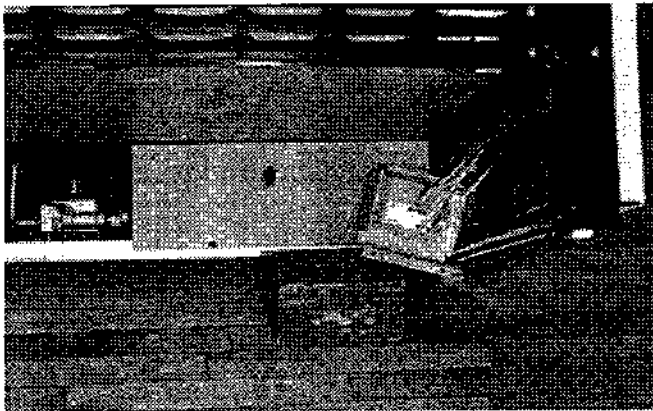


Rear of storage area with wire cover removed. Shown are: regulator/safety valve assembly, bake burner air shutter, bake ignitor connection and wire terminal board. To disconnect the valve from the regulator, use a pipe wrench or channel lock and rotate the union upward.

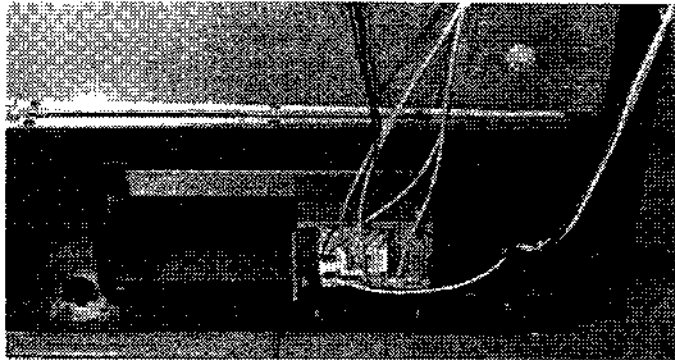
### Spark Module



Side view with end panel removed showing spark module. Note side heat shield. To remove heat shield, start at back by removing one screw.



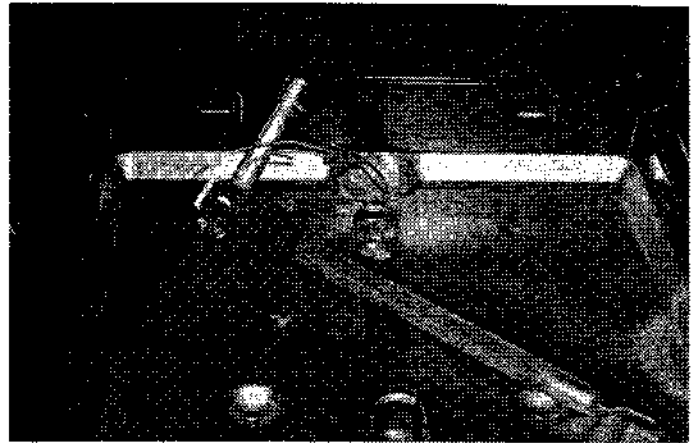
Storage area with module cover removed showing spark module.



Spark module as seen from side.

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### **Bake Burner & Glow Bar Ignitor.**

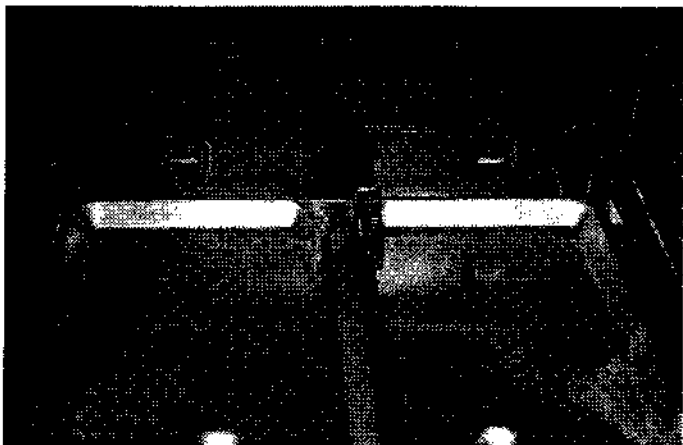


Bake burner and ignitor

Should the bake ignitor require changing, it is easier to remove the burner first and then the ignitor. When reinstalling, be sure to push the ignitor quick disconnect all the way through the insulation.

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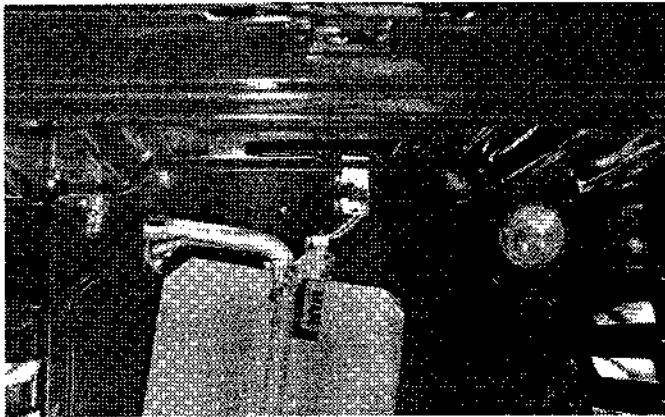
### **Broil Burner**



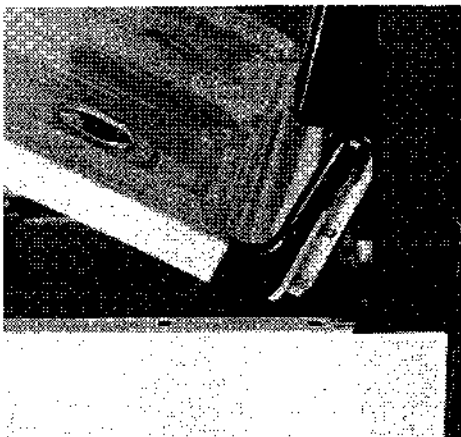
Bake burner and glow bar ignitor.



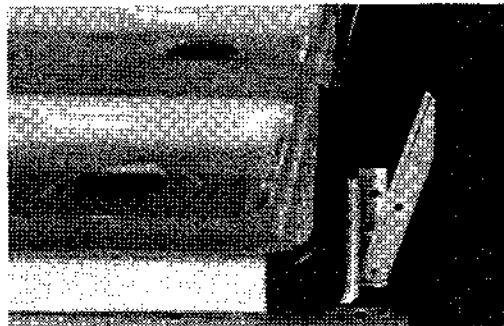
Broil burner, fitting, flame spreader, broil ignitor, and light. Upper left corner shows the oven sensor.



Broil burner, flame spreader, and broil ignitor removed. If ignitor is changed, be sure ignitor connection is pushed completely through the insulation and the hole is plugged with insulation.

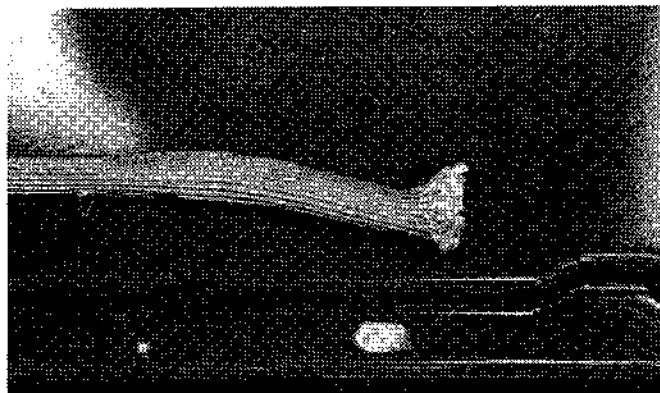


Upswept top hinge arm



To remove upswept top from hinge arm, remove 2 screws from each hinge arm. (Non-sealed tops only).

## Door Seal



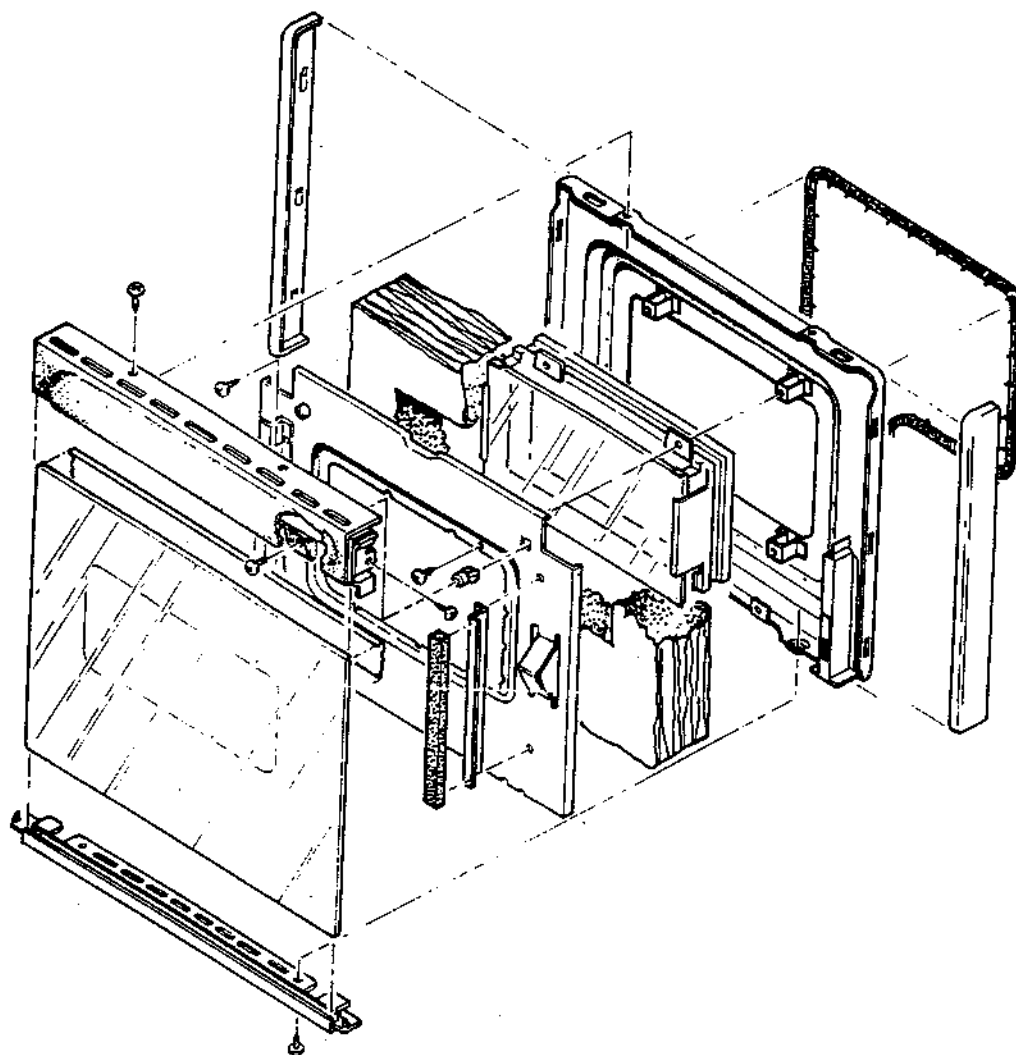
Self clean oven door seal

Note: Dart clip and small hole below it for attachment. The large hole is for the end of the seal. To remove seal, start with the first clip beyond the large hole.

## Plastic Door Frame Removal

Some door frames are made of molded plastic. The top, bottom and sides of the frame are held together by the use of tabs, slots, and groves. Each side

trim has three bent tabs that hook over slots in the door liner. They are located (from the bottom of each side trim) at 4.5 inches, 10.25 inches, and 16 inches.

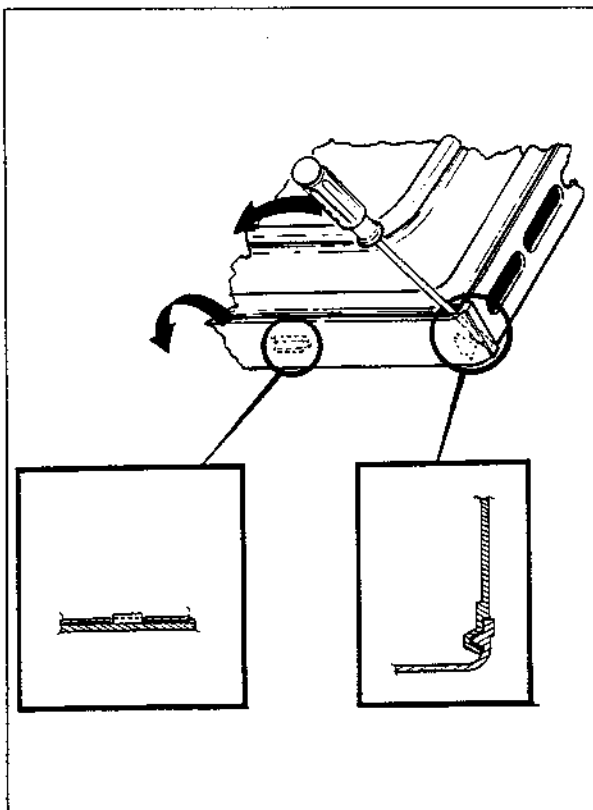


Door assemblies may vary.

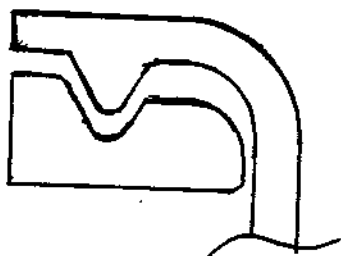
### To Remove Frame:

**Note:** The end cap trim on the Gas Self Clean door handle must be removed prior being able to remove the door frame. To do that, squeeze the two small prongs under each end of the door handle.

1. Lift off door and lay down, door liner up.
2. Place a small screwdriver in one of the lower corners of the door frame.
3. Exert pressure so as to separate the "v" groove from the "v" slot at the corner as in the following illustration:



4. The bottom trim of the frame is secured by 3 screws.



Enlarged view of corner "V" slot and groove.



Corner of plastic door frame.



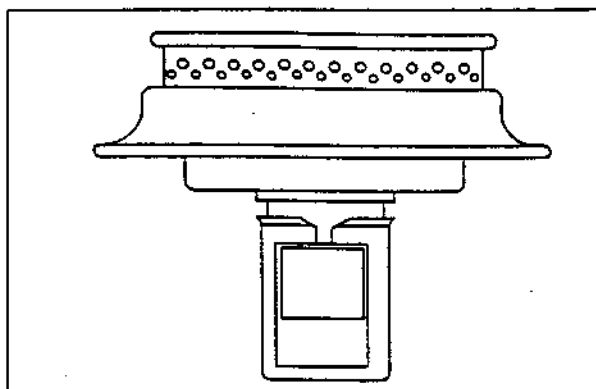
Self Clean door hinge  
(Heat shield pulled back)

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## SECTION 3. SPECIAL FEATURES

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### 1. SEALED TOP BURNERS TYPE "C"



Sealed Top Burner, Type C

The sealed top burner assembly consists of the burner with an adjustable air shutter, and its individual ignitor (electrode). The ignitor may be changed separately. Additionally, each burner will have its own seal. The burner sits directly over the orifice hood, and must be properly positioned for correct operation. The air shutter slides around the venturi tube. A pair of pliers or wrench is required to move

the shutter. They will be set at the factory for about a 1/4 inch opening (for natural gas). It would have to be adjusted to a more open position for use with LP. In any case, the air shutter should be adjusted so as not to have the flame blow off when the burner is cold.

**Note:** Correctly adjusted, sealed burners will blow off without a pot over the burner. These should be adjusted with a pot in place.

#### **CAUTION:**

*Burner will be hot when attempting to adjust air shutter. Use a pot holder or other safe means to prevent burns when handling a hot burner.*

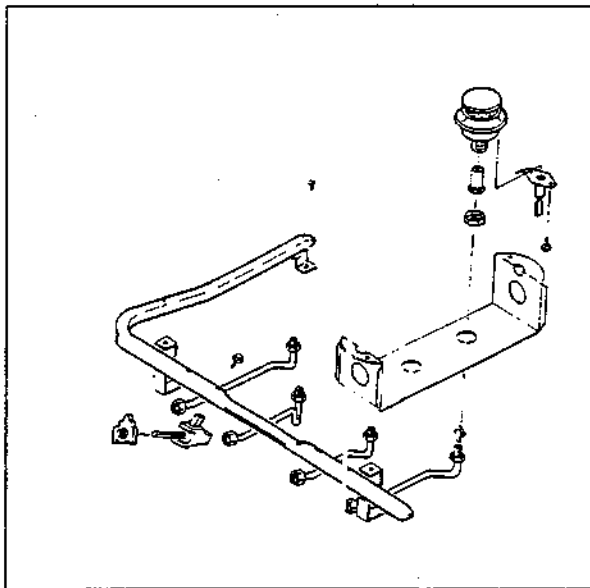
The spark gap of the electrode should be from .078 to .117 inches. Spark should be directed downward. The left rear and right front burner will be 12,000 BTU (natural gas), the other two burners will be 9,200 BTU. Some models will have four 9,200 BTU burners (natural gas).

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### **Associated Components** *Manifold and Valves*

A square manifold is used with valves. The valves attach to the manifold with a single bolt. They require no sealant other than the provided gasket. Some models have valves that are adjustable

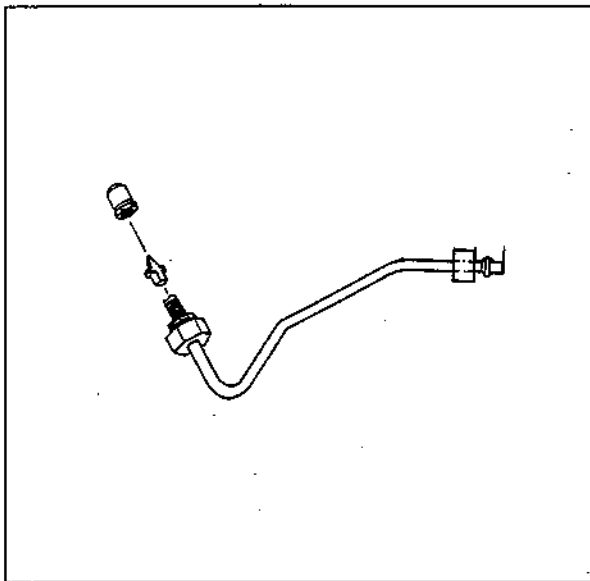
(travel greater than 90°. To adjust them, ignite the burner, and turn flame to its lowest setting. Remove handle (knob), secure stem, and adjust with a small screwdriver using the recessed slot in the stem. Adjust flame to have a small stable flame with a cold burner.



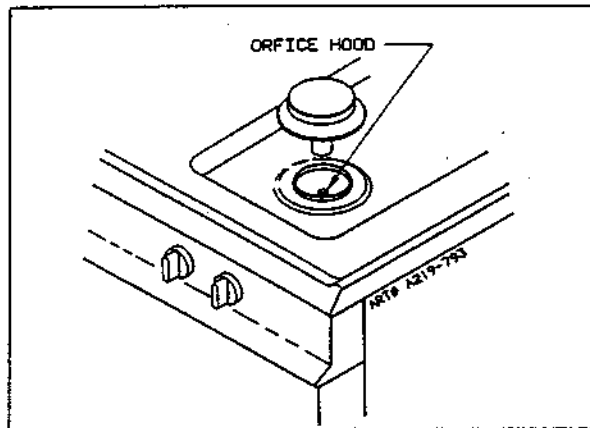
Sealed burner, ignitor, orifice, bracket, tubing, manifold, valve, valve switch.

### Orifice Hood, Pin and Tubing

Each sealed burner (type C) has an adjustable orifice hood, a pin, and valve tubing.

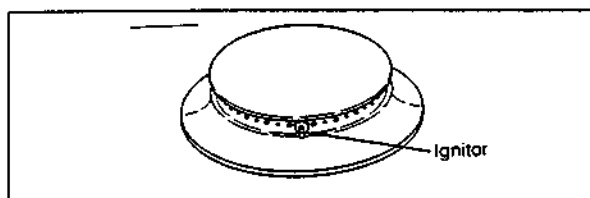


Orifice hood, pin and tubing.

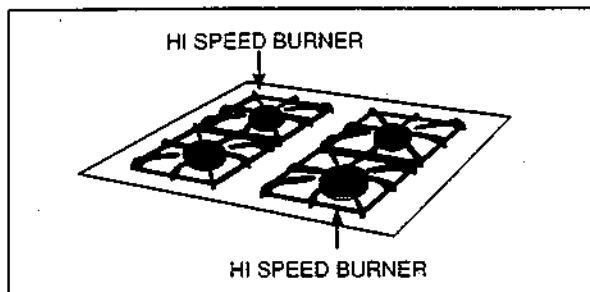


### Ignitor and Burner Location

When the sealed burner is properly installed on the main top, the ignitor should be facing the rear of the range (about 12:30 or 1:00 o'clock position).



Rear view of sealed burner



The 12,000 BTU (natural gas) burners will be located in the left rear and right front positions.

**Note:** Some models will have four 9,200 BTU (natural gas) burners. All burners will convert to 8,000 to 8,500 BTU (LP).

## Component Removal / Replacement

### Sealed Burner Type "C"

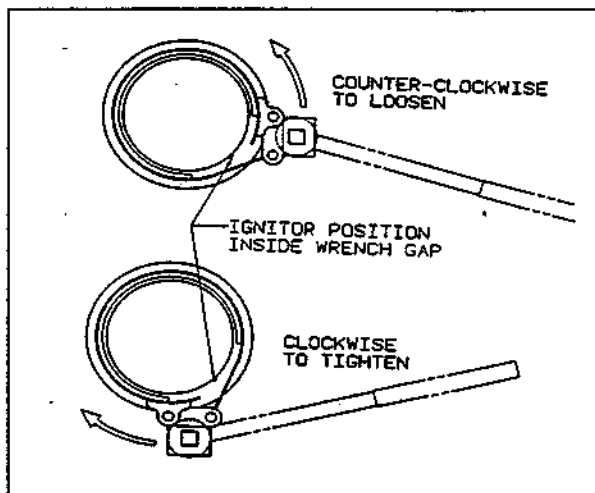
#### CAUTION:

Disconnect power prior to burner removal, and shut off gas supply.

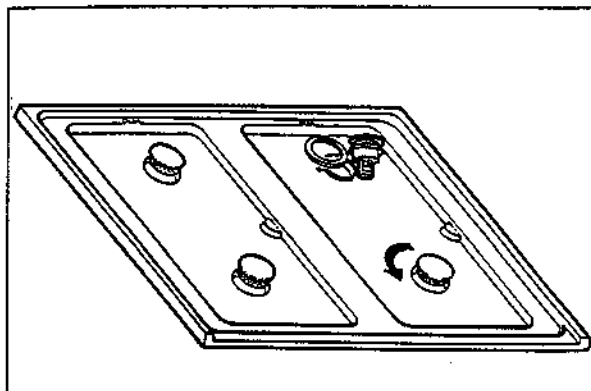
The type "C" sealed burner will be torqued to approximately 400-450 inch lbs., thus requiring a special burner wrench for removal/replacement to and from the main top. The burner wrench assembly is *part number 8312D075-60* and may be procured from Maycor or Maycor parts distributors.

**Note:** After the type "C" sealed burner has been used for a period of time, the seal may deteriorate or transfer to the main top. It can be removed by picking it up or scraping it off.

Should this occur, a field *replacement seal* is also available under *part number 7201P050-60*. Use of the burner wrench requires a 3/8" drive and ratchet with a 1/2" to 1" extension to prevent damage to the main top.



Burner wrench, part number 8312D075-60



Main top showing type "C" sealed burner, and direction of turn to remove burner. Replacement type seal is also shown.

### Burner

#### Removal:

**Note:** Prior to placing burner wrench over burner cap, mark on main top with a pencil the position of the ignitor in relation to top. This will help in repositioning burner to its original position.

1. Carefully place burner wrench over surface burner cap so that the edge of the cap is in the groove of the wrench protective lining, and the ignitor positioned inside the gap of the wrench ring. This prevents ignitor from being crushed when the wrench tightens on the burner.

**Note:** Be sure to use an extension for the 3/8 drive on the ratchet to prevent damaging the main top.

The burner base is constructed with two bumps or protrusions near the ignitor, and one on the opposite side of the burner. These bumps match three indentations on the main top, and when lined up, allow for removal of the burner.



2. Tighten wrench around burner and break torque (rotate burner counter-clockwise about 1/8 turn).
3. When the burner bumps and top indentations are lined up, lift the burner straight up.

**Note:** You will have to "feel" the line up. The burner cannot be removed if it is not properly aligned.

Each burner has one wire attached for the ignitor. If the main top is to be removed, it will be necessary to remove the wires. Replacement of a burner requires removal of the wires.

#### **Replacement:**

The possibility exists that after time and heat or removal of a burner, the seal may deteriorate. Should this happen, a replacement seal is available under part number 7201P050-60.

- Place replacement seal around burner opening of main top, if required.
- Connect spark wire, if removed.
- Locate the ignitor and turn the burner so that the ignitor and two locator bumps line up with the main top indentations.
- Set the burner directly down on the orifice hood for proper alignment, and turn the burner clockwise about 1/8 turn or until the ignitor lines up with pencil mark using the burner wrench assembly.
- When installed, ignitor should be at or near its original position (facing

rearward at the 12:30 or 1:00 o'clock position).

#### **Ignitor**

##### **Removal:**

1. Disconnect power.
2. Remove burner and the wire connected to the ignitor.
3. Remove the two screws from each ignitor bracket.
4. Remove ignitor and replace.
5. Reverse the procedure to replace.

**Note:** Make sure ceramic portion of ignitor tip protrudes from the burner cap and electrode is pointed downward.

#### **Main Top**

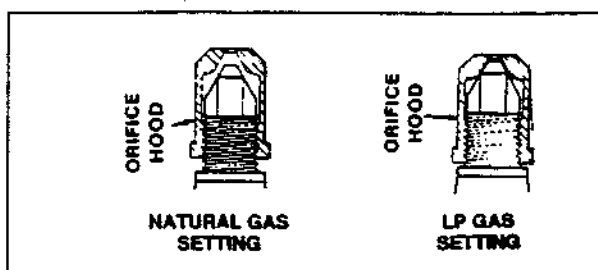
##### **Removal:**

1. Remove burners as described in the above "removal" paragraph.
2. Disconnect ignitor wire from each ignitor.
3. Remove one screw at each burner opening.
4. Use putty knife to release spring clip on each front corner of top.

#### **Conversion**

##### **(From Natural Gas to LP Gas)**

1. Remove burner per burner removal instructions.
2. Use a 1/2" deep-well socket to tighten each burner orifice hood approximately two complete turns clockwise or until it bottoms out to the closed position.



3. Adjust each burner air shutter to the widest opening that will not cause the flame to lift or blow off the burner when cold.

**Note:** Correctly adjusted sealed burners will blow off without a pot over the burner. These should be adjusted with a pot in place.

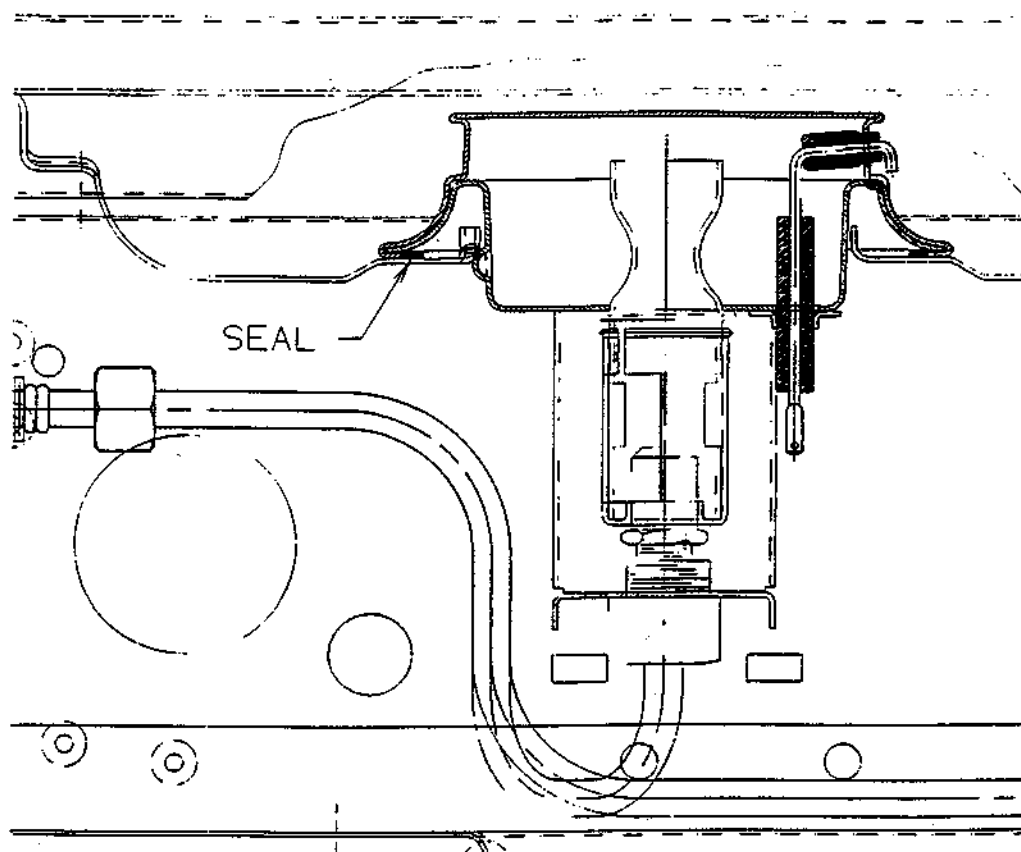
**Note:** When adjusting air shutters, it is *not necessary* to tighten down the burner while checking the flame for proper adjustment.

**CAUTION:**

*In the process of checking for proper flame adjustment, burner will get hot. Use a pot holder or other safe means to prevent burns when handling a hot burner.*

4. After orifice hoods have been tightened and air shutters adjusted, tighten the burners with the burner wrench per the replacement procedure.

### Sealed Top Burner Type "C" Cutaway



Cutaway showing tubing, venturi, air shutter, seal, burner and ignitor.

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## 2.ELECTRONIC CONTROL

- The new generation cooking appliances equipped with "T" clocks will initially have one of two different types of clocks, Type "C" and Type "D".
- The Type "C" clock is completely new. Both clocks will be activated by the use of a *membrane switch* instead of push buttons. The Type "C" clock will have "AM" and "PM" depicted in the first digit position of the display. The Type "D" clock does not have those letters (AM/PM).
- The Type "C" clock cannot be calibrated and has a separate relay board.
- The Type "D" clock on all freestanding ranges has its relay board physically attached (as one part) to the clock. *The Type "D" clock is identical to the current Type "B" clock, but with expanded fault codes.*
- Both Type "C" and Type "D" clocks have the same ten (10) fault codes, which are identical.
- *The clocks, Type "C" and "D" are not physically interchangeable.*

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### Components and Operating Parameters

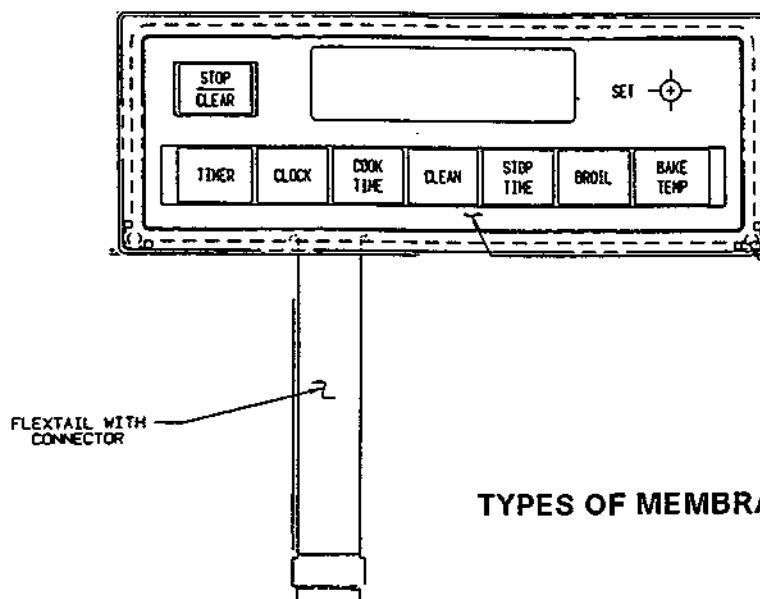
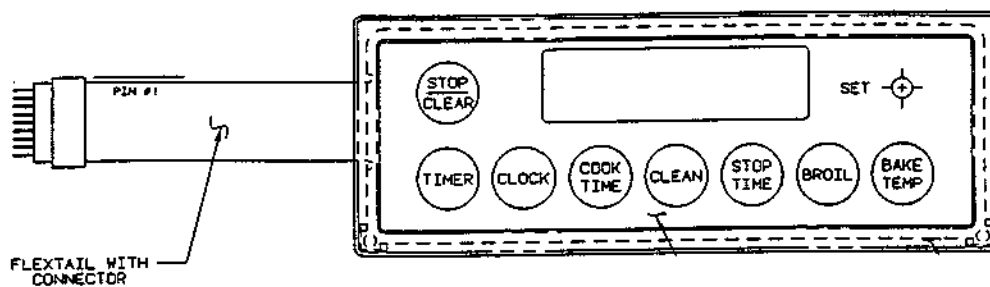
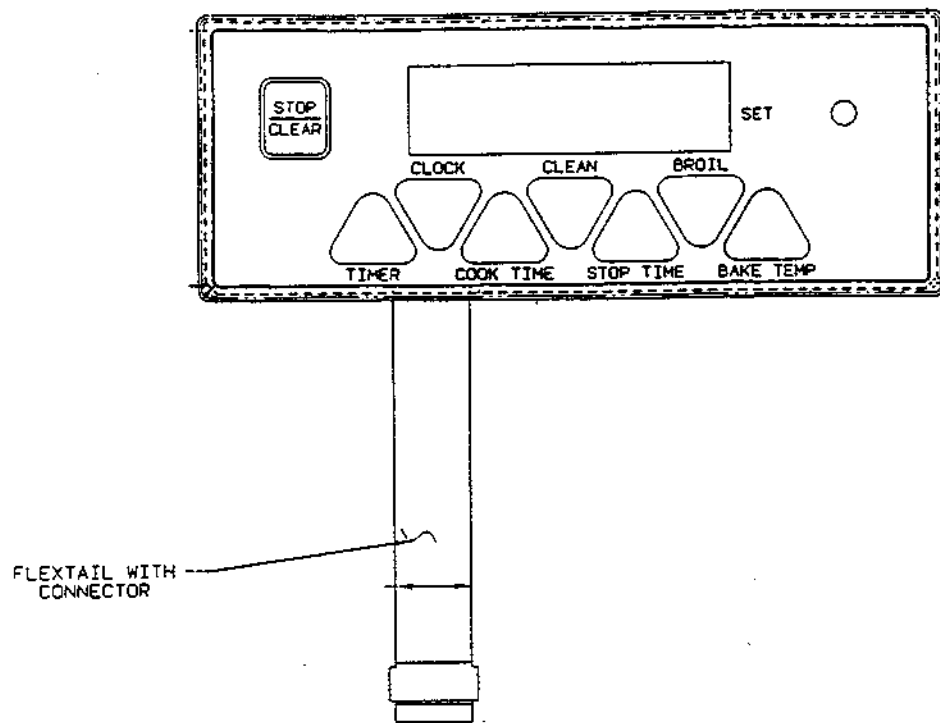
#### COMPONENTS

##### *Electronic Control (Type "C")*

- Clock
- Membrane Switch
- Relay Board
- Oven Sensor

#### OPERATING PARAMETERS

Bake	170°F - 550°F (± 25°)
Lo Broil	450°F (± 15°)
Hi Broil	550°F (± 15°)
Max Bake or Broil Temp.	640°F
Clean	875°F (± 15°)
Max Clean Temp.	900°F
Door Lock Light On	400°F
Door Lock Light Off	Temp Below 400°F
Controller Requires:	120 VAC, 60HZ (102 to 132VAC)



**TYPES OF MEMBRANE SWITCHES**

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## Operation Overview Of Each Control Mode

### **BAKE**

In the bake mode, a temperature is entered, and optionally a bake time. The bake cycle will begin and continue until the user stops the operation, or the set bake time is reached.

### **BROIL**

In the broil mode, a temperature range is entered, either LO or HI, and the broil process will begin and continue until the user stops the operation.

### **CLEAN**

The clean function will not operate until the door latch has been placed in the lock position. When the clean mode is selected, a clean time is entered, from 2 to 4 hours inclusive, and a preset temperature is activated.

### **STOP TIME / COOK TIME**

The cook time function can be used to operate a timed bake cycle. The stop time function can be used in conjunction with cook time to operate a delayed bake cycle.

### **TIMER**

The timer function operates independently of other oven functions. In the timer mode, a desired time is set by the user and the control begins and continues countdown until the set duration has expired, at which point an audible signal will sound.

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## Function Charts

**Type "C" Clock**

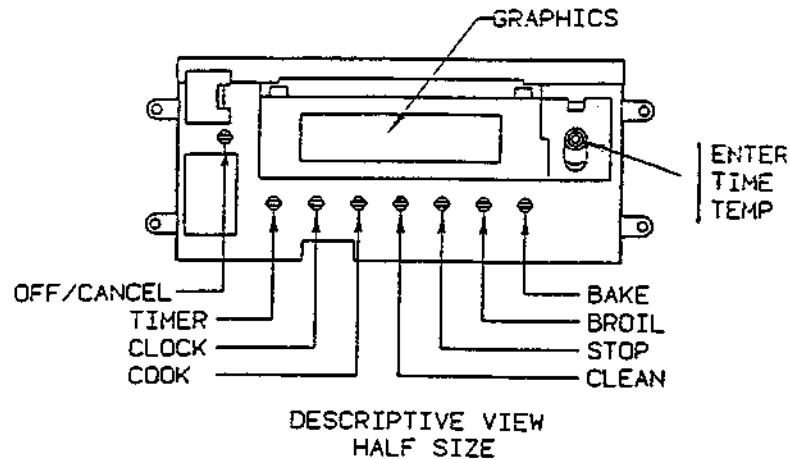
FUNCTION CHART	
FUNCTION	SWITCHING
Bake	1, 7
Broil	2, 7
Clean	4, 7
Clock	2, 6
Cook Time	3, 6
Stop Time	4, 6
Timer	1, 5
Cancel	2, 5

**Type "D" Clock**

FUNCTION CHART	
FUNCTION	SWITCHING
Bake	5, 7
Broil	4, 7
Clean	6, 7
Clock	3, 8
Cook Time	4, 8
Stop Time	6, 8
Timer	5, 8
Cancel	1, 2

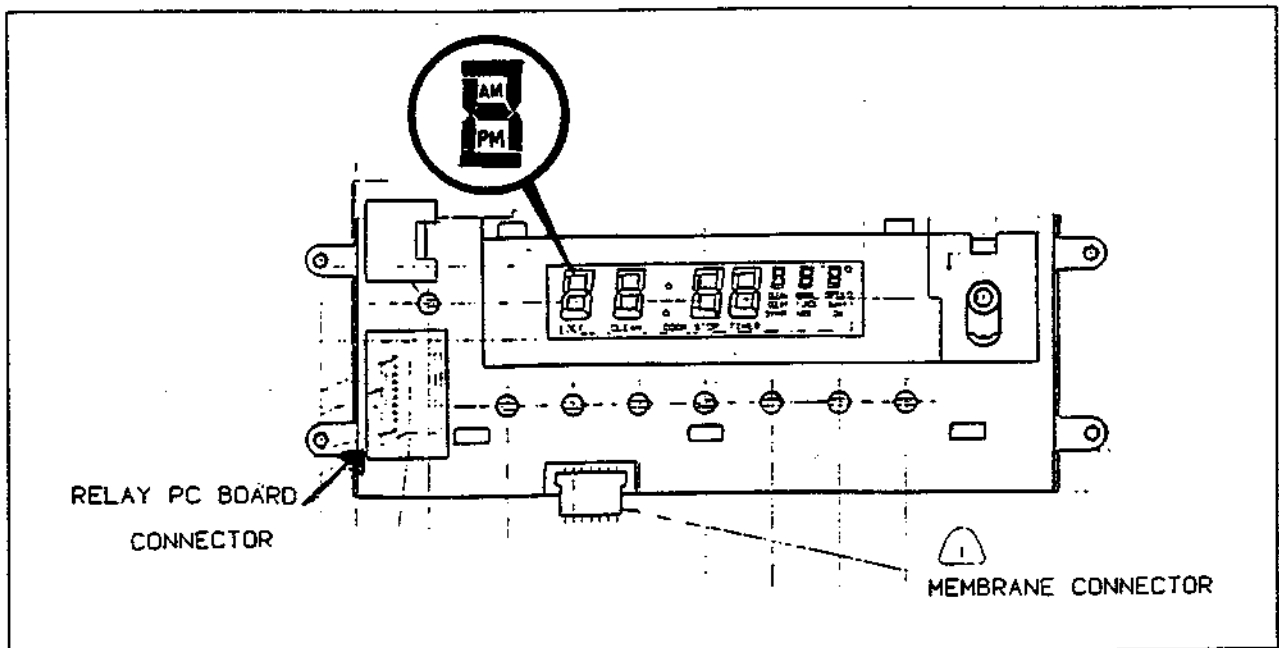
## TYPE "C" CLOCK

SYMBOL	DESCRIPTION
P1	TEMPERATURE SENSOR CONNECTOR
P1-1	SENSOR COMMON
P1-2	OVEN TEMPERATURE SENSOR
P2	RELAY BOARD CONNECTOR
P2-1	BROIL RELAY DRIVE
P2-2	BLOWER/AUXILIARY RELAY DRIVE
P2-3	BAKE RELAY DRIVE
P2-4	VF DISPLAY FILAMENT VOLTAGE 2
P2-5	VF DISPLAY FILAMENT VOLTAGE 1
P2-6	LOGIC VOLTAGE
P2-7	CONTROLLER GROUND
P2-8	VF DISPLAY VOLTAGE
P2-9	60 HZ SIGNAL
P2-10	DOOR LATCH

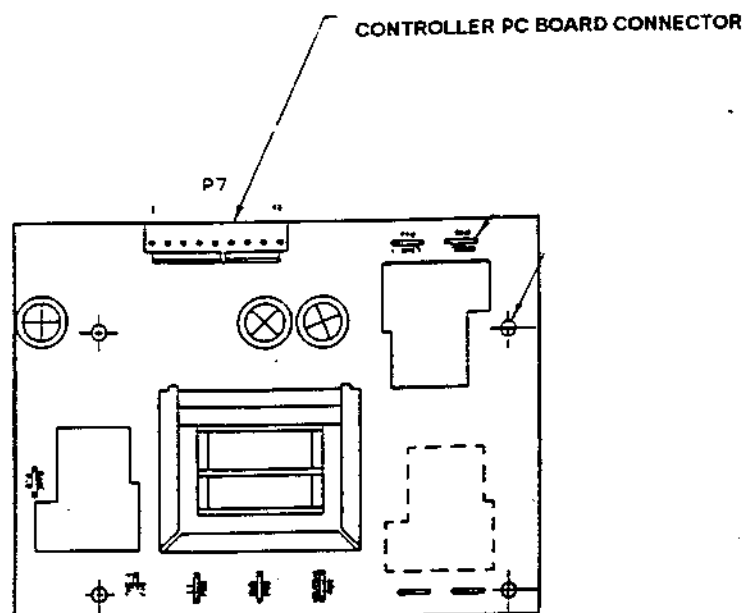


**Note:** All controller voltages and signals are isolated from neutral, power ground and chassis.

## Type "C" Clock



## Type "C" Relay Board



SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
		P7 - 1	CONTROLLER GROUND
P15	BROIL	P7 - 2	CONTROLLER SUPPLY VOLTAGE
P16	LINE 1, BAKE	P7 - 3	VF DISPLAY VOLTAGE
P18	BAKE	P7 - 4	VF DISPLAY FILAMENT VOLTAGE 1
		P7 - 5	BAKE DRIVE
		P7 - 6	VF DISPLAY FILAMENT VOLTAGE 2
P28	LINE 1	P7 - 7	60 HZ SIGNAL
P29	NEUTRAL	P7 - 8	BLOWER AUXILIARY DRIVE
P30	EARTH GROUND	P7 - 9	BROIL DRIVE

**Note:** All controller voltages and signals are isolated from neutral, power ground and chassis.

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## Type "D" Clock

### ELECTRONIC CONTROL OPERATING PARAMETERS

Bake Mode.....170° - 550°F.  
Lo Broil.....450°F.  
Hi Broil.....550°F.  
Clean.....900°F.

### RELAY BOARD TRANSFORMER:

Primary.....120 Vac, 60 Hz.  
Secondary.....21 Vac, 3.2 Vac.

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## Oven Calibration (Type "D" Clock)

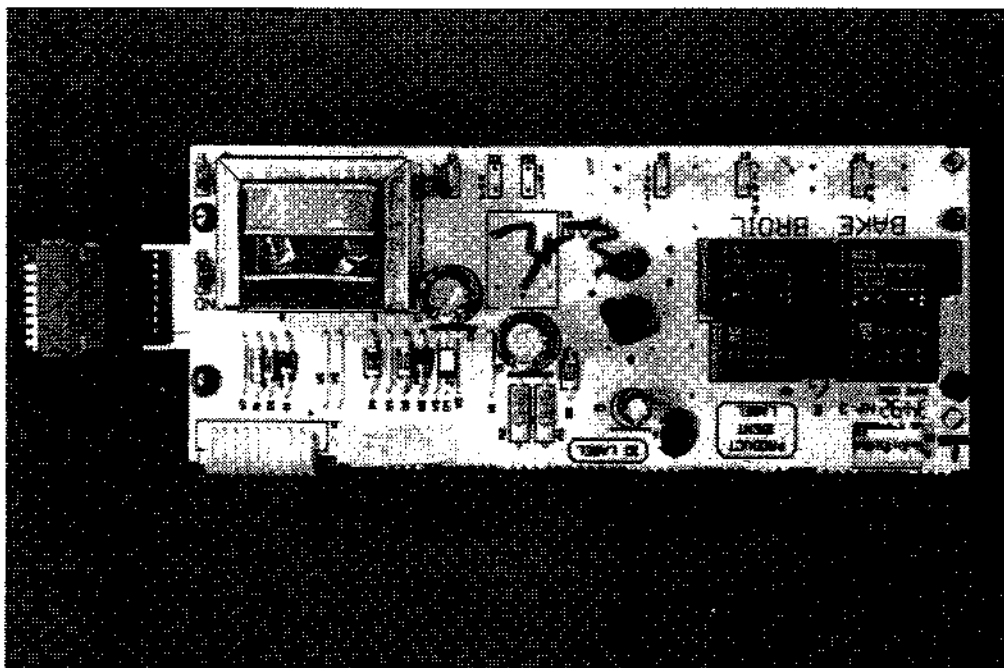
### Purpose:

To allow adjustment of center oven temperature +35°F. or -35°F., in 5°F. steps in relation to factory setting.

### Method:

1. Touch **BAKE**.
2. Dial rotary switch to a temperature of 500°F or greater.
3. Within one second of step # 2 above, touch and hold **BAKE** for 5 seconds. Factory setting of "00" will appear in display.
4. Dial rotary switch to enter warmer center oven temperature (5° to 35°F), or cooler center oven temperature (-5° to -35°F), as desired.
5. Touch **STOP/CLEAR**.

**Note:** The new calibration is stored in memory now, even through power outage. A new calibration value may be entered in the future if desired by following the same procedure.



Type "D" Clock Relay Board  
(backside of clock)



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## Fault Codes: Type "C" and "D" Clocks

The electronic control will be equipped with 10 supervisory alarms, which will show the associated code in the right of the time display. The control will also sound an audible alarm at one second intervals until attended to.

- F1 Supervisory Relay Enable Shorted (non-cook mode):** Sounds alarm and inhibits cook modes if Alarm fault monitor is always active in non-cook mode, and requires removal of power until serviced. The Cancel Key will reset the display code and audible for a sample period of 16 seconds. The alarm will repeat if the fault persists.
- F2 Bake/Broil/Clean Temp Runaway Alarm:** Sounds alarm and resets control to non-cook mode when Bake/Broil/Clean temperature exceeds programmed limits;
- Electric @ 625, 640, 900 °F.
  - Gas @ 640, 640, 900 °F.
- Alarm fault monitor is always active, and requires the temperature to drop below the programmed limit and/or removal of power until serviced. The Cancel Key will reset the display code and audible for a sample period of 16 seconds. The alarm will repeat if the fault persists.
- F3 Open Temp Sensor:** Sounds alarm and inhibits cook modes. The Cancel Key resets the control to non-cook mode, which cancels the display code and audible. The alarm repeats if a cook mode is re-activated.
- F4 Shorted Temp Sensor:** Sounds alarm and inhibits cook modes. The Cancel Key resets the control to non-cook mode, which cancels the display code and audible. The alarm repeats if a cook mode is re-activated.
- F5 Supervisory Relay Enable Open (cook modes):** Sounds alarm and resets control to non-cook mode. The Cancel Key resets the display code and audible. The alarm repeats if a cook mode is re-activated.
- F6 Missing AC Line Cycle Detector:** Displays code (no audible) and resets control to a non-cook mode if AC line cycles are missing for a sample period of one minute.
- F7 Function Key Shorted:** Sounds alarm and resets control to non-cook mode if a Function Key short is detected for a 16 second sample period. A shorted Function Key will prevent recognition of the Cancel Key, and requires removal of power until serviced.
- F8 A/D Supervisory:** Sounds alarm and resets control to non-cook mode if calibration fault is detected for a 16 minute sample period. The Cancel Key resets the display code and audible. The alarm repeats if a cook mode is re-activated.
- F9 Door Latch Supervisory (Door Latched):** Sounds alarm and resets control to non-cook mode if the door latch supervisory logic fails for a sample period of 2 seconds (while the door is latched). Unlatching the door (if not locked) and Cancel Key may reset the display code and audible. If the door is locked (temperature > 400°F.) power must be removed until the oven door can be unlatched.
- F0 Cancel Key Supervision:** Sounds alarm and resets control to non-cook mode if the Cancel Key supervision logic fails. Requires the removal of power until serviced.

## SECTION 4. TROUBLESHOOTING AND TESTING

### 1. PILOT IGNITION TROUBLE-SHOOTING GUIDE

BEFORE ANY COMPONENT IS REPLACED, FOLLOW THIS FOUR-STEP CHECK LIST.

1. Be sure that user misunderstanding or utensil problems are not the real source of the complaint.
2. Check basic adjustments: the oven pilot selector cartridge setting, rate and air shutter adjustment of the oven burner, oven thermostat bulb location and condition, location of the flame responsive element in the pilot bracket, etc.
3. Pressure regulators are an important part of the range control system and can be the cause of every problem listed in this Trouble Shooting Guide.
  - a. If the regulator is the convertible type (adjustable for use on either Natural or LP gas), check the setting to be sure it is correct for the gas on which the range is to be used.
  - b. Check pressure with a water manometer (U-gauge). Remove a top burner and slip the flexible tubing of the manometer over the valve orifice hood. Turn on that burner and any other top burner. The pressure reading should be within  $\pm 10\%$  of the pressure setting marked on the regulator cap.
  - c. Check for "bounce" by watching the top burner pilots as you turn on two top burner valves simultaneously and rapidly. If the pilot flame decreases substantially or goes out, the regulator should be replaced.
4. If gas pressure and all adjustments seem to be correct, use the chart which follows to help identify the problem and/or the malfunctioning component.

CONDITION	POSSIBLE CAUSE	CORRECTION
No constant and/or no heater pilot.	<ol style="list-style-type: none"><li>1. No gas to range</li><li>2. Oven pilot selector cartridge turned off.</li><li>3. Pressure regulator</li><li>4. Pilot tubing supply line blocked.</li><li>5. Pilot or pilot orifice blocked.</li></ol>	<ol style="list-style-type: none"><li>1. Use top burner or other constant gas supply outlet to check gas supply.</li><li>2. Turn oven pilot selector cartridge all the way to the stop for either Natural (N) or (LP) gas.</li><li>3. Replace regulator.</li><li>4. Disconnect tubing at source and at pilot end and blow out, to clear passageway.</li><li>5. Disconnect tubing and blow out pilot, to clear orifice cup from pilot to clean out blockage. DO NOT ream or drill out orifice hole.</li></ol>

CONDITION	POSSIBLE CAUSE	CORRECTION
Frequent constant pilot outage	<ol style="list-style-type: none"> <li>1. Unstable constant pilot.</li> <li>2. Strong drafts which blow out pilot.</li> <li>3. Pressure regulator.</li> <li>4. Thermostat.</li> </ol>	<ol style="list-style-type: none"> <li>1. See instructions 4 and 5 above.</li> <li>2. Determine and eliminate source of strong drafts (eg. opening in the wall behind the range).</li> <li>3. Replace regulator.</li> <li>4. If remedies suggested above will not correct pilot outage, replace thermostat.</li> </ol>
No main burner flame.	<ol style="list-style-type: none"> <li>1. Thermostat knob setting is low or off.</li> <li>2. Safety.</li> <li>3. Flame responsive element.</li> <li>4. Thermostat - no heater pilot flame, no main burner flame at any setting.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset knob to higher temperature.</li> <li>2. Replace safety. Note: There are no field adjustments for this control.</li> <li>3. Check the following possibilities: <ol style="list-style-type: none"> <li>a. Check position of flame responsive element in Pilot Unit. The tip must be enveloped by the heater pilot flame.</li> <li>b. Check setting of oven pilot selector cartridge. It must be set for the gas on which the range is to be used.</li> <li>c. Check gas pressure to the range - low gas main pressure may result in insufficient heater pilot flame.</li> <li>d. Check pressure regulator (if applicable). Convertible regulators must be set for the gas on which the range is to be used. An erratic or malfunctioning pressure regulator may cause pressure to be too low, causing insufficient pilot flame.</li> </ol> </li> <li>4. Replace thermostat. NOTE: No heater pilot flame could also be due to 3c or 3d above. Always check gas pressure before replacing thermostat.</li> </ol>

CONDITION	POSSIBLE CAUSE	CORRECTION
Oven will not maintain proper baking temperature.	<ol style="list-style-type: none"> <li>1. Oven bulb not in proper location.</li> <li>2. Oven bulb coated with foreign material (oven cleaner, ect.)</li> <li>3. Oven bottom improperly positioned.</li> <li>4. Oven bottom covered with aluminum foil.</li> <li>5. Utensils too large for the oven, cutting off free circulation of air.</li> <li>6. Thermostat not properly calibrated.</li> <li>7. Heater pilot flame not cycling off.</li> <li>8. Safety device not closing because flame responsive element is being heated by the oven burner flame. (Main burner flame may modulate or throttle when heater pilot flame is off.</li> <li>9. Safety device not closing. (Flame responsive element not being heated by any source).</li> </ol>	<ol style="list-style-type: none"> <li>1. Secure oven bulb in clips that hold it in proper location. Oven bulb should not touch any surface.</li> <li>2. Use fine steel wool or scouring pad and gently clean surface of bulb. <b>NOTE:</b> Replace carefully in locating clips.</li> <li>3. Reposition according to range manufacturer's instructions.</li> <li>4. If foil blocks holes or slots in oven bottom, oven heat and distribution will be affected. Remove foil.</li> <li>5. Allow at least 1 1/2 to 2" clearance for air circulation between utensils and any oven surface. (In most eye-level ovens, this means that a 14"x10" cookie sheet is the largest one which should be used).</li> <li>6. Replace thermostat.</li> <li>7. Check the following possibilities: <ol style="list-style-type: none"> <li>a. Check oven pilot selector cartridge setting.</li> <li>b. High pressure could cause the constant (standing) pilot flame to act as a heater pilot flame. Check pressure regulator and replace if necessary.</li> <li>c. Replace thermostat if problem is not due to either A or B above.</li> </ol> </li> <li>8. Check the following possibilities: <ol style="list-style-type: none"> <li>a. Flame responsive element must be properly located in Pilot Unit.</li> <li>b. Pilot Unit must be properly located on the oven burner bracket.</li> <li>c. Oven burner is overrated. Adjust to rating specified by range manufacturer.</li> </ol> </li> <li>9. Replace safety device with an exact replacement.</li> </ol>
Surface burner does not light.	<ol style="list-style-type: none"> <li>1. Clogged charge ports.</li> <li>2. Clogged burner ports.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean ports with paper clip.</li> <li>2. Clean ports.</li> </ol>
Top pilot out.	<ol style="list-style-type: none"> <li>1. No gas supply.</li> <li>2. Pilot tubing clogged.</li> <li>3. Selector in off position.</li> <li>4. Improper adjustment.</li> <li>5. Thermostat.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check gas.</li> <li>2. Blow out tubing.</li> <li>3. Move selector to type gas being used. (N or LP).</li> <li>4. Adjust pilot gas set screw.</li> <li>5. Change thermostat.</li> </ol>

## 2. SPARK SYSTEM (SURFACE IGNITION) TROUBLESHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	CORRECTION
Ignitor for top burner will not spark.	<ol style="list-style-type: none"> <li>1. Broken ignitor.</li> <li>2. Inoperative switch</li> <li>3. Target dirty.</li> <li>4. Module.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check for continuity.</li> <li>2. Check for continuity.</li> <li>3. Clean target and check alignment.</li> <li>4. Change module.</li> </ol>
Top ignitors spark all the time.	<ol style="list-style-type: none"> <li>1. Inoperative Switch.</li> <li>2. Module.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check switches. If continuity is present in any position other than "Start", replace the switch.</li> <li>2. Isolate switches from module. Apply power, if sparks, change module.</li> </ol>
Ignitor sparks on one side by not on the other.	<ol style="list-style-type: none"> <li>1. Ignitor or module inoperative.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reverse the wires on the manual terminals on the module. If the problem moves to the other side, replace the module. If conditions are the same, replace the ignitor.</li> </ol>
Top ignitors "jump". One sparks, then the other.	<ol style="list-style-type: none"> <li>1. Reversed polarity/poor ground.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check polarity and ground.</li> </ol>
Rotate dial to start. No sparking on any igniter, however, spark is available with all the other switches.	<ol style="list-style-type: none"> <li>1. Switch stuck open in the (OFF) position.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace switch.</li> </ol>
Constant sparking with all switches in the OFF position.	<ol style="list-style-type: none"> <li>1. A faulty module or two wire connections touching each other. Or switch stuck in the closed (ON) position.</li> </ol>	<ol style="list-style-type: none"> <li>1. Isolate/change switch.</li> <li>2. Replace module.</li> <li>3. Separate touching wires.</li> </ol> <p><b>CAUTION:</b> Be sure to remove electrical power prior to disconnecting or connecting any switch wiring.</p>

CONDITION	POSSIBLE CAUSE	CORRECTION
Sparks but does not light burner.	<ol style="list-style-type: none"> <li>1. Burner</li> <li>2. Ignitor</li> <li>3. Module</li> <li>4. Switch</li> <li>5. Wire Shorted</li> <li>6. Ignitor spark target out of position.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check surface burner cap ports to be clear and not clogged.</li> <li>2. Check surface burners for proper position on the burner support.</li> <li>3. Light burner with a match. If it will light with a match, that would indicate either (1) or (2) above were not correct or the spark target may be out of position or the burner flash tube not correctly lined up with the charge ports.</li> <li>4. Reverse the wires on the manual terminals on the module. If the problem moves to the other side, replace the module. If conditions are the same, replace the ignitor.</li> <li>5. Check spark target.</li> <li>6. Check flash tube for alignment.</li> </ol>

### 3. GLOW BAR IGNITION TROUBLESHOOTING

The silicon carbide ignitor is connected in series with a special gas valve across line voltage. As current begins to flow the ignitor starts to heat and its resistance decreases, as the ignitor resistance decreases the current flow through the low resistance heater coil of the gas valve increases. Ignition occurs when ignitor current is 3.2 to 3.6 amps and gas valve heater voltage is over 2.9 volts.

To check silicon carbide ignitor:

1. Visually check that ignitor is not broken and that is properly positioned adjacent to the burner (about 1/2 inch from burner ports).
2. Disconnect electrical power. Remove burner from orifice and gently pull ignitor wires through hole until quick-disconnect block is inside oven cavity. For the broil ignitor, make sure insulation is in hole when replacing disconnect block.
3. Disconnect the block or connection. With an ohmmeter attach one probe to one of the ignitor leads, and one to the other. A cold glow bar will have 50 to 400 ohms resistance.

As the resistance of the silicon carbide ignitor is determined by the temperature of the ignitor, a resistance measurement is of little value except to determine a direct short in the ignitor (less than 50 ohms), or in essence an open ignitor (in excess of 400 ohms), at room temperature.

**To check electric oven valve:**

1. Disconnect electrical power and shut off oven gas.
2. Using an ohmmeter, check for continuity across the two (2) terminals. (Dual valves have two sets of terminals, one for bake, one for broil). Resistance should be approximately 1 ohm.

**Note:** It is possible that the glow bar may appear bright and glowing but the valve does not open. If such is the case, and continuity indicates the valve is good, you will have to check the valve "live" as follows:

1. Use caution.
2. Shut off oven gas supply.
3. When the ignitor glows but the gas valve does not open, a clamp on AC ammeter (Maycor part No. 20000002 R1) should be used to determine whether the valve or the ignitor is at fault. The amperage can be checked at any point of the range where the jaws of the ammeter can be clamped around one side of the line supply.

After connecting the ammeter around one side of the line, observe current draw of the appliance while the oven is not programmed to bake or broil. Then select the bake/broil function that is not operating and observe the current reading. If the current difference is less than 3.2 amps with no ignition suspect the ignitor, if the current difference is 3.2 amps or higher with no ignition suspect the gas valve or gas supply to the oven.

**Note:** Remember - the ignitor and valve are wired in series. Should the ignitor fail to glow, check the valve for continuity first to make sure its heater coil is not open. If the valve is good, then check the ignitor and the power supply.

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## 4. SEALED BURNER TROUBLESHOOTING (TYPE "C")

### Sealed Burner Troubleshooting (Type "C")

<u>Symptom</u>	<u>Possible Cause</u>	<u>Correction</u>
Does not light	Low gas pressure or flow	Check pressure for 4 inches water column (Nat) or 10 inches water column LP.
Does not light	Spark directed other than downward or cracked ceramic portion of ignitor. Ceramic should stick out of burner about 1/8 inch.	Check ignitor position and spark coming out tip of the electrode.
Does not light	Restricted burner ports	Clear ports
Flame goes out at low setting	Burner valve not adjusted properly	Adjust burner valve
Flame lifts off burner	Improper air adjustment	* Adjust air shutter
Yellow tipping (some is normal on LP)	Improper air adjustment. Wrong gas pressure.	* Check gas pressure adjust air shutter

*Note: To check gas pressure, remove right rear burner and place manometer/gas meter hose directly over orifice hood.*

*\*Caution: Burner will be hot when attempting to adjust air shutter. Use a potholder or other safe means to prevent burns when handling a hot burner.*



## 5. "T" CLOCK TESTING TYPES "C" AND "D"

### TO TEST THE OVEN SENSOR (Continuity)

1. Disconnect the appliance from power.
2. Allow the oven and oven sensor to cool to room temperature.
3. Remove the sensor screws located at the rear of the oven cavity and gently pull wires to get quick disconnect into cavity.
4. Disconnect the oven sensor at the connector blocks.
5. Connect an ohmmeter across the terminals of the oven sensor connector block.
6. At room temperature of between 60 to 80 degrees F., the resistance should be between 1060 to 1100 ohms.
7. Connect one ohmmeter lead to one of the terminals of the oven sensor connector block and the other lead to the ground on the range.
8. If any resistance other than infinite resistance (open) is indicated, then suspect the oven sensor.
9. Reattach the connector block and push outside the cavity.
10. Fasten cover with screws.

### T CLOCK TYPE "C"

#### OPEN WIRING HARNESS SYMPTOMS

If an open circuit exists between the relay board and the electronic control, the following results could happen.

If the wire was open to "P7" Plug:	
Pin #	SYMPTOM
1	No display, no operation.
2	No display, no operation.
3	Flashing 8888, no operation, buzzes.
4	No display but can be programmed and will operate.
5	F1 on start up, push reset and can program bake or broil, but after set temperature is reached it will display F5 then if reset is pushed will display F1.
6	No display, can be programmed and will operate.
7	One beep when first plugged in, cannot program control.
8	Beeps, displays F1, after cancel is pushed appears to operate normal but after program is over or reset is pushed F1 will reappear.
9	F1 when plugged in, after reset/cancel F1 reappears in 16 seconds. Program bake and F5 is displayed. Program broil has no fault code but will not energize broil relay. If cancel is pushed F1 is displayed after 16 seconds.
Note: If the oven temperature is over 400 degrees, the clean cycle cannot be initiated.	

### TYPE "C" ELECTRONIC CLOCK

#### RELAY BOARD VOLTAGE CHECKS

While some failure codes indicate probable component failure such as an open or shorted sensor, other failure codes may only indicate the circuit of the control system at fault and do not always isolate the component which has failed. Voltage checks may assist in diagnosing if the electronic control, power supply (located on the relay board), or the wiring harness between the relay board and the electronic control is at fault. As with all voltages a 10% swing in listed voltages and measured voltages should be accepted.

## POWER SUPPLY / RELAY BOARD

The following voltage readings should be measured from connector terminal P7 on the relay board with power applied to the board, (120 VAC between P28 and P29), and with the wiring harness to the electronic control disconnected from terminal connector P7. Terminal connector P7 is the nine pin connector located on the relay board and when viewed as being on top, the terminals are counted from left to right. Terminal 1 is also identified on the board.

<u>Terminal Pin</u>			<u>Voltage</u>
1	to	2 @	+ 5.0 VDC
1	to	3 @	-17.2 VDC
1	to	4 @	-12.7 VDC
1	to	5 @	-17.7 VDC
1	to	6 @	-12.7 VDC
1	to	7 @	- 4.1 VDC
1	to	8 @	-17.7 VDC
1	to	9 @	-17.7 VDC

## WITH HARNESS CONNECTED BETWEEN ELECTRONIC CONTROL AND RELAY BOARD

<u>Terminal Pin</u>			<u>Voltage</u>
1	to	2 @	+ 4.9 VDC
1	to	3 @	-17.0 VDC
1	to	4 @	-12.3 VDC
1	to	5 @	-17.2 VDC
1	to	6 @	-12.3 VDC
1	to	7 @	- 3.7 VDC
1	to	8 @	-16.4 VDC
1	to	9 @	-17.2 VDC

**Note:** The voltages are slightly different between the harness connected and not connected and should be useful when a poor connection in the harness assembly is suspected. A digital meter is recommended as the difference may be as small as 0.1 of a volt.

## 6. CHECKING CALIBRATION

**Note:** The only New Generation cooking oven control that can be calibrated is the "T"clock, Type "D".

### INSTRUMENTATION

A thermocouple type test instrument is preferred for measuring oven temperatures accurately. Mercury thermometers are acceptable providing they can be proven accurate. For example, a recent check of mercury thermometers commonly used by service organizations showed errors of 5 to 15 degrees.

Regardless of the type test instrument used, it is most desirable to double-check it just before making an oven temperature check. This can be done simply and quickly by placing the thermocouple tip (or immersing the entire mercury thermometer) in boiling water. **NOTE:** Mercury oven thermometers should be the "total immersion type". The resulting reading should be within several degrees of 212°, depending on altitude.

Generally, a mercury thermometer can be best used if the oven door has a glass window because the door need not be opened to check temperatures. This is important because many mercury thermometers will drop in excess of 25 degrees within seconds after the door is opened. This condition makes it extremely difficult to get a true temperature reading.

Almost all ranges today have oven burners which cycle "on and off". The high and low points of the resulting temperature "swing" (differential) in the

oven must be measured-and averaged-to determine the true operating temperature. A thermocouple type test instrument is best suited to measure these temperature changes quickly and accurately,-and without opening the oven door.

With an accurate, thermocouple test instrument or mercury thermometer, it is still difficult to measure these changing oven temperatures and then, average them correctly. This is why we recommend that the thermocouple tip or the bulb of the thermometer be "weighted".

Weighting (adding mass) to the test instrument compensates for oven temperature changes by making the test instrument less sensitive to these constant changes in temperature. **NOTE:** How this weighting can be done is discussed later.

Measuring these changing high and low temperature points in an oven is possible with either type of test device-without weighting-but is subject to possible inaccuracies. This is most true at low temperature settings because, in this area the function of "time" becomes a factor. The simple averaging of temperatures, then, may not produce the true operating temperature. "Weighting" provides the compensation for both time and temperature that is necessary.

We produced below test curves showing actual results in the low temperature area showing the difference in results when using an unweighted and weighted thermocouple or thermometer. Tests were made with the same control, same oven and dial at 170° mark (not moved).

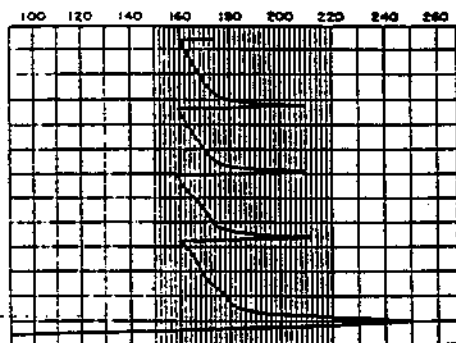


CHART No. 1

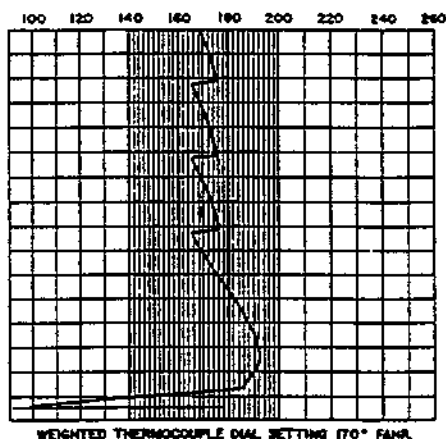


CHART No. 2

From the above, it can be seen that an error of 15 degrees is possible. Chart number 1, unweighted thermocouple indicates an erroneous average oven temperature of 185 degrees. Chart number 2, weighted thermocouple indicates the "average" or true oven temperature to be 170 degrees.

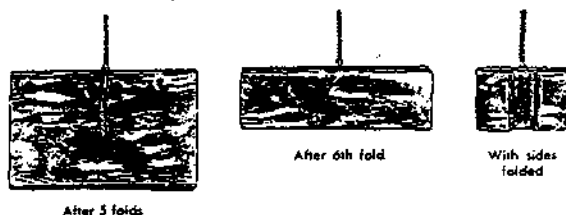
### WEIGHTING

A thermocouple can be weighted by clamping the tip between two (2) one-inch (1") square of 1/16" thick aluminum. The thermocouple can also be weighted (just as successfully) by using a letter-size sheet of aluminum foil about 5"x 8".

Fold the foil five (5) times doubling the thickness with each fold. After the fifth

fold, place the thermocouple tip in the center of the aluminum piece and fold once more. Finally, fold the sides so that the foil clings to the thermocouple tip.

A mercury thermometer can be weighted in much the same way by wrapping several layers of aluminum foil around the bulb end thus creating the necessary mass. This procedure is a must if you open a windowless oven door to check temperatures.



### TO CHECK CALIBRATION

1. Place thermocouple or mercury thermometer in center of oven.
2. With thermostat dial in the OFF position, make certain OFF mark on the dial agrees with reference point of the bezel or panel; misalignment will affect calibration.
3. Turn dial to 350° mark. Allow oven to heat until control cycles "ON and OFF" thermostatically at least three times. This will allow oven temperature to stabilize and eliminate possible error resulting from initial oven temperature overshoot and/or undershoot.  
  
**Note:** The oven burner will cycle on and off at full rate at all dial settings below the 575° marking.
4. After the control has cycled thermostatically three or more

times, note the oven temperature when the burner cycles on.

**EXAMPLE:** With a dial set at 350°, and after the system has cycled thermostatically three or more times, the highest temperature recorded (when burner cycles on) is 364 degrees. The lowest temperature recorded (when burner cycles on is 356 degrees). The average of these two temperature readings, 360 degrees, is the calibration temperature. This is well within acceptable calibration tolerances. With the dial at 350 degrees, change thermostat only if the average of the two readings is either greater than 375 degrees or less than 325 degrees.

**Note:** "T" Clock Type "D" is  $\pm 35^\circ$  and can be calibrated.

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## 7. BAKING COMPLAINT TIPS

1. Check ~~oven~~ vent to be clear and not blocked.
2. Check oven door seal.
3. Look at flame spreader for possible over/under gassed burner.
4. Verify oven is being preheated.
5. Verify that oven bottom is not covered with aluminum foil that blocks air flow or that excessively large utensils such as an oversize cookie sheet is not restricting air flow.
6. Check that the range installation does not restrict air flow.
7. Check oven temperature using a quality meter and a weighted thermocouple. (Calibration of equip-

ment may be done by the boiling water method).

8. If required, bake a white cake mix or canned biscuits with proper utensils following directions precisely.
9. If oven is out of calibration greater than  $\pm 25^\circ$ , replace thermostat on all models other than those with type "D" "T" Clocks which can be calibrated ( $\pm 35^\circ$ ).

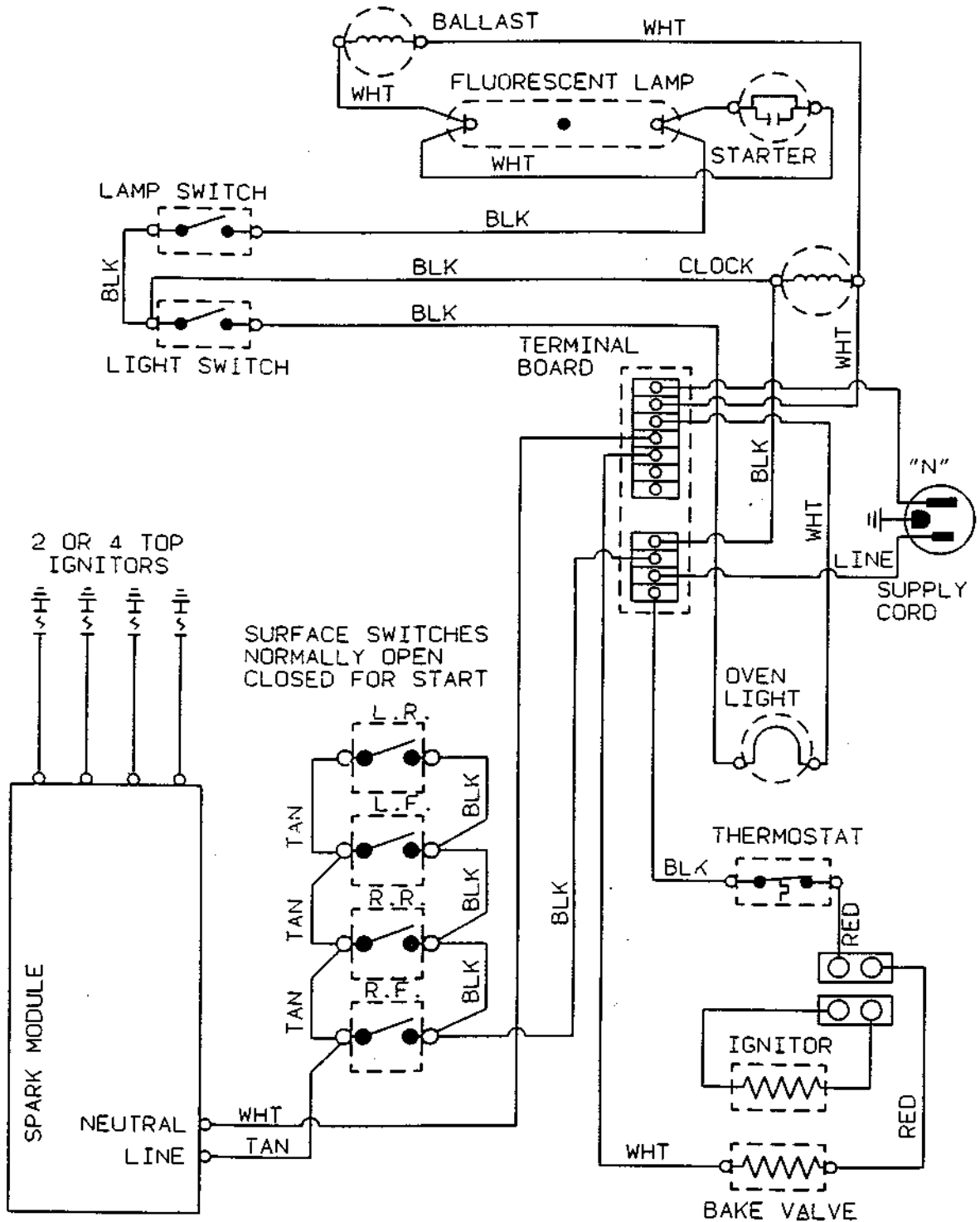
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## 8. GENERAL SERVICE TIPS

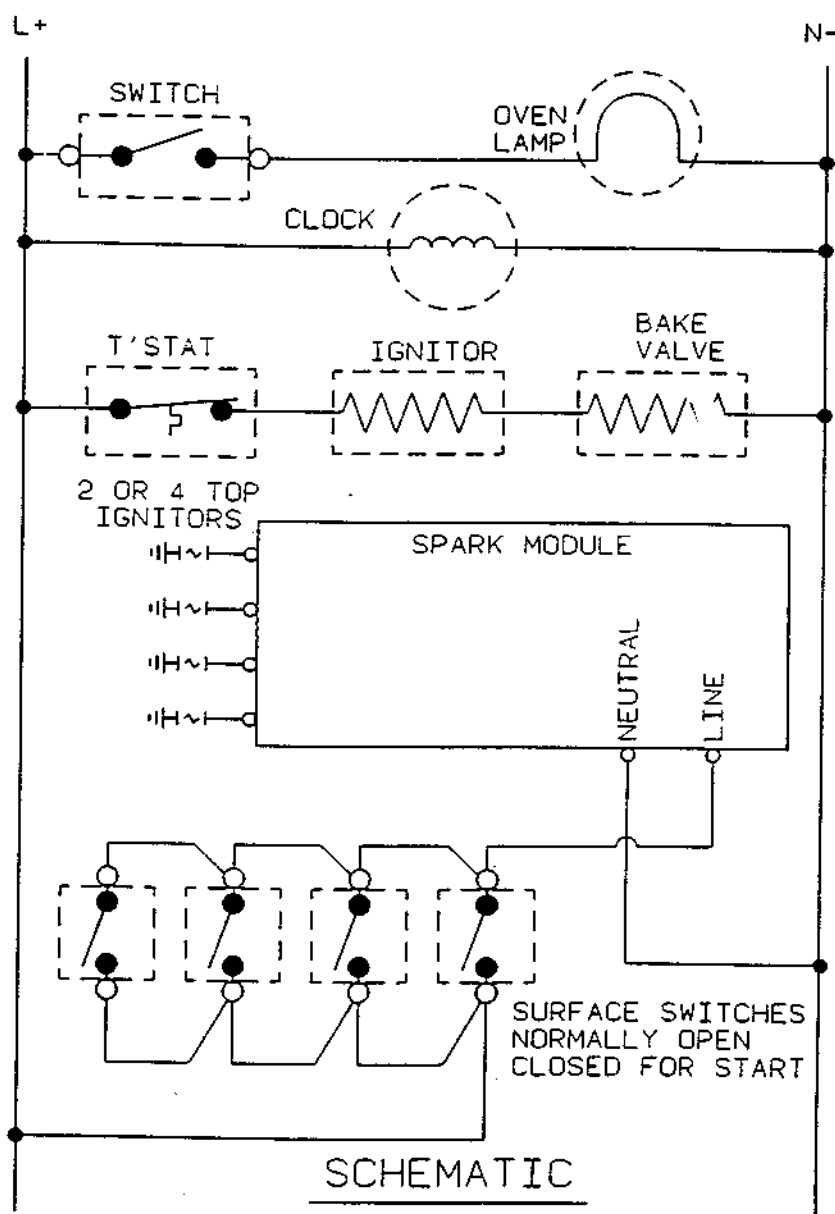
1. Listen to complaint.
2. If possible, observe condition described.
3. Note condition of range.
4. If any electrical components require checking or replacement, note wiring and wire routing. If necessary, tag individual wires.
5. Reconnect wiring or tubing correctly.
6. After removing/replacing any gas component, check for leaks with a bubble solution.
7. After completion of service, operationally check the corrected function.
8. Proper gas pressure and conversion (if performed) are extremely important.
9. Always record the exact model and serial numbers from the range certification plate.
10. Be alert to the possibility of burner ports being restricted or blocked and notify customer if such is the case.

## SECTION 5. SCHEMATICS / DIAGRAMS

SERIES: 3100 • 6100



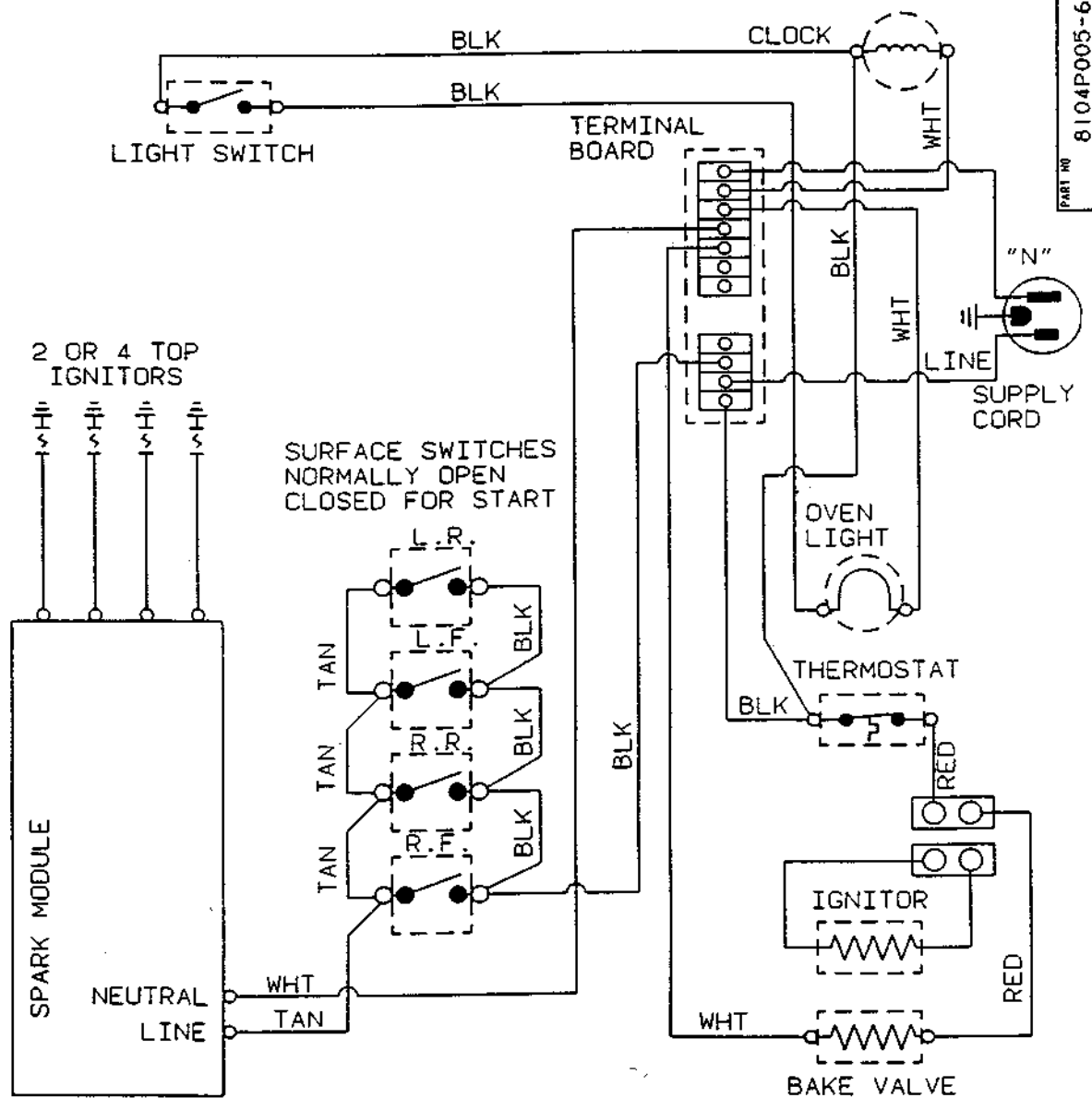
Note: Refer to wiring diagram supplied with unit before attempting service.



**NOTICE:**

1. DISCONNECT RANGE FROM POWER BEFORE REMOVING WIRE COVER.
2. REFER ONLY TO FEATURES EQUIPPED.
3. SERVICER PLEASE RETURN DIAGRAM TO RANGE.

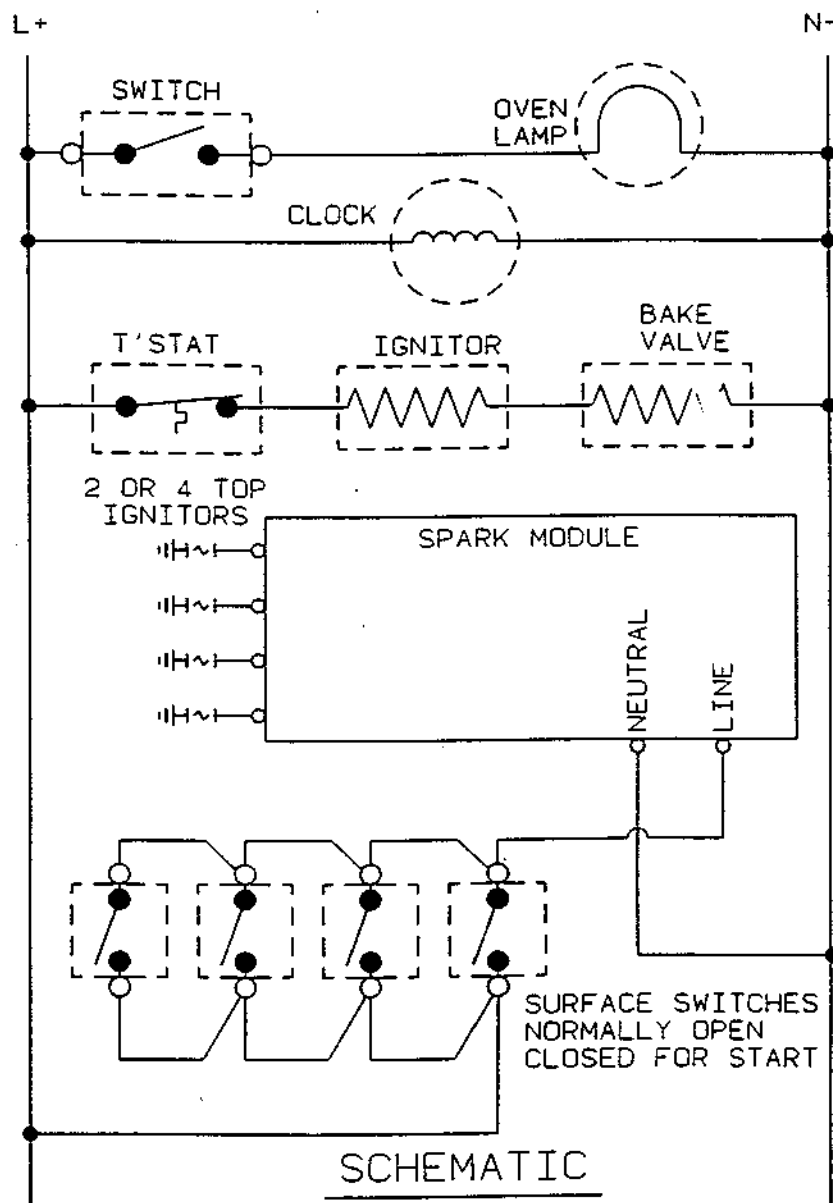
**Note:** Refer to wiring diagram supplied with unit before attempting service.



PART NO 8104P005-60

Note: Refer to wiring diagram supplied with unit before attempting service.



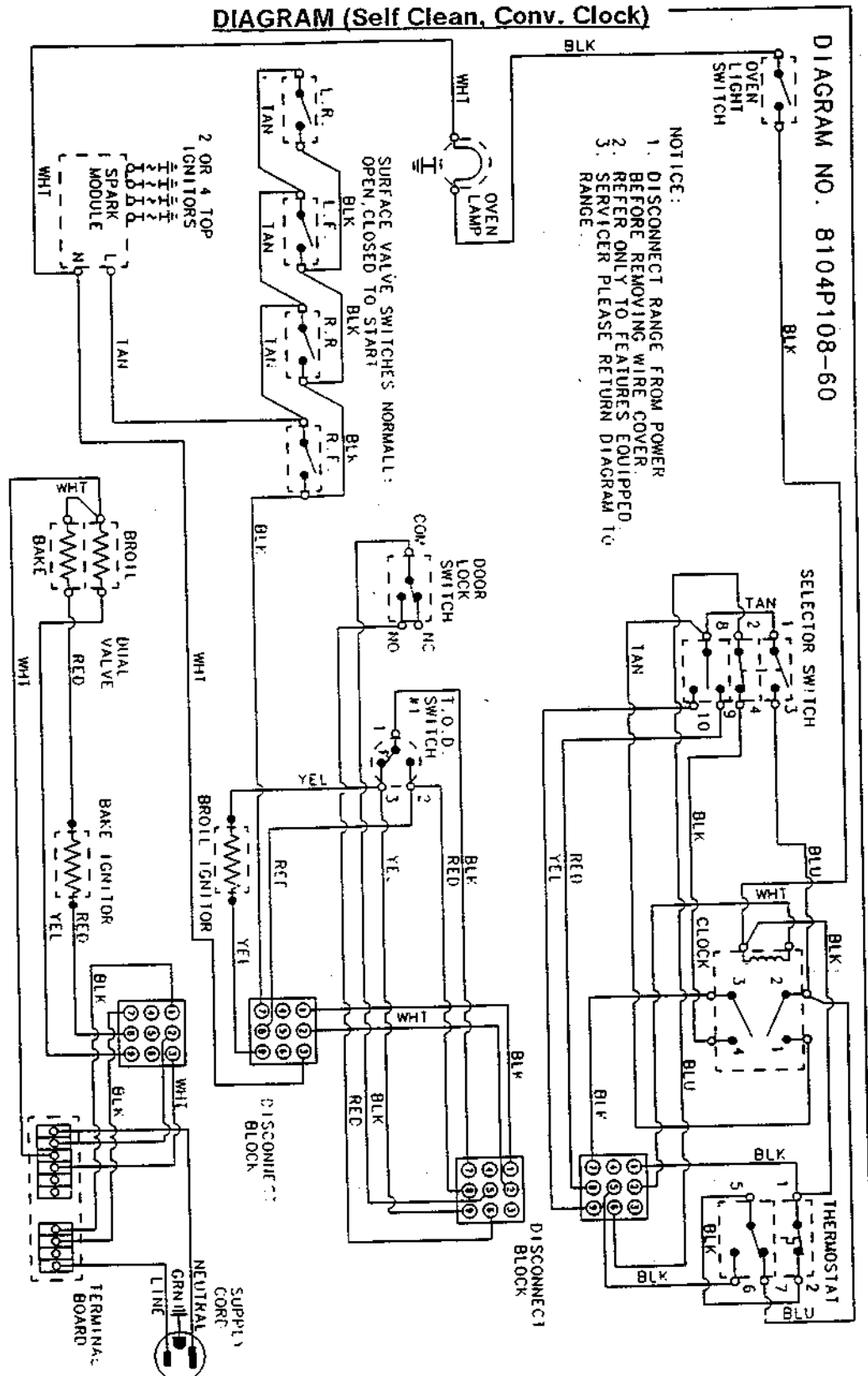


**NOTICE:**

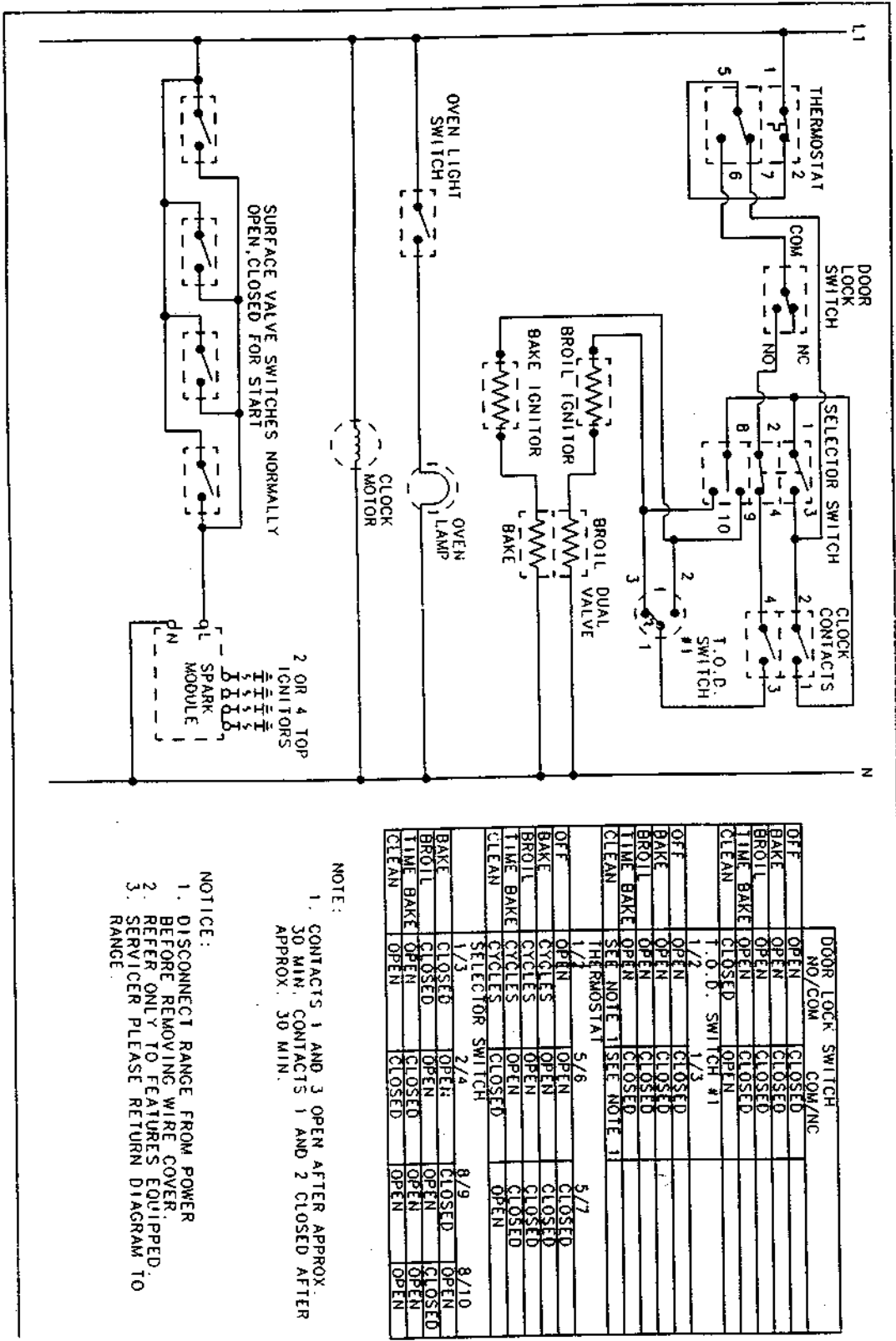
1. DISCONNECT RANGE FROM POWER BEFORE REMOVING WIRE COVER.
2. REFER ONLY TO FEATURES EQUIPPED.
3. SERVICER PLEASE RETURN DIAGRAM TO RANGE.

**Note:** Refer to wiring diagram supplied with unit before attempting service.

DIAGRAM (Self Clean, Conv. Clock)



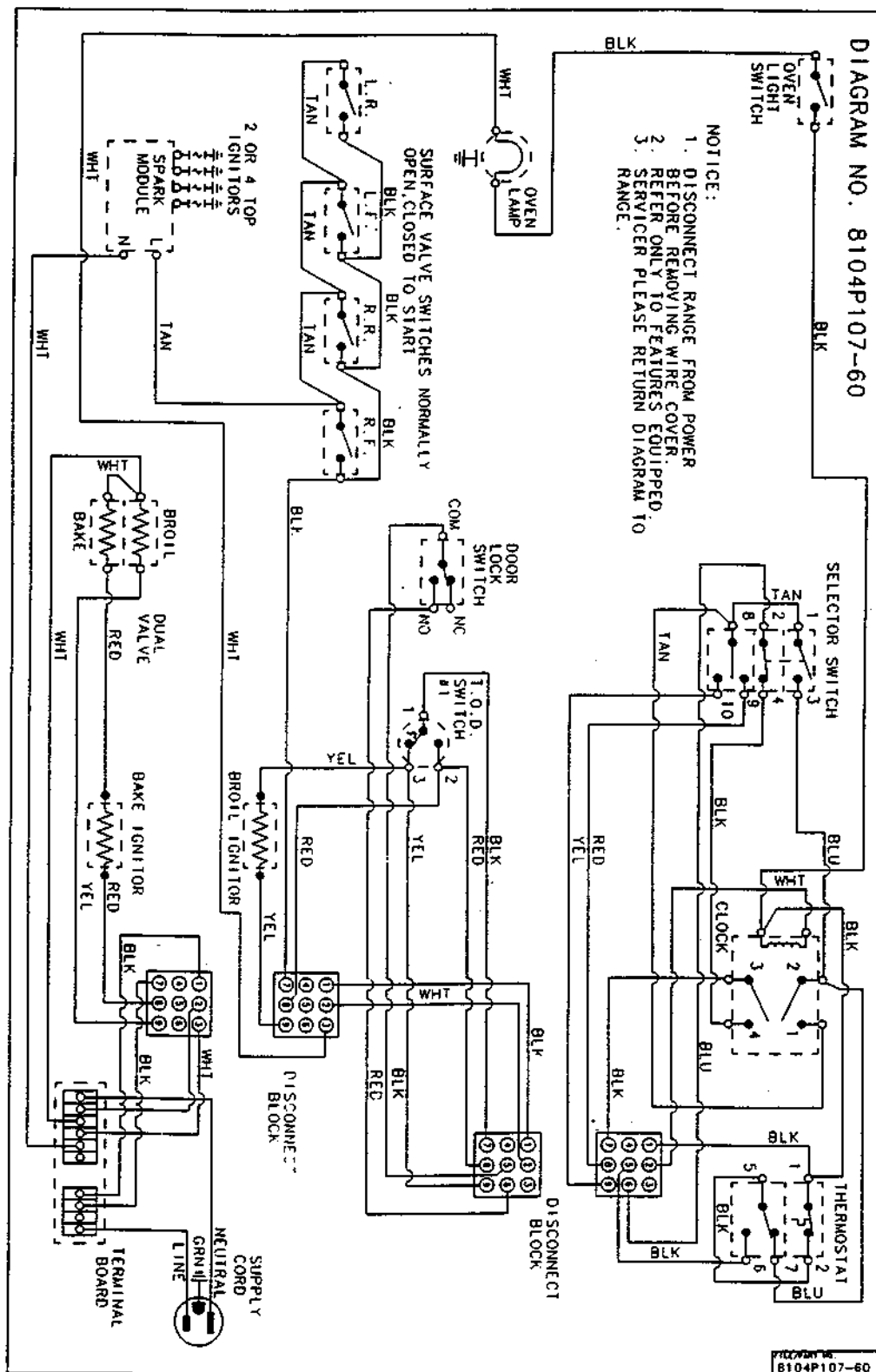
Note: Refer to wiring diagram supplied with unit before attempting service.



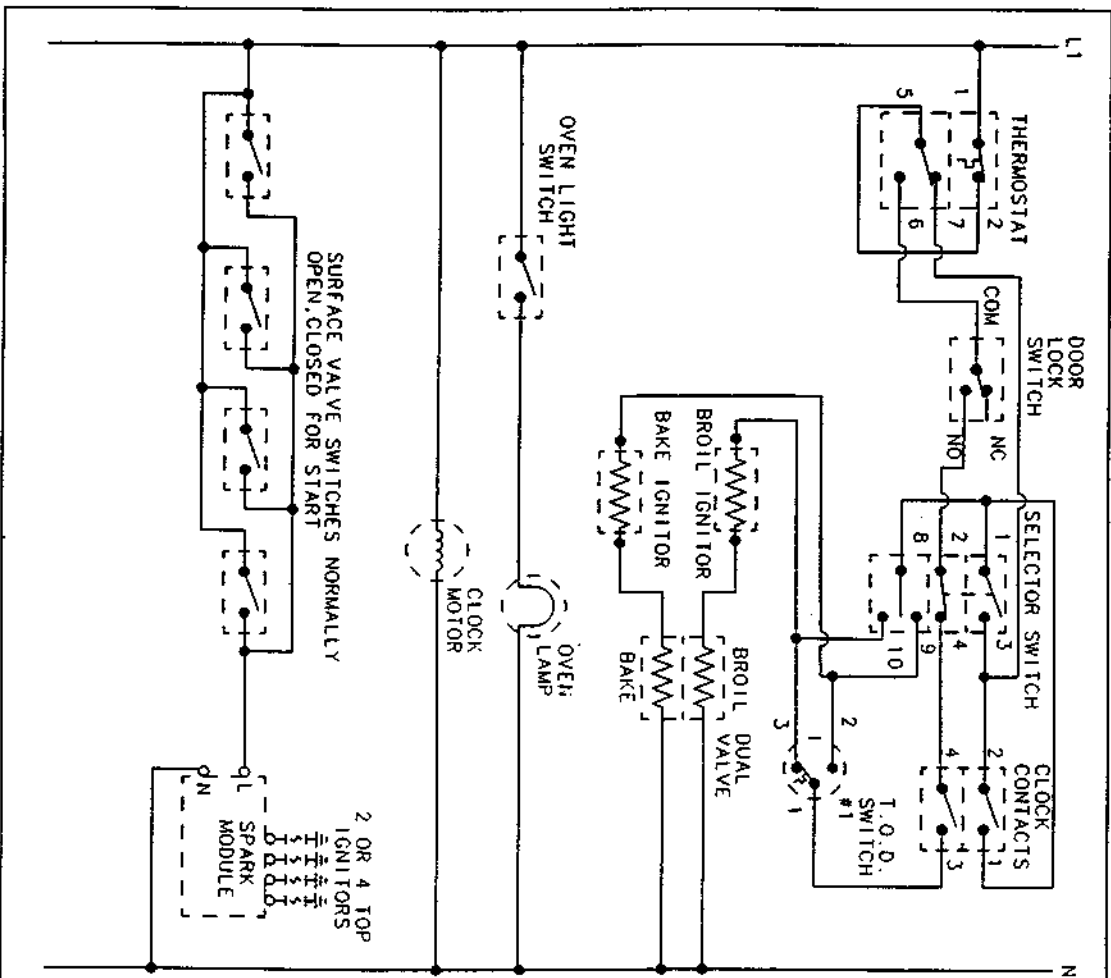
FILE PART NO.  
8104P10B-60

Note: Refer to wiring diagram supplied with unit before attempting service.

**DIAGRAM (Self Clean, Conv. Clock)**



**Note:** Refer to wiring diagram supplied with unit before attempting service.



	DOOR LOCK SWITCH			
	NO/COM	COM/NC		
OFF	OPEN	CLOSED		
BAKE	OPEN	CLOSED		
BROIL	OPEN	CLOSED		
TIME BAKE	OPEN	CLOSED		
CLEAN	CLOSED	OPEN		
	T.O.D. SWITCH #1			
OFF	1/2	1/3		
BAKE	OPEN	CLOSED		
BROIL	OPEN	CLOSED		
TIME BAKE	OPEN	CLOSED		
CLEAN	SEE NOTE 1	SEE NOTE 1		
	THERMOSTAT			
OFF	1/2	5/6	5/7	
BAKE	CYCLES	OPEN	CLOSED	
BROIL	CYCLES	OPEN	CLOSED	
TIME BAKE	CYCLES	OPEN	CLOSED	
CLEAN	CYCLES	CLOSED	OPEN	
	SELECTOR SWITCH			
BAKE	1/3	2/4	8/9	8/10
BROIL	CLOSED	OPEN	CLOSED	OPEN
TIME BAKE	CLOSED	OPEN	CLOSED	OPEN
CLEAN	OPEN	CLOSED	OPEN	OPEN

NOTE:

- CONTACTS 1 AND 3 OPEN AFTER APPROX. 30 MIN. CONTACTS 1 AND 2 CLOSED AFTER APPROX. 30 MIN.

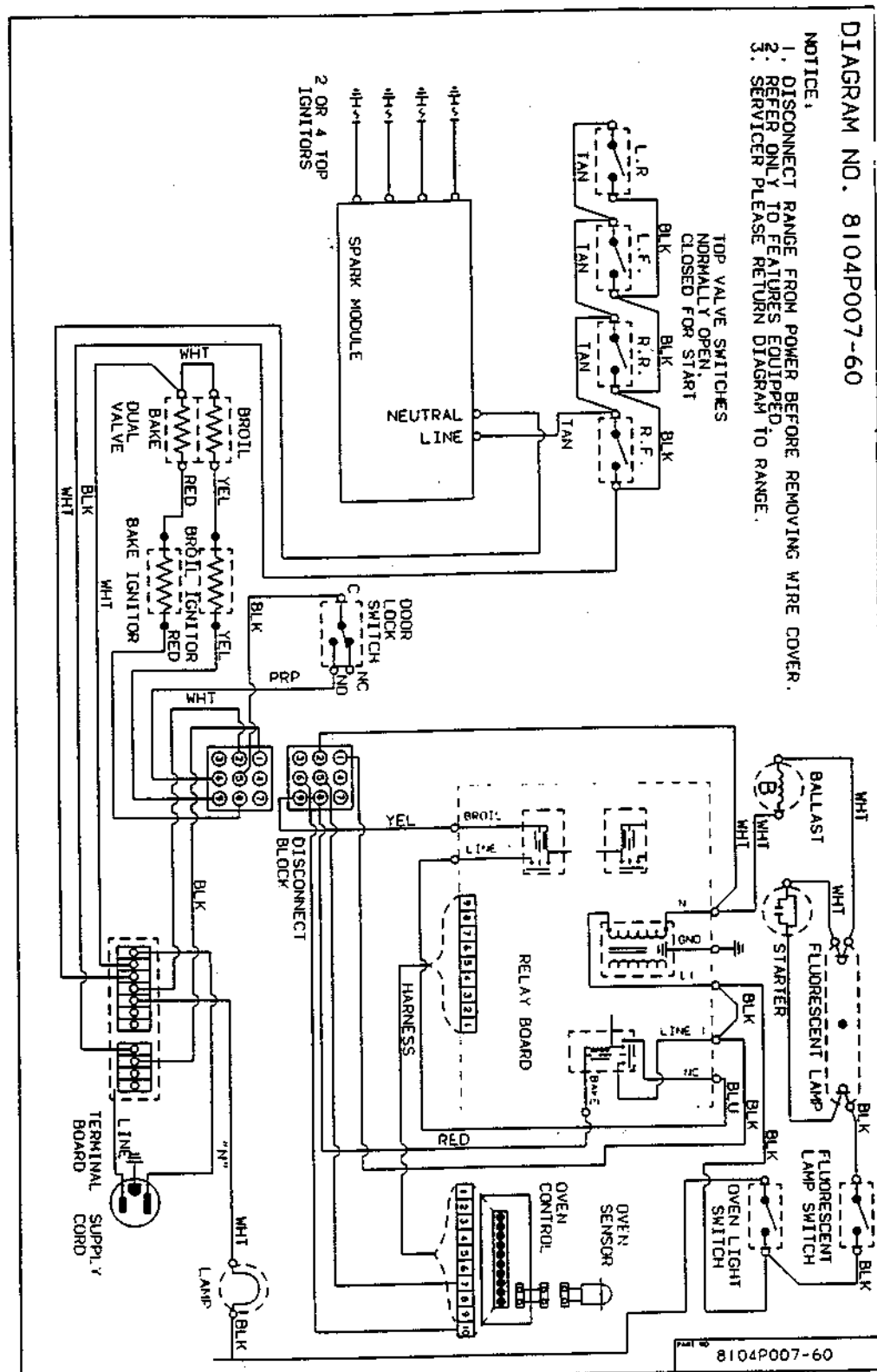
NOTICE:

- DISCONNECT RANGE FROM POWER BEFORE REMOVING WIRE COVER.
- REFER ONLY TO FEATURES EQUIPPED.
- SERVICER PLEASE RETURN DIAGRAM TO RANGE.

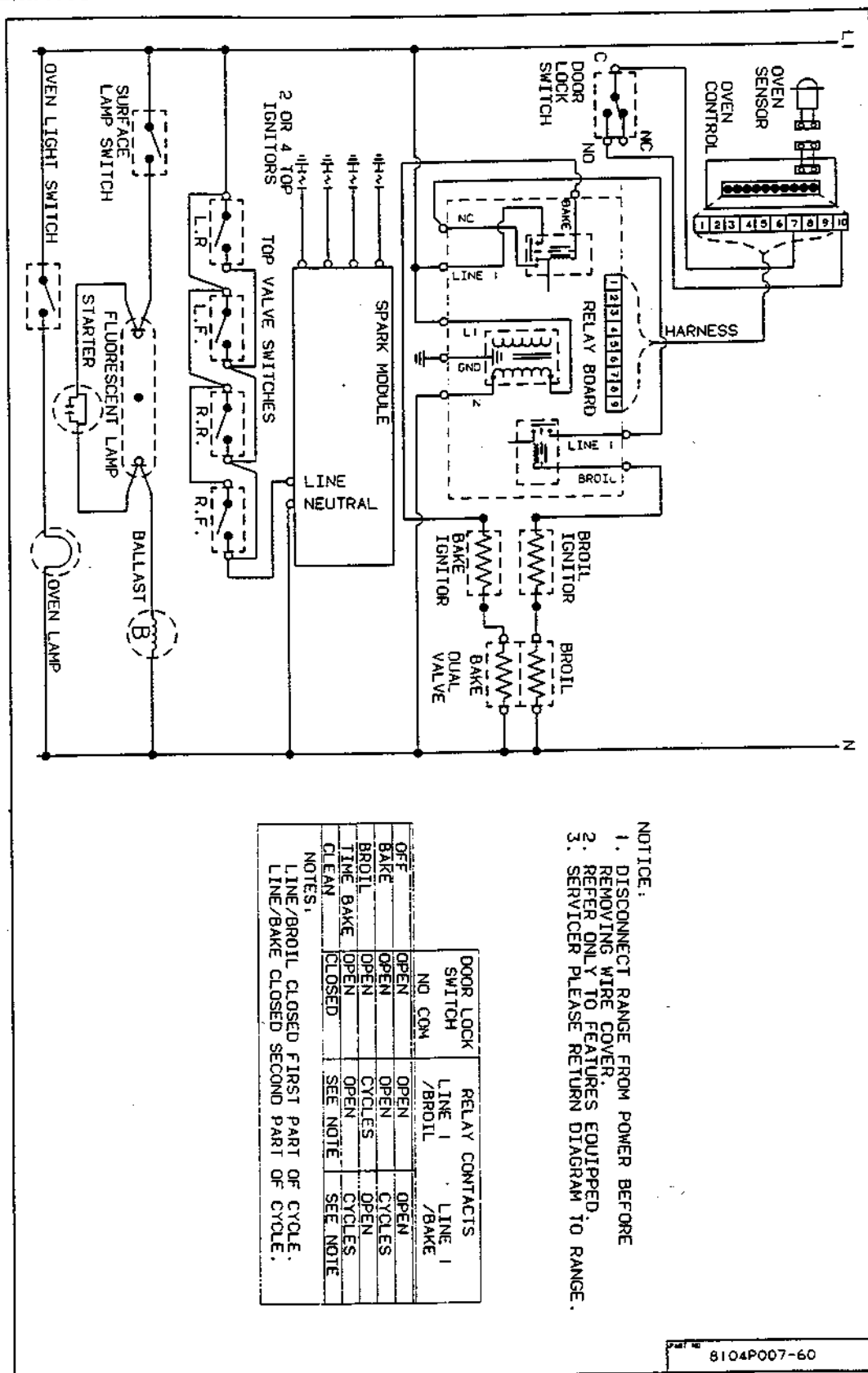
Note: Refer to wiring diagram supplied with unit before attempting service.

FILE/PART NO  
8104P107-60

DIAGRAM (T Clock, Type "C")



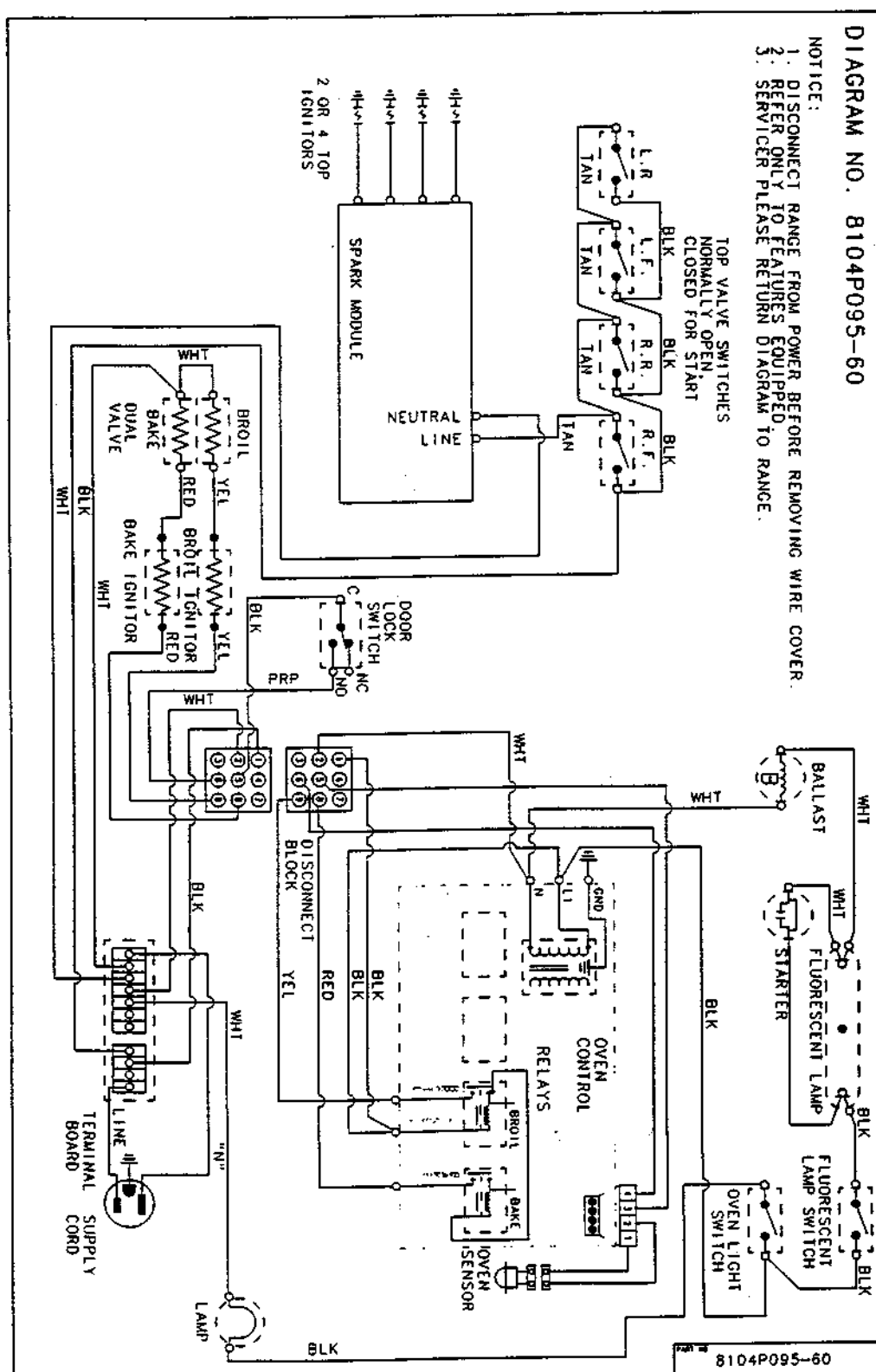
Note: Refer to wiring diagram supplied with unit before attempting service.



NOTICE:  
 1. DISCONNECT RANGE FROM POWER BEFORE REMOVING WIRE COVER.  
 2. REFER ONLY TO FEATURES EQUIPPED.  
 3. SERVICER PLEASE RETURN DIAGRAM TO RANGE.

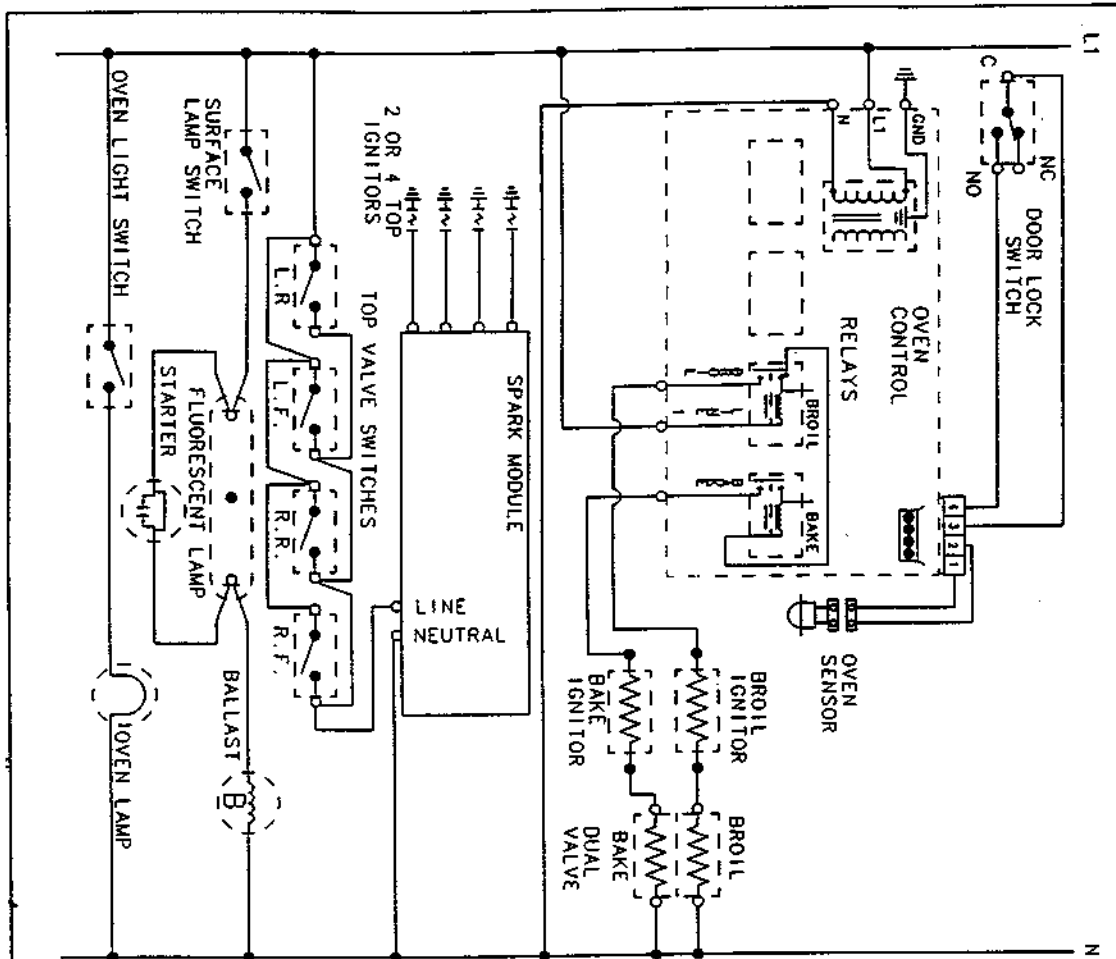
Note: Refer to wiring diagram supplied with unit before attempting service.

DIAGRAM (T Clock, Type "D")



**Note:** Refer to wiring diagram supplied with unit before attempting service.





- NOTICE:
1. DISCONNECT RANGE FROM POWER BEFORE REMOVING WIRE COVER.
  2. REFER ONLY TO FEATURES EQUIPPED.
  3. SERVICER PLEASE RETURN DIAGRAM TO RANGE.

	DOOR LOCK SWITCH		RELAY CONTACTS	
	NO	COM	LINE 1 / BROIL	LINE 1 / BAKE
OFF	OPEN	OPEN	OPEN	OPEN
BAKE	OPEN	OPEN	OPEN	CYCLES
BROIL	OPEN	OPEN	CYCLES	OPEN
TIME BAKE	OPEN	OPEN	OPEN	CYCLES
CLEAN	CLOSED	SEE NOTE	SEE NOTE	SEE NOTE

NOTES:  
 LINE/BROIL CLOSED FIRST PART OF CYCLE.  
 LINE/BAKE CLOSED SECOND PART OF CYCLE.

Note: Refer to wiring diagram supplied with unit before attempting service.

PART NO. 8104P095-60

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## **SECTION 6. BULLETINS / NOTICES**

This space reserved for Bulletins / Notices pertaining to New Generation Cooking Appliances (Gas).



**MAYTAG**

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Maytag Appliances Sales Company

Customer Service  
240 Edwards St.  
Cleveland, TN 37311