



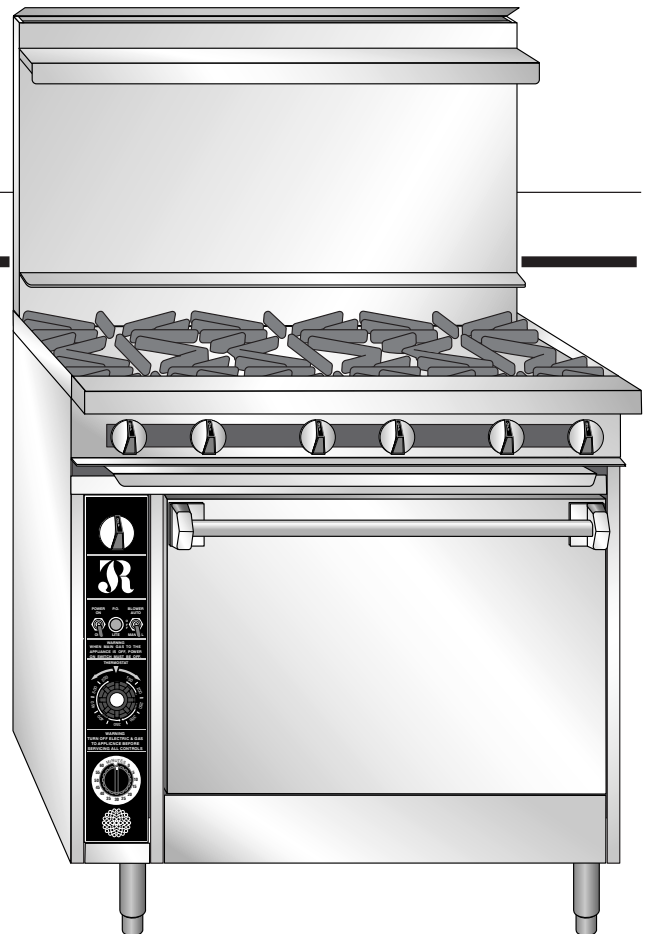
# Service Manual

REVIEW COPY 7

Manual number 3000012221

## TITAN™ SERIES SUPER HEAVY DUTY RANGE LINE

MODEL SERIES JTRH, JMRH & JTRHE



**RETAIN THIS MANUAL FOR FUTURE REFERENCE.**

**Jade Range LLC**

**A MIDDLEBY COMPANY**

2650 Orbiter Street, Brea, CA 92821 • 714-961-2400 • 800-884-5233 • [www.jaderange.com](http://www.jaderange.com)

**NOTES:**

IN LINE WITH ITS POLICY TO CONTINUALLY IMPROVE ITS PRODUCTS, JADE RANGE, INC. RESERVES THE RIGHT TO CHANGE MATERIALS AND SPECIFICATIONS WITHOUT NOTICE. JADE RANGE EQUIPMENT IS BUILT TO COMPLY WITH APPLICABLE STANDARDS FOR MANUFACTURERS. INCLUDED AMONG THOSE APPROVAL AGENCIES ARE UL, A.G.A., CSA, ETL AND OTHERS.

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## IMPORTANT FOR YOUR SAFETY

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THIS MANUAL HAS BEEN PREPARED FOR PERSONNEL QUALIFIED TO INSTALL ELECTRICAL AND GAS EQUIPMENT, WHO SHOULD PERFORM THE INITIAL FIELD STARTUP AND ADJUSTMENTS OF THE EQUIPMENT COVERED BY THIS MANUAL.

READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING OR PERFORMING MAINTENANCE ON THE EQUIPMENT.

POST IN A PROMINENT LOCATION THE INSTRUCTIONS TO BE FOLLOWED IN THE EVENT THE SMELL OF GAS IS DETECTED. THIS INFORMATION CAN BE OBTAINED FROM THE LOCAL GAS SUPPLIER.

 **WARNING**

*Failure to follow instructions in this manual can cause property damage, injury or death.*

 **WARNING**

*Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death.*

 **WARNING**

*Gas connections should be performed only by a certified professional.*

*Gas connections must comply with the applicable portions of the National Gas Code and/or all local gas codes. Failure to comply with this procedure can cause property damage, injury or death.*

 **WARNING**

*Before connecting the equipment to the gas supply, verify that the gas connections agree with the specifications on the data plate. Failure to comply can cause property damage, injury or death.*

 **WARNING**

*Before performing any service that involves electrical connection or disconnection and/or exposure to electrical components, always perform the Electrical LOCKOUT/TAGOUT Procedure. Disconnect all circuits. Failure to comply with this procedure can cause property damage, injury or death.*

 **WARNING**

*Before connecting the gas supply line, it must be purged to remove any contaminants. Failure to comply can cause property damage.*

 **WARNING**

*All gas joints disturbed during service must be checked for leaks. Do not use an open flame. Use a hazardous gas tester or a soap and water solution. Bubbles indicate a gas leak. Failure to comply can cause property damage, injury or death.*

 **WARNING**

*Do not use an open flame to test for a gas leak. Use a hazardous gas tester or a soap and water solution. Bubbles indicate a gas leak. Failure to comply can cause property damage, injury or death.*

 **WARNING**

*If a gas leak is detected, do not operate this or any other equipment until the leak has been properly repaired and residual gas has dissipated. Failure to comply can cause property damage, injury or death.*

 **WARNING**

*If a gas odor is detected, shut down the equipment at main shutoff valve and contact the local gas company or gas supplier for service. Failure to comply can cause property damage, injury or death.*

 **WARNING**

*Before performing any service that involves gas connection or disconnection and/or exposure to gas, always follow the Gas LOCKOUT/TAGOUT Procedure. Failure to comply can cause property damage, injury or death.*

 **WARNING**

*Do not operate this equipment without properly placing and securing all covers and access panels.*

 **WARNING**

*Electrical and grounding connections must comply with the applicable portions of the National Electric Code and/or all local electric codes.*

 **WARNING**

*Equipment equipped with a flexible electric supply cord are provided with a three-prong grounding plug. It is imperative that this plug be connected into a properly grounded three-prong receptacle.*

 **WARNING**

*If the receptacle is not the proper grounding type, contact an electrician. Do not remove the grounding prong from the plug.*

**IMPORTANT**

***IN THE EVENT A GAS ODOR IS DETECTED, SHUT DOWN UNITS AT MAIN SHUTOFF VALVE  
AND CONTACT THE LOCAL GAS COMPANY OR GAS SUPPLIER FOR SERVICE.***

**FOR YOUR SAFETY**

***DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS OR LIQUIDS  
IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.***

***IN THE EVENT OF A POWER FAILURE,  
DO NOT ATTEMPT TO OPERATE THIS DEVICE.***

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## GENERAL

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Jade Titan ranges are produced with the finest workmanship and materials. Proper installation, usage and maintenance will result in many years of reliable service.

Before performing maintenance on the range, thoroughly read this manual and carefully follow the instructions in the order given.

This manual is applicable to the Jade Titan ranges listed on the cover page. Procedures in this manual apply to all models unless specified otherwise. Pictures and illustrations apply to all models unless specified otherwise.

### INSTALLATION

Refer to the Installation and Operation manual.

### OPERATION

Refer to the Installation and Operation manual.

### CLEANING

Refer to the Installation and Operation manual.

### TOOLS

## REVIEW COPY 7

#### Standard

Standard set of hand tools

VOM with A.C. current tester (Any quality VOM with sensitivity of 20,000 Ohms/Volt)

#### Special

Automotive Drum Brake Spring Installation Tool  
(For Spring Replacement and Oven Door Removal)

Temperature Tester (Thermocouple type)

Gas leak detection equipment

Gas pressure manometer

## JTRH GAS / BTU / BURNER SPECIFICATIONS

FEATURE	Burner Type	Burner Part No.	BTU's	Natural @ 5" W.C.		Propane @ 10" W.C.	
				Orifice Size	Part No.	Orifice Size	Part No.
<b>Current</b>							
Open Burner front	2-Piece lift off Hex Head	3000010836	35K	39	4620800000	50	4611900000
Open Burner rear	2-Piece lift off Hex Head	3000010835	35K	39	4620800000	50	4611900000
Fire-N-Ice Saute' Burners	Hex Head bolt-on 920 burner	8492300000	20K	46	4622200000	55	4621100000
Step-Up Burner (4 across)	Hex Head bolt-on 915 burner	8406200000	15K	51	4624500000	57	4624600000
Step-Up Burner (3 across)	2-Piece lift off Hex Head	3000010836	30K	39	4620800000	50	4611900000
**Open Burners with "S" grates	2-Piece lift off Hex Head	n/a	27K	43	4620700000	53	4621700000
Hot Top	Tubular U-burner	1317510090	35K	41	4622900000	52	4621400000
Half Hot Top (rear only)	2-Piece lift off Hex Head	3000010836	15K	51	4624500000	57	4624600000
Griddle (manual control)	Tubular U-burner	2500010209	30K	39	4620800000	52	4621400000
Griddle (t-stat control)	Tubular U-burner	2500010209	25K	43	4620700000	53	4621700000
French Graduated Hot Top	2-Piece lift off Hex Head	3000010836	30K	41	4622900000	52	4621400000
Plancha	2-Piece lift off Hex Head	3000010836	15K	46	4622200000	56	4621200000
Plancha	Tubular U-burner	2500045000	20K	46	4622200000	55	4621100000
Char-Broiler	Straight tubular burner	1210600000	15K	51	4624500000	57	4624600000
Robata/Satay	Infra-Red burner	1212200000	37K	34	3000012091	49	4626800000
Oven (standard)	Tubular U-burner	2500010209	35K	37	4624300000	50	4611900000
Oven (convection)	Tubular U-burner	2500010209	30K	41	4622900000	52	4621400000
Pilot for standard oven	Pilot only (nat)	4616600100	n/a	#18	4617900000	#10	4623700000
Pilot for convection oven	Pilot w/electrode (nat)	4619600000	n/a	#18	4617900000	#10	4623700000
<b>Non-current</b>							
<i>Pre '01</i>							
Open Burner front	Hex head bolt-on 920 burner	8492300000	20K	44	4621500000	55	4621100000
Open Burner rear	Hex head bolt-on 920 burner	8492500000	20K	44	4621500000	55	4621100000
<i>'01-'05</i>							
Open Burner front	Lift off (donut) style	2500128430	35K	37	4624300000	50	4611900000
Open Burner rear	Lift off (donut) style	2500128431	35K	37	4624300000	50	4611900000
<i>Pre '09</i>							
French Graduated Hot Top	Round (mfg) burner	1322200090	30K	39	4620800000	52	4621400000

<b>Regulators</b>			
Specification	Model	Part No.	Capacity
3/4 x 3/4 nat gas	RV-48LT	4613500000	250K
3/4 x 3/4 propane	RV-48LT	4613400000	250K
1 x 1 nat gas	RV-61	4613700000	750K
1 x 1 propane	RV-61	4615800000	750K
1 1/4 x 1 1/4 nat gas	RV-61	4613200000	1.1M
1 1/4 x 1 1/4 propane	RV-61	4614000000	1.1M
1 1/4 x 1 1/4 **hi-capacity nat	**RV-81	4629400000	2.5M

# REMOVAL AND REPLACEMENT OF PARTS

## COMPONENT LOCATOR, EXTERIOR

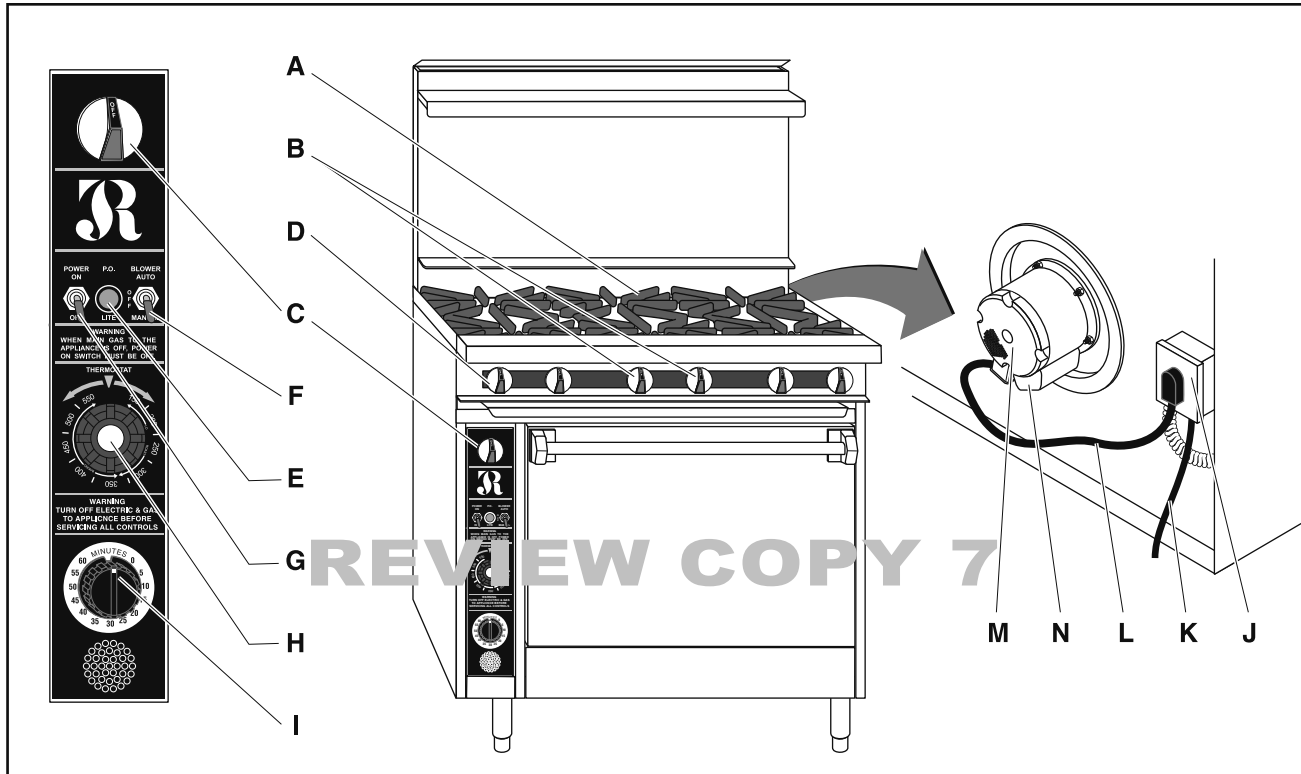


Figure 1: Component Locator, Exterior

- |  |   |
|--|---|
| A. Burner Grates   | H. Thermostat Knob                                    |
| B. Burner Control Valves                                   | I. Oven Timer (Optional)                              |
| C. Oven Gas Shut-Off Valve                                 | J. Electrical Junction Box                            |
| D. Alternate Oven Shut-Off Valve Location<br>(Some models) | K. Power Cord   |
| E. Power ON (P.O.) Light                                   | L. Fan Power Cord                                     |
| F. Blower AUTO/MANUAL Switch                               | M. Convection Fan Motor                               |
| G. Power ON/OFF Switch                                     | N. Capacitor Cover (Capacitor located under<br>cover) |



## COMPONENT LOCATOR, MANIFOLD

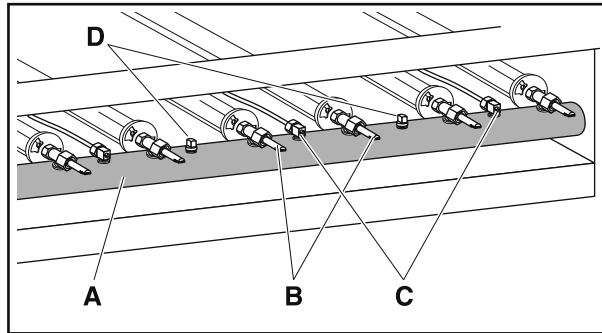


Figure 2: Component Locator, Manifold

- A. Manifold
- B. Burner Controls (w/Orifices)
- C. Pilot Adjustment Valves
- D. Pressure Test Plugs

## COMPONENT FUNCTION

### Control Valves, Top Burners

Brass control valves are used by the operator to turn on/adjust the gas supply to the burners.

### Control Valve, Oven Gas Supply Shut-off

The oven gas shut-off valve turns the gas to the oven on or off.

### Oven Door Switch (Convection models only)

The door switch is located under the oven control panel. When the oven door opens, the switch opens the circuit shutting off the fan motor. If door plunger switch has failed, the AUTO/MANUAL switch will not shut off the fan.

### Ignition Module (Convection models only)

The ignition module controls and supplies high voltage to the oven pilot igniter.

### Manifold

The gas supply manifold is located behind the top section burner knobs. The burner control valves are attached to the manifold, which is a large pipe full of gas under pressure.

### Motor, Convection Oven

The single-phase convection oven motor circulates oven heated air. The motor electrical circuit is routed

through door switch and through the blower AUTO/MANUAL switch. The door closes the door switch and allows voltage to flow from the door switch to the motor. The motor should operate with the door open when the blower switch is in the manual position.

### Orifice

Each burner is supplied with gas through an orifice.

### Pressure Regulator

The pressure regulator regulates the incoming supply pressure to keep the pressure of gas in the range at a constant level (5" WC nat., 10" WC propane).

### Oven Pilot and Control Valve Assembly

The safety control valve senses the presence of the pilot light via the thermocouple and opens the gas valve to the oven only when the pilot light is lit.

### Thermocouple/Safety Control Valve

The thermocouple on the pilot safety valve prevents gas from being sent to the oven burners unless the pilot light is on.

### Pilot Valve Assembly, Top Burners

Adjustable valves in the gas manifold control the flow of gas to the individual pilot lights for the top burners.

### Oven Thermostat

The thermostat regulates oven temperature by regulating the gas flow to the oven as required to maintain oven temperature.

### Oven Timer (Optional)

The oven timer control provides an audible alert after a specific time interval.

### Junction Box (Convection models only)

The junction box is located at the rear of the range and is the connection point for electrical wires that control the convection fan motor.

### Power Cord (Convection models only)

The power cord connects the range to the power source. The convection oven will not operate unless connected to an electrical power supply. *Conventional ovens and top burners do not require electrical power to operate.*

## ELECTRICAL LOCKOUT/ TAGOUT PROCEDURE



**BEFORE PERFORMING ANY SERVICE THAT INVOLVES ELECTRICAL CONNECTION OR DISCONNECTION AND/OR EXPOSURE TO ELECTRICAL COMPONENTS, ALWAYS PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE. DISCONNECT ALL CIRCUITS. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.**

The Electrical LOCKOUT/TAGOUT Procedure is used to protect personnel working on an electrical equipment. Before performing any maintenance or service that requires exposure to electrical components, follow these steps:

1. In electrical box, place equipment circuit breaker into OFF position.
2. Place a lock or other equipment on electrical box cover to prevent someone from placing circuit breaker ON.
3. Place a tag on electrical box cover to indicate that equipment has been disconnected for service and power should not be restored until tag is removed by maintenance personnel.
4. Disconnect equipment power cord from electrical outlet.
5. Place a tag on the cord to indicate that equipment has been disconnected for service and power should not be restored until tag is removed by maintenance personnel.

## GAS LOCKOUT/TAGOUT PROCEDURE



**BEFORE PERFORMING ANY SERVICE THAT INVOLVES GAS CONNECTION OR DISCONNECTION AND/OR EXPOSURE TO GAS, ALWAYS FOLLOW THE GAS LOCKOUT/TAGOUT PROCEDURE. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.**

The Gas LOCKOUT/TAGOUT Procedure is used to protect personnel working on a gas equipment. Before performing any maintenance or service that requires gas disconnections, follow these steps:

1. Locate the gas shutoff valve or inlet.
2. Place the valve in the OFF position.
3. Place a tag on the valve indicating that service is being performed on equipment and the gas must remain off until service is complete.
4. Place a locking device on the gas valve or inlet, preventing connection until the lock is removed.
5. On the equipment, make sure all flame sources are extinguished and/or removed.
6. Bleed residual gas from the equipment inlet line and allow time for the gas to dissipate before beginning service on the equipment.

## Gas Leak Test



**ALL GAS JOINTS DISTURBED DURING SERVICE MUST BE CHECKED FOR LEAKS. DO NOT USE AN OPEN FLAME. USE A HAZARDOUS GAS TESTER OR A SOAP AND WATER SOLUTION. BUBBLES INDICATE A GAS LEAK. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.**



**IF A GAS LEAK IS DETECTED, DO NOT OPERATE THIS OR ANY OTHER EQUIPMENT UNTIL THE LEAK HAS BEEN PROPERLY REPAIRED. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.**

After completing service on any gas equipment, all gas joints disturbed during service must be checked for leaks. DO NOT USE AN OPEN FLAME. Use a hazardous gas tester or use a soap and water solution as follows:

1. Apply a soap and water solution to gas joint and check for bubbles.
2. If bubbles are present, the joint is leaking and must be repaired before using the equipment.

## COVERS AND PANELS

### Manifold Cover, Top Section

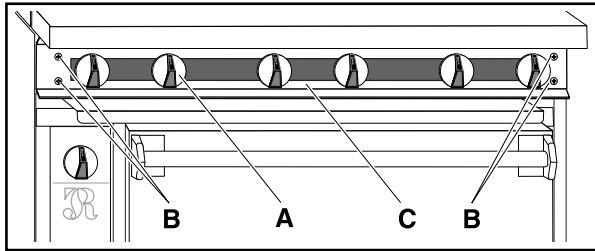


Figure 3: Manifold Cover, Top Section

- A. Gas Valve Knobs
- B. Cover Screws
- C. Manifold Cover

1. Loosen set screw and remove all knobs from control valves.
2. Remove four (4) manifold cover screws.
3. Remove manifold cover.
4. Reverse the procedure to install the cover.

### Convection Oven Control Panel

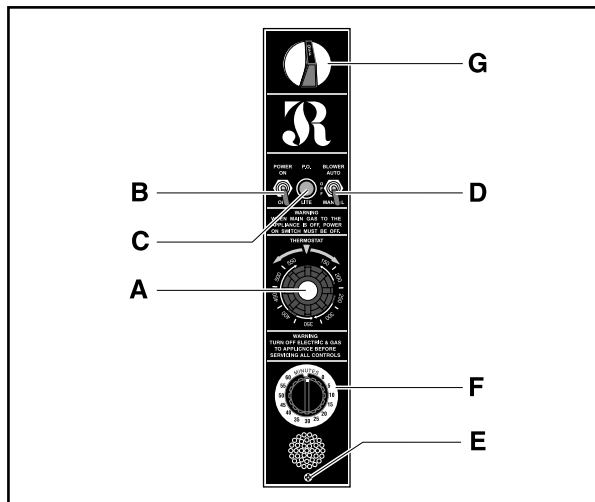


Figure 4: Convection Oven Control Panel

- A. TEMPERATURE Control Knob
- B. Power ON/OFF Switch
- C. Power ON Indicator Light
- D. Blower AUTO/OFF/MANUAL Switch
- E. Retaining Screw
- F. Timer
- G. Gas ON/OFF Valve for Oven

### **WARNING**

#### **PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE.**

1. Shut off all electric controls and perform the Electrical LOCK/TAGOUT procedure.
2. Remove thermostat and gas ON/OFF knobs.
3. Remove cover retaining screw.
4. Pull panel out to clear thermostat shaft.
5. Reverse the procedure to install the panel.

### Oven Door

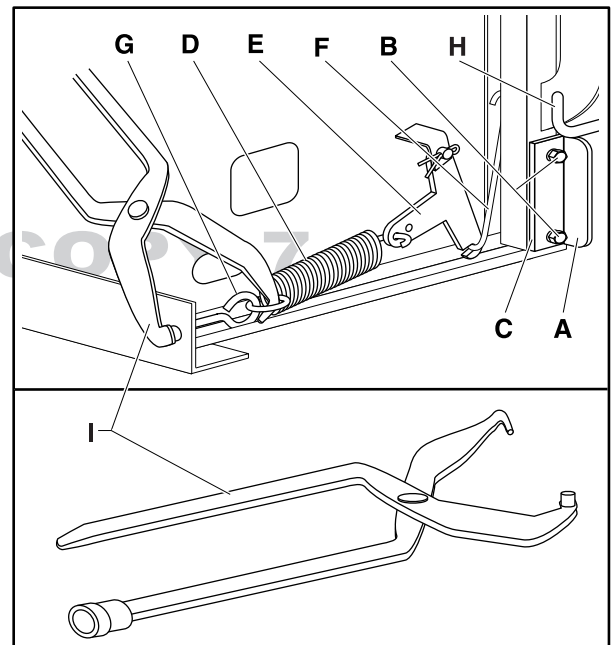


Figure 5: Oven Door Operating Mechanism

- A. Oven Door Hinge
- B. Hinge Bolts
- C. Door Hinge Shims
- D. Door Spring
- E. Rocker Arm
- F. "S" Hook
- G. Eyelet
- H. J-Hook to Mount Kick Panel
- I. Brake Spring Tool

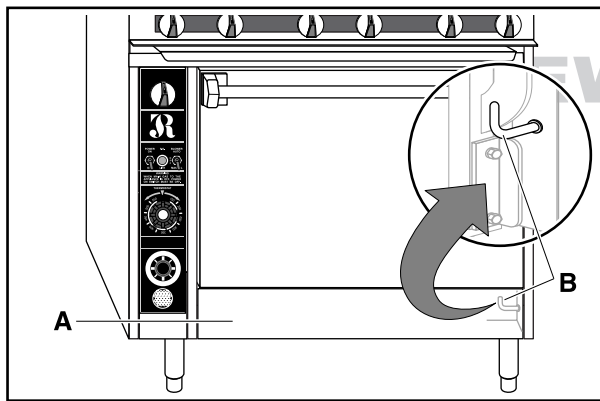
1. Remove kick plate as described under COVERS AND PANELS.

**WARNING**

**RISK OF BODILY INJURY! OVEN SPRING IS UNDER CONSIDERABLE TENSION. EXERCISE GREAT CARE IN REMOVING OR REPLACING SPRING.**

2. Using an automotive brake spring pliers release spring from eyelet as shown in Figure 5.
3. Remove wire S-Hook to rocker arm from oven door hinge.
4. Loosen the four bolts that attach oven door hinges.
5. Remove door hinges from behind the door.
6. Using an assistant to support door, remove four hinge bolts that attach hinges to frame.
7. Reverse the procedure to install the door.

**Oven Kick Panel**



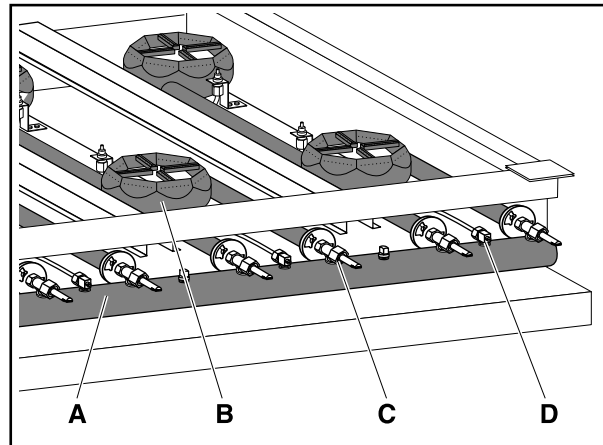
**Figure 6: Oven Kick Panel**

- A. Oven Kick Panel**
- B. J-Hook (on Hinge)**

1. Lift oven kick panel straight up to release tabs from retaining slots and pull out to remove.
2. To install the oven kick panel, insert tabs into hinge J-Hook slots and slide panel towards bottom of range.

**COMPONENT REMOVAL**

**Top Section Open Burner and Orifices**



**Figure 7: Top Section Open Burner and Orifices**

- A. Manifold**
- B. Top Burners**
- C. Burner Control Valve with Orifice**
- D. Pilot Valve**

**WARNING**

**PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE.**

1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.

**WARNING**

**PERFORM THE GAS LOCKOUT/TAGOUT PROCEDURE.**

2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove top grates to expose burners.
4. Remove manifold cover as per COVERS AND PANELS.

**NOTE:** It is not necessary to remove pilot tubes in order to remove burner assemblies.

5. Lift burner assembly at rear of range and pull away from burner control/orifice to remove.
6. Reverse the procedure to install the burner assembly.

## TOP SECTION VALVES: BURNER, OVEN SHUT-OFF, AND PILOT

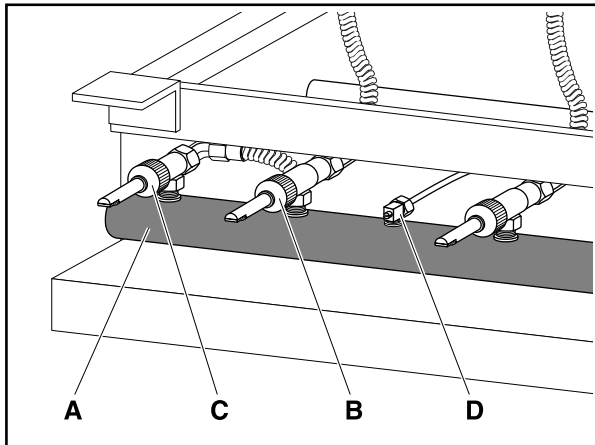


Figure 8: Top Section Valves: Burner, Grease Tray, Oven Shut-Off and Pilot (Char-Broiler configuration shown)

- A. Manifold
- B. Burner Valve
- C. Oven Shut-Off Valve
- D. Pilot Valve

### Pilot Valves: Top Section Burners



**WARNING**

**PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE.**

1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.



**WARNING**

**PERFORM THE GAS LOCKOUT/TAGOUT PROCEDURE.**

2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove manifold cover as per COVERS AND PANELS.
4. Remove pilot line(s) from valve.
5. Remove pilot valve.
6. Reverse procedure to install valve.

### Burner Valves: Top Section Burners



**WARNING**

**PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE.**

1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.



**WARNING**

**PERFORM THE GAS LOCKOUT/TAGOUT PROCEDURE.**

2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove burner as described in OPEN BURNERS AND NOZZLE.
4. Remove manifold cover as described in COVER and PANELS.

**CAUTION:** Only use flat wrenches to unscrew burner valves. Compression tools such as pliers and pipe wrenches can distort the valve body and cause gas leaks.

5. Remove burner valve and orifice from valve to be re-used.
6. Reverse procedure to install valve.

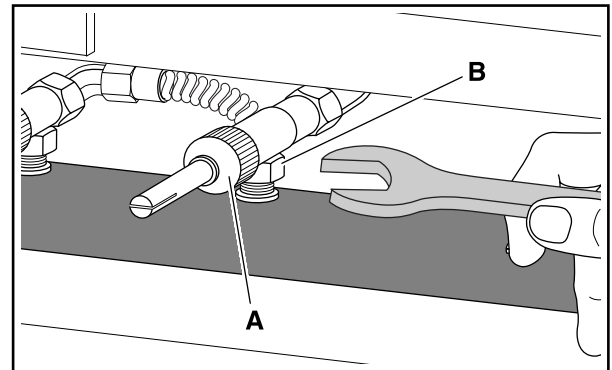


Figure 9: Remove Burner Valve

- A. Top Section Burner Valve
- B. Valve Wrench Flat

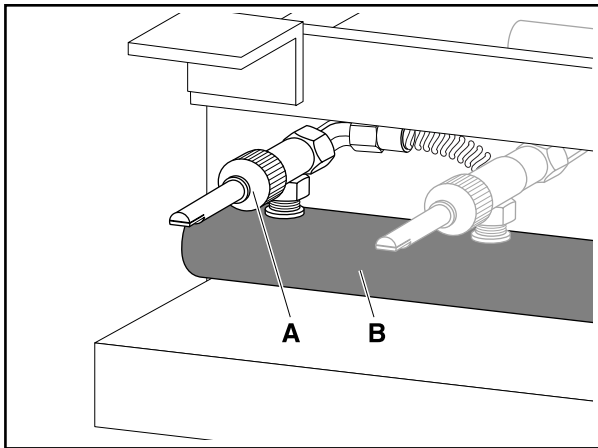
## Oven Shut-Off Valves

**NOTE:** The Oven Shut-Off valve is located below the manifold panel on the oven control panel, or is the far left valve on griddle/char broiler units. See THERMOSTAT AND THERMOCOUPLE for removal and replacement.



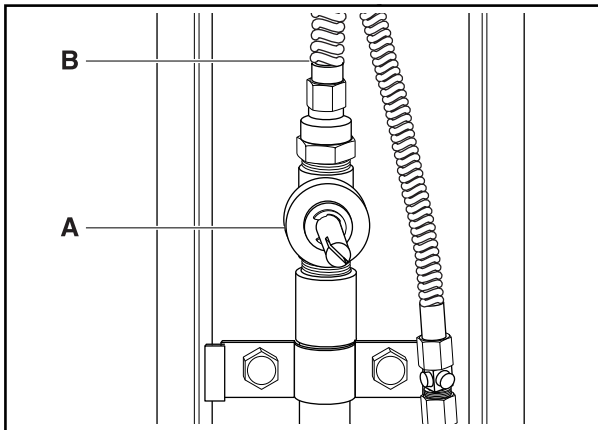
**WARNING**

**PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE.**



**Figure 10: Oven Shut-Off Valve  
(Griddle & Broiler Models)**

- A. Oven Shut-Off Valve
- B. Manifold



**Figure 11: Oven Shut-Off Valve  
(Standard Configuration)**

- A. Oven Shut-Off Valve
- B. Gas Line to Burner

1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.

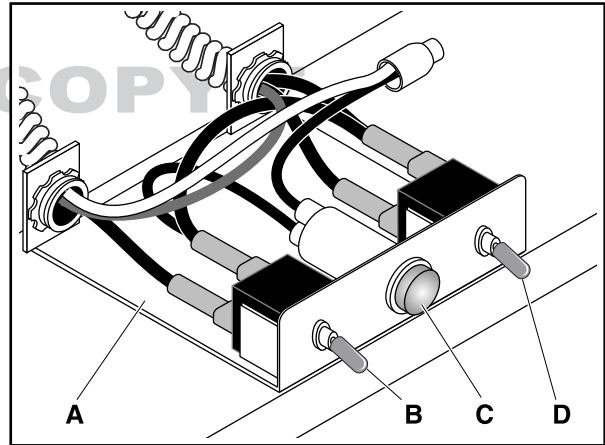


**WARNING**

**PERFORM THE GAS LOCKOUT/TAGOUT PROCEDURE.**

2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove manifold cover as described in COVER and PANELS.
4. Remove gas line to burner and right angle connector on burner.
5. Remove shut-off valve.
6. Reverse procedure to install valve.

## Fan Motor Switches and Indicator Light



**Figure 12: Fan Motor Switches  
and Indicator Light**

- A. Switch Bracket
- B. Power ON/OFF Switch
- C. Power ON (P.O.) Light
- D. Blower AUTO/OFF/MANUAL Switch



**WARNING**

**PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE.**

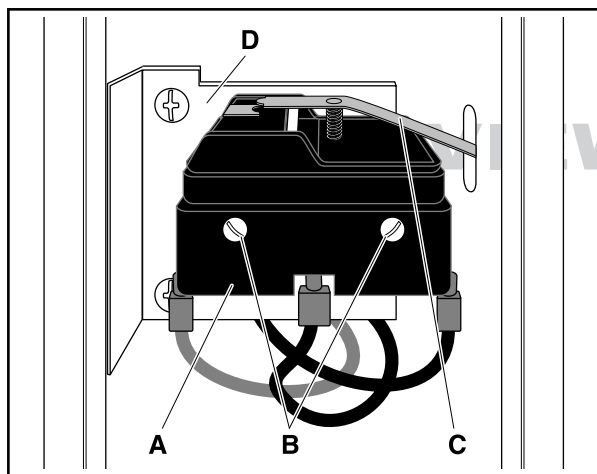
1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.

**! WARNING**

**PERFORM THE GAS LOCKOUT/TAGOUT PROCEDURE.**

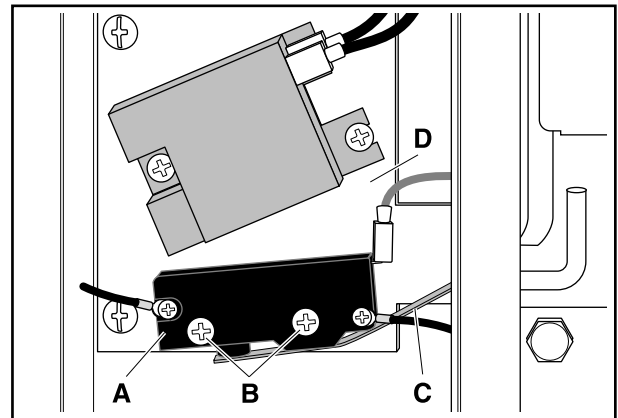
2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove oven control panel as described under COVERS AND PANELS.
4. Remove switch bracket assembly.
5. Remove switch or indicator light from bracket.
6. Mark and disconnect wiring from switch.
7. Reverse the procedure to install the switch or indicator light.

**Oven Door Switch**



**Figure 13: Oven Door Switch (Old style)**

- A. Oven Door Switch**
- B. Retaining Screws**
- C. Switch Contact Arm**
- D. Oven Door Switch Bracket**



**Figure 14: Oven Door Switch (New style)**

- A. Oven Door Switch**
- B. Retaining Screws**
- C. Switch Contact Arm**
- D. Oven Door Switch Bracket**

**! WARNING**

**PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE.**

1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.

**! WARNING**

**PERFORM THE GAS LOCKOUT/TAGOUT PROCEDURE.**

2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove Oven Control Panel as described under COVERS AND PANELS.
4. Remove two retaining screws holding oven door switch.
5. Slide switch contact arm through clearance hole.
6. Mark and disconnect wiring from switch.
7. Reverse the procedure to install the switch.

## Thermostat and Thermocouple

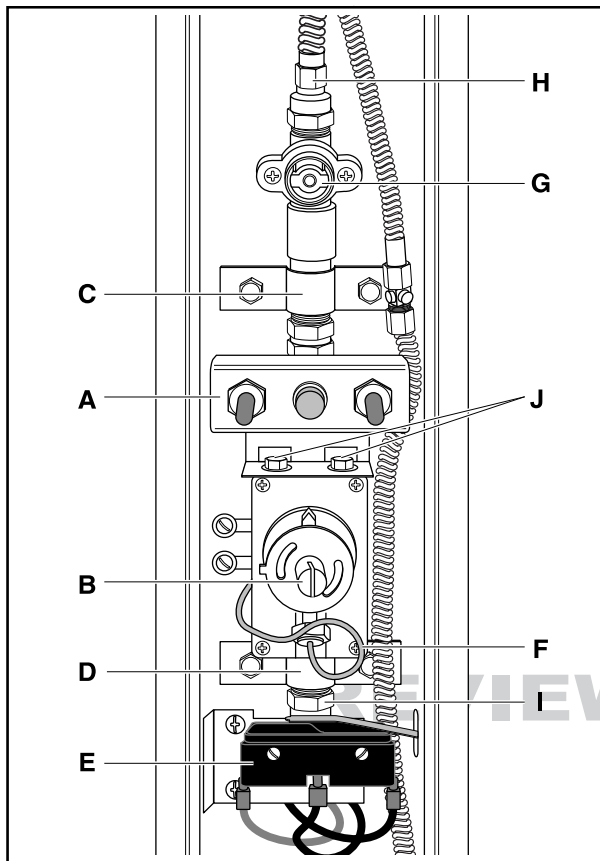


Figure 15: Thermostat and Control Panel  
(Convection Model Shown)

- A. Switch Panel
- B. Thermostat
- C. Upper Pipe Clamp
- D. Lower Pipe Clamp
- E. Door Switch and Bracket
- F. Capillary Sensor
- G. Oven Shut-Off Valve
- H. Upper Gas Fitting
- I. Lower Gas Fitting
- J. Mounting Screws for Switch Panel



### WARNING

**PERFORM THE ELECTRICAL LOCKOUT/  
TAGOUT PROCEDURE.**

1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.



### WARNING

**PERFORM THE GAS LOCKOUT/TAGOUT  
PROCEDURE.**

2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove oven control panel as described under COVERS AND PANELS.
4. Unbolt switch panel assembly from thermostat.
5. Remove screws from oven door switch bracket and remove bracket.
6. Disconnect flexible gas lines from top of gas shut-off valve and bottom of thermostat.
7. From inside the oven, remove the capillary from its supports and push it through the hole into cavity of oven control panel.
8. Remove lower pipe clamp.
9. While supporting assembly, remove upper pipe clamp and carefully remove entire assembly with the capillary out of the oven compartment.
10. Reverse the procedure to install the thermostat. Use caution so as to not kink-damage capillary when reinstalling.

## Oven Pilot Control Valve with Dropout of 45 - 60 Seconds

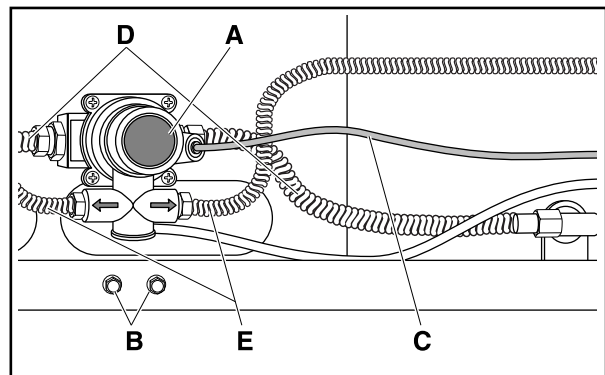


Figure 16: Oven Pilot Control Valve

- A. Oven Safety Control Valve
- B. Supporting Screws
- C. Thermocouple
- D. Main Burner Gas Lines
- E. Pilot Gas Lines



**! WARNING**

**PERFORM THE ELECTRICAL LOCKOUT/  
TAGOUT PROCEDURE.**

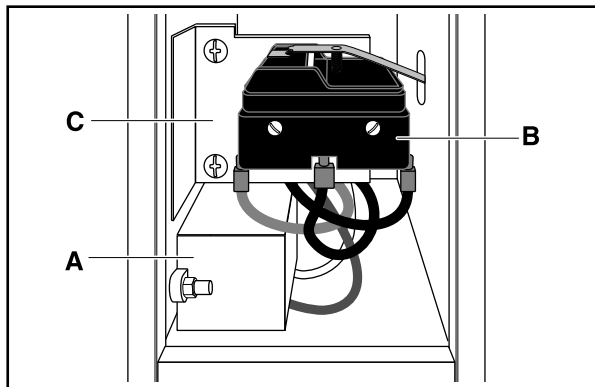
1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.

**! WARNING**

**PERFORM THE GAS LOCKOUT/TAGOUT  
PROCEDURE.**

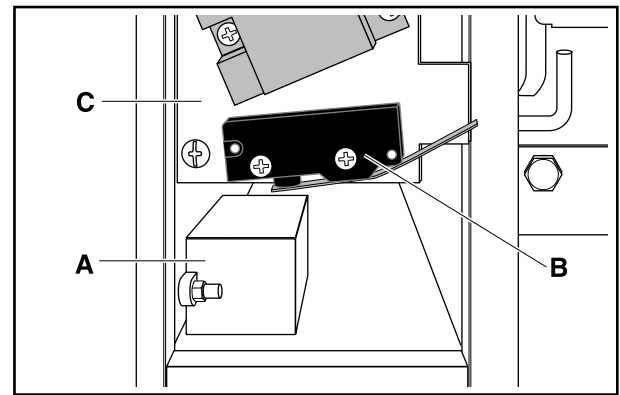
2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove kick plate as described under COVERS AND PANELS.
4. Remove thermocouple from oven pilot control valve.
5. Disconnect burner and pilot gas lines from safety control valve.
6. Remove screws supporting safety control valve and remove valve assembly.
7. Reverse the procedure to install control valve.

**Ignition Module**



**Figure 17: Ignition Module (Old style)**

- A. Ignition Module**
- B. Door Switch**
- C. Door Switch Bracket**



**Figure 18: Ignition Module (New style)**

- A. Ignition Module**
- B. Door Switch**
- C. Door Switch Bracket**

**! WARNING**

**PERFORM THE ELECTRICAL LOCKOUT/  
TAGOUT PROCEDURE.**

1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.

**! WARNING**

**PERFORM THE GAS LOCKOUT/TAGOUT  
PROCEDURE.**

2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove oven control panel as described under COVERS AND PANELS.
4. Remove the door switch as described under DOOR SWITCH.
5. Remove door switch bracket assembly.
6. Remove two nuts retaining ignition module.
7. Mark and disconnect wires on ignition module.
8. Reverse the procedure to install ignition module.

### Oven Pilot Assembly /Thermocouple

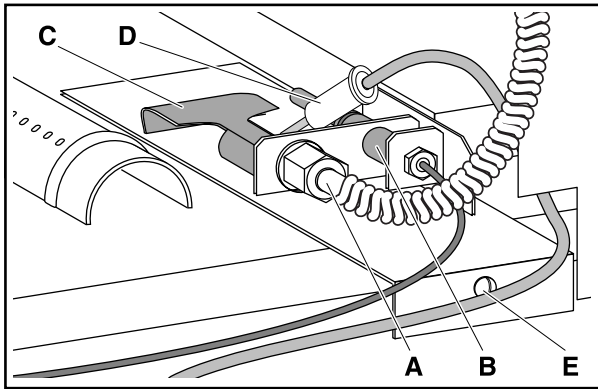


Figure 19: Oven Spark Pilot Assembly  
(Convection Models)

- A. Pilot Gas Line
- B. Thermocouple
- C. Pilot Assembly
- D. Electronic Igniter Electrode
- E. Hold-Down Screw

**WARNING**

**PERFORM THE ELECTRICAL LOCKOUT/  
TAGOUT PROCEDURE.**

1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.

**WARNING**

**PERFORM THE GAS LOCKOUT/TAGOUT  
PROCEDURE.**

2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove kick plate as described under COVERS AND PANELS.
4. Remove the pilot gas line.
5. Remove thermocouple from the pilot assembly.  
NOTE: Standard Oven has Locknuts and Convection Oven has Tinnerman Clip.
6. Remove hold-down screw and remove pilot assembly.
7. Reverse the procedure to install pilot assembly.

### Oven Burner Gas Orifice

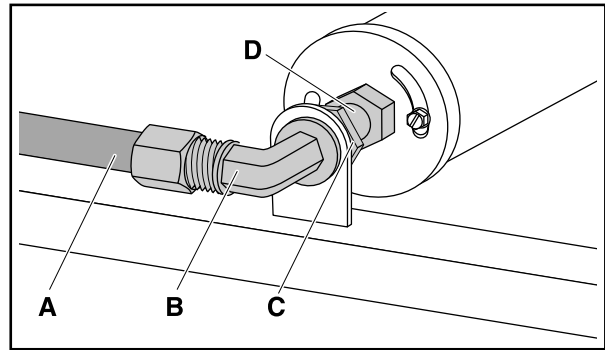


Figure 20: Oven Burner Gas Nozzle

- A. Gas Line
- B. Orifice Elbow Fitting
- C. Retaining Nut
- D. Orifice

**WARNING**

**PERFORM THE ELECTRICAL LOCKOUT/  
TAGOUT PROCEDURE.**

1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.

**WARNING**

**PERFORM THE GAS LOCKOUT/TAGOUT  
PROCEDURE.**

2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure
3. Remove kick plate as described under COVERS AND PANELS.
4. Remove gas line from the orifice elbow..
5. Slide oven burner to rear of range to expose the orifice.
6. Loosen hex head nut on the orifice elbow and remove the orifice.
7. Reverse procedure to install the orifice elbow.

## Oven Burner Assembly

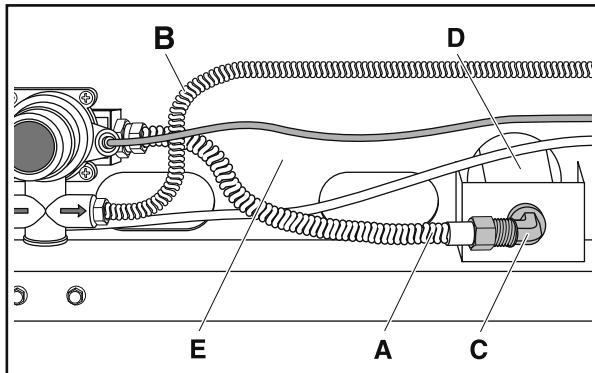


Figure 21: Oven Burner Assembly

- A. Oven Burner Gas Line
- B. Oven Pilot Gas Line
- C. Oven Burner Orifice Elbow
- D. Oven Burner
- E. Oven Burner Box (Firewall)



**WARNING**

**PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE.**

1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.



**WARNING**

**PERFORM THE GAS LOCKOUT/TAGOUT PROCEDURE.**

2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove kick plate as described under COVERS AND PANELS.
4. Remove burner gas line and orifice elbow as described under OVEN BURNER GAS NOZZLE.
5. Lift up front of burner assembly and remove through opening in firewall.
6. Reverse the procedure to install burner.

## Oven Timer

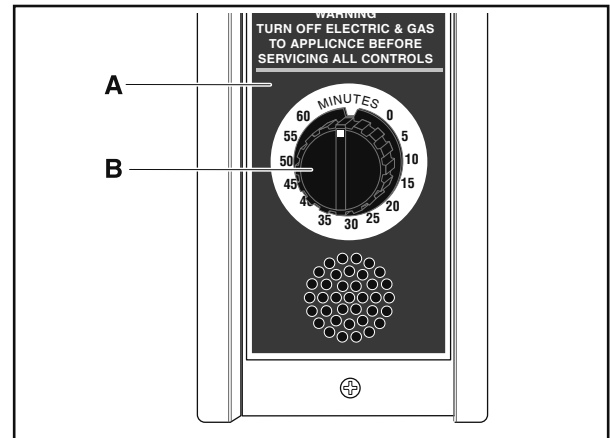


Figure 22: Oven Timer

- A. Oven Control Panel
- B. Timer



**WARNING**

**PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE.**

1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.



**WARNING**

**PERFORM THE GAS LOCKOUT/TAGOUT PROCEDURE.**

2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove oven control panel as described under COVERS AND PANELS.
4. Loosen set screw and remove timer knob.
5. Remove timer from panel.
6. Reverse the procedure to install the timer.

## Motor and Blower Assembly

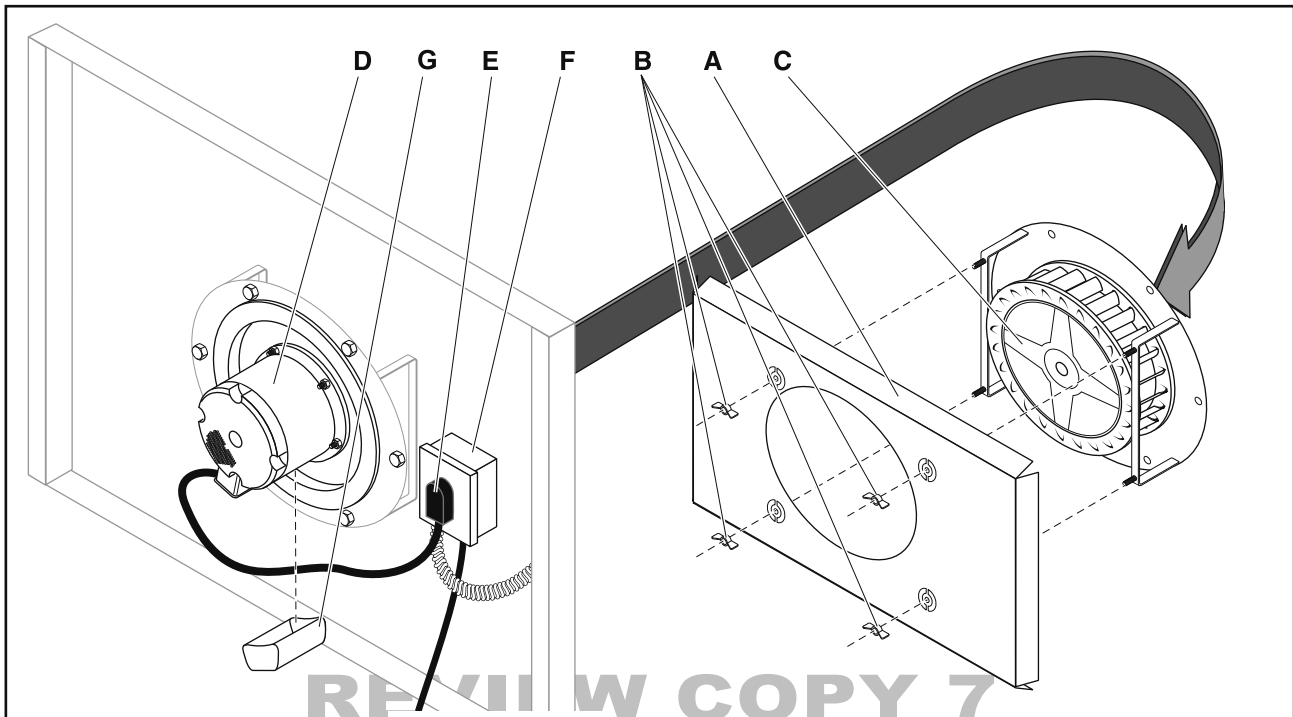


Figure 23: Motor and Blower Assembly

- A. Blower Shield
- B. Wing Nuts
- C. Blower
- D. Blower Motor
- E. Blower Plug
- F. Junction Box
- G. Capacitor Cover

**⚠ WARNING**

**PERFORM THE ELECTRICAL LOCKOUT/  
TAGOUT PROCEDURE.**

1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.

**⚠ WARNING**

**PERFORM THE GAS LOCKOUT/TAGOUT  
PROCEDURE.**

2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove oven racks and rack supports from inside oven cavity.
4. Remove four wing-nuts on blower cover. Then remove the cover from the oven cavity.
5. Remove the 6 bolts around the perimeter of the mounting plate.
6. Remove motor/blower assembly and set it down inside the oven cavity.
7. Reach through the opening and unplug the blower assembly at the back of the range (Twist-Loc-Plug).
8. Remove four bolts and spacers on motor mount.
9. Reverse procedure to install the assembly.

## SERVICE PROCEDURES AND ADJUSTMENTS

In order to provide maximum performance, proper operation, and insure the safety of the operator, the range should be serviced at least once a year by an authorized technician. If a range has not been in use or has been in storage for an extended period of time, the equipment should be inspected by an authorized technician prior to reinstallation and/or operation.

**WARNING**

**CERTAIN PROCEDURES IN THIS SECTION REQUIRE ELECTRICAL TESTS OR MEASUREMENTS WHILE POWER IS APPLIED TO THE EQUIPMENT. EXERCISE EXTREME CAUTION AT ALL TIMES. IF TEST POINTS ARE NOT EASILY ACCESSIBLE, DISCONNECT POWER, PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE, ATTACH TEST EQUIPMENT AND RECONNECT POWER TO TEST.**

When troubleshooting, always reference the schematic and wiring diagrams to assist in isolating the problem.

### GAS SUPPLY PRESSURE CHECK

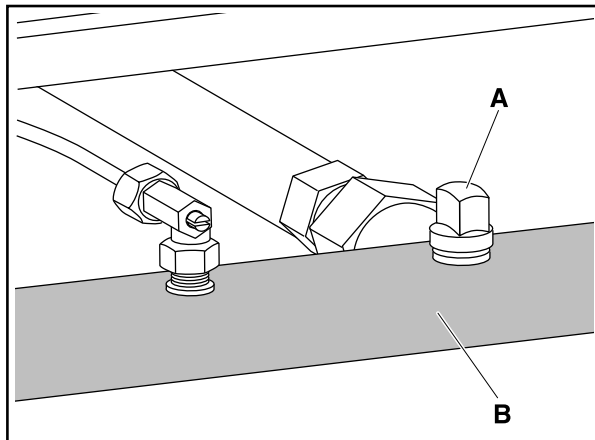


Figure 24: Manometer Tap in Manifold

- A. Pressure Tap Plug
- B. Manifold

**NOTE:** Before adjusting the regulator, verify proper incoming line pressure.

**WARNING**

**PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE.**

1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.

**WARNING**

**PERFORM THE GAS LOCKOUT/TAGOUT PROCEDURE.**

2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove the manifold cover plate as described under COVERS AND PLATES.
4. Turn off the gas supply.
5. Remove one of the plugs from the manifold.
6. Connect the manometer to the manifold.

**NOTE:** If the pressure reading is taken at the oven burner or anywhere other than the main gas manifold pipe, the pressure reading will not be valid.

7. In a battery arrangement, connect manometer to the center equipment of the battery.
8. Turn on the gas supply.
9. Check manometer reading. The reading should be 5.0" W.C. for natural gas and 10.0" W.C. for propane gas. If pressure is correct, no adjustment is necessary.
10. Remove the manometer and reinstall plug.
11. If pressure is NOT correct, adjust the regulator as described under REGULATOR ADJUSTMENT in this section.

If there is adequate gas supply, there should never be fluctuation of greater than 0.5" W.C.

## GAS PRESSURE REGULATOR VALVE ADJUSTMENT

**NOTE:** Before adjusting the regulator, check incoming line pressure.

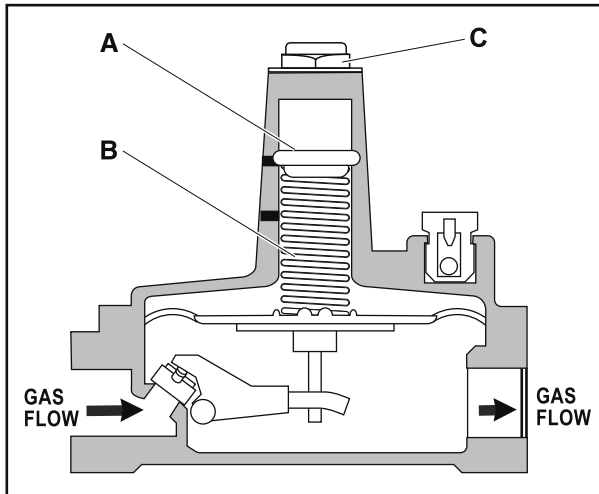


Figure 25: Gas Pressure Regulator – Typical

- A. Adjusting Screw
- B. Spring
- C. Closing Nut

1. Check the gas supply pressure according to CHECK GAS SUPPLY PRESSURE.
2. The manometer is already connected.
3. Remove the regulator closing nut.
4. Insert a straight-bladed screwdriver through the top of the regulator. Turn the adjusting screw clockwise to increase pressure and counterclockwise to decrease pressure.
5. While watching the manometer, turn the adjusting screw for proper regulator outlet pressure, typically 5.0" W.C. for natural gas and 10.0" W.C. for propane.

## Check for insufficient gas volume

6. Fire up one burner and take a reading, then fire up all burners on the range and take a reading.
7. Fire up all the gas equipment on that supply line and take a reading. At no time should pressure drop more than 0.5" W.C. If pressure drop is greater than 0.5" W.C., go to the next step.
8. Turn off all the gas valves. Adjust the regulator to no more than 0.5" W.C. above specifications, which would be 5.5" W.C. for natural gas or 10.5" W.C. for propane.
9. Repeat step 7.

If pressure drop is still greater than 0.5" W.C., there may be a lack of volume due to too small of a supply line. Advise the operator to check with the gas provider about installing a larger size gas line.

10. Install the regulator closing nut, remove the manometer, and reinstall the plug.

## TOP BURNER PILOT LIGHT ADJUSTMENT

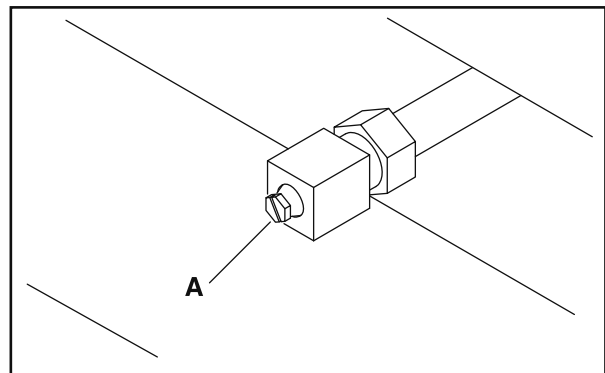


Figure 26: Adjusting Top Burner Pilot Light

### A. Pilot Adjustment Screw

Mushroom head type pilots are used on open burners, griddles, and hot tops. The flame should be only about the size of a dime. This type of pilot will burn yellow, so flame should be as small as possible and still be able to ignite the burner within 3 or 4 seconds.

To adjust the pilot flame height of the top burners:

1. Locate the pilot adjustment screws found on the front manifold pipe.

**CAUTION**

Do not turn the screw excessively in the counterclockwise direction. The screw can become loose and fall out resulting in a gas leak.

2. Rotate the screw clockwise to decrease and counterclockwise to increase the flame height.

## OVEN PILOT LIGHT

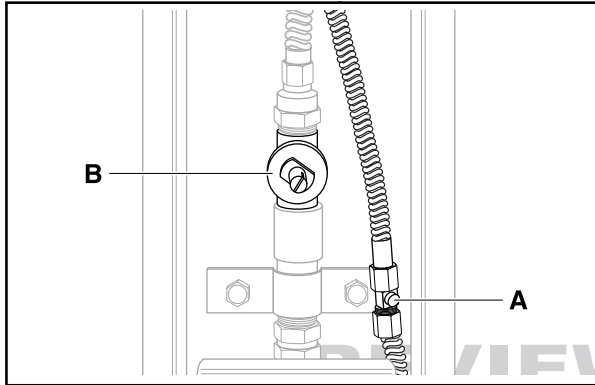


Figure 27: Inline Pilot Adjustment Valve

- A. Inline Pilot Adjustment Valve
- B. Gas Shutoff Valve

The pilot flame should be:

- A. Large enough to completely engulf the tip of the thermocouple/sensor and make the tip of the thermocouple/sensor red hot.
- B. A sharp, well-defined two-tone blue flame when burning natural gas.

**NOTE:** When burning propane (LP), there may be a tiny yellow tip to the flame. This yellow tip should be no more than 10% of the total flame size.

## AIR SHUTTER ADJUSTMENT

The efficiency of the burners depends upon a delicate balance between the air supply and the volume of gas. When this balance is disturbed, poor operating characteristics and excessive gas consumption will occur.

An air shutter on the front of each burner controls the air-gas mix. With natural gas, the air shutter will be approximately 50% open. On propane (LP) the air shutter will be approximately 90% open.

### If the flame is soft, lazy, or yellow:

There is not enough primary air. To correct this condition, rotate the air shutter open until the burner flame begins to lift from the burner, and then close the shutter slightly. If this does not solve the problem, check the burner for obstructions and clear as necessary.

### If the flame is lifting off the burner:

There is too much primary air. Close the air shutter slightly and retest.

**Note:** If grates, hot tops or oven bottoms have been removed to make shutter adjustments, recheck flame characteristics with these items in place.

If burner operation still seems poor and other systems have been checked, refer to NOZZLE AND ORIFICE CHECK.

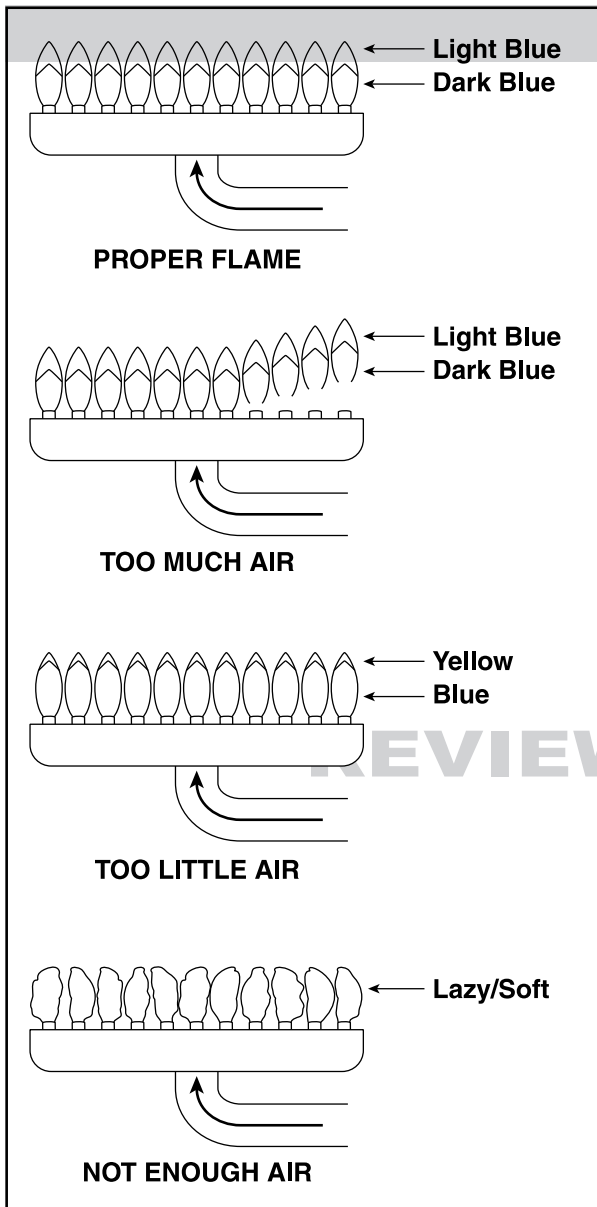


Figure 28: Examples of Burner Flames

## TOP BURNER ADJUSTMENT

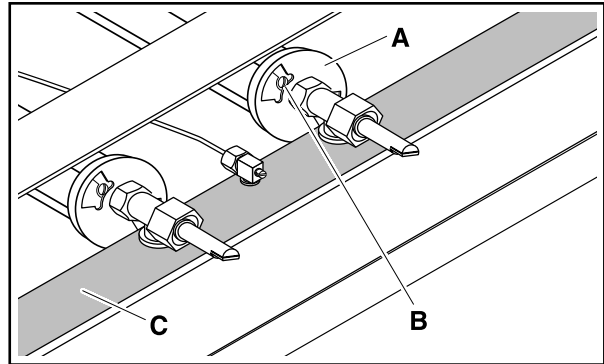


Figure 29: Top Burner Adjustment

- A. Air Shutter
- B. Air Shutter Adjustment Screw
- C. Manifold

1. Remove manifold cover as described in COVERS and PANELS.
2. Loosen the screw on the air shutter.
3. Light the burners and observe the quality of the flame.
4. Adjust the air shutter as per AIR SHUTTER ADJUSTMENT.
5. Repeat procedure for all burners.
6. Tighten screw on the air shutter.
7. Replace the manifold cover and burner knobs.

## OVEN BURNER ADJUSTMENT

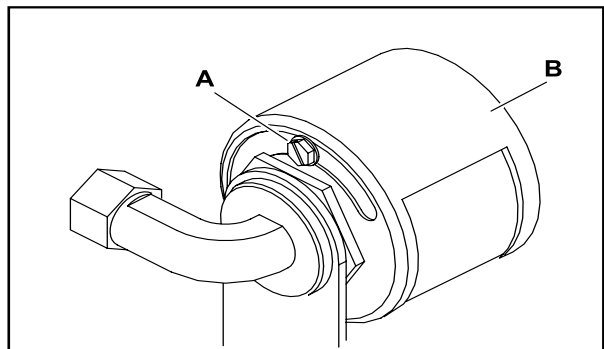


Figure 30: Oven Burner Adjustment

- A. Air Shutter Adjustment Screw
- B. Air Shutter/Mixer Sleeve



1. Remove kick plate as described in COVERS and PANELS.
2. Loosen the screw on the air shutter.
3. Light the oven and observe the quality of the flame.
4. Adjust the air shutter as per AIR SHUTTER ADJUSTMENT.
5. Tighten screw on air shutter.
6. Install kick plate.

## OVEN THERMOSTAT ADJUSTMENT

Adjustment is very seldom necessary on new equipment, but older thermostats may require adjustment. Adjustment should only be considered when cooking results indicate the thermostat is not maintaining the set temperature. Before adjusting, check the temperature with a reliable thermometer.



### CAUTION

*Only qualified service personnel should perform thermostat calibrations.*

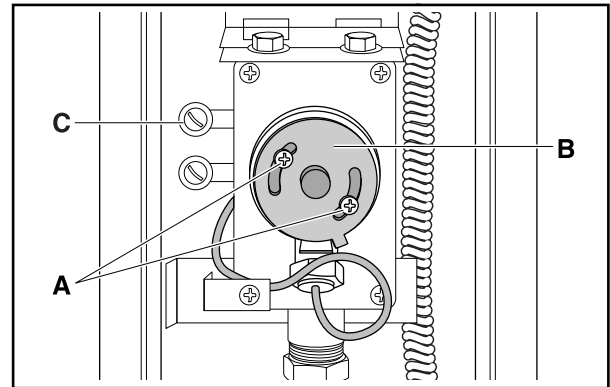


### CAUTION

*Warranty does not cover thermostats that have been rendered inoperative by improper adjustments and/or calibrations, or by work performed by unqualified personnel.*

**NOTE:** If a thermostat has to be replaced, use extreme care when handling and installing the sensor probe. Do not kink or severely bend the probe. Do not allow flame to contact the probe or the capillary line. Any excess capillary line should be gently coiled up in an area that is away from direct flame and/or working or cleaning areas.

## Oven Thermostat Test and Calibration



**Figure 31: Oven Thermostat  
Test and Calibration**

### A. Calibration Plate Screws

### B. Calibration Plate

### C. Bypass Screw

**NOTE:** Temperature accuracy of the FDO thermostat is  $\pm 25^{\circ}\text{F}$ .

Both the standard and convection model ovens use an FDO type, modulating thermostat.

When first turned on, the oven burner flame comes on full speed approximately 1-1/4" to 1-1/2" tall. As the temperature approaches the set point, the flame slowly reduces in size. When the temperature set point is achieved, the flame should be in bypass, approximately 1/8" tall. The bypass flame will keep the oven temperature constant unless the door is opened and heat is lost.

When the oven needs to recover heat loss, the thermostat will allow the flame to increase in size until the temperature is again at the set point.

Usually the thermostat does not require calibration, but it may need to have the bypass flame set at the time of installation. The temperature accuracy of this thermostat is  $\pm 25^{\circ}\text{F}$ .

1. Place the test instrument sensor or thermometer in the center of the oven cavity and close the door.
2. Turn the oven on, set the thermostat dial to 300°F and allow the oven to cycle several times (at least 20 minutes).
3. Turn the thermostat dial back to the lowest temperature setting.
4. Check the bypass flame; it should be 1/8" tall and adjust bypass as necessary.

5. Turn thermostat dial back to 325°F and allow 5 minutes for temperature to stabilize.
6. If temperature is less than 20°F different from the dial setting, calibration is not necessary.

If temperature is more than 20°F different from the dial setting, calibrate according to the following steps:

1. Remove dial.
2. Loosen the calibration plate screws until the calibration plate moves freely. Gently attach dial and turn until the dial setting matches the actual oven temperature.
3. Hold calibration plate in place to prevent movement.
4. Gently remove dial and tighten calibration plate mounting screws.
5. Replace dial and increase temperature 50°F. Allow 10 minutes and recheck the temperature.
6. If the temperature is within 20°F of dial setting, apply adhesive material to the calibration plate screws.
7. If temperature is still more than 20°F different from the dial setting, the thermostat may need to be replaced.

## GRIDDLE THERMOSTAT TEST AND CALIBRATION

**NOTE:** Temperature accuracy of the BJWA thermostat is  $\pm 25^{\circ}\text{F}$ .

The griddle thermostat is a BJWA modulation type. When first turned on, the flame comes on full. As the temperature approaches the set point, the flame slowly reduces in size. When the set temperature is achieved, the flame should be in bypass.

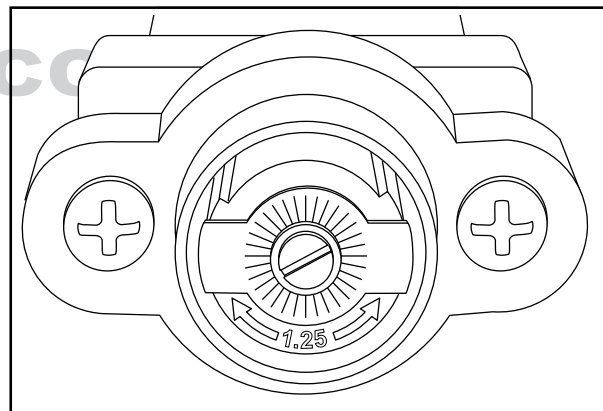
Bypass flame for griddles should only be big enough to keep the burner lit all the way around with little blue dots of flame. This type of thermostat will allow the temperature to creep if the griddle is left idling (no product on the griddle), a minimum of 50°F an hour. Therefore it is imperative that the bypass flame be set correctly.



*If the bypass flame is not correct, the temperature will creep 100°F to 200°F an hour.*

**NOTE:** Although the BJWA thermostat is a basic thermostat, it is somewhat difficult to calibrate because once the bypass is set, it must be regarded as in full bypass at the time the temperature reading is taken. Also, if the temperature reading is not taken as soon as the thermostat is in full bypass, the temperature will begin creeping up and a true temperature reading will not be possible.

**NOTE:** Before attempting re-calibration on the BJWA thermostat, a temperature check must be performed from a cold start, before the griddle has been idling and the temperature has had a chance to creep up. All temperature readings and/or calibrations must be performed from a cold start. Attempting to calibrate the BJWA griddle thermostat from other than a cold start is extremely difficult as well as time consuming and can cause the temperature to be incorrect at a later time.



**Figure 32: Griddle BJWA Thermostat**

1. Clean the griddle plate to ensure there is no carbon buildup on the cooking surface. Carbon buildup will cause a false temperature reading.
2. Remove the temperature dials and manifold cover as described in PANELS and COVERS.
3. Locate temperature sensor probes under griddles. Temperature readings can only be taken directly over the sensor probes.
4. Using a screwdriver from the back of the dial, push out the center chrome cap of the dial. Place dial back onto the thermostat.
5. Turn the dial to 300°F. The flame should be approximately 3/4" to 1" tall. Allow about 15 minutes for plate to heat up.

6. Turn the dial to the lowest temperature setting (150°F) and check the bypass flame. It should be only big enough to keep the burner lit all the way around with little blue dots of flame. Adjust as necessary.

**NOTE:** Throughout the calibration process it will be necessary to recognize when the thermostat is in bypass.

7. Note the size of the bypass flame.
8. Turn the dial up enough for the flame to come on at least 1/4" tall.
9. When the flame is in bypass again, take a temperature reading in the area previously identified as the probe location.

If the temperature is less than 25°F different from the dial setting, calibration is not necessary.

If the temperature is more than 25°F different from the dial setting, calibrate according to the following steps.

10. With the dial in place, use a small screwdriver through the opening in the front of the dial. Locate and depress the calibration screw. **DO NOT TURN THE CALIBRATION SCREW.**
11. Rotate the dial to match actual temperature on the griddle plate. Do not turn calibration screw.
12. Release the calibration screw.
13. Turn the dial to increase temperature 50°F.
14. Watch the flame. As soon as the flame is again in full bypass, take a temperature reading.
15. If the temperature is still more than 25°F different from the dial setting, the thermostat may need to be replaced.
16. Turn off the thermostat so as not to cause false readings on the other zones.
17. Repeat the process for each thermostat/zone.
18. When all the thermostats are calibrated reassemble the manifold cover and the thermostat dials/bezels.

## IGNITION MODULE CIRCUIT CHECK



### WARNING

**THIS PROCEDURE REQUIRES ELECTRICAL TESTS OR MEASUREMENTS WHILE POWER IS APPLIED TO THE EQUIPMENT. EXERCISE EXTREME CAUTION AT ALL TIMES.**

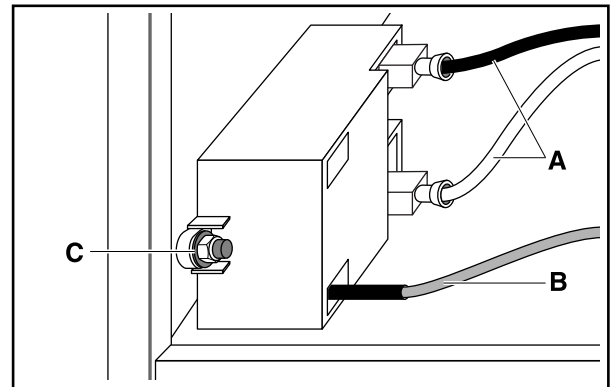


### WARNING

**IF TEST POINTS ARE NOT EASILY ACCESSIBLE, DISCONNECT POWER AND PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE, ATTACH TEST EQUIPMENT AND RECONNECT POWER TO TEST.**

The spark module sends high-voltage DC pulses to the pilot igniter when power switch is ON. When the pilot is lit, the module senses the presence of the pilot flame and stops sparking automatically by sensing the change in resistance when the spark has to travel through the pilot flame.

If sparking does not occur at the pilot, perform the following procedure to troubleshoot the problem.



**Figure 33: Ignition Module Circuit Check**

- A. 120VAC Terminals**
- B. High Voltage Sparker Terminal**
- C. Grounding Grommet**

**NOTE:** If module is removed from equipment (as shown in illustration) a jumper wire must be inserted between the grounding grommet and the frame of the range. This is the required ground for the oven sparker.

1. Remove the oven control panel according to the procedure under **COVERS AND PANELS**.

**NOTE:** The high-voltage wire from the module to the pilot igniter must not have any nicks, cuts or splices.

**NOTE:** The high-voltage connection at the spark module must be clean and tight and the grounding grommet on the module must have a good connection to the electrical ground (chassis) of the range or the module will not provide good spark control.

2. Check the pilot igniter on the oven pilot assembly for damage.
3. Check that the assembly is securely fastened to the oven to ensure a good ground connection.
4. With the oven door closed, turn the power switch to the ON position.
5. Listen for a clicking sound.

If there is a clicking sound, go to step 7.

If there is no clicking sound, go to the next step.

6. Check for proper voltage supply to the module.
  - a. Remove the connectors with the black and white wires from the module terminals.
  - b. Place the power switch to the ON position.
  - c. With the oven door closed, use a voltmeter on connectors.

If 120 VAC is not present, check for 120 VAC at every connection in the circuit back to the junction box attached to the rear of the range. Refer to the schematic in this manual. Repair and retest.

If proper voltage is present, make sure the module is properly grounded. (Metal ring on screw hole is the ground connection for the module.) If the ground connection is good, place the power switch in the OFF position, replace the module, and retest.

7. Inspect the pilot igniter according to INSPECT AND ADJUST THE PILOT IGNITER.

If no problem was found, go to the next step.

If there is no or intermittent continuity, repair the connector or replace the wire and retest.

If everything has tested OK to this point, there may be an unseen fault with the igniter. Disconnect the ignition wire at the module and connect a known good igniter to the module, ground the igniter, and retest. If the new igniter works properly, replace the existing oven pilot assembly.

8. Remove the high-voltage wire from the module and the pilot igniter. Check for continuity between the wire connectors.

## PILOT IGNITER INSPECTION AND ADJUSTMENT

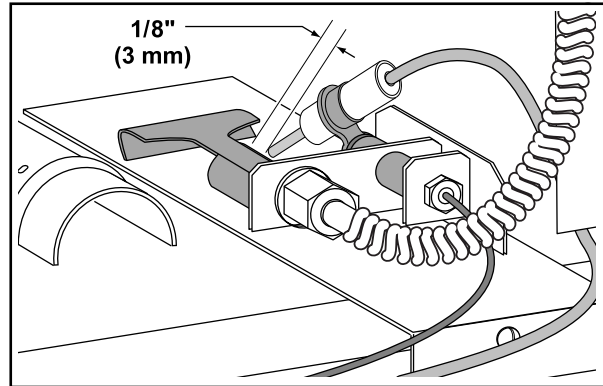


Figure 34: Inspect and Adjust Pilot Igniter



### PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE.

1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.



### PERFORM THE GAS LOCKOUT/TAGOUT PROCEDURE.

2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove the pilot/igniter assembly according to OVEN PILOT ASSEMBLY in the REMOVAL AND REPLACEMENT OF PARTS section.
4. Measure the gap between the sparker and the edge of the pilot nozzle. The gap should be approximately 1/8" (3 mm).
5. Inspect the ceramic insulator for cracks or evidence of exposure to extreme heat, which can permit current leakage to ground. If either of these conditions exists, replace the pilot igniter assembly.
6. Check the high-voltage ignition wire.
  - Check the wire for damaged insulation.
  - Make sure the wire is securely fastened to the sparker and to the connector at the module.
7. Install the adjusted or new pilot/igniter assembly.

## DOOR SWITCH TEST

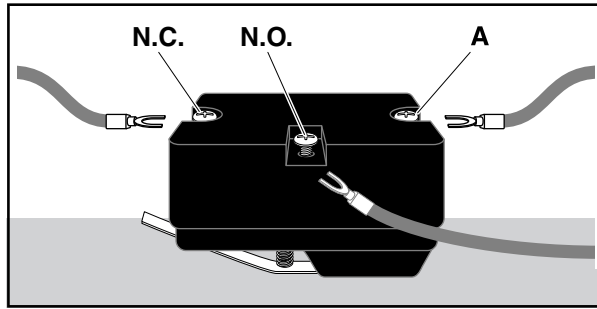


Figure 35: Door Switch Test (Old style)

### A. COMMON Connector

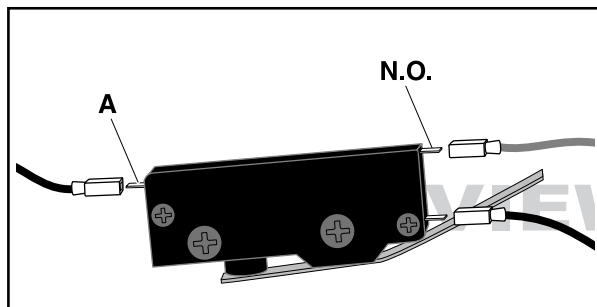


Figure 36: Door Switch Test (New style)

### A. COMMON Connector



#### WARNING

**PERFORM THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE.**

1. Shut off all electrical controls and perform the Electrical LOCKOUT/TAGOUT procedure.



#### WARNING

**PERFORM THE GAS LOCKOUT/TAGOUT PROCEDURE.**

2. Shut off all gas controls and perform the Gas LOCKOUT/TAGOUT procedure.
3. Remove the oven control panel according to the procedure under COVERS AND PANELS.
4. Remove the door switch according to the procedure under REMOVAL AND REPLACEMENT OF PARTS.
5. Remove the wiring from the switch.
6. Use a VOM to perform a continuity test on the switch.

7. Check continuity between the common connector and one of the two other contacts. If it is open, (no continuity) depressing the switch should close the connection. If it is closed (continuity) depressing the switch should cause the connection to open.
8. Repeat this procedure for the other contact.
9. If either contact fails to switch from open to closed (normally open contact) or fails to switch from closed to open (normally closed contact.), replace the switch.
10. Reverse steps to install switch and oven control panel.

## CONVECTION OVEN MOTOR TEST

### Motor Not Working



#### CAUTION

**DO NOT REENERGIZE THE MOTOR UNTIL THE PROBLEM IS FURTHER INVESTIGATED OR FURTHER DAMAGE MAY OCCUR.**

1. Check if the motor is seized. If so, remove and replace the motor according to MOTOR under the REMOVAL AND REPLACEMENT OF PARTS procedures. If not, go to step 2.
2. Spin blower wheel clockwise and turn AUTO/OFF/MANUAL switch to manual position. If blower motor starts and operates, replace the start capacitor.
3. Ask the range operator if anything unusual was noted when the motor stopped working.
  - A. Did the motor make any unusual noise? Spin the fan to check for bearing noise, excessive shaft play, loose fan or ducting parts, etc. If bearing noise or shaft play is found, remove and replace the motor. Repair any loose fan or ducting parts.
  - B. Was there any smoke or odd odor? If so, determine the specific source: Control panel? Junction Box? Motor itself? Inspect and repair as required.
  - C. Did a circuit breaker trip? Use a voltmeter to check and see if there is a short to ground in the motor circuit.

4. Remove the oven control panel insert (see OVEN CONTROL PANEL under COVERS AND PANELS).

Check for 120 VAC supply to the Power ON/OFF switch.

If no power is present at the FAN switch, refer to schematic and troubleshoot the cause. Check for loose, burned or disconnected wires or connectors at every point in the power supply circuit (see schematic).

If there is power to the FAN switch:

- A. Toggle Power ON/OFF switch to the ON position. There should be 120 VAC on both terminals of the switch. If not, replace the switch according to FAN MOTOR SWITCHES AND INDICATOR LIGHT in the REMOVAL AND REPLACEMENT OF PARTS section and retest.
- B. With the Power ON/OFF switch in the ON position, check the center terminal of the Blower switch. There should be 120 volts on this terminal. If 120 volts is indicated at the center terminal, toggle the switch and check for 120 volts in both the ON and the AUTO positions. If either terminal fails to indicate 120 volts, replace the switch according to FAN MOTOR SWITCHES AND INDICATOR LIGHT in the REMOVAL AND REPLACEMENT OF PARTS section and retest.
- C. If there is, test the door switch under DOOR SWITCH TEST.

If the door switch is good, remove the junction box cover located on the motor.

If there is burned insulation on the wires, replace the motor according to OVEN CONVECTION MOTOR under the REMOVAL AND REPLACEMENT OF PARTS procedures.

If wiring looks OK, check for 120 VAC. If no power, there is an open circuit between the motor and switch. Refer to schematic and troubleshoot the cause.

If wiring looks OK and there is power, make sure the neutral side of the circuit is complete.

If wiring looks OK and all circuits are good, remove and replace the motor according to MOTOR under the REMOVAL AND REPLACEMENT OF PARTS procedures.

### Motor Works – Noisy or Does Not Sound Right

1. Manually spin the fan to check for bearing noise, excessive shaft play, loose fan or duct parts, etc. If bearing noise or shaft play, remove and replace the motor. Repair any loose fan or ducting parts.
2. If the motor comes on but runs noisily, check for bearing noise, excessive shaft play, loose fan or duct parts, etc. If bearing noise or shaft play is found, remove and replace the motor according to MOTOR under the REMOVAL AND REPLACEMENT OF PARTS procedures.
3. Repair any loose fan or ducting parts.

## BURNER INSPECTION AND REPAIR

To inspect the top section or oven burners:

1. Check that all burner ports are clean. If not clean, clean the burners according to instructions in the Installation and Operation Manual.
2. Check that burners burn sharp, clean and blue, not yellow. Propane (LP) may normally have a small yellow tip.
3. If the flame is not correct and the burners are clean, check the air shutters according to AIR SHUTTER ADJUSTMENT.

### Nozzle and Orifice Check

If burner operation seems poor and other systems have been checked, remove the burner nozzle and check the orifice for blockage or damage, and replace as necessary. Refer to TOP SECTION BURNER AND NOZZLE or OVEN BURNER NOZZLE in the REMOVAL AND REPLACEMENT OF PARTS section.

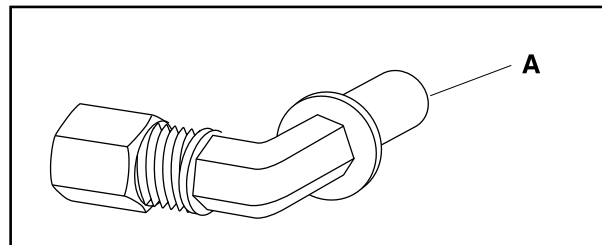


Figure 37: Burner Orifice (Oven Shown)

#### A. Burner Orifice

## TROUBLESHOOTING

 **WARNING**

**CERTAIN PROCEDURES IN THIS SECTION REQUIRE ELECTRICAL TESTS OR MEASUREMENTS WHILE POWER IS APPLIED TO THE EQUIPMENT. EXERCISE EXTREME CAUTION AT ALL TIMES.**

 **WARNING**

**IF TEST POINTS ARE NOT EASILY ACCESSIBLE, DISCONNECT POWER, ATTACH TEST EQUIPMENT AND RECONNECT POWER TO TEST.**

 **WARNING**

**DISCONNECT THE ELECTRICAL POWER TO THE EQUIPMENT AND FOLLOW ELECTRICAL LOCKOUT/TAGOUT PROCEDURE.**

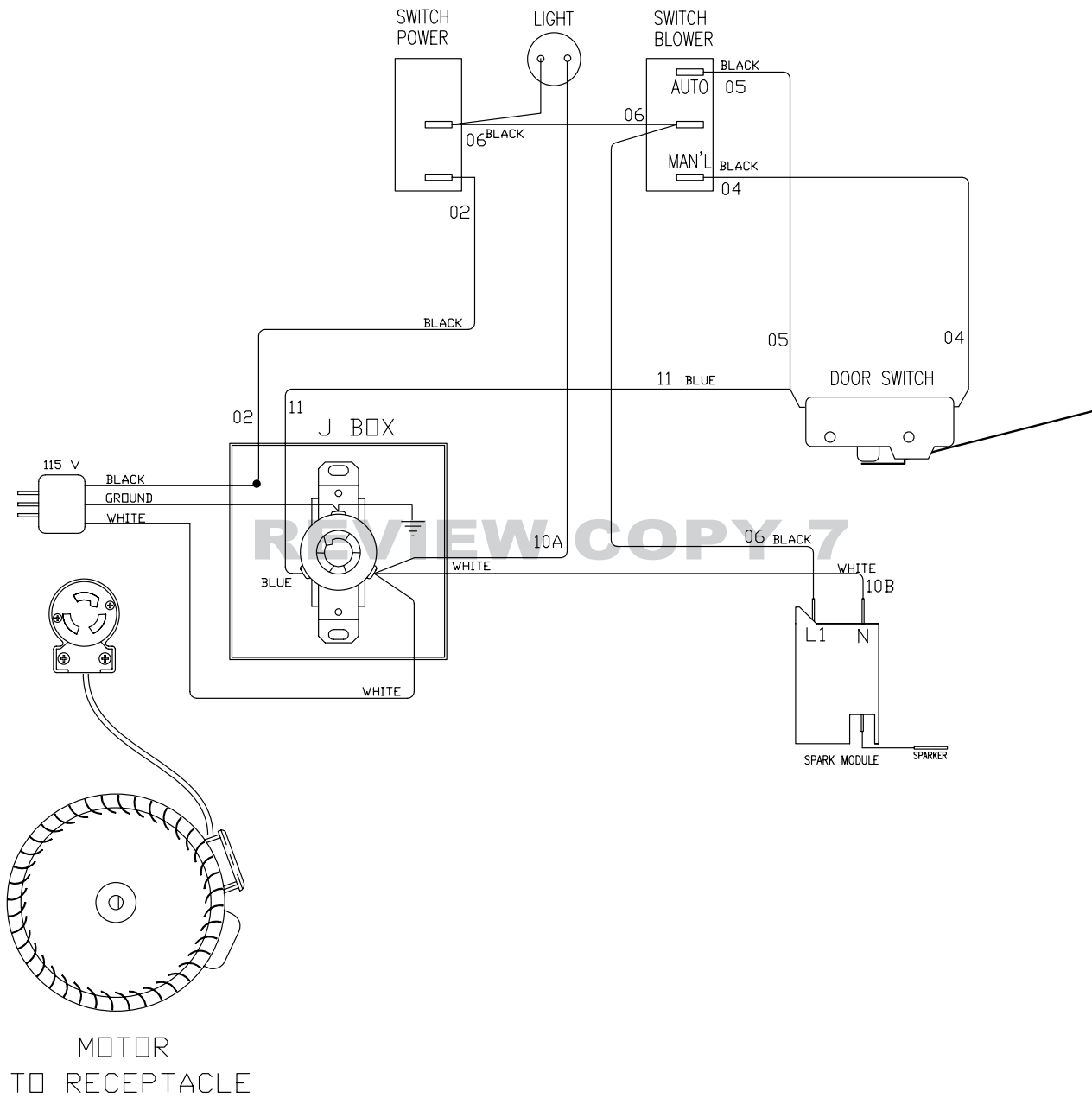
### SEQUENCE OF OPERATION – CONVENTIONAL OVEN

1. Oven gas shut-off valve is turned to ON.
2. Oven thermostat valve is set to desired temperature.
3. Heat from pilot light signals gas safety valve to remain open and gas flows into oven burner through the nozzle and orifice.
4. Pilot light ignites gas and oven begins to bake.

### SEQUENCE OF OPERATION – CONVECTION OVEN

1. Oven gas shut-off valve is turned to ON.
2. Power switch is turned ON. 120VAC is sent to spark igniter.
3. Push and hold the red button on the safety valve until pilot lites and remains on.
4. Pilot light ignites. Sparker is automatically turned off by sensing heat from pilot flame.
5. Blower switch is set to AUTO. If oven door is closed, convection fan motor will turn on. (With blower switch set to MANUAL, blower will operate with oven door open or closed.)
6. Oven thermostat is set to desired temperature and gas flows to pilot safety valve.
7. Heat from pilot flame will allow gas to flow through pilot safety valve and send gas through the nozzle and orifice into oven burners. Pilot light ignites gas and oven begins to bake.

**CONVECTION OVEN WIRING DIAGRAM**



**Figure 38: Convection Oven Wiring Diagram**



## TROUBLESHOOTING CHART

The troubleshooting chart provides a list of other fault conditions. The left-hand column lists typical symptoms, the center column lists probable causes and the right-hand column lists corrective actions.

SYMPTOM	POSSIBLE CAUSES	REMEDY
Oven will not hold temperature	Thermostat out of calibration	Calibrate thermostat.
	Bypass flame too high or too low	Adjust bypass flame.
	Oven door not closing properly	Align door and check for obstructions.
Oven slow to heat	Wrong orifice	Verify orifice size for gas type and replace as needed.
	Low gas pressure	Test for gas pressure and supply pipe sizes.
	Vent in pressure regulator blocked	Clear obstructions from pressure regulator or replace.
	Oven door not closing properly	Check oven door for obstruction or align door.
Oven will not recover	Wrong orifice	Verify orifice size for gas type and replace as needed.
	Bypass flame too low	Adjust bypass flame.
	Low gas pressure	Perform gas pressure check procedure, adjust as needed.
	Vent in pressure regulator blocked	Clear obstruction from pressure regulator or replace.
	Oven door not closing properly	Check oven door for obstruction or align door.
	Door spring broken/loose	Adjust/replace spring as needed.
Product in oven not cooking evenly	Temperature too high or too low	Verify temperature of oven with thermometer.
	Equipment not level	Check and level range.
	Door not closing properly	Check for obstructions and door alignment.
	Door spring broken/loose	Adjust/replace spring as needed.
	Product placement improper	Ensure adequate space around product in oven.
	Gas pressure fluctuating	Perform gas pressure check procedure, adjust as needed.

SYMPTOM	POSSIBLE CAUSES	REMEDY
Product in oven dried out	Temperature too low Thermostat out of calibration Baking time too long	Adjust temperature and/or cooking times. Calibrate thermostat. Adjust temperature and/or cooking times.
Oven pilot will not light (Standard Oven)	Air not purged from gas lines Red button not pressed long enough Pilot orifice clogged Failed safety valve Failed thermocouple	Clear air from lines and re-light pilot. Keep red button pressed long enough to maintain pilot light. Clean pilot orifice. Replace safety valve. Replace thermocouple.
Oven pilot will not light (Convection Oven)	Failed ignition module Defective sparker Defective wire to sparker	Test and replace ignition module. Test and replace sparker. Test and replace sparker.
Griddle will not achieve temperature	Thermostat out of calibration Low gas pressure Incorrect orifice Thermostat sensor not in correct position Flame hitting thermostat sensor Gas-to-air ratio incorrect Burner obstructed	Calibrate thermostat. Perform gas pressure check. Verify orifice size and replace with correct orifice. Verify sensor out of factory position and affix in correct position. Move sensor to correct position and check sensor for flame damage. Perform air shutter adjustment. Clean all burners.
Griddle will not hold temperature	Thermostat is out of calibration or by-pass flame is too high Vent in pressure regulator blocked Wrong dial on thermostat	Calibrate thermostat and/or adjust bypass flame. Clear obstructions from pressure regulator or replace. Replace with correct dial.

SYMPTOM	POSSIBLE CAUSES	REMEDY
Griddle will not heat evenly	<ul style="list-style-type: none"> <li>Range not level</li> <li>Wrong orifice</li> <li>Gas-to-air ratio incorrect</li> <li>Burner ports obstructed</li> </ul>	<ul style="list-style-type: none"> <li>Check and level range.</li> <li>Verify orifice size for gas type and replace.</li> <li>Perform air shutter adjustment.</li> <li>Clean all burner ports. Replace as needed.</li> </ul>
Griddle will not recover	<ul style="list-style-type: none"> <li>Thermostat out of calibration</li> <li>Low gas pressure</li> <li>Gas-to-air ratio incorrect</li> </ul>	<ul style="list-style-type: none"> <li>Calibrate thermostat.</li> <li>Perform gas pressure check, adjust as needed.</li> <li>Perform air shutter adjustment.</li> </ul>
Top burner will not light	<ul style="list-style-type: none"> <li>Wrong orifice</li> <li>Gas-to-air ratio incorrect</li> <li>Vent in pressure regulator blocked</li> <li>Pilot positioned incorrectly</li> <li>Obstruction in air shutter or venturi</li> <li>Water or grease in burner ports</li> <li>Pilot flame too big or too small</li> </ul>	<ul style="list-style-type: none"> <li>Verify orifice size for gas type and replace.</li> <li>Perform air shutter adjustment.</li> <li>Clear obstructions from pressure regulator or replace.</li> <li>Adjust position of pilot flame to intersect burner ports.</li> <li>Clear obstructions.</li> <li>Clean all burner ports.</li> <li>Adjust pilot flame to intersect burner ports.</li> </ul>
Oven burner will not light	<ul style="list-style-type: none"> <li>Pilot not lit</li> <li>Pilot flame too low</li> <li>Pilot burner not positioned properly</li> <li>Thermocouple not positioned correctly or is defective</li> <li>Wrong burner orifice</li> <li>Gas pressure incorrect</li> <li>Vent in pressure regulator blocked</li> <li>Gas-to-air ratio incorrect</li> </ul>	<ul style="list-style-type: none"> <li>Check and light pilot.</li> <li>Adjust pilot light to intersect burner.</li> <li>Adjust pilot burner to intersect burner ports.</li> <li>Adjust thermocouple to be directly in path of pilot flame or replace.</li> <li>Verify orifice size for gas type and replace.</li> <li>Perform gas pressure check procedure and adjust as needed.</li> <li>Clear obstructions from pressure regulator or replace.</li> <li>Perform air shutter adjustment.</li> </ul>

SYMPTOM	POSSIBLE CAUSES	REMEDY
Oven burner will not light (cont.)	Oven burner obstructed or dirty Oven burner not on orifice correctly Gas safety valve defective Thermocouple defective	Clean all burner ports. Slide oven burner onto orifice fully. Replace as needed. Replace as needed.
Oven pilot outage	Pilot orifice obstructed Low gas pressure or low gas volume Drafts/breezes	Clear all obstructions. Perform gas pressure check. Adjust as needed. Locate/eliminate draft/breeze.
Burners not working well (flame is lazy or yellow)	Orifice too large Air shutter closed too much Gas pressure too high Grease, water, or debris in burner or burner ports are deteriorated Foil on burner hanger	Verify orifice size for gas type and replace. Perform air shutter adjustment. Perform gas pressure check. Clean all burner ports or replace burners. Remove foil.
Convection fan will not operate	Door switch failed Blower AUTO/MANUAL switch failed Motor failed Wire short Capacitor failed	Perform door switch test and replace. Perform blower switch test and replace. Perform motor test and replace. Use wiring diagram to test for shorts in motor circuit. Test. Replace capacitor as needed.
Convection fan operates only in manual position	Door switch failed Blower AUTO/ON switch failed	Perform door switch test and replace. Perform blower switch test and replace.
Convection motor noisy	Motor mounting is loose Fan loose on shaft Motor bearings defective Motor malfunction Blower contacting the cover	Check bolts on motor mounting and tighten. Tighten set screws on fan. Test and replace motor. Test and replace motor. Adjust the blower/cover as needed.

<b>SYMPTOM</b>	<b>POSSIBLE CAUSES</b>	<b>REMEDY</b>
Gas odor	One or more pilots not lit	Check and light pilot lights.
	Burner not on orifice correctly	Slide burner on to orifice fully.
	Poor combustion in burner	Perform air shutter adjustment and gas pressure check.
	Burner not completely lighting	Check burners for obstructions and clean.
	Loose or broken gas line; Leak in gas line or fitting	Perform leakage check and replace/repair gas lines and connections.
	Pressure regulator ruptured	Check and replace pressure regulator.

**REVIEW COPY 7**

 **WARNING**

**IF NOT INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, THIS PRODUCT COULD EXPOSE YOU TO FUEL OR FUEL COMBUSTION SUBSTANCES, WHICH CAN CAUSE DEATH OR SERIOUS ILLNESS AND WHICH ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.**

The State of California enacted the California Safe Drinking Water and Toxic Enforcement Act of 1986, (Prop. 65), which "prohibits any person in the course of doing business from knowingly and intentionally exposing any individual to a chemical known to the State of California to cause cancer or reproductive toxicity without first giving clear and reasonable warning to such individuals." The Governor's Scientific Advisory Panel added carbon monoxide to the list of hazardous chemicals known to cause reproductive harm.

In order to establish full compliance with Proposition 65, a warning label has been attached to each gas-fired unit manufactured by Jade Range.

Carbon monoxide would not be present in concentrations that would pose a "significant risk" to the consumer when the equipment is installed, operated and maintained as follows:

1. Installed in accordance with all local codes, or in the absence of local codes, with the current National Fuel Gas Code ANSI Z223.1 Latest Addenda.
2. Installed under a properly designed and operating exhaust hood.
3. Connected to the type of gas for which the unit is equipped.
4. Proper appliance pressure regulator installed on the gas supply line and adjusted for the manifold pressure marked on the rating plate.
5. Adequate air supply to the unit.
6. The equipment is operated in the manner intended and using the proper utensil for that type of appliance.
7. Keep the equipment clean and have it checked periodically.
8. Burner air adjustments, mechanical maintenance and repairs must be performed by qualified service personnel.

If the equipment is not installed, operated and maintained in accordance with the above requirements, concentrations of carbon monoxide in excess of the established limits could be present in the kitchen environment.

**ALL PERSONNEL IN THE WORKPLACE WHO MAY BE SUBJECT TO ANY EXPOSURE OF CARBON MONOXIDE MUST BE WARNED OF SUCH POSSIBLE EXPOSURE. THIS WARNING SHOULD BE CONVEYED IN A MANNER SO THAT IT IS CLEARLY UNDERSTOOD BY THE EMPLOYEE. THE EMPLOYEE MUST BE ASKED IF IN FACT HE OR SHE UNDERSTANDS THE CORRECT METHOD OF OPERATION OF THE EQUIPMENT AND THAT A RISK OF EXPOSURE EXISTS IF THE EQUIPMENT IS OPERATED IMPROPERLY.**

# COMMERCIAL EQUIPMENT LIMITED WARRANTY

**EFFECTIVE JUNE 1, 2007:** Jade Range LLC (herein referred to as "Jade") warrants its new COMMERCIAL Product(s) to be free from defects in material and/or workmanship for the following periods from date of original installation not to exceed an additional six months from date of shipment from Jade's distribution point.

Jade Titan Ranges

Jade Supreme Ranges

All other new cooking products



Four (4) Years Parts and Labor

Lifetime part only on Titan steel open burner grates

## General Warranty Terms for All Products Specified Above:

**Commercial equipment sold for and/or used in residential applications is EXCLUDED from this warranty and is limited to products sold to the original commercial user.**

**Parts:** The liability of Jade under this warranty is limited to, at Jade's option, the repair or replacement of any parts found by Jade to be warranted herein.

**Labor:** Jade shall bear the normal labor charges incurred in such repair or replacement to the extent that such is performed within fifty (50) miles from an office of an authorized service agency of Jade, except that such obligation to bear labor charges shall not apply to products or parts installed outside continental United States.

**Travel:** In the event that a distance of more than 50 miles shall be required to be traveled to perform such service, the person or firm requesting such service shall bear normal charge of the person or firm performing the service for time and travel above and beyond the 50-mile limit. If service is required during overtime periods the person or firm requesting such service shall pay the difference between overtime and standard labor rates.

**Limitations:** Jade shall have no obligation as to any Product(s) which have been misapplied, mishandled, abused, misused, subject to improper cleaning methods, Jade cleaning instructions must be followed at all times, subject to harsh chemical action, modified by unauthorized service personnel, damaged by flood, fire, or other acts of God, failures due to improper installation, insufficient gas or electrical supply, problems due to improper ventilation, or which have had serial number removed or altered. Example: damage due to water, chemicals or direct contact to infrared burners is not covered.

## Exclusions:

- JSB and JCM units mounted over open broilers are warranted for a period of Thirty (30) days from date of original installation.
- Convection oven fan motors are warranted for Two (2) years from date of original installation.
- Refrigeration Labor costs are warranted for Two (2) years. Compressors and coils (part costs only) are warranted for Four (4) years from date of original installation.
- Calibrations and/or Adjustments are considered as maintenance and/or upkeep and are NOT covered by this warranty.
- Leveling, Tightening of fasteners and/or utility connections, normally associated with original installation, are the responsibility of the person/company that installed the appliance, NOT that of Jade.
- Failures and/or problems resulting from improper installation, which may include, but not be limited to: insufficient gas supply, volume or pressure; inadequate ventilation or fresh air supply; improper voltage or undersized wiring are NOT covered by this warranty.
- Physical damage, which may include, but is not limited to damage during transit (freight damage), installation handling, misuse or abuse, are NOT covered by this warranty.
- Products built by equipment manufacturers other than Jade and utilized in the manufacture of "custom suites and line-ups" will be warranted by original equipment manufacturer.

**Replacement Parts:** Replacement parts that are replaced in the field by Jade Authorized Service Agencies are limited to Ninety (90) days from the date of their installation and will be handled by the same Jade Authorized Service Agency. Additionally, the replacement of said part does NOT extend the term of this warranty.

**Parts Exceptions:** Rubber seals, light bulbs and gaskets are warranted for Ninety (90) days from installation. Oven door glass breakage is NOT covered by this warranty. Broiler radiants are warranted for a period of One Hundred Eighty (180) days from date of original installation. Radiants replaced (under warranty) by Jade Authorized Service Agencies will be covered by replacement parts warranty Ninety (90) days; see above.

THE FOREGOING WARRANTY IS IN LIEU OF ANY AND ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS, AND CONSTITUTES THE ENTIRE LIABILITY OF JADE.

*The specific warranties expressed above are the ONLY warranties provided by the manufacturer. These warranties give you specific legal rights, and you may also have other rights which vary from state to state.*

**REVIEW COPY 7**