

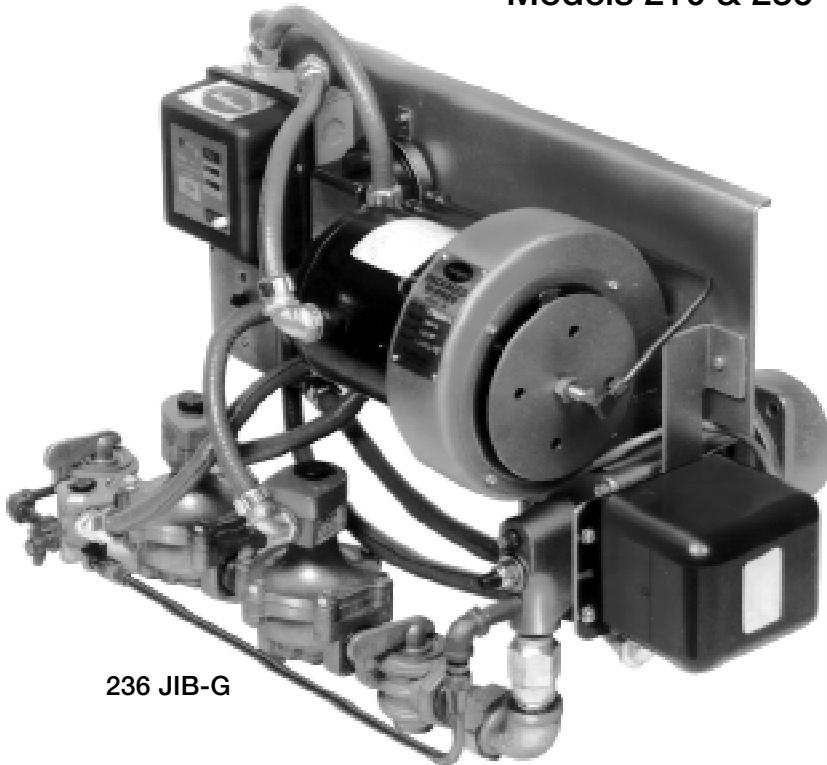
ECLIPSE INFORMATION GUIDE

Info 280

10/93

JUNIOR INDUSTRIAL BURNERS

Models 210 & 236 "JIB"



236 JIB-G

- Easy to install and operate.
- Rugged construction for long life in industrial environments.
- Protection against overheating from residual oven heat.
- Electronic flame monitoring.
- Two automatic gas shut-off valves.
- Air flow proving switch.
- 100% factory tested and adjusted.

WARNING

The burners covered in this Guide are designed to mix fuel with air and burn the resulting mixture. All fuel burning devices are capable of producing explosions and fires when improperly applied, installed, adjusted, controlled, or maintained. This Guide will provide information for using these burners for their limited design purpose. Do not deviate

from any instructions or application limits in this Guide without written advice from the Eclipse Combustion Division in Rockford, Illinois. Read this entire Guide before attempting to light burners. If you do not understand any part of the information in this Guide, contact your local Eclipse representative or Eclipse Combustion before proceeding further.

Important Notices About Safe Burner Operation

1. Store the burner inside. Exposure to the elements can damage the burner.
2. Adjustment, maintenance, and troubleshooting of the mechanical parts of this unit should be done by people with good mechanical aptitude and experience with combustion equipment.
3. Order replacement parts from Eclipse Combustion only. Any customer-supplied valves or switches should

carry UL, FM, CSA, and/or CGA approval where applicable.

4. The best safety precaution is an alert and competent operator. Thoroughly instruct new operators so they demonstrate an adequate understanding of the equipment and its operation. Regular retraining must be scheduled to maintain a high degree of proficiency. The operator must have easy access to this Information Guide at all times.



ECLIPSE COMBUSTION

1.0 Applications

JIB burners are complete assemblies ideal for use in ovens, furnaces, kilns, or incinerators requiring simple burner operation and easy maintenance.

2.0 Specifications

Inputs	Burner	Btu/hr.	kW		
Natural gas or propane vapor	210 JIB-F	750,000	219.8		
	236 JIB-G	1,000,000	293.0		
Gas Inlet Pressures	Burner	Minimum	Maximum		
At valve train inlet	210 JIB-F	5.0" w.c.	12.5 mbar	14.0" w.c.	34.8 mbar
	236 JIB-G	8.3" w.c.	20.7 mbar	14.0" w.c.	34.8 mbar
Electrical Supply	120 VAC, 1 cycle, 60 hz.				
Motor Type	210 JIB-F:	1/25 hp, 1550 rpm, open, with built-in overload protection.			
	236 JIB-G:	1/6 hp, 3600 rpm, TEFC, with built-in overload protection.			
Firing Chamber Limits	Draft required: 0.05" w.c. (0.1 mbar) to 1.5" w.c. (3.7 mbar). JIB burners will not operate against any backpressure.				
Ambient Temperature Limits	-40° to +104° F (-40° to +40° C)				
Materials	Burner Body:	Cast iron			
	Blower Housing:	Cast iron.			
	Impeller:	Steel.			
	Flame tube:	Cast iron.			
Net Weight	72.5 pounds	32.9 kilograms			
Models	Burner	Assembly	Flame Monitor	Sensor	Sensor #
	210 JIB-F	109789-00	None ¹	None	---
	210 JIB-F	109789-33	Eclipse 5605-33	Flame rod	13093-3 ²
	210 JIB-F	109789-01	Honeywell RA-890F	Flame rod	13093-3 ²
	210 JIB-F	109789-04	PCI 7256 BE	Flame rod	13093-3 ²
	210 JIB-F	109789-32	Eclipse 5605-32	UV scanner	10939
	210 JIB-F	109789-02	Honeywell RA-890G	UV scanner	16281
	210 JIB-F	109789-05	PCI 7256 BE	UV scanner	17265
	236 JIB-G	109749-00	None ¹	None	---
	236 JIB-G	109749-33	Eclipse 5605-33	Flame rod	13093-3 ²
	236 JIB-G	109749-01	Honeywell RA-890F	Flame rod	13093-3 ²
	236 JIB-G	109749-04	PCI 7256 BE	Flame rod	13093-3 ²
	236 JIB-G	109749-32	Eclipse 5605-32	UV scanner	10939
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	236 JIB-G	109749-05	PCI 7256 BE	UV Scanner	17265

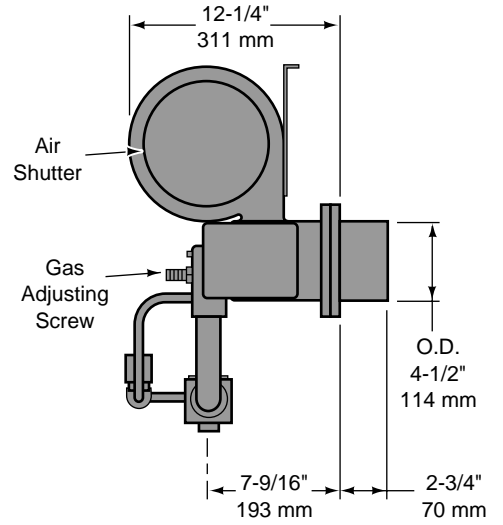
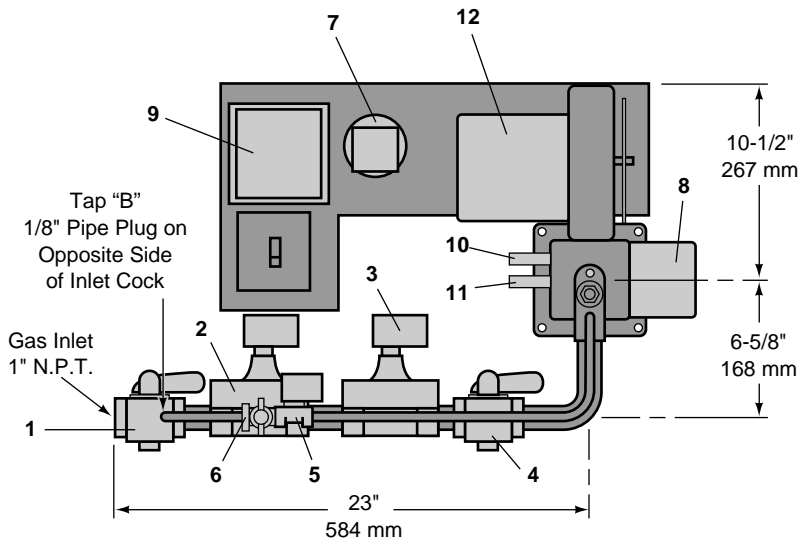
¹ Burners ordered less relay include an ignition plug, ignition transformer, and ignition cable. The customer must supply a suitable flame monitoring relay, base, and flame sensor meeting local and/or insurance requirements. To mount a UV scanner on the burner, order scanner adaptor #19748.

² Flame rod #13093-3 is furnished 3-1/4" long; it must be cut to 2-1/2" long to be used in the burner.

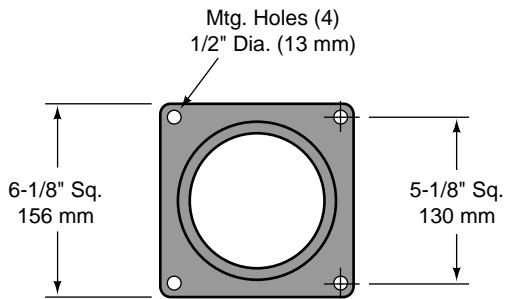
Flame monitoring equipment supplied with these burners by Eclipse may or may not meet local safety and/or insurance requirements. The owner/user and/or his insurance underwriter must assume responsibility for the acceptance, use, and proper maintenance of flame supervision, limit controls, and other safety devices.

Figure 1 Dimensions & Parts List

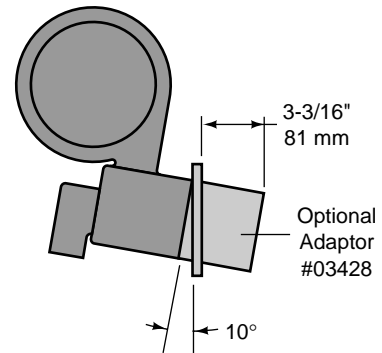
210 JIB-F & 236 JIB-G Burner



Mounting Flange Detail



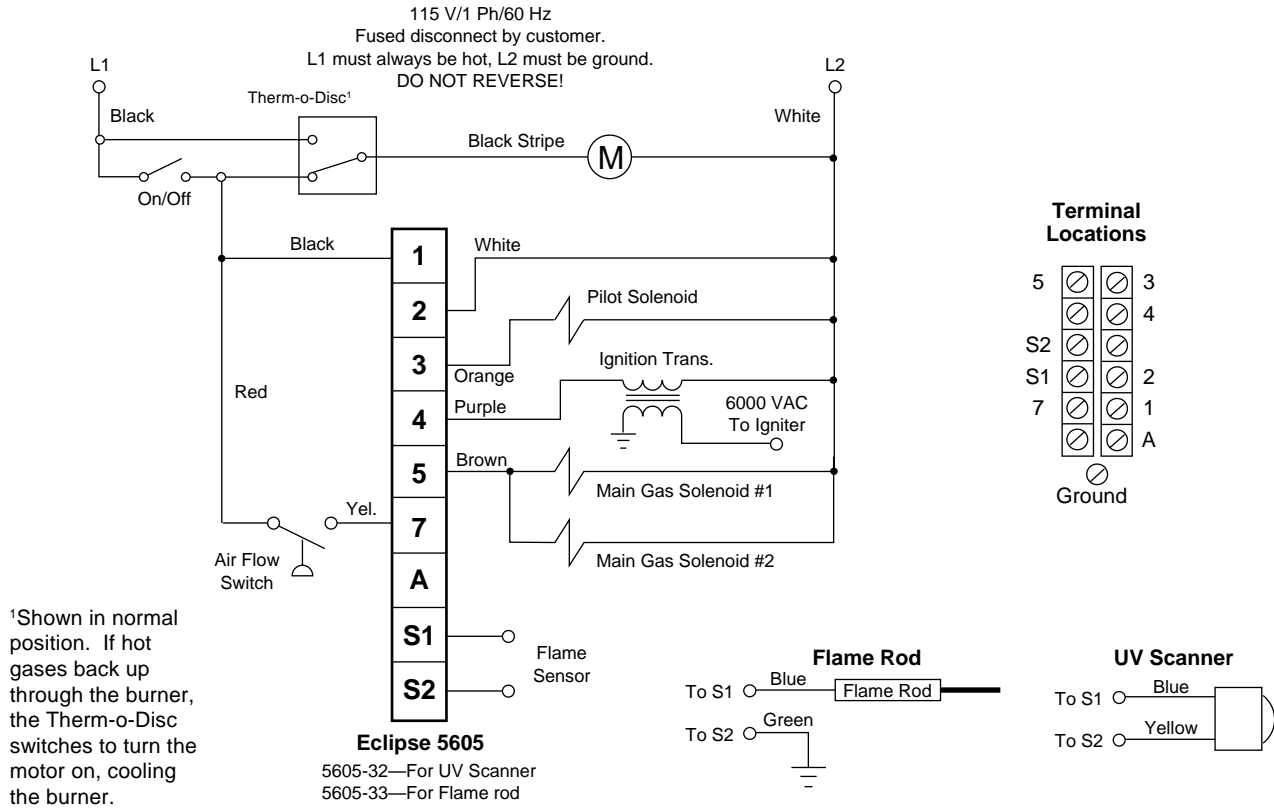
Optional 10° Adaptor



Item	Function	Description	210 JIB-F	236 JIB-G
1	Manual Gas Cock	Essex	19122	19122
2	Automatic Gas Shut-Off	Eclipse Solenoid	13250	13250
3	Automatic Gas Shut-Off	Eclipse Solenoid	13250	13250
4	Manual Gas Cock	Essex	19122	19122
5	Automatic Pilot Valve	Eclipse Solenoid	16728-1	16728-1
6	Adjustable Pilot Cock	---	12659	12659
7	Air Flow Switch	SMDF-12C133	14494	14494
8	Ignition Transformer	RA-890G or PCI UV 1/2 Wave Transformer	13551 612-6A020E	13551 12178
9	Flame Monitor	See model under "Specifications."		
10	Flame Sensor	See model under "Specifications."		
11	Spark Plug	---	16946-6	16946-6
12	Blower Motor	See "Specifications"	11366	12995

Figure 2—JIB Wiring Diagrams

Eclipse 5605



Honeywell RA-890

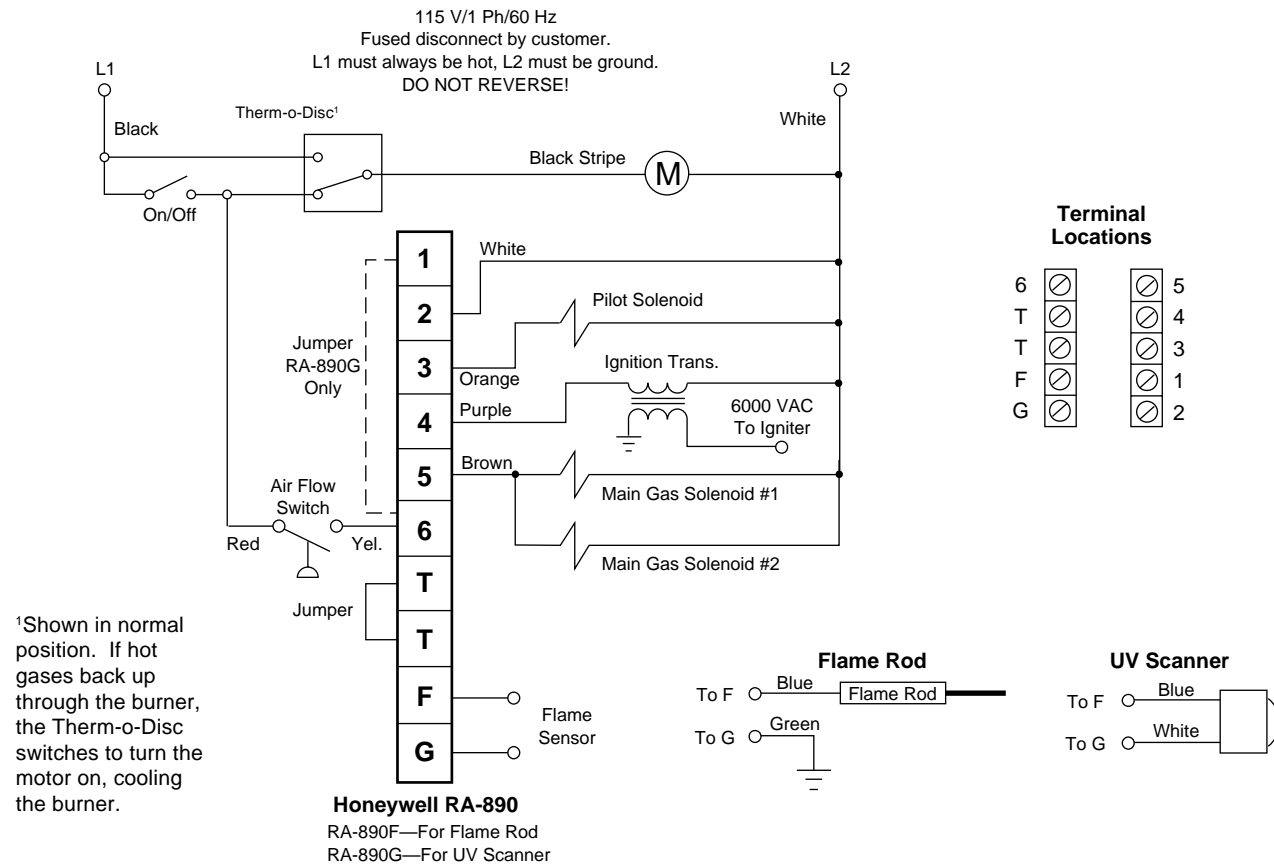


Figure 2—JIB Wiring Diagrams (Continued)

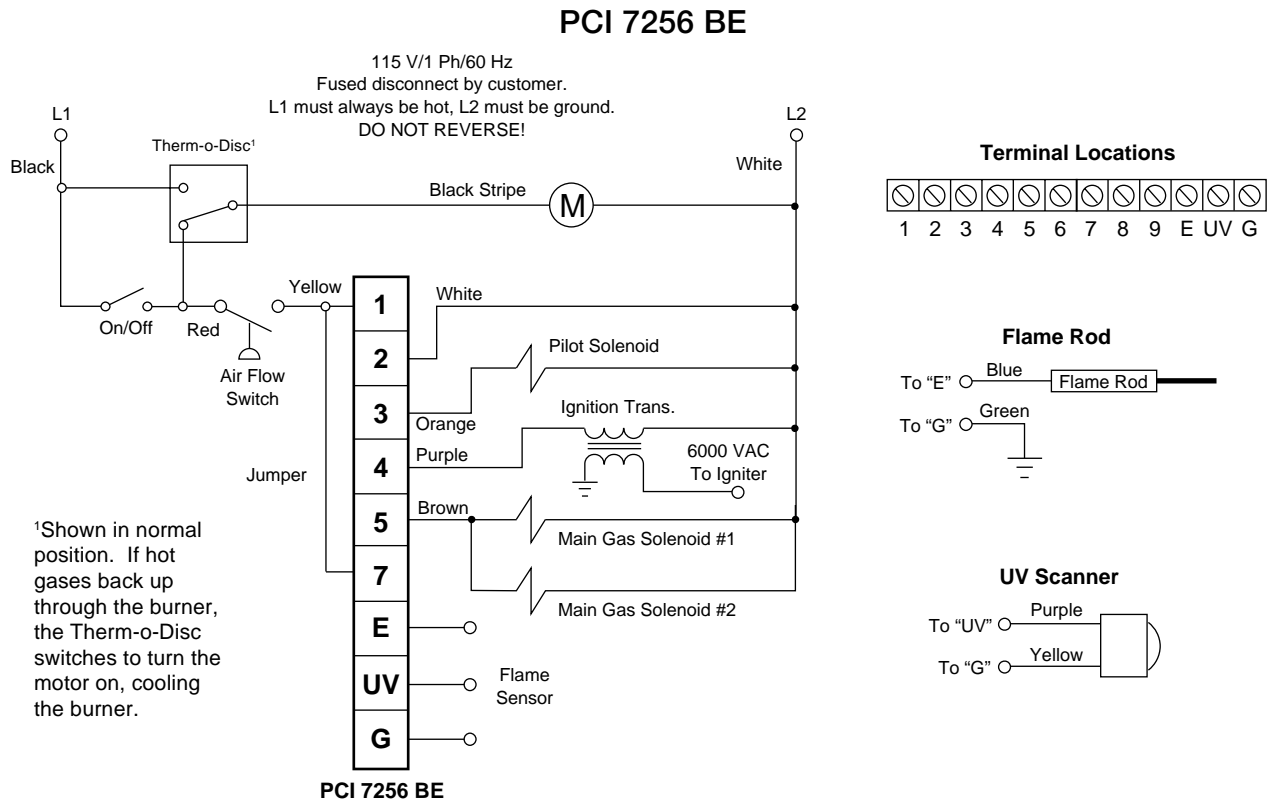


Figure 3—Burner Mounting

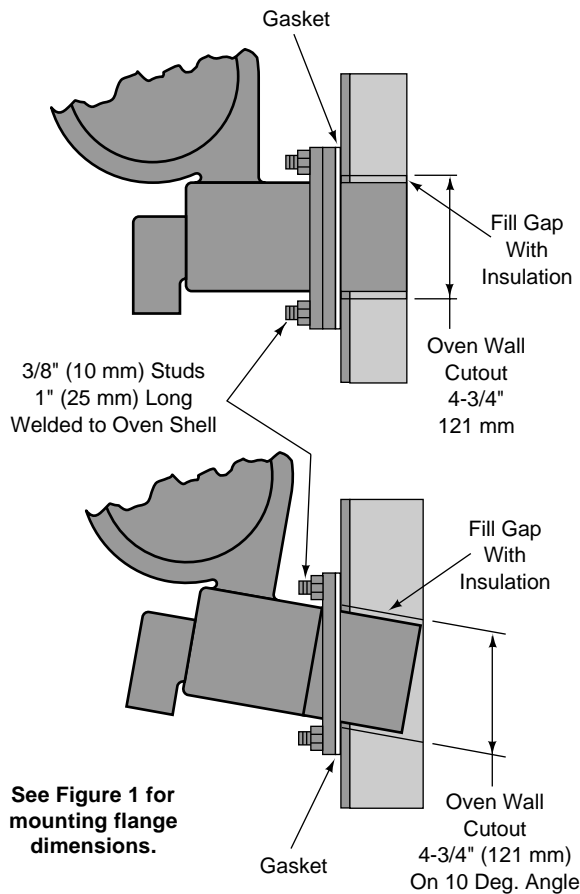
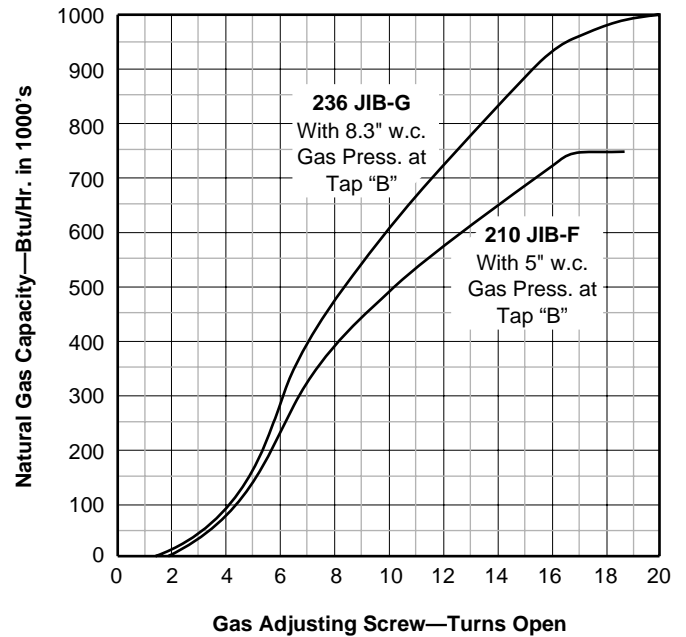


Figure 4—Gas Adjustment Data



For Propane: With the gas inlet pressures listed above, multiply the number of turns of the adjusting screw by 0.40. Alternately, the gas inlet pressure may be multiplied by .40, in which case the graph is correct as shown.

See Figure 5 for adjusting screw details.

3.0 Installation

WARNING

If improperly adjusted or operated, burners can produce toxic concentrations of gases, including carbon monoxide. Venting these products into confined, poorly ventilated areas is dangerous. To avoid this situation:

- Vent the appliance to the outdoors wherever feasible. See the appliance manufacturer's instruction manual for flue and stack design guidelines.
- Where equipment location or other considerations prevent outside venting, be sure that the building has adequate volume and fresh air makeup to dilute any potentially harmful combustion products down to safe levels as defined by OSHA or other authorities having jurisdiction.

3.1 Burner Inspection

Make a thorough inspection of the burner when uncrating and before installing it. If any parts appear broken, bent, or damaged, contact your Eclipse representative or the Eclipse factory before installing the burner.

3.2 Burner Environment

Protect burners from the weather.

Combustion air should be free of contaminants which might corrode or plug the blower or burner's internal passages.

Provide access to the burners for inspection, maintenance and removal.

Any obstruction placed directly in front of the burner will overheat and damage the burner.

3.3 Burner Mounting

See Figure 3 for mounting details. Do not overtighten the mounting bolts, as excessive force on the flange may break the casting.

For maximum service life of the automatic gas shut-off valves, mount the burner in the orientation shown in Figure 3.

3.4 Burner Piping

Connect the gas supply line to the burner and make certain the supply line is adequate in size. For long runs, the pipe size should be larger than the burner inlet to prevent excessive losses. Check with your gas company if in doubt.

For convenience in burner removal, Eclipse recommends installing a shutoff cock and suitable pipe union dsconnect upstream of the burner.

Use flexible nipples on all gas connections. Solid piping may restrain the burner from normal thermal expansion and damage the burner or its piping components. Do not use the burner assembly to support the piping.

Gas piping must comply with American National Standard "National Fuel Gas Code" (NFPA No. 54 or ANSI Z223.1)*, or must be acceptable to the authority having jurisdiction.

3.5 General Wiring Suggestions

The electrical supply must be 120 volt, 60 cycle, single phase AC. Make all electrical connections in accordance with the appropriate wiring diagram in Figure 2.

Do not disturb the factory installed wiring. Contact the Eclipse factory regarding special operating sequences and controls. Install suitable main disconnect switch and fuses at a convenient location. Be certain that the ignition cable is properly connected to the spark plug and the pilot ignition transformer.

Electrical wiring must comply with the National Electric Code*, (NFPA Std. 70 or ANSI-CI 1981), or must be acceptable to the authority having jurisdiction.

*Available from:

National Fire Protection Association
Batterymarch, Park
Quincy, MA 02269

American National Standard Institute
1430 Broadway
New York, NY 10018

4.0 Start-Up & Adjustment

CAUTION

JIB Burners are factory-adjusted on natural gas and tagged with the correct pressure settings. If factory settings have been tampered with, or if the burner will be operated on propane vapor instead of natural gas, field adjustment will be necessary. Follow the procedure below. These general instructions apply regardless of the type of flame monitoring relay installed. See the appropriate data sheets for specific information on the operation and sequencing of the particular relay installed on the burner.

- 4.1 Close the main manual gas cocks and the pilot gas cock and turn the burner On-Off switch "Off."
- 4.2 Loosen the lock nut on the gas adjusting screw (Figure 5). Using an allen wrench, turn the adjusting screw clockwise until it seats within the burner body. Referring to the graph in Figure 4, open the screw the number of turns required for the desired burner capacity.
- 4.3 Open the air shutter approximately 1/2" for the 210 JIB-F, and 3/4" for the 236 JIB-G.
- 4.4 Turn the handle of the adjustable pilot cock to the open position, Figure 6.
- 4.5 Turn the burner On-Off switch "On" to start the blower.

4.6 Once the air flow switch has proven blower operation, the flame monitoring control will be energized. The pilot solenoid valve will open and there will be a 15 second trial for ignition (TFI).

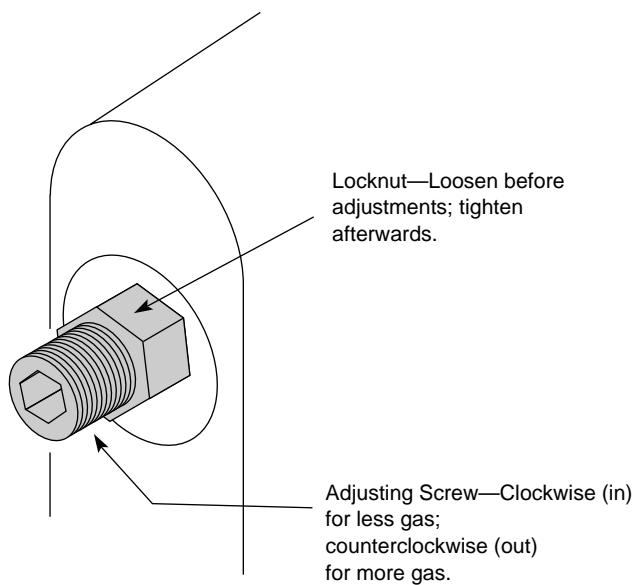
- 4.7 After the pilot ignites, adjust the pilot gas cock by removing the top screw, Figure 6. Turn the adjusting screw clockwise to reduce gas flow, and counterclockwise to increase gas flow. When the desired setting is reached, replace the top screw.

Pilot gas should be adjusted to the minimum flow which holds the flame monitoring device and **positively** ignites the burner. If the pilot gas input is too low, nuisance shutdowns will occur; if the input is too rich, aldehydes form.

Eclipse Controls flame monitoring relays have a front panel pilot test button that will hold the burner on pilot, giving you as much time as you need to adjust the pilot. See I-610 Information Guide for details on this feature.

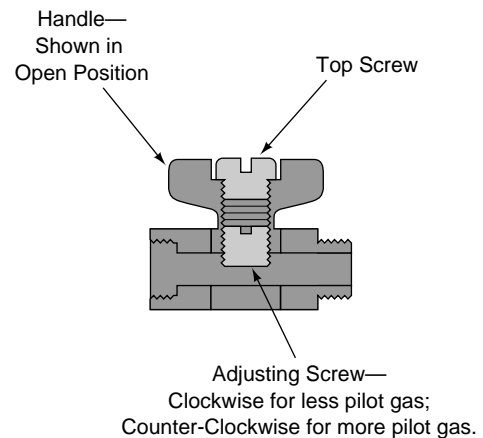
- 4.8 The flame monitor will prove pilot operation and energize both main gas solenoid valves.
- 4.9 Open the main manual gas cocks. After the main flame is lit, adjust the air shutter if necessary to achieve the desired flame characteristics.
- 4.10 When the burner is fully adjusted, lock the air shutter and gas adjusting screw in place.
- 4.11 If necessary, re-adjust the pilot setting to compensate for changes in the air shutter opening.
- 4.12 The burner can now be operated without further adjustment, using only the on-off switch.

Figure 5—Main Gas Adjusting Screw



See Figure 1 for adjusting screw location.

Figure 6—Pilot Cock



5.0 Trouble-Shooting

CAUTION

Trouble shooting of electrical circuits should be done by qualified plant electricians, technicians, or engineers experienced in all facets of this type of combustion equipment.

PROBLEM	POSSIBLE CAUSE
Pilot fails to light.	<ol style="list-style-type: none"> 1. On initial start-up, gas line may be filled with air. Repeat ignition trial several times to purge. 2. No power to ignition transformer or pilot solenoid. 3. Open circuit between ignition transformer and spark plug. 4. Spark plug is dirty or improperly installed. 5. Pilot gas cock screw closed. 6. Insufficient gas pressure at valve train inlet.
Main flame fails to light.	<ol style="list-style-type: none"> 1. Pilot set too lean, blows out as main flame comes on. 2. Insufficient gas pressure at valve train inlet. 3. Gas flow misadjusted. See Section 4.0.
Burner behaves erratically, does not respond to adjustment.	<ol style="list-style-type: none"> 1. Burner internals loose, dirty or burned out. If any of these problems exist, contact your Eclipse representative or the Eclipse factory for service.
Main flame is too long and yellow on high fire.	<ol style="list-style-type: none"> 1. Gas flow is misadjusted. See Section 4.0. 2. Air shutter is closed too far.
Main flame is too short at high fire.	<ol style="list-style-type: none"> 1. Gas flow is misadjusted. See Section 4.0. 2. Air shutter is open too far.

6.0 Maintenance

6.1 Motor Lubrication

Oil the blower motor according to the manufacturer's instructions as printed on the motor label.

6.2 UV Scanner Maintenance

Periodically clean the UV scanner lens as described in the manufacturer's product literature.

6.3 Ignition Plug and Flame Rod Replacement

Ignition plugs and flame rods wear out over long periods of normal burner operation. Eclipse recommends that the user keep at least one of each in stock at all times to prevent nuisance shutdowns.

See Figure 7 for proper ignition plug installation.

Figure 7—Ignition Plug Installation

