# Honeywell ECLIPSE

# Ultra low NO<sub>X</sub> burners Furnnox FN

# **OPERATING INSTRUCTIONS**

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# **1 SAFETY**

#### **1.1 Disclaimer Notice**

In accordance with the manufacturer's policy of continual product improvement, the product presented in this brochure is subject to change without notice or obligation.

The material in this manual is believed adequate for the intended use of the product. If the product is used for purposes other than those specified herein, confirmation of validity and suitability must be obtained. Honeywell-Eclipse warrants that the product itself does not infringe upon any United States patents. No further warranty is expressed or implied.

#### 1.2 Liability and Warranty

We have made every effort to make this manual as accurate and complete as possible. Should you find errors or omissions, please bring them to our attention so that we may correct them. In this way we hope to improve our product documentation for the benefit of our customers. Please send your corrections and comments to our Marketing Communications Manager.

It must be understood that Honeywell's liability for its product, whether due to breach of warranty, negligence, strict liability, or otherwise is limited to the furnishing of replacement parts and Honeywell-Eclipse will not be liable for any other injury, loss, damage or expenses, whether direct or consequential, including but not limited to loss of use, income, or damage to material arising in connection with the sale, installation, use of, inability to use, or the repair or replacement of Honeywell-Eclipse's products.

Any operation expressly prohibited in this manual, any adjustment, or assembly procedures not recommended or authorized in these instructions shall void the warranty.

#### **1.3 Document Conventions**

There are several special symbols in this document. You must know their meaning and importance.

- **1 2 3 a b c** ... = Action
- $\rightarrow$  = Instruction/Note

#### 1.4 Audience and Purpose

This manual has been written for people who are already familiar with all aspects of a gas burner and its add-on components, also referred to as "the burner system".

- These aspects are:
- Installation
- Use
- Maintenance

The audience is expected to have previous experience with this type of equipment.

The purpose of this manual is to make sure that you carry out the installation of a safe, effective, and trouble-free system.

#### **Further documents**

For further information about this product see  $\underline{\mbox{Technical Information}}$ 

#### 1.5 Safety instructions

Information that is relevant for safety is indicated in the instructions as follows:

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Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

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Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

# **A** CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

All interventions may only be carried out by qualified gas technicians. Electrical interventions may only be carried out by qualified electricians.

#### 1.6 Safety

Important notices which help provide safe burner operation will be found in this section. To avoid personal injury and damage to the property or facility, the following warnings must be observed. All involved personnel should read this entire manual carefully before attempting to start or operate this system. If any part of the information in this manual is not understood, contact Honeywell before continuing.

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The burners covered in this manual are designed to mix fuel with oxygen and burn the resulting mixture. All fuel burning devices are capable of producing fires and explosions when improperly applied, installed, adjusted, controlled or maintained.

- Do not bypass any safety feature; fire or explosion could result.
- Never try to light the burner if it shows signs of damage or malfunction.

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- The burner is likely to have HOT surfaces. Always wear protective clothing when approaching the burner.
- Honeywell products are designed to minimize the use of materials that contain crystalline silica. Examples of these chemicals are: respirable crystalline silica from bricks, cement or other masonry products and respirable refractory ceramic fibers from insulating blankets, boards, or gaskets. Despite these efforts, dust created by sanding, sawing, grinding, cutting and other construction activities could release crystalline silica. Crystalline silica is known to cause cancer, and health risks from the exposure to these chemicals vary depending on the frequency and length of exposure to these chemicals. To reduce the risk, limit exposure to these chemicals, work in a well-ventilated area and wear approved personal protective safety equipment for these chemicals.

# **A** CAUTION

 This manual gives information for the use of these burners for their specific design purpose. Do not deviate from any instructions or application limits in this manual without written advice from Honeywell.

#### Capabilities

Only qualified personnel, with good mechanical aptitude and experience with combustion equipment, should adjust, maintain, or troubleshoot any mechanical or electrical part of this system.

#### **Operator Training**

The best safety precaution is an alert and trained operator. Train new operators thoroughly and have them demonstrate an adequate understanding of the equipment and its operation. A regular retraining schedule should be administered to ensure operators maintain a high degree of proficiency.

#### **Replacement Parts**

Order replacement parts from Honeywell only. Any customer-supplied valves or switches should carry UL, FM, CSA, CGA and/or CE approval where applicable.

# **2 PRODUCT DESCRIPTION**

The Furnnox is a Low NO<sub>X</sub> nozzle-mix burner using ambient or preheated combustion air with temperatures up to 1100°F (600°C). The Furnnox burner is designed for application on direct fired high temperature range, 1400 to 2800°F (760 to 1540°C), furnaces.

By staging the combustion air the burner  $NO_X$  emissions are reduced compared to standard nozzle mixing burners. Staging of the combustion air is achieved by secondary air holes in the burner refractory block.

The Furnnox burner is designed for direct ignition and flame supervision by UV scanner.



# **3 INSTALLATION**

#### **3.1 Introduction**

In this section you will find the information and instructions needed to install the burner and system components.

#### 3.2 Handling and Storage

#### Handling

- $\rightarrow$  Make sure the area is clean.
- → Protect the components from weather, damage, dirt and moisture.
- → Protect the components from excessive temperatures and humidity.

#### Storage

- $\rightarrow$  Make sure the components are clean and free of damage.
- $\rightarrow$  Store the components in a cool, clean, dry room.
- → After making sure everything is present and in good condition, keep the components in original packages as long as possible.

#### **3.3 Position of Components**

The position and amount of components are determined by the kind of control method chosen. All the control methods can be found here: <u>Technical Information - System Design</u>. Use the schematics in that chapter to build your system.

#### **3.4 Approval of Components**

#### Limit Controls and Safety Equipment

All limit controls and safety equipment must comply with all applicable local codes and/or standards and must be listed for combustion safety by an independent testing agency. Typical application examples include:

- American: NFPA 86 with listing marks from UL, FM, CSA
- European: EN 746-2 with CE mark from TuV, Gastec, Advantica

#### **Electrical Wiring**

All the electrical wiring must comply with all applicable local codes and/or standards such as:

- NFPA Standard 70
- IEC 60364
- CSA C22
- BS7671

#### Gas Piping

All the gas piping must comply with all applicable local codes and/ or standards such as

- NFPA Standard 54
- ANSI Z223
- EN 746-2

#### Where to Get the Standards?

#### The NFPA Standards are available from:

National Fire Protection Agency Batterymarch Park Quincy, MA 02269 www.nfpa.org

#### The ANSI Standards are available from

American National Standard Institute 1430 Broadway New York, NY 10018 www.ansi.org

#### The UL Standards are available from

333 Pfingsten Road Northbrook, IL 60062 <u>www.ul.com</u>

#### The FM Standards are available from

1151 Boston-Providence Turnpike PO Box 9102 Norwood, MA 02062 www.fmglobal.com/approvals

# Information on the EN standards and where to get them is available from

Comité Européen de Normalisation Stassartstraat 36 B-1050 Brussels Phone: +32-25196811 Fax: +32-25196819 www.cen.eu

Comité Européen de Normalisation Electronique Stassartstraat 36 B-1050 Brussels Phone: +32-25196871 Fax: +32-25196919 www.cenelec.org

#### 3.5 Checklist Before Installation

#### Intake

Provide an opening in the burner room of at least one square inch per 4000 BTU/hr (6 cm<sup>2</sup> per 1 kW) to supply the burner intake with fresh, outdoor, combustion air.

If there are corrosive fumes or materials in the surrounding air, find an uncontaminated source to supply air to the burner, or provide a sufficient air filtering system.

#### Exhaust

Do not allow exhauct fumes to accumulate in the work area. Provide some positive means for exhausting from the furnace and the building.

#### Access

Make sure that you install the burner in such a way that you can gain easy access for inspection and maintenance.

#### Environment

Make sure the local environment matches the original operating specifications. Check the following items:

- Voltage, frequency and stability of the electrical power
- Fuel type and supply pressure of the fuel
- Availability of enough fresh, clean combustion air
- Humidity, altitude and temperature of air
- Presence of damaging corrosive gases in the air
- Prevent direct exposure to water

#### Configuration

Verify the configuration of the Furnnox burner package:

- Make sure piping orientation is correct. For guidance on changing the orientation see page 3 (3.6 Prepare the Burner).
- Make sure spark plug is installed and adjusted correctly.
- Make sure flame sensor is installed. It may be either a flame rod or a UV scanner, depending on the type of flame monitoring control system being used.

For detailed information on how to install and connect a flame rod, refer to:

- Eclipse Flame Equipment datasheet

For detailed information on how to install and connect a UV scanner, refer to the relevant UV Scanner documentation.

#### 3.6 Prepare the Burner

Several components must be installed on a burner before it can operate. Installation instructions follow.

It is possible to change the relative position of the gas inlet with respect to the air inlet. This can be convenient for the routing of the piping.

#### 3.6.1 Rotate the Rear Cover (Optional)



- → Be careful not to lose or damage the orifice plate and the o-rings or gaskets.
- 1 Disconnect the piping at a union in the piping or the inlet flanges **A** provided on the burner.
- 2 Remove the four bolts B.
- **3** Remove the rear cover **C** from the burner housing **D**.
- 4 Rotate the rear cover C to the position that you want.
- 5 Put the rear cover C in position against the burner housing D.
- 6 Install the four bolts B.
- **7** Reconnect the piping. If configured with o-rings, make sure that the o-rings show no signs of damage. If configured with high temp flat gaskets, follow the instructions listed in the next section.

#### 3.6.2 Installing the Flame Sensor



**1** Install the flame sensor into the NPT opening in the rear cover.

**2** Make sure that you connect the flame sensor of a burner to the electrical circuit of that burner.

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If you connect the flame sensor of a burner to the electrical circuit of the wrong burner, then you can cause fires and explosions.

→ Adjustments may vary from Honeywell Eclipse published values if the flame controls other than those recommended in the Design Guide are used. Consult with the engineer who specified the alternate control for limitations.

#### **UV Scanner UVS**



For detailed information on how to install and connect a UV scanner, refer to <u>scanner operating instructions</u>.

#### Installing the Spark Plug



Install the spark plug into the opening in the rear cover.

→ Do not apply any grease to the threads of the spark plug. You can cause bad grounding of the spark plug if you apply grease to it. Bad grounding of the spark plug results in a weak spark.

# **4 COMBUSTION BLOCK INSTALLATION**

#### 4.1 Hard Refractory Lined Furnaces



- → Allow approximately 1/2" (12 mm) clearance all around the refractory combustor.
- 1 Make sure gasket **A** is installed between burner **B** and block holder **C**.
- Install the gasket D between the refractory combustor flange C and the furnace shell E.
- 3 Support the weight of refractory combustor F with hard brick work anchored to the furnace shell G. Fill the 1/2" space between the refractory combustor F and the three unsupported sides with soft gasket material H.
- → After initial firing of furnace at design temperature, check fiber shrinkage in vicinity of burner tile. Fill any voids with bulk fiber insulation to maintain a gas tight seal between furnace interior and shell.

#### 4.2 Fiber Lined Furnaces



- **1** Make sure gasket **A** is installed between burner **B** and block holder **C**.
- Install the gasket D between the refractory combustor flange C and the furnace shell E.
- 3 Coat the outside of the refractory combustor F with an air setting refractory cement G. Also, fill clearance gap between the furnace shell E opening and the refractory combustor F with cement.
- **4** Wrap the exposed refractory combustor **F** length with two layers of continuous strip of blanket insulation **H**.
- 5 Compress and secure the blanket insulation H to the refractory combustor F using a suitable, nonmetallic tape. Compression of the blanket insulation H should be at least 25%.
- 6 Install the fiber insulation I tightly against the wrapped refractory combustor F, following the suppliers recommended procedure for anchoring and compressing the fiber I.



- 1 For applications exceeding 2200°F (1200°C) install a ceramic fiber board shield **J** suitable for the furnace design temperature as illustrated.
- 2 Anchor the shield J to the refractory combustor F and the fiber lining I with a high temperature, air setting refractory cement K and ceramic anchoring devices L.
- → After initial firing of furnace at design temperature, check fiber shrinkage in vicinity of burner tile. Fill any voids with bulk fiber insulation to maintain a gas tight seal between furnace interior and shell.

#### 4.3 Piping Installation



#### Layout

Install the piping as shown in the schematics. Refer to <u>System</u> design.

#### Support the Piping

Use brackets or hangers to support the gas piping. If you have questions, consult your local gas company.

#### Straight Run of Pipe Before a Metering Orifice

→ There must be a run of pipe with a straight length of at least 10 pipe diameters before the burner metering orifice. If you do not do this, the pressure readings will be inaccurate.

#### **Pipe Connections**

Install a pipe union in the gas line to the burner. This simplifies removal of the burner. The use of flexible pipe nipples in the gas line to the burner is optional. Flexible nipples can absorb stress due to heat expansion and slight misalignment.

→ Flexible pipe nipples will cause inaccurate metering orifice readings and may cause higher pressure drops than equivalent standard pipe nipples. Consider this when you size the gas lines.

#### Avoid Large Pressure Drops

→ The pressure drop of the gas in the piping is a critical parameter. Make sure that the size of all the piping is large enough to prevent excessive pressure losses.

#### 4.4 Checklist After Installation

To verify proper system installation, do the following:

- **1** Make sure that there are no leaks in the gas and air lines.
- 2 Make sure all the components of the flame monitoring control system are properly installed. This includes verifying that all switches are installed in correct locations and all wiring, pressure and impulse lines are properly connected.
- **3** Make sure components of spark ignition system are installed and functioning properly.
- **4** Make sure that the blower rotates in the correct direction. If incorrect, have a qualified electrician rewire the blower to reverse its rotation.
- **5** Make sure all valves are installed in the proper location and correctly oriented relative to the gas or air flow direction.

#### 4.5 Refractory Block Curing Schedule

The refractory block was cured at the factory up to a temperature of  $650^{\circ}$ F ( $345^{\circ}$ C). Final curing should be done after installation. The recommended curing schedule is:

- Ambient to 600°F (315°C) at 100°F (55°C) per hour.
- 600°F (315°C) to 1000°F (540°C) at 25°F (14°C) per hour. Hold the refractory block at 1000°F (540°C) for 12 hours.
- Cool or raise the operating temperature at a rate of 100°F (55°C) per hour.

# **5 ADJUSTMENT, START AND STOP**

In this chapter you will find instructions on how to adjust a system, and how to start and stop a system.

# 

Do not bypass any safety feature. You can cause fires and explosions.

# 5.1 Modulating Gas and Air Ratio System

If you adjust an on-ratio system for the first time, you must follow these steps: (Refer to Figures in the <u>Technical Information</u>.)

# 5.2 Reset the System

- 1 Close the automatic gas valves and gas cocks.
- **2** Fully open the manual air butterfly valve at each burner.
- **a** Drive the automatic zone air control valve to high fire.
- **b** Adjust the automatic zone air control valve so that it is fully open.
- 3 Start the blower.
- → Make sure that the blower rotates in the correct direction. If incorrect, have a qualified electrician rewire the blower to reverse its rotation.
- **4** Adjust the eductor flow valve to set the flow measured across the orifice to the flow specified by Honeywell Eclipse for your application.

# 5.3 Set High Fire Air

- 1 Set the system to high fire, but DO NOT ignite the burner(s).
- **2** Use the orifice flow data (provided by orifice manufacturer) to determine the pressure drop across the orifice necessary for high fire air flow.
- → If using single diaphragm ratio regulator control, set air flow to 35% excess air to account for temperature changes in combustion air.
- **3** Set high fire air using the manual combustion air butterfly to achieve the pressure differential determined in step 2.

→ A pressure tap is open when the screw inside the tap is unscrewed approximately half a turn.



→ Insulated Body Furnnox Burners do not have a Tap(s) A. For insulated housing version, use pressure taps in supply lines to the burner(s).

Burner system:

- a Standard version: Open all pressure tap(s) A.
- Insulated housing version: use pressure taps in the supply lines to the burner.
- **b** Measure and note the static pressure at Tap A for all the burners.
- **c** If all the measured static pressures are within 0.3" w.c. (0.75 mbar) of each other, then proceed to the next section. If the variation is greater than 0.3" w.c. (0.75 mbar) it will be necessary to adjust the manual air butterfly valve at each burner to improve the balance.
- d Close the pressure taps.
- e Repeat the proceeding for other zones (if any).



# 5.4 Set Low Fire Air

- 1 Set the system to low fire.
- **2** Connect the manometer to tap A (air inlet pressure tap).
- **3** Adjust the automatic zone air control valve until the low fire static air pressure is 0.2" w.c. This is the initial setting only. Further adjustment may be required.
- **4** Repeat 2 and 3 for the other zones (if any).

# 5.5 Verify the Air Settings

Make sure all the settings are still the same after you cycle the system several times between high and low fire.

# 5.6 Ignite the Burners

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This procedure assumes that a flame monitoring control system is installed and is serviceable. It also assumes that normal low fire start is being used.

- → If low fire gas is too low to be used for ignition, refer to options in page 7 (5.10 Set the Bypass Pilot Gas).
- 1 Drive the zone air automatic control valve to low fire.

- **2** Make sure the combustion air blower is running.
- 3 Set the manual gas butterfly valve at each burner to 50% open.4 Adjust the ratio regulator as required for low fire.



- 5 Open manual gas cock at each burner.
- 6 Initiate the ignition sequence through the flame monitoring control system.
- 7 If all the burners have ignited, drive the zone air butterfly valve to high fire. Verify flame is present at each burner. If burners do

not light, increase the gas flow by adjusting the ratio regulator, repeat the last two steps.

- 8 Recheck the high fire air settings.
- → As application temperature increases, pressure will change. Depending on control method, readjustment of the manual combustion air butterfly valve may be necessary.

#### 5.7 Set High Fire Gas



1 Use the gas curves from the <u>ThermJet Technical Information</u> for the gas being used to find the differential gas pressure needed at high fire. This is the target value for high fire.



- **2** Connect the manometer to taps B and D (across the gas orifice).
- **3** Measure the high fire differential gas pressure for the first burner.
- 4 Adjust the gas butterfly valve at the burner until the gas flow is at the target value.
- 5 Repeat 3 and 4 for the other burners in the zone.
- **6** Check the gas pressure at the inlet to the zone ratio regulator. This should be at least 5" w.c. (12.5 mbar) higher than the loading line pressure. It should not exceed the maximum pressure rating of the ratio regulator.

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Insufficient gas inlet pressure may cause the proportionator to remain fully open as the burner system turns down from high fire, causing excess fuel operation and possible accumulation of unburned fuel in the chamber. In extreme cases, this may cause explosions or fires.

#### 5.8 Set Low Fire Gas

- **1** Drive the system to low fire.
- **2** Use the gas curve from the appropriate <u>Technical Information</u> for the gas being used to determine the differential gas pressure required for low fire. This is your target value for low fire.
- **3** Measure the gas pressure at the first burner.
- 4 Adjust the ratio regulator until the gas flow is on the target value.
- → It is very difficult to measure the very low pressures experienced at low fire, and it may be necessary to rely on visual inspection. This is especially true when gas turndowns in excess of 10:1 are being used. The main intent is to provide a clean stable flame with a good flame signal that will not cause the furnace temperature to overshoot.
- → If the pressure required is too low to be measured, adjust the ratio regulator until a gas flow is obtained that will provide a clean stable flame with a strong flame signal.

## 5.9 Verify the Gas Settings

Make sure that all the settings are still the same after you have cycled the system several times between high and low fire. As application temperature increases, setting may vary. Recheck and readjust as temperatures increase.

→ When all the settings have been completed, mark the position of the indicator on the butterfly valves to indicate valve position.

#### 5.10 Set the Bypass Pilot Gas

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Before you perform this procedure, make sure the flame monitoring control system is working.

- **1** Set the system to low fire.
- 2 Make sure that the blower is on.
- **3** Use the flame monitoring control system to start the ignition and the bypass pilot gas for all the burners in the zone.
- 4 Adjust the manual butterfly valve in the bypass line until you obtain reliable ignition within the required trial for ignition time limit.
- 5 Repeat the last step for all the other burners and zones (if any).

#### 5.11 Start Procedure

- 1 Start the blower.
- 2 Open all the gas cocks.
- 3 Start the ignition sequence.
- 4 Verify that flame is present at each burner.

# 

If a burner does not light, and the system does not shut down automatically, then you must close the main gas cock. An uncontrolled flow of gas can cause fires and explosions. Do not touch the ignition plug or the ignition wire when the ignition is on. You will get a shock.

### 5.12 Stop Procedure

- 1 Close the following valves:
- The manual gas cock for each burner or zone
- The manual gas cock at the main control valve
- All the manual shut-off valves in the gas line upstream of the burner gas cock
- **2** Let the burners cool down. Keep the blower on until the chamber temperature is less than 1000°F (500°C) and then stop the blower.
- → Keeping the blower on after the burner is off protects the burner and the other components from hot gases that flow back through the burner.

# **6 MAINTENANCE**

Preventive maintenance is the key to a reliable, safe and efficient system. The core of any preventive maintenance system is a list of periodic tasks. The following are suggestions for a monthly list and a yearly list.

→ The monthly list and yearly lists are an average interval. If your environment is dirty, the intervals may be shorter. Other standards may take precedence for your particular application.

#### 6.1 Monthly checklist

**1** Test (leak test) safety shut-off valves for tightness of closure.

- **2** Test air pressure switch settings by checking switch movements against pressure settings and comparing with actual impulse pressure.
- 3 Visually check ignition cable and connectors.
- 4 Inspect impulse piping for leaks.
- 5 Clean and inspect all the burners.
- 6 Make sure that the following components are not damaged or distorted:
- burner nozzle
- spark plugs
- flame sensors
- flame tube or combustion block

7 If applicable, remove and clean all the orifice plates.

#### 6.2 Yearly checklist

- 1 Inspect flame-sensing devices for good condition and cleanliness.
- **2** Check for proper inlet air/gas ratios.
- **3** Test all the alarm systems for proper signals.
- 4 Check ignition spark plugs and proper gap.
- **5** Check valve motors and control valves for free, smooth action and adjustment.
- 6 Check for proper operation of the ventilating equipment.
- **7** Test the interlock sequence of all safety equipment; manually make each interlock fail, noting that related equipment closes or stops as specified by the manufacturer.
- 8 Test flame monitoring control system by manually shutting off gas to burner.
- 9 Test main fuel hand-valves for operation.
- **10**Clean or replace the combustion air blower filter.

**11**Inspect and clean the combustion air blower rotor.

### 7 ASSISTANCE IN THE EVENT OF MALFUNC-TION

#### Problem

- Possible Cause
- Solution

#### 7.1 Cannot initiate start sequence

- I Air pressure switch has not made contact
  - Check air pressure switch adjustment. Check air filter. Check blower rotation. Check outlet pressure from blower.
- I High gas pressure switch has tripped
  - Check incoming gas pressure. Adjust gas pressure if necessary. Check pressure switch setting and operation.
- Low gas pressure switch has tripped
  - Check incoming gas pressure. Adjust gas pressure if necessary. Check pressure switch setting and operation.
- Malfunction of flame monitoring control system such as shorted out flame sensor or electrical noise in the sensor line
   Have a qualified electrician investigate and rectify.
- Purge cycle not completed
  - Check flame monitoring control system or purge timer.
- ! Main power is off
  - Make sure power is on to control system.
- ! No power to control unit
- Call qualified electrician to investigate.

## 7.2 Start-up sequence runs but burner does not light

- I No ignition: There is no power to the ignition transformer
  - Restore power to the ignition transformer.
- I No ignition: Open circuit between the ignition transformer and the spark plug
  - Repair or replace the wiring to the spark plug.
- ! No ignition: The spark plug needs cleaning
  - Clean the spark plug.
- I No ignition: The spark plug is not correctly grounded to the burner
  - Clean the threads of the spark plug and the burner. Do not apply grease to the thread of the spark plug.
- Too much gas: Improper gas valve train sequence
  Verify solenoid valve is down-stream of proportionator.
- 1 Too much gas: Manual gas butterfly valves have been opened too far

- Check pressures and settings against start-up report and adjust as necessary.
- I Too much gas: Gas pressure out of the main gas pressure regulator is too high
  - Check start-up setting. If necessary, remove regulator and investigate.
- I Not enough gas: The gas pressure out of the main gas pressure regulator is too low
  - Check start-up setting. Check regulator and adjust if necessary.
- I Not enough gas: Start gas solenoid valve does not open.
  - Check solenoid valve coil for proper orientation. Replace if necessary.
- ! Not enough gas: Gas valve not open
  - Check wiring to the automatic gas shut-off valve.
- ! Not enough gas: Air in the gas line
  - Check output from the flame safeguard. Open gas cock. Purge gas line.

## 7.3 The low fire flame is weak or unstable

- Low fire adjusted too slow
  - Increase low fire gas setting.
- ! Not enough gas
  - Check start-up settings and adjust to increase low gas flow.
  - Check start-up settings. Investigate any change, i.e. blocked filter, loose connections.

### 7.4 The burner goes off when it cycles to high fire

Insufficient air (flame too rich)

• Check start-up settings. Check air filter, clean or replace if required.

#### 7.5 The burner is erratic and does not respond to adjustment

- I Flame signal weak
  - Check condition of flame monitoring device.
- Internal damage to the burner. Some parts inside the burner may be loose or dirty.
  - Contact Honeywell Eclipse.

## 7.6 The burner is unstable or produces soot or smoke

- I The air/gas ratio is out of adjustment
  - Measure all gas pressures and air pressures. Compare to initial start-up settings, and adjust them where necessary.

## 7.7 Cannot achieve full capacity

- ! Air filter is blocked
  - Clean or replace the air filter.
- Gas pressure is too low into the main gas pressure regulator
   Adjust gas pressure.
- I Increase furnace/chamber pressures
  - Re-check setup pressures.

## ! Poor piping practices

Contact Honeywell Eclipse.

# **8 SPARE PARTS**

The PartDetective web app for selecting spare parts is available at <u>www.adlatus.org</u>.

# FOR MORE INFORMATION

The Honeywell Thermal Solutions family of products includes Honeywell Combustion Safety, Eclipse, Exothermics, Hauck, Kromschröder and Maxon. To learn more about our products, visit ThermalSolutions. honeywell.com or contact your Honeywell Sales Engineer. Honeywell Eclipse branded products 201 E 18th Street Muncie, IN 47302 USA ThermalSolutions.honeywell.com



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