

# USER'S INFORMATION MANUAL

## X-2™ SERIES GAS - FIRED BOILER

**WARNING:** If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- **WHAT TO DO IF YOU SMELL GAS**
  - Do not try to light any appliance.
  - Do not touch any electrical switch; do not use any phone in your building.
  - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
  - If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.



The following terms are used throughout this manual to bring attention to the presence of hazards of various risk levels.

## **WARNING**

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

## **CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may result in moderate or minor injury or property damage.

### **Important Product Safety Information** **Refractory Ceramic Fiber Product**

#### **Warning:**

The Repair Parts list designates parts that contain refractory ceramic fibers (RCF). RCF has been classified as a possible human carcinogen. When exposed to temperatures above 1805°F, such as during direct flame contact, RCF changes into crystalline silica, a known carcinogen. When disturbed as a result of servicing or repair, these substances become airborne and, if inhaled, may be hazardous to your health.

#### **AVOID Breathing Fiber Particulates and Dust**

#### **Precautionary Measures:**

Do not remove or replace RCF parts or attempt any service or repair work involving RCF without wearing the following protective gear:

1. A National Institute for Occupational Safety and Health (NIOSH) approved respirator
  2. Long sleeved, loose fitting clothing
  3. Gloves
  4. Eye Protection
- Take steps to assure adequate ventilation.
  - Wash all exposed body areas gently with soap and water after contact.
  - Wash work clothes separately from other laundry and rinse washing machine after use to avoid contaminating other clothes.
  - Discard used RCF components by sealing in an airtight plastic bag. RCF and crystalline silica are not classified as hazardous wastes in the United States and Canada.

#### **First Aid Procedures:**

- If contact with eyes: Flush with water for at least 15 minutes. Seek immediate medical attention if irritation persists.
- If contact with skin: Wash affected area gently with soap and water. Seek immediate medical attention if irritation persists.
- If breathing difficulty develops: Leave the area and move to a location with clean fresh air. Seek immediate medical attention if breathing difficulties persist.
- Ingestion: Do not induce vomiting. Drink plenty of water. Seek immediate medical attention.

## Basic Operation

### CAUTION

Should overheating occur or the gas supply fail to shut off, do not turn off or disconnect the electrical supply to the pump. Instead, shut off the gas supply at a location external to the appliance.

Do not use this boiler if any part has been under water. Immediately call a qualified service technician to inspect the boiler and to replace any part of the control system and any gas control which has been under water.

**A. General.** This water boiler is equipped with controls for proper operation. All controls must be in proper working order. Contact a qualified service agency to provide annual maintenance as specified in Installation, Operating and Service Instructions.

**1. Limit.** See Figure 1. A device which automatically interrupts boiler operation when the water temperature exceeds the set point. Maximum allowable temperature is 220°F.

Original equipment with this boiler is an Intelligent Hydronic Control (IHC) and Limit Rated Sensor combination. The IHC shuts off boiler main burners when boiler water temperature exceeds pre-programmed IHC water temperature set point. Boiler main burners will re-light automatically, providing the call for heat is present, when boiler water temperature falls below pre-programmed control water temperature set point less the set point differential.

**2. Flame Rollout Switch.** See Figure 1. A device which automatically interrupts boiler operation when flames or excessive heat are present in the combustion area enclosure. The control is a single use device. The control is located in the combustion area enclosure. If the control was activated to interrupt boiler operation, do not attempt to place boiler in operation. Contact a qualified service agency.

### WARNING

Service on this boiler should be undertaken only by trained and skilled personnel from a qualified service agency.

### WARNING

Do not reset Blocked Vent Switch unless a qualified service agency has determined and corrected the cause of any blockage in the vent system or chimney.

**3. Blocked Vent Switch** See Figure 1. A device which automatically interrupts boiler operation when excessive vent system blockage occurs. If the control was activated to interrupt boiler operation, do not attempt to place boiler in operation. Contact a qualified service agency.

**4. Electronic Ignition System** - see Figure 1. The Electronic Ignition (EI) System consists of:

- a solid state ignition control with integral ignition module to initiate, monitor and stop burner operation. The IHC performs this function.
- a combination gas valve to regulate gas flow to the main burners.
- a pilot burner to provide the ignition source for the main burners.

**5. LWCO (if equipped).** See Figure 1. The IDL 1200 Low Water Cut-Off is designed to protect from potentially damaging low water conditions in the boiler. In the event of a low water condition, the amber "LOW WATER" LED will turn on and the control will shut down the burner. If the control was activated to interrupt boiler operation, do not attempt to place boiler in operation. Contact a qualified service agency.

**B. Instructions** to place the boiler in operation and to turn off the boiler are shown on the Operating Instruction Label posted on the inside of the front door. The Operating Instruction Label is shown in Figure 2.

**C. The Sequence of Operation** is shown in Figure 3.

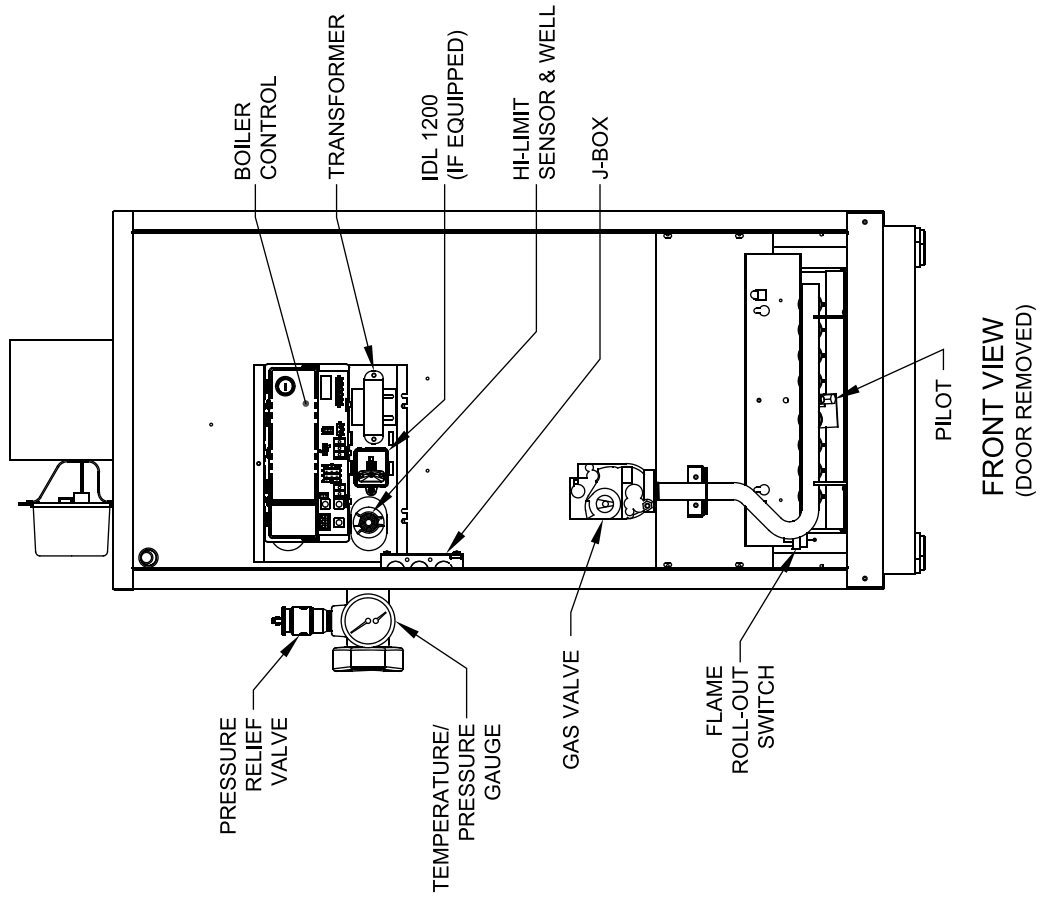
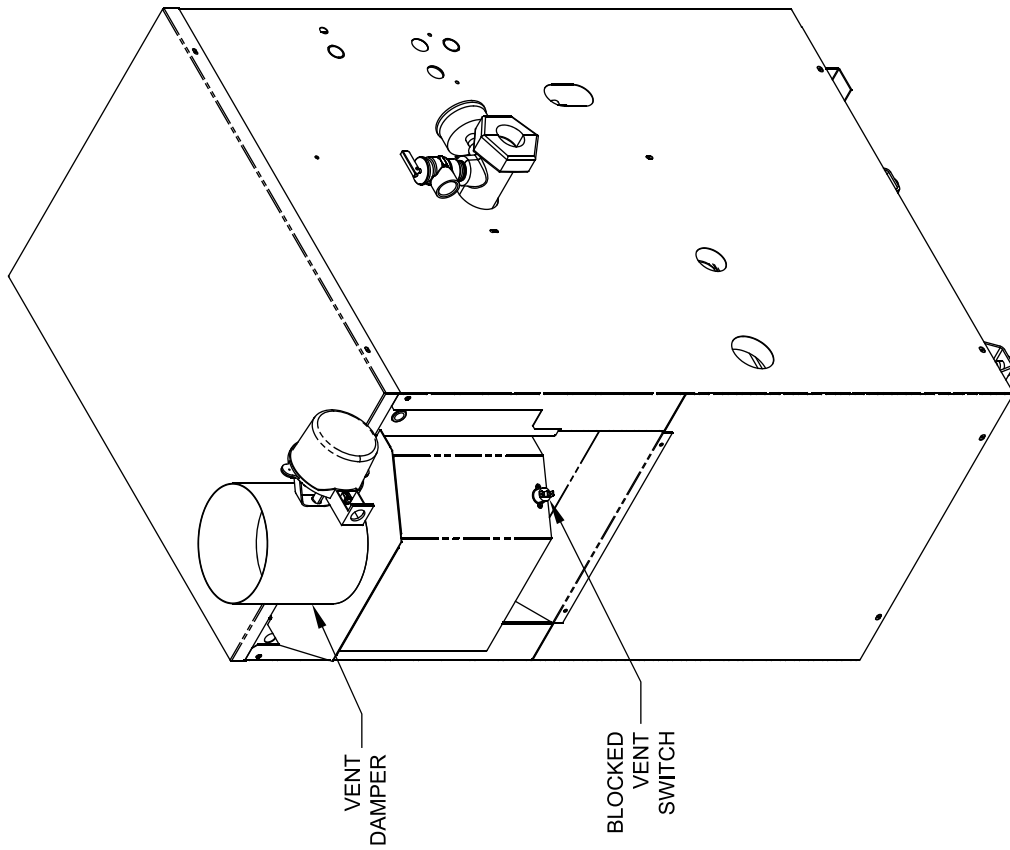


Figure 1: Control Locations

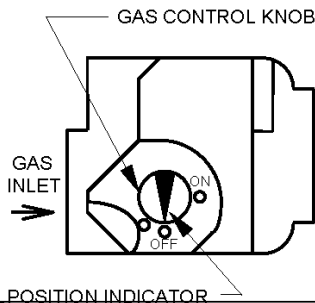
## FOR YOUR SAFETY READ BEFORE OPERATING

**WARNING:** If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury, or loss of life.

- A. This appliance is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand.
- B. BEFORE OPERATING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.
- WHAT TO DO IF YOU SMELL GAS**
- Do not try to light any appliance.
  - Do not touch any electric switch; do not use any phone in your building.
  - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.
- C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

## OPERATING INSTRUCTIONS

1. STOP! Read the safety information above on this label.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand.
5. Remove front door.
6. Locate the gas control valve at the end of the gas supply pipe going into the boiler. The gas control knob is the brown or blue plastic knob located on top of the gas control valve.
7. Rotate gas control knob clockwise from "ON" position to "OFF". Make sure knob rests against stop.
8. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information above on this label. If you do not smell gas, go to the next step.
9. Rotate gas control knob counterclockwise from "OFF" to "ON". Make sure knob rest against stop. Do not force.
10. Replace front door.
11. Turn on all electric power to the appliance.
12. Set thermostat to desired setting.
13. If the appliance will not operate, follow the instructions "TO TURN OFF GAS TO APPLIANCE" and call your service technician or gas supplier.



## TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Remove front door.
4. Rotate gas control knob clockwise from "ON" position to "OFF". Make sure knob rests against stop.
5. Replace front door.

Figure 2: Operating Instructions

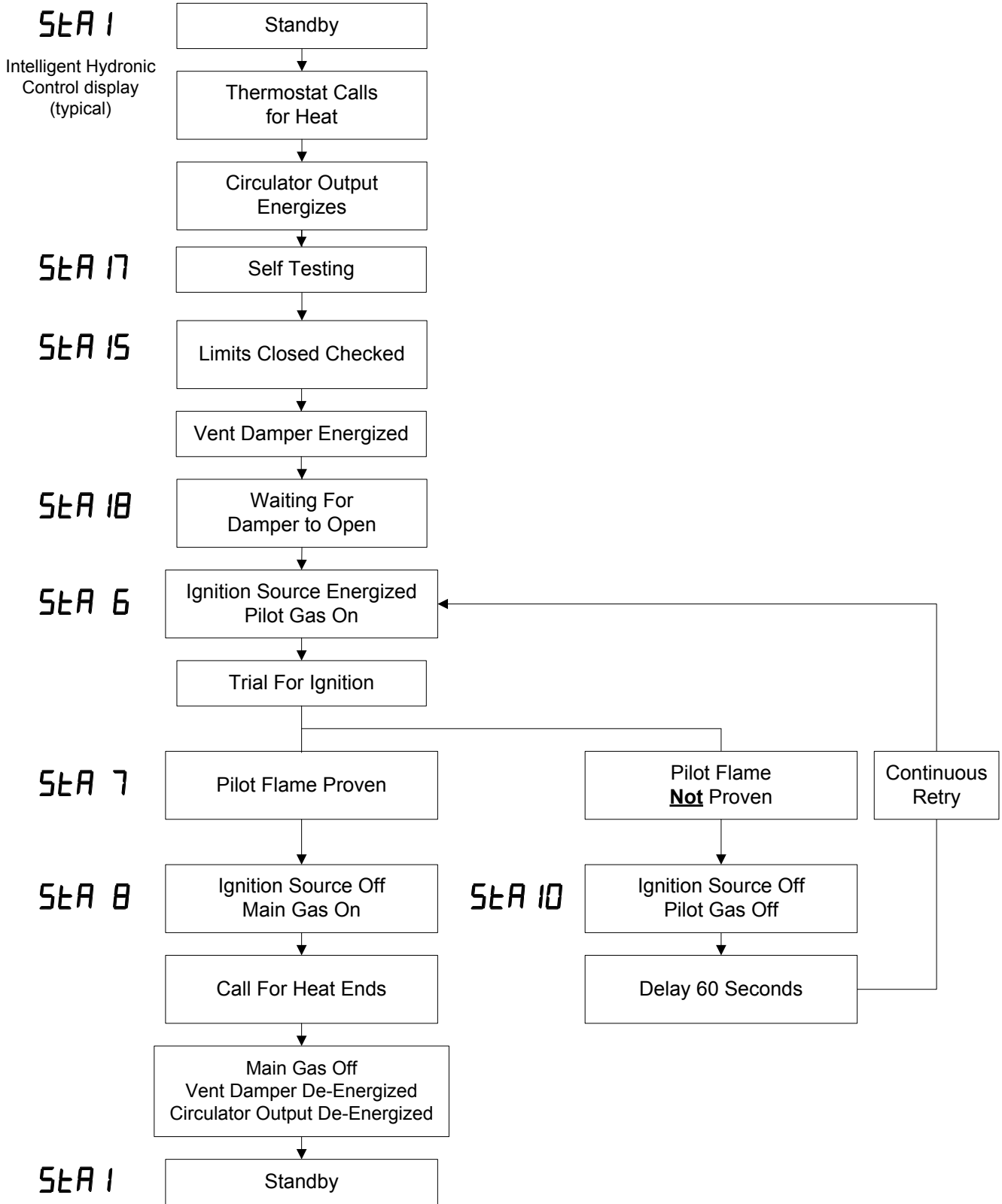


Figure 3: Sequence of Operation

## User Maintenance

### WARNING

Service on this boiler should be undertaken only by trained and skilled personnel from a qualified service agency. Inspections should be performed at intervals specified in Installation, Operating and Service Instructions and this manual. Maintain manuals in a legible condition.

Keep boiler area clear and free of combustible materials, gasoline and other flammable vapors and liquids.

Do not place any obstructions in boiler room that will hinder flow of combustion and ventilation air.

#### A. General Housekeeping (Continuous).

1. Keep boiler area clear and free of combustible materials and obstructions to the free flow of combustion and ventilation air to the boiler.
2. Do not store or use gasoline, other flammable vapors, liquids or sources of hydrocarbons in the vicinity of the boiler or any other appliance.
3. Do not store or use halogen-containing products (bleaches, cleaners, fabric softeners, refrigerants, chemicals, etc.) in the vicinity of the boiler.

#### B. Inspect Inlet Air and Vent System (Monthly). Check the following. If corrective action is required contact qualified service agency.

1. Blocked vent switch must be attached to the canopy.
2. Vent pipe must be full round shape, showing no damage from impact or excessive temperature.
3. All vent pipe joints must be secure.
4. Horizontal runs must not sag.
5. The vent system must be free of corrosion and other deterioration.
6. Supports must not be loose or broken.

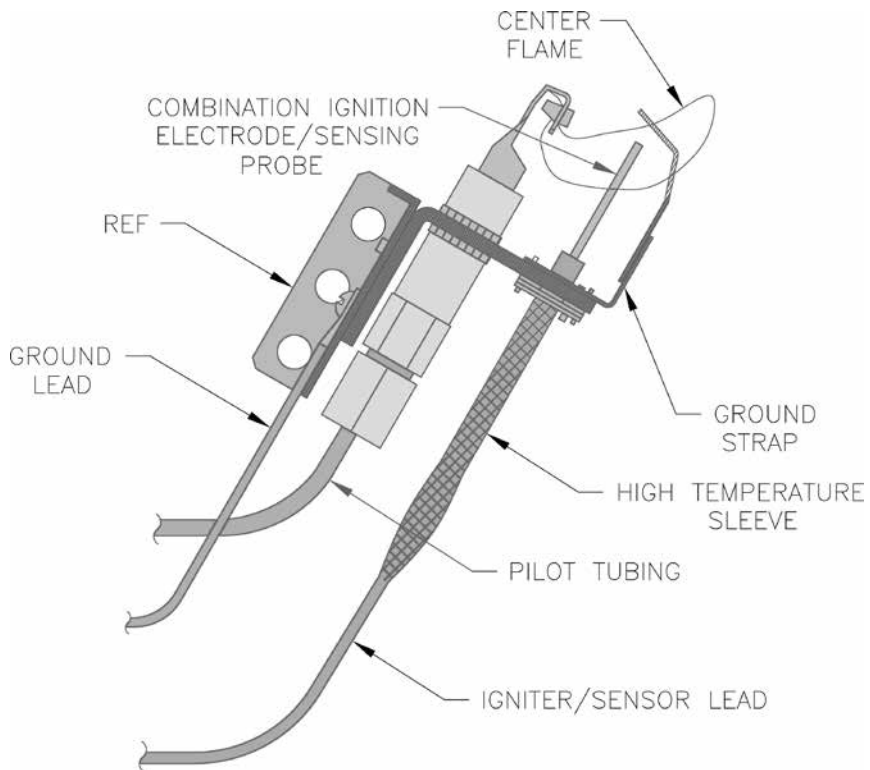
#### C. Inspect Pilot and Main Burner Flames (Monthly).

1. Remove jacket front panel.

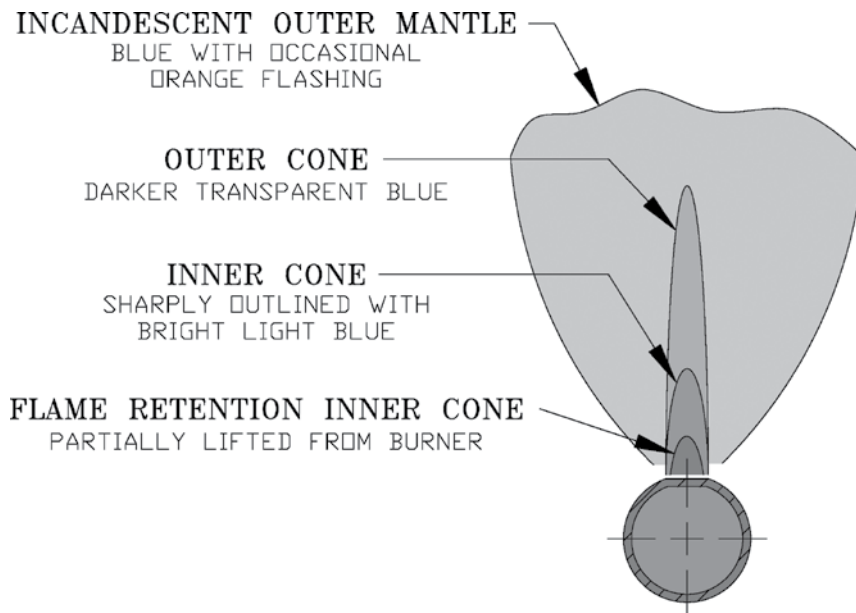
2. View flames through burner access panel. See Figure 1.
3. Adjust thermostat to highest setting.
4. Check pilot flame. See Figure 4. The pilot produces three (3) flames. The center flame should be steady, medium hard blue enveloping  $\frac{3}{8}$  to  $\frac{1}{2}$  inch of sensing probe. If flame is yellow and lazy, follow instructions TO TURN OFF GAS TO APPLIANCE (see Figure 2), and contact qualified service agency.
5. Check main burner flames. See Figure 5. Flame should have clearly defined inner cone with no yellow tipping. Orange-yellow streaks caused by dust should not be confused with true yellow tipping. If yellow flames are observed, follow instructions TO TURN OFF GAS TO APPLIANCE (see Figure 2), and contact qualified service agency.
6. Adjust thermostat to normal setting.

#### D. For models equipped with IDL 1200 LWCO inspect LWCO (Annually). Check control operation by pressing "TEST" button. The amber "LOW WATER" LED will illuminate and the burner will shut down.

#### E. Schedule Inspection by Qualified Service Agency (Annual or at Beginning of Heating Season). For continued safe operation a qualified service agency must provide a more detailed inspection of burners, heat exchanger and vent system, and provide maintenance as specified in Installation, Operating and Service Instructions.



**Figure 4: Pilot Burner**



**Figure 5: Main Burner Flame**

All X-2 Series Repair Parts may be obtained through your local U.S Boiler Company product distributor. Should you require assistance in locating a U.S Boiler Company product distributor in your area, or have questions regarding the availability of U.S Boiler Company brand products or repair parts, please contact U.S. Boiler Company Customer Service at (717) 481-8400 or Fax (717) 481-8408.