

# USER'S INFORMATION MANUAL

## INDEPENDENCE® PV

### *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 about 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 steam boiler utilizes fan-assisted combustion and 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. Low Water Cutoff.** See Figure 1. A device which automatically interrupts boiler operation when the surface of the boiler water falls to the lowest permissible operating level. The lowest permissible operating level is indicated on a plate adjacent to the gauge glass.

Original equipment with this boiler is a Hydrolevel CGB400 or a McDonnell & Miller PS-802-24V. This control resets automatically when the water returns to its normal level. Boiler operation will resume with a call for heat.

- 2. Limit.** See Figure 1. A device which automatically interrupts boiler operation when the steam pressure exceeds the set point. Maximum allowable pressure is 15 psi. Steam pressure can be read on the Pressure Gauge.

Original equipment with this boiler is a Honeywell L404F1367. Boiler operation is interrupted when system pressure reaches cut-in pressure plus differential pressure. Boiler operation resumes automatically when system pressure falls to cut-in pressure.

- 3. Flame Rollout Switch.** See Figure 6. A device which automatically interrupts boiler operation when flames or excessive heat are present in the vestibule. The control is a single use device. If the control was activated to interrupt boiler operation, do not attempt to place boiler in operation. Contact a qualified service agency.

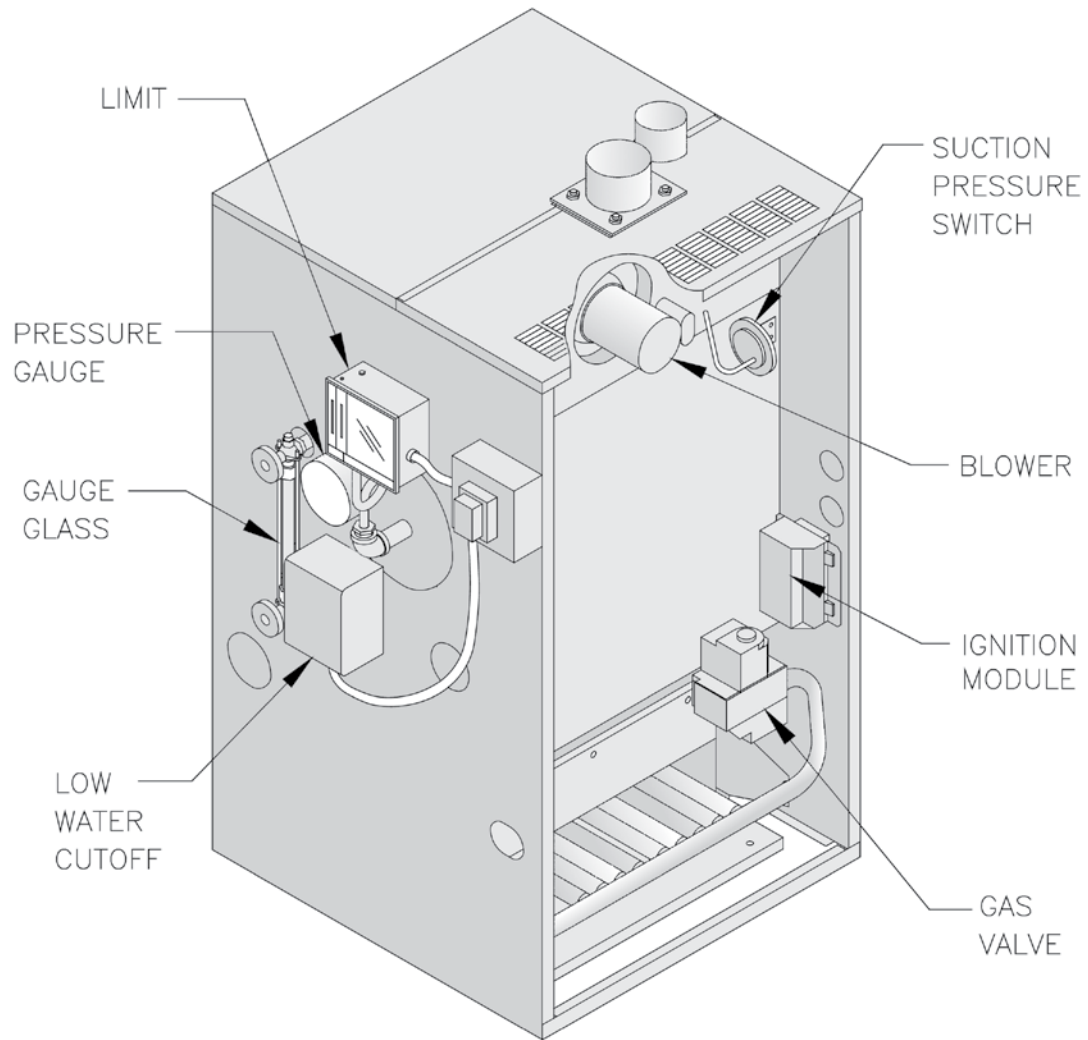
### WARNING

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

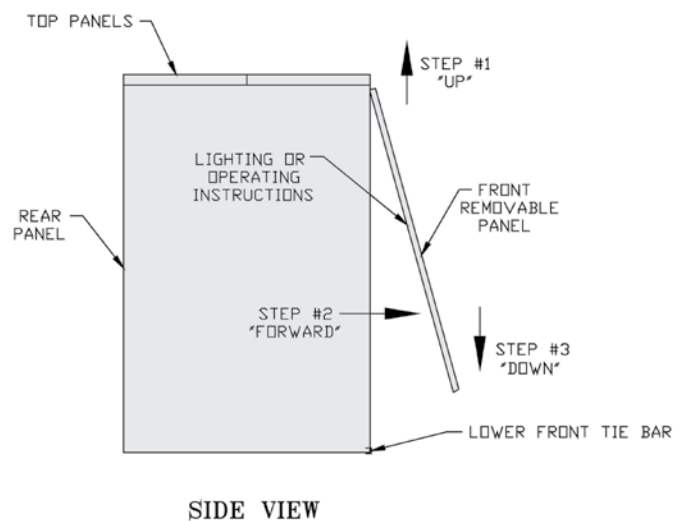
- 4. Suction Pressure Switch.** See Figure 1. A device which automatically prevents or interrupts boiler operation when the blower fails to move sufficient combustion air for proper burner operation. Boiler operation resumes automatically when sufficient combustion air flow is reestablished.
- 5. Electronic Ignition System.** The Electronic Ignition (EI) System consists of:
- a. a solid state Ignition Module to initiate, monitor and stop burner operation. See Figure 1.
  - b. a Gas Valve to regulate gas flow to the burners. See Figure 1.
  - c. a Pilot Burner to provide the ignition source for the main burners. See Figure 7.

**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 removable door. See Figure 2 for front door removal instructions. The Operating Instructions are also shown in Figure 3.

**C. The Sequence of Operation** is shown in Figure 4.



**Figure 1: Control Locations**



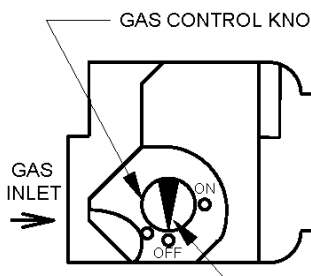
**Figure 2: Jacket Front Panel Removal**

## 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.
  - If you cannot reach your gas supplier, call the fire department.
- 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.
  - 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.
- 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.

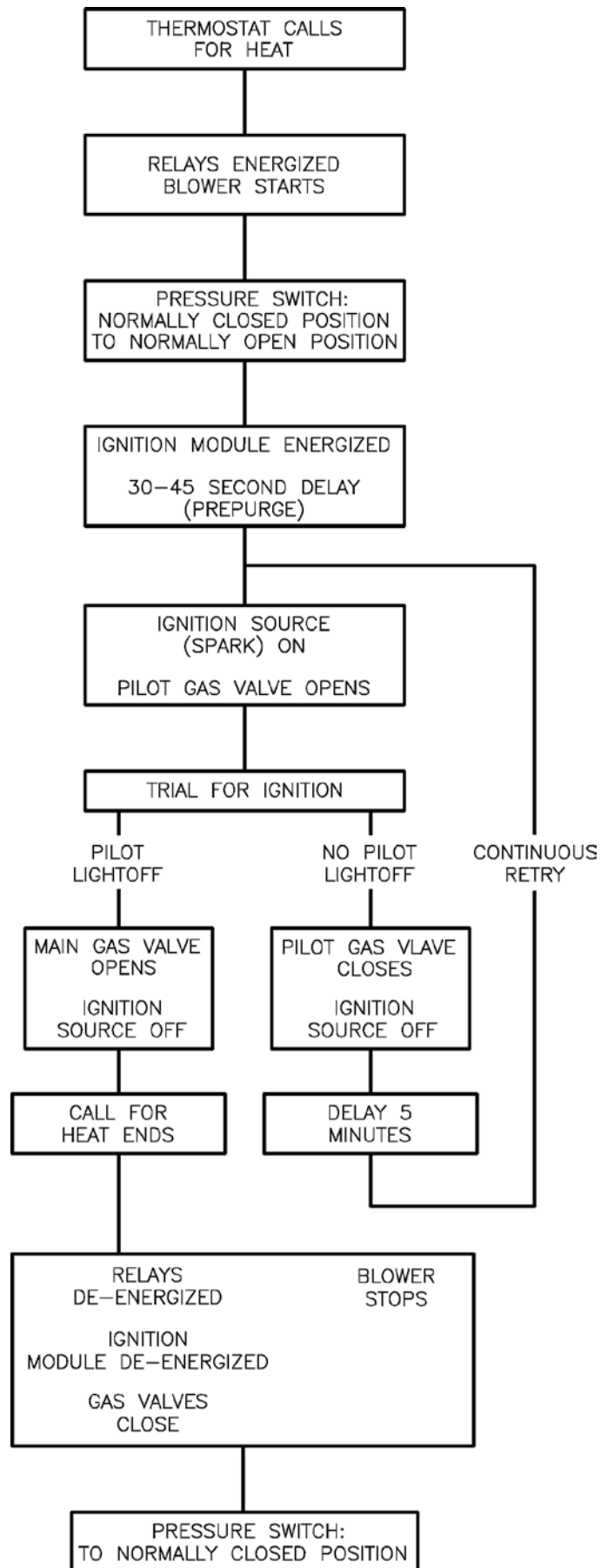
## OPERATING INSTRUCTIONS

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 3: Operating Instructions



**Figure 4: Sequence of Operation**

### 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 or other flammable vapors or liquids in the vicinity of the boiler or any other appliance.
3. Do not store or use sources of hydrocarbons in the vicinity of the boiler. Sources of hydrocarbons include bleaches, cleaners, chemicals, sprays, paint removers, fabric softeners, cat litter, and refrigerants.

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

1. Vent terminal must be free of obstruction, undamaged, with screens securely in place.
2. Vent terminal and wall thimble (if used) must be weather-tight.
3. Vent pipe must be full round shape, showing no damage from impact or excessive temperature.
4. Vent pipe must be supported at minimum 5 foot intervals and must not sag.
5. All joints must be secure and watertight.
6. Condensate drain (if used) must have minimum 6 inch trap and allow condensate to flow freely. To clean:
  - a. Disconnect condensate drain from drain fitting.
  - b. Flush condensate drain with water. Fill trap with water.
  - c. Securely fasten condensate drain to drain fitting, providing gas-tight and water-tight seal. See Figure 5.

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

1. Remove jacket front panel. See Figure 2.
2. Adjust thermostat to highest setting.
3. Check pilot flame through Observation Port. See Figures 6 and 7. 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 3), and contact a qualified service agency.

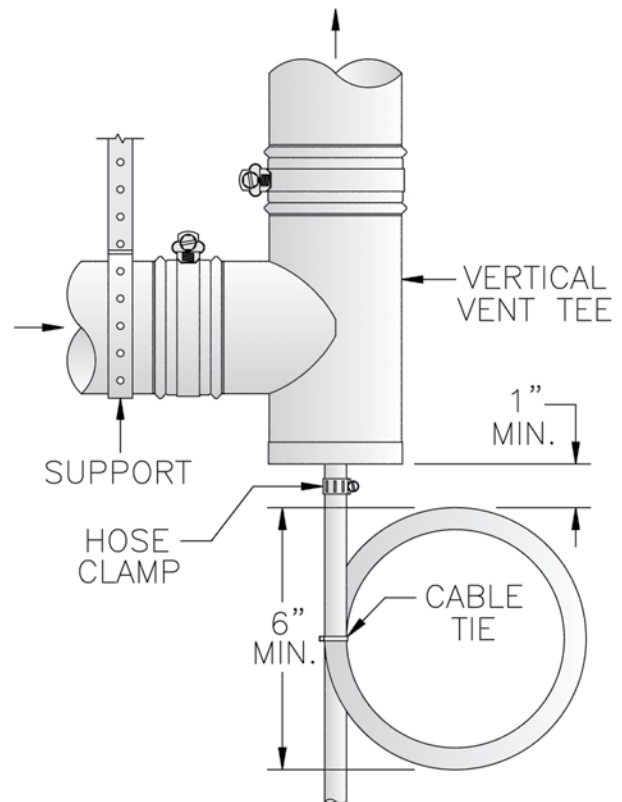
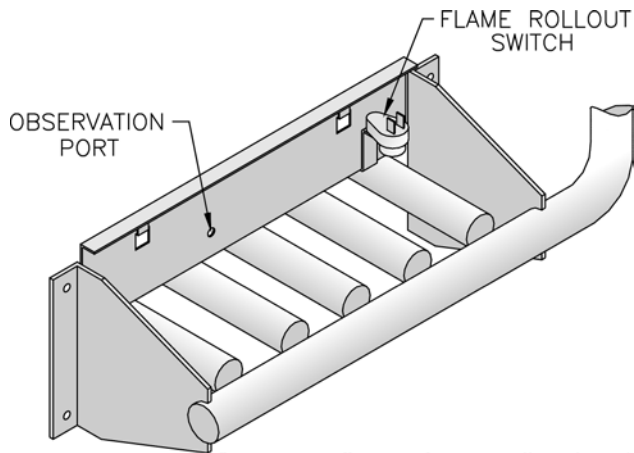


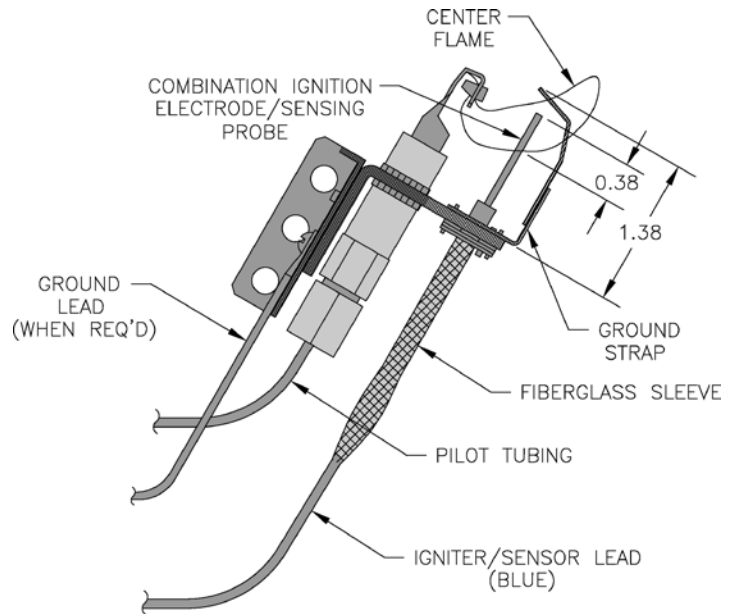
Figure 5: Condensate Drain

4. Check main burner flames through Observation Port. See Figures 6 and 8. 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 3), and contact a qualified service agency.
5. Install jacket front panel and adjust thermostat to normal setting.

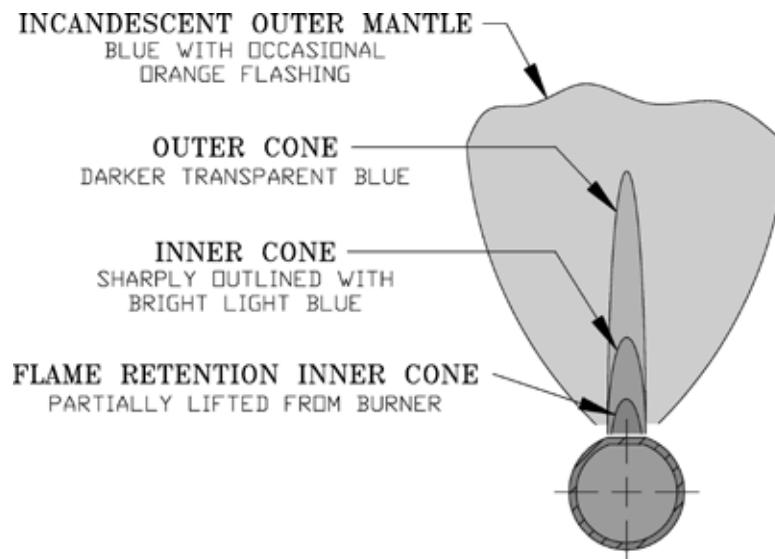


**Figure 6: Observation Port**

**D. Schedule Inspection by a 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 7: Pilot Burner Flame**



**Figure 8: Main Burner Flame**

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