

## Installation Instructions

All instructions may be superceded by applicable NFPA codes.

### General Instructions

**Important: Do not discard packing material until all loose items are accounted for.**

To prevent damage in transit, some components may be packed separately and shipped loose with your new Maxon UNI-RAD® Burner.

The burner itself is normally only a part of your complete combustion system. Additional pipe train accessories and control components will be required for a complete system installation.

### Mounting

The UNI-RAD® Burner is mounted by bolting the air housing to the furnace shell, with the combustion air inlet nipple oriented for piping convenience. The burner body is then bolted onto the air housing which can also be oriented for piping convenience. The UNI-RAD® Burner is shipped with the air housing/burner body nuts installed loosely. These should be hand-tight before installation is complete.

### Combustion Air Supply

Combustion air can be supplied either directly from a blower or pre-heated up to 800°F. Higher pre-heat temperatures may be available. Contact Maxon for more information. The UNI-RAD® Burner is a low pressure burner and typically requires 2 inches w.c.

combustion air supply pressure or less. The burners are typically piped into multiple burner zones using common air and gas manifolds. It is not uncommon to control 5 to 10 burners on the same zone.

### Ignition Air

The UNI-RAD® Burner ignition air is a constant supply of air piped into the burner body and is typically between 2% and 7% of the total air required to complete combustion.

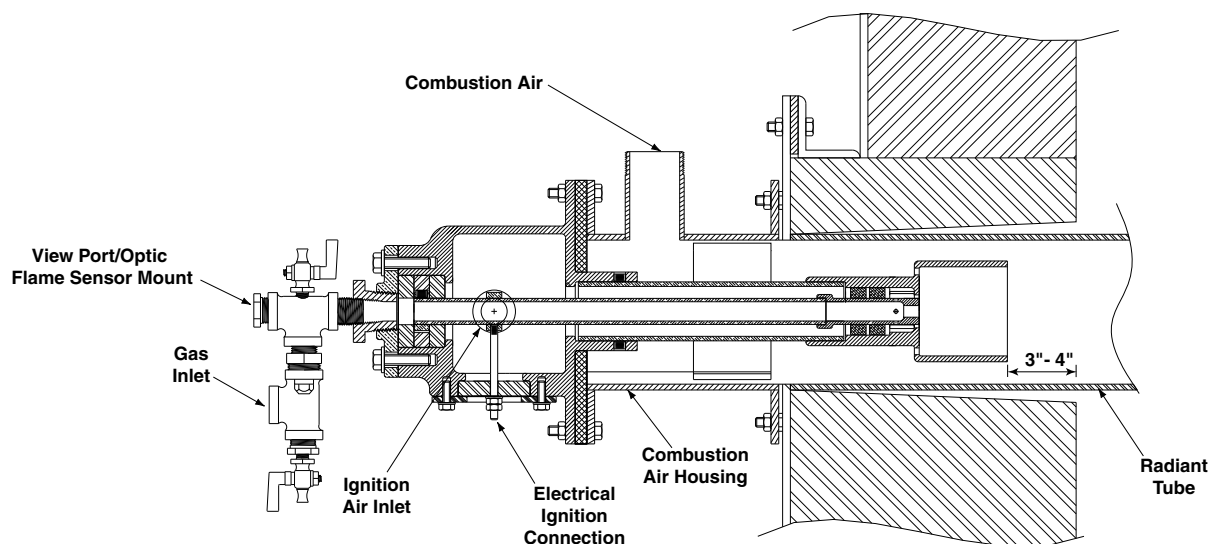
### Ignition

The UNI-RAD® Burner ignition is provided by a continuous plasma arc inside the burner. The electrical energy to produce this arc is provided by a continuous duty ignition transformer mounted near the burner in a cool environment. The transformer is generally turned on via an auxiliary contact in the safety shut-off valve, assuring that whenever gas is available to the burner, the ignition transformer is on.

### Flame Safety

The UNI-RAD® Burner generally operates without flame safety, but in those situations where it is required, IR (infrared) scanners have been used successfully. Please contact Maxon for details.

**CAUTION: When connecting optic flame sensors to gas tube/view port, a quartz isolation lens is recommended between the gas tube and optic flame sensors.**



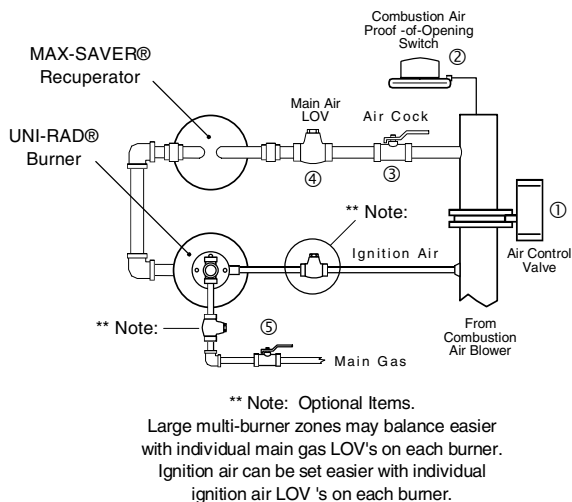
## Start-up Instructions

Read complete instructions before proceeding, and familiarize yourself with all the system's equipment components. Verify that your equipment has been installed in accordance with the original manufacturer's current instructions.

**CAUTION: Initial adjustment and light-off should be undertaken only by trained and experienced personnel familiar with combustion systems, with control/safety circuitry, and with knowledge of the overall installation. Instructions provided by the company and/or individuals responsible for the manufacture and/or overall installation of complete system incorporating Maxon burners take precedence over these provided by Maxon. If Maxon instructions conflict with any codes or regulations, contact Maxon Corporation before attempting start-up.**

1. Close the main, zone and burner gas valves ⑤.
2. Turn on the main power supply.
3. Set the temperature control instrument to a sufficient set-point to ensure the burner is "on".
4. Start the combustion air blower. Check impeller rotation.
5. Verify that the combustion air pulse firing valve ① is fully open and then set the proof-of-opening switch ② so that the contact closes only when the air pulse firing valve is fully open.
6. Open the burner air shut-off valve ③ (ball valve or equivalent) and main air limiting orifice valve ④ to the fully open position.
7. Set the high and low gas pressure switches on the main fuel train to 5 inches w.c. above and below the main gas pressure regulator, respectively.
8. Open the main gas cocks in the main fuel train (not pictured).
9. Open the safety shut-off valve and verify that the ignition transformer is energized and that the high voltage lead is properly installed on the burner.
10. Open the zone gas cock (not pictured).
11. While looking into the burner sight glass, slowly open the burner gas valve ⑥. Ignition commencement should be immediate. Flame should be a light yellow to yellow-orange in appearance. Using some type of pressure measuring device, verify the gas pressure delivered to the burner spud.
12. Look into the exhaust leg of the radiant tube and look for the flame position. Open or close the limiting orifice valve ④ in the combustion air line until the flame length is maximized. Using an oxygen analyzer, adjust the combustion air limiting orifice valve ④ until 2-1/2% excess oxygen is measured in the exhaust. The exhaust gas sample should be taken approximately halfway up the MAX-SAVER® Recuperator, or to the inside edge of the refractory wall, if possible. If a MAX-SAVER® Recuperator is being used, it is desirable for the flame to bend all the way around the radiant tube and lick the end of the recuperator return bend when at operating temperature.
13. Oxygen settings should always be confirmed at operating conditions. O<sub>2</sub> readings will normally be lower when taken during hot operating conditions compared to cold start-up conditions.

### Typical Piping Schematic (one burner shown)



### Ignition Transformer

