

High-Efficiency GAS HEATING SYSTEM

Designed for high performance and convenience.

StingRay Eclipse ImmersoJet burner is a nozzle-mix tube-firing burner that is designed to fire at high capacities through a small diameter immersion tube. The high velocity combustion gases from the burner scrub the inner tube surfaces to produce the highest heat transfer rate of any immersion burner available. The combination of high velocity flow through a small diameter tube allows for system efficiencies in excess of 80%

Benefits:

- Produces the industry's highest heat capacities and efficiencies.
- Small Diameter Tube saves valuable reservoir space making cleanout easier.
- Easy installation with pre-mounted reliable high pressure blower.
- Pre-heat combustion air systems lowers burner surface temperature.
- Faster heat-up times than any other immersion burner.
- Combustion chamber is outside the reservoir, taking up less space, providing uniform combustion and preheating combustion air.
- Unique air-fuel mix nozzle design ensures quiet operation.
- High pressure operation is unaffected by seasonal atmospheric variances like commercial forced air burners.



Temperature, the flue exhaust pipe height and the total length of run including all elbows have the greatest impact on natural draft in a flue. The draft will constantly change as a burner modulates, starts up or shuts down. The draft is also affected by outdoor temperature, barometric pressure and wind, so a flue exhaust pipe is not a very good draft controller. Draft variations due to fluctuations in outdoor air temperature alone can be substantial. During the operation, the flue exhaust pipe will be "oversized" most of the time, which can lead to inefficient and erratic operation. Changes in weather, barometric shifts or draft conditions caused by building heating, ventilating and air conditioning may necessitate readjustment of the burner air/fuel settings. This condition is virtually eliminated with the StingRay Eclipse Burner system because the burner has an extremely powerful blower and fires at above atmospheric pressure to overcome draft changes. The StingRay Eclipse firing pressure is 3 to 4 times higher than a standard commercial atmospheric burner.



For a gas burner heating a washer to be efficient and produce the lowest possible emission level, it must maintain a perfect flame and maximize heat transfer. A perfect flame can only be obtained by maintaining a precise fuel-to-air ratio with a proper air supply and proper draft. It is not uncommon to see high-efficiency burners operate at efficiency levels of low-efficiency burners. This is purely a result of lack of draft control making the additional investment in high-efficiency wasted. The StingRay Eclipse Burner system utilizes a ratio regulator

that varies the air-to-fuel ratio under varying atmospheric anomalies and firing conditions to maintain an optimum fuel to air ratio for maximum efficiency.

STINGRAY Manufacturing

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STINGRAY High Efficiency Burners

Provides 80%+ efficiencies.

High Velocity Equals High Efficiency

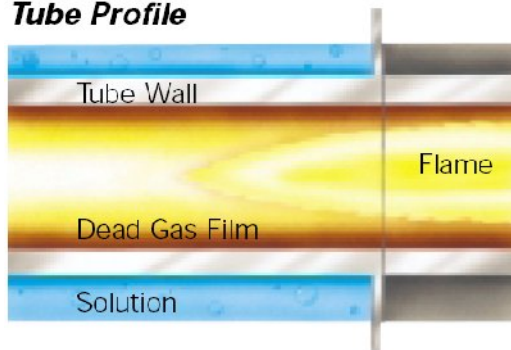
Compare state-of-the-art ImmersoJet design with conventional immersion burners and tubes, ImmersoJet clearly comes out on top.

Equal Heat in Half the Area!

Compare the conventional tube with the tube designed for use with the ImmersoJet, each designed for 70% efficiency with an input of 1 MM Btu/hr. Clearly, the ImmersoJet style tube is much smaller. Lengthening the ImmersoJet tube and adding another pass achieves efficiencies in excess of 80

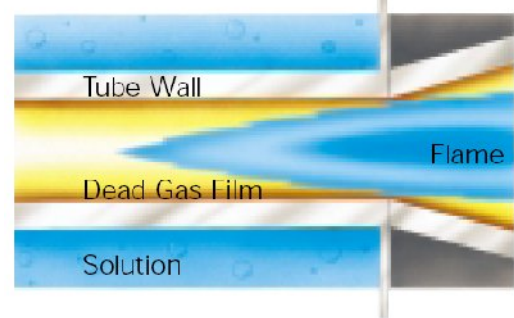


Conventional Immersion Tube Profile



A lazy, low velocity flame travels down the tube causing a "dead gas film" to build up on the inside wall, reducing heat transfer efficiency. Tube size limits system efficiency potential to 70%.

Eclipse Combustion ImmersoJet Profile



A robust, high velocity flame scrubs the inner tube surface, minimizing dead gas film. • System efficiencies in excess of 80% are achieved with smaller tube configurations.

Control System:

Designed is integrated into the StingRay Washer electrical control panel.

Offers numerous advantages:

- High Reliability Controls
- FM Rated Flame Control Module
- Industrial Dual Valves provide positive valve actuation feedback to the controller
- Enclosure Disconnect provides safe access to internal components



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StingRay Design Optimized Heat Exchanger:

In conventional immersion heating, every cubic inch of a tank is crammed with a bulky, large diameter tube. Replacing this tube with a compact smaller diameter tube in a serpentine shape provides substantial advantages:

- Reduced fuel costs
- Higher tank temperatures
- Reduce material and fabrication costs
- Conserved washer reservoir space.



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