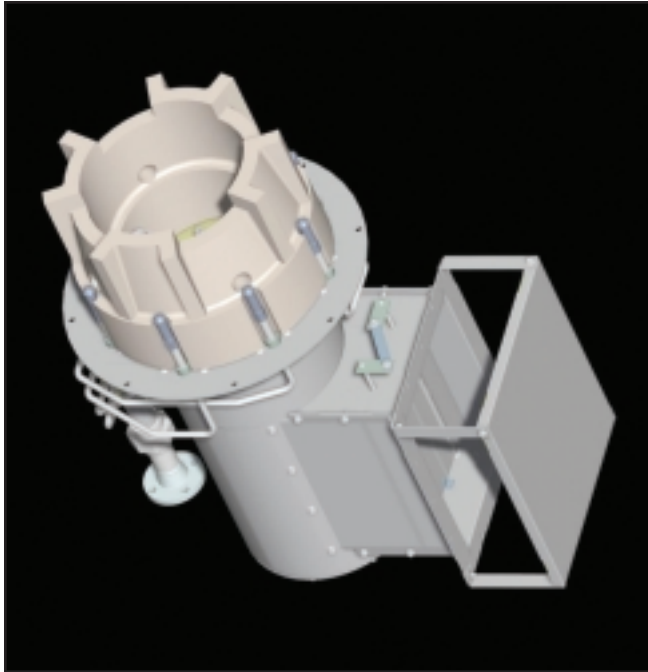




# COOLSTAR™ BURNER

## THE INDUSTRY'S MOST COMPACT ULTRA LOW-NOX GAS BURNER



John Zink Company, a world leader in clean combustion technologies and environmental systems, introduces the **patented\* COOLSTAR™ burner**—the industry's most compact, ultra low-NOx gas burner.

The **COOLSTAR burner** applies John Zink's proprietary flue-gas entrainment and mixing strategy using the potential energy of incoming fuel and air streams. The result? Stable, compact flames and single-digit NOx.

John Zink's engineers developed the **COOLSTAR burner** from the customer's point of view with a focus on safety, easy operation and optimum performance. Its compact design fits the furnace cutouts of conventional burners with little to no modifications. The **COOLSTAR burner** requires minimal maintenance and operates with a range of fuels, setting a new standard for economical, ultra low-NOx combustion.

### COOLSTAR BURNER FEATURES

- **Ultra Low-NOx**
  - Reduces emissions by as much as 90%
  - Delivers single digit (ppm) NOx in some refinery conditions
- **Compact Size**
  - Installs into existing burner opening with little to no modifications
- **Easy Operation**
  - Provides stable cold-furnace start-up
  - Features single fuel gas connection
  - Features single air control
- **Low Maintenance**
  - Fewer tips and larger orifices than other burners in its class
  - Tips positioned in furnace floor for protection from heat
- **Short, Stable Flame**
  - Exhibits short, visible flame (as low as 1.5 ft/MM Btu)
- **Wide Range of Fuels**
  - Natural gas through refinery fuel containing H<sub>2</sub> and other components
- **High turndown**
  - 4:1 and higher turndown

JZ Burner	Predicted NOx (ppm)	Heater Cutout (in.)	Tile O.D. (in.)
PVYD-18RM	163	20.5	24.5
PSFG-16RM	50	18.5	24.25
PQMR-18RM	15	31.5	30.5
<b>COOLSTAR-15</b>	<b>8</b>	<b>25.5</b>	<b>24.25</b>

Predicted NOx: Single burner test furnace for comparison basis  
 Fuel: 50% natural gas; 25% propane; 25% hydrogen  
 Furnace temperature: 1600°F  
 Draft: 0.3 inches H<sub>2</sub>O  
 Heat release: 8 MMBtu/hr

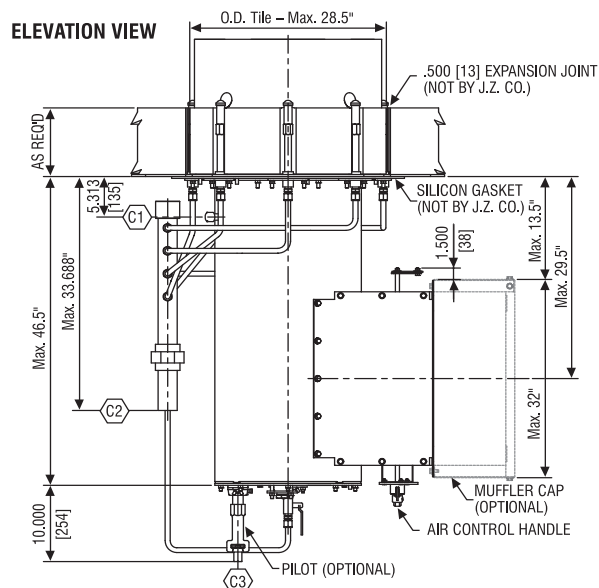
\* The COOLSTAR™ Burner, US Patent No. 6695609 has patents pending in other countries.

# COOLSTAR™ BURNER SPECIFICATIONS

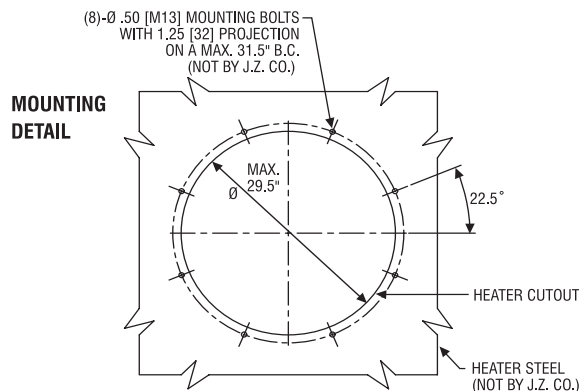
- Natural or forced draft gas burner
- Compact, round flame
- Vertically or horizontally mounted
- Ideal for ultra low-NOx process heater applications

At John Zink Company, the process energy challenges facing global industry today inspire us to push the limits of combustion science to help our customers operate cleaner, more efficiently, and more economically. In virtually every nation on earth, across the industries that shape our global economy, John Zink drives the future of clean combustion.

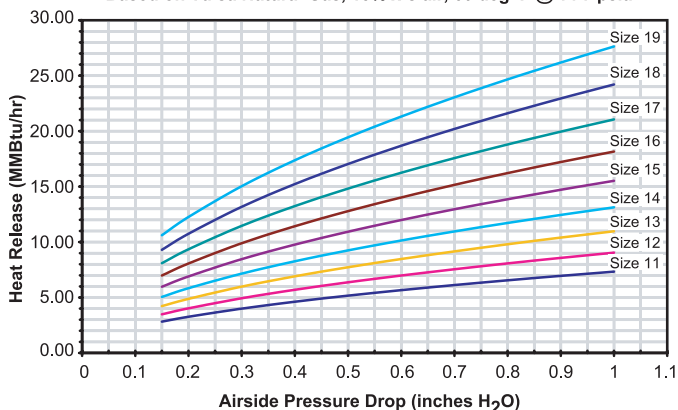
For more information about **COOLSTAR burner**, contact the clean combustion experts at John Zink Company.



C1 Pressure Tap Connection: 1/2" Male N.P.T. (Capped)  
 C2 Fuel Gas Connection: 2" Male N.P.T.  
 C3 Pilot Gas Connection: (Optional) 1/2" Female N.P.T.



**COOLSTAR 200 Series Capacity Curve**  
 Based on Tulsa Natural Gas, 15% x-s air, 60 deg. F @ 14.7 psia



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**JOHN ZINK**  
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CLEAN COMBUSTION. CLEAR SOLUTIONS.™