

## Design and Application Details

### Material Temperature Limits

**Standard burner block material** is suitable for operating temperatures up to 2200°F (1204°C). The maximum operating temperature limit may be downrated if the VORTIFLARE® Burner is operating under the following conditions:

- burner is installed in a furnace with fiber wall construction
- frequent cycling is present, inducing thermal shock and stresses

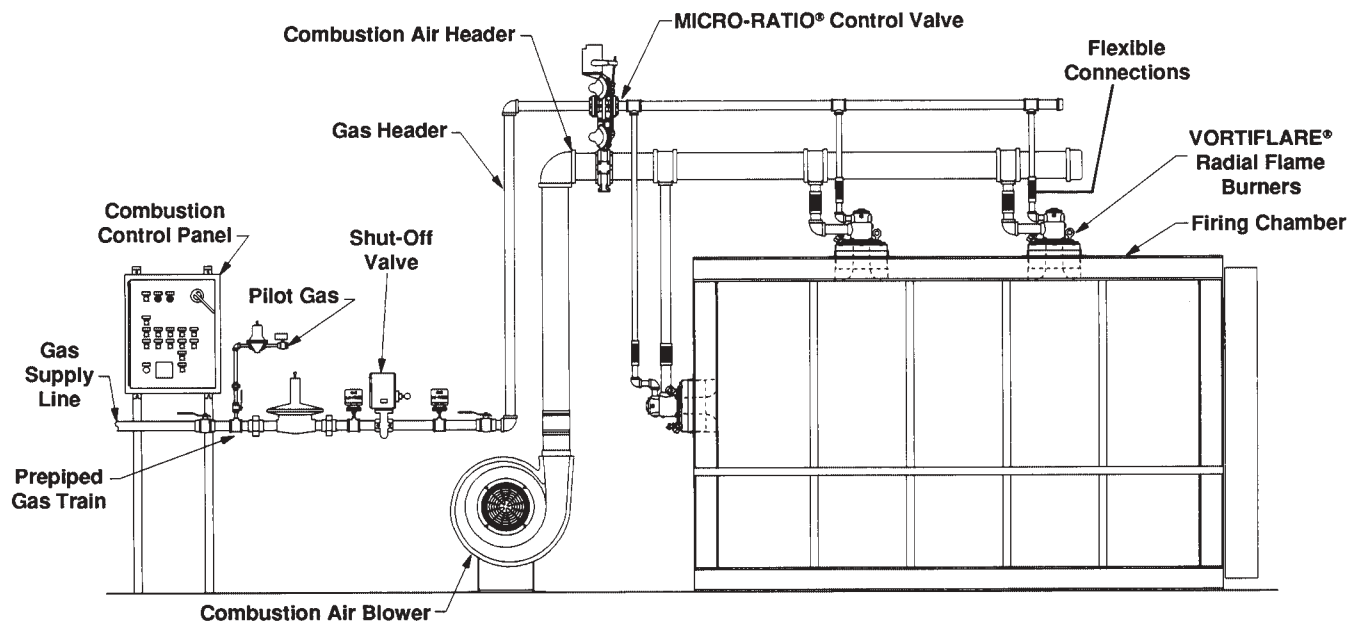
**Seal and support assemblies** reinforce burner blocks in thin wall construction installations. Their metallic cylinder surrounds the round cast block, providing additional strength and support.

**Stainless steel seal and support assembly** provides for chamber temperatures up to 1500°F (816°C).

**VORTIFLARE® Burners are available in two configurations:**

- **Standard version** with refractory blocks for installation in refractory walls
- **Standard with stainless steel seal and support** to provide additional block support in chamber walls of softwall construction

### Typical Series “G” VORTIFLARE® Burner Installation



**Typical applications** include kilns, forge furnaces, galvanizing tanks, annealing furnaces, lehrs, sinter furnaces, and other applications requiring heating uniformity and broad ratio control.

A complete VORTIFLARE® Burner system may include gas and/or oil trains, air/fuel proportioning equipment, pressure blower, and a combustion control panel. Your Maxon representative can help you choose from the broad range available.

## Capacities/Selection Data

### Capacities/Specifications for Series "G" (gas only) and Series "C" (gas/oil) VORTIFLARE® Burners

**Capacities and operating data** shown in the table below is based on firing with .65 Sp. Gr. natural gas (1000 Btu/ft<sup>3</sup>) and #2 fuel oil (34.2 SSU viscosity at 100°F) at approximately 140,000 Btu/gal.

**Gas pressures** shown are "differential" (firing chamber to burner test connections). Propane gas requires approximately 40% of the pressure shown for natural gas.

**Oil supply** must be regulated to the pressure indicated at the inlet to burner Y-strainer, and must be maintained at 40°F or higher (50 SSU minimum viscosity).

**Other light distillate fuels** such as #1, #2, JP4, etc. may be used. **Do not use #4 or heavier oils.**

**Atomizing air is required** at 14 osi for oil firing, **optional** for gas firing, with two capacity ranges shown. Shutting off atomizing air on Series "C" VORTIFLARE® Burners for gas firing gives lower minimum capacities and slightly reduced maximums.

**Gas pilots** require 25 CFH natural gas supply at about 2" wc (at inlet) and 11" wc differential pilot air supply.

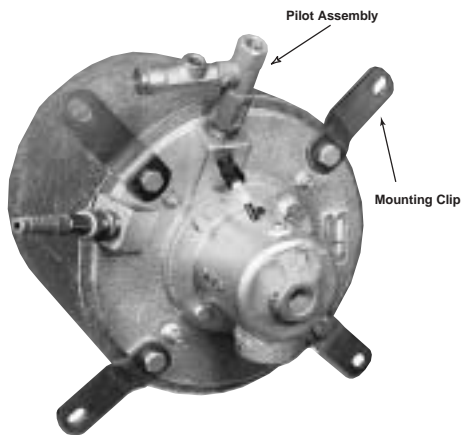
**Series "G" VORTIFLARE® Burner air/fuel ratios** may be adjusted for up to 10% excess gas at maximum firing rate, up to 200% excess air at minimum firing rate or both if Maxon's MICRO-RATIO® Control Valves are used. **Data in the table below is based on "on-ratio" firing.**

Performance Factors	VORTIFLARE® Burner	Series >	Series "G" (on natural gas)		Series "C" (on #2 oil)
		Size >	1.5"	2"	2"
Combustion Air Differential Pressure		osi	14		
		inch w.c.	24		
Capacities	1000's Btu/hr (without atomizing air)	Maximum	500	750	---
		Minimum	20	30	---
	1000's Btu/hr (with atomizing air)	Maximum	---	840	
		Minimum	---	100	70
	Gallon/hr #2 oil (with atomizing air)	Maximum	---	---	6
		Minimum	---	---	0.5
Air Volume Requirements	Combustion air (SCFM)		85	140	
	Atomizing air (SCFM)		---	14 [1]	14
Fuel Requirements [2]	Natural Gas Differential Pressure (inches w.c.)		3" wc	3" wc	---
	#2 oil pressure (PSIG)		---	---	7.5
Turndown Ratio	Without atomizing air		25:1	25:1	---
	With atomizing air		---	8:1	12:1
Flame Geometry	Diameter (inches) x Length (inches)		15" x 2"		20" x 4"

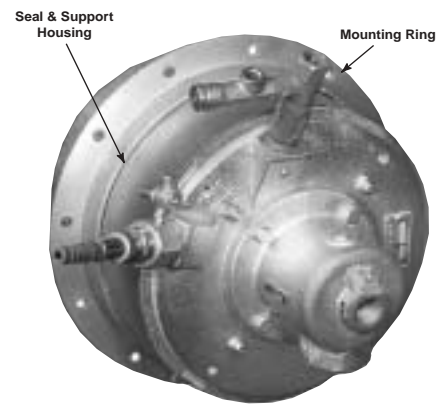
[1] If atomizing air is used with gas firing

[2] Differential: Firing chamber to burner gas test connection, or to burner oil inlet at Y-strainer on oil tube

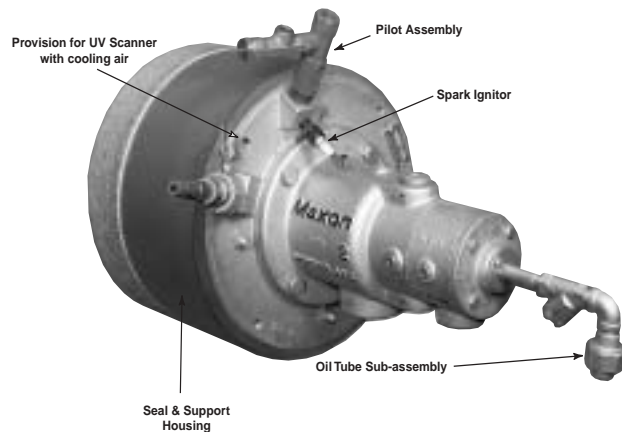
## Accessory Options



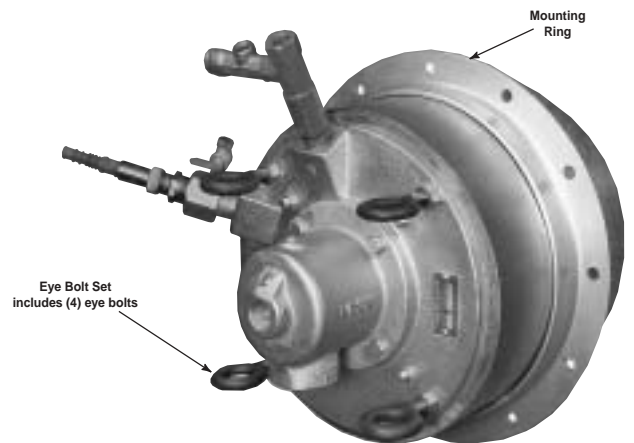
1-1/2" Series "G" VORTIFLARE® Burner basic block with pilot assembly and **mounting clips**



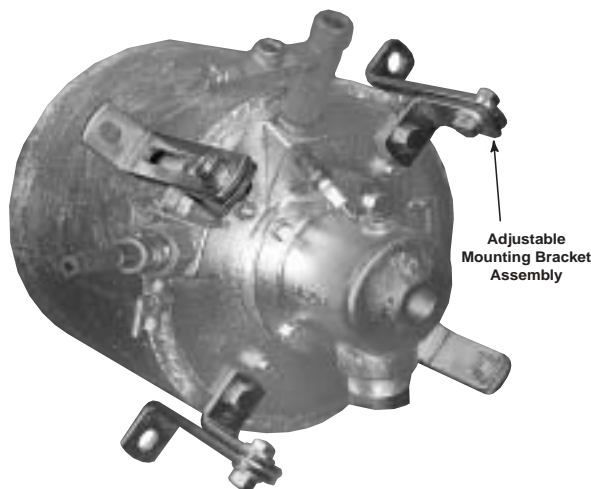
1-1/2" Series "G" VORTIFLARE® Burner with seal and support assembly and **mounting ring**



2" Series "C" VORTIFLARE® Burner with seal and support, pilot assembly, and provision for UV scanner cooling air



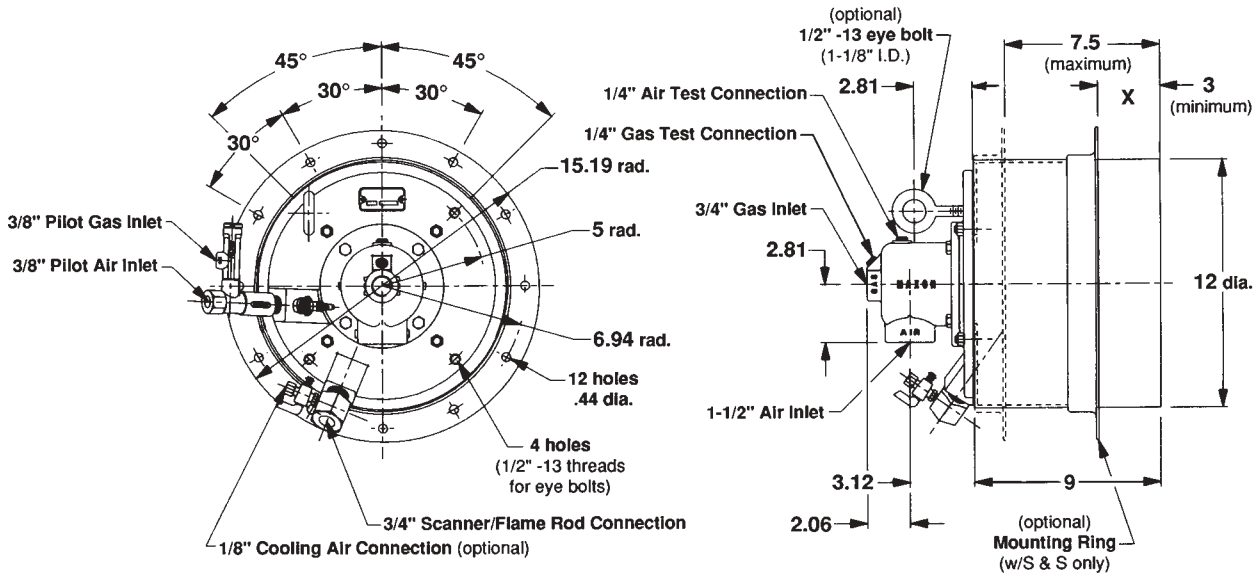
VORTIFLARE® Burner with **optional eye bolt set** to enable supporting of burner weight while mounting into chamber wall



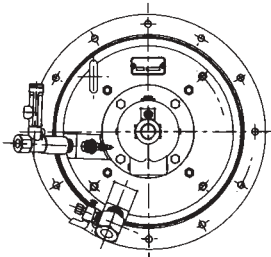
**Optional adjustable mounting bracket assembly** (left) permits adjusting burner to match chamber wall thickness. VORTIFLARE® Burners are mounted with face of block flush with internal chamber wall.

# Dimensions (in inches)

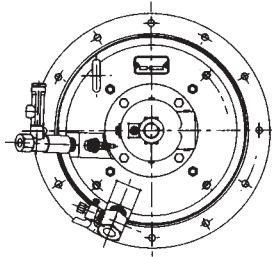
## 1.5" Series "G" VORTIFLARE® Radial Flame Burner



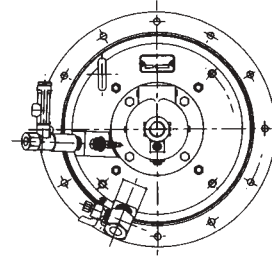
### Available Air Inlet Positions



Position "D" is furnished as standard

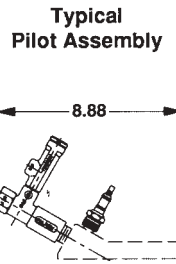
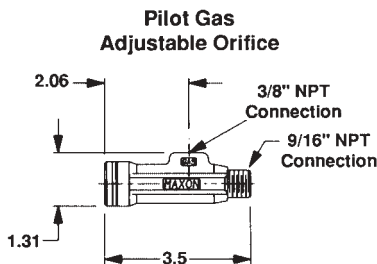


Position "R"



Position "U"

### Common items for all size VORTIFLARE® Burners

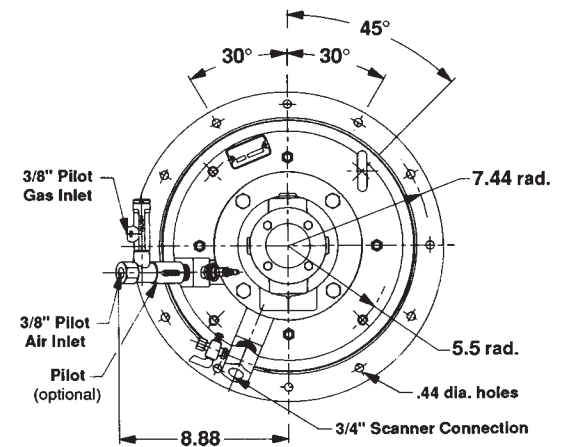
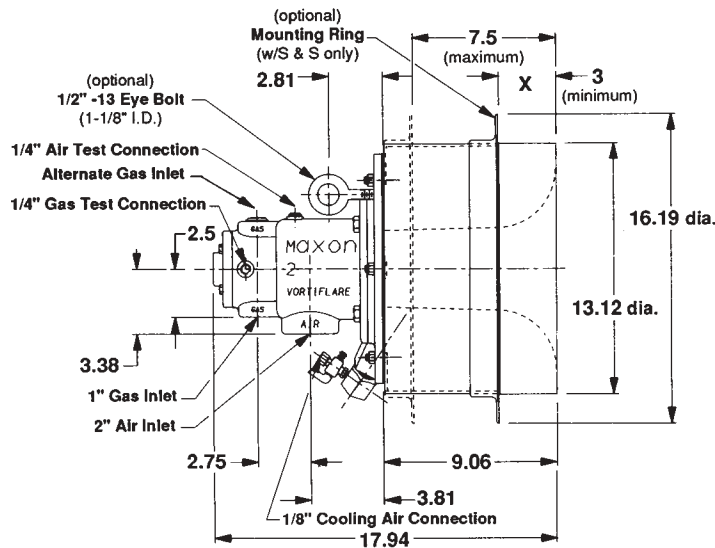


Pipe threads on this page conform to NPT (ANSI Standard B2.1)

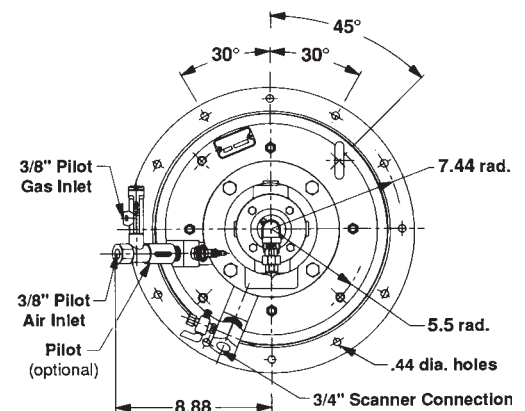
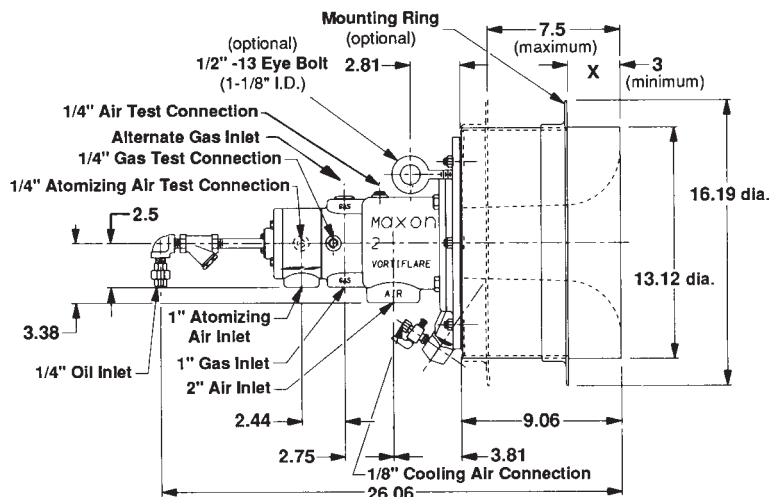
**Dimension "X" must be specified on order.** Burners with seal and support housing may be specified with an optional mounting ring which is welded in place at assembly to give desired block placement relative to inner firing chamber wall. **If you do not specify a desired mounting ring location (Dimension "X"), it will be shipped "loose", requiring welding at installation.**

# Dimensions (in inches)

## 2" Series "G" (gas only) VORTIFLARE® Burner

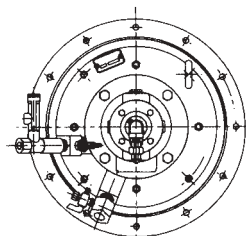


## 2" Series "C" (gas/oil) VORTIFLARE® Burner

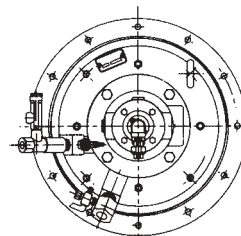


Dimension "X" must be specified on order. Burners with seal and support housing may be specified with an optional mounting ring which is welded in place at assembly to give desired block placement relative to inner firing chamber wall. If you do not specify a desired mounting ring location (Dimension "X"), it will be shipped "loose", requiring welding at installation.

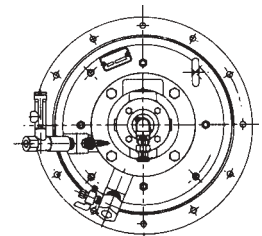
### Available Air Inlet Positions



Position "D" is furnished as standard



Position "R"

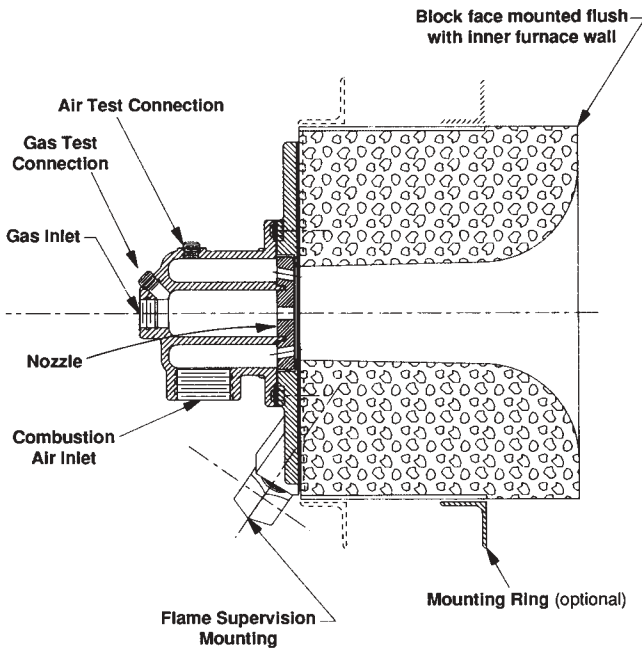


Position "U"

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# Component Identification

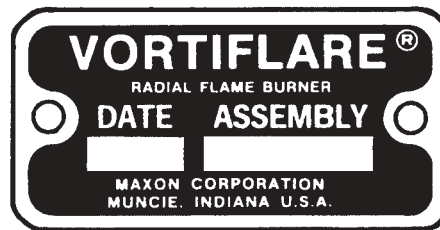
## 1.5" Series "G" VORTIFLARE® Burner



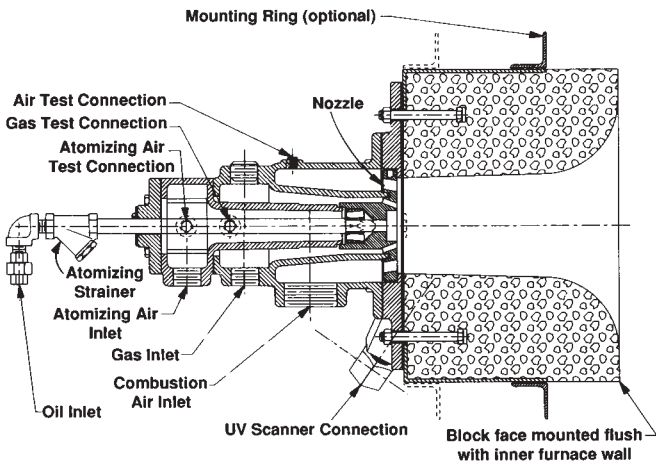
## To order replacement parts:

1. Specify parts by the names shown in the sketches
2. Indicate quantity desired
3. Indicate burner size from number cast on side of nozzle body and/or pipe size of air inlet connection
4. If ordering refractory block sub-assemblies, identify refractory material code stamped on block frame near cast Maxon name

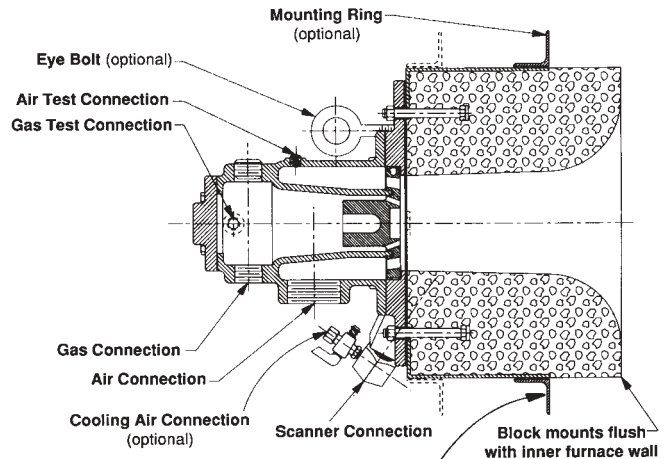
Replacement parts orders should always specify the date and assembly number stamped on the nameplate (see below) of the particular burner for which they are intended.



## 2" Series "C" VORTIFLARE® Burner



## 2" Series "G" VORTIFLARE® Burner



Burners with 304SS seal and support housing may be specified with an optional mounting ring which is welded in place at assembly to give desired block placement relative to inner firing chamber wall. If you do not specify a desired mounting ring location, it will be shipped "loose", requiring welding at installation.