

Capacity/Selection Data

All RAMFIRE® Burners can be fired “on-ratio” or with “excess air”. They include built-in test port connections for simplified start-up and adjustments, a spark ignitor and a gas pilot.

Performance data is provided in table below.

Gas pilot requires separately regulated natural gas differential pressure of 5-6" wc to the inlet of (optional) pilot gas adjustable orifice.

Cataloged minimums require an air differential of 0.1" wc for 1-1/2" burner size and 0.2" wc for 2" burners. This translates to 35% excess air for the 1-1/2" burner and 75% for the 2" at rated minimum. If on-ratio minimum is required, output will be considerably higher.

Performance limits show the **maximum** “excess air” ratio possible **at minimum firing rate**.

Fuel supply differential pressures (read between G₁ test connection and combustion chamber) are shown for natural gas. **To achieve cataloged maximum**, natural gas must be supplied at 10 osi (18" wc) at the burner inlet.

Maximum capacity is a function of differential air pressure to the burner air inlet connections as read between A₁ test connection and combustion chamber. Combustion air must be available at 15 osi at the burner inlet. Combustion air blower rating should be at least 2 ounces higher than burner air inlet requirements to allow for manifold pressure losses.

Combustion air flows show two figures: the first is the flow (in SCFM) required at maximum rated capacity. The second set of numbers, denoted “for sizing”, indicates the actual flow rate that will be encountered in starting up a “cold” burner. If combustion blower is to be used to purge combustion chamber, blower must be sized for the larger air volumes to prevent possible blower motor overloading. The lower figure at maximum rated capacity is the result of back pressure developed within the burner while firing.

Flame geometry is also shown in the table below. Flame remains within the burner’s refractory block at most firing rates. The flame length shown is measured from the end of burner block at maximum rated capacity. The diameter shown is the greatest that may be expected over entire capacity range.

Performance Factors	Series "G" RAMFIRE® Burner Size		1.5"	2"	
	Required combustion air differential pressures for maximum capacities	measured between burner inlet and chamber static condition	measured across burner air test connections A ₁ and A ₂	26 inches w.c. (15 osi)	12 inches w.c. (6.9 osi)
18 inches w.c. (10.4 osi)				9 inches w.c. (5.2 osi)	
Required natural gas differential pressure for maximum capacity		measured between burner inlet and chamber static condition	measured across burner gas test connections G ₁ and G ₂	400,000	800,000
				40,000	120,000
Capacities (Btu/hr)	Maximum		20,000 (35%)	50,000 (75%)	
	"On-ratio" pilot / minimum		2100%	1660%	
	Pilot / minimum with (percent) excess air		20:1	16:1	
Performance limits with (maximum 15 osi) combustion air	Minimum capacity to light burner (Btu/hr)		67	134	
	Percent excess air		80	160	
	Turndown ratio		14"	20"	
Combustion air volume [1] required for maximum capacity	SCFM required for maximum capacity		2"	3"	
	SCFM required for blower sizing				
Flame geometry	Length (inches)				
	Diameter (inches)				

[1] Note explanation at top of page regarding "combustion air flows"

Accessory Options

The photo below shows a RAMFIRE® Burner with seal and support assembly, standard refractory block and spark ignitor assembly. Standard air inlet position is shown.

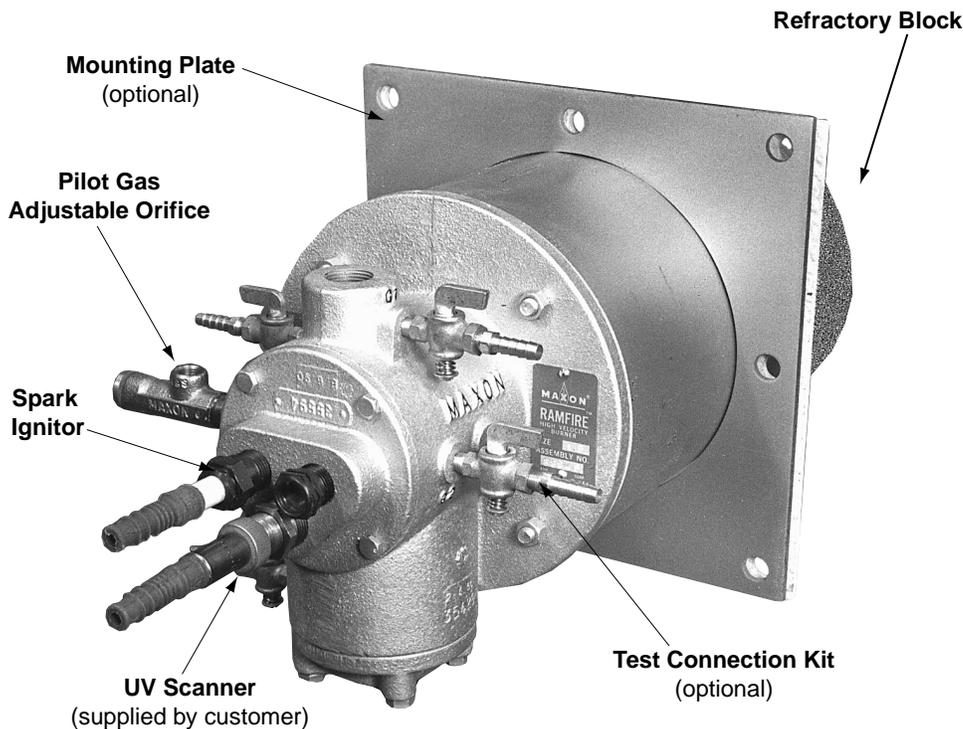
Standard refractory material permits operation at firing chamber temperatures of up to 2200°F (1204°C).

The following accessories are also shown:

- **Optional test connection kit.** Test connection kit simplifies manometer hook-up for air and/or gas

pressure readings during burner start-up and adjustment. Each kit includes 1/8" brass hose barb and 1/8" test cock. Kit **must** be removed and the test connections plugged during normal burner operation.

- **Optional pilot gas adjustable orifice** to simplify pilot adjustments
- **Optional mounting plate and gasket.** Mounting plates and gaskets attach to furnace or kiln wall and provide desired location relative to inner wall face.



Spark ignitors are used to ignite pilot or for direct burner light-off.

A complete Series "G" RAMFIRE® Burner system will also include gas train, air/fuel proportioning equipment, pressure blower, and a combustion control panel. Your Maxon representative can help you choose from the broad range available.

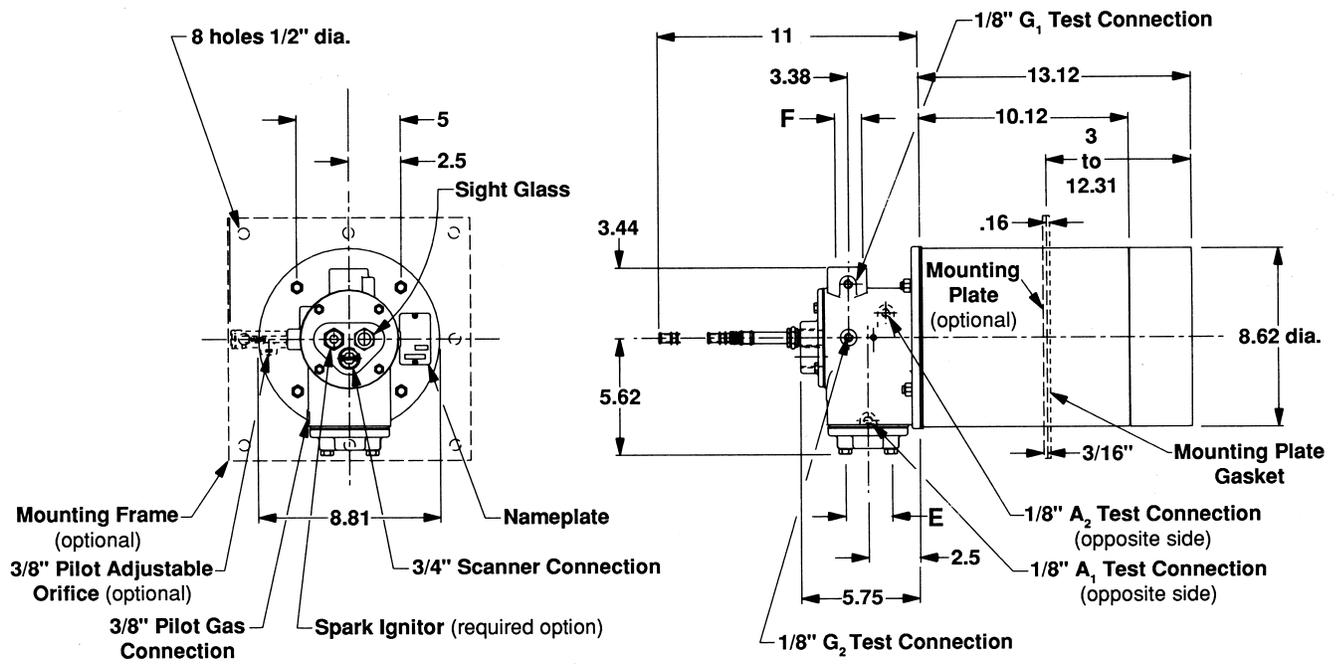


Gas check valves should be horizontally installed in multi-burner applications as close as possible to each burner inlet for dependable light-off (gas manifold may otherwise act as a reservoir, preventing light-off during trial-for-ignition period).

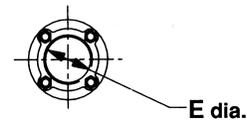


Air and gas balancing valves may be used on multi-burner installations for improved heating uniformity.

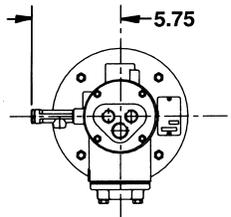
Dimensions (in inches)



Burner Size	NPT E	NPT F
1-1/2"	1-1/2"	3/4"
2"	2"	1"

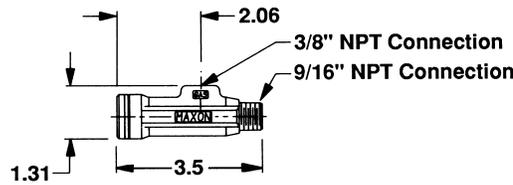


Air Inlet Position

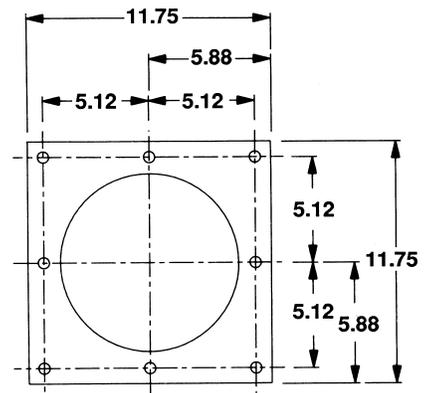


Air Inlet "Down" is Standard

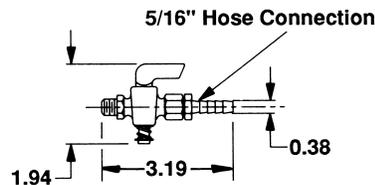
Optional Pilot Gas Adjustable Orifice



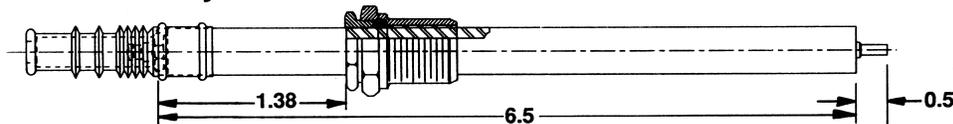
Optional Mounting Plate



Optional Test Connection Kit

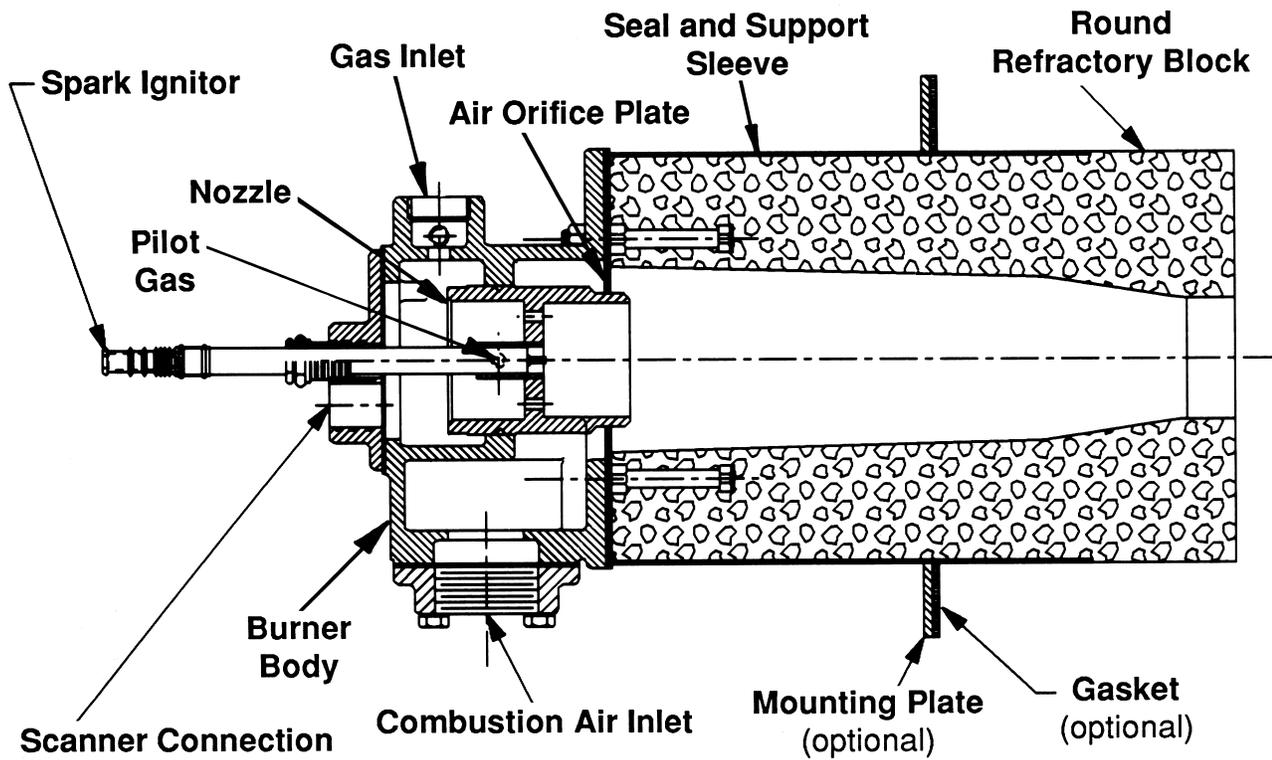


Spark Ignitor Sub-Assembly



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

Component Identification



To order replacement parts:

1. Specify parts by the names shown in the sketch above
2. Indicate quantity desired
3. Indicate burner size from numbers 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 bolt heads

Nameplate

