

## Specifications of Series 300 OXY-THERM® burners

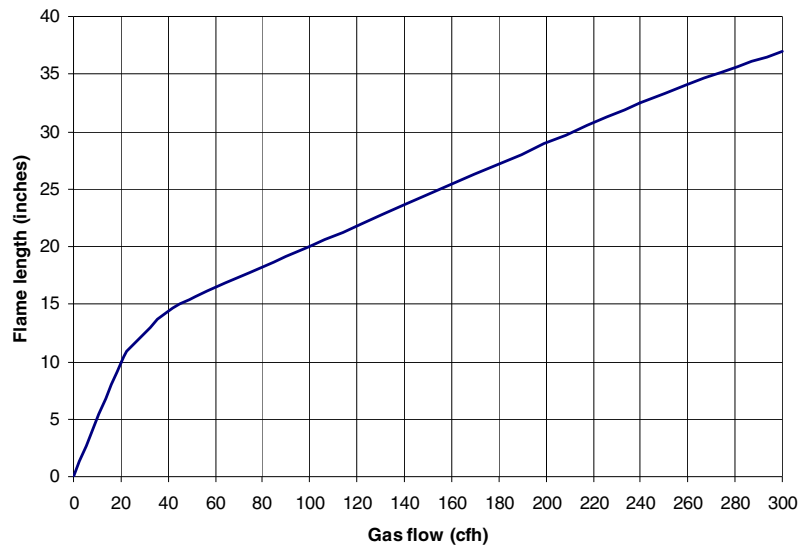
Typical burner data		
Fuel: natural gas at 60°F with 1000 Btu/ft <sup>3</sup> (st) HHV - sg = 0.6 [1]		
Stated pressures are indicative. Actual pressures are a function of gas and oxygen quality and fuel type.		
OXY-THERM® burners		Series 300
Maximum capacity	Btu/h	300,000
Minimum capacity [2]	Btu/h	5,000
Required pressures to burner inlet for maximum capacities	Oxygen flow	scfh
	Oxygen pressure	"wc
	Natural gas [3]	psig
	Propane [3]	psig
Typical oxygen to fuel volumetric ratios	To natural gas	2.1 to 1
	To propane	5.2 to 1
Approximate flame size (visible flame length firing in open air)	Diameter	inches
	Length	inches

[1] sg (specific gravity) = relative density to air (density air = 0.0763 lb/ft<sup>3</sup> (st) )

[2] Lower minimums are possible, if special considerations are taken. Contact MAXON for more information.

[3] Lower maximum pressures are possible if spark ignition feature is not required.

### Approximate flame lengths



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COMBUSTION SYSTEMS FOR INDUSTRY

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## Materials of construction

Block material	Alumina/zirconia/silica (AZS)
Backplate	304 stainless steel
Frame	Carbon steel
Burner insert assembly	304 stainless steel

## Selection criteria

### Burner versions

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Burner version
Series 300 OXY-THERM® with square block
Series 300 OXY-THERM® with square block and direct spark option
Series 300 OXY-THERM® with round block
Series 300 OXY-THERM® with round block and direct spark option
Options
Insulator block - included with direct spark option
UV scanner adapter - for direct spark versions only

### Application details

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Typical applications include converted regenerative-type furnaces and melters, unit melters, laboratory furnaces, non-ferrous melting and recovery, and various applications requiring high temperatures with focused flame profiles.

Applications using oxygen-fuel burner technology can vary greatly. Furnace designers will provide design specifics for individual furnaces.

### Process temperature

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Series 300 OXY-THERM® burners may be applied to furnace temperatures up to 2800°F with standard block materials. Contact MAXON for higher temperature refractory options.

Cooling flow, either clean, dry air or oxygen, must be used whenever the burner assembly is in a high temperature atmosphere and is not firing. See installation and operating instructions for more details.



**NOTE: Premium-quality materials have been used in the Series 300 OXY-THERM® burner, but metal components can be destroyed by high furnace temperatures if the burner is misused or disconnected from cooling flows. Because most oxygen-fuel burner applications operate at very high temperatures, these guidelines focus on enhancing burner performance and longevity.**

## Piloting & ignition

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MAXON recommends a 5000-volt full-wave spark ignition transformer for use with Series 300 OXY-THERM® burners that are equipped with the direct spark feature. A standard 1/4" female spade connector should be used on the ignition transformer connection. The Insulator Block (or optional UV Scanner Adapter) prevents stray voltages from damaging any sensitive electronic equipment, and must not be removed.

## Ratio control

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Oxygen-fuel burners require accurate control of both fuel and oxygen for optimum performance. MAXON recommends SMARTLINK® electronic fuel/air ratio control system. Piping to individual burners should include control valves for both oxygen and fuel. In addition, flow meters for oxygen and fuel capable of local or remote readout are required for proper burner adjustment.

## Typical ignition sequence

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- Pre-purge of burner and installation, according to the applicable codes and the installation's requirements.
- Oxygen control valve shall be in the minimum position to allow minimum oxygen flow to the burner.
- Pre-ignition (typically 2s sparking in air).
- Open main gas valves and allow enough time to have main gas in the burner (typical 5s + time required to have main gas in the burner).
- Stop sparking, continue to power the gas valve and start flame check (if applicable). Trip the burner if no flame from here on.
- Release to modulation (allow modulation of the burner).

Above sequence shall be completed to include all required safety checks during the start-up of the burner (process & burner safeties).

## Flame supervision

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Flame sensing may be accomplished by use of a UV scanner. The UV scanner must be field-supported if an adapter is used to mount the scanner to the burner assembly. Heat blocks, if used, may affect signal strength with some brands of UV scanners.

## Piping

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Use care when connecting fuel tubing/piping to the burner fuel connection. Fuel connection is not designed to support fuel piping. The burner is not designed to support the weight of piping and other mechanical systems.

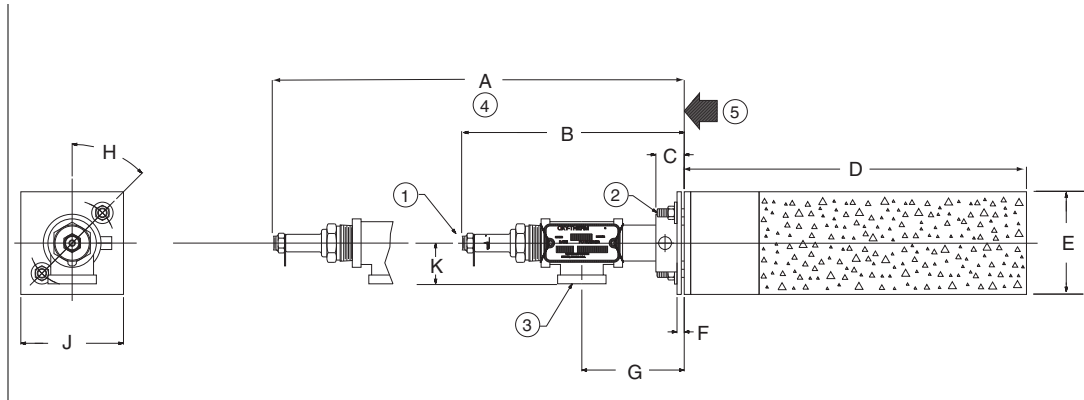
Burners, piping, and UV scanners (if burner mounted) should be supported to relieve stress to burner components. Unsupported equipment will cause damage to the burner. Flexible connections are recommended in all piping to relieve stress and to account for thermal expansion.

If multiple burners are fed from a single fuel train, care should be taken to minimize pressure drop and provide uniform flow.

## Dimensions and weights

### Series 300 OXY-THERM® burner with square block

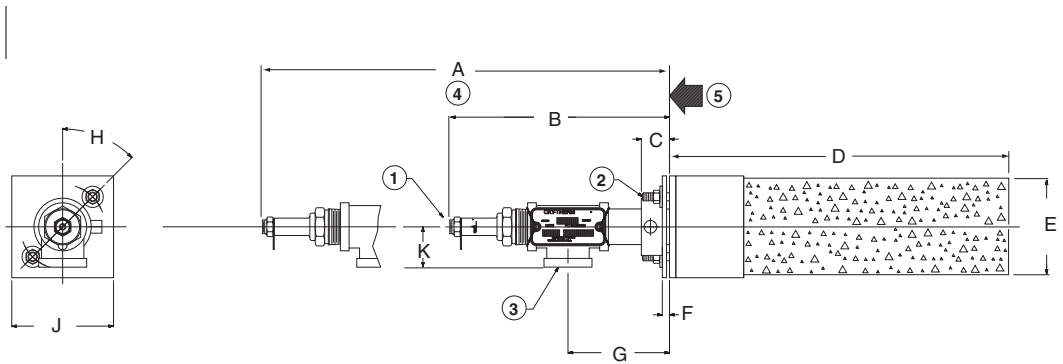
- 1) Gas inlet (1/8" NPT)
- 2) M6 x 1.0 thd.
- 3) 3/4" NPT oxygen inlet
- 4) Removal clearance
- 5) Exterior furnace wall



Dimensions in inches unless stated otherwise					
A	B	C	D	E square	F
16.5	6.5	0.8	10.0	3.0	0.2
G	H	J square	K	Weight lbs	
3.0	45°	3.0	1.2	11	

### Series 300 OXY-THERM® burner with round block

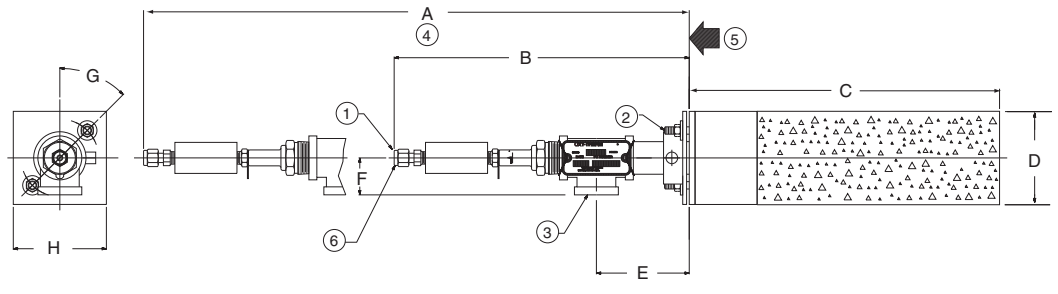
- 1) Gas inlet (1/8" NPT)
- 2) M6 x 1.0 thd.
- 3) 3/4" NPT oxygen inlet
- 4) Removal clearance
- 5) Exterior furnace wall



Dimensions in inches unless stated otherwise					
A	B	C	D	E Ø	F
16.5	6.5	0.8	10.0	2.8	0.2
G	H	J square	K	Weight lbs	
3.0	45°	3.0	1.2	8.2	

### Series 300 OXY-THERM<sup>®</sup> burner with square block and direct spark feature

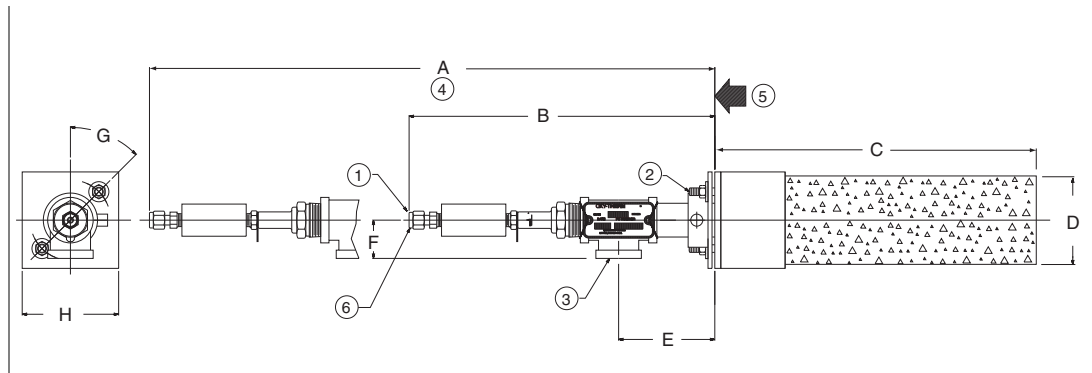
- 1) Gas inlet (3/16" O.D. tube)
- 2) M6 x 1.0 thd.
- 3) 3/4" NPT oxygen inlet
- 4) Removal clearance
- 5) Exterior furnace wall
- 6) NOTE: Compression fitting can be removed for 1/8" NPT inlet



Dimensions in inches unless stated otherwise				
A	B	C	D square	E
19.5	9.5	10.0	3.0	3.0
F	G	H square	Weight lbs	
1.2	45°	3.0	11	

### Series 300 OXY-THERM<sup>®</sup> burner with round block and direct spark feature

- 1) Gas inlet (3/16" O.D. tube)
- 2) M6 x 1.0 thd.
- 3) 3/4" NPT oxygen inlet
- 4) Removal clearance
- 5) Exterior furnace wall
- 6) NOTE: Compression fitting can be removed for 1/8" NPT inlet



Dimensions in inches unless stated otherwise				
A	B	C	D Ø	E
19.5	9.5	10.0	2.8	3.0
F	G	H square	Weight lbs	
1.2	45°	3.0	8	