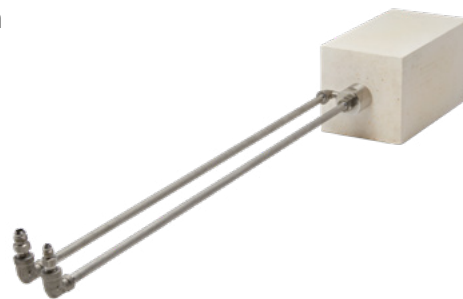


## Oxygen Burners PrimeFire FH

### TECHNICAL INFORMATION

- Cooler running burner and block for increased reliability and product life
- Maintenance free design for less downtime and lower maintenance costs
- Simple design, easy to configure and order for your specific application
- 60% reduction in fuel consumption as compared with Air-Fuel Pre-Mix solutions
- 80% NO<sub>x</sub> reduction as compared with Air-Fuel Pre-Mix solutions
- Capable of firing Hydrogen (up to a 20% Hydrogen/80% Natural Gas blend)

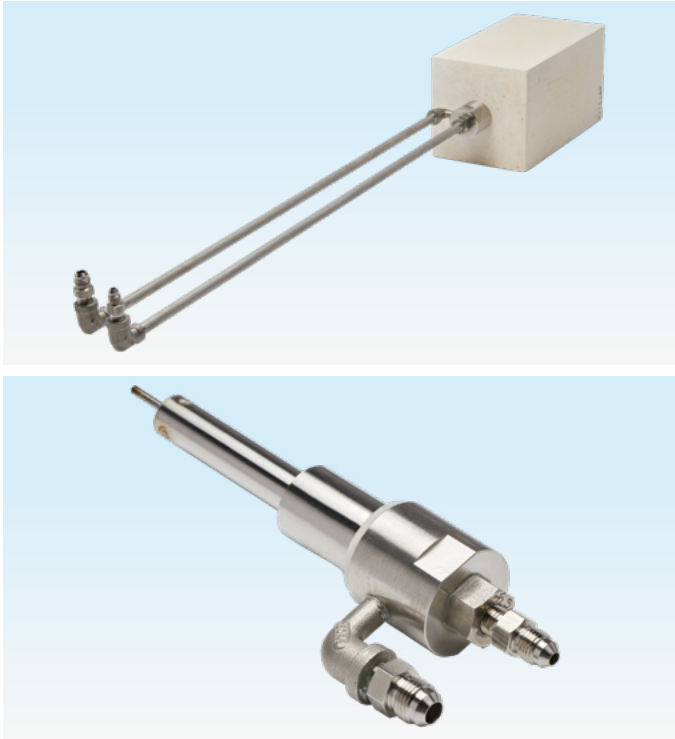


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## 1 Application



The forehearth is the section of the glass furnace just after melting and just before forming. It's function is to maintain temperature at glass working point (~1200 °C).

For furnace OEM's and operators in the glass industry looking for the latest forehearth burner available on the market, the Eclipse PrimeFire FH delivers next generation technology, longer product life, a maintenance free design, and a unique patent-pending burner-block combination.

## **2 Mechanical construction**



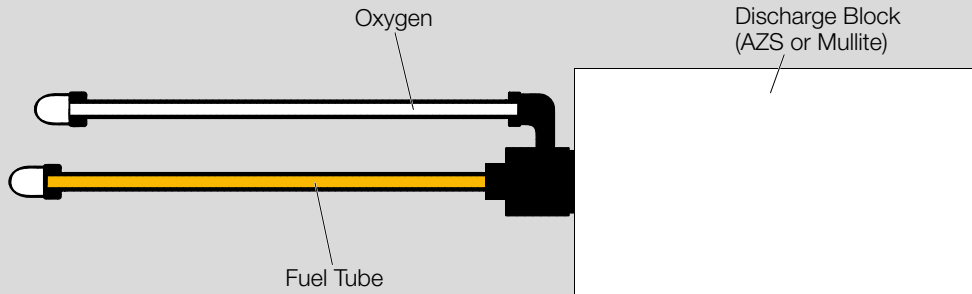
The PrimeFire FH has a modular design with a common oxygen body. This allows quick capacity changes by simply changing fuel tubes. The design of this burner is uniquely paired with the block to provide ideal performance in the forehearth environment. The patent pending combination of burner and block creates a long-lasting burner which can reliably run with little maintenance.

The block, available in Fused Mullite or AZS, depending on the needs of the application, is 5" x 5" square and 9" long, with one burner per each block.

The oxygen inlet is at a 90 degree angle to the fuel inlet.

See page 10 (Dimensions) for details on dimensions.

### 3 Function



Forehearth oxygen gas burners are small, nozzle mixing burners designed to be inserted into the forehearth to provide temperature homogeneity throughout the glass by increasing the heat of the glass melt in the area near the forehearth wall where cooling occurs more rapidly.

These burners consist of a 300-series stainless steel gas tip and a 300-series stainless steel or oxygen nozzle. They produce a short, bright flame intended to keep the temperature of the glass near the forehearth wall, where cooling is most rapid, at the same level as the middle of the glass bed.

Forehearth burners use one size body for all nozzle sizes making for easier maintenance and greater capacity flexibility. They fire natural gas or up to a 20% Hydrogen/80% Natural Gas fuel blend, and come with a unique block to fit the exact requirements of the burner.

## 4 Selection

The burner is designed with a unique burner and block combination and can be ordered/configured with or without fittings, a choice of standard pipe lengths, choice of block material, and with or without hoses.

### 4.1 Burner size

The PrimeFire FH is designed for use with Natural Gas and can be used with a Hydrogen Natural Gas blend and is available in three sizes to provide the best performance possible across a range of capacity needs.

Model	Natural Gas Fuel Flow Rate, scfh (Nm <sup>3</sup> /hr)	Hydrogen Blend <sup>1)</sup> Fuel Flow Rate, scfh (Nm <sup>3</sup> /hr)
FH0517	5 (0.142) to 17 (0.484)	5.8 (0.15) to 19.7 (0.51)
FH0935	9 (0.256) to 35 (0.997)	10.4 (0.27) to 40.5(1.06)
FH1350	13 (0.37) to 50 (1.425)	15 (0.39) to 57.9 (1.5)

*Fuel: Fuel Blend (80% NG + 20% H<sub>2</sub>) with 863 Btu/ft<sup>3</sup> HHV - sg = 0.49*

### 4.2 Block Material

Block materials available include Fused Mullite and AZS depending on the customer’s application.

### 4.3 Pipe Length

The standard pipe lengths are available in 2inch increments from 10 to 24 inches in length

Unique lengths are available on request from the Connect-ed Combustion Solutions team.

### 4.4 Fittings

The PrimeFire FH is available with or without fittings, all with NPT thread.

### 4.5 Hoses

Hoses can be added optionally.

4.6 Selection table

Option	FH0517	FH0935	FH1350
Fuel Type	G	G	G
Pipe and Fittings	XXX, 000, 100, 120, 140, 160, 180, 200, 220, 240	XXX, 000, 100, 120, 140, 160, 180, 200, 220, 240	XXX, 000, 100, 120, 140, 160, 180, 200, 220, 240
Block	M, A	M, A	M, A
Hoses	H, X	H, X	H, X

Order example

FH0517G140MH

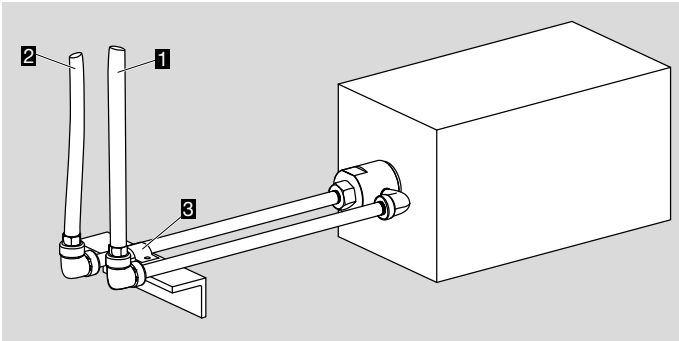
Note: orders using Hydrogen, are specials and will be reviewed by our Engineering Department.

4.6.1 Type code

FH0517	Burner, PrimeFire FH, 5-17 SCFH
FH0935	Burner, PrimeFire FH, 9-35 SCFH
FH1350	Burner, PrimeFire FH, 13-50 SCFH
G	Natural Gas
XXX	No Fittings
000	Fittings only
100	10.0 Inches Long
120	12.0 Inches Long
140	14.0 Inches Long
160	16.0 Inches Long
180	18.0 Inches Long
200	20.0 Inches Long
220	22.0 Inches Long
240	24.0 Inches Long
M	Block Fused Mullite
A	Block AZS
H	With Hoses (24")
X	No Hoses
----	Enter Zone Reference (Optional)

## 5 Project planning information

### 5.1 Installation



Recommended mounting configuration with the  
(1) Oxygen Supply line,  
(2) Fuel Supply Line,  
(3) and pipe clamp.

It is recommended that the PrimeFire FH be mounted such that the piping is anchored to allow pressure on the burner/ block connection in order to ensure ideal performance.

### 5.2 Gas Pressures at the Burner

Model	Natural Gas			
	Fuel		Oxygen	
	Fuel Flow rate (SCFH)	Fuel Pressure at the Burner ("w.c)	Oxy Flow rate (SCFH)	Oxy Pressure at the Burner ("w.c)
FH0517	17	52.4	34	1.3
FH0935	35	72.9	70	4.7
FH1350	50	61.5	100	7.96

Model	Hydrogen			
	Fuel <sup>1)</sup>		Oxygen	
	Fuel Flow rate (SCFH)	Fuel Pressure at the Burner ("w.c)	Oxy Flow rate (SCFH)	Oxy Pressure at the Burner ("w.c)
FH0517	19.7	57.7	33.4	1.3
FH0935	40.5	80.2	68.8	4.5
FH1350	57.9	61.5	98.3	7.7

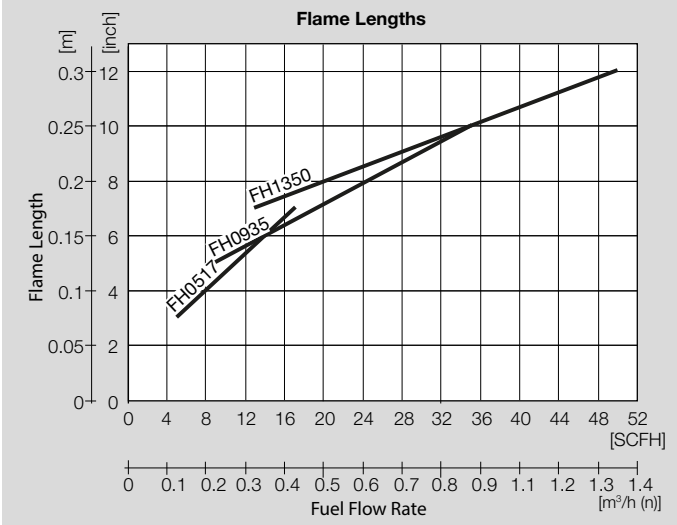
1) Fuel: Blend Fuel (80% NG + 20% H<sub>2</sub>) with 863 Btu/ft<sup>3</sup> HHV - sg = 0.49



### 5.3 Flame Lengths

Flame lengths are given at high fire and minimum fire for each capacity. The flame length in this design has a linear relationship with the fuel flow rate. The higher the fuel flow rate at a given capacity the longer the flame

Model	Fuel Flow Rate, scfh (Nm <sup>3</sup> /hr)	Flame Length, inches (meters)
FH0517	5 (0.142)	3 (0.076)
	17 (0.484)	7 (0.178)
FH0935	9 (0.256)	5 (0.127)
	35 (0.997)	10 (0.254)
FH1350	13 (0.37)	7 (0.178)
	50 (1.425)	12 (0.305)



### 5.4 Cooling Air Flow

Removal of the burner nozzle is recommended when the burner is out of service. If removal is not possible, or not chosen, cooling flow, either clean, dry air, nitrogen or oxygen, must be used. Typical compressed air systems contain lubrication oils, which will contaminate oxygen-clean environments and cannot be used for cooling flows without special treatment. Cooling air provided by plant process air fans is one possible source.

**Capacity:**

FH1350: 13 to 50 SCFH

### Gas and Oxygen pressure:

see page 8 (Gas Pressures at the Burner)

**Gas types:**

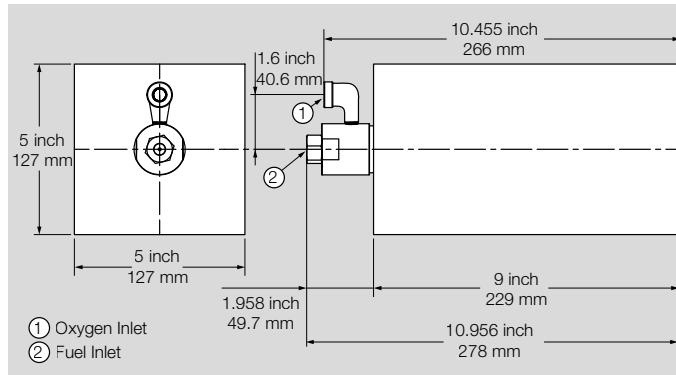
Natural gas, Hydrogen (up to 20% H<sub>2</sub>, 80% NG Blend)

**Block material:**

Fused Mullite

AZS

## 6.1 Dimensions



*Basic dimensions of the PrimeFire FH, showing both the Oxygen Inlet and Fuel Inlet orientation to the burner and block assembly.*

# 7 Maintenance

The PrimeFire FH requires very little maintenance, if any. However, preventative maintenance is the key to a reliable, safe and efficient system. Burners in severe environments or operational conditions should be checked more frequently. Spare burners not in use should be completely drained and stored vertically to prevent rusting.

NOTE: The periodic, monthly, and yearly lists are an average interval. If your environment is dirty, the intervals may be shorter. Check with local authorities having jurisdiction regarding their recommended maintenance schedules.

For more details, refer to the Operating Instructions for Oxy-Fuel Burner PrimeFire FH

### **8 Spare Parts**

The web app PartDetective for selecting spare parts is available at [www.adlatus.org](http://www.adlatus.org).

## For more information

The Honeywell Thermal Solutions family of products includes Honeywell Combustion Safety, Eclipse, Exothermics, Hauck, Kromschroder and Maxon. To learn more about our products, visit [ThermalSolutions.honeywell.com](https://ThermalSolutions.honeywell.com) or contact your Honeywell Sales Engineer.

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