

### VAREC BIOGAS 239A/ 240 H-O-A Series WASTE GAS BURNER AND MANUAL IGNITION SYSTEM

The Varec Biogas 239A Series Waste Gas Burner is designed for burning biogas generated in the anaerobic digestion process.

#### Introduction

The Varec Biogas 239A Series Waste Gas Burner is designed for burning biogas generated in the anaerobic digestion process. Burning or flaring reduces the potential odor nuisance from just venting directly to the atmosphere. This burner is suitable for burning low volumes of biogas, which is typically very “wet”, with a low BTU value (between 550 and 600 BTU), and composed primarily of methane.

#### Operation

The 239A Burner is designed to ignite the biogas by passing it through a “curtain of flame” developed by the ringtype pilot. The pilot gas mixes with air at the pilot ring, and the pilot flame burns on top of the ring. The biogas is deflected across the pilot flame by an integral baffle. A manually-adjustable shutter is provided at the bottom of the burner shroud to change the available air volume in case the waste gas flow rate fluctuates.

Dual pilot lines in the larger models (6” and 8” size) are located 180° apart to distribute the pilot flame around the entire ring. The burner pedestal is insulated internally, enclosing the pilot line(s) and the biogas line. A separate mounting base is included for installation on a concrete foundation or other suitable support. A covered pilot observation and ignition port is provided on the burner shroud.

A low-pressure natural gas pilot supply is recommended with the Varec Biogas 239A Burner. Since biogas is typically moist and dirty with fluctuating pressure and BTU value, it may not provide a reliable pilot flame. Please specify if pilot gas utilized is propane.



#### Pilot Ignition System

The Varec Biogas 240 H-O-A Manual/Cycling Electric Pilot Ignition System Series is designed for use with the Varec Biogas 239A Series Waste Gas Burner. The unit provides a manually initiated ignition spark and provision to continuously cycle the spark on and off. This model is recommended when automatic pilot re-ignition is required.

A compact ignition transformer with a dual-cycling timer switch is provided inside a weatherproof or explosion-proof enclosure. The enclosure is fitted with an external “Hand-Off-Auto” switch, and is suitable for panel or wall mounting.

The transformer and switches are pre-wired to a terminal strip at the factory. An ignition electrode assembly with weatherproof housing is also provided, and is easily field-mounted to the shroud of the 239A Series Burner.

#### Design Features

- “Curtain of Flame” ring-type pilot
- 304 SS pilot orifices
- Insulated pedestal protects pilot line(s) and biogas line.
- Separable mounting base
- UL approval on NEMA 4/4X control panels

## Operation

With the three-way position switch in the “Hand” position, the ignition transformer is energized. The transformer delivers a continuous high voltage to the ignition electrode and delivers a spark across an air gap to the pilot flame ring igniting the pilot gas. Once the pilot flame has been established, the switch is turned off. With the switch in the “Auto” position, you can achieve unattended re-ignition in the event of a pilot flame failure.

The timer is activated, which alternately energizes and de-energizes the transformer, and cycles the ignition spark. The fuel-cycling timer provides separate adjustment for the spark duration and the spark interval.

The 240HOA Ignition System is housed in a NEMA 4 enclosure as a standard. The ignition electrode housing is steel with an aluminum cover. Both the control enclosure and electrode housing are provided with 1/2-inch NPT female conduit connections.

The ignition control enclosure should be located at least 10 feet (3 m) away from the waste gas burner to protect operating personnel and enclosure components from radiant heat.

## Burning Capacity, ft<sup>3</sup>/ hr [m<sup>3</sup>/ hr]

Flow stated in air at 60°F and 14.7 PSIA at 1/2" WC (13mm WC) pressure drop, at sea level.  
For capacities at higher site elevations, consult factory.

2"	3"	4"	6"	8"
1850	4025	7875	20100	33475
[52]	[114]	[223]	[569]	[948]

NOTE: Flow is stated in SCFH air but can be corrected for waste gas at other specific gravities and temperatures.

## Specifications

### Sizes

2", 3", 4", 6", 8"

### Materials

#### BURNER

Fabricated Carbon Steel (Standard) <sup>1</sup>

#### PILOT FLAME RING

Heat Resistant Cast Iron <sup>2</sup>

#### PILOT ORIFICE/ FITTINGS

304 Stainless Steel

#### OBSERVATION/ IGNITION PORT

Carbon Steel

#### CONNECTIONS

Waste gas

Nominal pipe size/ weld connection

#### PILOT GAS

Single 1/2" NPT (2" through 4" sizes)

Dual 1/2" NPT (6" and 8" sizes)

#### MOUNTING

Flanged Connection or Concrete Pad

#### NOTE:

1 - Burner stack, shroud and pilot gas piping can be available in 304/ 316 SS construction.

2 - Stainless steel pilot flame ring only on all 304 or 316SS burner stack

### Biogas

#### COMPOSITION

Primarily Methane

#### BTU VALUE

500 to 600 BTU

#### MAXIMUM INLET PRESSURE

20" (508mm) WC

#### PILOT GAS

Biogas

Natural Gas

#### MINIMUM PILOT GAS SUPPLY PRESSURE

Biogas: 8" (203mm) WC

Natural Gas: 6" (152mm) WC

### Control Enclosure

NEMA 4, (Standard)

NEMA 4X Stainless Steel (Option)

NEMA 7, Explosion-proof (Option)

### Power Supply Input

110 - 120 VAC, 50/ 60 Hz

220 - 240 VAC, 50/ 60 Hz

Heater (Optional)

The transformer is rated for continuous duty with 110 VAC (220VAC) , 50/60 Hz primary. The timer is adjustable from 3 to 300 seconds for both the “Ignition Spark ON”, and the “Ignition Spark OFF” cycle.

### Auxiliary Equipment

#### 5200 SERIES FLAME CHECK

Recommended for field installation in the pilot gas piping just upstream of the burner pilot line connection(s). This unit is for protection from possible flashbacks generated in the pilot line. See 5200 Series for details.

#### SECONDARY STACKS (By Others)

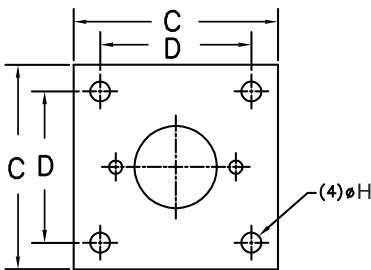
“Self-supporting” secondary stacks should be specified for field installation on all 4", 6", and 8" burners to protect from winds which can cause an unstable pilot and/or waste gas flame. Consult factory for recommended dimensions.

**Specifications**

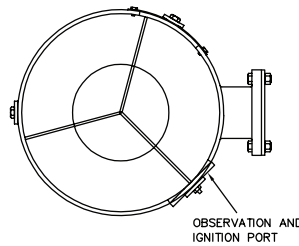
**Model 239A**

**Dimensions and Weights, inches [mm] and lbs. (kg)**

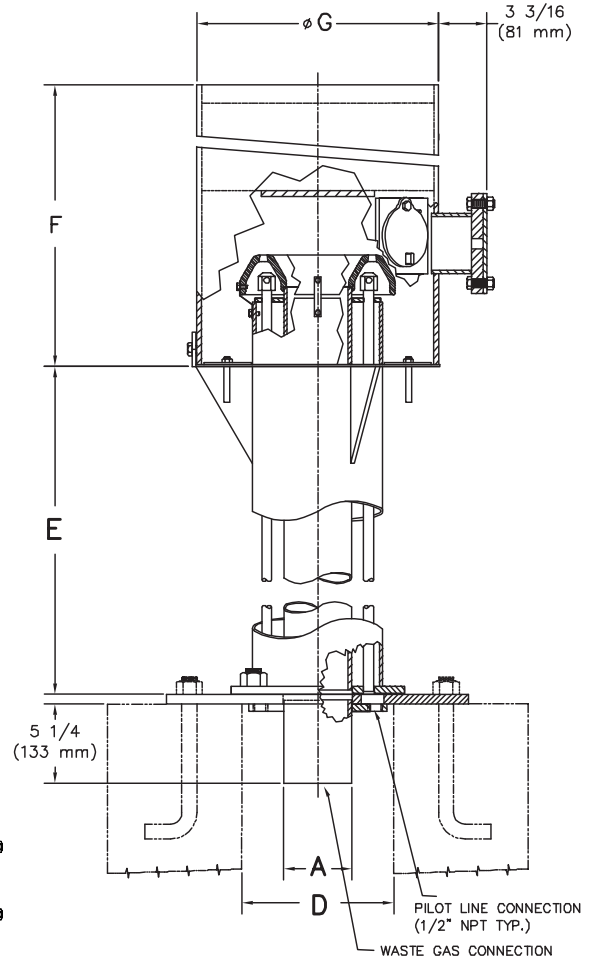
Size Code	02	03	04	06	08
A	2 [50]	3 [80]	4 [100]	6 [150]	8 [200]
B	8 3/4 [22]	10 [254]	11 [279]	13 [330]	15 [381]
C	17 1/2 [444]	18 3/4 [476]	20 [508]	22 [559]	24 [610]
D	14 1/2 [368]	15 3/4 [400]	17 [432]	19 [483]	21 [533]
E	68 [1730]	68 [1730]	68 [1730]	96 [2440]	96 [2440]
F	20 1/4 [514]	24 1/4 [616]	24 1/4 [616]	32 1/4 [819]	48 3/8 [1229]
G	12 3/4 [324]	14 [356]	16 [406]	20 [508]	24 [610]
H	1 [25]	1 [25]	1 1/4 [32]	1 1/4 [32]	1 1/4 [32]
Shipping Weight	465 (211)	590 (268)	700 (318)	860 (391)	1500 (682)



MOUNTING BASE BOLT LOCATION



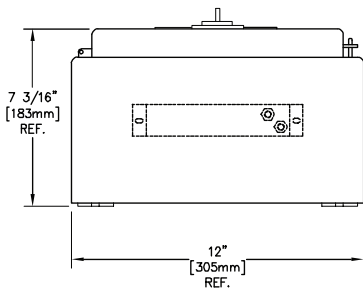
OBSERVATION AND IGNITION PORT



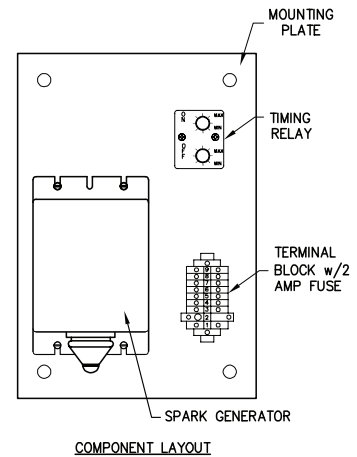
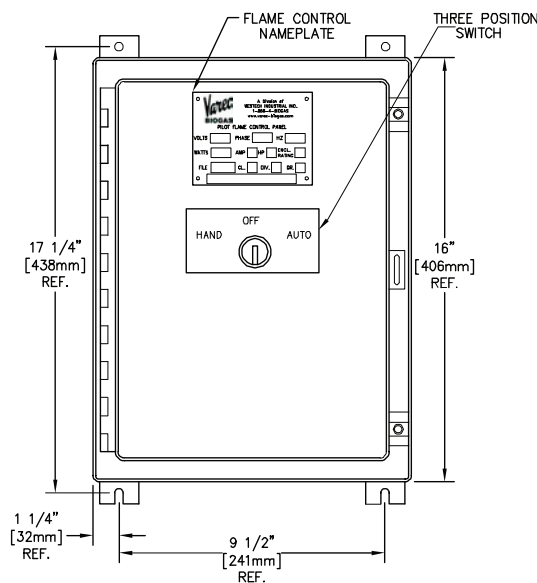
**Model 240 H-O-A**

**Shipping Weights, lbs. (kg)**

Code		
4	Nema 4, Steel Construction	50 (23)
9	NEMA 4X, 316 SS Construction	75 (34)
7	NEMA 7, XP, Al Construction	80 (36)



CONTROL PANEL LAYOUT (NEMA 4, 4X Panel)



COMPONENT LAYOUT

**Ordering Information**

Model	Description		
239A	Waste Gas Burner		
	Code	Size	
	02	2"	
	03	3"	
	04	4"	
	06	6"	
	08	8"	
	Code	Material of Construction	
	*	Leave Blank if Specifying Standard Fabricated Carbon Steel Stack, Cast Iron Pilot Flame Ring	
	S4	All 304 SS	
	S6	All 316 SS	
239A	06	*	(Example)
Example: 6" Waste Gas Burner with Standard Fabricated Carbon Steel Stack and Cast Iron Pilot Flame			

**Ordering Information**

Model	Description			
240	Manual/ Cycling Electric Pilot Ignitor			
	Code	Flame Monitoring		
	HOA	Hand-Off Auto Switch with Cycling Timer (Standard)		
	Code	Control Enclosure Rating		
	4	NEMA 4 Steel Construction (Standard)		
	9	NEMA 4X, 316 Stainless Steel		
	7	NEMA 7, Explosion Proof, Aluminum Construction		
	Code	Power Supply		
	1	110 - 120 VAC, 50/ 60Hz, Single Phase		
	2	220 - 240 VAC, 50/ 60Hz, Single Phase		
	Code	Options		
	*	None Required		
	1	Heater Mounted in Control Enclosure		
240	HOA	9	1	*
(Example)				
Example: Manual Cycling Electric Pilot Ignitor with Hand-Off-Auto Switch and Cycling Timer, NEMA 4X, 316SS Controller Enclosure, 110/120 VAC, 50/60 Hz.				