

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 & FEATURES

The 239A Burner is designed to ignite the biogas by passing it through a “curtain of flame” developed by the ring-type 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 separable mounting base is included for pre-installation on a concrete foundation or other suitable support. A covered pilot observation and ignition port with separate inspection port are 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 an electrical means of pilot ignition is desired, but automatic pilot monitoring and status alarms are not required.

A compact ignition transformer with a dual-cycling timer switch is provided inside a weatherproof 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

Varec Biogas 239A/240 H-O-A Series

Waste Gas Burner & Manual Ignition System

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.

Control Enclosure

NEMA 4, Standard
NEMA 4X Stainless Steel (optional)
NEMA 7, Explosion-proof (available upon request)

Power Supply Input

110-120 VAC, 50/60 Hz
220-240 VAC, 50/60 Hz
Heater and Thermostat (optional)

The transformer is rated for continuous duty with 110 VAC, 60 Hz primary, and 6000 VAC secondary. 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

Sizes

2”, 3”, 4”, 6” and 8”

Materials

Burner

Fabricated Carbon Steel, Standard¹

Pilot Flame Ring

Heat resistant cast iron

Pilot Orifice/Fittings

304 SS

Observation/Ignition Port

Cast Iron², Standard²

Notes:

1. Burner stack, shroud and pilot gas piping can be available in 304/316 SS construction.
2. Observation/Ignition port cover comes in carbon steel when burner stack, shroud and pilot gas piping is specified.

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.

Biogas

Composition

Primarily Methane

BTU Value

500 to 600 BTU

Maximum Inlet Pressure

20” WC (508mm WC)

Pilot Gas

Biogas

Natural Gas

Minimum pilot gas supply pressure

Biogas: 8” WC (203mm WC)

Natural Gas: 6” WC (152mm WC)

Burning Capacity, FT³/HR [M³/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.

Size Code	02	03	04	06	08
SIZE	2”	3”	4”	6”	8”
FT ³ /HR	1,850	4,025	7,875	20,100	33,475
M ³ /HR	[52]	[114]	[223]	[569]	[948]

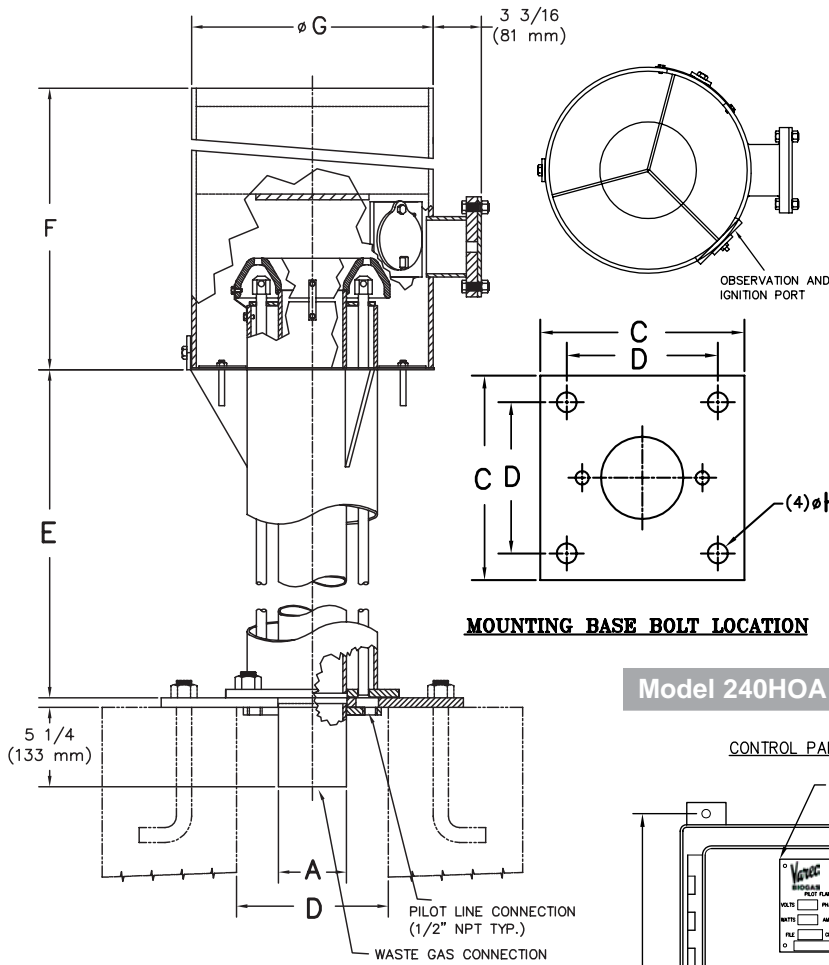
Note: Flow is stated in SCFH air but can be corrected for waste gas at other specific gravities and temperatures.

Varec Biogas 239A/240 H-O-A Series

Waste Gas Burner & Manual Ignition System

SPECIFICATIONS

Dimensions, inches and pounds [millimeters and kilograms]

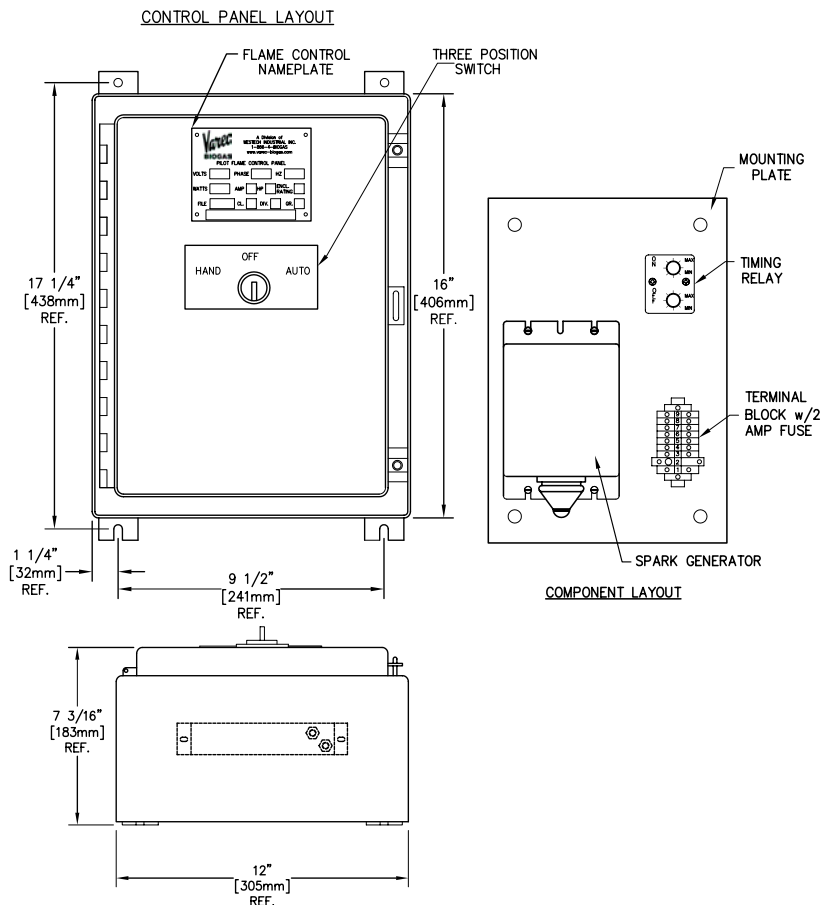


MOUNTING BASE BOLT LOCATION

Model 239A

Size Code	02	03	04	06	08
SIZE A	2 [50]	3 [80]	4 [100]	6 [150]	8 [200]
B	8 ³ / ₄ [222]	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]

Model 240HOA



NOTES:

1. Use 18 AWG with 7mm Insulation rated for 10,000 VAC. at 250°C.
2. All field wiring and conduit by others
3. Control panel to be mounted not less than 10 feet (3m) away from waste gas burner.

Installation, mounting arrangement and dimensions are preliminary general information not be used for construction.

Certified drawings are available.



BURNERS/FLARES

Varec Biogas 239A/240 H-O-A Series

Waste Gas Burner & Manual Ignition System

ORDERING INFORMATION

Model	Description
239A	Waste Gas Burner
Code	Size
02	2"
03	3"
04	4"
06	6"
08	8"

239A 06 Example

Example: 6" Waste Gas Burner

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, 316SS
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 and thermostat 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.

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