

97311 / 97311T

Enclosed Waste Gas Burner

The Shand & Jurs Biogas® Model 97311 Enclosed Waste Gas Burner safely combusts excess biogas when system pressure exceeds utilization capacity in anaerobic digestion and landfill gas systems. By enclosing the combustion zone within a vertical chamber, the burner eliminates visible flame and significantly reduces light and odor impact, making it suitable for installations located near populated or odor-sensitive areas.

The burner achieves minimum 99% destruction efficiency while maintaining low NOx and CO emission levels. Natural draft controlled air-to-gas mixing and residence time inside the chamber ensure reliable combustion of wide BTU and pressure fluctuations of primarily “wet” methane typical of digester and landfill gas streams. The natural draft combustion design maintains stable operation while eliminating the need for refractory lining. The tiered burner design ensures a much higher turndown than conventional enclosed type burners.

Automatic ignition is initiated through a remote contact or pressure permissive signal. A ground-level inspiring venturi pilot system with optional UV flame verification ensures reliable ignition across fluctuating methane concentration and saturated gas conditions.

The 97311T variant adds a touchscreen control panel for local monitoring and operational adjustment while maintaining identical combustion performance.

For open atmospheric disposal where visible flame is acceptable, see the Shand & Jurs Biogas Model 97301 Waste Gas Burner series.



Key Features

Enclosed combustion chamber

Eliminates visible flame and reduces light nuisance near populated areas.

Natural draft combustion design

Maintains stable air-to-gas mixing without mechanical air supply.

High destruction removal efficiency

Achieves ≥99% methane destruction with low NOx and CO emissions.

Ground-level venturi pilot ignition

Simplifies maintenance access and improves ignition reliability.

Automatic ignition sequencing

Allows pressure or remote signal activation for unattended operation.

High turndown capability

Maintains stable combustion across fluctuating digester gas flows.



Benefits



INVISIBLE COMBUSTION

Reduces community complaints and improves permitting acceptance near populated areas.



HIGH METHANE DESTRUCTION EFFICIENCY

Supports environmental compliance and reduces regulatory exposure.



RELIABLE IGNITION VERIFICATION

Prevents unburned methane release during startup and upset conditions.



STABLE OPERATION WITH VARIABLE GAS QUALITY

Maintains digester pressure stability during production fluctuations.



LOW INLET PRESSURE CAPABILITY

Eliminates need for gas compression in typical digester installations.



AUTOMATIC OPERATION

Reduces operator supervision and ongoing flare management labor.

Available Options



Touchscreen control panel (97311T)

Provides local monitoring, configuration, and diagnostic interface.



Pilot and main gas flame detection

Provides positive flame verification for automated safety systems.



Explosion-proof control enclosure

Enables installation in classified hazardous locations.



316 stainless steel gas piping

Improves corrosion resistance in aggressive biogas environments.



Pressure switch start

Enables automatic flaring on system pressure conditions.



Weather hood and equipment stand

Protects instrumentation and supports flexible installation.



Specifications

Parameter	Value
Sizes	3", 4", 6", 8", 10", 12"
Manifold Connection	ANSI 150 lb. Raised Face Flange
Gas Composition	50–70% CH ₄ with balance CO ₂ and trace gases
Moisture Content	Saturated (100% humidity)
Pilot Gas	Natural gas • Propane • Dual (≥500 BTU/ft ³)
Pilot Gas Pressure	4"–30" W.C. (Low pressure) or 1–30 PSIG (High pressure)
Power Requirements	120 VAC standard • 220 VAC optional
Control Functions	Manual start • Remote start • Automatic sequencing
Contact Outputs	Alarm SPDT • Flame proven SPDT
Optional Outputs	Pilot failure • Main gas open status
Controller Temperature Range	–20°F to 150°F
Venturi	347 Stainless Steel
Pilot Operation	Continuous while burning, intermittent or 24/7 standing pilot
Thermocouple	Inconel with Type K wiring
Control Box	NEMA 4, NEMA 4X Stainless Steel or NEMA 7 Aluminum – UL508A available.

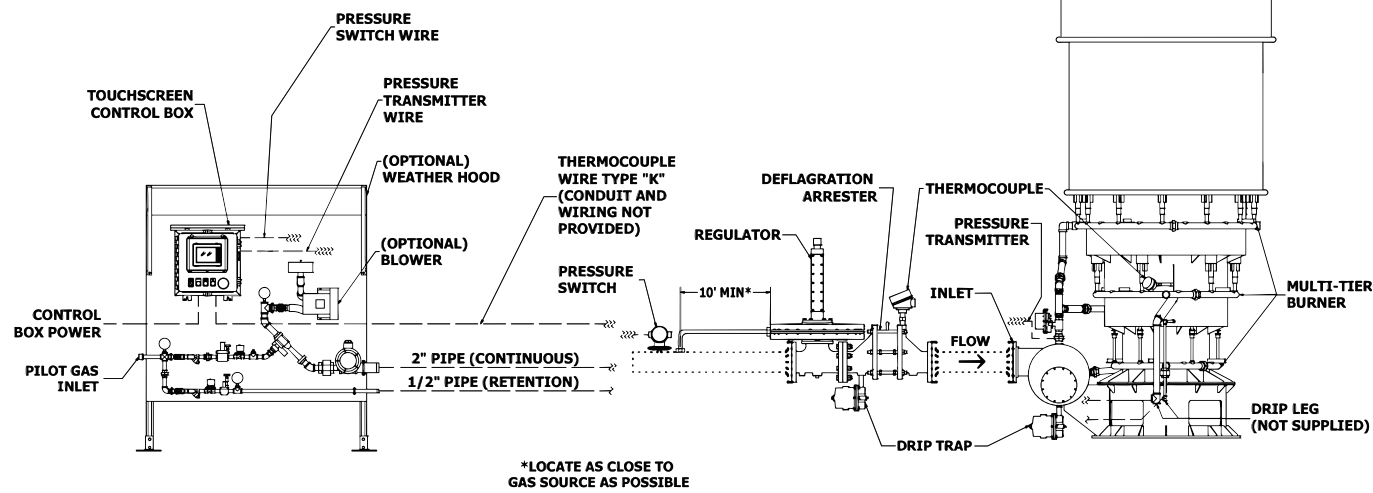
Key Performance Data

Parameter	Value
Destruction Efficiency	≥ 99%
Operating Temperature	1400°F to 1800°F
Max. NOx (One Hour Average)	0.06 LB/MMBTU
Max. CO (One Hour Average)	0.2 LB/MMBTU
Max. VOC (One Hour Average)	0.08 LB/MMBTU
Turndown	10:1 (Typical)
Materials of Construction	Stack Assembly: 304L stainless steel (316L optional) Burner Assembly: 304L stainless steel (316L optional) Manifold / Pilot Assembly: 304L stainless steel (316L optional)

Dimensions

Additional Options

- Weatherhood for Control Panel
- Stand
- Pressure Switch (Remote/Automatic Control)
- 316 Stainless Steel Pipings and Fittings
- NEMA 7, Explosion Proof Configuration



Model Number Selection

The model number will have a base number 97311T followed by 9 digit numbers. These digits will represent 9 sets of option tables.

97311T - AB - CD - EF - GH - I

Table A - Pilot Gas

Option A	Pilot Gas
0	Natural
1	Propane
2	Bio
3	Auto Dual*
4	Manual Dual*

* Biogas or other gas continuous pilot

Table C - Power Source / P.E. Certificate

Option C	Description
1	120 VAC, 60HZ
2	220/240 VAC, 60HZ
3	120 VAC, 60HZ with P.E. Cert
4	220/240 VAC, 60HZ with P.E. Cert

Table B - Unit Size

Option B	Unit Size
2	2"
3	3"
4	4"
5	6"
7	8"
8	10"
9	12"

Table D - Enclosure Rating / UL

Option D	Description
0	NEMA 4 - Carbon Steel
1	NEMA 7 Aluminum
2	NEMA 4X - 304 Stainless Steel
3	NEMA 4X - 316 Stainless Steel
4	NEMA 4 - Carbon Steel (UL 508A)
5	NEMA 7 Aluminum (UL 508A)
6	NEMA 4X - 304 SS (UL 508A)
7	NEMA 4X - 316 SS (UL 508A)

Table E - Control Inputs

Option E	Description
1	1 Dry Contact Input
5	2 Dry Contact Inputs
6	1 4-20MA Analog Input
7	1 4-20MA Analog + 1 Dry Contact Input

Typically Dry Contacts are used for SCADA or pressure switch.
Analog for pressure transmitter.

Table G - Blower/Control Box Location

Option G	Description
1	Blower Motor - General Purpose / Local C.B.
2	Blower Motor - NEMA 7 / Local C.B.
3	Blower Motor - General Purpose / Remote C.B.
4	Blower Motor - NEMA 7 / Remote C.B.
5	No Blower / Local C.B. *
6	No Blower / Remote C.B. *

*5 PSIG minimum pressure required

Table I - Flare Construction

Option I	Base - Manifold / Stack / Burners
5	304(L) SS / 304(L) SS / 304(L) SS
8	316(L) SS / 316(L) SS / 316(L) SS

NOTE: Pilot Material 316 Stainless Steel

Table F - Pilot

Option F	Description
1	Continuous (ON While Flaring)
2	Intermittent (OFF While Flaring)
3	Continuous (ON While Flaring; 347 SS*)
4	Intermittent (OFF While Flaring; 347 SS*)

* 347 Stainless Steel Venturi

Table H - Control Panel Construction*

Option H	Description
2	304 SS Panel, Pipe & Fittings
3	304 SS Panel, Pipe, Fittings & Base
4	304 SS Panel, Base & Weatherhood
5	304 SS Panel w/ 316 SS Pipe & Fittings
6	304 SS Panel & Base w/ 316 SS Pipe & Fittings
7	304 SS Panel, Base & Weatherhood with 316 SS Pipe & Fittings

NOTE: *Other materials available upon request.

Accessories

PART NUMBER	DESCRIPTION
9730-10124	Pressure Switch - Explosion Proof, 30" W.C. Adjustable Deadband 1/4" NPT
122200	Pressure Transmitter - Explosion Proof, 1/2" NPT, 4-20 Output, 1.5 PSI Max

NOTE: *Other materials available upon request.

Summary

The Model 97311 enclosed waste gas burner provides high-efficiency methane destruction while eliminating visible flame and minimizing nuisance emissions. Its natural draft combustion design and automatic ignition system maintain reliable operation across fluctuating digester gas conditions while supporting regulatory compliance, environmental performance, and stable plant operation.

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This document is for information purposes only. All designs subject to change. Certified dimensions, specifications, and performance data available upon request