Eclipse ThermJet

Self-Recuperative Burners
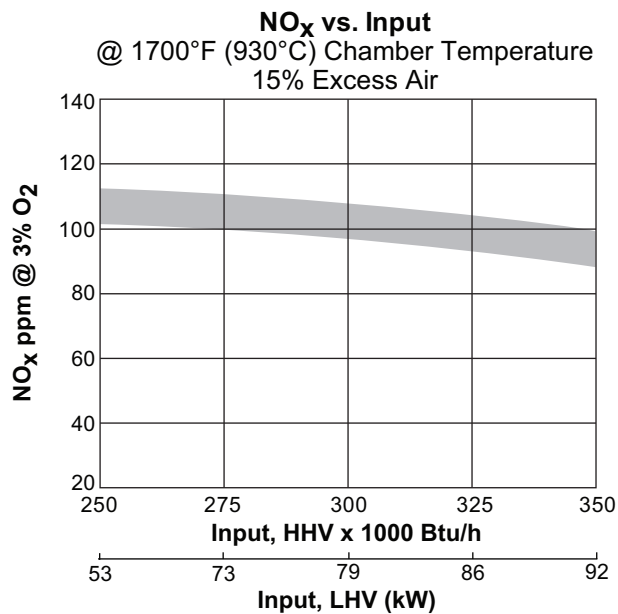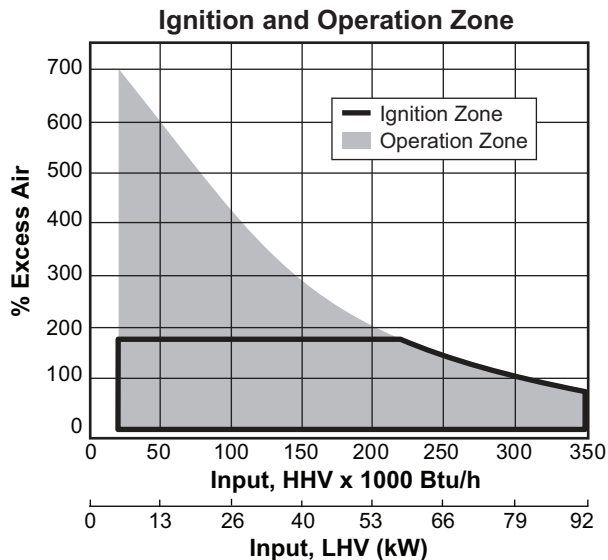
Model TJSR0035

Version 5

Parameter	Typical Burner Input 1000's Btu/h (kW)[1]		
	250 (66)	300 (79)	350 (92)
Low Firing Rate x 1000 Btu/h (kW)[2]	35 (9.2)	35 (9.2)	35 (9.2)
Minimum Low Fire Air Pressure Drop, "w.c. (mbar) *Measured between Taps A and C*	0.3 (0.8)		
Main Gas Inlet Pressure, "w.c. (mbar)[3] *Tap B (see page 4) based on 1800°F (982°C) chamber temperature*	5.2 (13.0)	7.4 (18.4)	10.0 (24.9)
Air Inlet Pressure, "w.c. (mbar) *15% excess air at maximum input* *Tap E (see page 4) based on 1800°F (982°C) chamber temperature*	15.7 (39.1)	21.5 (53.6)	28.1 (70.0)
Total Air Required, SCFH (Nm³/h) *Eductor air plus combustion air, assuming 15% excess combustion air*	10160 (287)	11700 (331)	13400 (379)
High Fire Visible Flame Length, inches (mm) *Measured from the outlet end of the combustor*	12 (300)		
Approximate Flame Velocity, ft/s (m/s)	550 (168)		
Maximum Chamber Temperature, °F (°C)	2200 (1200)		
Piping	NPT or BSP interface is available		
Flame Detection	UV Scanner		
Ignition	Direct Spark Ignition (6 kVAC)		
Fuel[4] *For any other mixed gas, contact Eclipse, Inc.*	Natural Gas		
Weight, lbs (kg)[5] *Burner and recuperative tube*	125 (57)		
Approvals	РСТ АИ30		

1 All imperial inputs based upon gross calorific values (HHV). All metric inputs based upon net calorific values (LHV)

2 Achievement of this low fire rate will be affected by the control method and ratio regulator used in the system design. Typical ratio regulators provide a 10 to 1 turndown from high to low fire. Contact Eclipse for turndowns greater than 10:1.

3 If a ratio regulator is being used, the gas pressure into the ratio regulator should be at least 5" w.c. above the static air pressure at Tap E.

4 See Design Guide 208 for more information about typical fuel composition and properties.

5 All weights are approximate.

• All information is based on laboratory testing with neutral (0.0" w.c.) chamber conditions.

• Air and fuel pressure data given in this document are based on 15% excess air and hot furnace conditions.

• Plumbing of air and gas will affect accuracy of orifice readings. All information is based on generally acceptable air and gas piping practices.

• Eclipse reserves the right to change the construction and/or configuration of our products at any time without being obliged to adjust earlier supplies accordingly.
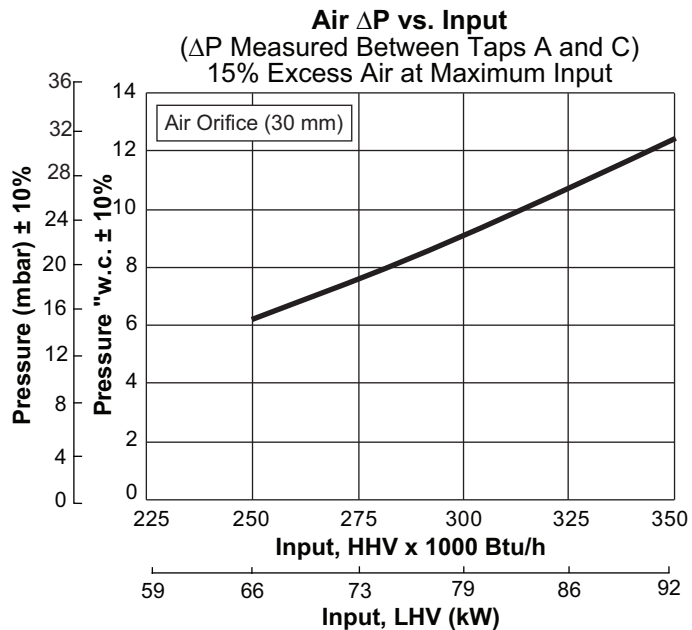
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Performance Graphs

Ignition and Operation Zone

NO$_x$ vs. Input
@ 1700°F (930°C) Chamber Temperature
15% Excess Air

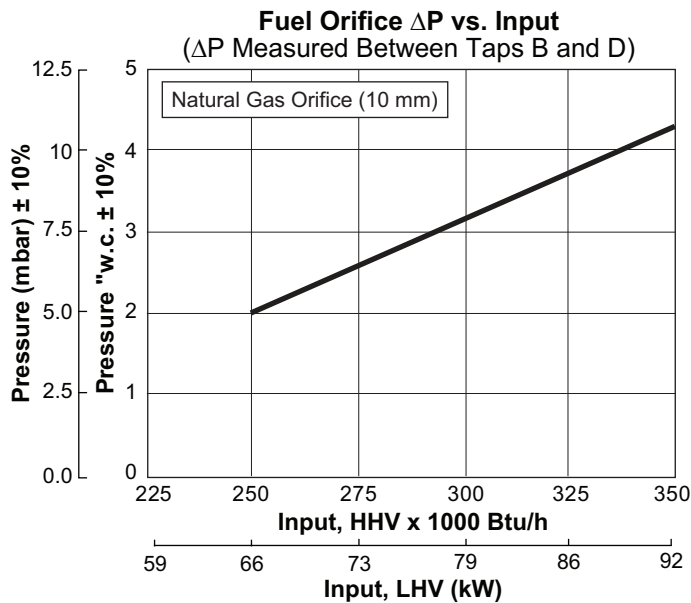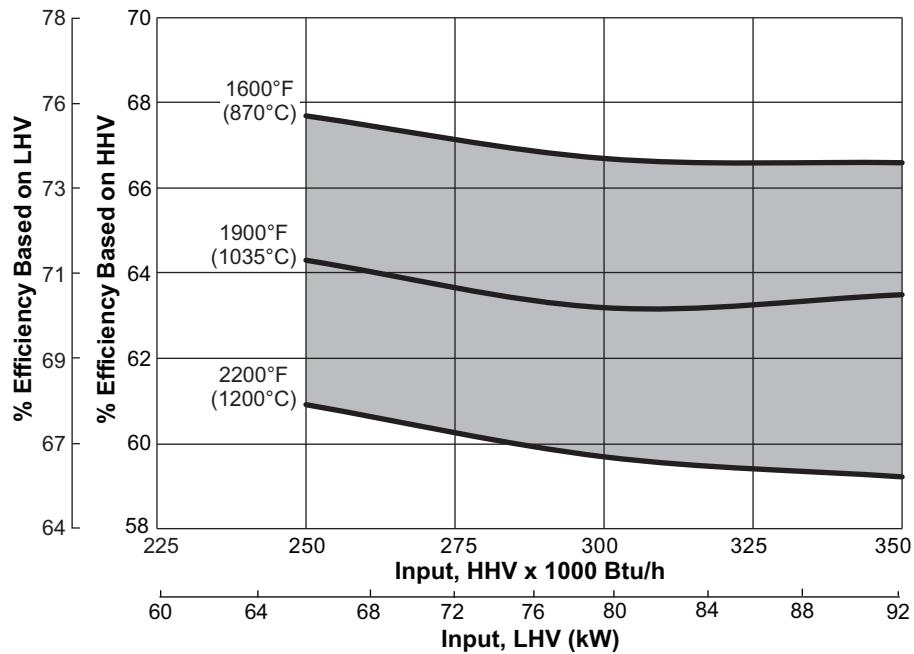**Emissions from the burner are influenced by:**
- Fuel type
- Combustion air temperature
- Firing rate
- Chamber conditions
- Percent of excess air

For estimates of other emissions, contact Eclipse.

Fuel Orifice ΔP vs. Input
(ΔP Measured Between Taps B and D)

Natural Gas Orifice (10 mm)

Air ΔP vs. Input
(ΔP Measured Between Taps A and C)
15% Excess Air at Maximum Input

Air Orifice (30 mm)

Efficiency at Given Furnace Temperatures

Static Pressure and Eductor Butterfly Valve Positions

Gross Input Btu/h (kW)[1]		Chamber Temperature °F (°C)						
		1600 (870)	1700 (930)	1800 (980)	1900 (1035)	2000 (1090)	2100 (1145)	2200 (1200)
Static Air Pressure Tap E "w.c. (mbar)	350,000 (93)	27.6 (68.7)	28.0 (69.7)	28.1 (70.0)	28.1 (70.0)	28.3 (70.5)	30.0 (74.7)	30.5 (76.0)
	300,000 (80)	20.9 (52.1)	21.1 (52.6)	21.5 (53.6)	21.5 (53.6)	21.8 (54.3)	22.1 (55.0)	22.6 (56.3)
	250,000 (66)	15.3 (38.1)	15.4 (38.4)	15.7 (39.1)	16.4 (40.8)	16.9 (42.1)	17.1 (42.6)	17.2 (42.8)
BV Position for 100% Exhaust through Burner		2.5	2	2	2	2	1.5	1.5
* BV Position for 90% Exhaust through Burne		3	3	3	3	3	3	3

NOTE: The integral BV indicator should point away from the air inlet. If the air comes in from the right, the indicator should point to a position to the left of the zero. For systems with multiple temperature set points, the eductor butterfly valve should be set for the lower operating temperature.

* Requires an auxiliary flue with furnace pressure control.

[1] All imperial inputs based upon gross calorific values (HHV). All metric inputs based upon net calorific values (LHV).

BV positions are approximate. It may be necessary to adjust the BV indicator to create a neutral chamber after the system is up and running. If the chamber has a positive pressure, decrease the setting. If the chamber has a negative pressure, increase the setting.

Dimensions and Specifications
Dimensions in mm (inches)

86.5
(3.4)

550
(21.7)

700
(27.6)

75
(3.0)

Peepsight

UV Scanner
Adapter

4X Ø15
(0.6)

4X R50
(2.0)

233
(9.2)

300
(11.8)

244
(9.6)

Tap E

Tap A

Tap C

177
(7.0)

Tap D

Tap B

Fuel Inlet
3/4" NPT/
Rc 0.75

329.5
(13.0)

453
(17.8)

Combustor and Exhaust Tube
Made of Reaction Bonded,
Silicon Infiltrated Silicon Carbide

522.5
(20.6)

554
(21.8)

Spark Rod

Air Inlet
2-1/2" NPT / Rc 2.5

Ø198
(7.8)

72 (2.8) to 272 (10.7)
in 25 mm (1.0) increments

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