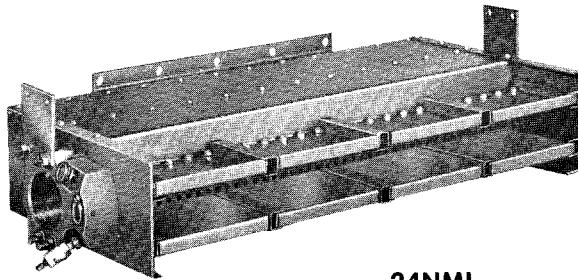
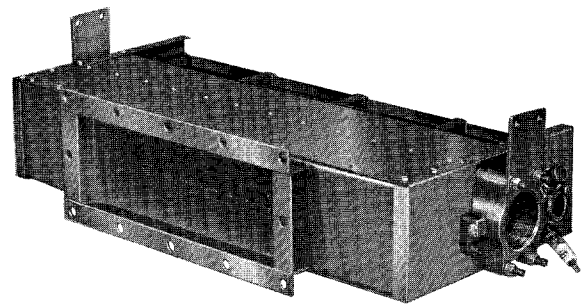


ECLIPSE RATIO-FLAME BURNERS*

SERIES NML



**24NML
FRONT VIEW**



REAR VIEW

Eclipse Ratio-flame burners are nozzle-mixing line type air heat burners designed for use in dryers, ovens, and similar applications. Although intended for in-duct mounting, they can be sealed or gap-fired if required. Combustion air is piped to the burner independently of the process airstream, permitting accurate control of burner air/gas ratio. Ratio-flame burners can thus be operated stoichiometrically to provide significant fuel savings when excess air is not required. They are also well suited to recirculating air systems in which oxygen content or total air flow must be closely regulated. Ratio-flame burners can be used with any clean commercially available fuel gas.

ADVANTAGES

- • • 30:1 On-ratio turndown from rated high fire input
- • • Fuel air ratios from 50% excess air to 25% fuel rich
- • • Linear construction for even heat distribution across ducts
- • • Will burn any clean, commercially available fuel gas

OPERATION

The illustration on page 4 shows a suggested control system using a cross-connected proportionator valve, item "D". As air flow is varied by the firing rate controller, changes in air pressure are transmitted to the proportionator valve which varies gas flow accordingly. For optimum combustion system performance, Eclipse recommends the use of the Eclipse Adjustable Bias Proportionator Valve (ABP), Bulletin M-405, to control air/gas ratio. This valve offers a gas turndown of 30:1 from rated high fire input. In addition, the ABP can be adjusted to hold a constant air/gas ratio during turndown, or to shift the air/gas ratio toward excess air or excess gas operation.

SPECIFICATIONS

Maximum Input per Foot of Burner:
1,200,000 Btu/Hr.

Maximum Air Turndown:
30:1 from on-ratio flow at maximum rated input

Maximum Gas Turndown:
40:1 from maximum rated input

Maximum % Excess Air:
50%

Maximum % Excess Gas:
25%

Maximum Combustion Air Temperature:
450° F.

Maximum Airstream Temperatures:
Upstream of the Burner:
450° F.

Downstream of the Burner:
1000° F.

Air Stream Velocities, Flow Parallel to Flame
Maximum: 6000 fpm
Minimum: 250 fpm
Optimum: 1000 to 4000 fpm

Air Stream Velocities, Flow Perpendicular to Flame
Maximum: 1500 fpm

IGNITION AND FLAME MONITORING

Ratio-flame burners longer than 18" must be ignited by the nozzle mixing pilot shown on page 4. Burners 18" and shorter may be ignited by this pilot or by direct spark ignition of the burner at low fire input. If direct spark ignition is used, ignition plug #16927 and direct spark casting #03877-1 must be specified on the order. Flame monitoring may be by the flame rod supplied with each burner or by U.V. scanner.

CAUTION: It is dangerous to use any fuel burning equipment unless it is equipped with suitable flame sensing devices and automatic fuel shut-off valves. Eclipse can supply such equipment or information on alternate sources.

PERFORMANCE DATA

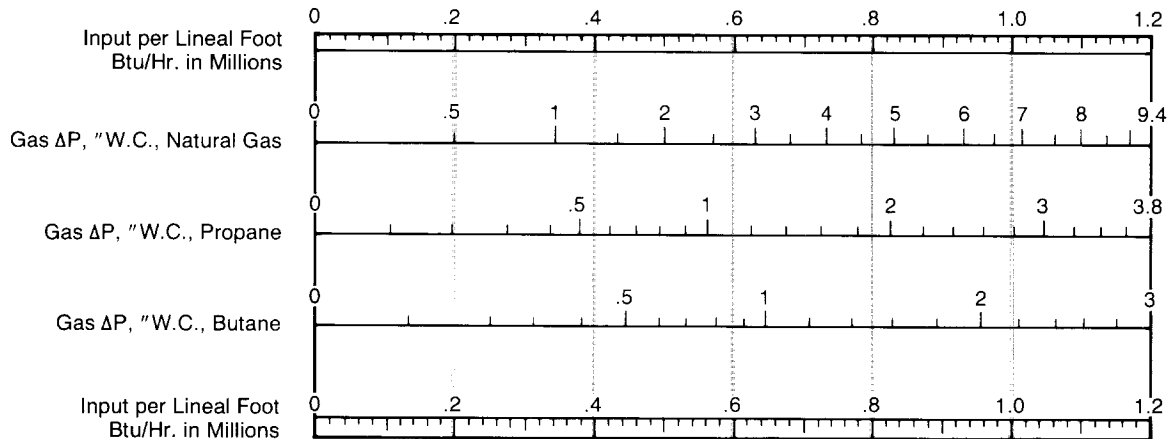
CAPACITIES

Burner Catalog Number	Linear Feet	Maximum Burner Capacity Btu/Hr. in Millions	On-Ratio High Fire Combustion Air Flow	
			SCFH in Thousands	Air ΔP,* "W.C.
6 NML	0.5	0.6	6	9.2
12 NML	1.0	1.2	12	11.5
18 NML	1.5	1.8	18	12.4
24 NML	2.0	2.4	24	13.0
30 NML	2.5	3.0	30	13.3
36 NML	3.0	3.6	36	13.5
42 NML	3.5	4.2	42	13.6
48 NML	4.0	4.8	48	13.7
54 NML	4.5	5.4	54	13.8
60 NML	5.0	6.0	60	13.9
66 NML	5.5	6.6	66	13.9
72 NML	6.0	7.2	72	14.0
78 NML	6.5	7.8	78	14.0
84 NML	7.0	8.4	84	14.1
90 NML	7.5	9.0	90	14.1
96 NML	8.0	9.6	96	14.2
102 NML	8.5	10.2	102	14.2
108 NML	9.0	10.8	108	14.3
114 NML	9.5	11.4	114	14.3
120 NML	10.0	12.0	120	14.3

*Combustion air differential pressure is measured as shown on page 4. To correct for combustion air temperature, multiply the pressure by the following factor:

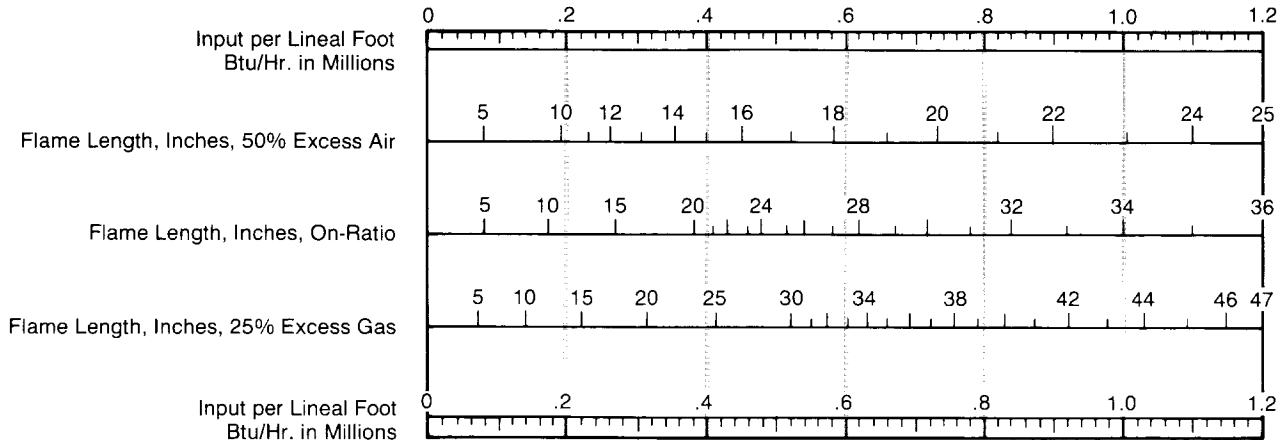
Air Temp, °F	Air ΔP Multiplier
70°F	1.00
150°F	1.15
250°F	1.34
350°F	1.53
450°F	1.72

GAS PRESSURES*



*Measured as shown on page 4.

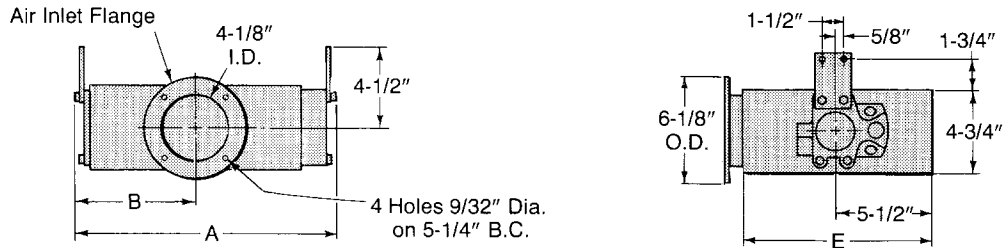
FLAME LENGTHS*



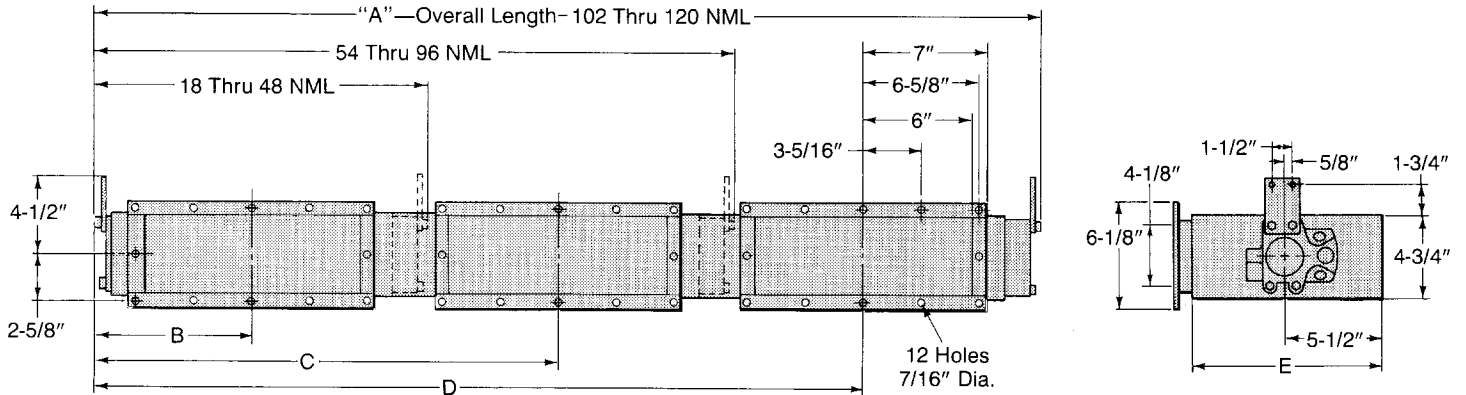
*Add 10% to flame length for 6 NML and 12 NML.

DIMENSIONS

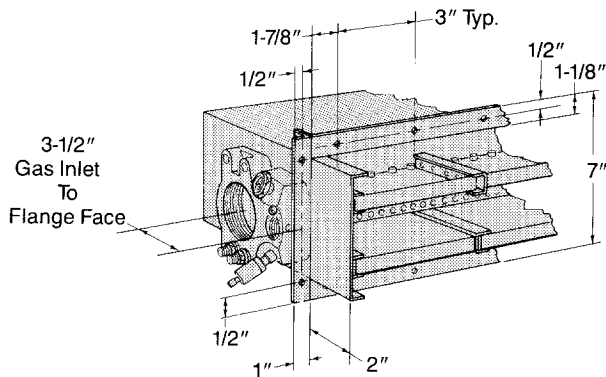
6 & 12 NML



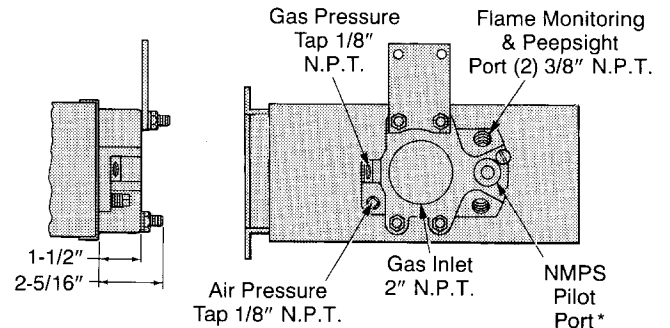
18 THROUGH 120 NML



OPTIONAL CONTINUOUS MOUNTING FLANGE



GAS INLET CASTING



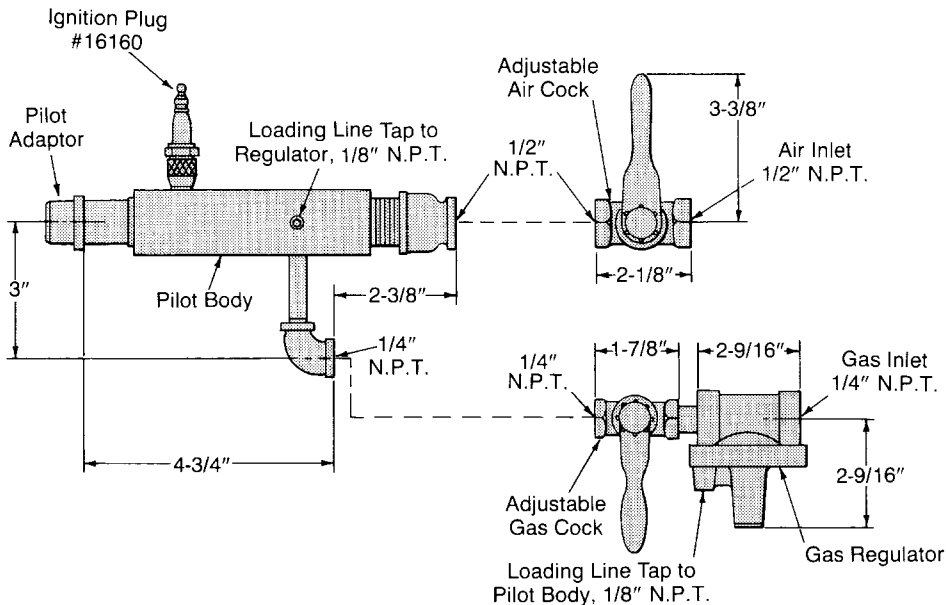
*On casting #03877-1 for direct spark ignition of 6, 12, & 18 NML burners, this hole is tapped for spark plug #16927.

Burner Cat. No.	Assembly Number		Linear Feet	Dimensions in Inches				
	Standard Burner	Burner With Continuous Mounting Flange		A	B	C	D	E
	6 NML 12 NML 18 NML 24 NML	107000 107004 107007-18 107007-24		107014-1 107014-2 107014-3 107014-4	.5 1.0 1.5 2.0	9-5/8 15-5/8 21-5/8 27-5/8	4-3/16 7-3/16 9 12	— — — —
30 NML 36 NML 42 NML 48 NML	107007-30 107007-36 107007-42 107007-48	107014-5 107014-6 107014-7 107014-8	2.5 3.0 3.5 4.0	33-5/8 39-5/8 45-5/8 51-5/8	15 18 21 24	— — — —	— — — —	15-3/4 15-3/4 15-3/4 15-3/4
54 NML 60 NML 66 NML 72 NML	107007-54 107007-60 107007-66 107007-72	107014-9 107014-10 107014-11 107014-12	4.5 5.0 5.5 6.0	57-5/8 63-5/8 69-5/8 75-5/8	13-1/2 15 16-1/2 18	40-7/16 44-15/16 49-7/16 53-15/16	— — — —	15-3/4 15-3/4 15-3/4 15-3/4
78 NML 84 NML 90 NML 96 NML	107007-78 107007-84 107007-90 107007-96	107014-13 107014-14 107014-15 107014-16	6.5 7.0 7.5 8.0	81-5/8 87-5/8 93-5/8 99-5/8	19-1/2 21 22-1/2 24	58-7/16 62-15/16 67-7/16 71-15/16	— — — —	15-3/4 15-3/4 15-3/4 15-3/4
102 NML 108 NML 114 NML 120 NML	107007-102 107007-108 107007-114 107007-120	107014-17 107014-18 107014-19 107014-20	8.5 9.0 9.5 10.0	105-5/8 111-5/8 117-5/8 123-5/8	17 18 19 20	51 54 57 60	84-15/16 89-15/16 94-15/16 99-15/16	15-3/4 15-3/4 15-3/4 15-3/4

PILOT ASSEMBLY NO. 107013

Air cock, gas cock and regulator are shipped loose for mounting outside of the duct.
The 6, 12, & 18 NML may be ignited by direct spark at low fire instead of using this pilot.
For direct spark ignition, specify ignition plug #16927 and direct spark casting #03877-1 when ordering.

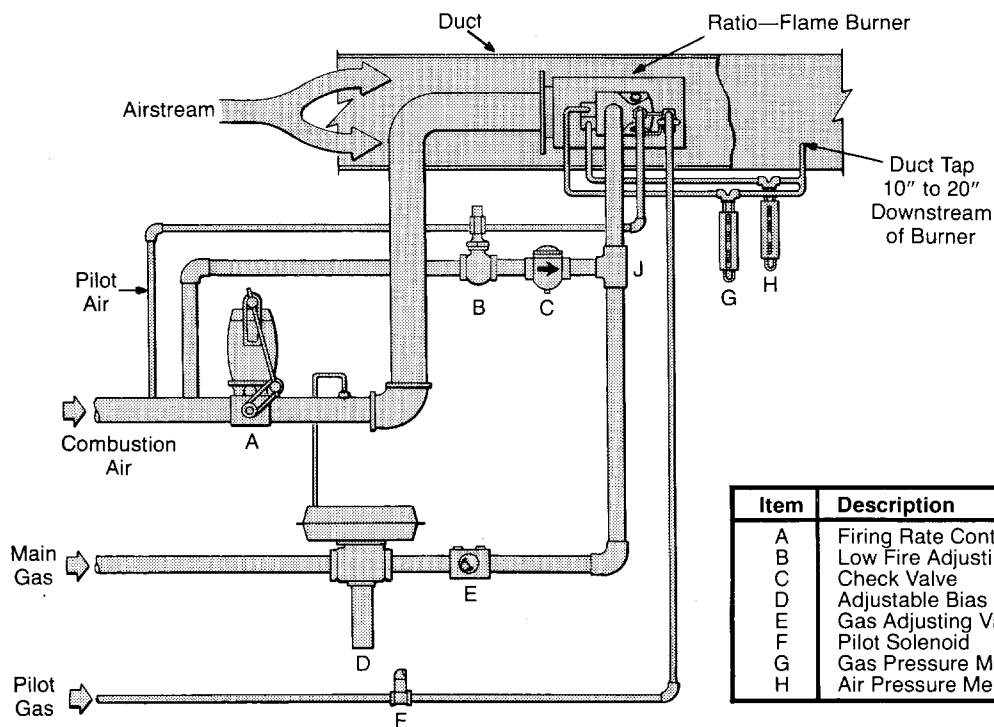
DIMENSIONS



SPECIFICATIONS

Min. Press. Required at Inlet to Air Cock: 10" w.c.
Min. Press. Required at Inlet to Gas Cock: (.65 sp. Natural Gas): 8" w.c.
Approximate Capacity: 15,000 Btu/Hr.

TYPICAL SYSTEM



Item	Description	Bulletin No.
A	Firing Rate Controller	M-150
B	Low Fire Adjusting Valve	M-311
C	Check Valve	MN-1000
D	Adjustable Bias Proportionator	M-405
E	Gas Adjusting Valve	M-150
F	Pilot Solenoid	M-500, M-501
G	Gas Pressure Measuring Device	—
H	Air Pressure Measuring Device	—

Item "C" stabilizes burner operation at low fire by introducing a partial premix to burner. **WARNING: Do not install any valve or controlling device in the piping between tee "J" and the burner.**



Offered By:

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