Specifications of "NP" & "RG" AIRFLO® burners

NP-I & NP-II AIRFLO® burners

Differential gas pressure at burner inlet

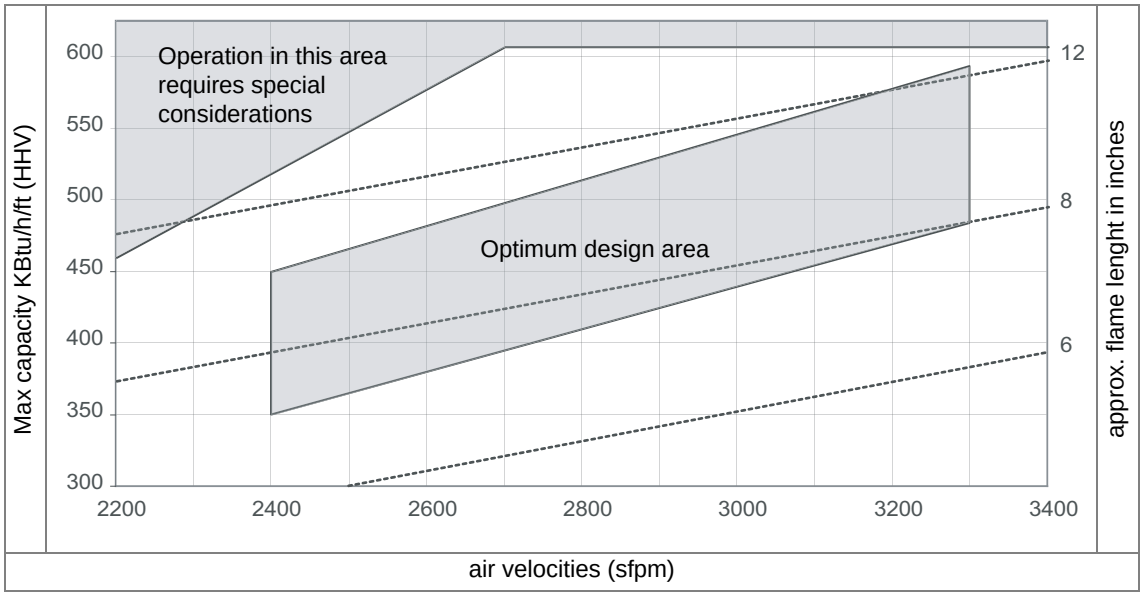
For burner capacity =0.5 MBtu/h/ft

Fuel		NP-I	NP-II
natural gas	(1000 Btu/ft³ HHV, d = 0.6)	5“ wc	2-1/2“ wc
propane	(2500 Btu/ft³ HHV, d = 0.6)	2“ wc	1“ wc

Note :

- For other capacities per foot or gases with different heating values and/or specific weights as shown in the above table, values for differential gas pressure will behave according to the normal laws of physics.
- Listed values are approximate net pressures at burner inlet, NOT taking into account any losses in piping/gas manifolds etc.
- Stated pressures are indicative - actual pressures are function of altitude, type of fuel, gas quality.

Optimum operation parameters



Note :

- Flame length is as measured from leading edge of mixing plates (see sketch on page 4-21.5-11*)*
  EXAMPLE: Series NP-I AIRFLO® burner at 3000 sfpm and at 0.5 MBtu/h per foot would have an approximate flame length of 10 in. Contact MAXON for operation outside the optimum operation area.
- **Airstream velocity** across and through your burner’s mixing plates must be kept uniform and within desired limits by use of a silhouette profile plate through which the burner fires. Refer to page 4-21.5-11 for more details on sizing of this profile plate.
- **Pilot capacities** are nominally rated at 25 000 Btu/h with natural gas differential pressure of 4” wc to 6” wc.
  Suitable for natural gas, propane and propane-air mixtures.
  Contact MAXON for applications on butane or other gases than specified here.

Minimum capacities

Minimum capacities are given as a guideline. They strongly depend on process conditions

Air velocities sfpm			2200	2400	2600	2800	3000	3200	3400
Minimum capacity KBtu/h/ft (HHV)	NP-I	natural gas	12	14	16	18	20	22	24
		propane	not recommended		20	22	24	28	30
	NP-II	natural gas	15	18	20	23	25	27	29
		propane	not recommended		23	25	28	30	33

NP-III AIRFLO® burners

Differential gas pressure at burner inlet

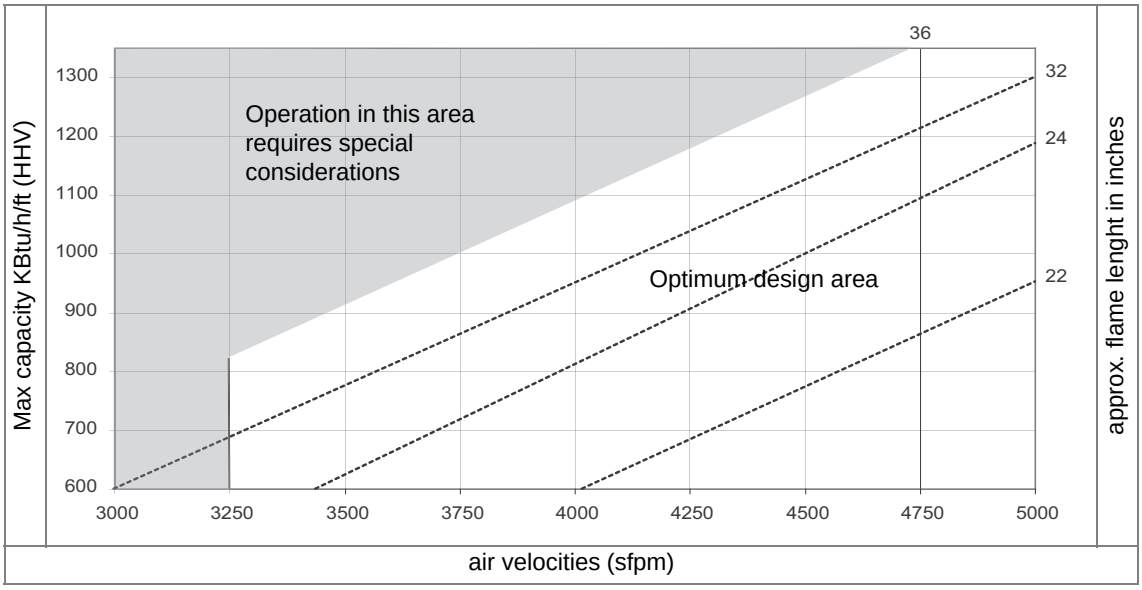
For burner capacity =1 MBtu/h/ft

Fuel		NP-III
natural gas	(1000 Btu/ft³ HHV, d = 0.6)	5” wc
propane	(2500 Btu/ft³ HHV, d = 0.6)	2” wc

Note :

- For other capacities per foot or gases with different heating values and/or specific weights as shown in the above table, values for differential gas pressure will behave according to the normal laws of physics.
- Listed values are approximate nett pressures at burner inlet, NOT taking into account any losses in piping/gas manifolds etc.
- Stated pressures are indicative - actual pressures are function of altitude, type of fuel, gas quality

Optimum operation parameters



Note :

- Flame length is measured from leading edge of mixing plate (see sketch on page 4-21.5-11)
  EXAMPLE: Series NP-III AIRFLO® burner at 4000 sfpm and 1 MBtu per foot would have an approximate flame length of 30 in..
  Contact MAXON for operation outside the optimum operation area (shaded area).
- **Airstream velocity** across and through your burner’s mixing plates must be kept uniform and within desired limits by use of a silhouette profile plate through which the burner fires. Refer to page 4-21.5-11 for more details on sizing of this profile plate.
- **Pilot capacities** are nominally rated at 25 000 Btu/h with natural gas differential pressure of 4” wc to 6” wc.
  Suitable for natural gas, propane and propane-air mixtures. Contact MAXON for applications on butane or other gases than specified here.

Minimum capacities

Minimum capacities are given as a guideline. They strongly depend on process conditions.

Air velocities sfpm			3000	3250	3500	3750	4000	4250	4500	4750	5000
Minimum capacity KBtu/h/ft (HHV)	NP-IIII	natural gas	67	87	115	150	180	240	285	330	370
		propane	67	83	115	120	140	158	175	195	215

RG-IV AIRFLO® burners

Differential gas pressure at burner inlet

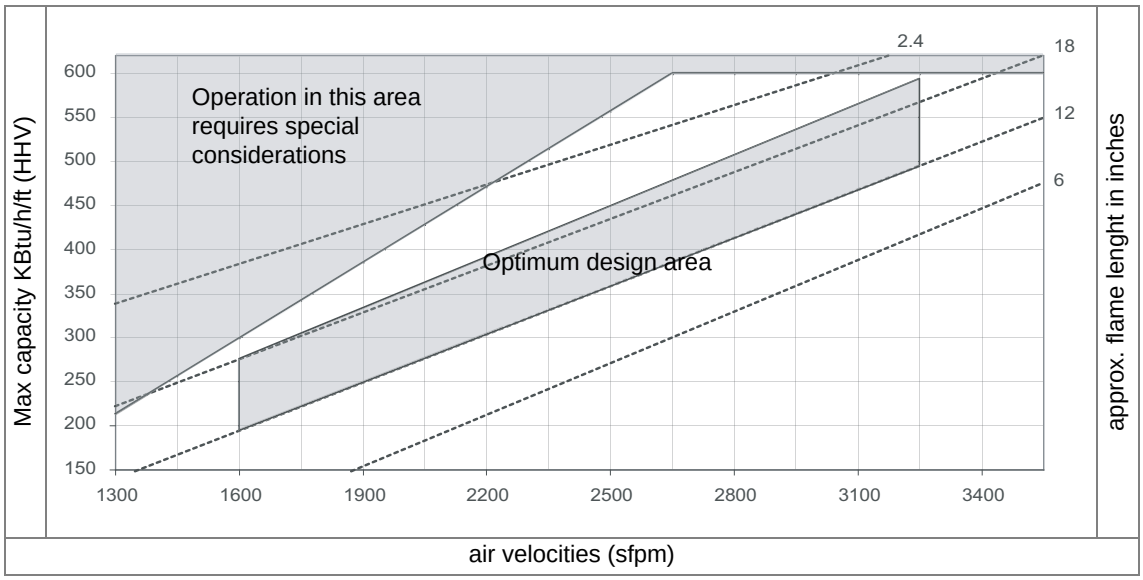
For burner capacity =0.5 MBtu/h/ft

Fuel		RG-IV
natural gas	(1000 Btu/ft³ HHV, d = 0.6)	5" wc

Note :

- For other capacities per foot or gases with different heating values and/or specific weights as shown in the above table, values for differential gas pressure will behave according to the normal laws of physics.
- Listed values are approximate net pressures at burner inlet, NOT taking into account any losses in piping/gas manifolds etc.
- Stated pressures are indicative - actual pressures are function of altitude, type of fuel, gas quality.

Optimum operation parameters



Note :

- Flame length is as measured from leading edge of mixing plates (see sketch page 4-21.5-11)
  EXAMPLE: Series RG-IV AIRFLO® burner used with 2-speed blower at 3000 sfpm and 0.5 MBtu/h per foot or at 1500 sfpm and 0.25 MBtu/h per foot (flame length 14 in. – 0.5 MBtu/h / 10 in. – 0.25 MBtu/h).
  Contact MAXON for operation outside the optimum operation area (light grey area).
- **Airstream velocity** across and through your burner's mixing plates must be kept uniform and within desired limits by use of a silhouette profile plate through which the burner fires. Refer to page 4-21.5-11 for more details on sizing of this profile plate.
- **Pilot capacities** are nominally rated at 25 000 Btu/h with natural gas differential pressure of 4" wc to 6" wc. For natural gas only. Contact MAXON for applications on butane, propane, or other gases than natural gas.
- Capacity at half speed should be limited with fail-safe security.

Minimum capacities

Minimum capacities are given as a guideline. They strongly depend on process conditions.

Air velocities sfpm			1600	1900	2200	2500	2800	3100	3400
Minimum capacity KBtu/h/ft (HHV)	RG-IV	natural gas	13	15	16	18	20	24	32

Materials of construction

	NP-I, NP-II, NP-III, RG-IV	NP-I-AL, RG-IV-AL
Burner body	gray iron ASTM A159-77 Grade G3000	Aluminum
Mixing plates	AISI 430 = W.S. 1.4016	AISI 430 = W.S. 1.4016
1 piece endplates	gray iron ASTM A159-77 Grade G3000	steel plated
2 piece endplates		
flange	gray iron ASTM A159-77 Grade G3000	steel plated
plate	AISI 430 = W.S. 1.4016	AISI 430 = W.S. 1.4016
Fasteners	Aluminized and galvanized steel [1]	Aluminized and galvanized steel [1]

[1] Optional stainless steel fasteners available for NP-I and RG-IV with aluminum bodies

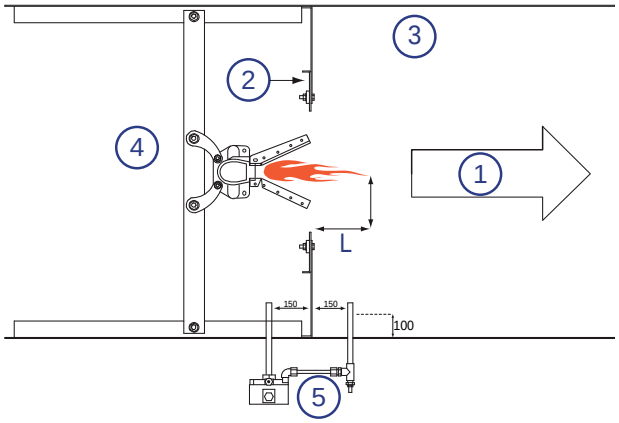
Selection criteria

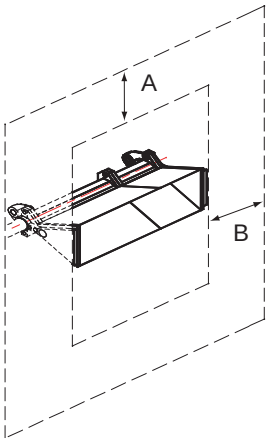
Air-stream velocity

Air-stream velocity across and through the burner's mixing plates must be kept uniform and within desired limits by use of a silhouette profile plate through which the burner fires. A 6 in. (minimum) profile plate should be installed surrounding the interior duct walls at the leading edge of the burner mixing plates.

1) Direction of process air movement
2) Adjustable profile plate
3) Fixed profile plate
4) Universal support bracket
5) Differential pressure switch

A Minimum 6 in.
B Minimum 6 in.
L Flame length





Optimum design ranges for Series "NP" and "RG" AIRFLO® burners are shown in the graphs on page 4-21.5-7, page 4-21.5-8 and page 4-21.5-9. Velocities in sfpm are measured with a velometer direct in the duct at the plane of the profile plate and leading edge of burner mixing plates (see above sketch).

To determine profile opening areas, add burner displacement areas (ft²/section) from table on page 4-21.5-12 for complete burner assembly to "Net Free Area" of duct :

"Net free area" of duct (ft²) =

$$\frac{\text{Fan volume (scfm)}}{\text{Velocity (sfpm)}}$$

scfm = fan volume at 288 Kelvin and 1 atmosphere

Net free area (ft²) + burner displacement (ft²) = profile area (ft²)

The relation between velocity and pressure differential across the burner slightly differ with the ratio between net profile area and total duct section.

Velocities should always be confirmed and established by use of a velometer on actual field site installation.

Velocity factors (fresh air - 60° F)

Velocity fpm	1600	1800	2000	2200	2400	2600	2800	3000	3250	3500	3750	4000	4500
Air pressure differential "wc	0.16	0.20	0.25	0.30	0.36	0.42	0.49	0.57	0.64	0.77	0.88	1.00	1.26

Note:

- differential air pressures are measured via pressure test points located 6 in. upstream and 6 in. downstream the profile plate, near the duct wall at 4 in. into the duct. (See sketch on page 4-21.5-11)
- typical data which may not represent precise pressure drops for all design cases.

Inlet feed limitations

The maximum number of units of burner per gas inlet connection should be limited in order to guarantee correct gas distribution inside the burner manifold. Insufficient or badly distributed gas inlet connections may affect flame length, pollutant emissions and temperature distribution downstream the burner. Refer to the table below as a guideline for natural gas, based on a maximum capacity limitation of 0.5 MBtu/h/ft (NP-I & NP-II) and 1 MBtu/h/ft (NP-III). The number of gas inlets should be reconsidered for gases different from natural gas (for example gases with lower calorific value).

Contact MAXON for more details.

	NP-I	NP-II	NP-III	RG-IV
1 1/4" end inlet flange	≦ 4 ft	≦ 4 ft	≦ 2 ft	≦ 4 ft
1 1/2" back inlets [1]	≦ 5 ft	≦ 5 ft	≦ 4 ft	≦ 5 ft

[1] For 36 in. back inlet sections, not more than 6 in. section off any one leg.

Burner sections

Burner type	NP-I	NP-II	NP-III	RG-IV	NP-I	RG-IV	NP-I	RG-IV	
	Cast iron bodies with AISI 430 mixing plates and carbon steel fasteners				Alu bodies with AISI 321 mixing plates and carbon steel fasteners		Alu bodies with AISI 321 mixing plates and stainless steel fasteners		
Description	Designation								Sketch [1]
6 in. straight section	NP-I-6	NP-II-6	NP-III-6	RG-IV-6	NP-I-6 (AL)	RG-IV-6 (AL)	NP-I-6 (ALSS)	RG-IV-6 (ALSS)	1
12 in. straight section	NP-I-12	NP-II-12	NP-III-12	RG-I-V12	NP-I-12 (AL)	RG-IV-12 (AL)	NP-I-12 (ALSS)	RG-IV-12 (ALSS)	2
18 in. straight section	NP-I-18	NP-II-18	NP-III-18	RG-I-V18	N/A [2]	N/A	N/A	N/A	3
24 in. straight section	NP-I-24	NP-II-24	NP-III-24	RG-IV-24	N/A	N/A	N/A	N/A	4
6 in. x 6 in. elbow section	NP-I-L	NP-II-L	NP-III-L	RG-IV-L	N/A	N/A	N/A	N/A	5
12 in. x 6 in. T-section	NP-I-T	NP-II-T	NP-III-T	RG-IV-T	NP-I-T (AL)	RG-IV-T (AL)	NP-I-T(ALSS)	RG-IV-T (ALSS)	6
12 in. back inlet section	NP-I-12B	NP-II-12B	NP-III-12B	RG-IV-12B	NP-I-12B (AL)	RG-IV-12B (AL)	NP-I-12B (ALSS)	RG-IV-12B (ALSS)	7
36 in. back inlet section	NP-I-36B	NP-II-36B	NP-III-36B	RG-IV-36B	NP-I-36B (AL)	RG-IV-36B (AL)	NP-I-36B (ALSS)	RG-IV-36B (ALSS)	8
6 in. pilot assembly section includes built-in pilot	NP-I-6P	NP-II-6P	NP-III-6P	RG-IV-6P	N/A	N/A	N/A	N/A	1

[1] Sketch see page 4-21.5-13
[2] N/A = not applicable

Burner displacement and weight [1]

Burner type	NP-I / NP-II / NP-III		RG-IV		NP-I		RG-IV		NP-I		RG-IV	
	Cast iron bodies with AISI 430 mixing plates and carbon steel fasteners				Alu bodies with AISI 321 mixing plates and carbon steel fasteners				Alu bodies with AISI 321 mixing plates and stainless steel fasteners			
Description	Area ft²/ section	Weight lbs	Area ft²/ section	Weight lbs	Area ft²/ section	Weight lbs	Area ft²/ section	Weight lbs	Area ft²/ section	Weight lbs	Area ft²/ section	Weight lbs
6 in. straight section	0.25	5	0.33	5.3	0.25	2.9	0.33	3.4	0.25	2.9	0.33	3.4
12 in. straight section	0.50	9	0.66	9.7	0.50	5.7	0.66	6.7	0.50	5.7	0.66	6.7
18 in. straight section	0.75	14	0.99	15	N/A (2)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
24 in. straight section	1.00	18	1.32	19.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6 in. x 6 in. elbow section	0.45	9	0.60	9.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12 in. x 6 in. T-section	0.60	13.2	0.75	14	0.60	1.1	0.75	9.3	0.60	7.7	0.75	9.3
12 in. back inlet section	0.50	10.8	0.66	11.5	0.50	6.2	0.66	7.1	0.50	6.2	0.66	7.1
36 in. back inlet section	1.20	26.5	1.50	28.2	1.20	15.6	1.50	18.9	1.20	15.6	1.50	18.9
6 in. pilot assembly section includes built-in pilot	0.25	9	0.33	5.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

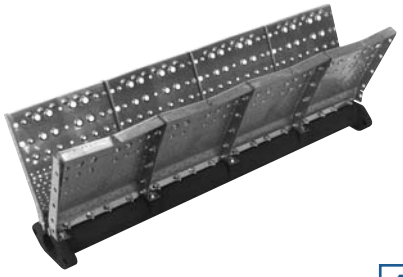
[1] Sketches see page 4-21.5-13. Refer to page 4-21.5-19 for dimensions.
[2] N/A = not applicable

1) NP/RG-*-6
2) NP/RG-*-12
3) NP-*-18 [1]
4) NP-*-24 [1]
5) NP-*-L [1]
6) NP/RG-*-T
7) NP-12B
8) NP/RG-*-36B


1


2


3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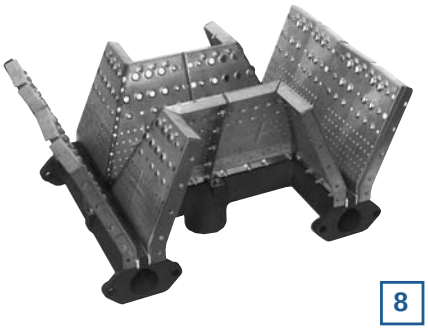
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[1] not available in "RG" AIRFLO®

Note: mixing plates of Series "RG" AIRFLO® burners are slightly longer. See dimensions on page 4-21.5-19.

Pilots, end closures and end inlet flange sets for Series "NP" AIRFLO® burners

All open ends of burner assembly must be closed off with one of these end closures or pilots. One-piece cast end closures should not be used if temperature rise exceeds 300° F.

Series "NP" AIRFLO® burners			
Designation	Description	Model	Weight (lbs)
NP-EC	One piece end closure set		3.9
NP-EP	Two piece end plate set		6.3
NP-EC-SI-3/4" UV [1]	One piece pilot set including SI with 3/4"-NPT UV-connection		4.1
NP-EC-SI-1/2" FR [1]	One piece pilot set including SI with 1/2"-NPT FR-connection		3.9
NPF-1-1/4"-FR-SI-1pc-ANSI [1]	One piece pilot set including SI with 1-1/4" NPT gas inlet connection and FR/UV-connection		3.8
NPF-1-1/4"-FR-SI-1pc-ISO [1]	One piece pilot set including SI with Rp 1-1/4 gas inlet connection and FR/UV-connection		
NPF-1-1/4"-FR-SI-2pc-ANSI [1]	Two piece pilot set including SI with 1-1/4" NPT gas inlet connection and FR/UV-connection		7.0
NPF-1-1/4"-FR-SI-2pc-ISO [1]	Two piece pilot set including SI with Rp 1-1/4 gas inlet connection and FR/UV-connection		
NPF-1-1/4"-EP-ANSI	Two piece End inlet flange set with 1-1/4" NPT gas inlet connection		6.4
NPF-1-1/4"-EP-ISO	Two piece End inlet flange set with Rp 1-1/4 gas inlet connection		
NP-PAK w/SI [1]	Two piece pilot set with SI and FR/UV-connection		7.2
NP-PAK w/AO-SI [1]	Two piece pilot set with SI, FR/UV-connection and adjustable orifice for pilot gas flow		7.6
NP-PAK w/AO-SI-cock-tube [1]	Two piece pilot set with SI, FR/UV-connection, adj.orifice, cock and tubing for pilot gas flow		8.8
NP-6P pilot section	Pilot section w/Built-in pilot includes two piece pilot set with SI and FR/UV-connection onto its own special 6" Series “NP” AIRFLO® burner assembly		10.0

[1] SI = spark ignitor - UV = connection for flame scanner
FR = connection for flame rod

Pilots, end closures, and end inlet flange sets for Series "RG" AIRFLO® burners

All open ends of burner assembly must be closed off with one of these end closures or pilots. One-piece cast end closures should not be used if temperature rise exceeds 300° F

Series "RG" AIRFLO® burners			
Designation	Description	Model	Weight (lbs)
RG-EP-2pc	Two piece end plate set		2.2
RGF-1-1/4"-FR-SI-1pc-ANSI [1]	One piece pilot set including SI with 1/2"-NPT FR-connection and 1-1/4"-NPT gas connection		5.0
RGF-1-1/4"-FR-SI-1pc-ISO [1]	One piece pilot set including SI with Rp 1/2 FR-connection and Rp 1-1/4 gas connection		5.0
RGF-1-1/4"-EP-2pc-ANSI	Two piece end plate set with 1-1/4" NPT gas connection		2.2
RGF-1-1/4"-EP-2pc-ISO	Two piece end plate set with Rp 1-1/4 gas connection		
RGF-1-1/4"-FR-SI-2pc-ANSI [1]	Two piece pilot set with SI, FR/UV-connection and 1-1/4" NPT gas connection		2.9
RGF-1-1/4"-FR-SI-2pc-ISO [1]	Two piece pilot set with SI, FR/UV-connection and Rp 1-1/4 gas connection		
RG-PAK pilot set w/SI-2pc [1]	Two piece pilot set with SI and FR/UV-connection		301
RG-PAK pilot set w/AO-SI [1]	Two piece pilot set with SI, FR/UV-connection and adjustable orifice for pilot gas flow		3.4
RG-PAK pilot set w/AO-SI-cock-tube [1]	Two piece pilot set with SI, FR/UV-connection, adjustable orifice, cock and tubing for pilot gas flow		4.6
RG-6P pilot section	Pilot section w/Built-in pilot includes two piece pilot set with SI and FR/UV-connection onto its own special 6" Series "RG" AIRFLO® burner assembly		9.3

[1] FR = connection for flame rod
SI = spark ignitor

Process flows and oxygen contents

Series "NP" AIRFLO® and "RG" AIRFLO® burners are used only for the heating of fresh air in motion. Fresh air means air with 21 % oxygen, at ambient temperature, or indirectly preheated via a steam or water coil.

It is not recommended to use the burner in recirculating air systems.

NP-I , NP-II and RG-IV AIRFLO® burners may be used if temperature rise does not exceed 840° F.

NP-III can be used to heat fresh air up to 1200° F.

Max. temperature of the fresh air entering the burner is 600° F.

Velocity and air flow at operating temperature must be uniform and constant for Series "NP" AIRFLO® burners.
Series "RG" AIRFLO® burners can operate at 50 % and 100 % of the flow, typically applicable in two-speed air handling systems. Precautions should be taken to prevent overfiring of the burner in such conditions.

Piloting & ignition

Series "NP" and "RG" AIRFLO® burners are standard equipped with raw gas pilots to ignite the main flame. Pilot burner is incorporated in the burner endplate. Depending on the burner configuration, MAXON offers the choice between a complete range of pilot endplate sets. See table on page 4-21.5-14 for proper selection or contact MAXON for more detailed information.

Permanent pilot operation is not advised – use main burner at minimum capacity for continuous operation.

Also direct ignition of the burner is possible, as far as acceptable by local regulations.

Use minimally 5000 V/200 VA ignition transformer for sparking of the spark igniter. Contact MAXON for optional ignition equipment in hazardous location.

Locate one pilot valve close enough to the pilot burner gas inlet, to guarantee fast and reliable ignition of the pilot burner.

Typical ignition sequence

- Pre-purge of the combustion chamber and installation, according to the applicable code's and the installation requirements.
- Gas control valve in minimum position
- Pre-ignition (typically 2 s sparking in air). Open pilot gas valves and continue to spark (typically 5 s to 10 s).
- Stop sparking, continue to power the pilot gas valves and start flame detection. Trip the burner in case no flame detected from this point on.
- Check pilot flame stability (typical 5 s to 10 s to prove stable flame).
- Open main gas valves and allow enough time for the fuel gas to reach the burner (typical 5 s or the time that gas needs to reach the burner).
- Close the pilot gas valves.
- Release to modulation (allow modulation of the gas control valve).
- Above sequence shall be completed to include all required safety checks during the start-up of the burner (process & burner safeties).
- Be advised that some regional codes require proving of cross-ignition by sensing flame at both ends of long burners.

Flame supervision

Standard connections for flame detection equipment are provided on the different endplates.
Refer to selection tables on page 4-21.5-14 and page 4-21.5-15.

Only use these connections for correct flame-safeguarding. One-piece endplates have one connection for UV-scanner (scanning parallel to the burner-manifold) and flame rods (mounted parallel with burner body). Two piece endplates have 2 additional alternative connections for flame rod (45°-angle with burner-manifold).

Capacity control

Series "NP" and "RG" AIRFLO® burners are raw gas burners firing in a constant process air flow.
Only gas flow to the burner is modulated by the use of a gas control valve. (MAXON Series "CV" valves, "A"-, "M"- or "P"-SYNCHRO® valves, SMARTLINK®Krûmmung soll CV).

Mechanically limit the minimum gas flow to the burner to guarantee stable flame at minimum fire.

Assure that the burner is not overfired by limitation of the max. position of the gas control valve.

Changes of process air temperature, system back pressure and other parameters could cause failures or unsafe conditions if the burner control system is not designed to compensate for these. Contact MAXON for assistance.

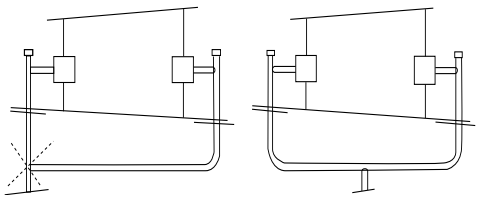
Manifolding

It is extremely important that the piping between the gas control valve (pipe-train) and the burner inlet is correctly designed to ensure equal distribution of the gas to the burner inlet(s). Particularly with burners with multiple gas inlets, special attention should be given to this. Wrong choice of pipe-diameters, incorrect construction of branch connections, wrong positions of elbow and insufficient straight pipe-length to the burner inlet are some of the factors that may influence burner performance dramatically.

Below a few general guidelines to take into consideration when designing the gas manifold (contact MAXON for any questions or advice) :

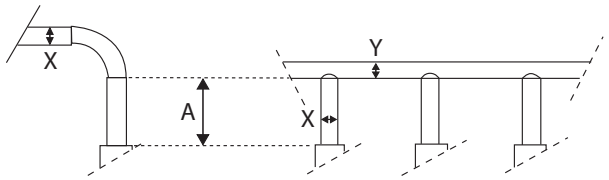
In case there are 2 burners on each side of a process air heater, the length of pipe of each side should be the same, so that the pressure in the 2 lines can equalize (see Fig. 1)

1



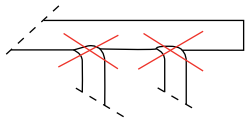
The pipe length A between any manifold offtake or elbow and burner inlet should be at least 4 pipe diameters (see Fig. 2) of the nipple used or 2 1/2 times the main manifold pipe diameter, whichever is larger. (4 X < A > 2 1/2 Y).

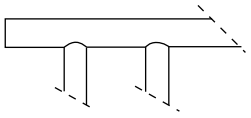
2



An offtake from a manifold should be straight and not in stream as shown in Fig. 3. Also the offtake should be welded on the manifold in such a way that the smaller pipe does not stick into the main manifold, (saddle weld) thus avoiding turbulence at the take-off point (see Fig. 4). The manifold should continue at least 2 pipe diameters beyond the last take-off (see Fig. 5).

3





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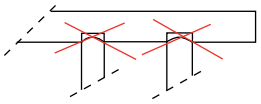

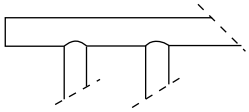

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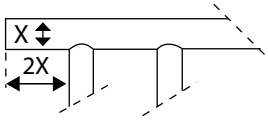


Staged combustion

Series "NP" and "RG" AIRFLO® burners combine extremely stable operation with high performance on temperature distribution and on turndown.

By the use of staged combustion, turndown may even be dramatically increased.

Contact MAXON for more information.

Fuels

Series "NP" AIRFLO® burners are suitable for natural gas, propane and propane-air mixtures. Series "RG" AIRFLO® burners are standard designed for natural gas only. Contact MAXON for other gases.

Expected Emissions

			NP-I , II [1] - natural gas [2] - fresh process air firing [3] [4]			
V_p [5]	Capacity/ft	MBtu/h	340	500	680	850
2000 fpm	CO	lbs/MBtu	0.116	0.145	0.145	0.145
	NOx	lbs/MBtu	0.116	0.136	0.160	0.145
3000 fpm	CO	lbs/MBtu	0.464	0.145	0.145	0.145
	NOx	lbs/MBtu	0.099	0.102 [6]	0.113	0.179
4000 fpm	CO	lbs/MBtu	1.100	0.580	0.290	0.260
	NOx	lbs/MBtu	00.067	0.084	0.090	0.090

[1] Typical emissions of NP-I and NP-II burners
[2] Natural gas with 1053 Btu/ft³ HHV, sg = 0.6
[3] Fresh process air 60° F – 21 % O_2
[4] Temperature increase $\Delta T < 450°$ F
[5] Air stream velocity (see page 4-21.5-11) across the burner with $A_p/A_d = 0.35$ for 4000 fpm, $A_p/A_d = 0.42$ for 3000 fpm, and $A_p/A_d = 0.62$ for 2000 fpm
[6] Optimum operation area

Emissions are, however, highly influenced by different burner and process related factors such as type of gas, burner capacity, air stream velocity, process air humidity and temperature, relation duct/profile plate area etc. We strongly advise to contact MAXON for evaluation of expected emissions on your typical application.
No guarantee of emissions is intended or implied on the above. Contact MAXON for specific evaluation of your process and application for a written guarantee of emissions.

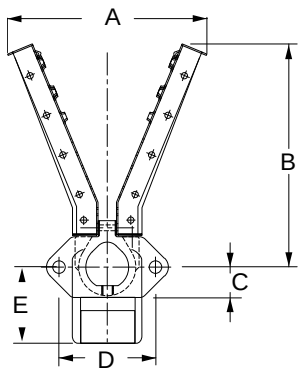
Dimensions

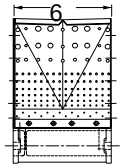
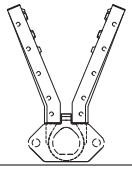
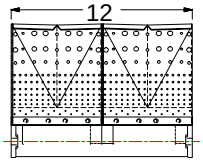
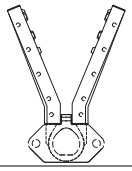
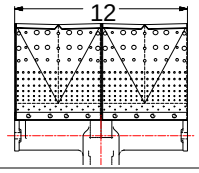
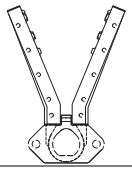
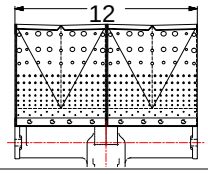
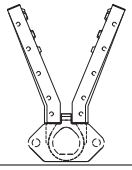
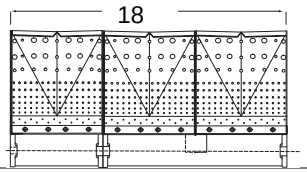
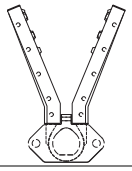
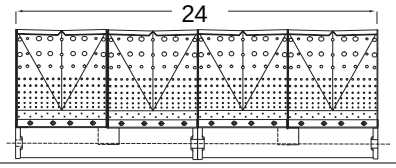
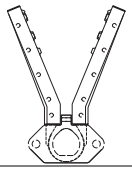
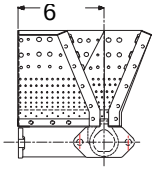
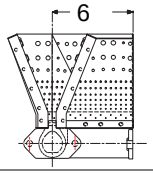
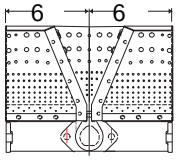
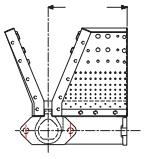
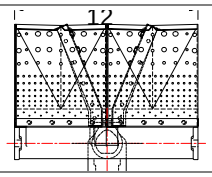
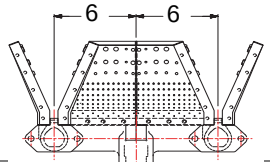
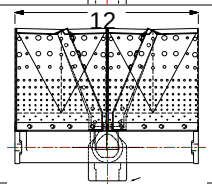
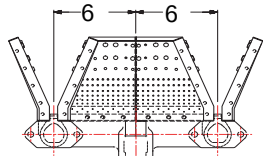
Burner sections

All "NP" AIRFLO® burners shown are available in NP-I, NP-II, and NP-III versions. Use (I, II, III) instead of asterisk (*) in burner designation when ordering.

NP-I and RG-IV AIRFLO® burners are also available with aluminum bodies. See burner sections on page 4-21.5-12 for burner displacement and weights. Dimensions are identical.

Series "NP" AIRFLO® burners differ from Series "RG" AIRFLO® burners only by length of mixing plate.

Dimensions in in. unless stated otherwise						
Burner type	A	B	C	D	E	
NP-*-	7.0	7.81	1.06	3.38	2.19	
RG-IV	8.5	10.13	1.6	3.38	2.19	

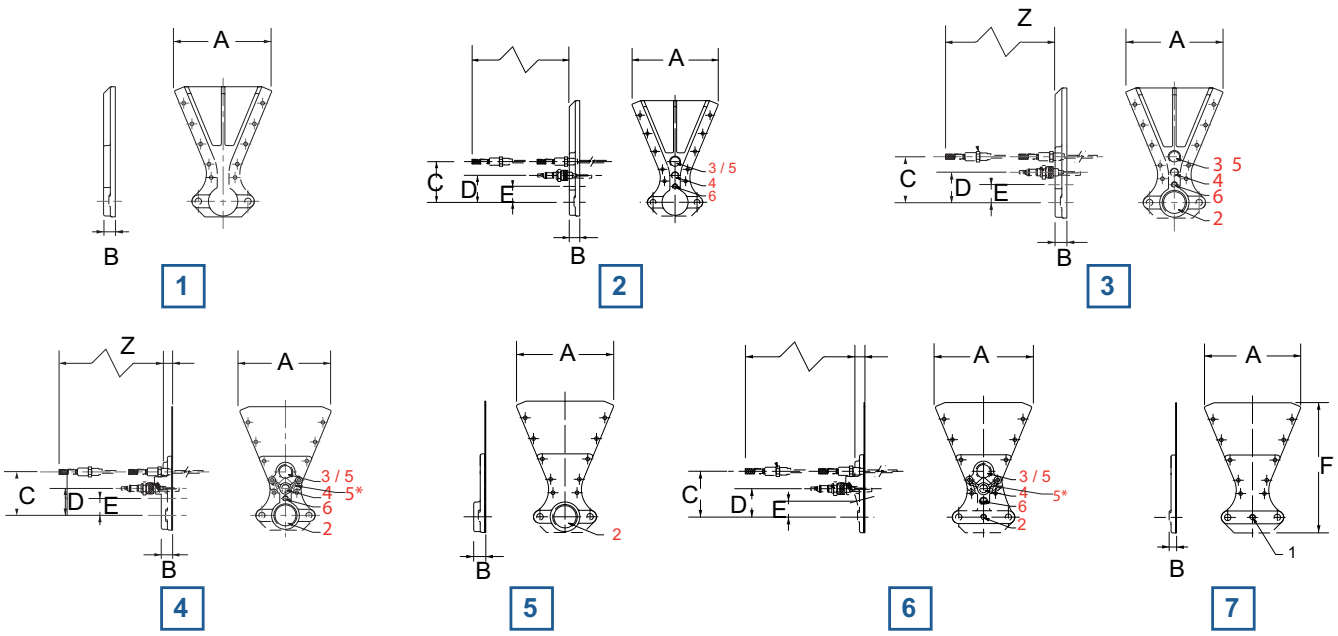
Dimensions in in. unless stated otherwise		
Designation	Dimensions	
NP-*-6 or NP-*-6P RG-IV-*-6 or RG-IV-6P		
NP-*-12 RG-IV-*-12		
NP-*-12B (ANSI) RG-IV-12B (ANSI)		
NP-*-12B (ISO) RG-IV-12B (ISO)		
NP-*-18 RG-IV-*-18		
NP-*-24 RG-IV-*-24		
NP-*-L RG-IV-*-L		
NP-*-T RG-IV-*-T		
NP-*-36B (ANSI) RG-IV-*-36B (ANSI)		
NP-*-36B (ISO) RG-IV-*-36B (ISO)		

Endplates Series "NP" AIRFLO® burners

All open ends of burner assembly must be closed off with one of these end closures or pilots.
One-piece cast end closures should not be used if temperature rise exceeds 300° F.

Designation	Sketch	Test conn. (1)	Gas inlet (2)	UV conn. (3)	SI conn. (4)	FR conn. (5)	FR alt conn. (5*)	Pilot conn. (6)
NP-EC	1	-	-	-	-	-	-	-
NP-EP	7	1/8" NPT	-	-	-	-	-	-
NP-EC-SI-3/4" UV	2	-	-	3/4" NPT	14 mm	-	-	1/8" NPT
NP-EC-SI-1/2" FR	2	-	-	-	14 mm	1/2" NPT	-	1/8" NPT
NPF-1.1/4"-FR-SI-1pc-ANSI	3	-	1.1/4" NPT	3/4" NPT	14 mm	1/4" NPT bushed	-	1/8"
NPF-1-1/4"-FR-SI-1pc-ISO	3	-	Rp 1.1/4	Rp 3/4	14 mm	Rp 1/4 bushed	-	Rp 1/8
NPF-1-1/4"-FR-SI-2pc-ANSI	4	-	1.1/4" NPT	3/4" NPT	14 mm	1/4" bushed	1/4"	1/8" NPT
NPF-1-1/4"-FR-SI-2pc-ISO	4	-	Rp 1.1/4	Rp 3/4	14 mm	Rp 1/4 bushed	1/4"	Rp 1/8
NPF-1-1/4"-EP-ANSI	5	-	1.1/4" NPT	-	-	-	-	-
NPF-1-1/4"-EP-ISO	5	-	Rp 1.1/4	-	-	-	-	-
NP-PAK w/SI	6	1/8" NPT	-	3/4" NPT	14 mm	Rp 1/4 bushed	1/4"	1/4" NPT

.



Dimensions in inches unless otherwise stated							
Sketch	A	B	C	D	E	F	Z [1]
1	6.6	0.82	-	-	-	-	-
2	6.6	0.82	3.1	2	1.25	-	9.5
3	6.6	0.82	3.1	2	1.25	-	9.5
4	6.6	0.82	3.1	1.9	1.22	-	9.5
5	6.6	-	3.1	1.9	1.1	-	9.5
6	6.6	0.82	3.1	1.9	1.22	-	9.5
7	6.6	0.43	-	-	-	9	-

[1] space for flame rod removal

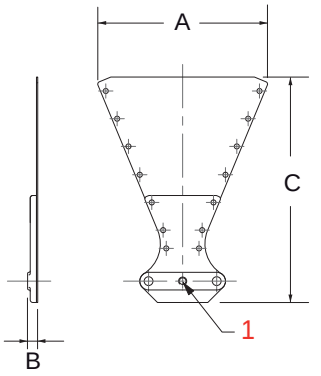
Endplates Series "RG" AIRFLO® burners

Note : all open ends of burner assembly must be closed off with one of these end closures or pilots. One-piece cast end closures should not be used if temperature rise exceeds300°F.

..

Designation	Sketch	Test conn. (1)	Gas inlet (2)	UV conn. (3)	SI conn. (4)	FR conn. (5)	FR alt conn (5*)	Pilot conn. (6)
RG-EP	1	1/8”	-	-	-	-	-	-
RGF-1.1/4"-FR-SI-1pc-ANSI	3	-	1.1/4” NPT	1/2”	14 mm	1/4” bushed	1/4”	1/8”
RGF-1-1/4"-FR-SI-1pc-ISO	3	-	Rp 1.1/4	Rp 1/2	14 mm	Rp 1/4 bushed	1/4”	Rp 1/8
RGF-1-1/4"-FR-SI-2pc-ANSI	2	-	1.1/4” NPT	1/2”	14 mm	1/4” bushed	1/4”	1/8”
RGF-1-1/4"-FR-SI-2pc-ISO	2	-	Rp 1.1/4	Rp 1/2	14 mm	Rp 1/4 bushed	1/4”	Rp 1/8
RGF-1-1/4"-EP-ANSI	4	-	1.1/4” NPT	-	-	-	-	-
RGF-1-1/4"-EP-ISO	4	-	Rp 1.1/4	-	-	-	-	-
RG-PAK pilot set w/SI	5	1/8”	-	1/2”	14 mm	Rp 1/4 bushed	1/4”	1/4”

.



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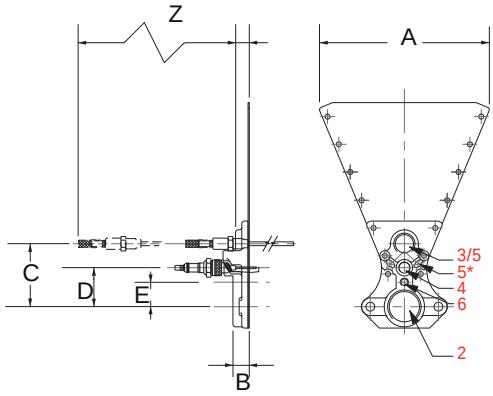

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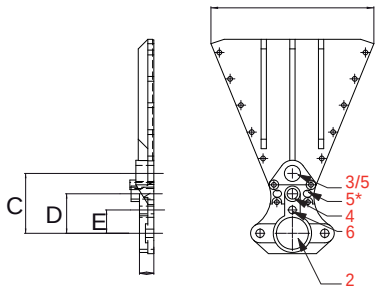

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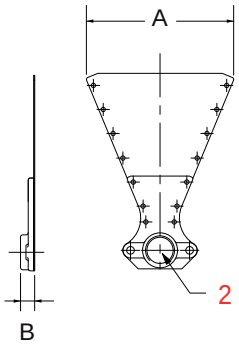

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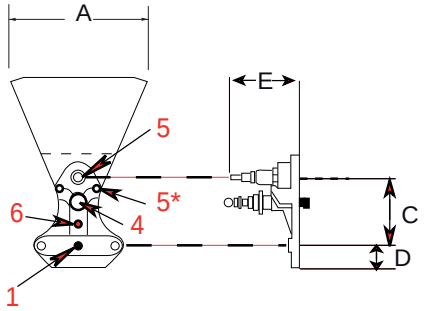


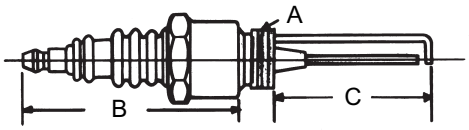
5

Dimensions in in. unless otherwise stated						
Sketch	A	B	C	D	E	Z [1]
1	8.5	0.5	-	-	-	-
2	8.5	11	3.1	1.9	1.25	9.5
3	8.5	0.75	3.1	2	1.22	
4	8.5	0.82	-	-	-	-
5	8.5	0.43	3.1	1.9	1.25	9.5

[1] space for flame rod removal

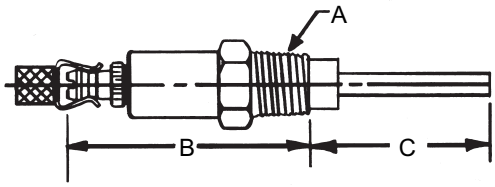
Accessories / Replacement items

14 mm spark ignitor



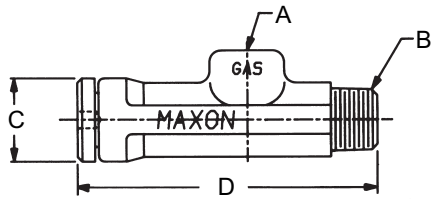
Dimensions in in. unless stated otherwise		
A	B	C
14 mm Thd.	2.03	1.5

Flame rod 1/4" NPT



Dimensions in in. unless stated otherwise		
A	B	C
1/4 Thd.	2	7.5

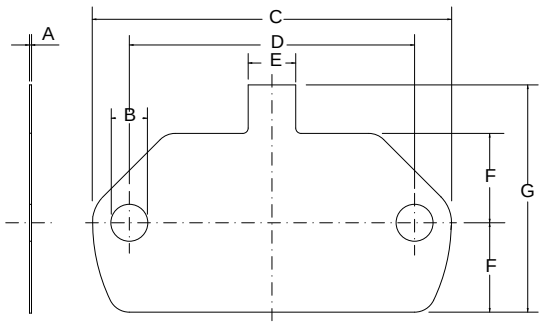
Adjustable orifice



Dimensions in in. unless stated otherwise			
A	B	C	D
3/8 NPT	1/4 NPT	0.90	3.23

Division plate

Provides isolation of burner feed where desirable.



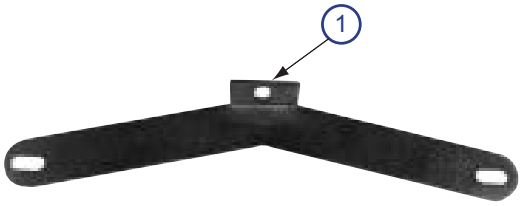
Dimensions in in. unless stated otherwise						
A	B	C	D	E	F	G
0.02	0.43	4.25	3.38	0.56	1.06	2.68

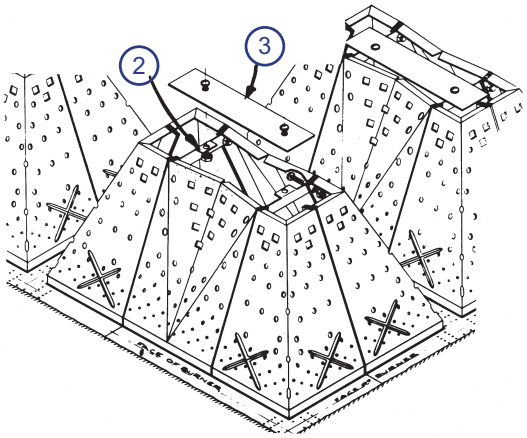
Profile plate mounting bracket

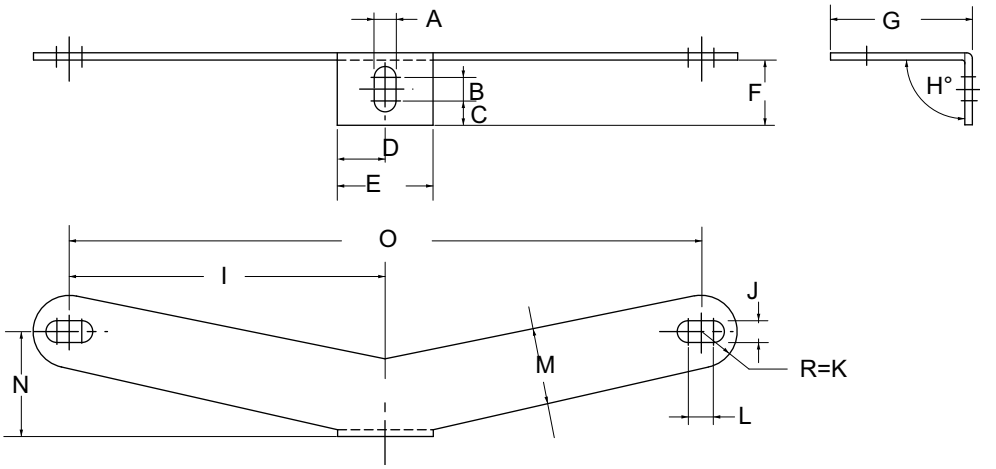
On certain high temperature rise applications of AIRFLO® line burners, it is advantageous to partially close off the square or rectangular openings within the burner assembly in addition to installing the profile plate around the outside of the burner in order to increase the velocity sufficiently.

The stainless steel profile mounting plate bracket, illustrated in the sketches below, is used to support plates for this purpose. The plate used to close off a portion of the openings will need to be sized for each individual application and therefore will be fabricated and installed by the customer.

1) Diam. = 1/4
2) Profile plate mounting bracket
3) Profile plate



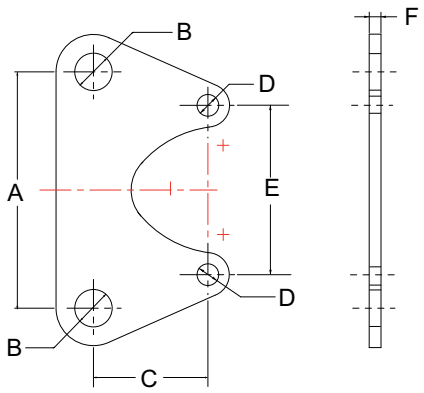




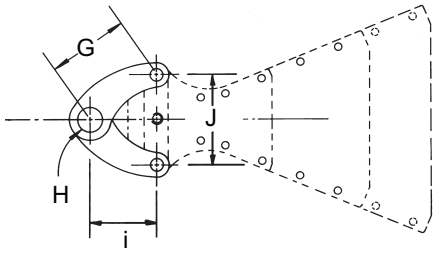
Dimensions in in. unless stated otherwise														
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
0.22	0.25	0.22	0.49	0.99	0.68	1.46	194°	3.26	0.22	0.37	0.37	0.74	1.09	6.6

Burner support brackets

1) 1-piece burner support bracket
2) 2-piece burner support bracket [1]



1

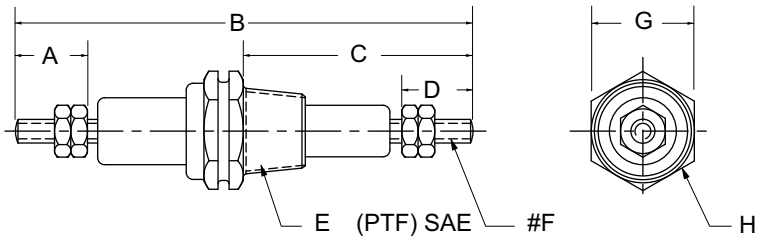


2

[1] Normally used in pairs as shown here. Mount to burner assembly at any joint.

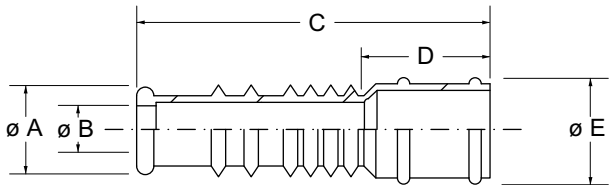
Dimensions in inches unless stated otherwise									
A	ø B	C	ø D	E	F	G	ø H	I	J
4.7	3/4 hole	2.3	0.4	3.4	0.1	3	3/4 hole	2.47	3.38

Electrical feed through



Dimensions in in. unless stated otherwise							
A	B	C	D	E	#F	G	H (wrench size)
0.50	3.6	1.8	0.50	? - 0.70	0.4 -1	0.81	0.82

Rubber cover



Dimensions in in. unless stated otherwise				
ø A	ø B	C	D	ø E
0.6	0.25	2.28	0.78	0.70

External mounting assembly

Frequently used to provide easy accessibility to spark ignitor and flame supervision components.

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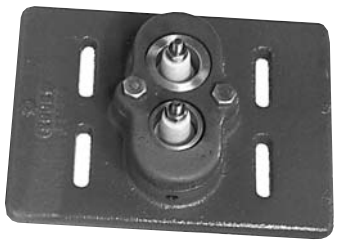
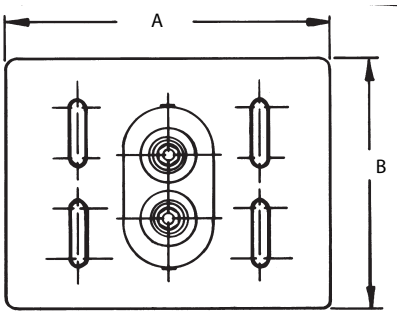
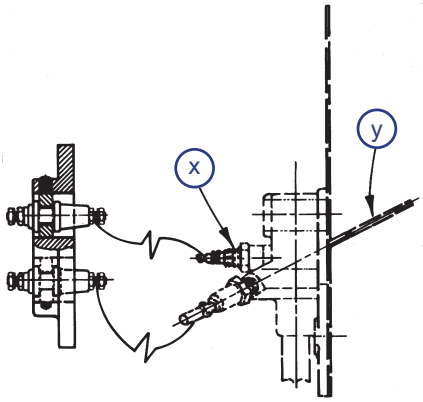
1) Includes mounting plate with 2 feed-through insulators for internal mounting of spark ignitor and flame rod
2) External mounting plate
3) Used with typical pilot
   x) spark ignitor
   y) flame rod
4) Opening required



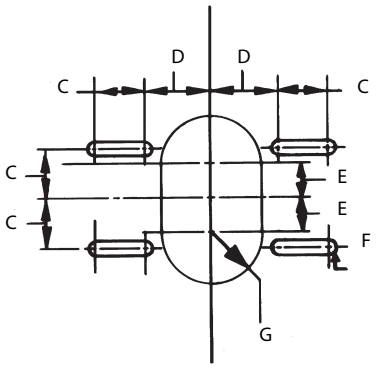
1



2



3



4

Dimensions in in. unless stated otherwise						
A	B	C	D	E	F Ø	G Ø
6.50	4.81	1.25	1.31	6.9	0.16	1.00