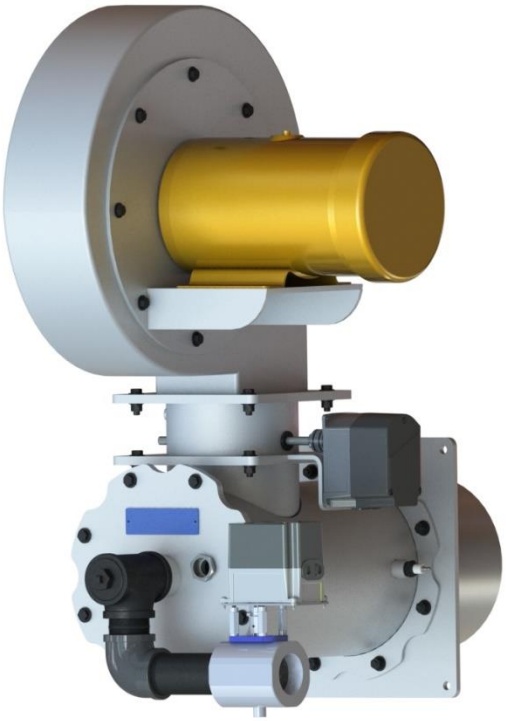
MODEL R BURNER



DESIGNED, MACHINED AND ASSEMBLED IN THE USA

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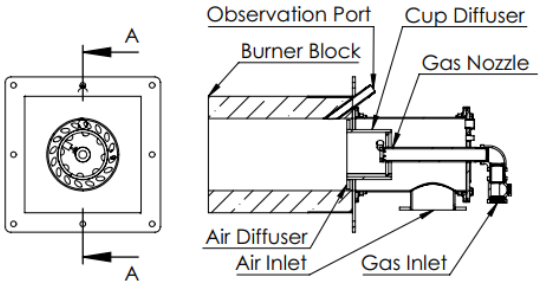
Alpha
COMBUSTION LLC

MODEL R

Alpha Combustion **Model R** burners are design for industrial heat applications where clean combustion and high burner turndown is required. Model R burners are available in a Package and as a Remote Blower (EB) configuration. The burner generates a high spin, medium velocity and high momentum flame profile.

Model R burners are force draft, nozzle mix power burners. They are design to produce a high spin combustion flame by igniting and mixing the fuel inside the cup diffuser. The burner utilizes a proprietary air diffuser that stages combustion air and splits the air flow into two zones. A portion of air is injected into a cup shape diffuser and anchors the base of a flame inside the cup. The remaining air is injected into the flame downstream of the cup. The diffuser anchors and shields the base of the flame generating unsurpassed flame stability over wide operating rage.



APPLICATIONS

- Boilers.
- Thermal Fluid Heaters.
- Paint Booths.
- Low Temp Air Heat Furnaces.
- High Temp Melting Furnaces.
- Regenerative Thermal Oxidizers (RTO).

FUEL

Natural Gas (NG)
Propane (LP)

BURNER TURNDOWN

Up to 50 to 1

EXCESS AIR

0 to 15% at high fire conditions.

BURNER MOUNTING OPTIONS

Horizontal
Vertical
Up or down firing.

PREHEAT AIR

Burner can be operated with up to 800F (426C) preheated combustion air.

Material of Construction	
Burner Housing	Carbon Steel
Gas nozzle	AISI 310 Stainless Steel
Air Diffuser (Orifice Plate)	AISI 310 Stainless Steel
Burner Block	Castable Refractory
Burner Sleeve (For Applications below 600F)	AISI 310 Stainless Steel

Burner Model Selection
R06-0010-PLN

- P/E - (Packaged/External Blower),L/H- (Low Temp/High Temp), N/L-(Fuel Type: NG, LP)
- Input size: 0010-(1MMBTU)
- Burner Frame Size

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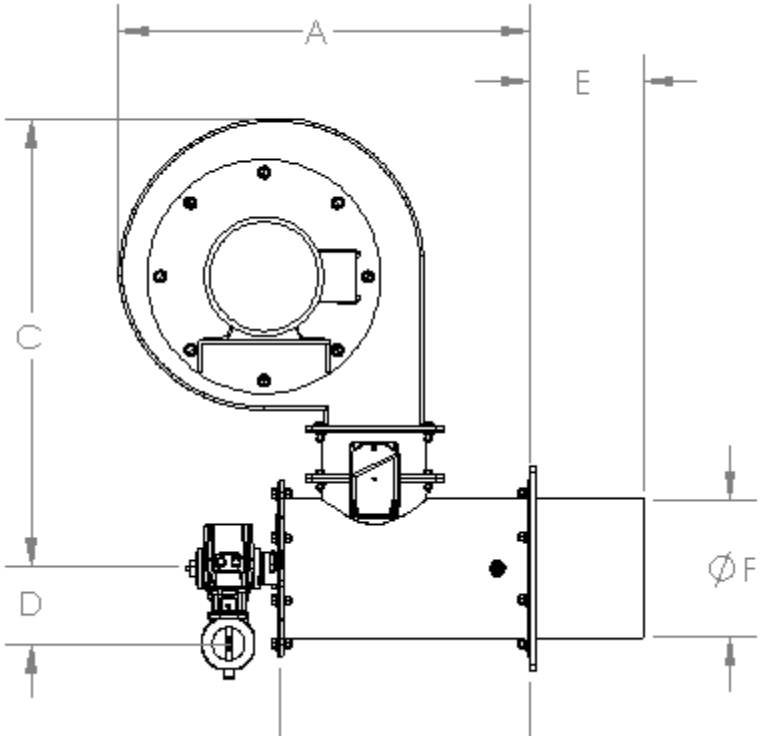
PACKAGED BLOWER, SIZE AND CONFIGURATION

Packaged Blower Burner Model Selection	Frame Size	Burner size MMBTU/hr. HHV	MW LHV	Air SCFM at 3% O2	Flame Length At Capacity inch	mm	Air Pressure inch W.C.	[mBar]	Fuel Pressure inch W.C.	[mBar]
R04-0003-PLN	4	0.25	0.07	47	12	305	2.5	6	3.0	7
R04-0005-PLN	4	0.50	0.13	94	10	254	7.5	19	8.0	20
R06-0010-PLN	6	1.00	0.26	187	16	406	5.0	12	6.0	15
R06-0015-PLN	6	1.50	0.39	281	18	457	7.5	19	8.0	20
R08-0020-PLN	8	2.00	0.52	375	22	559	6.5	16	8.0	20
R08-0030-PLN	8	3.00	0.78	562	26	660	6.5	16	8.0	20
R08-0040-PLN	8	4.00	1.04	750	36	914.4	6.5	16	8.0	20
R10-0060-PLN	10	6.00	1.57	1125	32	812.8	6.5	16	8.0	20
R10-0080-PLN	10	8.00	2.09	1500	46	1168.4	6.5	16	8.0	20
R10-0100-PLN	10	10.00	2.61	1875	52	1320.8	6.5	16	8.0	20

Gas input is based on natural gas with 1,000 Btu/cu.ft. and 0.60 gravity.
Rated capacity is show at neutral furnace pressure, burner can operate at negative furnace pressures.



Burner Frame Size	A Inch (mm)	B Inch (mm)	C Inch (mm)	D Inch (mm)	E Inch (mm)	F Inch (mm)	GAS INLET ANSI (NPT)
4	18 (457)	8.5 (216)	18 (457)	3.5 (8.9)	6 (152)	4.5 (114)	1
6	20 (508)	10.5 (267)	26 (660)	4.5 (114)	8 (203)	6.5 (165)	1.5
8	24 (610)	12.5 (318)	30 (762)	5.5 (140)	8 (203)	8.5 (216)	2.0
10	30 (762)	18.5 (470)	32 (813)	5.5 (140)	8 (203)	10 (254)	2.0

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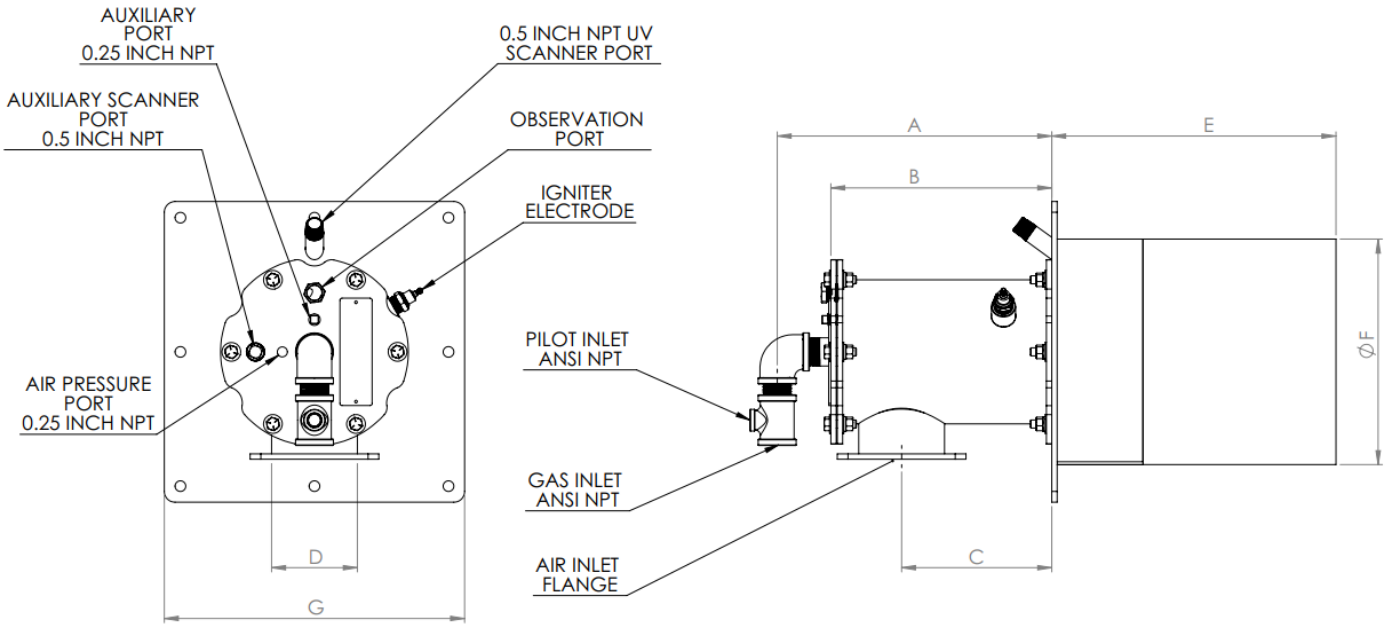
EXTERNAL BLOWER (EB), BURNER GENERAL DIMENSIONS

EB-8A Burner Model Selection	Frame Size	Burner size MMBTU/hr. HHV	Burner size MW LHV	Air SCFM	Flame Length At Capacity inch	Flame Length At Capacity mm	Air Pressure inch W.C.	Air Pressure [mBar]	Fuel Pressure inch W.C.	Fuel Pressure [mBar]
R08	8	2.00	0.52	400	20	508	3.0	7	5.1	13
		3.00	0.78	605	28	711	6.5	16	11.5	29
		4.00	1.04	740	32	813	9.0	22	20.5	51
		4.50	1.17	820	36	914.4	11.0	27	26.0	65

EB-8B Burner Model Selection	Frame Size	Burner size MMBTU/hr. HHV	Burner size MW LHV	Air SCFM	Flame Length At Capacity inch	Flame Length At Capacity mm	Air Pressure inch W.C.	Air Pressure [mBar]	Fuel Pressure inch W.C.	Fuel Pressure [mBar]
R08	8	3.00	0.78	580	20	508	3.0	7	6.5	16
		4.00	1.04	805	28	711	6.0	15	11.5	29
		5.00	1.31	970	32	813	9.0	22	18.0	45
		6.00	1.57	1100	36	914.4	11.0	27	26.0	65

EB-10 Burner Model Selection	Frame Size	Burner size MMBTU/hr. HHV	Burner size MW LHV	Air SCFM	Flame Length At Capacity inch	Flame Length At Capacity mm	Air Pressure inch W.C.	Air Pressure [mBar]	Fuel Pressure inch W.C.	Fuel Pressure [mBar]
R10	10	5.00	1.31	1048	12	305	3.0	7	2.3	6
		7.00	1.83	1350	10	254	5.0	12	4.6	11
		9.50	2.48	1690	16	406	8.0	20	8.4	21
		11.50	3.00	2000	18	457	11.0	27	12.4	31
		13.50	3.52	2400	22	559	16.0	40	17.0	42
		14.50	3.78	2550	26	660	18.0	45	19.5	49
		16.00	4.18	2820	36	914.4	22.0	55	23.9	59
		16.50	4.31	2910	32	812.8	24.0	60	25.4	63



Burner	A	B	C	D	E	F	G	E	F	G	GAS INLET
					HIGH TEMP BURNER BLOCK SIZE			LOW TEMP BURNER SLEEVE SIZE			
Frame Size	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	ANSI (NPT)
4	12 (305)	10 (254)	6 (152)	3.5 (89)	13.5 (89)	8.5 (216)	11 (280)	8 (203)	4 (102)	8.44 (214)	1
6	14 (355)	12.4 (315)	7.5 (190)	4 (102)	13.5 (89)	10 (254)	14 (356)	8 (203)	6 (152)	10.3 or 12.5 (261) or (317)	1.5
8	15 (380)	12.4 (315)	7.5 (190)	6 (152)	14.25 (114)	16 (406)	19.5 (495)	8 (203)	8 (203)	12.5 (317)	2.0
10	20 (508)	15 (381)	9.5 (241)	8 (203)	14.5 (114)	20 (508)	25 (635)	8 (203)	10 (254)	14.75 (375)	2.0

Note:

- Dimenstion E, F, and G can be changed to fit application requieremnts.
- Burner can be rotated with blower above the center-line.

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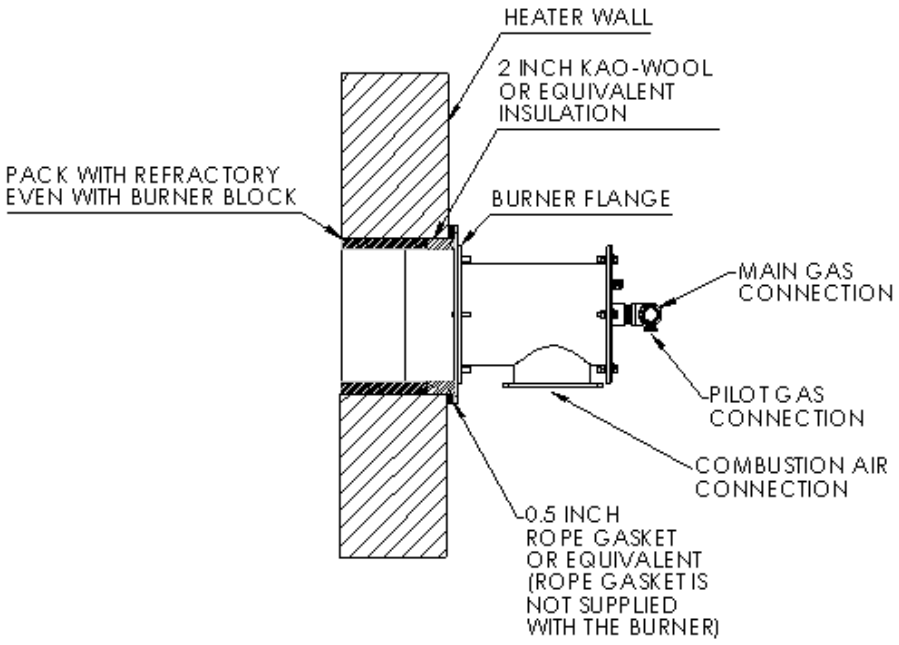
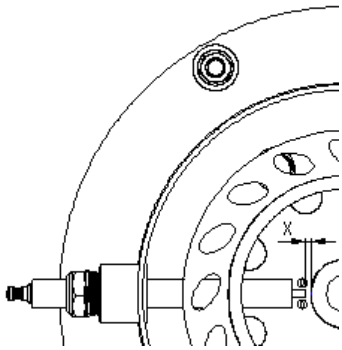
BURNER MOUNTING



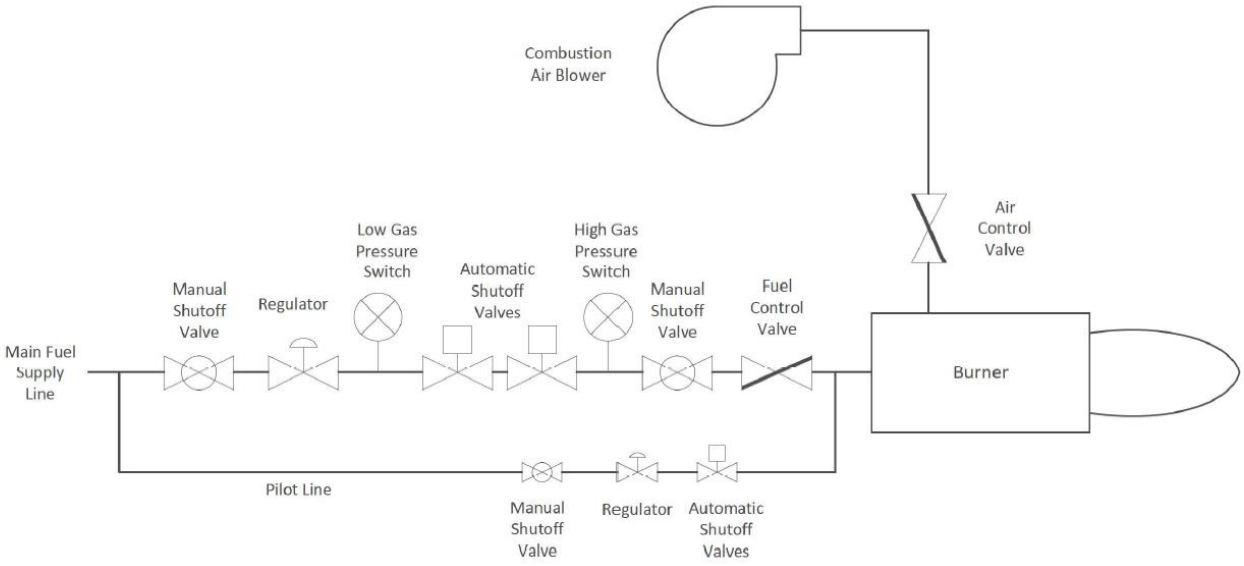
PILOT AND IGNITION SYSTEM

Model R Burners are equipped with an integrated piloted design. Pilot shall be used only for ignition of the main flame (interrupted pilot). For a direct spark burner configuration start the burner at low fire settings only. Ideal pilot gas flow rate should be between 60,000BTU/hr to 100,000BTU/hr. Use minimally 5000V ignition transformer for spark generation.
Igniter should spark to the gas tip nozzle only. Arc should create sufficient light to be visible through the observation window. To set the correct gap between the igniter and the gas nozzle (distance X) move the igniter into the burner until the igniter hits the gas nozzle. Mark the location on the ceramic and pull the igniter back 1/8 inch (3.2mm). Tighten the ceramic in place.



Set distance X to 1/8inch (3.2mm)

Typical Burner gas train



TYPICAL BURNER IGNITION SEQUENCE

- Pre-purge the system according to the applicable codes and the installation's requirements.
    - Make sure air control valve is fully open during the Pre-purge sequence.
- During the ignition sequence combustion air valve shall be in the minimum position and allow minimum combustion air flow to the burner.
- Start ignition spark (energize ignition transformer)
- Open pilot gas and continue to spark the ignitor (typically 5s).
- Stop sparking, continue to power the pilot gas valves and start flame check.
- Check pilot flame stability and pilot flame signal.
- Open main gas.
- Close the pilot gas valves.
- Release to modulation (allow modulation of the burner).

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