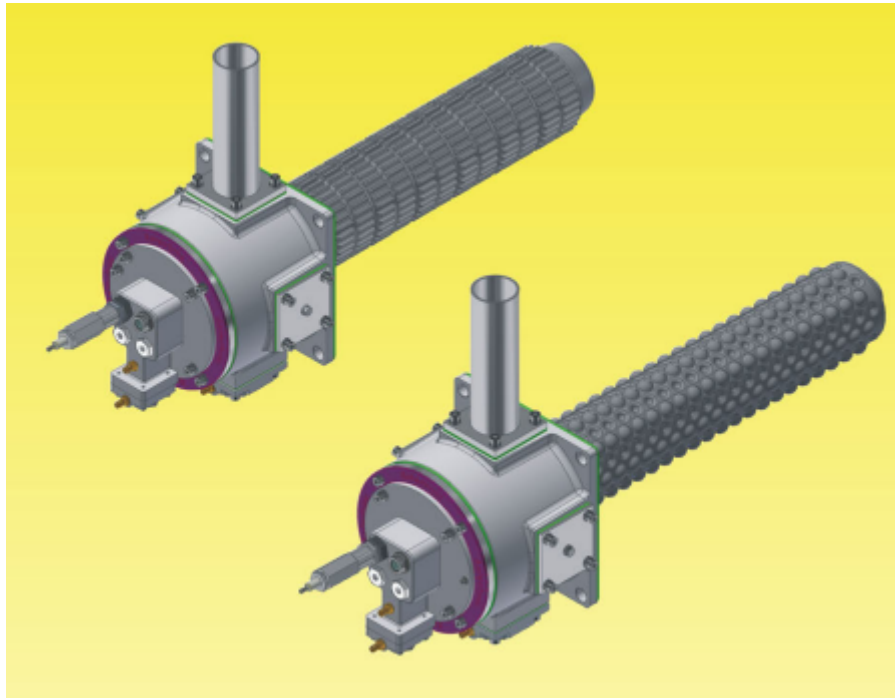




A-MAX Series Self-preheating Burner



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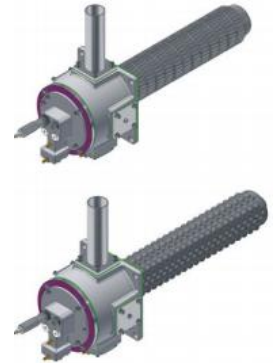
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A-MAX Series Self-preheating Burner

Features

- The burner and heat exchanger are integrated to save the cost of external accessories.
- Efficient heat transfer, lower energy consumption compared with traditional Conventional burner.
- The air staged combustion design is adopted in the burner to reduce the production of NO_x.
- The high temperature flue gas ejected at high speed will play the role of flue gas reflux and stirring in the furnace, so that the temperature distribution in the furnace is uniform.
- The smoke produced in the furnace can be discharged through the smoke exhaust system of the burner itself, and the furnace does not need to be equipped with a smoke exhaust system.
- The workpiece can be heated directly by open fire or indirectly by radiation tube, and it can be used widely.



Applications

A-MAX Series Self-preheating Burner is suitable for industrial furnaces and combustion systems in iron and steel industry and non-ferrous metal industry.

- Roller hearth furnace ● Trolley furnace ● Chamber furnace ● Normalizing furnace ● Silicon steel wire
- Baking machine ● Galvanized line ● Mesh belt furnace

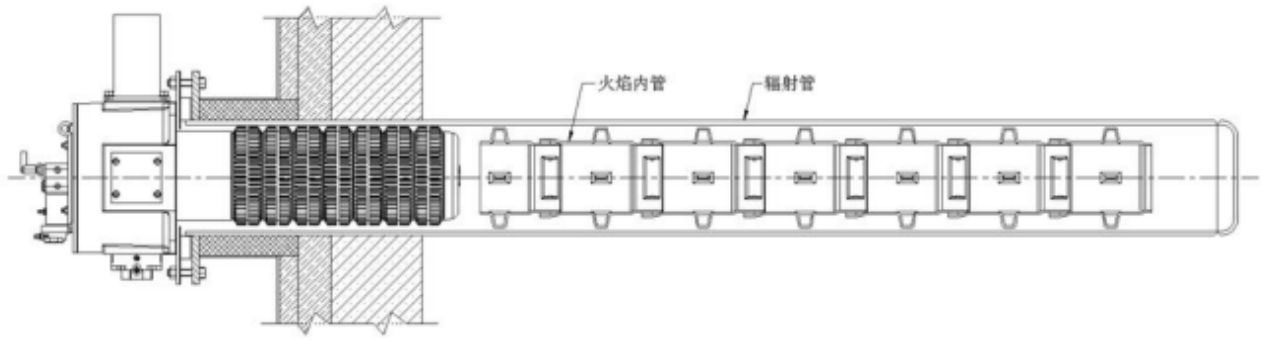
Product Description

- | | |
|---|---------------------------------|
| □ Air shell: Cast aluminum | □ Power: 15~250KW |
| □ Air inlet material: Cast aluminum | □ Air inlet pressure: 80mbar |
| □ Applied maximum furnace temperature: 1250°C | □ Gas inlet pressure: 60mbar |
| □ Heat exchanger quality: 2848W5/SUS3 10s/Silicon carbide | □ Fuel: NG /L PG/COG |
| □ Combustion head material: SUS 310S/Silicon carbide | □ Adjustment ratio: 1:3 |
| □ Fixed flange: Cast aluminum/Q235 | □ Air excess coefficient: 1 .05 |

Introductions

Indirect heating applications:

The high-speed emission of combustion gas from the combustion chamber leads to flue gas recycling, which can reduce nitrogen oxide emissions and uniform radiation tube temperature. The heat exchanger is heated when the high temperature flue gas is removed from the outer wall of the heat exchanger, and the combustion air is heated by the heat exchanger when the combustion air flows through the heat exchanger. Convective heat transfer can heat the combustion air up to 700 °C, depending on the type.

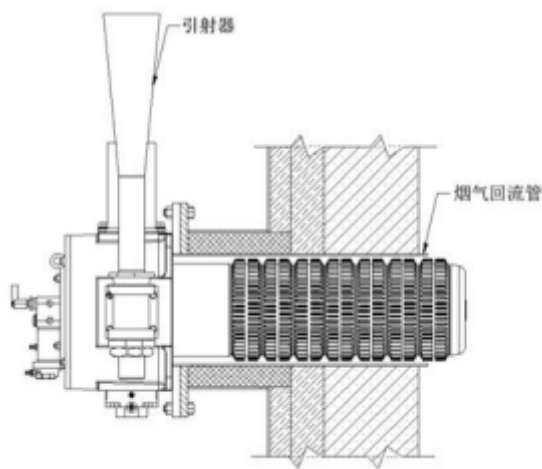


Flame inner tube, radiant tube

Indirect heating schematic

Direct heating applications

The self-preheating burner is equipped with an ejector when used for direct heating. When the flue gas is extracted from the furnace and the flue gas flows through the heat exchanger, the combustion-supporting air can be heated by the ejector. the heating effect of the air can be up to 700°C according to the furnace temperature.



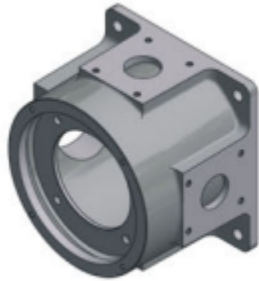
-Ejector -Flue gas reflux pipe

Direct heating schematic

Product Structure

- A-MAX Self-Preheating Burner consists of four modules: burner shell, heat exchanger, empty conduit and burner core. The modular design helps the burner adapt to various applications or integrate into the existing combustion system, and can also reduce the maintenance time, and can continue to be used after the module is directly replaced.

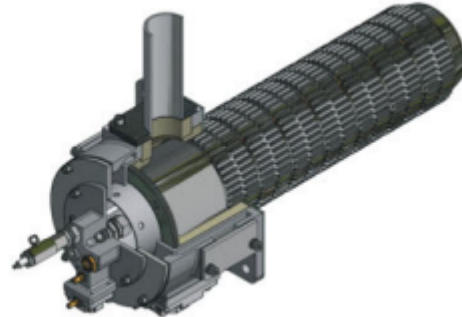
A-MAX Self-preheating Burner



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Burner shell

Burner shell can fix the plug-in of the burner. It is made of high-quality aluminum, light weight, double-layer structure, combustion-assisted air flow through the annular gap can cool the shell to reduce emissions.



Heat exchanger

Metal straight tube heat exchanger

As a low-cost alternative to cast steel heat exchangers, the heat transfer efficiency is low.

It is suitable for the application of low furnace temperature.

Cast steel heat exchanger

A large number of fins on the heat exchanger provide a large heat transfer area, which can effectively transfer heat even when the temperature of the reflux flue gas is low.

Ceramic heat exchanger

The heat exchanger is made of silicon carbide and has a special surface structure to achieve efficient heat transfer..



Air duct

The A-MAX.. C self-preheating burner has ceramic air ducts of suitable dimension, and the 0-3 models are used as combustion chambers at the same time.

The air ducts used in A-MAX ..M and A-MAX .FTR are made of heat-resistant steel.



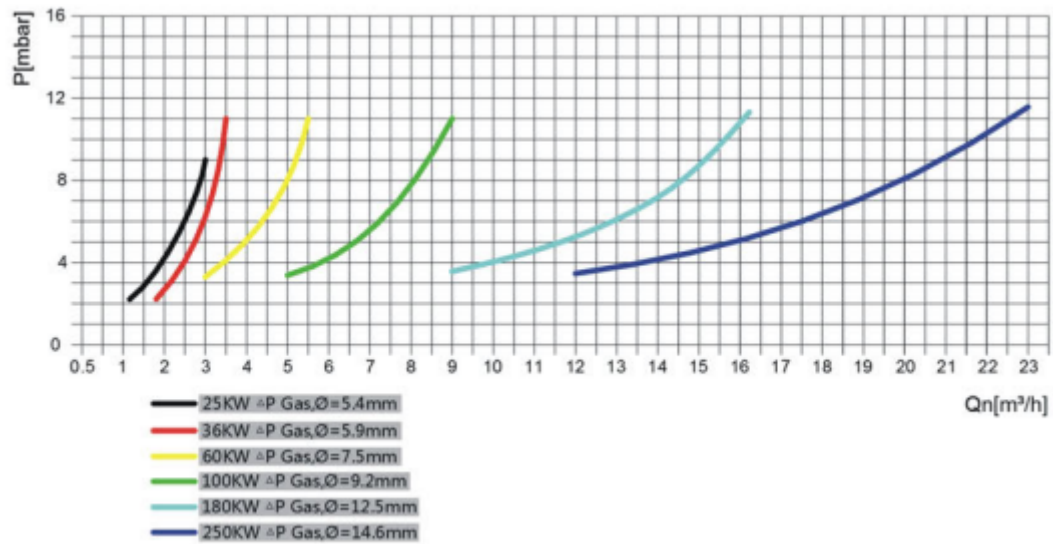
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Burner core

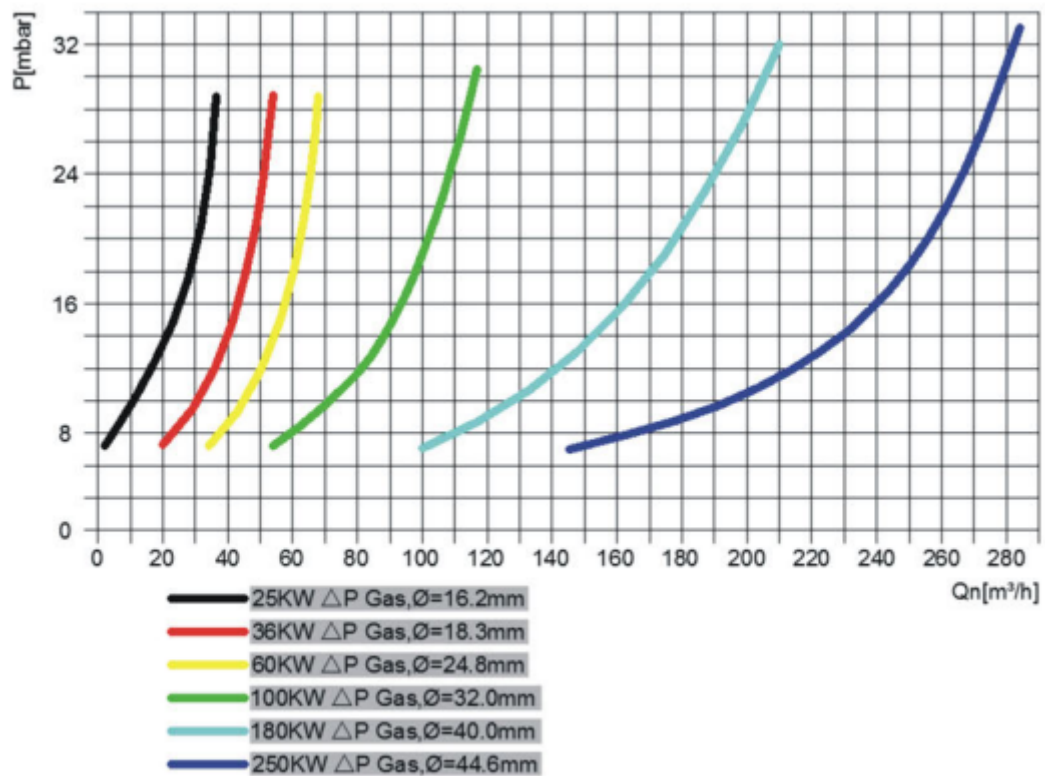
The burner core is connected to the shell by flange, and the electrode is used for ignition and detection at the same time.

The burner cores of A-MAX. M and A-MAX. FTR have combustion chambers.

Pressure-flow characteristics

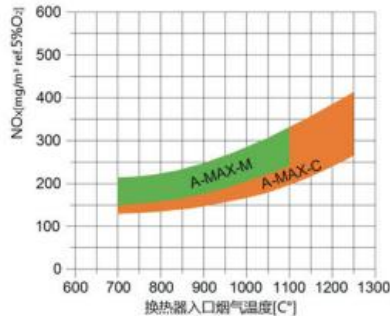


Gas Pressure Difference curve



Air pressure difference curve

A-MAX Self-preheating Burner



Flue gas temperature at the inlet of heat exchanger[°C]

Emission

CO and no values depend on furnace temperature, air preheating, burner type and burner settings (no specific standards). If you use LPG, the NO value is approximately 25% higher than NG.

CO emission depends on the operation mode of the burner and the flue gas temperature at the inlet of the heat exchanger. For continuous operation, the flue gas temperature upstream of the regenerator is about 600°C or above, lower than 10 ppm. For intermittent operation, the flue gas temperature upstream of the regenerator is about 750°C or above, lower than 10 ppm.

Type selection

Burners

Self-preheating burner has three kinds of heat exchangers: ceramic heat exchanger, cast steel heat exchanger and metal straight tube heat exchanger.

Depends on the heating type and furnace temperature.

Burner	Heating type	
	Direct heating/°C	Indirect heating/°C
A-MAX ..C	1250	1200
A-MAX..M	1100	1050
A-MAX..FTR	1000	950

Burner dimension

Select the Dimensions of the burner according to the power

Dimension	Heat exchanger			Maximum Output Power [kW]
	Ceramics	Cast steel	Straight pipe	
	C	M	FTR	
A-MAX 0	●	-	-	25
A-MAX 1	●	●	●	36
A-MAX2	●	●	●	60
A-MAX3	●	●	●	100
A-MAX4	●	●	●	180
A-MAX5	●	●	●	250

●=Optional.

The above power is suitable for natural gas and liquefied gas, and the maximum output power reaches 80% of the above table when using coke oven gas as fuel. The following information is required when selecting your own preheating burner:

- Heating type
- Furnace temperature
- Required output power
- Fuel type
- Wall thickness of furnace body

A-MAX Self-preheating Burner

Gas type

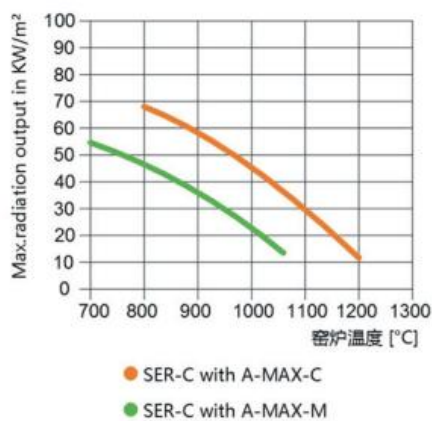
Gas type	Abbreviations	Calorific value [kWh/m ³]	Density [kg/m ³]
Natural gas	B	8-12	0.7-0.9
Liquefied gas	G	25-35	2-2.7
Coke oven gas	D	4-6	0.4-0.6

Burner length

The G below is the suitable length of the burner. The distance between the burner and the inner wall of the furnace lining is $S1=0\pm20\text{mm}$

Specific Model

Model	Specifications	Heat exchanger style	Optional length	Rated Power(kw)
A-MAX	0	C	545/595/645/695	25
A-MAX	1	M/C/FTR	545/595/645/695	36
A-MAX	2	M/C/FTR	545/595/645/695	60
A-MAX	3	M/C/FTR	545/595/645/695	100
A-MAX	4	M/C/FTR	545/595/645/695	180
A-MAX	5	M/C/FTR	545/595/645/695	250
Example (A-MAX-3M-545)				



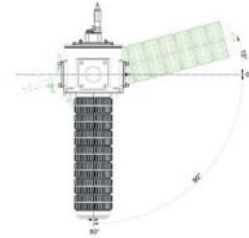
Kiln temperature [°C]

When designing the heating system of the radiation tube, it is noted that the energy is transmitted to the furnace through the surface of the radiation tube, so the temperature resistance of the material of the radiation tube and flame tube should not exceed the maximum flue gas temperature at the entrance of the burner heat exchanger. The useful radiation output in the furnace depends on the furnace temperature, the surface of the radiation tube and the material used in the radiation tube and burner. The burner capacity also depends on the efficiency of the burner. Depending on the system configuration, it may be necessary to reduce the energy supply according to the furnace temperature, for example, by reducing the load cycle. According to the capacity of the burner and the dimensions of the radiation tube, the opening time of the burner must be limited to prevent thermal overload of the radiation tube and burner.

A-MAX Self-preheating Burner

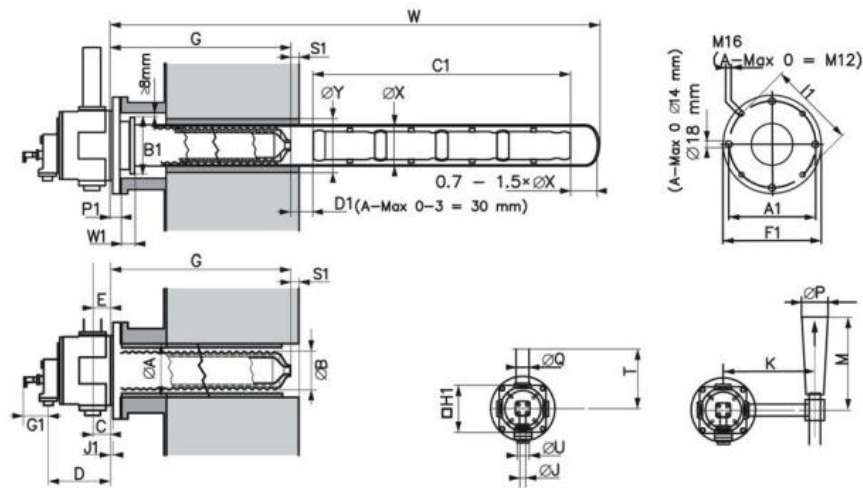
Installation

The MAX self-preheating burner can be installed between 0 °(horizontal) and 90 °(vertical from top to bottom) as required, and the burner can be tilted horizontally up to a maximum angle of 15 °, as shown in the figure.



Installation Dimensions of Burner

Dimensions of A-MAX-C Self-Preheating Burner



Product Type	[mm]											
	φA	φB	C	D	E	G	φJ	K	M	φP	φQ	T
A-Max 0C	142	86	60	182	60	545-695	R1/2"	269	625	43	DN 32	297
A-Max 1C	180	123	60	212	60	545-695	R1/2"	269	625	43	DN 50	331
A-Max 2C	200	142	60	212	60	545-695	R1/2"	283	625	73	DN50	331
A-Max 3C	236	178	83	262	83	545-695	R1/2"	292	820	79	DN 65	353
A-Max 4C	300	240	95	298	95	545	R3/4"	353	820	98	DN 100	399
A-Max 5C	336	273	95	298	95	695	R1"	345	920	98	DN 100	399

Product Type			[mm]											Weight	
	φU	W	φX	φY	A1	ΦB1	C1	D1	Φf1	G1	H1	φI1	si	kg	
A-Max 0C	R3/4”	1000-2600	100	140	-	160	C1=nx250+50	30	-	90	182	210	S1=0±20	12	
A-Max 1C	R1"		142	182	280	200		30	330	90	236	290		20	
A-Max 2C	R1/2”		162	202	280	220		30	330	90	236	290		25	
A-Max 3C	R2"		202	242	325	260		30	385	90	280	330		33	
A-Max 4C	R2 1/2”		-	-	420	-		-	480	110	372	445		48	
A-Max 5C	R2 1/2”		-	-	420	-		-	480	110	372	445		57	