



PROFIRE® SBR-5

ULTRA LOW-NO_x BURNER

**Lowest Emissions with Highest Efficiency
at 5 PPM NO_x with 3% O₂**

Advanced Technology

Endless Possibilities

The Cleaver-Brooks ProFire SBR-5 series is designed for a variety of boiler types such as firetubes and watertubes. Capable of less than 5 ppm NO_x emissions with FGR, the ProFire SBR-5 series features a unique firing head design to achieve controlled combustion leading to ultra-low emissions with 3% O₂. Advanced technology allows the SBR series to offer ultra-low-NO_x, low CO emissions and up to 6:1 turndown on natural gas.

Controls Help Make the Difference

The Hawk is a complete boiler room solution. It not only integrates the boiler/burner, heat recovery and feedwater systems, but provides complete boiler room data to remote communication systems such as building automation systems, SCADA packages and other remote monitoring systems.

All Hawk packages come standard with:

- Parallel positioning
- Stack temperature with high cutoff set point
- Thermal shock protection
- Dual set points
- Touch screen HMI
- PLC-based combustion control
- Alarm and historical monitoring



Hawk Controls Offer Remote IoT Monitoring

Prometha™ Connected Boiler Solutions provides actionable insights into your boiler operation, and helps you:

- Access boiler insights from anywhere, 24/7/365
- Increase operational efficiency
- Lower total cost of ownership
- Prevent and reduce downtime

promētha™





SBR-5 Burner Explained

The ProFire SBR-5 series burner, capable of less than 5 ppm NO_x emissions with FGR, offers: natural gas fuel option from 10.5 to 42 MMBTU/hr. This Ultra-Low-NO_x burner is also capable of firing ASTM 2D-S15 (ultra low sulfur diesel) as a backup fuel at NO_x levels below 40 ppm. The design is ideal for use with applications where low emissions are required. The SBR 5 ppm burner delivers the reliability to meet today's most stringent NO_x emission levels.

ProFire® SBR-5



Ultra-Low-NO_x Emissions as low as 5 ppm achieved with FGR

3~4% O₂ across a wide load range

Maximum Efficiency provided by standardized parallel positioning

Uniform Flame for equal heat transfer allowed by premix fuel

Easy Access air housing for internal components

Silent operation with an advanced combustion air fan wheel; Less horsepower and less noise

Induced FGR modulating valve

Ultra-Low-NO_x/CO achieved without a fragile surface combustion burner head, making it safer and more reliable, and requires less maintenance

Integrated Controls with remote IoT monitoring capabilities



Capacities and Ratings

The SBR 5 ppm burner is designed to burn natural gas with ASTM 2D-S15 (ultra low sulfur diesel) as backup fuel in a firetube boiler.

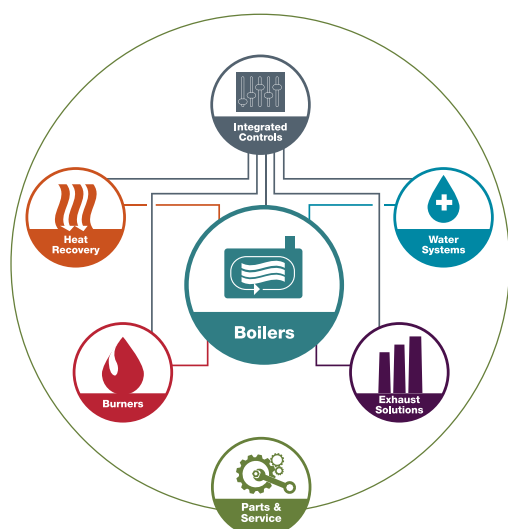
Burner Size (BHP)	250	300	350	400	500	600	700	800	900	1000
Heat Input (MMBTU/h)	10.5	12.6	14.7	16.8	21	25.2	29.4	33.6	37.8	42
Recommended Furnace Diameter (inch)	34	34	37	37	45	45	50	50	52	52
Recommended Furnace Length (inch)	128	134	135	143	146	152	160	160	200	200
Recommended Furnace Pressure @ 15% Excess Air and NO FGR (inwc)	2.7	3.7	3.7	3.6	4.3	5.6	5.4	7	3.5	4.1
Elevation (ft)	0~1500	0~1500	0~1500	0~1500	0~1500	0~1500	0~1500	0~1500	0~1500	0~1500
Gas Train Inlet Pressure (psig)	5	5	5	5	5	5	5	5	5	5
Oil and Atomizing Air Pressure at Burner Inlet (psig)	100	100	100	100	100	100	100	100	100	100
Fan Motor HP	20	25	30	40	40	TBD	TBD	TBD	TBD	TBD
Operating Excess O ₂ (% , dry)	3.0~4.0	3.0~4.0	3.0~4.0	3.0~4.0	3.0~4.0	3.0~4.0	3.0~4.0	3.0~4.0	3.0~4.0	3.0~4.0
FGR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NO _x (ppm, @3% O ₂) burning Natural Gas	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
NO _x (ppm, @3% O ₂) burning ASTM 2D-S15	≤ 40	≤ 40	≤ 40	≤ 40	≤ 40	≤ 40	≤ 40	≤ 40	≤ 40	≤ 40
CO (ppm, @3% O ₂) burning Natural Gas and ASTM 2D-S15	≤ 100	≤ 100	≤ 100	≤ 100	≤ 100	≤ 100	≤ 100	≤ 100	≤ 100	≤ 100
Turndown burning Natural Gas*	Up to 6:1	Up to 6:1	Up to 6:1	Up to 6:1	Up to 6:1	Up to 6:1	Up to 6:1	Up to 6:1	Up to 6:1	Up to 6:1
Turndown burning ASTM 2D-S15	Up to 4:1	Up to 4:1	Up to 4:1	Up to 4:1	Up to 4:1	Up to 4:1	Up to 4:1	Up to 4:1	Up to 4:1	Up to 4:1
Smoke # burning ASTM 2D-S15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1

Consult manufacturer on availability of burner sizes.

The information in this document is work in progress and subject to change without notice.

The recommended furnace conditions are based on CBEX firetube boilers. Operating conditions and performance criteria may be different if furnace diameter and length are smaller than the recommended values.

*Consult manufacturer with specific conditions to verify applicability.



Total integration doesn't stop with the burner.

Only Cleaver-Brooks offers complete boiler systems, from fuel inlet to stack outlet, that are completely designed, engineered, manufactured, integrated, and serviced by one company.

Integration starts with the burners, and Cleaver-Brooks has been perfecting this integral element of the boiler system through innovation and expert engineering for more than 90 years.



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