

# PACKAGED BURNER SYSTEMS

## Product Catalog



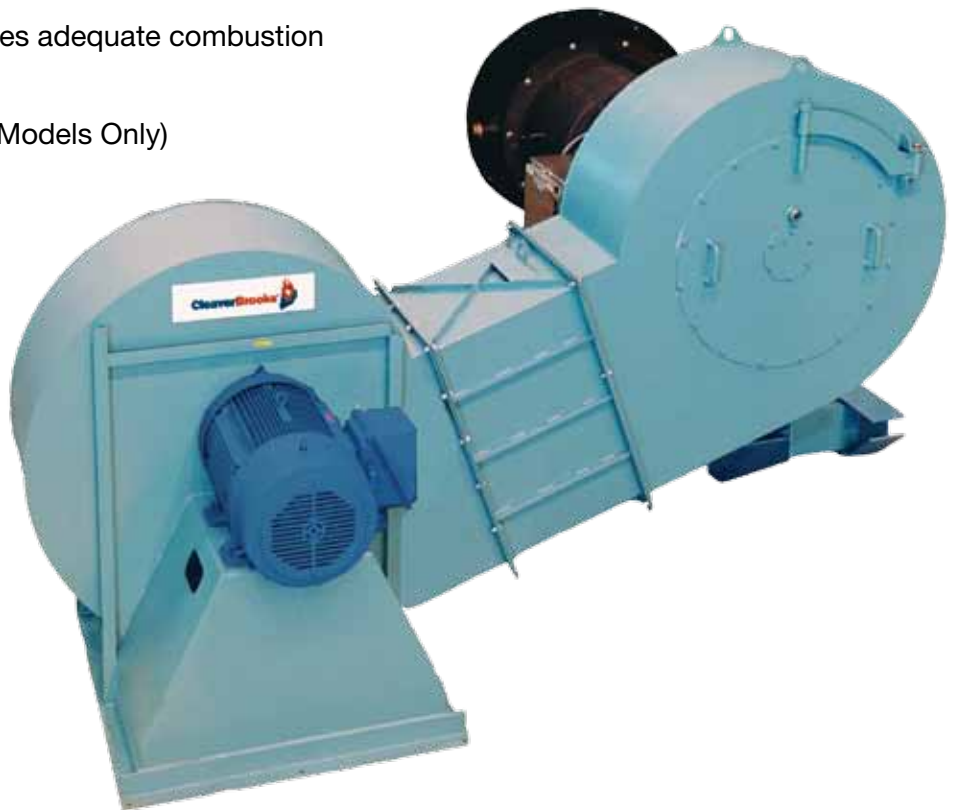
**FORCED DRAFT DUAL  
FUEL BURNERS**

# **XL / LNXL / NTXL SERIES - FLOOR SUPPORTED**

Suitable for large firetube and watertube applications; the XL series features a unique and precise air metering system which permits accurate air-to-fuel settings for maximum combustion efficiency. The XL Floor Supported series offers natural gas, propane gas, propane air mix (NT Only), air atomized #2 oil and combination gas/oil fuel options at capacities from 67,200,000 to 92,400,000 Btu/hour. Through the use of advanced technology, the XL series offers high turndown up to 10:1 on natural gas and up to 8:1 on light oil. The NTXL offers turndown up to 6:1.

## **SERIES FEATURES:**

- 1800 RPM combustion air fan (Motor HP based on NOx and capacity requirement)
- Parallel positioning is standard for optimal control throughout the firing range
- Low NOx with FGR capabilities (LNXL / NTXL Models Only)
- Gas manifold on oil burners standard for easy upgrade to combination units (XL / LNXL Models Only)
- Hinged rear door and burner access panels for easy access and maintenance
- Air atomizing with steam atomization optional
- Backward-curved impeller provides adequate combustion air for various furnace pressures
- High turndown ratios (XL / LNXL Models Only)
- NT Technology for Ultra Low NOx applications



## **CAPACITIES & SPECIFICATIONS:**

	<b>STANDARD MODELS</b>	<b>LOW NOx MODELS</b>	<b>ULTRA LOW NOx MODELS</b>
Fuels:	Gas, #2 Oil, or Comb.	Gas or Comb.	Gas or Comb.
Gas Input (Btu/hr):	67,200,000 to 92,400,000	67,200,000 to 92,400,000	67,200,000 to 92,400,000
Oil Input (US gph):	480 to 660	480 to 660	480 to 660
Thermal Output:	1,600 to 2,200	1,600 to 2,200	1,600 to 2,200
Shipping Weight (lbs):	12,000	12,000	13,000

*Note: The Low NOx designation only applies to Natural Gas.*

# **XL / LNXL / NTXL SERIES - FAN OVER**

Suitable for large firetube and watertube applications; the XL series features a unique and precise air metering system which permits accurate air-to-fuel settings for maximum combustion efficiency. The XL Fan Over series offers natural gas, propane gas, propane air mix (NT Only), air atomized #2 oil and combination gas/oil fuel options at capacities from 37,800,000 to 63,000,000 Btu/hour. Through the use of advanced technology, the XL series offers high turndown up to 10:1 on natural gas and up to 8:1 on light oil. The NTXL offers turndown up to 6:1.

## **SERIES FEATURES:**

- 3600 RPM combustion air fan (Motor HP based on NOx and capacity requirement)
- Parallel positioning is standard for optimal control through out the firing range
- Low NOx with FGR capabilities (LNXL / NTXL Models Only)
- Gas manifold on oil burners standard for easy upgrade to combination units (XL / LNXL Models Only)
- Hinged rear door and side access covers for easy access and maintenance
- Backward-curved impeller provides adequate combustion air for various furnace pressures
- Air atomizing with steam atomization optional
- High turndown ratios (XL / LNXL Models Only)
- NT Technology for Ultra Low NOx Applications



## **CAPACITIES & SPECIFICATIONS:**

	<b>STANDARD MODELS</b>	<b>LOW NOx MODELS</b>	<b>ULTRA LOW NOx MODELS</b>
Fuels:	Gas, #2 Oil, or Comb.	Gas or Comb.	Gas or Comb.
Gas Input (Btu/hr):	37,800,000 to 63,000,000	37,800,000 to 63,000,000	67,200,000 to 92,400,000
Oil Input (US gph):	270 to 450	270 to 450	270 to 450
Thermal Output:	900 to 1,500	900 to 1,500	900 to 1,500
Shipping Weight (lbs):	8,000 to 10,000	9,000 to 12,000	10,000 to 13,000

*Note: The Low NOx designation only applies to Natural Gas.*

# S1 / LNS1 / NTS1 - SERIES

S1 series burners are suitable for scotch marine and watertube boiler applications. The standard S1 series offers natural gas, propane gas, air atomized #2-6 oil and combination gas/oil fuel options at capacities from 46,200,000 to 63,000,000 Btu/hour. The LNS1 series offers natural gas, propane gas, air atomized #2 and #6 oil, and combination gas/oil fuel options at capacities from 42,00,000 to 58,800,000 Btu/hour. The NTS1 series offers natural gas, propane air mix, air atomized #2 oil, and combination gas/oil fuel capacities from 33,600,000 to 63,000,000 Btu/hour. A true forced draft design provides the ability to deliver rated capacities against a wide range of furnace pressures.

## SERIES FEATURES:

- Gas, light and heavy oil fuels
- Cam trim with 14-point adjustment range for consistent air/fuel ratios (S1 / LNS1 Models Only)
- Parallel positioning available for optimal control throughout the firing range (Standard on NTS1 Models Only)
- Top or bottom FGR connection options (S1 / LNS1 Models Only)
- Gas manifold on oil burners standard for easy upgrade to combination units (S1 / LNS1 Models Only)
- Hinged combustion head / burner housing for easy access and maintenance
- Backward-curved impeller provides adequate combustion air for various furnace pressures
- Air atomizing with steam atomization optional
- High turndown ratios (S1 / LNS1 Models Only)
- NT Technology for Ultra Low NOx Applications



## CAPACITIES & SPECIFICATIONS:

	STANDARD MODELS	LOW NO <sub>x</sub> MODELS	ULTRA LOW NO <sub>x</sub> MODELS
Fuels:	Gas, #2-6 Oil, or Comb.	Gas, #2,#6 Oil, or Comb.	Gas, #2, or Comb.
Gas Input (Btu/hr):	46,200,000 to 63,000,000	42,000,000 to 63,000,000	33,600,000 to 63,000,000
Oil Input (US gph):	330 to 450	300 to 450	240 to 450
Thermal Output:	1,100 to 1,500	1,000 to 1,500	800 to 1,500
Shipping Weight (lbs):	6,000	6,500	6,500

Note: The Low NO<sub>x</sub> designation only applies to Natural Gas.

# **E / LNE - SERIES**

Suitable for firetube, firebox and watertube boilers; the E series features a low pressure drop head design and low motor horsepower requirements for increased efficiencies. The E series offers natural gas, propane gas, air atomized #2 oil and combination gas/oil fuel options at capacities from 8,400,000 to 42,000,000 Btu/hour. Incorporating advanced technology, the E series offers low NOx emissions, and up to 10:1 turndown on natural gas and 8:1 turndown on light oil.

## **SERIES FEATURES:**

- Gas and light oil fuels
- Standard emissions & Low NOx capabilities
- Up to 10:1 turndown on natural gas, 8:1 turndown on light oil
- Advanced control options include Parallel Positioning, O<sub>2</sub> trim, variable speed drives and more
- Low pressure drop head design
- Low motor horsepower for increased energy efficiency
- Hinged combustion head for easy access and maintenance
- UL & cUL listed



## **CAPACITIES & SPECIFICATIONS:**

	<b>STANDARD MODELS</b>	<b>LOW NO<sub>x</sub> MODELS</b>
Fuels:	Gas, #2 Oil, or Comb.	Gas, #2 Oil, or Comb.
Gas Input (Btu/hr):	8,400,000 to 42,000,000	8,400,000 to 42,000,000
Oil Input (US gph):	60 to 300	50 to 300
Thermal Output:	200 to 1,000	200 to 1,000
Shipping Weight (lbs):	1,500 to 5,000	2,000 to 5,500

*Note: The Low NO<sub>x</sub> designation only applies to Natural Gas.*

# D / LND / NTD - SERIES

D series burners are performance proven in boiler, heater, furnace, kiln and dryer applications worldwide. The standard D series offers natural gas, propane gas, air atomized #2-6 oil and combination gas/oil fuel options at capacities from 4,200,000 to 42,000,000 Btu/hour. The low NOx D series offers natural gas, propane gas, air atomized #2 and #6 oil, and combination gas/oil fuel options at capacities from 2,511,000 to 37,800,000 Btu/hour. The NTD series offers natural gas, propane air mix, air atomized #2 oil, and combination gas/oil fuel options at capacities from 12,600,000 to 33,600,000. A true forced draft design provides the ability to deliver rated capacities against a wide range of furnace pressures.

## SERIES FEATURES:

- Low-pressure air atomizing system on oil with rotary vane compressor (D / LND Models Only)
- Cam trim with 14-point adjustment range for consistent air/fuel ratios (D / LND Models Only)
- Parallel positioning available for optimal control throughout the firing range (Standard on NTD Models Only)
- Piston-type positive displacement oil metering system (D / LND Models Only)
- Gas manifold on oil burners standard for easy upgrade to combination units (D / LND Models Only)
- Hinged combustion head for easy access and maintenance
- Backward-curved impeller provides adequate combustion air for various furnace pressures
- Nozzle line electric heater standard on medium to heavy oil burners
- FGR modulating valve (LND Models Only)
- UL & cUL listed (D / LND Models Only)



## CAPACITIES & SPECIFICATIONS:

	STANDARD MODELS	LOW NOx MODELS	ULTRA LOW NOx MODELS
Fuels:	Gas, #2-6 Oil, or Comb.	Gas, #2,#6 Oil, or Comb.	Gas, #2 Oil, or Comb.
Gas Input (Btu/hr):	4,200,000 to 42,000,000	2,511,000 to 37,800,000	12,600,000 to 33,600,000
Oil Input (US gph):	30 to 300	18 to 270	90 to 240
Thermal Output:	100 to 1,000	80 to 900	300 to 800
Shipping Weight (lbs):	1,000 to 4,200	1,000 to 5,000	3,000 to 5,000

Note: The Low NOx designation only applies to Natural Gas.

# **M - SERIES**

M series burners are designed for a wide range of applications such as boilers, heaters, furnaces, kilns and dryers. The M series offers natural gas, propane gas, air atomized #2-6 oil and combination gas/oil fuel options at capacities from 1,400,000 to 10,500,000 Btu/hour. Full modulation and cam trim adjustment provides optimum performance to meet load demand.

## **SERIES FEATURES:**

- Gas, light and heavy oil fuels
- Low-pressure air atomizing system on oil with rotary vane compressor
- Piston-type positive displacement oil metering pump
- Cam trim with 14-point adjustment range for consistent air/fuel ratios on models M34-63
- Nozzle line electric heater standard on medium to heavy oil burners
- Gas manifold on oil burners standard for easy upgrade to combination units
- Hinged combustion head for easy access and maintenance
- Backward-curved impeller provides adequate combustion air for various furnace pressures
- Refractory combustion cone
- Full modulation
- UL & cUL listed



## **CAPACITIES & SPECIFICATIONS:**

Fuels:	Gas, #2 Oil, or Comb.
Gas Input (Btu/hr):	1,400,000 to 10,500,000
Oil Input (US gph):	10 to 75
Thermal Output:	33 to 250
Shipping Weight (lbs):	450 to 1,250

# V / LNV - SERIES

Suitable for firetube, watertube and cast iron boilers; the V series features a unique aerodynamic air damper design which permits accurate air-to-fuel settings for maximum combustion efficiency. The standard V series offers natural gas, propane gas, pressure atomized #2 oil and combination gas/oil fuel options at capacities from 1,300,000 to 16,800,000 Btu/hour. The low NOx V series offers natural gas, propane gas, pressure atomized #2 oil, and combination gas/oil fuel options at capacities from 1,300,000 to 14,700,000 Btu/hour. Through the use of advanced technology, the V series offers high turndown up to 10:1 on natural gas, and low emission capabilities with turndown up to 5:1.

## SERIES FEATURES:

- Natural gas, propane gas, pressure atomized #2 oil and combination gas/oil fuel options
- Cam trim with 14-point adjustment range for consistent air/fuel ratios
- Parallel positioning available for optimal control through out the firing range
- Up to 10:1 turndown on natural gas and optional low NOx with up to 5:1 turndown
- Unique aerodynamic air damper design for optimal flow control
- Forced draft for clean and efficient combustions
- Top or rear mount panel options
- Induced FGR
- FGR modulating valve
- FGR shutoff valve
- Cam trim with 14-point adjustment range on FGR
- No. 2 oil capability for back-up fuel
- UL & cUL listed



## CAPACITIES & SPECIFICATIONS:

	STANDARD MODELS	LOW NO <sub>x</sub> MODELS
Fuels:	Gas, #2 Oil, or Comb.	Gas, #2 Oil, or Comb.
Gas Input (Btu/hr):	1,300,000 to 16,800,000	1,300,000 to 14,700,000
Oil Input (US gph):	9.3 to 120	9.3 to 105
Thermal Output:	31 to 400	31 to 350
Shipping Weight (lbs):	450 to 1,450	550 to 1,550

Note: The Low NO<sub>x</sub> designation only applies to Natural Gas.



# **NTH - SERIES**

Designed for cast iron, firebox, firetube or watertube boilers, NTH series burners operate on gas or a combination of gas/oil fuels at capacities ranging from 1,500,000 to 12,500,000 Btu/H. These units feature low CO performance, a unique air damper design for easy combustion set-up as well as independent low and high fire adjustment.

## **SERIES FEATURES:**

- Natural gas, propane gas, propane air mix and combination gas/oil fuel options
- Parallel positioning available for optimal control through out the firing range
- Top or rear mount panel options
- Backward-curved impeller provides adequate combustion air for various furnace pressures
- Multi-blade-type air damper systems with silencer
- NT Technology for Ultra Low NOx applications



## **CAPACITIES & SPECIFICATIONS:**

Fuels:	Gas or Comb.
Gas Input (Btu/hr):	1,500,000 to 12,500,000
Oil Input (US gph):	10.7 to 90.0
Thermal Output:	36 to 300
Shipping Weight (lbs):	450 to 1,450

# PRODUCT SELECTION GUIDE

	<b>XL / LNXL</b>	<b>NTXL</b>	<b>S1 / LNS1</b>	<b>NTS1</b>	<b>E</b>	<b>D / LND</b>	<b>NTD</b>
<b>FUEL TYPE</b>							
Gas	X	X	X	X	X	X	X
#2 Oil	X	X	X	X	X	X	X
#4-6 Oil	-	-	X	X	-	X	X
Comb. Gas/Oil	X	X	X	X	X	X	X
<b>ATOMIZATION</b>							
Air	X	X	X	X	X	X	X
Pressure	-	-	-	-	-	-	-
Steam	-	X	-	X	-	-	X
<b>LOW NO<sub>x</sub> CAPABILITIES</b>							
< 9 PPM	-	X	-	X	-	-	X
< 12 PPM	-	X	-	X	-	-	X
< 15 PPM	-	X	-	X	-	-	X
< 20 PPM	-	X	-	X	-	X	X
< 30 PPM	X	X	X	X	X	X	X
<b>*APPLICATION</b>							
Firetube	X	X	X	X	X	X	X
Commercial Watertube	-	X	-	X	X	X	X
Industrial Watertube IWT	X	X	-	X	X	-	X
Firebox	-	-	-	-	X	X	X
Cast Iron	-	-	-	-	X	X	X

	<b>M</b>	<b>V / LNV</b>	<b>NTH</b>	<b>K</b>
<b>FUEL TYPE</b>				
Gas	X	X	X	X
#2 Oil	X	X	X	X
#4-6 Oil	X	-	-	-
Comb. Gas/Oil	X	X	X	X
<b>ATOMIZATION</b>				
Air	X	-	X	-
Pressure	-	X	-	X
Steam	-	-	X	-
<b>LOW NO<sub>x</sub> CAPABILITIES</b>				
<9 PPM	-	-	X	-
< 12 PPM	-	-	X	-
< 15 PPM	-	-	X	-
< 20 PPM	-	-	X	-
< 30 PPM	-	X	X	-
<b>*APPLICATION</b>				
Firetube	X	X	X	X
Commercial Watertube	X	X	X	-
Industrial Watertube IWT	-	-	-	-
Firebox	X	X	X	-
Cast Iron	X	X	X	-

Consult factory for applications not listed above.



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# **K - SERIES**

Suitable for firetube boilers; the K series features a unique aerodynamic air shutter design which permits accurate air-to-fuel settings for maximum combustion efficiency. The K series offers natural gas, propane gas, pressure atomized #2 oil and combination gas/oil fuel options at capacities from 1,250,000 to 14,650,000 Btu/hour.

## **SERIES FEATURES:**

- Natural gas, propane gas, pressure atomized #2 oil and combination gas/oil fuel options
- Cam trim with 14-point adjustment range for consistent air/fuel ratios on models K54-145
- Parallel positioning available for optimal control through out the firing range
- Top or rear mount panel options
- Backward-curved impeller provides adequate combustion air for various furnace pressures
- Gas manifold on oil burners standard for easy upgrade to combination units
- Multi-blade-type air damper systems with silencer
- Forced draft for clean and efficient combustions
- UL & cUL listed



## **CAPACITIES & SPECIFICATIONS:**

Fuels:	Gas, #2 Oil, or Comb.
Gas Input (Btu/hr):	1,300,000 to 14,500,000
Oil Input (US gph):	8.9 to 105.0
Thermal Output:	30 to 348.8
Shipping Weight (lbs):	450 to 1,100

# **PRODUCT INFORMATION SPECIFICATIONS**

## **A PIECE OF Cleaver-Brooks HISTORY**

Cleaver-Brooks can trace its origins back to the 1930's and a Chicago firm marketing novel conversion burners. The product was the first air-atomized oil burner that utilized a rotary vane air compressor and an adjustable positive displacement volumetric oil metering pump. This pioneering burner was just a hint of the many designs this firm and its successors were able to offer over the next 70 years.

Superior design is the key to Cleaver-Brooks products' ongoing popularity. C-B, an early pioneer of air-atomization of fuel oil, has led the industry in the development of new burner technologies. Our commitment to research and development assures Industrial customers of having the most technologically advanced burner systems available.

Today, our wide range of products has enabled Cleaver-Brooks to become a leader in both domestic and International markets. C-B burners are still standard equipment with specifying engineers and leading boiler manufacturers. We are also the burner-of-choice when upgrading existing boiler installations for maximum fuel efficiency.



## **A BURNER FOR EVERY APPLICATION**

Cleaver-Brook's product line offers a wide choice of burner capacities from 1,300,000 Btu/hour to greater than 100,000,000 Btu/hour and provide superior performance in boiler, heater, furnace, kiln and dryer applications. All units are designed to perform to maximum efficiency with either gas, oil, or combination fuels. Combination units provide operators the option of choosing the lower cost fuel without costly equipment changeover or adjustments.

## **THE PERFECT BALANCE**

All Cleaver-Brooks burners feature true forced draft design for superior control of the air/fuel mixture. This perfect balance of air and fuel results in complete combustion and maximum efficiency. All C-B burners are designed to work efficiently with all kinds of fuel. Our low-emissions burners come equipped with state-of-the-art technology and control systems.