



**POWER-fin<sup>®</sup>**

**High Efficiency  
Commercial Gas  
Boilers**



**UP TO 87% THERMAL  
EFFICIENCY**



**500,000 to 1, 300,000 Btu/hr**

**Less Than 30 ppm NOx**

**Up to 87% Thermal Efficiency**

# POWER-fin®

## The High-Efficiency, High-Output Compact Boiler



First Power-Fin production model - 1986

*The Power-Fin® was first introduced nearly two decades ago in 1986. Using time tested fan assisted technology, Lochinvar has raised the bar again, offering you new models with even more installation flexibility than before.*

*What's more, unit inputs range as high as 1,300,000 Btu/hr but require just 4.6 sq. ft. of floor space. Only the Power-Fin-with its high efficiency output-can offer such heavyweight performance in a boiler so compact. Plus, with new venting capabilities, the Power-Fin is even more flexible in installation. And it is easy to see how the Power-Fin is performing thanks to a new digital control panel.*

## Outstanding Thermal Efficiency

Power-Fin boilers offer up to 87% thermal efficiency and a NOx rating of less than 30 ppm by way of fan-assisted sealed combustion. This means that up to 87¢ out of every fuel dollar goes into heating the water - dramatically reducing operating costs of the boiler while ensuring clean combustion.

The heat energy from the combustion process is transferred to the water as it passes through the solid copper finned tube heat exchanger. The sealed combustion design eliminates external heat losses, which means that the fuel dollars are used to heat the water, not the mechanical room. It also ensures the jacket stays cooler, providing greater safety and requiring less clearance from combustibles - zero clearance on each side.



## Power-Fin Venting Options

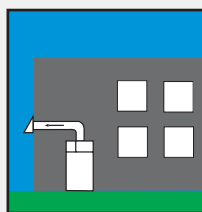
These new models also feature a more flexible two pipe, independent air inlet and exhaust vent piping. When equipped with On/Off firing controls the Power-Fin utilizes Category I, Type B vent material in most cases. When equipped with modulating fire controls the heater utilizes Category IV, AL29-4C corrosion resistant, sealed vent pipe. Factory supplied vent kits are required for some venting configurations - see below.

### Exhaust Vent Reducer

Available for installation with Category IV vent systems, the Vent Reducer kits allow the vent diameter of each Power-Fin model to be reduced by as much as 45%. The vent reducer is made from AL29-4C corrosion resistant material. Because the reduction in vent size creates a "positive" pressure, all reduced vent systems are classified as Category IV systems requiring corrosion resistant, sealed vent pipe.

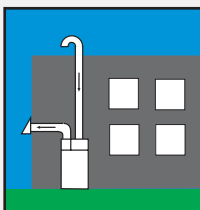
### Reduced Vent Sizes

PBN0501	7" to 4"
PBN0751	9" to 5"
PBN1001	10" to 6"
PBN1300	12" to 8"



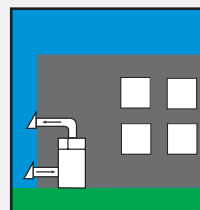
#### Sidewall\*

Vents horizontally up to 50 equivalent feet, using Category IV approved vent material.



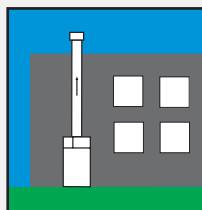
#### Direct Air Horizontal w/ Rooftop Inlet\*

Vents horizontally up to 50 equivalent feet, using Category IV approved vent material. Directly draws combustion air 50 equivalent feet from the roof top.



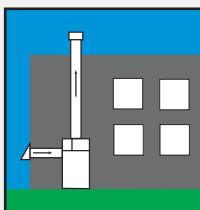
#### Direct Vent Horizontal\*

Vents horizontally up to 50 equivalent feet, using Category IV approved vent material. Directly draws combustion air 50 equivalent feet from a side wall.



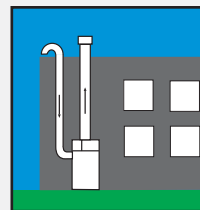
#### Vertical

Vents vertically through the roof.



#### Direct Air Vertical w/ Sidewall Inlet\*

Vents vertically up to 50 equivalent feet, and directly draws combustion air 50 equivalent feet from a side wall.



#### Direct Vent Vertical

Vents vertically up to 50 equivalent feet, and directly draws combustion air 50 equivalent feet from the roof top.

Modulating (M9) models require Category IV vent material in any venting configuration.

On/Off (F9) models require Category IV vent materials when exhausting through a sidewall.

Consult I&O manual for exact specifications.

\*Requires factory supplied vent kits

# Time Tested Performance with

## Combustion Air Filter

Creating cleaner combustion the standard size filter is easily replaced by removing from back of the unit.

## Hot Surface Ignition

Eliminates the need for a standing pilot. Utilizes the latest and most reliable technology in ignition and flame rectification.

## Service Friendly Design

Power-Fin is designed for easy service and maintenance.

## ASME Copper-Finned Tube Heat Exchanger

Gasketless design by the company who pioneered the gasketless heat exchanger. ASME construction built to 160 psi working pressure. Finned copper tubes transfer heat nine times faster than regular copper.

## Field Electrical Connections

All models require a single 120 V, 15 Amp, Single Phase electrical connection to the rear of the unit.

## Firing Control System

Two control systems are offered on the Power-Fin - On/Off (F9) or infinitely modulating with 4:1 turndown (M9).

## Slide Out Control Panel

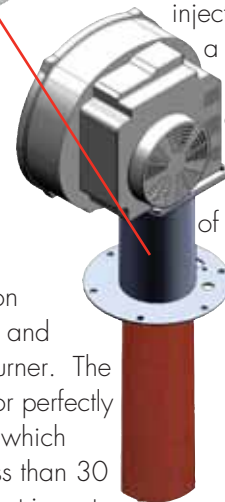
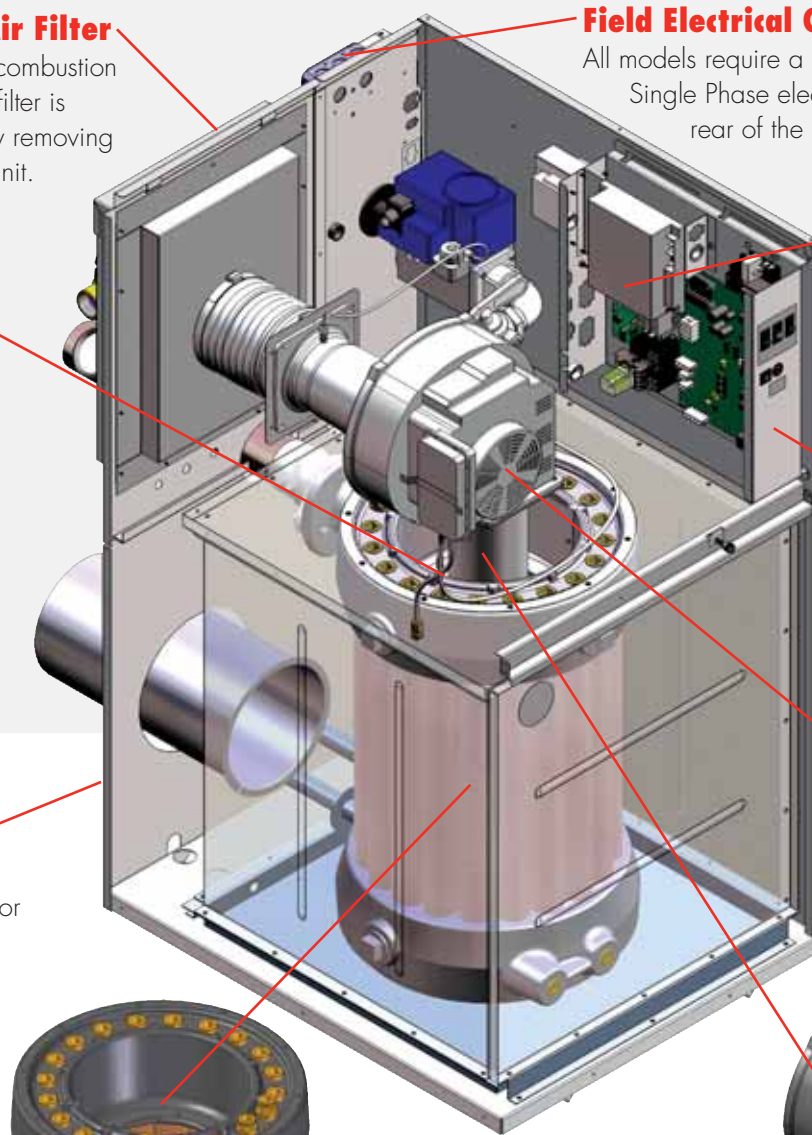
For easy and convenient access to controls.

## Fan Assembly

The Combustion Air Fan draws a precise ratio of gas and air into the combustion chamber based on heat load and injects the mixture into a 360° ceramic burner, which contributes to the overall quiet operation of the appliance.

## 360° Ceramic Burner

At the center of the combustion chamber is the highly flexible and efficient Power-Fin ceramic burner. The new ceramic burner allows for perfectly even gas and air distribution which results in a NOx Rating of less than 30 ppm - far exceeding the most stringent air quality standards. What's more - the Power-Fin burner is perfect in installations with low supply gas pressure, operating without hesitation as low as four inches of water column.



# h Cutting Edge Technology

## Modular Flexibility

With input capacities from 500,000 to 1,300,000 Btu/hr, there's a Power-Fin boiler to meet every need. And our exclusive Harmony sequencer gives you the flexibility to create larger systems. As demand increases, additional units can easily be added for greater flexibility.

The 4:1 turndown Power-Fin in a modular boiler design further increases your system's efficiency, allowing an even greater turndown ratio to the heat demanded. For example, a boiler with a peak output of 500,000 Btu/hr and a minimum stable firing rate of 125,000 Btu/hr would have a turn-down ratio of 500,000/125,000, or 4:1.

When modulating boilers are combined into a multiple boiler system, using a Harmony Sequencer, the overall turndown ratio of that system is significantly better than that of an individual boiler. If four of the boilers cited in the above example were used in a system, the overall capacity control range would be from a peak of 2,000,000 Btu/hr all the way down to 125,000 Btu/hr. Hence the system's turndown ratio would be 16:1.

## Compact Design



*All models fit through a standard 30" doorway and require only 4.6 square feet of floor space with zero clearance to combustibles on each side - install even in the tightest mechanical room.*

## Front End Loading



A cost effective method of maximizing boiler performance is with front end loading. Typically, for 80 percent of the heating season a building will only need 20 percent of the heat output of the boiler system, failing to fully utilize the full Btu load the boiler system was designed for. Front end loading pairs a high efficient boiler with a lower efficient unit. The high efficient unit, such as a modulating Power-Fin, runs a majority of the heating season. The lower efficient boiler, such as an 85% thermal efficiency Copper-Fin II, (seen to the left) is only fired during the coldest degree days. Front end loading allows you maximize the benefits of high efficiency throughout the heating season while lowering operating costs and initial equipment cost.

# Flexible Firing Options

To ensure fail-safe operation, every major function of the Power-Fin is automatically controlled and checked by a digital control panel with advanced diagnostic features. The large display is easy to read and makes set up's a snap. The digital display, accurate to +/- 1°F, indicates temperature while the LED indicators prove operation and status. This monitoring system not only warns against failures, it can actually help to pinpoint the source of any problems, leading to faster solutions. In addition, all of the components are field replaceable, so down time is reduced.

## **On/Off Firing and Category I Venting 85% Thermal Efficiency**



The On/Off firing model is ideal for replacement or retrofit applications, where an existing Category I vent is already installed - lowering the overall installed cost.

## **Modulation with 4:1 Turndown and Category IV Venting 87% Thermal Efficiency**



A more energy efficient alternative is the modulating fire model. With a 4:1 turndown ratio, the Power-Fin can more precisely match output to the heating demand of the building. This saves fuel dollars and increases comfort with seamless burner modulation by firing in 1% increments.

## **True Modulation**

The Power-Fin's new ceramic burner is capable of firing from 25 - 100% (4:1) of rated input based on the firing control selected and heating demand. The 360° ceramic burner creates clean combustion and burns from infrared to blue flame at 100% input. As a standard On/Off boiler, the Power-Fin will receive a call for heat and fire at 100% until that demand is met.

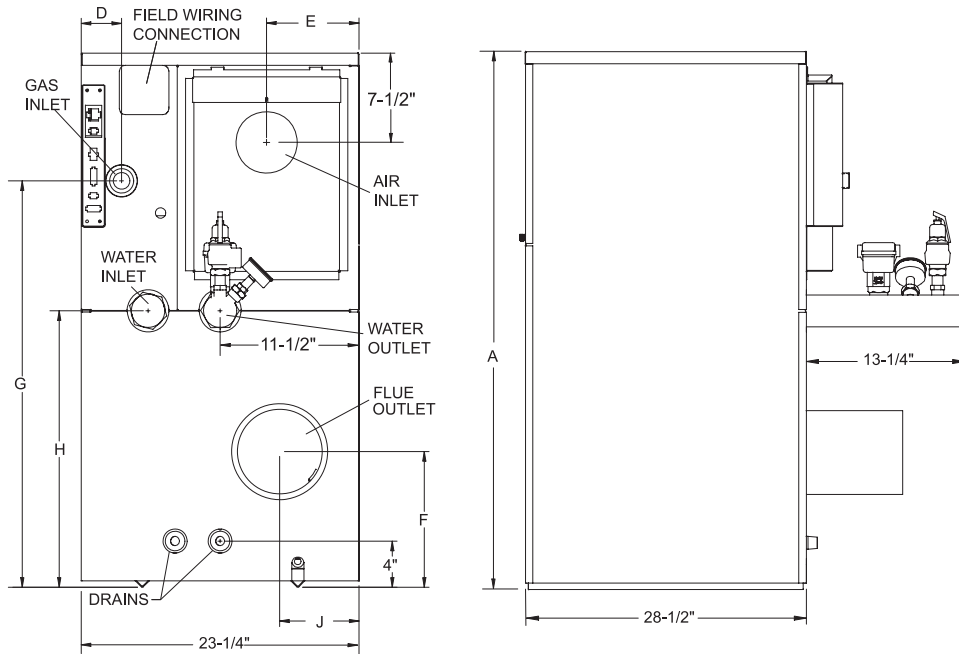
With the optional M9 Firing Control, the Power-Fin incorporates true modulation with 4:1 turndown. The Power-Fin will fire at 25% of input upon a call for heat and the advanced PID temperature control will monitor how fast the temperature changes and determine if higher inputs are needed. These models increase and decrease input in 1 percent increments, utilizing true modulation rather than step modulation.

**So, what's the difference?** The Power-Fin, with true modulation, precisely matches the firing rate to the heating load - down to 25% of rated input. Step modulation, utilized by some competing products, modulates in steps, much like a stage fired boiler. The Power-Fin boiler more precisely matches output to the heat load of the building, without overshooting temperature.



**25%** Burns from infrared to blue flame **100%**

# Power-Fin® Boiler Dimensions & Specifications



Model Number	Btu/Hr Input	Btu/Hr Output	D								Gas Conn.	Air Inlet	Vent Size	Ship.Wt. (lbs)
			A	(F9)	(M9)	E	F	G	H	J				
PBN0501	500,000	425,000	44-1/2"	5-1/4"	3-1/4"	7-3/4"	11-1/4"	33-3/4"	23-1/4"	6-3/4"	1"	5"	7"	505
PBN0751	750,000	637,000	52-1/4"	5-1/4"	3-1/4"	7-3/4"	11-1/4"	41-1/4"	30-3/4"	7"	1-1/4"	5"	9"	554
PBN1001	1,000,000	850,000	59-1/4"	4-1/4"	3-1/4"	7-3/4"	11-1/4"	48-1/2"	37-3/4"	7-1/4"	1-1/4"	6"	10"	603
PBN1300	1,300,000	1,105,000	67-3/4"	4-1/4"	3-1/4"	7-3/4"	19-1/2"	57"	46-1/4"	8-1/4"	1-1/4"	6"	12"	652

Notes: Change "N" to "L" for LP Gas Model.

Water Connections are 2-1/2" on 6" centers.

No deration on LP Gas Models.

Performance Data Based on Manufacturer Test Results.

## Standard Features

- Up to 87% Thermal Efficiency
- Aquastat with Adjustable Differential
- Sequential & Diagnostic Control Panel
- Digital Display with Alarm & Status LEDs
- Radial Ceramic Burner
- Low NOx Operation Exceeds the most Stringent Air Quality Requirements
- ASME Copper Finned Tube Heat Exchanger
- Gasketless Heat Exchanger Design
- 160 PSI Working Pressure
- Temperature & Pressure Gauge
- Combustion Air Filter
- Hot Surface Ignition
- Adjustable High Limit with Manual Reset
- Down Stream Test Cock
- Zero Clearance to Combustible Materials
- Slide Out Control Panel
- ASME Pressure Relief Valve
- Pump Delay

- Freeze Protection
- Flow Switch
- Small Footprint
- Flame View Port
- 24 Volt Control System
- 10 Year Limited Warranty on Heat Exchanger (See warranty for details)

## Optional Equipment

- Alarm Bell
- Contacts for Air Louvers
- Contacts on any Failure
- Cupro-Nickel Heat Exchanger
- High or Low Gas Pressure Switch
- Indoor/Outdoor Control
- Low Water Cut-Off w/ Manual Reset
- MP2 Sequencer (F9 models only)
- Harmony Sequencer (M9 models only)
- Vent Diameter Reducer

## Available Firing Systems

F=On/Off M=Modulating

F9	HSI (Standard)
M9	Hot Surface Ignition with Modulation
F/M13	GE GAP/FM/IRI
F/M7	California Code

FOR EASE IN ORDERING BY MODEL NUMBER

PB N 0501 F9



This is a 500,000 Btu/hr natural gas Power-Fin boiler with F9 firing controls.



**Lochinvar®**  
High Efficiency Water Heaters, Boilers and Pool Heaters



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