



# **POWER-fin<sup>®</sup>**

**High Efficiency  
Commercial Gas  
Water Heaters**



**1.5, 1.7, & 2.0 Million Btu/hr**  
**Less Than 30 ppm NOx**  
**87% Thermal Efficiency**

## Reliability

Since 1986, when Lochinvar invented this technology, Lochinvar has manufactured and sold thousands of Power-Fins, which through years of operation in the field have proven themselves reliable. The same quality and intelligent design that has been the hallmark of the Power-Fin since 1986 is the foundation for the larger models.

These models come equipped with a **gasketless heat exchanger**. This means no gaskets or O-rings to crack or leak. To ensure quality, the manufacturing process is not complete until every Power-Fin heat exchanger assembly is hydrostatically tested and proven to perform at the highest standards. Plus, the straight-line design of the finned copper tubing in the Power-Fin combustion chamber creates a cost saving, scouring action that prevents lime scale build-up that decreases the efficiency and longevity of conventional water heaters over time.

Each function of the water heater is automatically monitored and controlled by a **digital control system**, accurate to +/- 1°F. A digital display indicates temperature while LED



indicators prove operation and status. This monitoring system not only warns against failure, it can actually help pinpoint the source of any problems, leading to faster solutions. In addition, all of the components are field replaceable, so down-time is reduced.

And like all Lochinvar water heaters, no Power-Fin leaves the factory without first being 100% fire-tested to ensure the highest level of quality. Lochinvar offers a full 5-year warranty on the Power-Fin burner and heat exchanger. Which means you can rest assured that there will be hot water whenever it's needed.

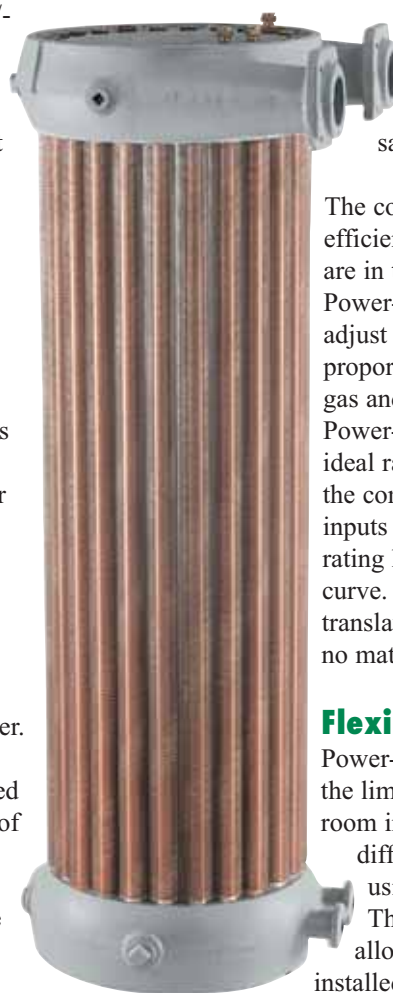
## High Efficiency

Efficiency is gained or lost in the transfer of heat to the water. This process takes place in the combustion chamber. The Power-Fin combustion chamber is created by surrounding the burner with 24 straight, vertically mounted copper fin tubes. Using a special process, the outer wall of each tube is extruded into fins spaced with exactly seven fins per inch. The high thermal conductivity of copper combined with the increased surface area provided by the design of the fins maximizes the heat transfer into the water flowing through the tubes. In fact, this design transfers heat nine times better than ordinary copper tubing. The result is 87% thermal efficiency, which means for every fuel dollar, 87 cents is converted into usable hot water.

## Infinite Proportionality with 4:1 Turndown

However, there is more to efficiency than just a number. Efficiency can fluctuate depending on several factors, such as the length of time the heater runs before satisfying the demand for heat and the ratio of the elements involved in the combustion process. Water heaters are typically most efficient when they fire for an extended period of time at their full Btu/hr capacity, which happens only a small percentage of the total run time, during peak demand or dump loads.

The Power-Fin is designed to take advantage of this principle. Capable of firing from 100% down to 25% of rated input in 1% increments to match heat input demand, the Power-Fin can supply the exact amount of heat necessary to maintain the desired water temperature for an extended period of time. This prevents the cycling process so common in systems with an intermittent low volume demand. By firing at a lower Btu/hr level for an extended period of time, energy is saved because the water heater doesn't have to be heated up in each cycle. In much the same way driving your car at a steady speed on the highway costs less than starting and stopping in traffic, this benefit can add up to big savings.



The combustion process is most efficient, when the elements involved are in the correct proportion. The Power-Fin has been designed to adjust both *gas and air* in infinitely proportional amounts. By keeping the gas and air proportionally equal, the Power-Fin is able to maintain a more ideal ratio of the elements involved in the combustion process even at lower inputs - which keeps the efficiency rating high along the entire efficiency curve. This uncommon advantage translates into even greater savings, no matter how much heat is needed.

## Flexibility

Power-Fin models were created with the limitations of the typical mechanical room in mind. The can be vented in six different configurations, up to 50 feet using a two pipe venting system.

This Category IV vent system allows both air and vent to be installed horizontally through a sidewall or vertically through the roof. This flexibility means fewer hassles with building constraints and more options when architectural integrity is a high priority.

# Performance with High Efficiency

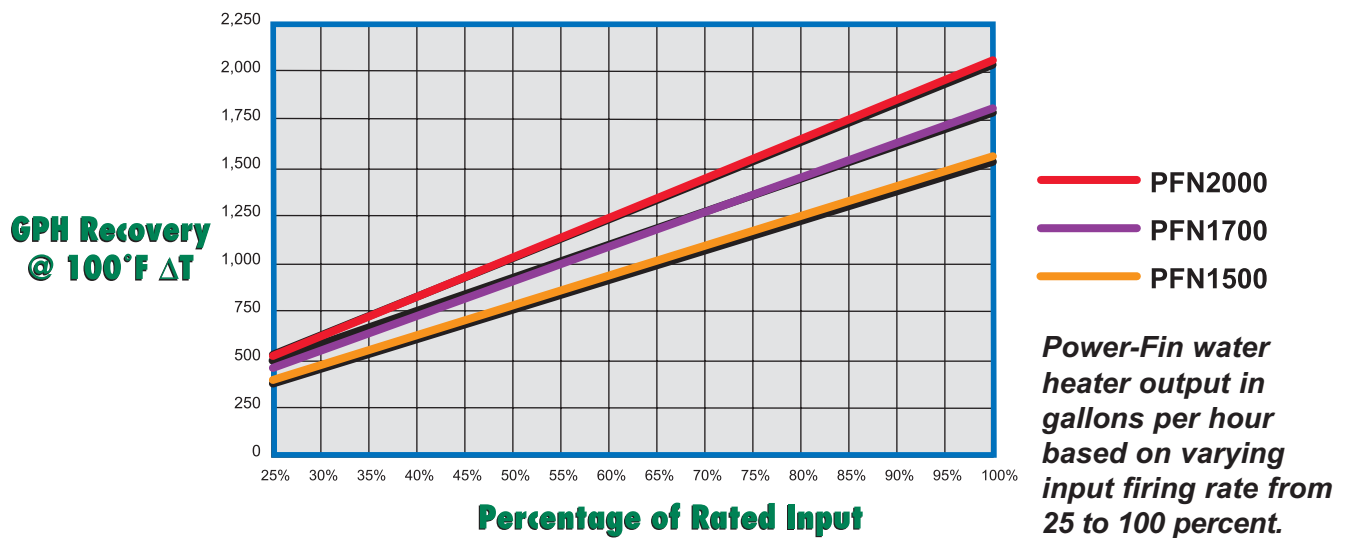
## Small Footprint

Power-Fin makes use of vertical space, keeping its footprint unusually small. In fact, all three models will fit in just over 5.5 square feet. Plus, the Power-Fin is approved for 0" clearance to combustibles on all sides for even more space saving convenience. And because all service can be performed from the front, top and back, Power-Fins can be placed side by side to create a high output system with a reduced space requirement. So no matter how big the system requirements or how small the installation space, there's a Power-Fin to meet the need.

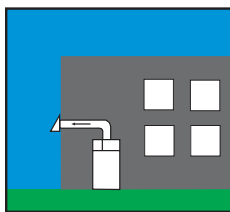
## What It All Boils Down To

Efficiency, reliability, and flexibility are the three most important factors to consider when it comes to heating water. The more efficient the water heater is, the less money it costs to provide the correct amount of hot water at the right time. Reliability offers peace of mind that there will never be a time when hot water is required and none is provided. And flexibility in design means that the water heater will be easy to install and maintain. The time-tested Power-Fin design, coupled with new and advanced technologies has resulted in a water heating machine that excels in each of these important areas. The Power-Fin is water heating technology you can count on.

## GPH Recovery Chart

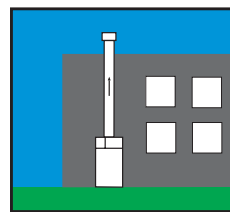


## Venting Options



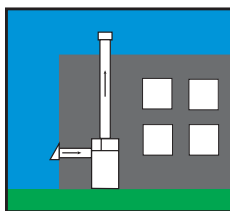
### *Sidewall\**

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



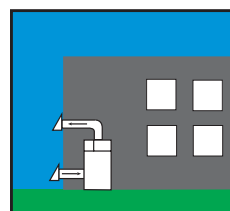
### *Vertical*

Vents vertically using Category IV approved vent material. Ideal when a vent stack is not practical.



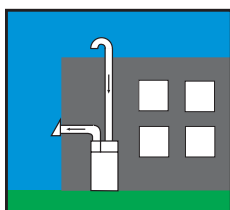
### *Direct Aire Vertical w/ Sidewall Inlet\**

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



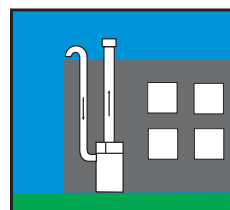
### *Direct Vent Horizontal\**

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



### *Direct Aire 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.

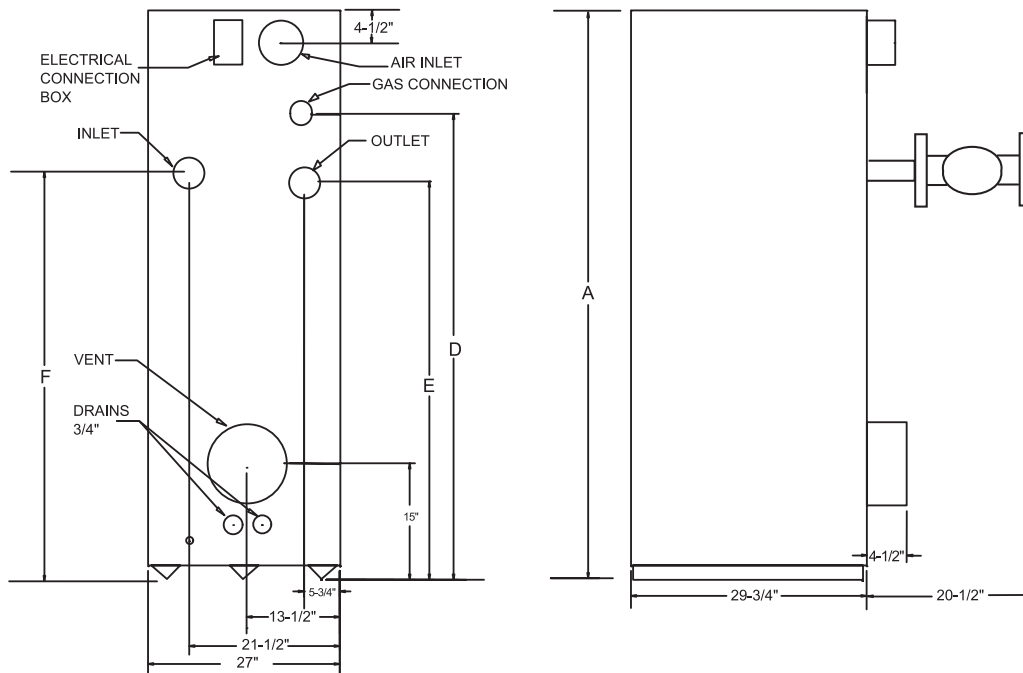


### *Direct Vent Vertical*

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

\*Requires factory supplied vent kits

# Power-Fin® Water Heater Dimensions and Specifications:



**FOR EASE IN ORDERING  
BY MODEL NUMBER**

PF	N	1500	PM	M9
Model	Natural Gas	Blow-In Input	Pump Mounted	Firing Control

*This heater is a natural gas, 1.5 MBH, Power-Fin water heater. It is pump mounted and has M9 firing controls.*

Model Number	Btu/Hr Input	GPH @ 100°F Rise	A	D	E	F	Air Inlet Size	Vent Size	Shipping Weight
PFN1500PM	1,500,000	1,582	66-3/4"	52-1/4"	42"	44-1/2"	6"	8"	1,165
PFN1700PM	1,700,000	1,793	71-1/4"	56-3/4"	46-1/2"	49"	7"	8"	1,225
PFN2000PM	2,000,000	2,109	78"	63-1/2"	53-1/4"	55-3/4"	8"	10"	1,325

*Notes: Change 'N' to 'L' for LP Gas Models. No deration on LP models. Performance data based on manufacturer test results. All gas connections are 1-1/2" NPT. All water connections are 2-1/2". 120 VAC / 15 AMP circuit required.*

## Standard Features

- 87% Thermal Efficiency
- 25-100% Infinitely Proportional Firing Rate
- Digital Display w/ Alarm & Status LED's
- Variable Frequency Drive
- Digital Temperature Control Accurate to 1°F
- Tamper Resistant Temperature Controls
- Alcomesh Burner with 5-Year Limited Warranty
- Low NOx Operation Exceeds the most Stringent Air Quality Requirements
- Selectable Inlet/Outlet Temperature Controls
- ASME Copper Finned Tube Heat Exchanger
- 160 psi Working Pressure
- Gasketless Heat Exchanger Design
- All Bronze Circulating Pump
- Pump Delay
- Freeze Protection
- Glass-Lined Water Surfaces

- Low Gas Pressure Operation
- Zero Clearance to Combustible Materials
- ASME Temperature & Pressure Relief Valve
- Down Stream Test Valve
- Adjustable High Limit with Manual Reset
- Flow Switch
- Small Footprint
- 24 Volt Circuit Breaker
- Construction Air Filter
- 5 Year Limited Warranty on Heat Exchanger

## Venting

- Horizontal Air Intake Cap
- Horizontal Vent Cap

## Optional Equipment

- Alarm Bell
  - Contacts for Air Louvers
  - Contacts on any Failure
  - Cupro-Nickel Heat Exchanger
  - High or Low Gas Pressure Switch
  - Low Water Cut-Off w/Manual Reset
- Harmony Sequencer**
- 1-4 Unit Master Control Module
  - 5-12 Unit Extension Module

## Firing Control Systems

- M9 Hot-Surface Ignition with Electronic Supervision (Standard)
- M13 GE GAP/FM/IRI
- M7 California Code

*Registered under U.S. patents #6,428,312 & 6,619,951.*



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



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