



**Intelli-Fin<sup>®</sup>**

**High Efficiency  
Commercial Gas  
Water Heaters**



**97% Thermal Efficiency**  
**LonWorks<sup>®</sup> Compatible Intelligence**  
**Highly Flexible and Ultra Quiet**  
**Super Compact Design**

## Variable Frequency Drive Lets You Change Output to Match Demand

Intelli-Fin is the first water heater to feature variable frequency drive. Variable frequency drive further increases the thermal efficiency by precisely supplying the proper amount of gas and air to the burner. Ensuring this balance yields complete combustion and therefore increased Btu/hr output. Just as the electronic fuel injection system in your car adapts to changes in atmosphere, the Intelli-Fin's variable frequency drive allows the system to adjust. This means maximum efficiency, no matter what the system load may be.

In addition to the tight control of the combustion system, variable frequency drive allows Intelli-Fin to adjust its output to meet demand, limiting excessive heat, thereby maximizing efficiency. Because the variable frequency drive controls fan motor speed in an infinitely proportional manner, Btu/hr output can be adjusted to match any heating demand. In fact, Intelli-Fin can reduce output from 100% down to 25% of rated capacity and efficiently provide heat at any fraction of the load in between.

This variable combustion process combined with Lochinvar's new temperature control, accurate to within 1°F, enables Intelli-Fin to track the domestic load precisely. By precisely tracking the load, hot water

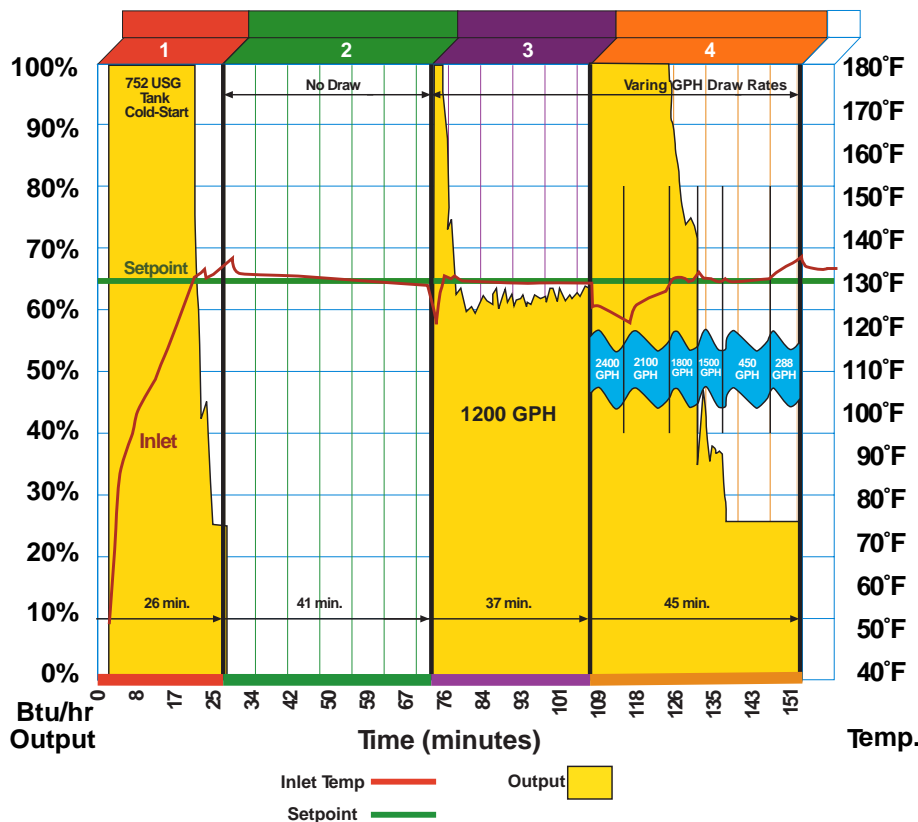
output equals the facility domestic load. This means that your water heater can automatically provide the required amount of hot water for large dump loads and consistent draw applications, without wasting energy. With Intelli-Fin, it is now possible to tailor system output to meet demand, while significant energy is saved and short cycling is eliminated. That's an intelligent new advantage for you.

## Flexibility in Water and Gas Supplies

Intelli-Fin's advanced burner technology operates within a broader range of inlet gas supply pressures. Intelli-Fin can operate with a minimum inlet gas pressure as low as 4 inches of water column. This advanced design prevents nuisance operational problems in areas of varying gas supply pressures. Unlike other high efficiency products, Intelli-Fin does not require high pressure gas service or additional gas pressure boosters.

The sophisticated heat transfer system of Intelli-Fin integrates dual heat transfer surfaces with a fully automatic pumped bypass. This innovative design provides increased installation flexibility within low return water temperature applications, allowing Intelli-Fin to operate with return water temperatures as low as 50°F. The fully automatic bypass controls the point where condensate occurs within Intelli-Fin. This innovative design increases the product flexibility, maximizes efficiency and eliminates worry.

## Intelli-Fin® Precisely Tracks Domestic Water Demand and Adjusts Heat Output



- 1 One key advantage of the Intelli-Fin's variable frequency drive, is that it adjusts output capacity anywhere between 100% and 25% (yellow bar shows output capacity). In this chart, Intelli-Fin operates at full capacity during cold start to heat a 752-gallon tank from a 40-degree inlet water temperature up to the 130-degree set point, then reduces capacity as water temperature rises.
- 2 Once the tank is full and there is no demand on the system, Intelli-Fin shuts down.
- 3 A sudden 1200 GPH draw re-starts the unit, which quickly compensates and then begins modulating again to maintain the setpoint temperature.
- 4 Varied demand shows how the water heater continually adjusts to demand tracking the set point with precise Btu/hr output, maximizing efficiency.



*Sequencing options allow for closer control of domestic water systems. Options include first on/first off with lead lag, first on/last off, efficiency optimization (lead lag), and run time optimization (lead lag). Units can be kept within 24 hours total operating time of each other.*

## Intelligent Enough to Speak Your Language

Intelli-Fin is the first water heater designed to be fully compatible with LonWorks®, the interoperability language that is fast becoming the language standard for building management systems. LonWorks allows the Intelli-Fin to provide open control protocols that let it function in a broad range of building management systems, with minimal effort required for integration.



*Fully LonWorks compatible, the Intelli-Fin's Command Display also allows for up to 21 diagnostic readouts. This "window" into water heater operation provides the ability to customize performance.*

The LonWorks network protocols are in use across a broad range of building management products, and with the introduction of Intelli-Fin, it is easier to link components for simplified building integration. LonWorks also simplifies building upgrades in the future.

To enhance this LonWorks performance, Lochinvar has developed a new control, which provides a remarkable amount of information and the ability to customize equipment for a specific application. This control along with the Command Display allows local monitoring of 21 diagnostic points and adjustment of 6 operational characteristics. If remote system management is desired, all Intelli-Fin functionality can be accessed, reviewed and adjusted via a phone line and personal computer. This means increased peace of mind and the ability to adjust the system without an expensive service call.

## An Intelligent Use of Space

Intelli-Fin is about the size of a four-drawer filing cabinet. This remarkably small footprint makes it ideal for retrofit installations as well as new construction. In fact, it's often easier to retrofit an Intelli-Fin system than remove an existing system because it's so much smaller and easier to install.

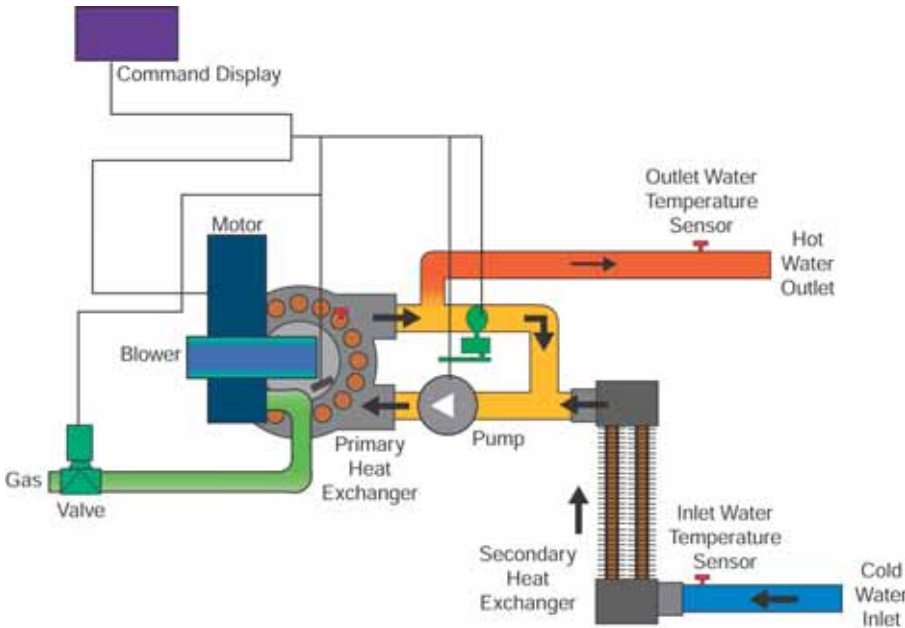
Intelli-Fin's chassis has been engineered so that it makes use of vertical rather than horizontal space. This allows the smaller footprint, but the unit is still so compact that it fits in spaces no higher than 80 inches.

For even more convenience, Intelli-Fin offers several venting options. It's even possible to direct vent Intelli-Fin through a side wall.

## Intelligent Enough To Provide Diagnostic Support

Intelli-Fin adds a new dimension to communications. Thanks to its intelligence, it can identify problems and notify the proper maintenance people, providing diagnostic codes for as many as 21 separate functions. It's even possible to communicate remotely with the system, so maintenance staff can investigate alarms from offsite and determine specific needs, therefore being better prepared should onsite service be necessary.

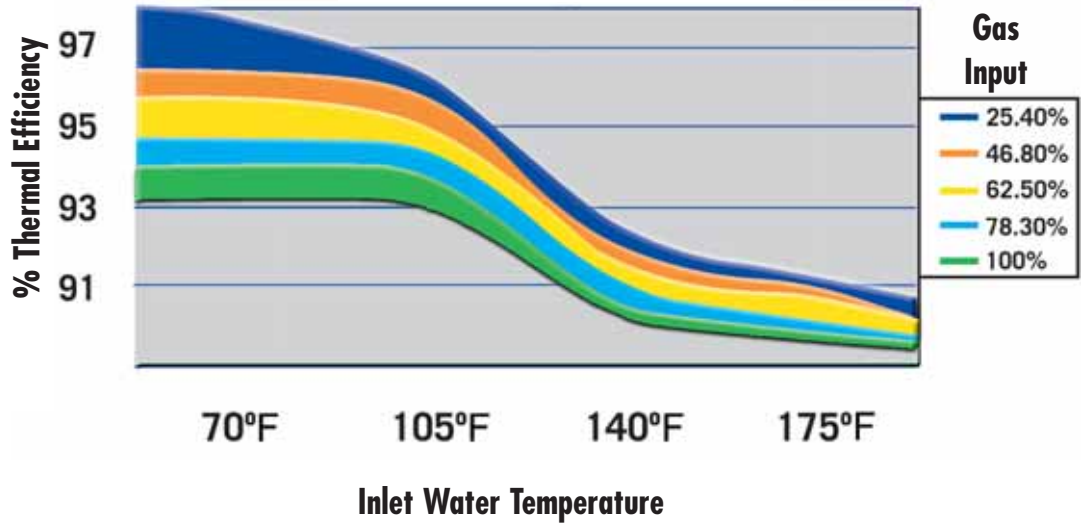
# Intelli-Fin® Operating Schematic



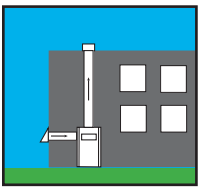
The Intelli-Fin can operate with a broad range of gas pressure and water temperature situations thanks to its intelligent controls and unique heat exchanger arrangement. The dual heat exchanger arrangement preheats return water to control condensate formation. Using a pumped bypass, a portion of the heated supply water is recirculated to raise inlet temperature to a point where condensation on the primary heat exchanger is avoided. In addition, gas and air supply for combustion are also adjusted to ensure sufficient Btu/hr output to raise supply water temperature to the prescribed set point.

## Intelli-Fin Efficiency Data at Firing Rate

Intelli-Fin provides thermal efficiency ratings as high as 97%. Because of its ability to infinitely modulate operation, efficiency is maintained at maximum levels to provide lowest total operating cost.

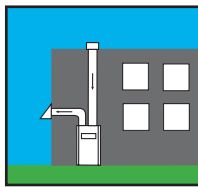


## Venting Options



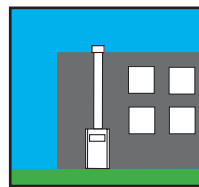
**Intelli-Vent Vertical**

Vents vertically up to 100 equivalent feet. Directly draws combustion air 100 equivalent feet from a side wall.



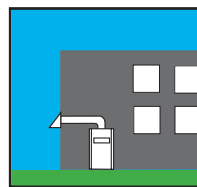
**Intelli-Vent Horizontal**

Vents horizontally up to 100 equivalent feet. Directly draws combustion air 100 equivalent feet from the roof top.



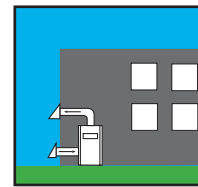
**Vertical**

Vents vertically using Category IV approved vent material.



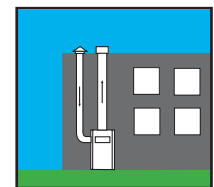
**Sidewall**

Vents horizontally up to 100 equivalent feet.



**Direct Vent Horizontal**

Vents horizontally up to 100 equivalent feet. Directly draws combustion air 100 equivalent feet from a side wall.



**Direct Vent Vertical**

Vents vertically up to 100 equivalent feet. Directly draws combustion air 100 equivalent feet from the roof top.

See Installation and Design Documents for details



by Lochinvar

## The Intelligent Approach to Water Heating

Lochinvar has a tradition of setting industry standards for water heater efficiency, and our Intelli-Fin Series takes efficiency to a higher level – not just with superior water heater technology, but with a new level of intelligence.

Our 1.5 million, 1.7 million, and 2.0 million-Btu/hr Intelli-Fin water heaters are whisper-quiet. They are engineered to take advantage of the power of digital communications. That's a powerful advantage, because this capability, along with Lochinvar's engineering, means Intelli-Fin provides you with **the lowest total cost of water heater operation.**

## Pushing the Upper Limits of Efficiency

Intelli-Fin has been engineered so that it offers a dramatic increase in efficiency. Independent testing shows that Intelli-Fin reaches 97% thermal efficiency. That means for every energy dollar, 97 cents is converted into useable heat. That's pushing the limits of what is possible within the laws of physics.

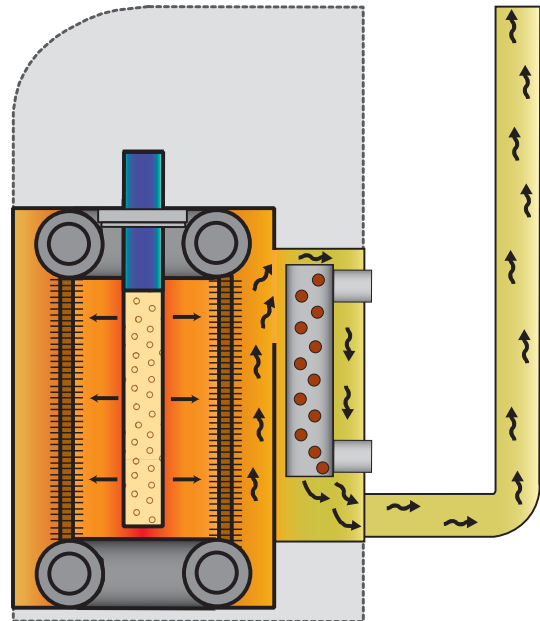
To achieve this higher efficiency, Lochinvar utilizes a dual heat exchanger arrangement to create a heat trap. One heat exchanger surrounds the unit's burner, absorbing heat at the point of combustion. A second heat exchanger captures additional heat as the spent gases are extracted from the combustion chamber. The position of this second heat exchanger forces the products of combustion to flow over its entire surface allowing the remaining heat to be absorbed and transferred to the water.

If your project demands high efficiency, Intelli-Fin delivers.



UP TO **97%**  
Thermal Efficiency

97 cents from every energy dollar goes into useable heat.



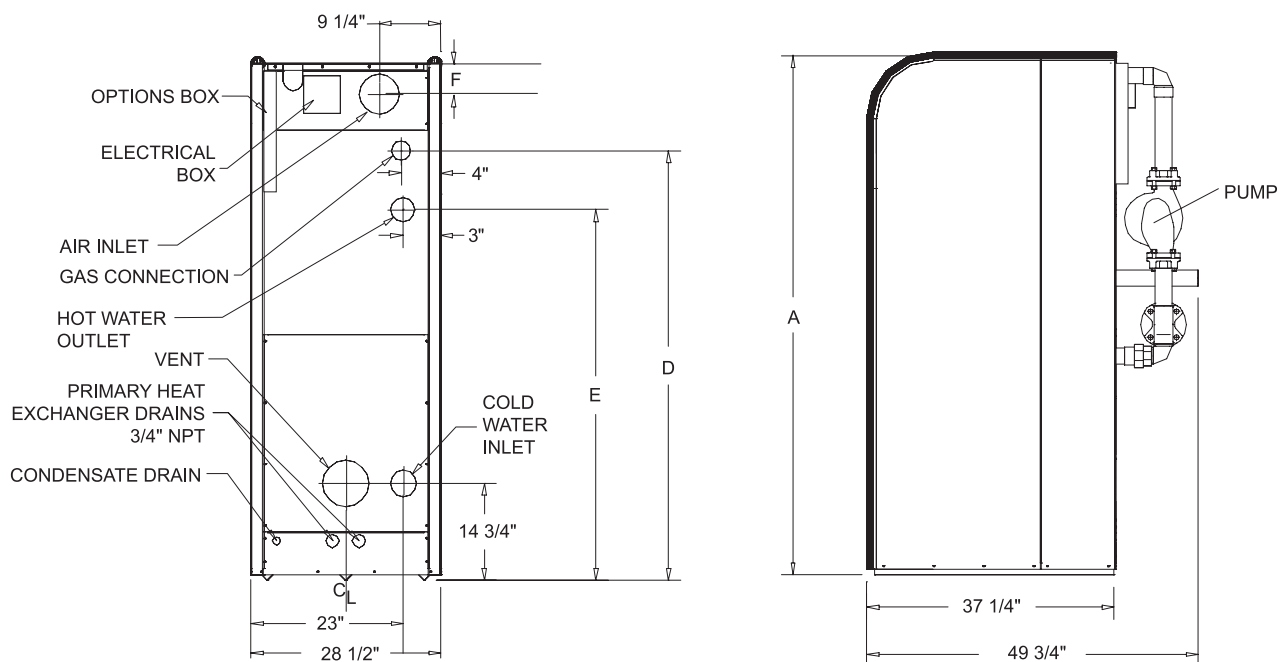
*Intelli-Fin's dual heat exchanger arrangement creates a heat trap to capture convective heat flow. Trapping this latent heat reduces flue losses, increases efficiency and saves energy dollars.*

## Five Year Burner Warranty



Our Alchromesh (aluminum/chromium alloy) metallic burner disperses the flame to improve heat transfer. This unique construction also improves durability. In fact, our burner features a five year warranty.

# Intelli-Fin® Water Heater Dimensions & Specifications



Model Number	Btu/hr Input	GPH @ 100°F Rise	A	D	E	F	Air Inlet Size	Vent Size	Shipping Weight
IWN1500	1,500,000	1,700	67-3/4"	52-3/4"	40-3/4"	4-1/2"	6"	6"	1,495
IWN1700	1,700,000	1,927	72-1/4"	57-1/4"	45-1/4"	4-1/2"	7"	7"	1,545
IWN2000	2,000,000	2,267	79"	64"	52"	6-1/2"	8"	8"	1,610

Notes: Change 'N' to 'L' for LP Gas Model. No deration on LP models. Performance data is based on manufacturer test results. All gas connections are 1-1/2" NPT. All water connections are 3".

## Standard Features

- Up to 97% Thermal Efficiency
- 25 - 100% Infinitely Proportional Firing Rate
- LonMark Building Management System Compatibility
- Command Display - 21 Point Diagnostic Control (One per Job Site)
- Variable Frequency Drive
- Digital Temperature Control Accurate to 1°F
- Alcomesh Burner with 5-Year Limited Warranty
- Low NOx Operation Exceeds the most Stringent Air Quality Requirements
- ASME Copper Finned Tube Heat Exchanger
- 160 psi Working Pressure
- Gasketless Heat Exchanger Design
- All Bronze Circulating Pump-Mounted and Wired
- Pump Delay
- Glass-Lined Water Surfaces
- Internal Stainless Steel Jacket
- Internal Corrosion Protection
- Low Gas Pressure Operation
- Zero Clearance to Combustible Materials
- Alarm Contacts on any Failure

- Contacts for Air Louver
- ASME Temperature & Pressure Relief Valve
- Down Stream Test Valve
- Adjustable High Limit w/ Manual Reset
- Manual Control Override
- Flow Switch
- Small Footprint
- Whisper Quiet Operation
- 24 Volt Circuit Breaker
- Freeze Protection
- Construction Air Filter
- 5 Year Limited Warranty on Heat Exchanger

## Optional Equipment

- 4-20 mA DDC Signal
- Additional Command Display
- Alarm Bell
- Cupro-Nickel Heat Exchanger
- High Gas Pressure Switch
- Horizontal Air Intake Cap
- Horizontal Vent Cap
- Low Gas Pressure Switch
- Low Water Cut-Off
- Neutralization Kit

## Monitoring

- Local Monitoring via Personal Computer Includes Serial LonTalk Adapter
- Remote Monitoring via Personal Computer Includes Serial LonTalk Adapter and Network Modem

## Sequencing

- Standard Sequencing Package:
  - First On/Last Off
  - First On/First Off with Lead-Lag
- Custom Sequencing Package:
  - Efficiency Optimization
  - Efficiency Optimization with Run Time Equalization
  - First On/Last Off
  - First On/First Off with Lead-Lag

## Available Firing Systems

- M9 Electronic Control with Proportional Fire Hot-Surface Ignition (Standard)
- M13 GE GAP/FM
- M7 State of California Code

Registered under U.S. Patent # 6,428,312 and 6,619,951



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