

The World's Most *Efficient* and  
**Versatile**  
Fireplace System



***The First and ONLY Vented Fireplace That***

- Is Certified to Exceed 90% Efficiency
- Uses PVC Pipe for Low-Cost Venting Installation
- Humidifies as it Heats
- Installs as Fireplace, Insert, or Freestanding Stove
- Installs as a Direct-Vent or Single-Vent System



*Mantis*<sup>™</sup>  
by Empire Comfort Systems



## Welcome to Mantis – the world’s most efficient and versatile fireplace

The Mantis exceeds 90% efficiency – which means it uses about 35 percent less fuel compared to any other vented heater or fireplace system per Btu of heat in your room. This makes Mantis the greenest fireplace you can buy.

Because its inexpensive 1 1/2-inch PVC vent pipe can be run inside a conventional 2 x 4 framed wall, the Mantis costs less to install – in materials, time, and labor.

The Mantis is the first and only vented fireplace that adds humidity to the dry winter air, making your home feel warmer and more comfortable.

The Mantis comes in two versions. The new flat-front Mantis Fireplace comes in three models with vent kits to allow installation in a wall, in a mantel, or in an existing wood-burning fireplace. The Mantis Bay Window comes in three models for installation in a mantel, in an existing wood-burning fireplace, or on a pedestal.

	<i>Mantis</i>	<i>Conventional DV Fireplace</i>
Efficiency	90% *	60%
Gas Input (Btu/H)	28,000	28,000
Heat Output (Btu/H)	25,200	16,800
Exhaust Gas Heat Loss (Btu/H)	2,800	11,200!!
Annual Savings	35%	0

\* Independently tested to ANSI/ASHRAE 03-1993

## Green Heating with Gas

According to the US Environmental Protection Agency, heating with any gas appliance generates far less particulate pollution than heating with any other common fuel. The worst polluter, a wood fireplace, generates 28 pounds of particulates (measuring 2.5 microns or more) for every million Btu of fuel you put in. Heating with gas generates a tiny fraction of that (just 0.0083 pound) for every million Btu input. Compared to an EPA-certified wood stove, gas heat still generates less than 1 percent of the particulate pollution. And gas produces less than 2 percent of the pollution emitted by a pellet stove.

<i>Particulate Pollution Generated by Heat Source</i>	<i>PM 2.5 lb/million BTU</i>	<i>Percentage Compared to a Wood Fireplace</i>
Fireplaces Burning Wood	28	
Uncertified Wood Stove	4.6	16.43%
EPA-certified Wood Stove	1.4	5.00%
Pellet Stove	0.49	1.75%
Oil Furnace	0.013	0.05%
Gas Furnace	0.0083	0.03%

## What Makes Mantis Unique?

Inside the Mantis a three-stage heat exchanger sends more than 90 percent of the heat energy into your home – not up the flue. While the temperature inside the combustion chamber may exceed 900 degrees F, the exhaust gas exits the flue at just 120 to 130 degrees F – as little as two feet away!

This makes Mantis the first and only condensing fireplace, which means the exhaust is cool enough to run in PVC. Using PVC for venting makes the total installed price (unit, labor, and materials) comparable to a direct-vent fireplace or pellet stove.

The Mantis puts the green in environmentally friendly. Its power-vented heat-exchanger technology ensures the optimal air/fuel mixture for consistently clean-burning operation. With its clean burn and super-efficient heat exchanger, the Mantis generates fewer greenhouse gases – CO and CO<sup>2</sup>.

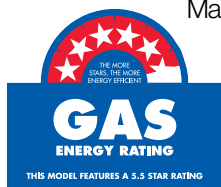
The top and sides of the Mantis stay cool-to-the-touch – so cool, in fact, it earned a zero-clearance certification for installation against any combustible building materials.

The dual burners deliver a total of 28,000 Btu. Operating the front burner alone lets you enjoy the ambiance of the attractive log set and gas fire without overheating the room. But, when the temperature dips, the Mantis rises to the occasion, switching on the second burner to produce maximum heat output.

## Developed in Australia more than 10 Years Ago

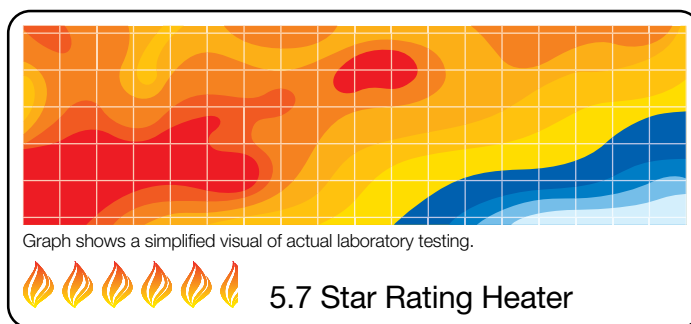
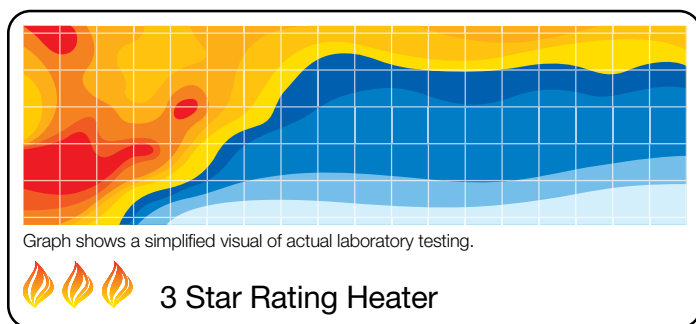
### Patented Design – Worldwide

If the Mantis is so efficient, why does it not carry an Energy Star rating?



Mantis is so new to the U.S. market, it fits no current Energy Star category, however, it outperforms most Energy Star rated central furnaces in heat transfer efficiency. (The Mantis does not fit the furnace classification because it does not need “ductwork” to convey the heated air. Ironically, a central furnace’s ductwork contributes to heat loss.)

In Australia, however, where this technology was originally developed, the Mantis earns a 5.52 out of 6 on that country’s Star Rating system. No vented zone heating system – U.S. or Australian – outperforms it.



Australia’s Star system graphically represents heat transfer efficiency. The red and orange areas represent area of 1,500-sq ft room heated after one hour at 28,000 Btu/H input in Independent Laboratory Testing. For comparison, a typical 60-percent AFUE system would rate just three stars.

The American Heating and Refrigeration Institute is working with the U.S. Department of Energy to create an Energy Star category for gas-fired zone heating products.

## The Award Winning Mantis

The Mantis won the 2007 Innovation Award, which recognizes products that best help HVAC contractors provide safer, healthier, more efficient, and more comfortable environments. Sponsored by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, the Air Conditioning & Refrigeration Institute, and The International Exposition Company.

The Mantis earned the 2007 Dealer Design Award, which recognizes products that advance home heating & air conditioning, and attain new levels of installation, maintenance, and service ease. Sponsored by the NEWS, a monthly magazine serving HVAC Contractors.

The Home Builders Association of Connecticut awarded the 2009 HOBBI Award for Best Green Product to the Mantis Fireplace in The Homes at Greenbrier sustainable community. The awards were sponsored by HBA of Connecticut, Inc.



*Mantis Fireplace Package (Shown with Matte Black Mantel Surround Kit)*

## Advanced Technology and Solid-State Controls

The sophisticated control system monitors every critical aspect of the Mantis's operation to maximize efficiency, comfort, and safety.

For all its advanced technology, the Mantis is amazingly easy to operate. Two on/off buttons control the two burners, allowing you to set the temperature to low (front only), medium (rear only) or high (both burners).

Or, choose one of the optional external controls, such as the programmable thermostat, and let your Mantis deliver the right amount of heat for each day of the week and time of the day.

The Mantis automatically purges unburned gas from the combustion chamber for 40 seconds before each ignition for controlled, even starts every time. The modern, hot-surface igniters conserve gas by eliminating the need for a standing pilot.

The three-speed automatic circulating fan cycles on only after the Mantis reaches operating temperature and continues blowing as long as it senses warm air. You never feel a cool draft – just warm, humidified air.



Inside the Mantis, separate systems create the heat and distribute the heat, so room air stays isolated from the combustion process.

### Creating the Heat (White, Black and Gray Arrows)

(A) The power vent blower draws in outdoor air (White Arrow) via the PVC intake pipe.

(B) Inside the fireplace the three-stage burner, below the log set, mixes the air and gas (LP or natural) and burns it to produce heat.

(C) The power vent blower extracts the hot combustion gases (up to 900° Fahrenheit) out of the combustion chamber and through the heat exchanger (Black Arrow).

(D) The combustion gases exit the heat exchanger (now cooled to 130°) and are forced outdoors through the PVC vent pipe (Gray Arrow).

### Circulating the Warmth (Blue and Red Arrows)

(E) The circulation blower draws in room air (Blue Arrow) via louvers beneath the fireplace...

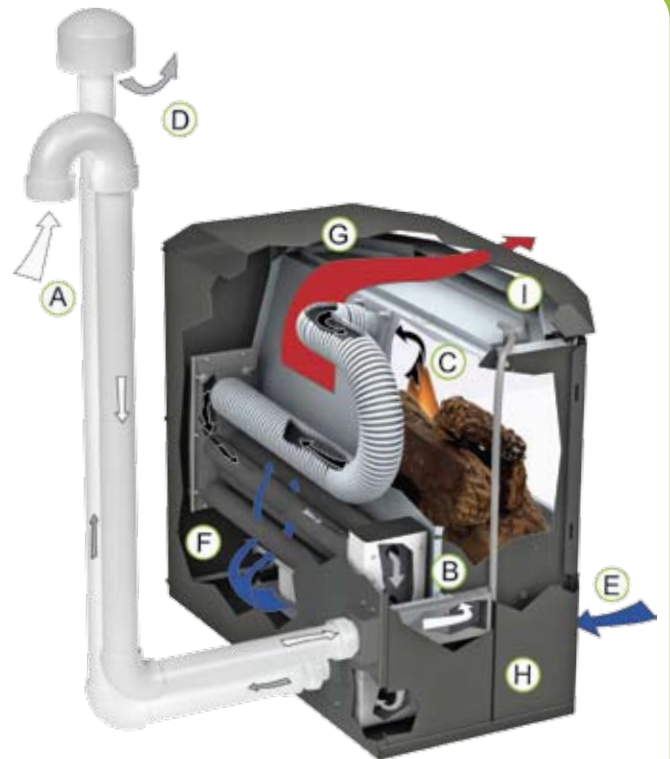
(F) ...and forces it across the heat exchanger fins. This transfers more than 90% of the heat inside the tubes to the room air.

(G) The blower forces this warm air out through louvers above the fireplace to warm the home.

### Adding the Humidity

(H) Droplets of moisture, a by-product of the Mantis' super-efficient heat exchanger, are captured in a holding tank (not visible).

(I) Once the Mantis reaches operating temperature, a pump cycles on to send any collected water onto a stainless steel tray above the combustion chamber, where heat and airflow circulate the water vapor. This added humidity helps alleviate the static shocks, wood furniture damage, and even sore throats caused by dry winter air.





*Mantis In-Wall Package (Shown with Matte Black Surround Kit)*

## Humidify While You Heat - Greater Comfort

The Mantis captures condensed water – a by-product of its clean combustion and super-efficient heat exchanger – and evaporates it to introduce humidity to the room air.

This water contains fewer contaminants than the drinking water in most homes. An automatic blower in the Mantis gently diffuses the humidified air into the room.

The result is a more comfortable home environment.



The diagram shows a cross-section of the Mantis fireplace. A firebox at the bottom contains logs and a fire. A white corrugated duct (A) leads from the firebox to a holding tank. A pump (B) moves water from the tank to an evaporation tray above the firebox. Red arrows (C) show air circulating from the firebox, through the heat exchanger, and out of the fireplace, carrying moisture into the room.

### Automatic Humidification

Most heaters dry the air. Mantis actually adds humidity to the home for greater winter comfort.

- (A) Water vapor, a combustion by-product, condenses out of the rapidly cooled exhaust and collects in a holding tank (not shown).
- (B) Mantis pumps the water onto an evaporation tray above the firebox.
- (C) Heat and circulating air evaporate the water to create humidity.

## Quality Construction – Factory Tested

Critical internal components in the Mantis – including the heat exchanger – are manufactured from the same corrosion-resistant and heat-resistant stainless steel that was developed for high-efficiency central furnaces.

The steel cabinet is finished in matte black powder coating to resist chipping and smudging. The Mantis Bay Window is available with decorative fireplace frames in rich 24-karat gold plating, contemporary nickel chrome plating, or matte black.

Precision-formed one-piece ceramic glass withstands temperatures in excess of 1,500-degrees F and radiates more heat into the room, while providing a great view of the flames and log set.

The Mantis' hand-painted ceramic fiber log set complements the flame pattern, and glows when heated to provide exceptional realism.

Two rugged printed circuit boards – designed specifically for the Mantis – monitor all functions and controls. The hand-assembled wiring harness is made from heat-insulated copper wire fitted with click-lock connectors for reliable performance.

Two powerful blowers inside the Mantis feature maintenance-free motors driving precisely balanced fans for a lifetime of efficient performance. One fan draws air into the combustion chamber and draws hot gases through the heat exchanger. The second fan draws room air across the heat exchanger and circulates the heated air throughout the room.

To ensure your fireplace performs flawlessly, every Mantis is connected to gas, electricity, and a PVC exhaust system, and test fired before it leaves our factory.





*Mantis Bay Window Pedestal Package with Chrome Frame*



## Versatile Installation

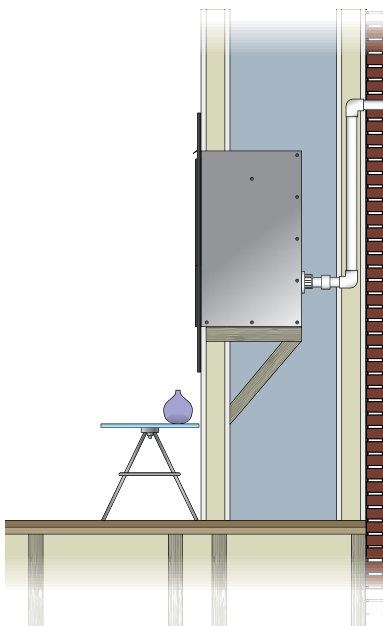
With the power-vented exhaust and intake made from PVC, the venting options are numerous. Install the Mantis as a direct-vent co-axial system, as a direct-vent co-linear, or as a single-vent system.

Any vent configuration may be used with any Mantis package. Using PVC for venting significantly reduces installation time, and requires cutting a much smaller opening in the home's exterior than is required for conventional metal venting. This makes Mantis ideal for any installation, especially for sunrooms, basements, and other applications that demand unobtrusive venting.

Packages include PVC vent adaptors for single and co-linear venting. Lengths of 1 1/2-inch PVC to complete the vent run are available at your local hardware store.



All Mantis packages include PVC vent adaptors for single vent (shown above coming from the unit) and co-linear (shown right on the exterior wall). Vent pipe and elbows not included.

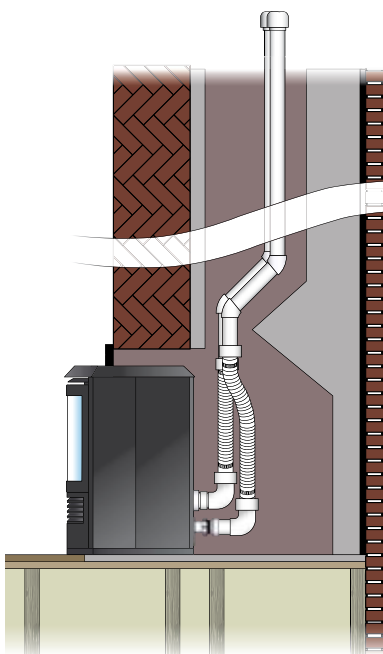
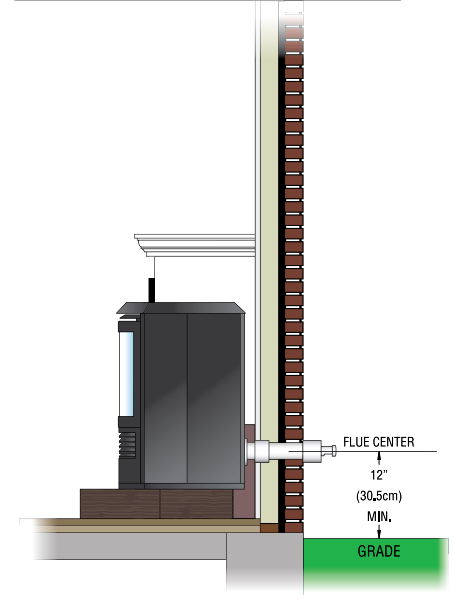


### ◀ Fireplace Picture Frame Package

Mantis Fireplace installed in-wall with single-vent running up and out through a horizontal termination (up to 40 ft of PVC).

### ▶ Zero-Clearance Fireplace Package

Mantis installed with co-axial direct-vent along an outside wall (up to 4 ft). Bay Window model shown with Empire cabinet mantel.

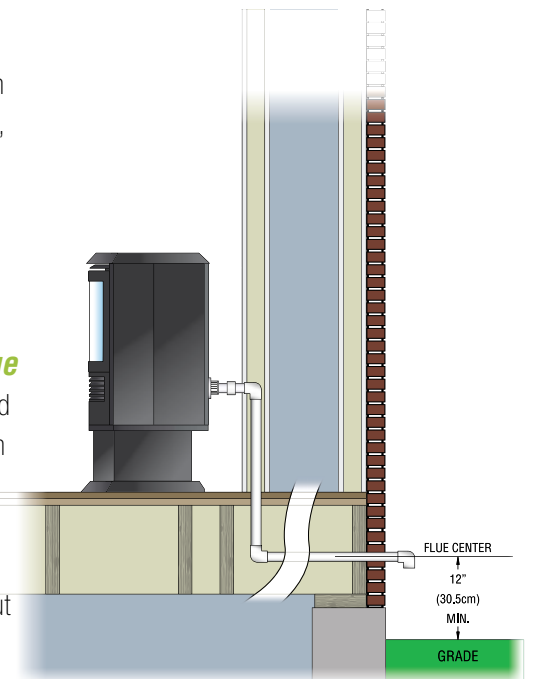


### ◀ Fireplace Insert Package

Mantis Bay Window installed as an insert in an existing wood-burning or vented gas fireplace, with co-linear direct-vent vertical termination (up to 40 ft of PVC).

### ▶ Freestanding Pedestal Stove Package

Mantis Bay Window Pedestal Package installed with single vent running down and out through a basement or crawlspace to a horizontal termination (up to 40 ft of PVC). Single-vent and direct-vent 1 1/2-inch PVC runs can also route up and out an exterior wall or up and out through the roof.





*Mantis Insert Package (Shown with Matte Black Insert Surround Kit)*

## Surround Options



*Mantis Bay Window (BF28-BM) with surround*



*NEW! Mantis Fireplace (FF28-BM) with Mantel Surround (FFK-28)*



*NEW! Mantis Fireplace (FW28-BM) with Picture Frame Surround (FWK-28)*



*NEW! Mantis Fireplace (FI28-BM) with Insert Surround (FIK-28)*

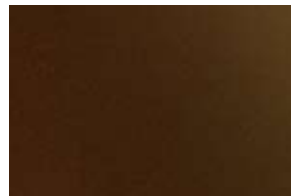
## Finish Options for Mantis Fireplace Surrounds



*Matte Black*



*Stainless Steel*



*Copper Metallic*



*Hammered Pewter*

## Window Frame Color Choices for Mantis Bay Window



*Black Frame*



*Chrome Frame*



*Gold Frame*

## Mantis Packages

Fireplace packages require metal surround available in Matte Black, Copper Metallic, Hammered Pewter, and Stainless Steel. Bay Window Fireplace and Insert packages include a Matte Black surround. Mantis Bay Window may be ordered with Black, Chrome, or Gold window frame.

<b>Mantis Fireplace Package for Zero-Clearance Fireplace</b> <i>Includes PVCA Co-linear Adaptor, PVVKSH Vent Adaptor, 24-V Thermostat</i>	
BF28-BM	Mantis Bay Window Fireplace Package, Black Window Frame (for use with mantel) - Includes Slim Top & Surround
BF28-CM	Mantis Bay Window Fireplace Package, Chrome Window Frame (for use with mantel) - Includes Slim Top & Surround
BF28-GM	Mantis Bay Window Fireplace Package, Gold Window Frame (for use with mantel) - Includes Slim Top & Surround
<b>FW28-BM</b>	<b>NEW! Mantis Fireplace In-Wall Package (for in-wall installation) - Requires FWK-28 Surround</b>
<b>FF28-BM</b>	<b>NEW! Mantis Fireplace Package (for use with mantel) - Requires FFK-28 Surround</b>
<b>Mantis Insert Package for Installation in an Existing Fireplace</b> <i>Includes PVCA Co-linear Adaptor, PVVKSH Vent Adaptor, PVTC Termination Cap, PVVKCFA Vent Flex Kit (x 2), 24-V Thermostat</i>	
BI28-BM	Mantis Bay Window Insert Package, Black Window Frame - Includes Slim Top & PVE-1 Surround
BI28-CM	Mantis Bay Window Insert Package, Chrome Window Frame - Includes Slim Top & PVE-1 Surround
BI28-GM	Mantis Bay Window Insert Package, Gold Window Frame - Includes Slim Top & PVE-1 Surround
<b>FI28-BM</b>	<b>NEW! Mantis Fireplace Insert Package - Requires FIK-28 Surround</b>
<b>Mantis Pedestal Package for Installation as a Freestanding Stove (with or without pedestal)</b> <i>Includes PVCA Co-linear Adaptor, PVVKSH Single-Vent Adaptor, VVPK Pedestal, PVVTC Termination Cap, 24-V Thermostat</i>	
BP28-BM	Mantis Bay Window Pedestal Package, Black Window Frame - Includes Full Top
BP28-CM	Mantis Bay Window Pedestal Package, Chrome Window Frame - Includes Full Top
BP28-GM	Mantis Bay Window Pedestal Package, Gold Window Frame - Includes Full Top
<b>Mantis Accessories</b>	
TDV-1	Wall Thermostat, Wire, 24-V
TMV2	Wall Thermostat, 2-Stage
TRW	Wall Thermostat, Wireless
FRBTC	Remote Control, Thermostat, Battery Operated
FRBC	Remote Control, Battery Operated
FRBTP	Remote Control, Programmable, Battery Operated
FSW-1	Wall Switch
EMBF-9S	Cabinet Mantel*
EMBC-9S	Corner Cabinet Mantel*
<b>Mantis Bay Window Accessories</b>	
PV-4H	Top, 10-inch, for insert installation, projects Mantis further into room
PVSH	Black Metal Rear Shroud, 5-inch deep, conceals vent pipes on Pedestal Package
Floor Pad	May be required for applications over carpet or tile – see dealer
<b>Mantis Fireplace Accessories</b> <i>(available in Matte Black, Copper Metallic, Hammered Pewter, or Stainless Steel)</i>	
<b>FWK-28</b>	<b>NEW! Mantis Fireplace In-Wall Surround Kit for use with FW28-BM</b>
<b>FIK-28</b>	<b>NEW! Mantis Fireplace Insert Surround Kit for use with FI28-BM</b>
<b>FFK-28</b>	<b>NEW! Mantis Fireplace Mantel Surround Kit for use with FF28-BM</b>

\* Mantels are available in Cherry, Dark Oak, Oak, Nutmeg, Unfinished Hardwood, Unfinished Oak, and White.

# Warranty Overview:

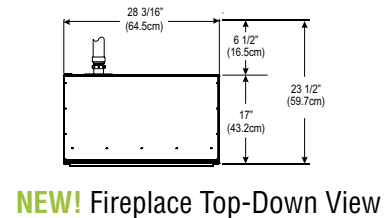
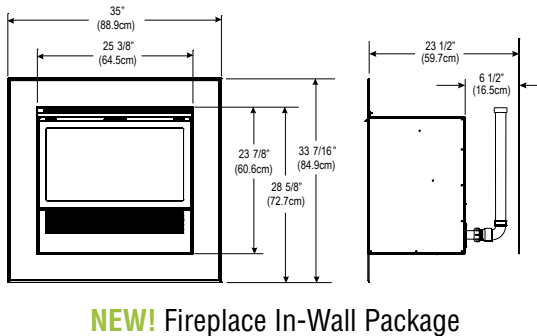
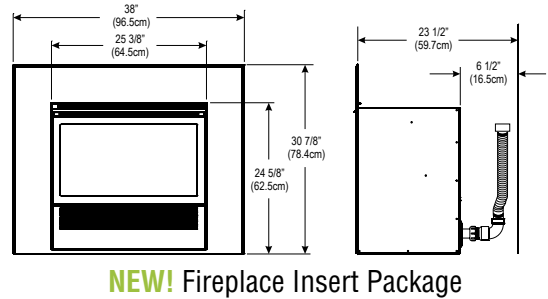
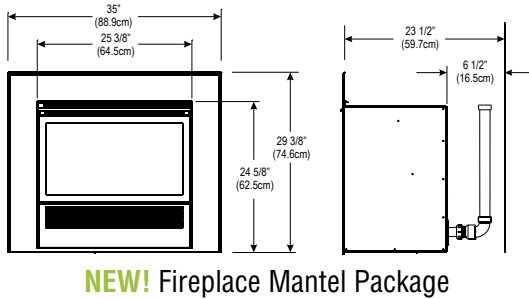
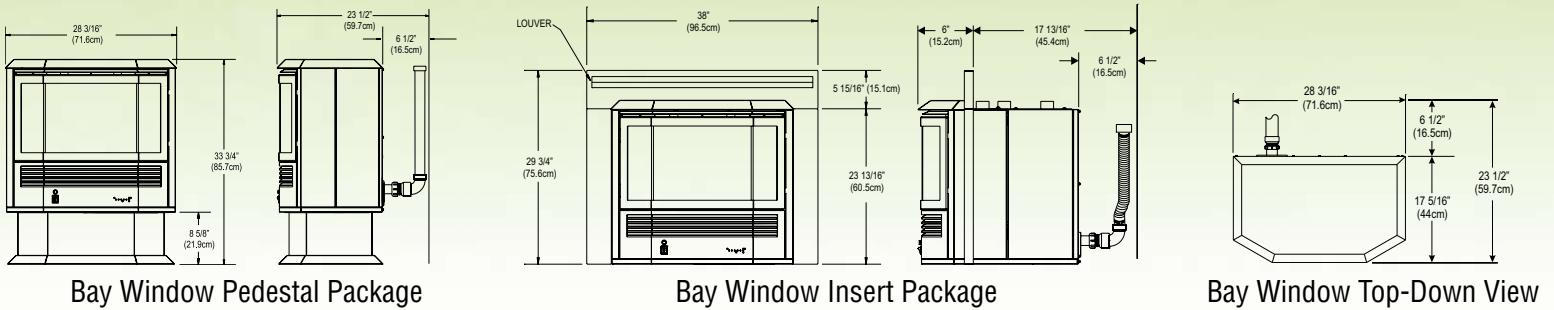
- Limited 10-Year Warranty on Heat Exchanger
  - Limited 5-Year Warranty on Parts
  - Limited 2-Year Warranty on Labor
- (See owner's manual for complete warranty information)

# Specifications: 90+% Efficient

Btu/H	Fireplace Input/Output	Bay Window Input/Output
High (Both Burners)	28,000/25,200	28,000/25,200
Med (Back Burner)	15,000/13,500	19,000/17,100
Low (Front Burner)	13,000/11,700	9,000/8,100

Fan	3-Speed Automatic <i>(cycles on only when heat is available)</i>
Ignition	Hot Surface <i>(eliminates standing pilot)</i>
Humidification	Automatic
Heating	Heats up to 1,600 sq ft <i>(actual area will depend on heater position, floorplan, and home insulation)</i>
Clearance	Zero Clearance to combustibles

# Dimensions:



Member of the following industry associations:

This appliance is design-certified to the ANSI standard by:



Empire is committed to continuous product improvement; specifications are subject to change without notice. Flame size, shape, and color will vary from photos. Our mantels feature natural veneers and hand-rubbed finishes – wood grain and color will vary. Adjust light levels and use "natural light" incandescent bulbs to enhance the dramatic look for your wooden mantel.

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