



HIGH-EFFICIENCY WALL FURNACE



SURROUND YOURSELF WITH COMFORT

UltraSaver90Plus

Zone heating is the proven method of saving money by allowing you to warm the rooms you use most. A central furnace loses 20 to 30 percent of its heat through its ductwork. Even closing the doors and registers in unused spaces does not prevent the furnace's air return system from drawing your warm air into those rooms. A modern zone heating system generates its heat and draws its return air from the same room – eliminating forced air movement into other rooms. The result is greater comfort and greater savings all winter long.

Zone heating with an UltraSaver90Plus system – the most advanced and most efficient vented heater you can buy – saves on installation, saves space, saves energy and – with the available power humidifier – helps alleviate dry winter air. Because it does not require ductwork, your US90 heater delivers all of its heat to the room, making it more efficient than even the very best central furnace.

Empire Comfort Systems – the leader in zone heating technology since 1932 – designed, tested, and manufactures the UltraSaver90Plus in Belleville, Illinois. We use the best materials available and give preference to North American suppliers. The US90Plus is truly – “Made in the USA.”

**92%
AFUE**

Innovative Technology

With its microprocessor controls, modulating gas valve, two-stage heat exchanger, and separate multi-speed blowers for venting and for air circulation, the UltraSaver90Plus* represents the cutting edge in heating technology.

The modulating valve inside the US90 delivers the exact amount of gas required, whether you just need to take the chill off in one room or heat the entire condo. The computer-controlled timing system activates the circulation blower at exactly the right moment and at the power level that matches the heat output. The result is a perfect flow of warm air – never a cold blast.

The US90 is power vented, meaning a blower delivers the precise amount of air needed to support the most efficient combustion at any heat output level. Power venting allows the UltraSaver90Plus to vent up to 50 feet away – vertically or horizontally.

The measure of any heater's efficiency starts with the heat exchanger. Inside the US90, you'll find two – both warranted for 10 years against rust-through. At each stage, the US90 captures a little more of the heat and the circulating blower transfers it into your home. (See cut-away on page 6.)

Simple Operation

For all of its technology, the UltraSaver90Plus is surprisingly easy to operate. In addition to the owner's manual every US90 comes with a Quick Start Guide to let you operate the heater in minutes.

The built-in control panel offers three modes – Remote, Manual, and Local.

Remote Mode – lets you operate the heater with an optional wall thermostat or hand-held remote. (Installing a millivolt thermostat will allow the heater to automatically resume operation after a power failure.)

Manual Mode – lets you run the heater continuously at any of five heat settings.

Local Mode – lets you set the internal thermostat to cycle the heater on and off to maintain your desired room temperature.

For complete operating instructions, download the Quick Start Guide or the owner's manual.

Follow the instructions in the manual to access a host of more advanced features. You can also operate the US90 with a variety of readily available wall thermostats – providing everything from simply maintaining your temperature setting to advanced multi-day programmability.

*Patent Pending.

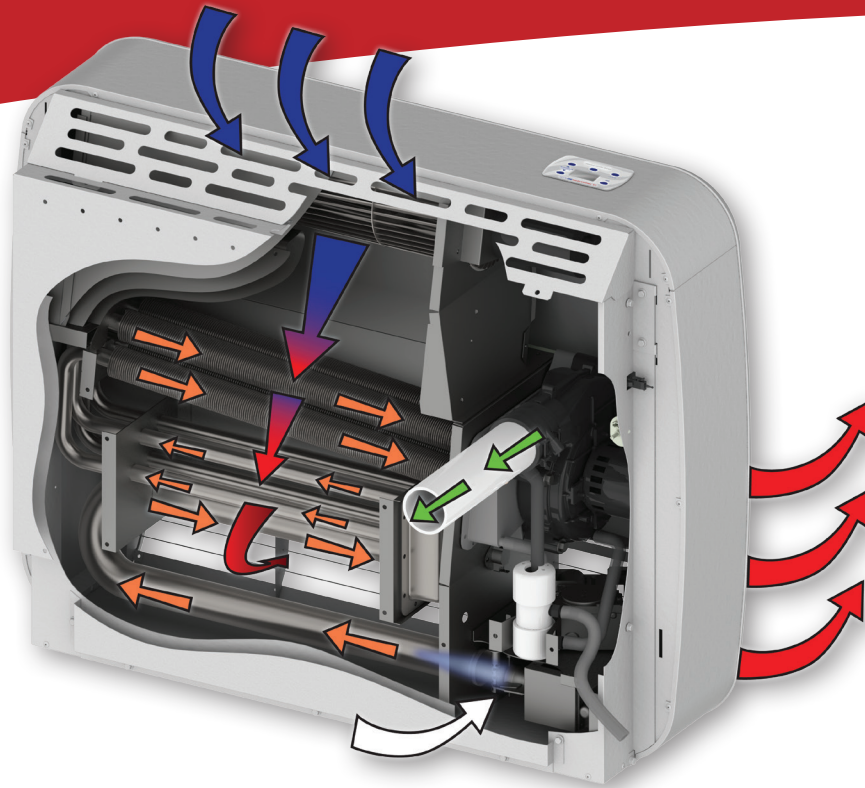


UltraSaver90Plus – Features & Benefits

- **The most efficient wall furnace available**
- **Choose 35,000 Btu or 17,500 Btu**
- **Clean, modern cabinet fits your décor**
- **Cool touch cabinet**
- **Vents with low-cost PVC, Poly pipe, or UL636 listed pipe**
- **Simple control system is easy to learn and use**
- **Works with most millivolt programmable thermostats**
- **No adjustment for high-altitude applications**
- **Whisper quiet operation**
- **Natural Gas or Propane (conversion kits available)**
- **10-Year Combustion Chamber Warranty;
5-Year Warranty – Other Components;
2-Year Labor Warranty**
- **Made in USA**

**92%
AFUE**





Condensate – A byproduct of Super-Efficient Heating

The UltraSaver90Plus is so efficient at capturing its heat, water condenses out of its exhaust – just like it does in a modern high-efficiency central furnace.

And just like a furnace installation, your dealer can route this water to flow by gravity to the nearest floor drain (where allowed by local code), or the installer can add one of two accessories.

The electric external pump accessory captures the water and periodically pumps it into a drain line. Because it does not rely on gravity, the pump can move the water horizontally or even vertically (up to 10 feet rise) to a convenient drain.

The electric humidifier accessory captures the water in a tray and uses heat and air circulation to evaporate it – creating humidity to offset the effects of dry winter air.

Only a Super-Efficient Heating System can achieve condensation.

Inside the UltraSaver90Plus

Creating Heat – The power-vent blower draws in an ideal charge of air (White Arrow) to support combustion.

The high-efficiency in-shot burners generate the heat (Orange Arrows). (Two burners in the PV35 and one in the PVI8). The two-stage heat exchanger consists of a large-diameter tube and multiple small-diameter stainless steel finned tubes. Each transfers progressively more heat.

Cooled exhaust exits the heater via PVC (or Empire approved Poly vent pipe) at 110 to 120 degrees F (Green Arrows).

Circulating Heat – The blower pulls room air (Blue Arrows) into the top of the heater and forces it across the heat exchanger. The warm air (Red Arrows) exits through the bottom louvers at the front of the heater.



Versatile Installation

Thanks to its super-high efficiency the US90 uses widely available 2-inch PVC pipe or Empire approved Poly pipe for venting. Using PVC takes a fraction of the material cost and labor involved in steel vent pipe. PVC pipe fits easily inside a standard stud wall, eliminating the additional framing and clearances required for metal vent pipe.

Because the US90 has a powered vent, the 2-inch PVC pipe can run up to 50 feet to terminate vertically through the roof or horizontally through an exterior wall. Installation in Canada must conform to the requirements of CSA B149 code. Vent systems must be composed of pipe, fittings, cements, and primers listed to the ULC S636. See installation manual for venting details.

Exceptional Safety Features

- Sealed two-stage heat exchanger protects indoor air quality
- Electronic hot surface ignition eliminates the standing pilot light
- PVC (or Empire approved Poly) venting system stays cool to touch, passes all high-wind test protocols
- Microprocessor continuously monitors all functions and displays a diagnostic code to allow faster repair (i.e. if the flue is blocked)

US90Plus – Perfect for: Sunrooms, Basements, and Room Additions; Vacation Homes and Cabins; Multifamily Housing, Lofts and Condominiums; Updating from Wood, Oil, Electric, or an Inefficient Gas Heater; Approved for Manufactured and Mobile Homes.

	PVS18N	PVS18P	PVS35N	PVS35P
Btu Input Max/Min (50% turndown)	17,500/8,750	17,500/8,750	35,000/17,500	35,000/17,500
AFUE	90%	90%	92%	92%
Fuel (conv. kit available)	Natural Gas	Propane	Natural Gas	Propane
Four-Speed Blower	210cfm MAX	210cfm MAX	420cfm MAX	420cfm MAX
Ignition	Hot-Surface	Hot-Surface	Hot-Surface	Hot-Surface
Clearance to Combustibles (inches) – top	12	12	12	12
Clearance to Combustibles (inches) – sides	0	0	0	0
Recommended Clearance for Service (inches) – sides	8	8	8	8
Height (inches)	27 7/8	27 7/8	27 7/8	27 7/8
Width (inches)	36 1/8	36 1/8	36 1/8	36 1/8
Depth (inches)	13	13	13	13
Unit Weight (pounds)	112	112	128	128
Gas Connection	1/2-NPT	1/2-NPT	1/2-NPT	1/2-NPT
Gas Supply (Min. Dia.)	1/2	1/2	1/2	1/2
Venting Diameter*	1 1/2 or 2-in PVC or approved Poly pipe	1 1/2 or 2-in PVC or approved Poly pipe	1 1/2 or 2-in PVC or approved Poly pipe	1 1/2 or 2-in PVC or approved Poly pipe
Vent Length – Min/Max	8-in to 50-ft	8-in to 50-ft	8-in to 50-ft	8-in to 50-ft
Heats Typical Room Sizes (In a Typical home in northern US state with 8 ft ceiling)	500 to 790 sq ft	500 to 790 sq ft	725 to 1400 sq ft	725 to 1400 sq ft
Electrical Requirements	← 120V 60HZ 15A, MCA 8A (10A with PVSHT1) →			
Noise Level (decibels)	35 to 42	35 to 42	39 to 50	39 to 50

*Connection to unit is 2 inches.

Accessories

Part No	Description	Fits
PVSA1	Air Pipe Kit (Converts heater from single flue to direct-vent; Comes standard with heater)	PVS18(all), PVS35(all)
PVSDS1	Deep Rear Shroud (Allows venting to be run in front of the wall on floor installations only. Adds 3 3/8 inches in depth.)	PVS18(all), PVS35(all)
PVSEP1	External Condensate Pump Kit (Pumps condensate away from heater instead of gravity drain)	PVS18(all), PVS35(all)
PVSHT2	Heated Humidification Tray (Evaporates condensate as humidity back into the room)	PVS18(all), PVS35(all)
PVSRT1	Temperature Sensor Relocation Kit (Room temperature Sensor Extension)	PVS18(all), PVS35(all)
PVSW1	Wall Mount Shroud (Allows installation of heater off of the floor)	PVS18(all), PVS35(all)
PVSCT10	Condensate Hose Extension (10 ft condensate drain extension)	PVS18(all), PVS35(all)

Warranty Terms
Limited Ten-Year Parts Warranty – Combustion Chamber
Limited Five-Year Parts Warranty – All Other Components (Except Remote Controls and Thermostats)
Limited One-Year Parts Warranty – Remote Controls and Thermostats
Limited Two-Year Labor Warranty – All Components (Except Remote Controls and Thermostats)

See owner's manual for complete warranty details.

The Annual Fuel Utilization Efficiency (AFUE) procedures used to test conventional DV heaters do not accurately measure efficiency in a true condensing heater like the US90Plus.

The US Dept. of Energy (DOE) has granted a waiver to allow US90 heaters to be tested under a newly created standard that accounts for condensate. (71 FR 63410 – March 26, 2014)

FOR YOUR SAFETY

Installation and repair should be done by a qualified service person.

This series is design certified in accordance with American National Standards Institute Z21.86/CSA 2.32 as Vented Gas-Fired Space Heating Appliances.

The installation must conform to local codes. In the absence of local codes, the

installation must conform with American National Standard (National Fuel Gas Code) known as NFPA 54 and ANSI Z223.1 (latest edition) available from the American National Standards Institute, Inc., 11 West 42nd St., New York, N.Y. 10036, or from the National Fire Protection Association, Batterymarch Park, Quincy, Massachusetts 02269.



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