

Frequently Asked Questions about Ductless Heat Pumps

Q: What is a ductless heat pump?

A ductless heat pump (also known as a mini-split) is a highly efficient zonal heating and cooling system that does not require the use of air ducts. Ductless heat pump systems consist of an outdoor compressor unit and one or more indoor air-handling units, called “heads”, linked by a refrigerant line. Indoor heads are mounted high on a wall or ceiling covering a 3” hole where the refrigerant line passes through to the outside unit. Each indoor head corresponds with a heating and cooling zone that can be controlled independently.

Q: What are the criteria for a qualified system?

Qualifying ductless heat pump systems must be split system heat pumps employing inverter-driven outdoor compressor units, and inverter –driven or variable speed indoor blowers. Inverter-driven indoor units are preferred, as they increase the overall system efficiency. In addition, systems must be installed according to industry best practice standards for R410A protocol, flare connections (size and tightening torque), leak checking and vacuum/dehydration. Rigid line set covers must be installed over insulation-wrapped exterior line sets and, at minimum, UV tape wrapping on the portion of the line set that leaves the house and joins the outdoor unit. Units must be installed in the main living area of the home. Indoor units using any type of field-installed duct system are not eligible.

Q: Do I still need my old heaters?

While a ductless heat pump can be used as a primary heat source, most homeowners are encouraged to keep their existing electric heating units to supplement the ductless heat pump in extreme weather conditions or in hard to reach extremities of the home.

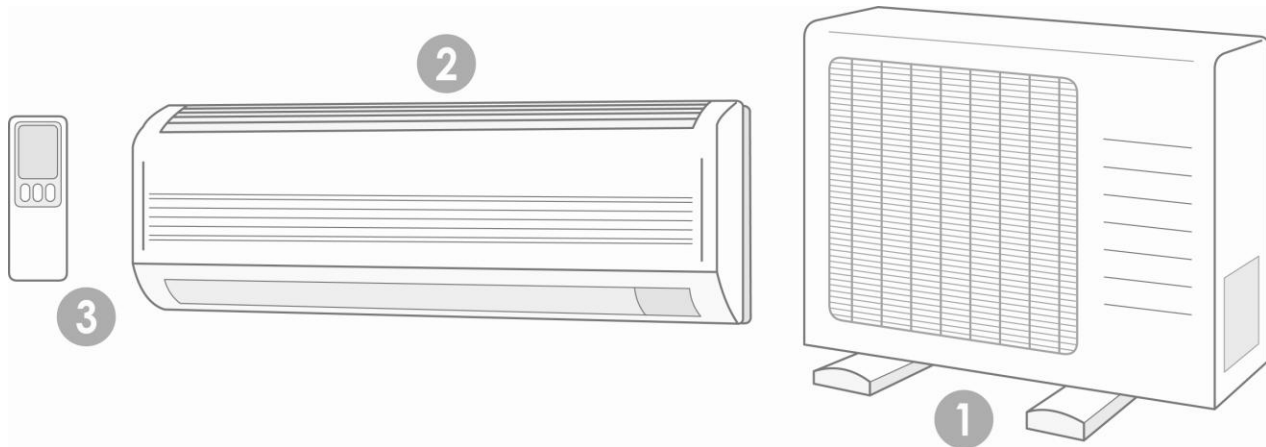
Q: How does a ductless heat pump work?

Ductless heat pumps are reversible, 2-way heat pumps that use electricity to transfer heat between outdoor and indoor air by compressing and expanding a refrigerant. Using a refrigerant vapor compression cycle, like a common household refrigerator, ductless heat pumps collect heat from outside the house and deliver it inside on the heating cycle, and vice versa on the cooling cycle.

Ductless heat pumps use variable speed compressors with “inverter technology” (AC to DC) to continuously match the heating/cooling load, avoiding the on/off cycling of conventional electric resistance and central heating systems that is associated with uncomfortable temperature variations and higher energy consumption.

Ductless Systems consist of several parts:

1. An outdoor unit that contains a condensing coil, an inverter-driven variable speed compressor, an expansion valve and a fan to cool the condenser coil.
2. An indoor unit that contains an evaporator and a quiet oscillating fan to distribute air into the space.
3. A remote control that is used to set the desired temperature.



Q: How is the system controlled?

The system is controlled with a remote control that also functions as a programmable thermostat. Most systems offer various modes of operation such as quiet, high, or timer. Wall mounted controls are also available.

Q: What are appropriate applications for a ductless heat pump?

Replacing an existing zonal heating system – ductless heat pumps can replace or supplement existing electric baseboard/wall/ceiling units, woodstoves and other space heaters (propane, kerosene). A cost effective electric heat conversion in a small house might consist of a single system serving the main area of the house, while leaving existing electric baseboards in bedrooms and bathrooms. Talk to your participating contractor about options for your home.

Room additions – Another application for ductless heat pumps is when a room is added to a house or an attic is converted to living space. Rather than extending the home's existing ductwork or pipes or adding electric resistance heaters, the ductless heat pump can provide efficient heating and cooling. Note: room additions are not eligible for the Idaho Power incentive.

New construction – New homes can be designed or adapted to take advantage of the characteristics of ductless heat pumps. Typically one or more systems might be installed in various "zones" of the house to simplify installation and minimize refrigerant line length. Note: new construction is not eligible for the Idaho Power incentive.

Q: Are ductless heat pumps efficient?

Yes! Ductless heat pumps can operate using 25%- 40% less energy than electric resistance & forced air.

Three key factors account for the high efficiency of ductless heat pumps:

1. Ductless heat pumps allow the user to control each heating/cooling zone independently, eliminating the costly over-heating and cooling common to central air systems. Why pay to heat or cool rooms that are not currently occupied? While central air systems lose as much as 30% efficiency through air leaks and conduction in the ductwork, ductless heat pumps distributing air directly into each zone, resulting in as much as 25% greater efficiency.
2. Ductless heat pumps use inverter-driven variable speed compressors that allow the system to maintain constant indoor temperatures by running continuously at higher or lower speeds. Thus, the system can ramp-up or down without great losses in operating efficiency, avoiding the energy intensive on/off cycling common in electric resistance and forced air systems.
3. Modern ductless heat pumps have ultra-high Seasonal Energy Efficiency Ratios (SEER) between 16 and 22, and Heating Seasonal Performance Factors (HSPF) between 8.5 and 11.

Q: How long have ductless heat pumps been around?

Ductless heat pumps were developed in Japan in the 1970's and have since become a preferred heating and cooling system in Asia and much of Europe. In the United States ductless heat pumps have been used in commercial applications for over 20 years.

Q: How much does a ductless heat pump cost?

The average cost of an installed ductless heat pump with one indoor heating/cooling zone is between \$3,500 and \$4,500. Additional heating zones and greater heating capacities will increase the cost of the system. Other factors that will affect the cost of an installed system include: the manufacturer and model, refrigerant line-set length, difficulty of installation, and contractor rates.

Q: What incentives are available for ductless heat pumps?

Idaho Power is helping qualified customers upgrade to a ductless heating and cooling system that uses less electricity and provides greater comfort. Eligible homeowners will receive a \$1,000 incentive check when a participating contractor installs a qualified system. Limit of one incentive per home.

You may qualify for participation in the pilot if:

- your home's primary heat source is electric: baseboards, wall heaters or ceiling cable,
- you contract to install an inverter-driven ductless system in the main living area of your home,
- your home is not connected to a natural gas line for use of space heating,
- you have the qualifying ductless heat pump installed by a participating contractor,
- you agree to allow Idaho Power and third parties associated with the pilot to visit your home to inspect the ductless heat pump installation, and
- you agree to participate in customer surveys as part of this pilot.

Q: How long will a ductless heat pump system last?

With proper maintenance and care a ductless heat pump should perform for over 20 years. Many systems installed in the 1980's are still functioning well today.

Q: What kind of maintenance does a ductless heat pump require?

Ductless heat pumps require some basic maintenance to ensure optimum performance. In most cases keeping the filters and coils clean is all the maintenance needed, and can be performed easily by the home owner. Check with your contractor to see what maintenance is recommended for your system.

Q: How do I know what size of system my house needs?

Ductless heat pump systems are sized to meet the heating and cooling needs of individual zones in the home. There is a great deal of flexibility when it comes to system sizing as one indoor unit can provide between ¾ and 2 ½ tons of heating/cooling depending on its BTU capacity rating. Some common capacities for indoor units are 9k, 12k, 18k, 24k, and 30k BTU. Outdoor units are sized to meet the combined load of all heating/cooling zones. More than one outdoor unit may be necessary for multiple indoor units. Consult with your contractor to determine the appropriate size of system for your home.

Q: How do I select a contractor?

Tips for hiring a contractor:

1. Check that the contractor holds an Idaho State HVAC contractor or specialty contractor certificate. Find out about certification requirements for contractors in Idaho at the [State of Idaho Division of Building Safety Web site](#). The Idaho Division of Building Safety requires that Heating Ventilation and Cooling contractors have a valid Idaho State HVAC contractor or specialty contractor certificate.
2. Ask for referrals from friends, neighbors, and co-workers.
3. Ask contractors for customer references and call those references.
4. The contractor should spend time inspecting your current system and assessing your needs.
5. Get a written and itemized estimate. Be sure to compare cost, energy efficiency and warranties. The lowest price might not be the best deal.
6. Always have a signed written proposal with the contractor before work begins. The proposal should specify costs, model numbers, job schedule and warranty information. Never let a job begin without one.