Ductless

Heat pump for single-family ground oriented houses

ENERGY SAVE NEW WEST

A ductless or mini/multi split heat pump is a good fit for your home if you are…

- ✓ **Without ductwork and already heating with radiators, in-floor, or electric/hydronic baseboards.**
- ✓ **Seeking a more economical way of heating.**
- ✓ **Replacing window air conditioning (AC) or adding home cooling.**
- ✓ **Wanting more control over heating and cooling of your home.**

THINGS TO CONSIDER WHEN DESIGNING/SELECTING A DUCTLESS HEAT PUMP

INSTALLED COST – Ductless heat pump costs can vary from several thousand dollars up to tens of thousand dollars depending on the number of indoor units installed and the complexity of installation. This cost can be reduced by carefully selecting indoor unit locations that can maximize the per-unit servicing areas and are also easy to access for installation.

SIZING – For the heat pump to work at its optimal rated efficiency, it is important to size the equipment based on a proper heat loss/heat gain calculation of the home. Under- or oversized equipment will likely reduce the comfort and increase the electricity costs. To properly size the equipment, it is necessary to use the CSA F280 Standard room-by-room calculation method. While the F280 calculation is required by BC Building Code, it is often overlooked, and a rule of thumb method is used instead. This may result in installing a heat pump with too large or too little capacity. If your heat load is too large, consider upgrading insulation, windows/doors and airtightness of your home before replacing your heating equipment.

ZONING – Another great thing about ductless heat pump is that zoning is easier as each indoor head typically serves one thermal zone and is controlled with its own thermostat/controller.

SUPPLEMENTAL HEAT SOURCE – Depending on the climate and product type/efficiency, some type of auxiliary or backup heating may be required. If a cold climate heat pump is installed, homeowners may reduce or even eliminate the need of supplemental heating. However, for ductless heat pumps it might be challenging to have an indoor head in every single room for retrofit projects, and in these situations, homeowners may need auxiliary heating.

ELECTRICAL PANEL/SERVICE CAPACITY – In many cases of older homes, homeowners may require upgrading the electrical panel and/or service to accommodate your heat pump's additional electrical load, and depending on the current capacity and service availability, the electrical upgrade cost can sometimes be higher than expected. In this case, you may also consider installing an energy management system.

MULTI-ZONE VS. SINGLE-ZONE SYSTEMS – Depending on the home's square footage and layout, homeowners may have just one single zone system (one indoor unit per outdoor unit), or more often, a multi-zone system where multiple indoor units are connected to one outdoor unit. This still allows you to heat and cool multiple separate zones or individual rooms with its own thermostats. For some larger homes, there could be more than one outdoor unit.

USEFUL LINKS

REBATE INFORMATION

- ▸ CleanBC Better Homes Heat Pump Rebate (Central)
- ▸ CleanBC Better Homes Heat Pump Rebate (Ductless)
- ▸ CleanBC Better Homes Heat Pump Rebate (Dual Fuel Ducted)
- ▸ CleanBC Better Homes Heat Pump Rebate (Air-to-Water)
- ▸ CleanBC Municipal Top-up
- ▸ Canada Greener Homes Initiative

THINGS TO CONSIDER WHEN INSTALLING A DUCTLESS HEAT PUMP

Indoor Unit

Indoor unit or head is the visible unit of the heat pump system that goes into each thermal zone of your home.

INDOOR UNIT LOCATION

- It is easier to heat or cool one open space with one indoor unit as the heated or chilled air will only likely travel when doors are open. Also, while some of the heated air can rise to the floor above through an open stairwell, it won't go down to the floor below and vise versa for cool air.
- Locate the indoor unit(s) as close as possible to the outdoor condenser. This will reduce the installation costs, and also facilitate the condensate drain to the ground outside.
- Hide connections in closets. While tubes and wires can run through in-wall/ceiling spaces, if the indoor unit is placed where the line sets can run exposed (e.g. through closets, crawlspaces, attics, etc.) homeowners can save the cost of patching walls and ceilings.

INDOOR UNIT TYPES

- **Wall units** are the most common type of indoor units that are also most efficient as they are mounted high on a wall and able to heat or cool a larger space.
- **Floor units** are less visible than wall units, but the airflow can be obstructed by furniture in the room.
- **Ceiling cassettes** are mounted above the ceiling and only the vents are visible. They are the least visible option but require space above the ceiling. With some cassette units you may also require installing a separate condensate pump.

Outdoor Unit

The outdoor unit or condenser/compressor of ductless heat pump system is typically about the size of a large suitcase. It uses its surrounding air to transfer heat to indoor units for distribution.

OUTDOOR UNIT LOCATION

- **Local bylaws** – No building permit is required for single family homes including homes with secondary suites, townhouses or row houses and duplexes, but the noise limit compliance will be required.

  Check out the City of New Westminster bylaws around noise limits.

  Building permits are required for multifamily buildings including condos and apartment buildings..
- **Aesthetics** – Aesthetics are based on personal preference but sometimes external line sets from multi-headed ductless heat pump can be visibly unpleasant. Ask your contractor about an installation strategy including the use of conduits to minimize visibility if you're considering a ductless heat pump with multiple indoor units.
- **Unobstructed airflow** – Heat pumps extract heat from surrounding air so it is important to locate the outdoor unit where free airflow is well maintained.
- **Roof runoff** – Avoid locating under a roof drip line or where snow slides off the roof.
- **Mounting** – Consider using a ground stand/riser or vibration isolation pad to minimize noise and keep snow out of your heat pump. Wall mounts can also keep away from mowers and shovels but can sometimes transmit noises inside. Some municipalities may require an extra permit to mount a heat pump on an external wall.
- **Serviceability** – Outdoor unit should easily be accessible for servicing and maintenance separate condensate pump.

Other Considerations

- **Mechanical ventilation** – Ductless heat pump cannot incorporate fresh air ventilation into the system, and an alternative solution may be needed if required. Consider installing a separate mechanical equipment such heat recovery ventilator (HRV) for balanced ventilation of an airtight home.
- **Quality installation and warranty** – You should hire a contractor who can do a quality installation and ensure your equipment is providing maximum efficiency and comfort. If you're applying for CleanBC Better Homes rebates, you must have the work completed by a Home Performance Contractor Network (HPCN) member who have been trained and registered by the Home Performance Stakeholder Council.
- **Maintenance** – Regular maintenance is recommended to maximize equipment efficiency and longevity. Keep your indoor and outdoor units always clean and remember to clean the filter every 4 - 6 months or as recommended by the manufacturer.

FOR MORE INFORMATION VISIT ENERGYSAVENEWWEST.CA OR CALL 604.515.3818