



Heating & Cooling Systems

Cold Climate Application Guideline Ductless

Bryant Ductless Systems are designed to perform within a wide temperature range, including low outdoor ambient conditions as low as -22°F (-30°C), provided proper load calculation, application, installation and maintenance measures are observed. When installing Bryant Ductless Systems in extreme outdoor conditions where snow and ice buildup may be an issue, it is important that the installing contractor or dealer survey the jobsite to ensure the outdoor unit is installed properly and precautions are taken to keep the unit operating within the tested ratings and conditions. In extreme conditions, defrost issues may occur and extra care must be taken to allow the system to operate and defrost properly to provide optimal comfort and meet the demands of the conditioned space.

1. Proper System Sizing

Ensure the system is sized properly based on the Heating Load calculation. Oversizing the system may cause short run times. Frequent heating cycles lasting less than 10 minutes may lead to incomplete defrost cycles or extended periods between defrost cycles.

2. Use of a Ductless System where additional heating sources (Auxiliary Heater) are in the space

For optimal performance, including proper defrost cycle operation, allow the properly sized Bryant Ductless Heat Pump to run as the sole heating source, reducing the operation of the additional heating sources to a minimum or if possible turned off. Adjust all the additional heating sources (Auxiliary Heater) in the same and/or other areas of the house to allow the Ductless System to carry the majority of the load at all times. Since heat rises and the high wall ductless unit is installed in the upper part of the wall, migration of heat to the space where the ductless system is installed from other sources could cause conflict between the two heating sources, which may prevent the ductless unit from meeting the required minimum run time of 10 minutes to properly begin the full defrost cycle of the outdoor coil.

When using additional heating sources (auxiliary heater) within the space, adjust the temperature offset, especially for the High Wall indoor units. Adjust sensing offset settings to at least 4°F (2.2°C) to take into account situations where air distribution to the space may be compromised by overheating the space with the additional heating sources (auxiliary heater) and reducing the run time cycle of the Ductless System leading to incomplete defrost cycles. This may require further adjustment based on occupant feedback.

3. Proper Charge

Pressure test the line set with dry nitrogen and triple-evacuate with the vacuum pump per the manufacturer's instructions. The refrigerant charge is adjusted **ONLY IF NECESSARY**.

Many installations do not require adjustments from pre-charge levels with a standard line set. Improperly charged systems can lead to issues with the system such as:

1. Poor heating and or cooling performance
2. Incomplete defrost cycles or lack of defrost cycles
3. Condensation leaks
4. Compressor operation reduction due to overheating.

NOTE: Follow the manufacturer's instructions for the minimum and maximum line set length and height change.

4. Minimum Line Set Length

Line set separation shorter than 10ft (3m) may cause early defrost termination and clog the outdoor coil. A clogged coil may emit noise during the unit operation due to refrigerant flowing through the system.

5. Insulation

Insulate the entire line set length (both pipes separately and completely) to avoid condensation and energy loss. Once insulated, protect the outdoor portion of the line set with a rigid cover to avoid insulation damage.

6. Snow and Ice Buildup

Ensure adequate clearance above the historical average maximum snow depth of the installation location. Installation instructions call for the outdoor unit to be installed 2in (5cm) above the prevailing snow fall rate. Take precautions to avoid excess snow and ice buildup due to wind and/or extreme snow and ice conditions. Remove ice and snow buildup more than 3in (7.6cm) from the top of the outdoor unit. In climates with significant snowfall, snow remains for long periods of time creating buildup. Raise the outdoor unit per the installation instructions.

A field provided stand must be used and it must be high enough to allow for snow drifts and 3ft (1m) of clearance in front of the outdoor unit must be maintained at all times.

7. Outdoor Unit Installation

Do not place multiple units at less than manufacturer allowed clearances. Do not place multiple units above each other, or with the outdoor fan outlet flow pointing directly at another unit, except when explicitly recommended by the manufacturer.

NOTE: Pay attention to the prevailing winds when selecting the outdoor unit location.

8. Protection of the T4 or outdoor sensor

Position the unit to allow for free airflow. Review the service manual for guidance on proper clearance from obstructions including walls, overhangs, protrusions and other features. The outdoor unit should be installed as close as possible to the wall to meet factory clearances of 6in (15.2cm) to avoid snow and ice buildup on the rear of the coil thus affecting the T4 sensor function. For more information, consult your Ductless Representative.

- Ice accumulation on the outdoor coil during heating mode is a normal occurrence for a heat pump system. Only excess accumulations, which impede heating operation or buildup where frost can touch the fan blade, should be considered faulty defrost operation.
- It is possible for frost to accumulate and not completely defrost in some extreme weather events. Manual defrosting may be necessary in this condition to allow the system to recover from such events.

Manual Defrost can be achieved following these steps (not available with the 24 Volt interface):

1. Press the **Auto/Cool** button twice on the indoor unit to start the **Force Cooling** mode (FC appears on the indoor panel display).
2. Press the **Auto/Cool** button continuously for 5 seconds under the **Forced Cooling** mode. The indoor fan stops and "dF" appears on the indoor panel display.