

## Variable Speed Heat Pumps and PTCS Specifications

Many manufacturers produce heat pumps with variable speed or inverter-driven compressors. These units are capable of ramping output up or down depending on various factors, including outdoor temperature and requested heat. Many manufacturers claim these units use less energy overall to provide the same conditioning effect as standard air source heat pumps.

### Outdoor Compressor

The compressor in the outdoor unit must be inverter-driven to be considered a Variable Speed Heat Pump (VSHP). If the indoor air handler is the only component that is variable speed, the system will not qualify as a VSHP.

### Reference List (not a QPL) & Quick Guide

Although it is not a Qualified Products List (QPL), BPA maintains a [Reference List](#) of products to help quickly identify Ducted Variable Speed Heat Pumps & Ducted Mini-Splits with at least 9.0 HSPF/7.6 HSPF2. If you don't see a particular VSHP on this list, it may still qualify. Please send its AHRI certificate to [ResHVAC@bpa.gov](mailto:ResHVAC@bpa.gov) to keep this reference updated.

### Air Flow

**Variable speed heat pumps must meet specified manufacturer air flow rate to qualify for PTCS certification.**

The variable output of these units has led to questions regarding PTCS air flow requirements. A common misinterpretation of the specification is that any installed unit must provide at least 325 cfm/ton of air flow. This is only partially correct, as we also accept units that meet the manufacturer specified air flow rate. To clarify, the [PTCS Air Source Heat Pump specification](#) states:

**3. Air Flow** *Air flow across the indoor coil must be as specified in the heat pump manufacturer's documentation.*

Since outdoor temperatures greatly influence the air flow rates for variable speed heat pumps, some manufacturers specify their required flow rates in the form of a range (*see example right*).

**Carrier: Heating in Efficiency Mode (CFM)**

Size	Max Capacity	Min Capacity
24	900	750
36	1350	750
48	1600	890
60	1750	901

*25VNA Infinity™ Variable Speed Heat Pump, Product Data Manual. Carrier. Aug. 2015.*

For more information, please contact the Residential HVAC team by calling 1-800-941-3867 or by emailing [ResHVAC@bpa.gov](mailto:ResHVAC@bpa.gov).