

# 2001 STANDARD for

# SINGLE PACKAGE VERTICAL AIR- CONDITIONERS AND HEAT PUMPS



AIR-CONDITIONING &  
REFRIGERATION  
INSTITUTE

**Standard 390**

**IMPORTANT**

***SAFETY RECOMMENDATIONS***

It is strongly recommended that the product be designed, constructed, assembled and installed in accordance with nationally recognized safety requirements appropriate for products covered by this standard.

ARI, as a manufacturers' trade association, uses its best efforts to develop standards employing state-of-the-art and accepted industry practices. However, ARI does not certify or guarantee safety of any products, components or systems designed, tested, rated, installed or operated in accordance with these standards or that any tests conducted under its standards will be non-hazardous or free from risk.

Note:

This is a new standard.

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# SINGLE PACKAGE VERTICAL AIR-CONDITIONERS AND HEAT PUMPS

## Section 1. Purpose

**1.1 Purpose.** The purpose of this standard is to establish, for Single Package Vertical Air-Conditioners and Heat Pump equipment: definitions; classifications; test requirements; rating requirements; minimum data requirements for Published Ratings; operating requirements; marking and nameplate data; and conformance conditions.

**1.1.1 Intent.** This standard is intended for the guidance of the industry, including manufacturers, engineers, installers, contractors and users.

**1.1.2 Review and Amendment.** This standard is subject to review and amendment as technology advances.

## Section 2. Scope

**2.1 Scope.** This standard applies to factory-made commercial and industrial Single Package Vertical Air-Conditioners and Heat Pump equipment as defined in Section 3.

**2.1.1 Energy Source.** This standard applies to electrically operated, vapor-compression refrigeration systems.

**2.1.2 Installation.** The *SPVAC/SPVHP* is intended for ducted or non-ducted installation with field or factory supplied grilles.

**2.2 Exclusions.** This standard does not apply to the following:

**2.2.1** Heat operated air-conditioning/heat pump equipment or to room air-conditioners/heat pumps.

**2.2.2** Packaged terminal air-conditioners and heat pumps as defined in ANSI/ARI Standard 310/380, *Packaged Terminal Air-Conditioners and Heat Pumps*, or to water-to-air and brine-to-air heat pumps as defined in ISO 13256-1, *Water-Source Heat Pumps-Testing and Rating for Performance*.

**2.2.3** Unitary air-conditioners and air-source unitary heat pumps as defined in ARI Standard 210/240, *Unitary Air-Conditioning and Air-Source Heat Pump Equipment*, with capacities less than 65,000 Btu/h [19 000W].

**2.2.4** Commercial and industrial unitary air-conditioners and heat pumps as defined in ARI Standard 340/360, *Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment*, with capacities 65,000 Btu/h [19 000W] or greater.

## Section 3. Definitions

All terms in this document shall follow the standard industry definitions in the current edition of *ASHRAE Terminology of Heating, Ventilation, Air Conditioning and Refrigeration* unless otherwise defined in this section.

**3.1 Coefficient of Performance (COP).** A ratio of Cooling/Heating Capacity in watts [W] to the power input values in watts [W] at any given set of rating conditions expressed in watts/watt [W/W]. For heating *COP*, supplementary resistance heat shall be excluded.

**3.1.1 Standard Coefficient of Performance.** A ratio of the capacity to power input obtained at Standard Rating Conditions.

**3.2 Cooling Capacity.** The capacity associated with the change in air enthalpy which includes both the Latent and Sensible Capacities expressed in Btu/h [W].

**3.2.1 Latent Capacity.** Capacity associated with a change in humidity ratio.

**3.2.2 Sensible Capacity.** Capacity associated with a change in dry-bulb temperature.

**3.3 Defrost Range.** Ambient conditions such that a heat pump operating in the heating mode will develop frost on the outdoor coil to the extent that temperature ranges/tolerances specified in Table 4 of ANSI/ASHRAE Standard 37 will be exceeded.

**3.4 Energy Efficiency Ratio (EER).** A ratio of the Cooling Capacity in Btu/h to the power input values in watts [W] at any given set of Rating Conditions expressed in Btu/W·h.

**3.4.1 Standard Energy Efficiency Ratio.** A ratio of the capacity to power input value obtained at Standard Rating Conditions.