

# 1997 STANDARD for

# POSITIVE DISPLACEMENT CONDENSING UNITS



AIR-CONDITIONING &  
REFRIGERATION  
INSTITUTE

**Standard 520**

**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 standard supersedes ARI Standard 520-90.

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# POSITIVE DISPLACEMENT CONDENSING UNITS

## Section 1. Purpose

**1.1 Purpose.** The purpose of this standard is to establish, for positive displacement condensing units for refrigeration applications: definitions; requirements for testing and rating; 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, designers, installers, contractors and users.

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

## Section 2. Scope

**2.1 Scope.** This standard applies to electric motor driven, single capacity positive displacement condensing units for refrigeration applications, air-cooled, evaporatively-cooled, and water-cooled.

**2.1.1 Refrigerant.** The rating points in this standard are based on commonly used refrigerants. This standard is intended to serve as a guide for use with other refrigerants.

**2.2 Exclusions.**

**2.2.1** This standard does not apply to condensing units intended for use in:

- a. Household refrigerators and freezers
- b. Automotive air-conditioners
- c. Dehumidifiers

## Section 3. Definitions

**3.1 Definitions.** All terms in this document will 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.

**3.2 Energy Efficiency Ratio (EER).** A ratio calculated by dividing the refrigerating capacity (see 3.6) in Btu/h [W] by the power input in watts at any given set of ratings expressed as Btu/h per watt [W/W]

**3.2.1 Standard Energy Efficiency Ratio.** A ratio calculated from the refrigerating capacity and power input values obtained at Standard Rating Conditions.

**3.3 Manufacturer.** For the purpose of this standard, the manufacturer is the company or organization which evidences its responsibility by affixing its name or its nationally registered trade mark or trade name, to the condensing unit.

**3.4 Positive Displacement Condensing Unit.** A specific refrigerating machine combination for a given refrigerant, consisting of one or more motor driven positive displacement compressors, condensers, and accessories as provided by the manufacturer.

**3.5 Published Rating.** A statement of the assigned values of those performance characteristics, under stated rating conditions, by which a unit may be chosen to fit its application. These values apply to all units of like nominal size and type (identification) produced by the same manufacturer. As used herein, the term "published rating" includes the rating of all performance characteristics shown on the unit or published in specifications, advertising or other literature controlled by the manufacturer, at stated rating conditions.

**3.5.1 Standard Ratings.** A rating based on tests performed at Standard Rating Conditions.

**3.5.2 Application Rating.** A rating based on tests performed at application rating conditions, (other than Standard Rating Conditions).

**3.6 Refrigerating Capacity.** For the purposes of this standard, refrigerating capacity is the capacity in Btu/h [W] obtained at specified conditions; it is equal to the increase in total enthalpy between the liquid refrigerant entering the expansion valve and superheated return gas multiplied by the mass flow rate of the refrigerant.

**3.7 "Shall," "Should," "Recommended" or "It is Recommended."**

**3.7.1 Shall.** Where "shall" or "shall not" is used for a provision specified, that provision is mandatory if compliance with the standard is claimed.

**3.7.2 Should, Recommended, or It is Recommended.** "Should," "recommended," or "it is recommended" is used to indicate provisions which are not mandatory, but which are desirable as good practice.