

1995 STANDARD for

SOUND RATING OF OUTDOOR UNITARY EQUIPMENT



AIR-CONDITIONING &
REFRIGERATION
INSTITUTE

Standard 270

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.

ARI CERTIFICATION PROGRAM PROVISIONS

Scope of the Certification Program

The Certification Program includes testing to determine a sound rating for outdoor unitary air-conditioning equipment.

Certified Ratings

The following Certification Program rating is verified by test:

1. Sound rating in terms of a derived tone corrected A-weighted sound power level in decibels.

Note:

This standard supersedes ARI Standard 270-94.

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SOUND RATING OF OUTDOOR UNITARY EQUIPMENT

Section 1. Purpose

1.1 Purpose. The purpose of this standard is to establish for outdoor unitary equipment definitions, requirements for testing and rating sound, 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 the outdoor sections of factory-made air-conditioning and heat pump equipment as defined in ARI Standard 210/240-94.

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 noted in this section.

3.2 Air-Source Unitary Heat Pump. An air-source unitary heat pump consists of one or more factory-made assemblies which normally include an indoor conditioning coil, compressor(s), and outdoor coil, including means to provide a heating function and may optionally include a cooling function. When such equipment is provided in more than one assembly, the separated assemblies shall be designed to be used together, and the requirements of rating outlined in the standard are based upon the use of matched assemblies.

3.3 Hertz. Hertz (Hz) is the unit for frequency in cycles per second.

3.4 One-Third Octave Band. A one-third octave band is a band of sound covering a range of frequencies such that the highest is the cube root of a two (approximately 1.26) times the lowest. The one-third octave bands used in this standard are those shown in Table 1, as defined in ANSI Standard S1.11-1986 (R1993).

3.5 Published Rating. A published rating is 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.

3.5.1 Standard Rating. A standard rating is a rating based on tests performed at Standard Rating Conditions.

3.5.2 Application Rating. An application rating is a rating based on tests performed at application rating conditions (other than Standard Rating Conditions).

3.6 "Shall," "Should," "Recommended," or "It Is Recommended." "Shall," "should," "recommended," or "it is recommended" shall be interpreted as follows:

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

3.6.2 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.

3.7 Sound Power Level. The sound power level (L_w) of a sound source, in decibels (dB), is ten times the logarithm to the base 10 of the ratio of the sound power radiated by the source to a reference power. The reference power used in this standard is one picowatt (1 pW).

3.8 Sound Pressure Level. The sound pressure level (L_p), in decibels (dB), of a sound is 20 times the logarithm to the base 10 of the ratio of a given pressure to a reference pressure. The reference pressure used in this standard is 20 micropascals.

3.9 Unitary Air-Conditioner. A unitary air-conditioner consists of one or more factory-made assemblies which normally include an evaporator or cooling coil, a compressor and condenser combination, and may include a heating function as well. Where such equipment is provided in more than one assembly, the separated assemblies are to be designed to be used together.