AHRI Standard 270

2015 Standard for

Sound Performance Rating of Outdoor Unitary Equipment

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AHRI STANDARD 270-2015 WITH ADDENDUM 1,
Sound Performance Rating of Outdoor Unitary Equipment

March 2016

Note: This addendum is not ANSI approved and is currently going through the process to become so.

Addendum 1 (dated March 2016) of AHRI Standard 270-2015, "*Changes to AHRI Standard 270-2015"* is provided as follows. The following changes have been incorporated (deletions are shown by ~~strikethroughs~~, additions are shown by shading) into the already published 2015 version of AHRI Standard 270 to avoid confusion.

The changes include:

1) The last sentence of Section 4.3.2 was removed.

4.3.2 *Outdoor-side Air Quantity.* All tests shall be made at the outdoor-side air quantity specified by the manufacturer where the fan drive is adjustable, or, where the fan drive is direct-connected, they shall be determined at the outdoor air quantity inherent to the unit when operated with all of the air resistance elements associated with inlet louvers and any duct work and attachments normally supplied as part of the unit. ~~Once established, the outdoor air circuit shall remain unchanged for all tests prescribed herein, except for the reduced ambient conditions operation (Refer to Section 5.5).~~

2) Edits to the second paragraph of Section 4.3.3.

For convenience, the standard (cooling) condition temperatures ~~the sound test temperatures~~ for Unitary Air-conditioners, VRF systems and Air-source Unitary Heat Pumps are listed below.

3) Edits to Section 5.1.2.

5.2.1 ~~Overall A-weighted Sound Power Level, L_{wA}, dB (100 Hz to 10,000 Hz are required, 50 Hz to 10,000 Hz are optional)~~Overall A-weighted Sound Power Level, L_{wA}, dB covering the range of 100 Hz to 10,000 Hz (or optionally from 50 Hz to 10,000 Hz)

4) Section 5.5 was removed.

5.5 ~~*Reduced Ambient Conditions Operation.* For those units designed to automatically operate with lower noise levels during reduced ambient conditions, Standard Ratings shall also be determined with the unit operating at these lower sound levels per Section 4.3, except that the temperature entering and surrounding the outdoor portion of the unit shall be 26.5°C dry-bulb (and 19.5°C wet bulb when condensate is rejected to the air stream).~~

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IMPORTANT

SAFETY DISCLAIMER

AHRI does not set safety standards and does not certify or guarantee the safety of any products, components or systems designed, tested, rated, installed or operated in accordance with this standard/guideline. It is strongly recommended that products be designed, constructed, assembled, installed and operated in accordance with nationally recognized safety standards and code requirements appropriate for products covered by this standard/guideline.

AHRI uses its best efforts to develop standards/guidelines employing state-of-the-art and accepted industry practices. AHRI does not certify or guarantee that any tests conducted under its standards/guidelines will be non-hazardous or free from risk.

Note:

This standard supersedes AHRI Standard 270-2008.

Foreword

This standard references the sound intensity test method defined in ANSI/AHRI Standard 230, as an alternate method of test to the reverberation room test method defined in ANSI/AHRI Standard 220 for determination of sound power ratings.

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SOUND PERFORMANCE RATING OF OUTDOOR UNITARY EQUIPMENT

Section 1. Purpose

1.1 *Purpose.* The purpose of this standard is to establish for outdoor unitary equipment: definitions; test requirements; rating requirements; minimum data requirements for Published Ratings; 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 ANSI/AHRI Standard 210/240, ANSI/AHRI Standard 340/360 (cooling capacity ratings of equal to or less than 40.0 kW), ANSI/AHRI Standard 1230, ANSI/AHRI Standard 1160 (I-P), and ANSI/AHRI Standard 1161 (SI). Products covered include: Air-source Unitary Heat Pumps, Heat Pump Pool Heaters, Unitary Air-conditioners and Variable Refrigerant Flow (VRF) Systems.

Section 3. Definitions

All terms in this document will follow the standard industry definitions in the ASHRAE Terminology website (https://www.ashrae.org/resources--publications/free-resources/ashrae-terminology) unless otherwise defined in this section.

3.1 *Air-source Unitary Heat Pump.* One or more factory-made assemblies which normally include an indoor conditioning coil(s), compressor(s), and outdoor coil(s), including means to provide a heating function. They shall provide the function of air heating with controlled temperature and may include the functions of air-cooling, air-circulating, air-cleaning, dehumidifying or humidifying. 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.

3.2 *Heat Pump Pool Heater.* A factory-made assembly, which contains the air moving device, compressor, refrigerant-to-water heat exchanger and air-to-refrigerant heat exchanger using ambient air as the heat source. They shall provide the function of heating pool water to achieve a controlled temperature, but may include the functions of pool water cooling, air-heating, air cooling, air-circulating, air-cleaning, or dehumidifying. Models may consist of more than one assembly to be used together for the purpose of cooling and heating air. Models with separated assemblies shall be designed to be used together, and the requirements of rating outlined in this standard are based upon the use of matched assemblies.

3.3 *Hertz (Hz).* A unit of frequency equal to one cycle per second.

3.4 *Octave Band.* A band of sound covering a range of frequencies such that the highest is twice the lowest. The Octave Bands used in this standard are those defined in ANSI/ASA Standard S1.11.

3.5 *One-third Octave Band.* A band of sound covering a range of frequencies such that the highest frequency is the cube root of two times the lowest. The One-third Octave Bands used in this standard are those defined in ANSI/ASA Standard S1.11.

3.6 *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

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