

AHRI Standard 260 (I-P)

2017 Standard for

Sound Rating of Ducted Air Moving and Conditioning Equipment



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IMPORTANT

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Note:

This standard supersedes ANSI/AHRI Standard 260 (I-P)-2012 and differs in the following ways:

- Sound power shall be determined following ANSI/AHRI Standard 230 procedures if Sound Intensity is used.
- Sound ratings can be predicted for untested fan operating points and unit sizes with certain restrictions.

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SOUND RATING OF DUCTED AIR MOVING AND CONDITIONING EQUIPMENT

Section 1. Purpose

1.1 *Purpose.* The purpose of this standard is to establish for the indoor portions of factory-assembled ducted air moving and conditioning equipment and not the individual subassemblies: definitions; requirements for acquiring sound data; sound level calculations; equipment sound ratings; 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.

1.2 *Rationale.* Ducted Equipment presents unique challenges when providing sound ratings since their ratings are used to both compare products and to provide the information necessary to predict application sound levels. For these reasons, the sound ratings shall define the sound coming from various portions of the equipment (Sound Components). The Sound Components are the Sound Sources that impact the application sound paths.

Ducted air-conditioning equipment can have ducted discharge, ducted inlet, and casing radiated Sound Components. Depending on its applied configuration, free discharge (or free inlet) combined with the casing radiated Sound Component may also be needed. All Sound Components are acoustically described/rated by utilizing a Mapped Sound Rating approach that is typically referenced to the product's supply fan operating map. The supply fan is contained in the Base Unit of the product. In addition, this standard defines an approach to account for the acoustical effects of product Appurtenances (such as modulation devices or discharge/inlet plena) and other Sound Sources (such as the refrigeration circuit, return and exhaust fans, etc.) to the base unit Mapped Sound Rating. Thus, a Mapped Sound Rating can be developed for a given product configuration and each of its various Sound Components defining the sound for any product operating condition. Figure 1 presents an example of a typical product application showing the relationship between the product Sound Components and the various application sound paths. Figure 2 presents an example of a typical vertically ducted product depicting the contribution of the various product Sound Sources on the Sound Components.

All Sound Components are tested utilizing either a reverberation room (qualified by test) or using Sound Intensity. Reverberation room tests are conducted using the Comparison Method and a calibrated Reference Sound Source (RSS), while the sound intensity tests are conducted using measurements made at discrete points or by the scanning method. Sound ratings are in the form of octave band Sound Power Levels, dB, from 63 to 8,000 Hz derived from one-third octave band measurements. In addition to the stated octave band ratings, this standard can be used to provide one-third octave band sound ratings from 50 to 10,000 Hz.

Note: The specified sound intensity method, ANSI/AHRI Standard 230, is derived from ISO 9614-1 and 9614-2.