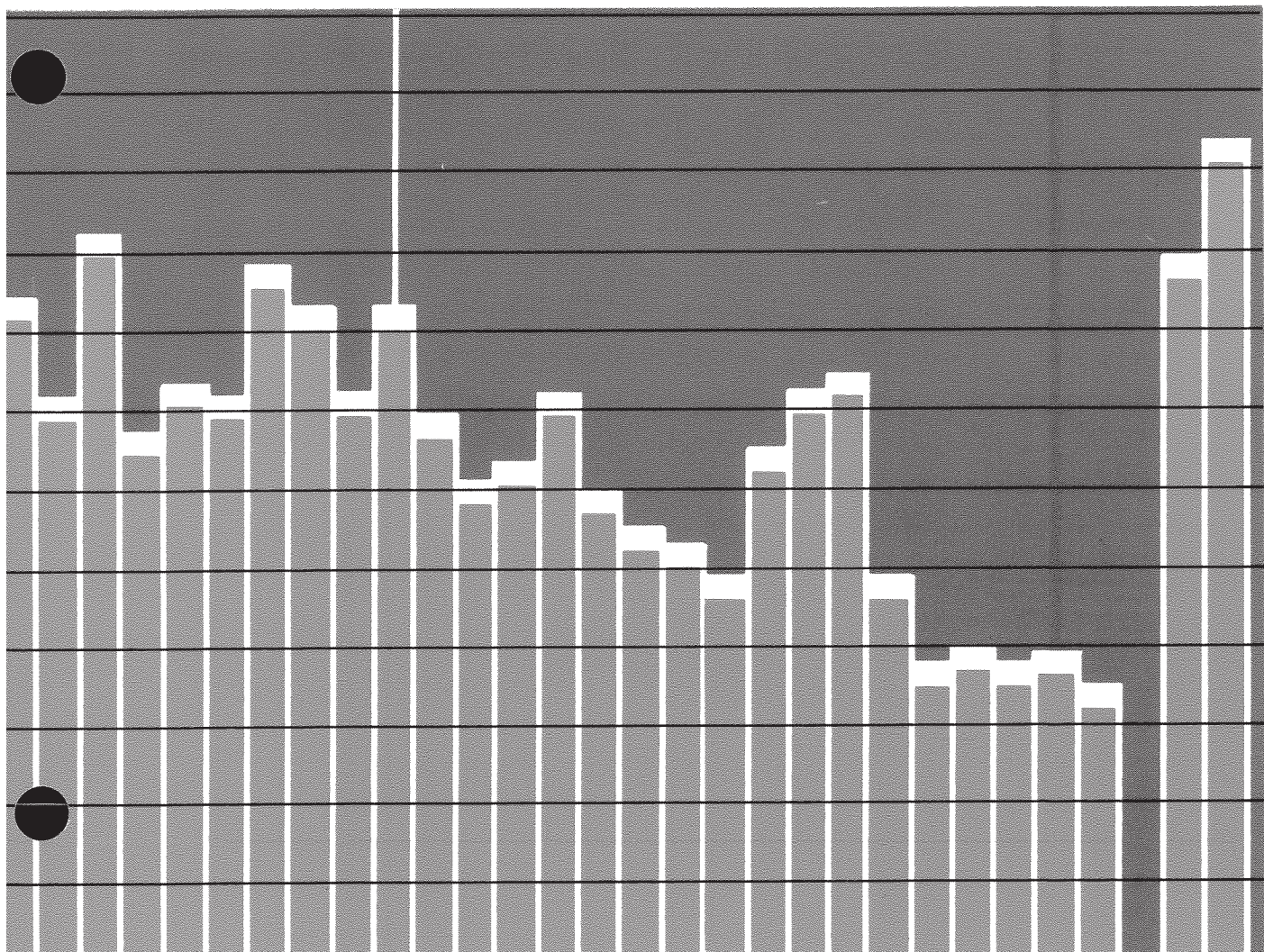


AMCA STANDARD 301-90



Methods for Calculating Fan Sound Ratings from Laboratory Test Data



Standard 301-90

Methods for Calculating Fan Sound Ratings from Laboratory Test Data

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History and Authority

This document was compiled by the AMCA Technical Advisory Committee on Sound. It is based on the methods adopted by the various product divisions of AMCA and approved by the membership in February, 1965. This 1990 issue was revised to conform to AMCA Standard 300-85. It was adopted by the membership October 25, 1990 and takes effect as of December 1, 1990 as regards new catalogs. All catalogs shall be in compliance by December 1, 1995.

Other AMCA Publications on Sound

- Standard 300 - Reverberant Room Method for Sound Testing of Fans
- Publication 302 - Application of Sone Ratings for Non-Ducted Air Moving Devices
- Publication 303 - Applications of Sound Power Level Ratings for Ducted Air Moving Devices
- Standard 330 - Laboratory Method of Testing In-Duct Sound Power Measurement Procedure for Fans

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1. PURPOSE

This document establishes standard methods for calculating fan sound ratings from laboratory test data. The methods of presenting ratings have been clarified to indicate how the ratings were obtained.

Rating procedures have been established in this document to provide consistent data which will allow the customer to compare manufacturers' ratings and aid in determining system performance.

2. SCOPE

This standard applies to fans, blowers, exhausters or other air moving devices.

3. GENERAL REQUIREMENTS

3.1 SOUND RATINGS

All sound ratings shall be based on sound power level data obtained in accordance with AMCA Standard 300, *Reverberant Room Method for Sound Testing of Fans*, or AMCA Standard 330, *Laboratory Method of Testing In-Duct Sound Power Measurement Procedure for Fans*, and shall be related to air performance ratings obtained in accordance with AMCA Standard 210, *Laboratory Methods of Testing Fans for Rating*.

3.2 PUBLICATION OF SOUND DATA

The methods described in this standard shall be used for sound rating purposes at the fan inlet, fan outlet or for fan total sound power for the installation types below:

- A: *free inlet, free outlet*
- B: *free inlet, ducted outlet*
- C: *ducted inlet, free outlet*
- D: *ducted inlet, ducted outlet*

3.3 REQUIRED STATEMENTS

Published sound ratings shall be accompanied by the applicable following statement(s):

3.3.1 Octave Band Ratings from Reverberant Room Test. For fans rated in eight octave bands from tests conducted in accordance with AMCA Standard 300, Figure-1 Fan Total Sound Testing, Figure 2-Fan Inlet Sound Testing or Figure 3-Fan Outlet Sound Testing, *Ratings shall be presented to the nearest integer as pertaining to one of the*

following installation types:

- A: *free inlet, free outlet*
- B: *free inlet, ducted outlet*
- C: *ducted inlet, free outlet*
- D: *ducted inlet, ducted outlet,*

and the following statement shall be used: *"The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301."*

In addition the appropriate statement from Section 3.3.3 shall be used to clarify installation type and end reflection.

3.3.2 L_{WA} Rating. For fans rated by a single A-weighted (L_{WA}) rating from tests according to AMCA Standard 300, Figure 1-Fan Total Sound Testing, Figure 2-Fan Inlet Sound Testing, or Figure 3-Fan Outlet Sound Testing, ratings shall be presented to the nearest interger as pertaining to one of the following installation types:

- A: *free inlet, free outlet*
- B: *free inlet, ducted outlet*
- C: *ducted inlet, free outlet*

and the following statement shall be used: *"The A-weighted sound ratings shown have been calculated per AMCA Standard 301."*

In addition the appropriate statement from Section 3.3.3 shall be used to clarify installation type and end reflection.

3.3.3 Octave Band and L_{WA} Rating Qualifying Statements. The following are the qualifying statements which shall be used with Sections 3.3.1 and 3.3.2.

3.3.3.1 Figure 1, Fan Total Sound Testing. *"Values shown are for (total L_W or total L_{WA}) sound power levels for:*

- Installation Type A: free inlet, free outlet. Ratings do not include the effects of duct end correction."*
- Installation Type B: free inlet, ducted outlet. Ratings include the effects of duct end correction for the outlet duct."*