

AMCA Publication 211-05 (Rev. 6/12)

Certified Ratings Program -
Product Rating Manual for
Fan Air Performance



**AIR MOVEMENT AND CONTROL
ASSOCIATION INTERNATIONAL, INC.**

The International Authority on Air System Components

AMCA Publication 211-05 (Rev. 6/12)

Certified Ratings Program Product Rating Manual for Fan Air Performance



Air Movement and Control Association International
30 W. University Drive
Arlington Heights, Illinois
60004

AMCA Publications

Authority

This publication was approved by the AMCA International membership on 13 February 2005. This edition of Publication 211, taken together with AMCA Publication 11-03, supersedes AMCA Publication 211-94 (Rev. 11/98). The requirements of this program became effective on 1 March 2005.

The November 2006 revision was approved by the Board and became effective on 19 October 2006 and adds Subsection C.4.3.

The March 2007 revision was approved by the board and became effective on 1 March 2007 and adds Rating Method L for induced flow fans.

The September 2007 revision was approved by the board and became effective on 1 September 2007 and clarifies circulating fan sections.

The March 2011 revision adds requirements for certifying Fan Efficiency Grades (FEGs).

The June 2012 revision adds language to Section 10.1.2.4 for making adjustments to fan performance when determining check test failures.

Copyright

© 2012 by Air Movement and Control Association International, Inc.

All rights reserved. Reproduction or translation of any part of this work beyond that permitted by Sections 107 and 108 of the United States Copyright Act without the permission of the copyright owner is unlawful. Requests for permission or further information should be addressed to the Executive Director, Air Movement and Control Association International, Inc. at 30 West University Drive, Arlington Heights, IL 60004-1893 U.S.A.

Objections

Air Movement and Control Association International, Inc. will consider and decide all written complaints regarding its standards, certification programs, or interpretations thereof. For information on procedures for submitting and handling complaints, write to:

Air Movement and Control Association International
30 West University Drive
Arlington Heights, IL 60004-1893 U.S.A.

AMCA International, Incorporated
c/o Federation of Environmental Trade Associations
2 Waltham Court, Milley Lane, Hare Hatch
Reading, Berkshire, United Kingdom
RG10 9TH

Disclaimer

AMCA uses its best efforts to produce standards for the benefit of the industry and the public in light of available information and accepted industry practices. However, AMCA does not guarantee, certify or assure the safety or performance of any products, components or systems tested, designed, installed or operated in accordance with AMCA standards or that any tests conducted under its standards will be non-hazardous or free from risk.

REVIEW COMMITTEE

W.T.W. (Bill) Cory, Chair	Woods Air Movement Limited
Claude Longet	ABB Solyvent-Ventec
John Cermak	Acme Engineering & Manufacturing Corporation
Rad Ganesh	Twin City Fan Companies, Ltd
Chris Lack	Elta Fans Limited
Mike Duggan	Federation of Environmental Trade Associations Limited
Pete Neitzel	Greenheck Fan Corporation
Paul Novotny	The New York Blower Company
Dario Brivio	Nicotra S.p.A.
R. Arnold Robb	Universal Fan & Blower Limited
Ian P. Andrews	Vent-Axia Limited
Mark Stevens	AMCA Staff
Joseph A. Brooks	AMCA Staff

This is a preview of "AMCA 211-05 (Rev. 6-...)". Click here to purchase the full version from the ANSI store.

Related AMCA Documents

Related Publications

AMCA Publication 11

Certified Ratings Program Operating Manual

AMCA Publication 111

Laboratory Accreditation Program

ANSI/AMCA Standard 210

Laboratory Methods of Testing Fans for Certified Aerodynamic Performance

CONTENTS

1. Purpose and Scope	1
2. Normative References	1
3. Definitions	1
4. Data Submittal Requirements	1
5. Drive Methods	1
6. Ducted Inlet Simulation	2
7. Catalog Requirements	2
7.1 Scope of certification	2
7.2 Statement required adjacent to the seal	2
7.3 Application statements	2
7.4 Noncertified efficiency, FEG, and/or sound ratings	2
7.5 The AMCA Certified Ratings Seals	2
7.6 Further information	3
8. Fan Performance Ratings	3
8.1 Manufacturer's responsibility	3
8.2 AMCA Staff's responsibility	3
8.3 Rating development	3
8.4 Catalog data	4
9. Rating Method Details	4
9.1 Rating method "A": centrifugal, mixed flow, axial, propeller, power roof ventilator, energy recovery ventilator	4
9.2 Rating method "B": centrifugal, mixed flow, axial, propeller, power roof ventilator, energy recovery ventilator	5
9.3 Rating method "C": centrifugal, mixed flow, axial, propeller, power roof ventilator, energy recovery ventilator	5
9.4 Rating method "D": centrifugal, mixed flow, axial, propeller, power roof ventilator, energy recovery ventilator	6
9.5 Rating method "E": centrifugal, mixed flow, axial, propeller, power roof ventilator, energy recovery ventilator	7
9.6 Rating method "F": centrifugal, mixed flow, axial, propeller, power roof ventilator, energy recovery ventilator	7
9.7 Rating method "G": air curtains	8
9.8 Rating method "H": jet tunnel fans	9
9.9 Rating method "I": agricultural fans	9
9.10 Rating method "J": positive pressure ventilators (PPVs)	10
9.11 Rating method "K": circulating fans	10
9.12 Rating method "L": induced flow fans	11
10. Check Tests	11
10.1 Centrifugal fans, mixed flow, axial fans, propeller fans, power roof ventilators, agricultural fans, positive pressure ventilators, and energy recovery ventilators	12

10.3	Jet tunnel fans	15
10.4	Circulating fans	15
10.5	Induced flow fans	16
11.	Product Rating Requirements for Centrifugal and Mixed Flow Fans	16
11.1	Product configuration	16
11.2	Test conditions	16
11.3	Test data submittal requirements	16
12.	Product Rating Requirements for Axial Fans	17
12.1	Product configuration	17
12.2	Test conditions	17
12.3	Test data submittal requirements	17
12.4	Precertification check tests	18
13.	Product Rating Requirements for Propeller Fans	18
13.1	Product configuration	18
13.2	Test conditions	18
13.3	Test data submittal requirements	18
14.	Product Rating Requirements for Power Roof Ventilators (PRVs)	18
14.1	Product configurations	18
14.2	Test conditions	19
14.3	Test data submittal requirements	19
14.4	Exhaust/supply units	19
15.	Product Rating Requirements for Jet Tunnel Fans	19
15.1	Test setups	19
15.2	Product configuration	19
15.3	Test conditions	20
15.4	Test data submittal requirements	20
16.	Product Rating Requirements for Air Curtains	20
16.1	Conformance to standards	20
16.2	Product configuration	20
16.3	Test conditions	20
16.4	Test data submittal requirements	21
17.	Product Rating Requirements For Agricultural Fans	21
17.1	Product configuration	21
17.2	Catalog photographs or illustrations	21
17.3	Test conditions	21
17.4	Test data submittal requirements	21

18. Product Rating Requirements for Positive Pressure Ventilators	22
18.1 Test setups	22
18.2 Product configuration	22
18.3 Catalog photographs or illustrations	22
18.4 Test conditions	22
18.5 Test data submittal requirements	23
18.6 Alternate motors/engines	23
19. Product Rating Requirements for Energy Recovery Ventilators (ERVs)/Heat Recovery Ventilators (HRVs)	23
19.1 Definitions	23
19.2 Test conditions	23
19.3 Catalog requirements	23
20. Product Rating Requirements for Circulating Fans	24
20.1 Test setups	24
20.2 Product configuration or examples of installation	24
20.3 Test conditions	24
20.4 Test data submittal requirements	24
21. Product Rating Requirements for Induced Flow Fans	24
21.1 Basic conditions	24
21.2 Test setups	24
21.3 Electric power requirements	24
21.4 Test data submittal requirements	25
Annex A Dimensional Requirements (Normative)	26
Annex B CRP Forms (Normative)	39
Annex C Electronic Catalogs (Normative)	43
Annex D Guidelines for Development of Fan Performance Ratings (Informative)	47
Annex E Reference Material (Informative)	50
Annex F Summary of Available Rating Methods (Informative)	51

This is a preview of "AMCA 211-05 (Rev. 6-...)". [Click here to purchase the full version from the ANSI store.](#)

Certified Ratings Program

Product Rating Manual for Fan Air Performance

1. Purpose and Scope

The purpose of this manual is to prescribe technical procedures to be used in connection with the AMCA Certified Ratings Program for Fans - Air Performance.

Products that can be licensed by AMCA to bear the AMCA Certified Ratings Seal are those defined in AMCA Standard 99, Section 0068, ISO 13349 and IEC 60335-2-80, and are within the product scope of AMCA International.

The program applies only to fans, and is not applicable to their component parts such as fan impellers and housings.

2. Normative References

AMCA Publication 11, *Certified Ratings Program - Operating Manual*

ANSI/AMCA Standard 99, *Standards Handbook*

AMCA Publication 111, *Laboratory Accreditation Program*

AMCA Publication 200, *Air Systems*

AMCA Standard 205, *Energy Efficiency Classification for Fans*

ANSI/AMCA Standard 210, *Laboratory Methods of Testing Fans for Certified Aerodynamic Performance*

ANSI/AMCA Standard 220, *Laboratory Methods of Testing Air Curtain Units for Aerodynamic Performance Rating*

ANSI/AMCA Standard 230, *Laboratory Methods of Testing Air Circulating Fans for Rating*

ANSI/AMCA Standard 240, *Laboratory Methods of Testing Positive Pressure Ventilators for Aerodynamic Performance Rating*

ANSI/AMCA Standard 250, *Laboratory Methods of Testing Jet Tunnel Fans for Performance*

AMCA Standard 260, *Laboratory Methods of Testing Induced Flow Fans for Rating*

AMCA Publication 311, *Certified Ratings Program - Product Rating Manual for Fan Sound Performance*

ISO 5801, *Industrial Fans -- Performance Testing Using Standardized Airways*

ISO 13350, *Industrial Fans -- Performance Testing of Jet Fans*

3. Definitions

All definitions found in AMCA Publication 11, as well as the following, apply to this program.

3.1 Appurtenance (accessory)

Any item in or on the inlet or discharge air stream that affects the performance of the fan.

3.2 AMCA Certified Ratings Program - Air Performance

A program for certifying a product's aerodynamic performance ratings, as defined in this document.

3.3 Performance rating(s)

A statement of the pressure performance and power versus airflow at a given speed at standard inlet air density or other specified density. Efficiency may also be included in the performance ratings at the option of the licensee. Power shall be specified as impeller, shaft, or motor power, as appropriate. The rating may be published in tabular and/or graphical format. Specific performance rating requirements are given in the Product Rating Requirement Sections of this document.

3.4 Shall and should

The word "shall" is understood to be a mandatory requirement and the word "should" is understood to be advisory.

4. Data Submittal Requirements

The following data shall be submitted with the CRP-8 application form:

Test data for each test conducted (observations of all variables measured for each test point), which must conform to the test standard used.

Results of the test(s) corrected to standard air density, and constant speed, where applicable.

Drawings of each size of the product line, showing the dimensions specified in Annex A for the type of product being submitted.

Photograph of each test setup.

5. Drive Methods

Various methods may be used to drive the test unit and measure the power input to the fan. The power measurements may or may not include the power transmission losses, but for fans supplied with shaft and bearings, the bearing losses shall be included in the fan power input measurement. See Annex D for more information for allowable methods of accounting for bearing and/or power transmission losses when calculating test data to other sizes and speeds.

Direct driven fans using "low-slip" (e.g. squirrel cage induction motors) motors may be driven by a dynamometer or a calibrated motor when the fan power rating is the output