

AMCA Publication 211-13

Certified Ratings Program -
Product Rating Manual for
Fan Air Performance



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

The International Authority on Air System Components

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 August 21, 2013. This edition of Publication 211 supersedes AMCA Publication 211-05 (Rev. 1/13). The requirements of this program became effective on August 21, 2013.

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 January, 2013 revision includes additional provisions required for AMCA to administer the ENERGY STAR® Program

Copyright

© 2013 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.

European Air Movement and Control Association
Nutkin Cottage
Barracks Road, Assington
Suffolk CO10 5LP
UK

Asia AMCA
27 Senoko Way (Level 2)
Singapore 758060

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

Thomas Gustafson Committee Chair	Hartzell Air Movement
Michael Brendel	Lau Industries, Inc.
John Cermak	Acme Engineering and Manufacturing Corporation
Yong Ning Chen	Zhejiang Yilida Ventilator Co., Ltd.
Franco Cincotti	Comefri USA Inc.
Thomas Donaldson	American Fan Company
Armin Hauer	ebm-papst Inc.
Jeff Hill	Huntair Inc.
Abishek Jain	Air Flow PVT. LTD.
Scott Kurszewski	Greenheck Fan Corporation
Keith Lins	M. K. Plastics Corporation
Doug Matthews	Canarm Ltd.
Kim Osborn	Governair LLC
Fernando Ruiz Contreras	Equipos Electromecanicos, S.A. de C.V.
Dave Wingard	Aerovent, A Twin City Fan Company
Joe Brooks	AMCA International
Tim Orris	AMCA International
John Pakan	AMCA International

Related AMCA Documents

AMCA Publication 11	<i>Certified Ratings Program Operating Manual</i>
ANSI/AMCA Standard 99	<i>Standards Handbook</i>
AMCA Publication 111	<i>Laboratory Accreditation Program</i>
AMCA Publication 200	<i>Air Systems</i>
AMCA Standard 205	<i>Energy Efficiency Classification for Fans</i>
ANSI/AMCA Standard 210	<i>Laboratory Methods of Testing Fans for Certified Aerodynamic Performance</i>
ANSI/AMCA Standard 220	<i>Laboratory Methods of Testing Air Curtain Units for Aerodynamic Performance Rating</i>
ANSI/AMCA Standard 230	<i>Laboratory Methods of Testing Air Circulating Fans for Rating and Certification</i>
ANSI/AMCA Standard 240	<i>Laboratory Methods of Testing Positive Pressure Ventilators for Aerodynamic Performance Rating</i>
ANSI/AMCA Standard 250	<i>Laboratory Methods of Testing Jet Tunnel Fans for Performance</i>
AMCA Standard 260	<i>Laboratory Methods of Testing Induced Flow Fans for Rating</i>
AMCA Publication 311	<i>Certified Ratings Program - Product Rating Manual for Fan Sound Performance</i>

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	5
9. Rating Method Details	5
9.1 Rating method "A/B/D": centrifugal, mixed flow, axial, propeller, power roof ventilator, energy recovery ventilator (constant speed rating method)	5
9.2 Rating method "C/E": centrifugal, mixed flow, axial, propeller, power roof ventilator, energy recovery ventilator ("as-run" speed rating method)	5
9.3 Rating method "F": centrifugal, mixed flow, axial, propeller, power roof ventilator, energy recovery ventilator	6
9.4 Rating method "G": air curtains	7
9.5 Rating method "H": jet tunnel fans	8
9.6 Rating method "I": agricultural fans	8
9.7 Rating method "J": positive pressure ventilators (PPVs)	9
9.8 Rating method "K": circulating fans	9
9.9 Rating method "L": induced flow fans	10
9.10 Rating Method "M": Residential Ventilating Fans	10

10.1	Centrifugal fans, mixed flow, axial fans, propeller fans, power roof ventilators, agricultural fans, positive pressure ventilators, and energy recovery ventilators.	12
10.2	Air curtains	14
10.3	Jet tunnel fans	16
10.4	Circulating fans.	16
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	17
11.3	Test data submittal requirements	17
12.	Product Rating Requirements for Axial Fans	17
12.1	Product configuration	17
12.2	Test conditions	18
12.3	Test data submittal requirements	18
12.4	Precertification check tests.	18
13.	Product Rating Requirements for Propeller Fans	18
13.1	Product configuration	18
13.2	Test conditions	19
13.3	Test data submittal requirements	19
14.	Product Rating Requirements for Power Roof Ventilators (PRVs)	19
14.1	Product configurations	19
14.2	Test conditions	20
14.3	Test data submittal requirements	20
14.4	Exhaust/supply units	20
15.	Product Rating Requirements for Jet Tunnel Fans	20
15.1	Test setups	20
15.2	Product configuration	20
15.3	Test conditions	20
15.4	Test data submittal requirements	21
16.	Product Rating Requirements for Air Curtains	21
16.1	Conformance to standards.	21
16.2	Product configuration	21
16.3	Test conditions	21
16.4	Test data submittal requirements	21
17.	Product Rating Requirements For Agricultural Fans	22
17.1	Product configuration	22

17.3	Test conditions	22
17.4	Test data submittal requirements	22
17.5	Alternate motors	22
18.	Product Rating Requirements for Positive Pressure Ventilators.	23
18.1	Test setups	23
18.2	Product configuration	23
18.3	Catalog photographs or illustrations.	23
18.4	Test conditions	23
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	24
19.3	Catalog requirements.	24
20.	Product Rating Requirements for Circulating Fans	24
20.1	Test setups	24
20.2	Product configuration or examples of installation.	25
20.3	Test conditions	25
20.4	Test data submittal requirements	25
21.	Product Rating Requirements for Induced Flow Fans	25
21.1	Basic conditions	25
21.2	Test setups	25
21.3	Electric power requirements.	25
21.4	Test data submittal requirements	25
Annex A	Dimensional Requirements (Normative)	26
Annex B	CRP Forms (Normative).	40
Annex C	Electronic Catalogs (Normative).	44
Annex D	Guidelines for Development of Fan Performance Ratings (Informative)	48
Annex E	Reference Material (Informative).	51
Annex F	Summary of Available Rating Methods (Informative)	52

This is a preview of "AMCA 211-13". [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.

3.5 Constant speed

Test data are converted to a single speed before catalog data are generated.

3.6 As-run speed

Test data are not converted to a single speed before catalog data are generated.

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 loss-