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Certified Ratings Program
Product Rating Manual for Fan Air Performance

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AMCA Publications

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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 fan air performance.

Products that can be licensed by AMCA to bear the AMCA certified ratings seal are those defined in ANSI/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 axial impellers.

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
ANSI/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
ANSI/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
Appendix U to Subpart B of Part 430 — Uniform Test Method for Measuring the Energy Consumption of Ceiling Fans, 10 CFR Part 430, Subpart B — Test Procedures (including amendments published in the Energy Conservation Program: Test Procedures for Ceiling Fans; Final Rule, 81 FR 48619, July 25, 2016)
IEC 62301, Ed. 2 2011-01, Household electrical appliances – Measurement of standby power

3. Definitions

All definitions 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 airstream that affects the performance of the fan. An accessory/appurtenance is henceforth referred to as an appurtenance.

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.

3.7 Fan efficiency grade (FEG)

A metric defined by ANSI/AMCA Standard 205 that represents an efficiency grade for fans without consideration of the drives.

3.8 Single room air handler

An encased assembly consisting of a fan or fans, and including at least one electric motor. It may include additional components to condition and/or control the air. Only single inlet/single outlet testing may be used for ratings.

3.9 Axial Impeller

An impeller in which airflow enters and exits substantially parallel to the shaft axis, designed to operate in an orifice, partition, or bell-mouth structure. See Figure A.38 for mandatory dimension reporting requirements.

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 may be driven by a dynamometer or a calibrated motor when the fan power rating is the output power of the dynamometer or calibrated motor. When the fan power rating is the motor input watts, the fan shall be driven by its own motor. Direct driven fans using “high slip” (e.g., shaded pole or capacitor start) motors shall be driven by their own motors, and the power rating shall be the motor input watts.

Motor calibrations shall be performed by the AMCA testing laboratory, the motor manufacturer or an AMCA-accredited laboratory. Motor calibrations shall be performed at the voltage and frequency to be used for the fan test. The motor calibration shall be conducted at the motor’s operating temperature.