

ICS 23.120
CCS J 72



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 44844-2024

**Industrial fans - Tolerances, methods of conversion and
technical data presentation
(English Translation)**

Issued on: October 26, 2024

Implemented on: May 1, 2025

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Preface	
Introduction	
1 Scope	
2 Normative references	
3 Terms and Definitions	
4 Symbols and Units	
5 Performance tolerances for specially designed ventilators and series-produced non-certified ventilators	
5.1 Information to be provided by the purchaser	
5.2 Information Suppliers Need to Provide	
5.3 Tolerance	
5.4 Purchase Agreement	10
5.5 Contractually agreed testing	
6 Performance tolerances for series-produced ventilators with certified rating procedures	
6.1 General Principles	
6.2 Fan performance conversion rules	
6.3 Check test	
6.4 Aerodynamic performance tolerances	
6.5 Noise Tolerance	
7 Conversion Method	
7.1 Aerodynamic performance test data conversion	
7.2 Sound Power Test Data Conversion	
8 Technical data representation method	
8.1 General Principles	
8.2 Basic Information	
8.3 Fan performance chart	
8.4 Other Information	
Appendix A (Normative) Document	
Appendix B (Normative) Marking	
Appendix C (Informative) Relationship between system resistance and flow rate	
Reference	
Figure 1 Deviation limits (tolerance range) of agreed operating parameters according to Table 1	

Figure 2 Example of tolerance levels for adjustable ventilators

Figure 3 Example of specified tolerance levels for non-adjustable ventilators 14

Figure 4 Comparison of measured values from performance tests with agreed operating points

Figure 5 Comparison of the range of measured values for the performance test of the specified parameters (efficiency and fan pressure) with the agreed operating points

Figure 6 Flow tolerance curve

Figure 7 Tolerances applicable to the full performance range of the fan

Figure 8 Measured dimensionless performance curve of fan

Figure 9 Dimensionless performance superposition system characteristic curve

Figure 10 Interpolation under constant system conditions

Figure 11 Interpolation showing gradient changes and necessary additional test points under constant system conditions

Figure 12 Interpolation shows gradient changes under constant system conditions and necessary additional test points Figure

Figure 13 Relationship between L_g and χ at the mixed flow fan inlet, $\phi=0.45$

Figure 14 Relationship between L_g and χ at the outlet of the mixed flow fan, $\phi=0.45$

Figure 15 Example of determining a and b for a typical fan series

Figure 16 Typical characteristic curve of a fan with fixed geometric dimensions and variable speed

Figure 17 Typical data example of an axial flow fan with constant speed and variable installation angle

Figure C.1 Relationship between friction coefficient and Reynolds number of straight pipe

Figure C.2 Relationship between friction coefficient and Reynolds number of large radius elbow

Table 1 Guidelines for tolerance classes 1 to 4 for fans "aerodynamics and noise"10

Table 2 Manufacturing tolerance grade

Table 3 ϕ , λ and η for different parabola constants and impeller diameters at constant speed

Table 4 Octave center frequency

Table 5 A-weighted octave correction

Table 6 Sound power level in pipe. decibel value based on 10-12 W (1 pW)

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is equivalent to ISO 13348:2007 "Tolerances, conversions and expression of technical parameters for industrial ventilators".

The following minimal editorial changes have been made to this document.

--- Corrected the section number referenced in this document from 6.1.4 to 6.4.1 (see 6.5.1);

--- Corrected the section number referenced in this document from 6.1.4 to 6.4.1 (see 6.5.2);

--- Corrected the section number of ISO 5801:1997 reference from 13.9 to 14.4.1 (see 7.1.1).

Introduction

This document focuses on clarifying the technical issues related to the performance of the ventilator in the contract and the specific Issues with the accuracy and consistency of performance technical indicators.

In this document, a distinction is made between ventilators specially designed for a specific purpose and ventilators produced in series, the former being those which meet the contractual requirements.

performance data for the latter are included in the sample.

Chapter 6 describes a specially designed ventilator, and calculates the aerodynamic and noise performance based on the performance data obtained under the agreed conditions and test conditions.

This document also provides four tolerance levels, each of which is suitable for a specific type of ventilator and/or its application.

These procedures are considered satisfactory; however, alternative methods may be agreed upon between the supplier and the user.

The relevant technical parameters of the uncertified ventilators produced in series will be included in the product technical catalog (electronic or printed), and the relevant calculations will be it is recommended to adopt the tolerance grade method in Chapter 6.

The relevant technical parameters of the series-produced ventilators that have passed the certification rating procedure will be included in the product technical catalog (electronic or printed).

The calculation is recommended to use the tolerance grade method in Chapter 7, and the certification rating procedure can be completed by an independent certification body with certification qualifications.

Industrial ventilator tolerances, conversions and technical parameters Representation

method

1 Scope

This document applies to the description of performance tolerances and technical parameters of various types of industrial ventilators, and is not applicable to ventilators designed for low-flow air circulation.

For fans designed for use (e.g. ceiling fans, table fans), see ISO 13350 for jet fans.

The upper limit of the unit mass work of the fan is $25\text{kJ}\cdot\text{kg}^{-1}$, which is equivalent to the average density of the conveying medium of the fan being $1.2\text{kg}\cdot\text{m}^{-3}$.

The fan pressure rise is approximately 30kPa. For higher pressure rises, the supplier and the user shall negotiate.

This document covers the four device types defined in ISO 5801.

Type A. free import and free export;

Type B. free inlet, pipe outlet;

Type C. Pipe inlet, free outlet;

Type D. Pipe inlet, pipe outlet.

The performance of the ventilator will vary significantly with the type of device. Therefore, the type of device is an important basis for the technical parameters of the ventilator.

Note: The recognition of the above four types of devices enables users and system designers to sign contracts based on the most suitable fan device type.

Increases the possibility of providing negotiated ventilator performance without compromise.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

ISO 5801:1997 Industrial Fans - Performance testing Note. GB/T 10178-2006 Industrial ventilators - Field performance test (ISO 5802:2001, IDT) ISO 13347-1 Industrial fans - Determination of fan sound power under standard laboratory conditions - Part 1: General requirements eraloverview) Note. GB/T 34877.1-2023 Industrial fans - Determination of sound power levels of fans under standard laboratory conditions - Part 1: General