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**Fans - Performance testing using standardized airways
(ISO 5801:2017 + ISO 5801:2017/Amd 1:2025)**

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

See Eesti standard EVS-EN ISO 5801:2017+A1:2025 sisaldab Euroopa standardi EN ISO 5801:2017 ja selle muudatuse A1:2025 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 5801:2017+A1:2025 consists of the English text of the European standard EN ISO 5801:2017 and its amendment A1:2025.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 25.10.2017, muudatus A1 22.01.2025.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 25.10.2017, for A1 22.01.2025.
Muudatusega A1 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega A1 A1 . Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.	The start and finish of text introduced or altered by amendment A1 is indicated in the text by tags A1 A1 . The standard is available from the Estonian Centre for Standardisation and Accreditation.

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ICS 23.120

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EUROPEAN STANDARD

EN ISO 5801 + A1

NORME EUROPÉENNE

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normalisés (ISO 5801:2017 + ISO 5801:2017/Amd
1:2025)

Ventilatoren - Leistungsmessung auf genormten
Prüfständen (ISO 5801:2017 + ISO 5801:2017/Amd
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EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

This document (EN ISO 5801:2017) has been prepared by Technical Committee ISO/TC 117 “Fans” in collaboration with Technical Committee CEN/TC 156 “Ventilation for buildings” the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2018, and conflicting national standards shall be withdrawn at the latest by April 2018.

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Endorsement notice

The text of ISO 5801:2017 has been approved by CEN as EN ISO 5801:2017 without any modification.

A1 Amendment A1 European foreword

This document (EN ISO 5801:2017/A1:2025) has been prepared by Technical Committee ISO/TC 117 "Fans" in collaboration with Technical Committee CEN/TC 156 "Ventilation for buildings" the secretariat of which is held by BSI.

This Amendment to the European Standard EN ISO 5801:2017 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2025, and conflicting national standards shall be withdrawn at the latest by July 2025.

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Endorsement notice

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 117, *Fans*.

This third edition cancels and replaces the second edition (ISO 5801:2007), which has been technically revised. It also incorporates the Technical Corrigendum ISO 5801:2007/Cor.1:2008.

A1 Amendment A1 Foreword

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This document was prepared by Technical Committee ISO/TC 117, *Fans*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 156, *Ventilation for buildings*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html. **A1**

Introduction

This document is the result of almost 50 years of discussion, comparative testing and detailed analyses by leading specialists from the fan industry and research organizations throughout the world.

It was demonstrated many years ago that the codes for fan performance testing established in different countries do not always lead to the same results.

The need for an International Standard has been evident for some time and Technical Committee ISO/TC 117 started its work in 1963. Important progress has been achieved over the years and, although the International Standard itself was not yet published, the successive revisions of various national standards led to much better agreement among them.

It has become possible since 1997 to complete this document by agreement on certain essential points. It is to be borne in mind that the test equipment, especially for large fans, is very expensive and it was necessary to include in this document many setups from various national codes in order to authorize their future use. This explains the sheer volume of the first edition (ISO 5801:1997).

The second edition (ISO 5801:2007) of this document was the result of a survey of ISO members, deleting those methods that were the least frequently used. A significant reduction in the number of pages had been achieved.

For the third edition, the contents were reorganized to define and allow all possible configurations of defined component parts as standardized test setups. A further significant reduction of volume has been achieved by streamlining the content.

Essential features of this document are as follows.

— **Installation categories and test configurations** (see Clause 5 and Clause 6).

Since the connections of a duct to a fan inlet and/or outlet affect the fan's performance, a number of installation categories and test configurations need to be recognized.

— **Common segments** (see Clause 8).

It is essential that all standardized test airways to be used with fans need to have portions in common adjacent to the fan inlet and/or outlet sufficient to ensure consistent determination of fan pressure.

Geometric variations of these common segments are strictly limited.

— **Flow rate measurement** (see 12.5 and Annex A).

Determination of flow rate has been separated from the determination of fan pressure. A number of standardized methods may be used.

— **Test results** (see Clause 15).

Methods of measurement and calculation for the flow rate, for the fan pressure and for the fan efficiencies are established taking into account all compressibility effects of the air. For fan pressure less than 2 000 Pa, the change of density between fan inlet and fan outlet is allowed to be neglected. Other compressibility effects are allowed to be neglected for reference velocity values not higher than 65 m/s (see Clause 13).

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Fans — Performance testing using standardized airways

1 Scope

This document specifies procedures for the determination of the performance of fans of all types except those designed solely for air circulation, e.g. ceiling fans and table fans. Testing of jet fans is described in ISO 13350.

This document provides estimates of uncertainty of measurement and rules for the conversion, within specified limits, of test results for changes in speed, gas handled and, in the case of model tests, size are given.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5136, *Acoustics — Determination of sound power radiated into a duct by fans and other air-moving devices — In-duct method*

ISO 5167-1, *Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full — Part 1: General principles and requirements*

ISO 5802, *Industrial fans — Performance testing in situ*

ISO 13347 (all parts), *Industrial fans — Determination of fan sound power levels under standardized laboratory conditions*

ISO 13348, *Industrial fans — Tolerances, methods of conversion and technical data presentation*

ISO 13349, *Fans — Vocabulary and definitions of categories*

ISO 13350, *Fans — Performance testing of jet fans*

IEC 60034-1:2010, *Rotating electrical machines — Part 1: Rating and performance*

IEC 60034-2-1:2014, *Rotating electrical machines — Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)*

IEC 60051-2, *Direct acting indicating analogue electrical measuring instruments and their accessories — Part 2: Special requirements for ammeters and voltmeters*

IEC 60051-3, *Direct acting indicating analogue electrical measuring instruments and their accessories — Part 3: Special requirements for wattmeters and varimeters*