

Forestry machinery — Noise test code for portable hand-held machines with internal combustion engine — Engineering method (Grade 2 accuracy)

The European Standard EN ISO 22868:2006 has the status of a British Standard

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National foreword

This British Standard was published by BSI. It is the UK implementation of EN ISO 22868:2006. It supersedes BS EN ISO 22868:2005 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee AGE/29, Forestry machinery.

A list of organizations represented on AGE/29 can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

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Forestry machinery - Noise test code for portable hand-held machines with internal combustion engine - Engineering method (Grade 2 accuracy) (ISO 22868:2005, corrected version 2005-06-01)

Machines forestières - Code d'essai acoustique pour machines portatives tenues à la main à moteur à combustion interne - Méthode d'expertise (classe de précision 2) (ISO 22868:2005, version corrigée 2005-06-01)

Forstwirtschaftliche Maschinen - Geräuschmessnorm für handgehaltene Maschinen mit Verbrennungsmotor - Verfahren der Genauigkeitsklasse 2 (ISO 22868:2005, korrigierte Fassung 2005-06-01)

This European Standard was approved by CEN on 18 September 2006.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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Foreword

The text of ISO 22868:2005 has been prepared by Technical Committee ISO/TC 23 "Tractors and machinery for agriculture and forestry" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 22868:2006 by Technical Committee CEN/TC 144 "Tractors and machinery for agriculture and forestry", the secretariat of which is held by AFNOR.

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 2007, and conflicting national standards shall be withdrawn at the latest by April 2007.

This document supersedes EN ISO 22868:2005.

The determination of noise emission values is a prerequisite for a manufacturer to assess the noise reduction obtained at the design stage.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO 22868:2005 has been approved by CEN as EN ISO 22868:2006 without any modifications.

INTERNATIONAL STANDARD

EN ISO 22868:2006

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*Machines forestières — Code d'essai acoustique pour machines
portatives tenues à la main à moteur à combustion interne —
Méthode d'expertise (classe de précision 2)*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 22868 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 17, *Manually portable forest machinery*.

This first edition of ISO 22868 cancels and replaces ISO 7182:1984, ISO 7917:1987, ISO 9207:1995 and ISO 10884:1995, of which it constitutes a technical revision.

This corrected version of ISO 22868:2005 incorporates the following corrections:

- Page 7, A.2.3, Figure A.1, the dimension (700 ± 10) mm has been altered for conformity with the text.

Introduction

During the first steps in the revision of this International Standard, it became obvious that the repeatability of the test results could become better if the operator were to be replaced by a simulation process, representing the normal operating modes with chain-saws and trimmers/brush-cutters. Furthermore, it was found that the cutting process performed with chain-saws causes considerable deviations, which are not related to the measured object but to the test procedure itself.

Based on these observations, it was concluded that the operators in both test procedures, i.e. for chain-saws and trimmers/brush-cutters, ought to be replaced by a defined fixture and the cutting process with chain-saws by a brake simulating the load. In this manner, the operating conditions during measurement would simulate normal operating conditions.

The determination of noise emission characteristics is primarily used for

- manufacturers' declarations of noise emitted,
- comparing the noise emitted by machines in the family concerned, and
- purposes of noise control at source at the design stage.

The use of this noise test code will ensure reproducibility of the determination of the noise emission characteristics within specified limits determined by the grade of accuracy of the basic noise measurement method used. Noise measurement methods allowed by this International Standard give results with Grade 2 accuracy.

The operating modes are of interest for assessment of the exposure sound pressure levels, for example, over a typical working day.

The work cycles chosen for this test code are based on the following considerations of application:

- a) chain-saws with an engine of $< 80 \text{ cm}^3$ are used for various operations, including felling, bucking and delimbing;
- b) chain-saws with an engine of $\geq 80 \text{ cm}^3$ are normally used for felling and bucking.

Delimbing will cause the saw to run at racing speed; therefore, racing is included only for saws with a $< 80 \text{ cm}^3$ engine.

For brush-cutters and grass-trimmers, the cutting mode (full load) is estimated to be valid only for short periods, while racing and idling are the two dominant modes. Moreover, it has been found to be diverse and not able to be performed under repeatable conditions.

For trimmers, the full load and the racing modes are integrated in one single mode due to the loading effect of the flexible line.

For brush-cutters, it is not possible to simulate the full load mode in a feasible way since there are no constant load conditions comparable to chain-saws. Since the operating mode "racing" is anyhow the worst case, it is used as representative.

In either case, transport and other tasks between operations will cause the machine to run at idling. Experience has led to the conclusion that equal duration for the different working modes is a good estimation of daily exposure.

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1 Scope

This International Standard specifies a noise test code for determining, efficiently and under standardized conditions, the noise emission characteristics of portable, hand-held, internal combustion-engine-powered forest machines such as chain-saws, brush-cutters and grass-trimmers. Noise emission characteristics include the A-weighted emission sound pressure level at the operator position and the A-weighted sound power level. The code is applicable for manufacturers' product controls as well as type tests. It is intended that the results obtained will be able to be used to compare different machines or different models of the same type of machine. Although the noise emission values determined are obtained in an artificial operation, they are representative of noise emission in a real work situation.

2 Normative references

The following referenced documents are indispensable for the application 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 354:2003, *Acoustics — Measurement of sound absorption in a reverberation room*

ISO 3744:1994, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essentially free field over a reflecting plane*

ISO 4871:1996, *Acoustics — Declaration and verification of noise emission values of machinery and equipment*

ISO 6531, *Machinery for forestry — Portable hand-held chain-saws — Vocabulary*

ISO 7112, *Machinery for forestry — Portable hand-held brush-cutters and grass-trimmers — Vocabulary*

ISO 7293, *Forest machinery — Portable chain saws — Engine performance and fuel consumption*

ISO 8893, *Forestry machinery — Portable brush-cutters and grass-trimmers — Engine performance and fuel consumption*

ISO 11201:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Engineering method in an essentially free field over a reflecting plane*

IEC 60651:1979, *Sound level meters*

IEC 60804:2000, *Integrating-averaging sound level meters*