INTERNATIONAL STANDARD

ISO 11203

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Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions from the sound power level

Acoustique — Bruit émis par les machines et équipements — Détermination des niveaux de pression acoustique d'émission au poste de travail et en d'autres positions spécifiées à partir du niveau de puissance acoustique

Reference number
ISO 11203:1995(E)

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.

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.

International Standard ISO 11203 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*.

Annex A of this International Standard is for information only.

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Introduction

0.1 This International Standard specifies methods for determining the emission sound pressure levels at a work station and at other specified positions in the vicinity of machinery and equipment from the sound power level. In general, these sound pressure levels are different from those that would be observed when the machinery or equipment is operating in its normal surroundings where the environment may influence the emission sound pressure level.

0.2 This International Standard is one of a series (ISO 11200 to ISO 11204) which specifies various methods for determining the noise emissions of a piece of machinery or equipment, or a sub-assembly of such equipment (machine under test). ISO 11200 gives guidance on the choice of the method to be used to determine the emission sound pressure levels of machinery and equipment.

It also gives details of International Standards giving methods for the determination of sound power levels.

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1 Scope

1.1 General

This International Standard specifies two methods for determining the emission sound pressure levels of machinery and equipment, at a work station and at other specified positions nearby, by calculation from the sound power level. The principal purpose of this determination is to permit comparison of the performance of different units of a given family of machinery or equipment, under defined environmental conditions and standardized mounting and operating conditions. The data obtained may also be used for the declaration and verification of emission sound pressure levels as specified in ISO 4871.

Emission sound pressure levels are determined with the same frequency weighting and time weighting, or in the same frequency bands, as those for which sound power levels have been determined.

NOTES

1 The contents of this and related International Standards are summarized in table 1 of ISO 11200:1995.

2 At any given position in relation to a particular machine, and for given mounting and operating conditions, the emission sound pressure levels determined by the method of this International Standard will in general be lower than the directly measured sound pressure levels for the same machine in the typical workroom where it is used. This is due to reverberation and the contributions of other machines. A method of calculating the sound pressure levels in the vicinity of a machine operating alone in a workroom is given in ISO 11690-3. Commonly observed differences are 1 dB to 5 dB, but in extreme cases the difference may be even greater.

1.2 Types of noise and noise sources

This International Standard is, in principle, applicable to moving or stationary machines, for indoor or outdoor use, particularly those machines which are mass-produced. The methods given in this International Standard are not applicable to highly directional sound sources used outdoors.

This International Standard is particularly applicable to machines whose largest dimension is less than or equal to 1 m. It is also applicable to larger machines in certain cases (see 6.2.3).

This International Standard is applicable to all types of noise as defined in ISO 2204 and ISO 12001 for which methods for determining the sound power level are available.

1.3 Test environment

The test environment to be used is that which is specified for the determination of the sound power level in accordance with the International Standards of the ISO 3740 or ISO 9614 series.

1.4 Specified positions

This International Standard is applicable to work stations and other specified positions in the vicinity of the source under test where emission sound pressure levels are to be determined. It is not applicable to work stations and other defined positions which are situated inside a cab or a cabin, or behind a screen.

A work station can be a single point, corresponding to the specified position of a standing or seated operator. It can also be a specified path.

NOTE 3 More detailed specifications regarding seated, standing, stationary or moving operators, as well as information concerning bystanders, are to be found in ISO 11201.

1.5 Specific field of application of each method

Specific information on the field of application of each of the two methods described in this International Standard is given in 6.2.2 and 6.2.3.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2204:1979, *Acoustics — Guide to International Standards on the measurement of airborne acoustical noise and evaluation of its effects on human beings.*

ISO 3741:1988, *Acoustics — Determination of sound power levels of noise sources — Precision methods for broad-band sources in reverberation rooms.*

ISO 3742:1988, *Acoustics — Determination of sound power levels of noise sources — Precision methods for discrete-frequency and narrow-band sources in reverberation rooms.*

ISO 3743-1:1994, *Acoustics — Determination of sound power levels of noise sources — Engineering methods for small, movable sources in reverberant fields — Part 1: Comparison method for hard-walled test rooms.*

ISO 3743-2:1994, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering methods for small, movable sources in reverberant fields — Part 2: Methods for special reverberation test rooms.*

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 3745:1977, *Acoustics — Determination of sound power levels of noise sources — Precision methods for anechoic and semi-anechoic rooms.*

ISO 3746:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane.*

ISO 9614-1:1993, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 1: Measurement at discrete points.*

ISO 9614-2:—[1], *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 2: Measurement by scanning.*

ISO 11200:1995, *Acoustics — Noise emitted by machinery and equipment — Guidelines for the use of basic standards for the determination of emission sound pressure levels at a work station and at other specified positions.*

ISO 12001:—[1], *Acoustics — Noise emitted by machinery and equipment — Rules for the drafting and presentation of a noise test code.*

IEC 651:1979, *Sound level meters.*

IEC 804:1985, *Integrating averaging sound level meters.*

IEC 942:1988, *Sound calibrators.*

IEC 1260:—[2], *Electroacoustics — Octave-band and fractional-octave-band filters.*

3 Definitions

For the purposes of this International Standard, the following definitions apply. More detailed definitions may be found in noise test codes for specific types of machinery and equipment.

3.1 emission: Airborne sound radiated by a well-defined noise source (e.g. the machine under test).

NOTE 4 Noise emission descriptors may be incorporated in a product label and/or product specification. The basic

1) To be published.

2) To be published. (Revision of IEC 225:1966)