

Reciprocating internal combustion engine driven alternating current generating sets —

Part 10: Measurement of airborne noise by the enveloping surface method

ICS 17.140.20; 29.160.40

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National foreword

This British Standard reproduces verbatim ISO 8528-10:1998 and implements it as the UK national standard.

The UK participation in its preparation was entrusted to Technical Committee MCE/14, RIC engines, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ISO title page, page ii, pages 1 to 14 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Amendments issued since publication

Amd. No.	Date	Comments

This British Standard, having been prepared under the direction of the Engineering Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 January 1999

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ISBN 0 580 30982 7

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INTERNATIONAL STANDARD

ISO
8528-10

First edition
1998-10-01

Reciprocating internal combustion engine driven alternating current generating sets —

Part 10: Measurement of airborne noise by the enveloping surface method

*Groupes électrogènes à courant alternatif entraînés par moteurs alternatifs
à combustion interne —*

Partie 10: Mesurage du bruit aérien par la méthode de la surface enveloppe



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 3.

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.

This part of ISO 8528 was prepared by ISO Technical Committee ISO/TC 70, *Internal combustion engines*.

ISO 8528 consists of the following parts under the general title *Reciprocating internal combustion engine driven alternating current generating sets*:

- *Part 1: Application, ratings and performance;*
- *Part 2: Engines;*
- *Part 3: Alternating current generators for generating sets;*
- *Part 4: Controlgear and switchgear;*
- *Part 5: Generating sets;*
- *Part 6: Test methods;*
- *Part 7: Technical declarations for specification and design;*
- *Part 8: Requirements and tests for low-power generating sets;*
- *Part 9: Measurement and evaluation of mechanical vibrations;*
- *Part 10: Measurement of airborne noise by the enveloping surface method;*
- *Part 11: Dynamic, uninterrupted power supply systems;*
- *Part 12: Emergency power supply to safety services.*

Annex A and the Bibliography of this part of ISO 8528 are for information only.

Descriptors: Generating sets, motor generator sets, noise (sound), engine noise, airborne sound, tests, acoustic tests, acoustic measurements.

1 Scope

This part of ISO 8528 defines measurement methods for the determination of airborne noise emitted by reciprocating internal combustion engine driven generating sets in such a way that the total of relevant noise emissions, e.g. exhaust and cooling system noise, together with all other sources of engine noise, are evaluated on a similar basis to yield comparable results. However, when the exhaust and cooling systems are ducted to a remote site their noise contribution is not to be included in this part of ISO 8528.

The essential noise emission characteristic value is the sound power level.

The results of measurement taken in accordance with this part of ISO 8528 are classified as either accuracy grade 2 or grade 3 depending on which acoustic measurement conditions are complied with. Accuracy grade 2 (i.e., engineering method in accordance with ISO 3744) requires the measuring area to be a substantially acoustic-free field over a reflecting plane (with an environmental correction $K_{2A} \leq 2$ dB) and with negligible background noise level (background noise correction $K_{1A} \leq 1,3$ dB). Accuracy grade 3 (i.e. survey method in accordance with ISO 3746) requires the environmental correction K_{2A} to be less or equal than 7 dB, and the background noise correction K_{1A} to be less or equal than 3 dB.

For the operation of a generating set under steady conditions this part of ISO 8528 allows for the calculation of the A-weighted sound power level as well as appropriate octave or one third octave sound power level for the appropriate accuracy grade.

This part of ISO 8528 applies to RIC engine driven AC generating sets for fixed and mobile applications with rigid or flexible mountings. It is applicable for land and marine use, excluding generating sets used on aircraft or to propel land vehicles and locomotives.

NOTE 1 This part of ISO 8528 has been developed for RIC engine driven AC generating sets, but it can also be applied to RIC engine driven DC generating sets.

NOTE 2 For some specific applications (e.g. essential hospital supplies, high rise buildings, etc.) supplementary requirements may be necessary. The provisions of this part of ISO 8528 should be regarded as a basis.

NOTE 3 True comparisons can only be made between generating sets when the measurement are classified in the same accuracy grade.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 8528. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 8528 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 700:—, *Arc welding equipment — Welding power sources*¹⁾.

ISO 3046-1:1995, *Reciprocating internal combustion engines — Performance — Part 1: Standard reference conditions, declarations of power, fuel and lubricating oil consumptions and test methods*.

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 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 8528-1:1993, *Reciprocating internal combustion engine driven alternating current generating sets — Part 1: Application, ratings and performance*.

ISO 8528-2:1993, *Reciprocating internal combustion engine driven alternating current generating sets — Part 2: Engines*.

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

ISO 9614-2:1996, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 2: Measurement by scanning*.

ISO 11203:1995, *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*.

IEC 60804:1985, *Integrating-averaging sound level meters*.

¹⁾ To be published. (Revision of ISO 700:1982)