INTERNATIONAL STANDARD

ISO 6396

First edition
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Acoustics — Measurement at the operator's position of noise emitted by earth-moving machinery — Dynamic test conditions

Acoustique — Mesurage du bruit émis par les engins de terrassement au poste de conduite — Conditions d'essai dynamiques

Reference number
ISO 6396:1992(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 6396 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Sub-Committee SC 1, *Noise*.

Annex A of this International Standard is for information only.

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Introduction

This International Standard is a special test code for specific types of earth-moving machinery. It is an extension of ISO 6081 which contains the general requirements for many types of machinery and equipment.

A simulated dynamic rather than an actual work cycle test condition is chosen. Dynamic test conditions provide acceptable noise emission data which are repeatable and representative. Actual work cycle tests are complex and repeatability can be a problem.

Specific procedures are described in this International Standard to enable the sound pressure level at the operator's position, with the machine in a dynamic test condition, to be determined in a manner which is repeatable. Attachments (bucket, dozer, blade, etc.) for the manufacturer's production version are to be fitted since this is the configuration most likely to exist when the machine is in actual use.

This International Standard enables compliance with noise limits to be determined. It can also be used for evaluation purposes in noise-reduction investigations.

An additional special test code is given in ISO 6395. This other special test code is intended to be used to determine the noise emitted by earth-moving machinery in terms of the A-weighted sound power level while the machine is in a dynamic test condition.

Corresponding measurements of noise emitted to the environment and noise at the operator's position under stationary test conditions are described in ISO 6393 and ISO 6394, respectively.

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Acoustics — Measurement at the operator's position of noise emitted by earth-moving machinery — Dynamic test conditions

1 Scope

This International Standard describes a method for determining at the operator's position the noise emitted by earth-moving machinery, in terms of the equivalent continuous A-weighted sound pressure level, while the machine is operating under dynamic test conditions.

This International Standard is applicable to the following specific crawler and wheeled types of earth-moving machinery:

— excavators (hydraulic or rope-operated) (see figure 1),

— tractors with dozer equipment (see figure 2),

— loaders (see figure 3), and

— backhoe loaders (also known as excavator-loaders) (see figure 4).

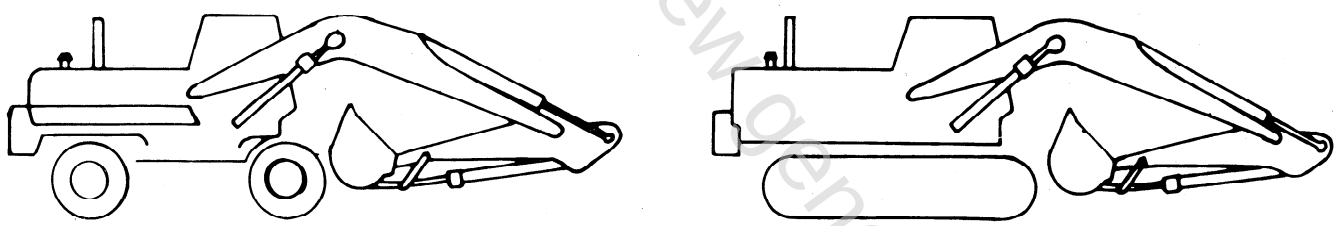

Figure 1 — Excavator

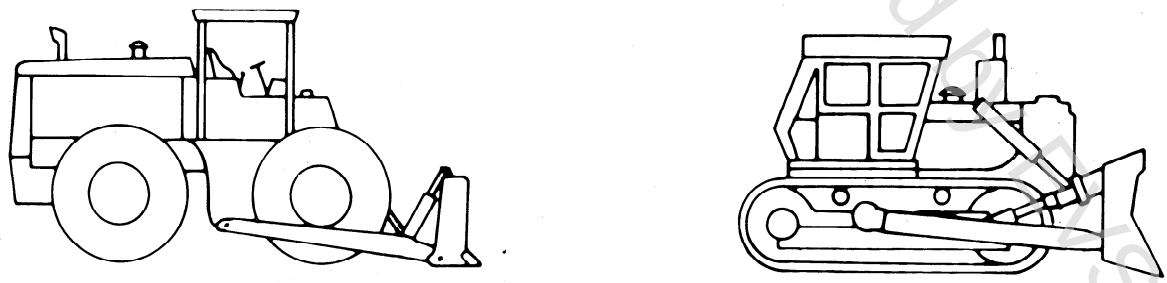

Figure 2 — Tractor with dozer attachment

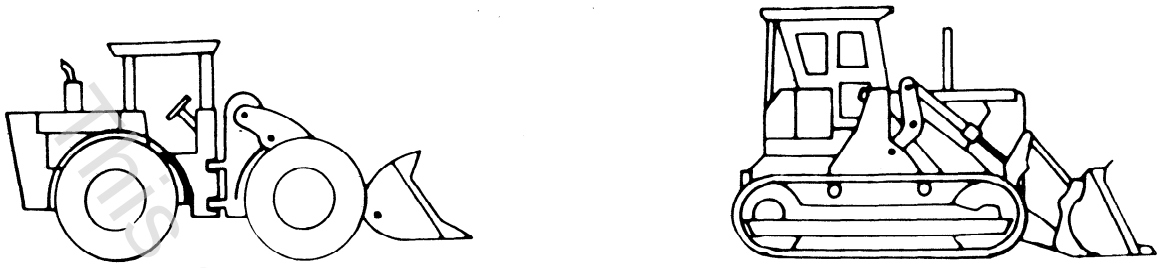

Figure 3 — Loader

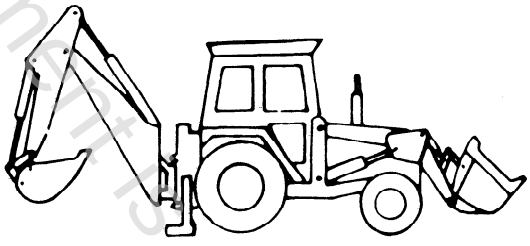

Figure 4 — Backhoe loader

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 1585:1982, *Road vehicles — Engines test code — Net power.*

ISO 3411:1982, *Earth-moving machinery — Human physical dimensions of operators and minimum operator space envelope.*

ISO 6081:1986, *Acoustics — Noise emitted by machinery and equipment — Guidelines for the preparation of test codes of engineering grade requiring noise measurements at the operator's or bystander's position.*

ISO 6395:1988, *Acoustics — Measurement of exterior noise emitted by earth-moving machinery — Dynamic test conditions.*

IEC 651:1979, *Sound level meters.*

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

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 6081 and ISO 6395 and the following definition apply.

3.1 equivalent continuous A-weighted sound pressure level, $L_{pAeq,T}$: The A-weighted sound pressure level averaged on an energy basis over the whole measurement period. It is expressed in decibels.

4 Instrumentation

The instrumentation shall be capable of carrying out measurements as described in 8.1. Integrating-averaging sound level meters shall meet the requirements of IEC 804 for a type 1 instrument. Alternative instrumentation, including the microphone and cable, shall meet the requirements of IEC 651 for a type 1 instrument.

An omnidirectional microphone shall be used for measurements so as to reduce possible directivity errors. The microphone and its associated cable shall be chosen so that the combined sensitivity does not change significantly over the temperature range encountered during the measurements.