



SLOVENSKI STANDARD
SIST EN ISO 7096:2000
01-december-2000

Earth-moving machinery - Laboratory evaluation of operator seat vibration (ISO 7096:2000)

Earth-moving machinery - Laboratory evaluation of operator seat vibration (ISO 7096:2000)

Erdbaumaschinen - Laborverfahren zur Bewertung der Schwingungen des Maschinenführersitzes (ISO 7096:2000)

Engins de terrassement - Evaluation en laboratoire des vibrations transmises a l'opérateur par le siege (ISO 7096:2000)

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Ta slovenski standard je istoveten z: EN ISO 7096:2000

ICS:

13.160	Vpliv vibracij in udarcev na ljudi	Vibration and shock with respect to human beings
53.100	Stroji za zemeljska dela	Earth-moving machinery

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en

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ICS 13.160.00; 53.100.00

English version

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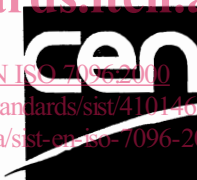
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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword

The text of the International Standard ISO 7096:2000 has been prepared by Technical Committee ISO/TC 127 "Earth-moving machinery" in collaboration with Technical Committee CEN/TC 151 "Construction equipment and building material machines - Safety", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by September 2000, and conflicting national standards shall be withdrawn at the latest by September 2000.

This European Standard 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).

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

NOTE FROM CEN/CS: The foreword is susceptible to be amended on reception of the German language version. The confirmed or amended foreword, and when appropriate, the normative annex ZA for the references to international publications with their relevant European publications will be circulated with the German version.

Endorsement notice

The text of the International Standard ISO 7096:2000 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to International Standards are listed in annex ZA (normative).

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Annex ZA (normative)
Normative references to international publications
with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN</u>	<u>Year</u>
ISO 6165	1997	Earth-moving machinery - Basic types - Vocabulary	EN ISO 6165	1999
ISO 8041	1990	Human response to vibration - Measuring instrumentation	ENV 28041	1993
ISO 10326-1	1992	Mechanical vibration - Laboratory method for evaluating vehicle seat vibration - Part 1: Basic requirements	EN 30326-1	1994
ISO 13090-1	1998	Mechanical vibration and shock - Guidance on safety aspects of tests and experiments with people - Part 1: Exposure to whole-body mechanical vibration and repeated shock	EN ISO 13090-1	1998

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**Earth-moving machinery — Laboratory
evaluation of operator seat vibration**

*Engins de terrassement — Évaluation en laboratoire des vibrations
transmises à l'opérateur par le siège*

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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 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.

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

International Standard ISO 7096 was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 2, *Safety requirements and human factors*.

This third edition cancels and replaces the second edition (ISO 7096:1994), which has been technically revised.

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Introduction

The operators of earth-moving machinery are often exposed to a low frequency vibration environment partly caused by the movement of the vehicles over uneven ground and the tasks carried out. The seat constitutes the last stage of suspension before the driver. To be efficient at attenuating the vibration, the suspension seat should be chosen according to the dynamic characteristics of the vehicle. The design of the seat and its suspension are a compromise between the requirements of reducing the effect of vibration and shock on the operator and providing him with stable support so that he can control the machine effectively.

Thus, seat vibration attenuation is a compromise of a number of factors and the selection of seat vibration parameters needs to be taken in context with the other requirements for the seat.

The performance criteria provided in this International Standard have been set in accordance with what is attainable using what is at present the best design practice. They do not necessarily ensure the complete protection of the operator against the effects of vibration and shock. They may be revised in the light of future developments and improvements in suspension design.

The test inputs included in this International Standard are based on a very large number of measurements taken *in situ* on earth-moving machinery used under severe but typical operating conditions. The test methods are based on ISO 10326-1, which is a general method applicable to seats for different types of vehicles.

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Earth-moving machinery — Laboratory evaluation of operator seat vibration

1 Scope

1.1 This International Standard specifies, in accordance with ISO 10326-1, a laboratory method for measuring and evaluating the effectiveness of the seat suspension in reducing the vertical whole-body vibration transmitted to the operator of earth-moving machines at frequencies between 1 Hz and 20 Hz. It also specifies acceptance criteria for application to seats on different machines.

1.2 This International Standard is applicable to operator seats used on earth-moving machines as defined in ISO 6165.

1.3 This International Standard defines the input spectral classes required for the following earth-moving machines. Each class defines a group of machines having similar vibration characteristics:

- rigid frame dumpers > 4 500 kg operating mass¹⁾
- articulated frame dumpers
- scrapers without axle or frame suspension²⁾
- wheel-loaders > 4 500 kg operating mass¹⁾
- graders
- wheel-dozers
- soil compactors (wheel type)
- backhoe-loaders
- crawler loaders
- crawler-dozers \leq 50 000 kg operating mass^{1), 3)}
- compact dumpers \leq 4 500 kg operating mass¹⁾
- compact loaders \leq 4 500 kg operating mass¹⁾
- skid-steer loaders \leq 4 500 kg operating mass¹⁾

1) See ISO 6016.

2) For tractor scrapers with suspension, either a seat with no suspension may be used, or one having a suspension with high damping.

3) For crawler dozers greater than 50 000 kg, the seat performance requirements are suitably provided by a cushion type seat.