

---

---

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

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

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

ISO 7096:2020

<https://standards.iteh.ai/catalog/standards/iso/00efd471-90af-4cee-a567-d3429f899bc4/iso-7096-2020>



**iTeh Standards**  
**(<https://standards.itih.ai>)**  
**Document Preview**

ISO 7096:2020

<https://standards.itih.ai/catalog/standards/iso/00efd471-90af-4cee-a567-d3429f899bc4/iso-7096-2020>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Fax: +41 22 749 09 47  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

|                                                                  |           |
|------------------------------------------------------------------|-----------|
| <b>Foreword</b>                                                  | <b>iv</b> |
| <b>Introduction</b>                                              | <b>vi</b> |
| <b>1 Scope</b>                                                   | <b>1</b>  |
| <b>2 Normative references</b>                                    | <b>2</b>  |
| <b>3 Terms, definitions, symbols and abbreviated terms</b>       | <b>2</b>  |
| 3.1 Terms and definitions                                        | 2         |
| 3.2 Symbols and abbreviated terms                                | 3         |
| <b>4 General</b>                                                 | <b>4</b>  |
| <b>5 Test conditions and test procedure</b>                      | <b>4</b>  |
| 5.1 General                                                      | 4         |
| 5.2 Simulation of vibration                                      | 5         |
| 5.3 Test seat                                                    | 5         |
| 5.3.1 General                                                    | 5         |
| 5.3.2 Run-in                                                     | 5         |
| 5.3.3 Seat adjustment                                            | 5         |
| 5.4 Test person and posture                                      | 5         |
| 5.5 Input vibration                                              | 6         |
| 5.5.1 Simulated input vibration test to evaluate the SEAT factor | 6         |
| 5.5.2 Damping test                                               | 6         |
| 5.5.3 Damping test for active and semi-active suspension systems | 7         |
| 5.6 Tolerances on input vibration                                | 7         |
| 5.6.1 General                                                    | 7         |
| 5.6.2 Distribution function                                      | 7         |
| 5.6.3 Power spectral density and rms values                      | 7         |
| <b>6 Acceptance values</b>                                       | <b>8</b>  |
| 6.1 SEAT factor                                                  | 8         |
| 6.2 Damping performance                                          | 8         |
| <b>7 Seat identification</b>                                     | <b>9</b>  |
| <b>8 Information for use</b>                                     | <b>9</b>  |
| 8.1 General                                                      | 9         |
| 8.2 Test report                                                  | 9         |
| <b>Bibliography</b>                                              | <b>23</b> |

## 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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 2, *Safety, ergonomics and general requirements*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 151, *Construction equipment and building material machines - Safety*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 7096:2000), which has been technically revised.

The main changes compared to the previous edition are as follows:

- [Clause 1](#), horizontal direction drills added to the list of machines with low vertical vibration inputs;
- crawler dumpers added to [Table 4](#) and aligned with [Figure 7](#);
- whole document, update of normative references;
- skid steer loaders with tracks have been added;
- [5.4](#), reference to the posture of the test person added and total mass of heavy person updated;
- [5.5.2](#), informative note for bag filling;
- [5.5.3](#), damping test for active and semi-active suspension systems added;
- [Table 2](#), Power Spectral Density of class EM 1 and EM 3 modified;
- [Table 3](#), Filter cut-off frequencies of class EM 1 modified;
- [Table 4](#), Characteristics of the simulated input vibration modified for the following machine types:
  - Articulated or rigid frame dumper >4 500 kg;
  - Wheel loader >4 500 kg.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

**iTeh Standards**  
**(<https://standards.itih.ai>)**  
**Document Preview**

ISO 7096:2020

<https://standards.itih.ai/catalog/standards/iso/00efd471-90af-4cee-a567-d3429f899bc4/iso-7096-2020>