



**International
Standard**

ISO 31915-3

**Aircraft ground support
equipment — General
requirements —**

**Part 3:
Vibration measurement methods
and reduction**

Matériel au sol pour aéronefs — Exigences générales —

Partie 3: Vibrations, réduction et méthodes de mesure

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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.

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 document 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).

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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.

This document was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 9, *Air cargo and ground equipment*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 274, *Aircraft ground support equipment*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 31915 series can be found on the ISO website.

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.

Introduction

The aim of this document is to deal with vibration as a hazard and to provide methods for the measurement and reduction of vibration emission transmitted to the whole body of drivers of ground support equipment (GSE) when driving. See EN 1032:2003+A1:2008 for determining whole body vibrations under stationary operating conditions and hand-arm vibrations.

The results obtained can also be used to compare GSE of the same category or a given GSE when equipped with different seats or tyres, etc.

Fitting different seats, changing the tyre specification, etc. can lead to different vibration values. Due to the specific operation of GSE, however, EN 1032:2003+A1:2008 cannot be applied directly for whole body vibration under driving conditions, and therefore, the preparation of this document for GSE has become necessary.

This document cannot be used for field measurements to determine the daily exposure of the driver to vibration.

This document is a type-C standard as stated in ISO 12100.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium and large enterprises);
- health and safety bodies (regulators, accident prevention organisations, market surveillance etc.)

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

- machine users/employers (small, medium and large enterprises);
- machine users/employees (e.g. trade unions, organizations for people with special needs);
- service providers, e.g. for maintenance (small, medium and large enterprises);
- consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this document.

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Aircraft ground support equipment — General requirements —

Part 3: Vibration measurement methods and reduction

1 Scope

This document is applicable to whole body vibration as a significant hazard. It also specifies the methods for determining the vibration emission transmitted to the whole body of drivers standing or seated on freely moveable ground support equipment (GSE) when driving, for purposes of type evaluation and declaration. This document also specifies methods for verifying vibration emission. This document is applicable to self-powered GSE only.

The test results do not apply to the determination of whole body vibration exposure of persons.

This document is intended to be used in conjunction with the different parts of the EN 1915 series and the EN 12312 series.

This document does not apply to GSE manufactured before the date of its publication.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies

ISO 2041:2018, *Mechanical vibration, shock and condition monitoring — Vocabulary*

ISO 5805:1997, *Mechanical vibration and shock — Human exposure — Vocabulary*

ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

EN 1032:2003+A1:2008, *Mechanical vibration — Testing of mobile machinery in order to determine the vibration emission value*

EN 1915-1:2023, *Aircraft ground support equipment — General requirements — Part 1: Basic safety requirements*

EN 12096:1997, *Mechanical vibration — Declaration and verification of vibration emission values*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100:2010, EN 1915-1:2023, ISO 2041:2018 and ISO 5805:1997 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>