
Mehanske vibracije - Prenosni ročni in ročno vodeni stroji - Načela vrednotenja oddajanja vibracij (ISO/DIS 20643:2026)

Mechanical vibration - Hand-held and hand-guided machinery - Principles for evaluation of vibration emission (ISO/DIS 20643:2026)

Mechanische Schwingungen - Handgehaltene und handgeführte Maschinen - Grundsätzliches Vorgehen bei der Ermittlung der Schwingungsemission (ISO/DIS 20643:2026)

Vibration mécanique - Machines tenues et guidées à la main - Principes pour l'évaluation d'émission vibratoire (ISO/DIS 20643:2026)

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25.140.01	Ročna orodja na splošno	Hand-held tools in general

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DRAFT International Standard

ISO/DIS 20643

Mechanical vibration — Hand-held and hand-guided machinery — Principles for evaluation of vibration emission

Vibration mécanique — Machines tenues et guidées à la main — Principes pour l'évaluation d'émission de vibration

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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 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).

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This document was prepared by Technical Committee ISO/TC 118, *Compressors and pneumatic tools, machines and equipment*, Subcommittee SC 3, *Pneumatic tools and machines*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 231, *Mechanical vibration and shock*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 20643:2005 including Amd 1:2012), which has been technically revised.

The main changes are as follows:

- introduction has been clarified and aligned with B-standard introductions;
- scope has been clarified by removing the second paragraph and restructuring the scope to increase the readability;
- values for repeated shock vibrations are added as a second emission value;
- hand-transmitted vibration emission is divided into hand-transmitted continuous vibration and repeated shock vibration emission;
- [Annex D](#) has been added;
- references have been updated;
- editorial changes to fulfil the ISO Directives.

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.

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Introduction

Human exposure to mechanical vibration from hand-held or hand-guided machinery can interfere with comfort, working efficiency and, in some circumstances, health and safety. According to ISO 12100 the risks created by vibrating machinery need to be minimized and the residual risk from vibration need to be noted in the relevant instruction handbook. This, ideally, will be based on the vibration emission values reported in accordance with this document or the relevant vibration test code, but additional information for use can be required.

This document can be used for hand-held machinery (e.g. chipping hammers, sanders), hand-guided machinery (e.g. lawn mowers, single-axle tractors, vibratory rollers) and other types of machinery fitted with handles, guiding beams or similar means of control. It can be used for machinery of all power sources (electrical, hydraulic, pneumatic, internal combustion engine, etc.).

It is possible that not all of the mechanisms that generate vibration when the machinery is used in the real operational environment are identified by the type test method. Factors such as the workpiece, the process and the operator can have an important influence on the vibration magnitudes. For this reason, the type test measurements cannot replace field measurements for evaluating vibration exposure at the workplace, but they are sufficiently representative to be used for a preliminary assessment of risk.

Vibration magnitudes in type tests are kept within the range of measurements made in the field, but with less variability. Type tests require accurate and reproducible conditions. It is essential that different laboratories obtain the same results within specified limits. This requires that the process or way in which the machinery is measured is precisely defined.

This document is intended to assist technical standardization committees responsible for specific types of machinery in preparing vibration test codes to ensure that such vibration test codes:

- enable users to make comparisons and to check the declared vibration emission values;
- are as homogeneous as possible with each individual test code having the same basic structure;
- are in full accordance with basic type-B standards on measurement of vibration emissions;
- reflect the latest technical knowledge of methods of determining the vibration emissions from the specific family of machinery under consideration.

A vibration test code for a family of machinery prepared in accordance with this document:

- a) produces vibration emission data which allow the determination of the vibration state-of-the-art for a family of machinery and the identification of a machinery which has significantly greater or smaller vibration emission;
- b) produces vibration emission values and uncertainties suitable for comparing the emissions of machinery of the same type irrespective of the date or location of the testing;
- c) produces vibration emission values and uncertainties corresponding to the upper quartile of vibration magnitudes resulting from intended uses of the machinery;
- d) specifies the operating conditions of the machinery during testing that are, so far as practicable, representative of normal use;
- e) identifies parameters that have a significant influence on the vibration emission of the machinery;
- f) specifies installation and mounting conditions of transducers, measurement positions and measurement directions;
- g) prescribes accessories used during testing and
- h) requires recording of the values of machinery operating parameters that may influence vibration emission.

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This document can be used, in the absence of an agreed vibration test code, as a guide to determine vibration emission values and to define test parameters that may influence vibration emission to be recorded.

This document is a type-B 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 organizations, 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:

- machinery users/employers (small, medium and large enterprises);
- machinery 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.

In addition, this document is intended for standardization bodies elaborating type-C standards.

The requirements of this document can be supplemented or modified by a type-C standard.

For machinery that are covered by the scope of a type-C standard and have been designed and built according to the requirements of that standard, the requirements of that type-C standard take precedence.

This document does not present limits or recommended vibration values. It does not give any guidance or recommendations for determination of human exposure to vibration at the workplace. For such information, see ISO 5349-1 and ISO 5349-2.

Mechanical vibration — Hand-held and hand-guided machinery — Principles for evaluation of vibration emission

1 Scope

This document provides the basis for the drafting of vibration test codes for hand-held and hand-guided machinery. It specifies the determination of hand-transmitted continuous vibration and repeated shock vibration emission values during type testing. For machinery where vibration test codes do not exist, it may also be used for determination of vibration emission values and contains sufficient guidance for designing an appropriate test.

This document does not apply

- to fixed machinery in which the vibration is transmitted to the hand-arm system through the workpiece, and,
- to mobile machinery where the operator's position is on the machine, see EN 1032.

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 5349-1:2001, *Mechanical vibration — Measurement and evaluation of human exposure to hand-transmitted vibration — Part 1: General requirements*

ISO 5349-2:2001, *Mechanical vibration — Measurement and evaluation of human exposure to hand-transmitted vibration — Part 2: Practical guidance for measurement at the workplace*

ISO 5349-3:2025, *Mechanical vibration — Measurement and evaluation of human exposure to hand-transmitted vibration — Part 3: Isolated and repeated shocks using the frequency range of ISO 5349-1*

ISO 8041-1:2017, *Human response to vibration — Measuring instrumentation — Part 1: General purpose vibration meters*

EN 12096:2026, *Mechanical vibration — Declaration and verification of vibration emission values*

3 Terms, definitions and symbols

For the purposes of this document, the terms and definitions given in ISO 5349-3 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/>