
Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration —

Part 5: Method for evaluation of vibration containing multiple shocks

Vibrations et chocs mécaniques — Évaluation de l'exposition des individus à des vibrations globales du corps —

Partie 5: Méthode d'évaluation des vibrations contenant des chocs répétés



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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 2.

The main task of technical committees is to prepare International Standards. 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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 2631-5 was prepared by Technical Committee ISO/TC 108, *Mechanical vibration and shock*, Subcommittee SC 4, *Human exposure to mechanical vibration and shock*.

ISO 2631 consists of the following parts, under the general title *Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration*:

- *Part 1: General requirements*
- *Part 2: Vibration in buildings (1 Hz to 80 Hz)*
- *Part 4: Guidelines for the evaluation of the effects of vibration and rotational motion on passenger and crew comfort in fixed-guideway transport systems*
- *Part 5: Method for evaluation of vibration containing multiple shocks*

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Introduction

The purpose of this part of ISO 2631 is to define a method of quantifying whole-body vibration containing multiple shocks in relation to human health. Examples of conditions that result in vibration containing multiple shocks include, but are not limited to, machinery travelling over rough surfaces, small boats in rough sea, aircraft in buffeting, presses and mechanical hammers.

Adverse effects on the lumbar spine are the dominating health risks of long-term exposure to vibration containing multiple shocks. Therefore, this part of ISO 2631 is basically concerned with the lumbar spine response. Annex A provides guidance on assessment of adverse health effects.

The assessment method described in this part of ISO 2631 is based on the predicted response of the bony vertebral endplate (hard tissue) in an individual who is in good physical condition with no evidence of spinal pathology and who is maintaining an upright unsupported posture. However, the assessment method and related models described in this part of ISO 2631 have not been epidemiologically validated.

Annex A provides guidance on assessment of health effects of multiple shocks. Annex B discusses the effects of multiple shocks and the posture on the intervertebral disc (soft tissue). Annex C gives information on the background of the calculation of spinal response in the vertical direction (z -direction). Annex D includes a software calibration check and an example of a computer program that can be used for the calculation of the vibration dose.