

# SVENSK STANDARD

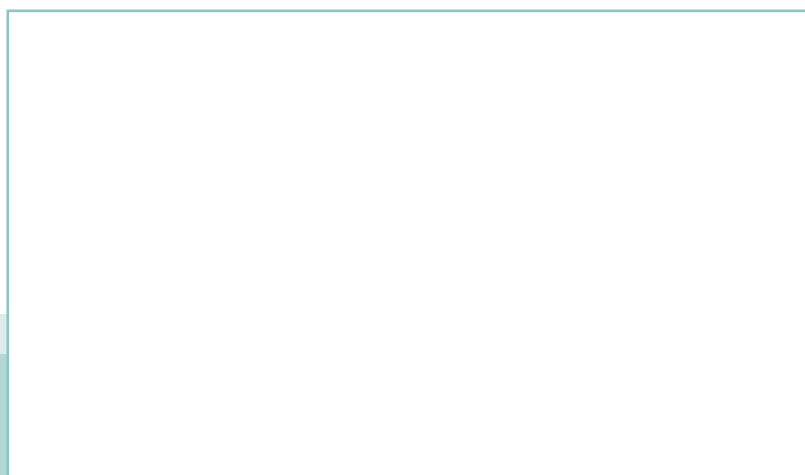
## SS-ISO 2631-4/Amd 1:2010

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**Vibration och stöt – Vägledning för bedömning av  
helkroppsvibrationers inverkan på människan –  
Del 4: Bedömning av åkkomfort på passagerare och  
besättning i spårbunden trafik –  
Tillägg 1 (ISO 2631-4:2001/Amd 1:2010, IDT)**

**Mechanical vibration and shock – Evaluation of human  
exposure to whole-body vibration –  
Part 4: Guidelines for the evaluation of the effects of  
vibration and rotational motion on passenger and crew  
comfort in fixed guideway transport systems –  
Amendment 1 (ISO 2631-4:2001/Amd 1:2010, IDT)**



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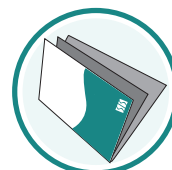
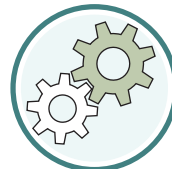
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Vi erbjuder våra kunder allt som rör standarder och deras tillämpning. Hos oss kan du köpa alla publikationer du behöver – allt från enskilda standarder, tekniska rapporter och standardpaket till handböcker och onlinetjänster. Genom vår webbtjänst e-nav får du tillgång till ett lättnavigerat bibliotek där alla standarder som är aktuella för ditt företag finns tillgängliga. Standarder och handböcker är källor till kunskap. Vi säljer dem.

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Den internationella standarden ISO 2631-4:2001/Amd 1:2010 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av ISO 2631-4:2001/Amd 1:2010.

The International Standard ISO 2631-4:2001/Amd 1:2010 has the status of a Swedish Standard. This document contains the official English version of ISO 2631-4:2001/Amd 1:2010.

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*Upplysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS Förlag AB som även lämnar allmänna upplysningar om svensk och utländsk standard.*

*Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS Förlag AB, who can also provide general information about Swedish and foreign standards.*

Denna standard är framtagen av kommittén för Människans påverkan av vibrationer, SIS/TK 111/AG 1.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på [www.sis.se](http://www.sis.se) - där hittar du mer information.



## 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.

Amendment 1 to ISO 2631-4:2001 was prepared by Technical Committee ISO/TC 108, *Mechanical vibration, shock and condition monitoring*, Subcommittee SC 4, *Human exposure to mechanical vibration and shock*.

Amendment 1 to ISO 2631-4:2001 cancels and replaces ISO 10056:2001.



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

Part 4:

## **Guidelines for the evaluation of the effects of vibration and rotational motion on passenger and crew comfort in fixed-guideway transport systems**

### **AMENDMENT 1**

*Page iii, Foreword*

Add the following part:

— *Part 5: Method for evaluation of vibration containing multiple shocks*

*Page 5, Clause 6, 3rd paragraph, 2nd sentence*

Replace “ISO 10056” by “Annex B”.

*Page 8, after Table A.2*

Insert Annex B (see overleaf).

## Annex B (informative)

### Statistical analysis method

#### B.1 Symbols and abbreviated terms

$a_w$	weighted root mean square (r.m.s.) value of acceleration, in metres per second squared
$b$	class width, in metres per second squared
$h$	probability histogram of the weighted r.m.s. values of acceleration
$h_c$	cumulative probability histogram of the r.m.s. values of acceleration
$i$	subscript representing the number of an elementary block of data
$m$	argument characterizing the class of an observation
$n(m)$	number of observations in class $m$
$n_{\text{tot}}$	total number of observations

#### B.2 Statistical analysis method

The data for comfort indices are determined from certain statistical parameters: average value of the r.m.s. values and characteristic parameter of the higher r.m.s. values (e.g. 95th and 99th percentiles). To evaluate these, the histogram of r.m.s. values of the weighted acceleration signal,  $a_w$ , is used.

A probability,  $h(m)$ , histogram and a cumulative probability,  $h_c(m)$ , histogram can be constructed (see examples in Figures B.1 and B.2):

$$h(m) = \frac{n(m)}{n_{\text{tot}}} \quad (\text{B.1})$$

$$h_c(m) = \sum_{i=0}^m h(i) \quad (\text{B.2})$$

where  $m$  is the value of  $a_w(m)/b$  rounded down to the nearest integer.

Figures B.1 and B.2 represent a probability histogram and the corresponding cumulative probability histogram

$$h_c(m) = P[a_w \leq a_w(m)] \quad (\text{B.3})$$

where  $P$  is probability.