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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

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

Partie 4: Lignes directrices pour l'évaluation des effets des vibrations et du mouvement de rotation sur le confort des passagers et du personnel dans les systèmes de transport guidé

AMENDEMENT 1

Reference number
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Foreword

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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_{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):

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

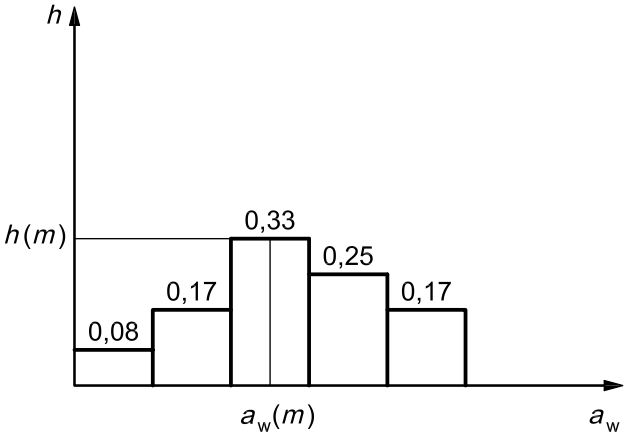
$$h_c(m) = \sum_{i=0}^{m} h(i) \tag{B.2}$$

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

$$h_c(m) = P[a_w \leqslant a_w(m)] \tag{B.3}$$

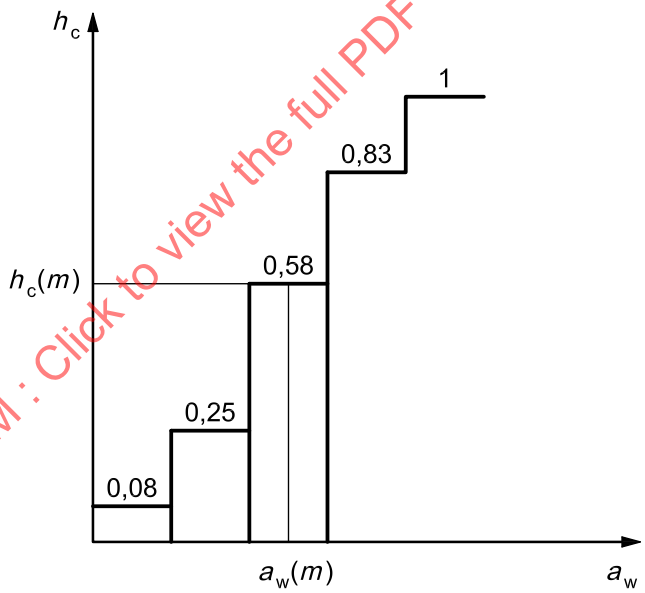
where P is probability.



Key

a_w	weighted r.m.s. acceleration value
$a_w(m)$	weighted r.m.s. acceleration value for class m
h	probability
$h(m)$	probability for class m

Figure B.1 — Example of a probability histogram



Key

a_w	weighted r.m.s. acceleration value
$a_w(m)$	weighted r.m.s. acceleration value for class m
h_c	cumulative probability
$h_c(m)$	cumulative probability for class m

Figure B.2 — Example of the corresponding cumulative probability histogram

Page 9, Bibliography

Add

[1] ISO 2631-5, *Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration — Part 5: Method for evaluation of vibration containing multiple shocks*

Renumber Reference “[1] ISO 8727” to “[2] ISO 8727”.

Delete the existing Reference [2], ISO 10056.

In Reference [10], replace “1990” by “1996”.