

ANSI S3.18-2002  
ISO 2631-1:1997

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## AMERICAN NATIONAL STANDARD

### **Mechanical vibration and shock—Evaluation of human exposure to whole-body vibration—Part 1: General requirements**

(A Nationally Adopted International Standard)

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NAIS STANDARD  
ANSI S3.18-2002  
ISO 2631-1:1997

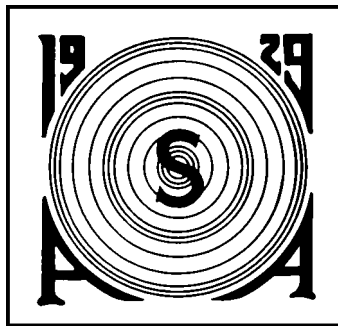
Accredited Standards Committee S3, Bioacoustics

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Standards Secretariat  
Acoustical Society of America  
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**ANSI S3.18-2002  
ISO 2631-1:1997**

AMERICAN NATIONAL STANDARD

**Mechanical vibration and shock  
— Evaluation of human exposure  
to whole-body vibration — Part 1:  
General requirements**

A Nationally Adopted International Standard

Secretariat

**Acoustical Society of America (ASA)**

Approved 13 May 2002

**American National Standards Institute, Inc.**

**Abstract**

This part of ISO 2631 defines methods for the measurement of periodic, random and transient whole-body vibration. It indicates the principal factors that combine to determine the degree to which a vibration exposure will be acceptable. Informative annexes indicate current opinion and provide guidance on the possible effects of vibration on health, comfort and perception and motion sickness. The frequency range considered is

- 0.5 Hz to 80 Hz for health, comfort and perception and
- 0.1 Hz to 0.5 Hz for motion sickness.

Although the potential effects on human performance are not covered, most of the guidance on whole-body vibration measurement also applies to this area. This part of ISO 2631 also defines the principles of preferred methods of mounting transducers for determining human exposure. It does not apply to the evaluation of extreme-magnitude single shocks such as occur in vehicle accidents.

This part of ISO 2631 is applicable to motions transmitted to the human body as a whole through the supporting surfaces: the feet of a standing person, the buttocks, back and feet of a seated person or the supporting area of a recumbent person. This type of vibration is found in vehicles, in machinery, in buildings and in the vicinity of working machinery.

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The Acoustical Society of America (ASA) provides the Secretariat for Accredited Standards Committees S1 on Acoustics, S2 on Mechanical Vibration and Shock, S3 on Bioacoustics, and S12 on Noise. These committees have wide representation from the technical community (manufacturers, consumers, trade associations, general interest, and government representatives). The standards are published by the Acoustical Society of America through the American Institute of Physics as American National Standards after approval by their respective standards committees and the American National Standards Institute.

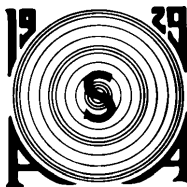
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## Foreword

[This foreword is not part of the Nationally Adopted International Standard (NAIS), Mechanical vibration and shock – Evaluation of human exposure to whole body vibration – Part 1: General requirements, ANSI S3.18-2002, ISO 2631-1:1997.]

This Nationally Adopted International Standard (NAIS) comprises a part of a group of definitions, standards, and specifications for use in acoustical work. It has been adopted by the American National Standards Institute utilizing the Accredited Standards Committee Procedures, under the Secretariat of the Acoustical Society of America.

Accredited Standards Committee S3, Bioacoustics, under whose jurisdiction this NAIS Standard was adopted, has the following scope:

*Standards, specifications, methods of measurement and test, and terminology in the fields of psychological and physiological acoustics, including aspects of general acoustics, shock, and vibration which pertain to biological safety, tolerance and comfort.*

This Standard is identical to International Standard ISO 2631-1:1997, Mechanical vibration and shock – Evaluation of human exposure to whole body vibration, which was prepared by Technical Committee ISO/TC 108, Mechanical vibration and shock, Subcommittee SC 4, Human exposure to Mechanical vibration and shock.

At the time this NAIS Standard was submitted to Accredited Standards Committee S3, Bioacoustics, for final approval, the membership was as follows:

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| D. Johnson     |                |                  |

Working Group S3-39, Human Exposure to Mechanical Vibration and Shock, which assisted Accredited Standards Committee S3, Bioacoustics, in the preparation of this Standard, had the following membership:

D.D. Reynolds -Chair

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|---------------|-----------------|
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| M. Cherniack  | S. D. Smith     |
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| J. Rescigno   | D. Wilder       |

Suggestions for improvement of this Standard will be welcomed. They should be made in writing to Accredited Standards Committee S3, Bioacoustics, in care of the Standards Secretariat, Acoustical Society of America, 35 Pinelawn Road, Suite 114E, Melville, New York 11747-3177.

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

## **Part 1:** General requirements

### **1 Scope**

This part of ISO 2631 defines methods for the measurement of periodic, random and transient whole-body vibration. It indicates the principal factors that combine to determine the degree to which a vibration exposure will be acceptable. Informative annexes indicate current opinion and provide guidance on the possible effects of vibration on health, comfort and perception and motion sickness. The frequency range considered is

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### **2 Normative references**

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 2631. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 2631 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2041:1990, *Vibration and shock — Vocabulary*.

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

ISO 8041:1990, *Human response to vibration — Measuring instrumentation*.

IEC 1260:1995, *Electroacoustics — Octave-band and fractional-octave-band filters*.