



National Standards Authority of Ireland

IRISH STANDARD

I.S. CEN/TR 15172-1:2005

ICS 13.160
17.160

**WHOLE-BODY VIBRATION - GUIDELINES FOR
VIBRATION HAZARDS REDUCTION - PART 1:
ENGINEERING METHODS BY DESIGN OF
MACHINERY**

National Standards
Authority of Ireland
Glasnevin, Dublin 9
Ireland

Tel: +353 1 807 3800
Fax: +353 1 807 3838
<http://www.nsai.ie>

Sales
<http://www.standards.ie>

*This Irish Standard was
published under the
authority of the National
Standards Authority of
Ireland and comes into
effect on:*

January 25, 2006

**NO COPYING WITHOUT NSAI
PERMISSION EXCEPT AS
PERMITTED BY COPYRIGHT
LAW**

© NSAI 2005

Price Code I

Údarás um Chaighdeáin Náisiúnta na hÉireann

TECHNICAL REPORT
RAPPORT TECHNIQUE
TECHNISCHER BERICHT

CEN/TR 15172-1

November 2005

ICS 13.160; 17.160

English Version

**Whole-body vibration - Guidelines for vibration hazards
reduction - Part 1: Engineering methods by design of machinery**

Vibrations globales du corps - Guide pour la réduction des
risques de vibrations - Partie 1: Mesures techniques lors de
la conception des machines

Ganzkörper-Schwingungen - Leitfaden zur Verringerung der
Gefährdung durch Schwingungen - Teil 1: Technische
Maßnahmen durch die Gestaltung von Maschinen

This Technical Report was approved by CEN on 25 July 2005. It has been drawn up by the Technical Committee CEN/TC 231.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents	Page
Foreword	3
Introduction	4
1 Scope	5
2 Identification of main sources and operational modes producing vibration that might be hazardous to health	5
2.1 Identification of main sources and operational modes.....	5
2.2 Factors that can combine with vibration to increase the likelihood of injury	6
3 Reduction of vibration at source	6
3.1 Travelling on uneven surfaces.....	6
3.2 Operating of working equipment (tools)	7
3.3 Information from the manufacturer on the use of tools and accessories	7
3.4 Vibrating tools mounted to the machinery.....	7
3.5 Engine.....	8
4 Reduction of transmission of vibration from source to the operator	8
4.1 General	8
4.2 Wheel size and tyres.....	9
4.3 Low-frequency wheel and chassis suspension.....	10
4.4 Low-frequency cab suspension.....	10
4.5 Seat suspension and seat design.....	11
5 Elimination of incorrect posture	11
5.1 General	11
5.2 Improving external cab visibility.....	12
5.3 Design of cab adapted to the operator dimension and task.....	13
5.4 Selection of seats adapted to the machine and task.....	14
6 Summary of questions to be considered when evaluating the design of mobile machinery in view of protecting operator's safety and health	15
6.1 General	15
6.2 Visibility	15
6.3 Cabin construction	15
6.4 Selection of seat.....	16
Annex A (informative) Vibration isolation.....	17
Bibliography.....	22

Foreword

This Technical Report (CEN/TR 15172-1:2005) has been prepared by Technical Committee CEN/TC 231 “Mechanical vibration and shock”, the secretariat of which is held by DIN.

CEN/TR 15172 consists of the following parts:

CEN/TR 15172-1, *Whole-body vibration — Guidelines for vibration hazards reduction — Part 1: Engineering methods by design of machinery*

CEN/TR 15172-2, *Whole-body vibration — Guidelines for vibration hazards reduction — Part 2: Management measures at the workplace*

CEN/TR 15172-1:2005(E)

Introduction

This Technical Report deals with engineering methods for design of machinery transmitting vibration to the human body. Guidance on management measures at the workplace is given in CEN/TR 15172-2.

Significant whole-body vibration is mainly related to operators of mobile machinery. Mobile machinery transmits vibration and shock from the seat for seated operators, from the floor for standing operators, which may cause adverse health effects, primarily damage to the spine. The effects of vibration depend on its frequency, direction, intensity, presence of shocks and on the exposure time. They also depend on the operator's posture. It is important to understand that the design and manufacture of mobile machinery is complex, requiring extensive technical background.

The EC Directive 98/37/EC on the approximation of the laws of the member states relating to machinery (Machinery Directive), amended by Directive 98/79/EC, requires that the machinery is so designed and constructed that risks resulting from vibration produced by the machinery are reduced to the lowest level, taking account of technical progress and the availability of means of reducing vibration, in particular at source. Limiting vibration by design is one of the measures that EN ISO 12100-2 suggests machine manufacturers and designers should consider as part of a strategy to achieve safety by design of machinery in conformity with European Legislation.

The reduction of vibration by design of machinery can make an important contribution to the effective protection of people at work from the harmful effects of vibration. In practical situations, however, a combination of engineering measures and management measures may be necessary.

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-