

**Acoustics and vibration - Laboratory measurements of vibro-acoustic transfer properties of resilient elements - Part 3: Indirect method for determination of the dynamic stiffness of resilient supports for translatory motion**

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## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 10846-3:2003 sisaldab Euroopa standardi EN ISO 10846-3:2002 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 18.02.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 10846-3:2003 consists of the English text of the European standard EN ISO 10846-3:2002.</p> <p>This document is endorsed on 18.02.2003 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p><b>Käsitlusala:</b></p> <p>This part of ISO 10846 specifies a method for determining the dynamic transfer stiffness for translations of resilient supports, under specified preload. The method concerns the laboratory measurement of vibration transmissibility and is called the indirect method</p>	<p><b>Scope:</b></p> <p>This part of ISO 10846 specifies a method for determining the dynamic transfer stiffness for translations of resilient supports, under specified preload. The method concerns the laboratory measurement of vibration transmissibility and is called the indirect method</p>
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**English version**

Acoustics and vibration

**Laboratory measurement of vibro-acoustic transfer  
properties of resilient elements**

Part 3: Indirect method for determination of the dynamic stiffness of  
resilient supports for translatable motion  
(ISO 10846-3 : 2002)

Acoustique et vibrations – Mesurage  
en laboratoire des propriétés de  
transfert vibro-acoustique des  
éléments élastiques – Partie 3:  
Raideur dynamique en translation des  
supports élastiques (Méthode  
indirecte) (ISO 10846-3 : 2002)

Akustik und Schwingungstechnik –  
Laborverfahren zur Messung der vibro-  
akustischen Transfereigenschaften  
elastischer Elemente – Teil 3: Indirek-  
tes Verfahren für die Bestimmung der  
dynamischen Steifigkeit elastischer  
Elemente für translatorische Schwin-  
gungen (ISO 10846-3 : 2002)

This European Standard was approved by CEN on 2002-05-29.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

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**CEN**

European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

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

## Foreword

International Standard

ISO 10846-3 : 2002 Acoustics and vibration – Laboratory measurement of vibro-acoustic transfer properties of resilient elements – Part 3: Indirect method for determination of the dynamic stiffness of resilient supports for translatory motion,

which was prepared by ISO/TC 43 'Acoustics' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 211 'Acoustics', the Secretariat of which is held by DS, as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by December 2002 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard:

Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

## Endorsement notice

The text of the International Standard ISO 10846-3 : 2002 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to international publications are listed in Annex ZA (normative).

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## Introduction

Passive vibration isolators of various kinds are used to reduce the transmission of vibrations. Examples are automobile engine mounts, resilient supports for buildings, resilient mounts and flexible shaft couplings for shipboard machinery and small isolators in household appliances.

This part of ISO 10846 specifies an indirect method for measuring the dynamic transfer stiffness function of linear resilient supports. This includes resilient supports with non-linear static load-deflection characteristics provided that the elements show an approximate linearity for vibrational behaviour for a given static preload. This part of ISO 10846 belongs to a series of International Standards on methods for the laboratory measurement of vibro-acoustic properties of resilient elements, which also includes parts on measurement principles and on a direct and a driving point method. ISO 10846-1 provides global guidance for the selection of the appropriate International Standard.

The laboratory conditions described in this part of ISO 10846 include the application of static preload, where appropriate.

The results of the indirect method are useful for isolators, which are used to reduce the transmission of structureborne sound (primarily frequencies above 20 Hz). The method does not characterize isolators completely, which are used to attenuate low frequency vibration or shock excursions.

## 1 Scope

This part of ISO 10846 specifies a method for determining the dynamic transfer stiffness for translations of resilient supports, under specific preload. The method concerns the laboratory measurements of vibration transmissibility and is called the indirect method. This method is applicable to test elements with parallel flanges (see Figure 1).

NOTE 1 Vibration isolators which are the subject of this part of ISO 10846 are those which are used to reduce the transmission of audiofrequency vibrations (structureborne sound, 20 Hz to 20 kHz) to a structure which may, for example, radiate unwanted fluidborne sound (airborne, waterborne or other).

NOTE 2 In practice the size of the available test rig(s) can give restrictions for very small and for very large resilient supports.

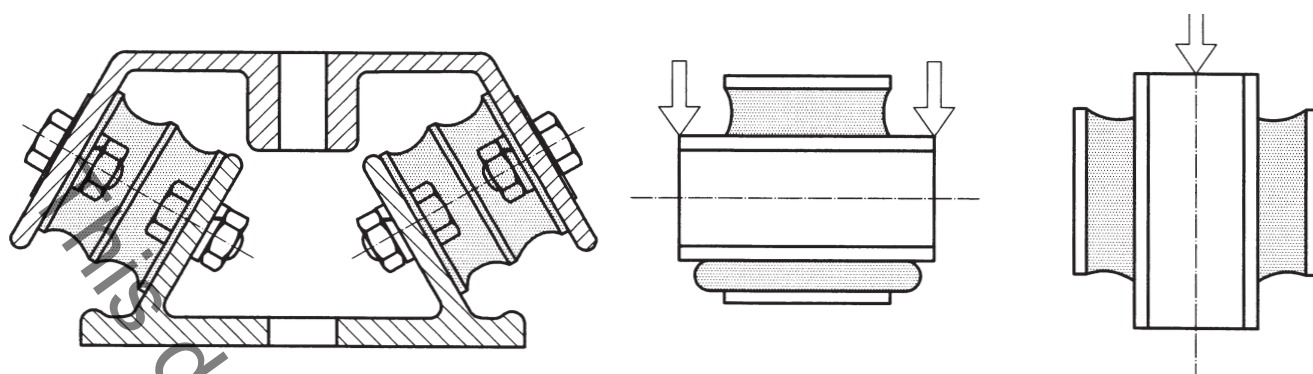
NOTE 3 Samples of continuous supports of strips and mats are included in the method. Whether or not the sample describes the behaviour of the complex system sufficiently, is the responsibility of the user of this part of ISO 10846.

Measurements for translations normal and transverse to the flanges are covered in this part of ISO 10846. Annex A provides guidance for the measurement of transfer stiffnesses which include rotatory components.

The method covers the frequency range from  $f_2$  up to  $f_3$ . The values of  $f_2$  and  $f_3$  are determined by the test set-up and the isolator under test. Typically  $20 \text{ Hz} \leq f_2 \leq 50 \text{ Hz}$  and  $2 \text{ kHz} \leq f_3 \leq 5 \text{ kHz}$ .

The data obtained according to the method specified in this part of ISO 10846 can be used for

- product information provided by manufacturers and suppliers,
- information during product development,
- quality control, and
- calculation of the transfer of vibration through isolators.



NOTE 1 When a resilient support has no parallel flanges, an auxiliary fixture should be included as part of the test element to arrange for parallel flanges.

NOTE 2 Arrows indicate load direction.

**Figure 1 — Examples of resilient supports with parallel flanges**

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 10846. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 10846 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 266, *Acoustics — Preferred frequencies*

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

ISO 5347-3<sup>1)</sup>, *Methods for the calibration of vibration and shock pick-ups — Part 3: Secondary vibration calibration*

ISO 5348, *Mechanical vibration and shock — Mechanical mounting of accelerometers*

ISO 7626-1, *Vibration and shock — Experimental determination of mechanical mobility — Part 1: Basic definitions and transducers*

ISO 7626-2, *Vibration and shock — Experimental determination of mechanical mobility — Part 2: Measurements using single-point translation excitation with an attached vibration exciter*

1) To be revised as ISO 16063-21.