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GB/T 22159.5-2017

Acoustics and vibration -- Laboratory measurement of vibro-acoustic transfer properties of resilient elements -- Part 5: Driving point method for determination of the low-frequency transfer stiffness of resilient supports for translatory motion

声学与振动 弹性元件振动-声传递特性实验室测量方法 第5部分：弹性支撑件低频平动动刚度的驱动点测量方法

(English Translation)

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Foreword

GB/T 22159 "acoustic and vibration elastic element vibration - acoustic transmission characteristics of laboratory measurement methods" includes the following five sections.

--- Part 1. Measuring principles and guidelines;

--- Part 2. Direct measurement method of flat dynamic stiffness of elastic support;

--- Part 3. Indirect measurement of elastic dynamic stiffness of the support member;

--- Part 4. Elastic non-supported pieces of flat dynamic stiffness;

--- Part 5. Measurement method of driving point of low frequency flat dynamic stiffness of elastic support.

This section GB/T 22159 Part 5.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This section uses the translation method is equivalent to using ISO 10846-5:2008 "Acoustics and Vibration Vibration - Acoustic Transmission Laboratory Features Methods of measurement - Part 5. Measurement method of driving point for low frequency flat dynamic stiffness of elastic supports ".

The documents of our country that are consistent with the corresponding international documents that are normative references in this section are as follows.

--- GB/T 2298-2010 Glossary of mechanical vibration, shock and condition monitoring (ISO 2041:2009, IDT);

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--- GB/T 3240-1982 Frequencies commonly used in acoustic measurements (neq, ISO 266:1975);

--- GB/T 11349.1-2006 vibration and shock mechanical admittance test to determine Part 1. Basic definitions and sensors (ISO 7626-1:1986, IDT);

Mechanical Installation of Mechanical Vibration and Impact Accelerometers (ISO 5348:1998, IDT);

--- GB/T 20485.21-2007 vibration and shock sensor calibration method Part 21. Vibration comparison method calibration (ISO 16063-21:2003, IDT);

Acoustics and vibration - Elastics - Laboratory measurement of sound transmission characteristics - Part 1. Method of measurement.

Principles and Guidelines (ISO 10846-1:2008, IDT).

This section is proposed by the Chinese Academy of Sciences.

This part of the National Acoustic Standardization Technical Committee (SAC/TC17) centralized.

This part of the drafting unit. Shenzhen Zhongya Electrical and Mechanical Industry Co., Ltd., Acoustics Institute of Chinese Academy of Sciences, Anhui Weiwei Plastic Group Co., Ltd.

Division, Tongji University, Zhejiang University, Beijing Institute of Labor Protection, Anhui Vocational and Technical College, Shanghai Jiaotong University, China Metrology Research Institute, Northwestern Polytechnical University, Changzhou Tenglong Auto Parts Co., Ltd., Changsha Aobang Environmental Protection Industry Co., Ltd., Hefei Industrial the University.

Introduction

Various passive isolators are used to reduce the transmission of vibrations, such as the suspension of automobile engines, the elastic support of buildings, the marine equipment Flexible support and flexible shaft couplings, and small vibration isolators in household appliances.

This section specifies the driving line method of low frequency dynamic stiffness function of the elastic support member measuring line. This section also includes non-linear static preload Load-displacement elastic support as long as such elements exhibit a nearly linear vibrational behavior for a given static pre-load. This section is Flexible element vibration - acoustic characteristics of laboratory measurement methods, one of the series of standards, this series of standards also include the principle of measurement and elastic support dynamic stiffness the direct method, the indirect method and the driving point method part, ISO 10846-1 provides a comprehensive guide to select the appropriate

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standard.

The laboratory conditions described in this section include the rational use of static preload.

The result of the driving point method is very useful for elastic supports for preventing low-frequency vibration problems and for attenuating the low-frequency structure sound of the acoustic frequency band.

However, this method does not provide the full character of the vibration isolator used to attenuate low-frequency vibration or shock displacement, for which additional information is required.

Acoustics and Vibration Elastic Components Vibration -Sound transmission characteristics of laboratory measurement methods Part 5. Elastic support low frequency flat Driving Point Measurement Method of Dynamic Stiffness

1 Scope

This section GB/T 22159 describes in detail under a specific pre-load conditions, the elastic support low-frequency dynamic stiffness drive point Measurement methods. In the elastic support output block, through the input of the force and vibration measurement of the experimental method of stiffness, known as the drive Point measurement.

The stiffness obtained by measuring the displacement (speed, acceleration) and force of the input is called the driving jogging stiffness. Only in the low frequency range due to flooding the dynamic stiffness of moving point is equal to the moving stiffness of transmitting moving point. This method can be used to measure the dynamic stiffness of elastic supporting part.

Note 1: GB/T 22159.2 already includes the direct method of dynamic stiffness measurement. The direct method includes the measurement of low frequency dynamic stiffness and in principle has a ratio drive point method Wider frequency range. However, the driving point method is also included in the series of standards. It is used as a driving point stiffness measurement device (usually very expensive) Owners are a useful option for extending the use of these devices for the determination of low frequency dynamic stiffness.

This method is suitable for measuring pieces with parallel connecting surfaces (see Figure 1).

Elastic elements used as measuring objects in this section are used to reduce.

a) Vibration of the lower frequency range (usually 20Hz ~.200Hz) to the structure. The structure can radiate undesirable Fluid sounds (such as air, water, or other sounds);

b) The spread of low frequency (1Hz ~ 80Hz) vibration, if such vibration is too strong, no matter acting on the human body or any size structure Cause harm.

Note 2: In actual cases, very small or very large elastic supports can not be measured due to the

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size of the measuring device.

Note 3: This method also includes a sample of continuous supports for slats and shims. This part of the user is responsible for the complex system of these samples vibration - acoustic transmission characteristics Give a full description.

This section also covers the connection with the test piece parallel and vertical displacement measurement method. The frequency range to which this measurement method applies Range is f1 = 1Hz to the upper limit of frequency fUL, the usual range of values. 50Hz <= fUL <=.200Hz.

The measurement data obtained by this method can be used.

--- Product information provided by the manufacturer and supplier;

--- To provide information for product development;

--- Vibration element transmission rate calculation.

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