ASA/ANSI S2.81-2019/ Part 14/
ISO 21940-14:2012

AMERICAN NATIONAL STANDARD

Mechanical vibration — Rotor balancing — Part 14: Procedures for assessing balance errors

(a nationally adopted international standard)

Secretariat:

Acoustical Society of America

Approved on September 24, 2019:

American National Standards Institute, Inc.

This nationally adopted international standard specifies the requirements for identifying errors in the unbalance measuring process of a rotor; assessing the identified errors; taking the errors into account. Specifies balance acceptance criteria, in terms of residual unbalance, for both directly after balancing and for a subsequent check of the balance quality by the user. For the main typical errors, this document lists methods for their reduction in an informative annex.

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Accredited Standards Committee S2, Mechanical Vibration and Shock

Standards Secretariat
Acoustical Society of America
1305 Walt Whitman Road
Melville, NY 11747

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Abstract

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Foreword

[*This Foreword is for information only and is not a part of the American National Standard ASA/ASA S2.81-2019/* Part 14/ISO 21940-14:2012 American National Standard Mechanical vibration – Rotor balancing – Part 14: Procedures for assessing balance errors (a nationally adopted international standard). *As such, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the standard.*]

This standard comprises a part of a group of definitions, standards, and specifications for use in mechanical vibration and shock. It was developed and approved by Accredited Standards Committee S2 Mechanical Vibration and Shock under its approved operating procedures. Those procedures have been accredited by the American National Standards Institute (ANSI). The Scope of Accredited Standards Committee S2 is as follows:

> *Standards, specification, methods of measurement and test, and terminology in the field of mechanical vibration and shock, and condition monitoring and diagnostics of machines, including the effects of exposure to mechanical vibration and shock on humans, including those aspects which pertain to biological safety, tolerance and comfort.*

This standard is an identical national adoption of ISO 21940-14:2012 Mechanical vibration — Rotor balancing —Part 14: Procedures for assessing balance errors, which was prepared by ISO/TC 108/SC 2.

The ANSI/ASA equivalents to ISO/IEC standards referenced herein are given below:

- ANSI/ASA S2.81/Part 2/ISO 20816-2 is an identical national adoption of ISO 20816-2.
- ANSI/ASA S2.81/Part 11/ISO 21940-11 is an identical national adoption of ISO 21940-11.
- ANSI/ASA S2.81/Part 12/ISO 21940-12 is an identical national adoption of ISO 21940-12.

At the time this Standard was submitted to Accredited Standards Committee S2, Mechanical Vibration and Shock for approval, the membership was as follows:

James T. Nelson, *Chair*
Richard J. Peppin, *Vice-Chair*

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Acoustical Society of America ..... James T. Nelson
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Northern Illinois University ..... Donald Peterson

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Siemens Power Generation, Inc. ..... Max L'vov

UE Systems, Inc. ..... Mark Goodman

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VibeTech, Inc. ..... Jeff Leismer

Vibration Institute ..... Ronald L. Eshleman
..... Brian Biby (Alt.)

Z-R Consulting ..... Zlatan Racic
..... Marin Racic (Alt.)

Individual Experts of Accredited Standards Committee S2, Mechanical Vibration and Shock, were:

Anthony Brammer
George Johnson
Robert Koch
Richard J. Peppin
Donald Wasserman

Working Group S2/WG 10, Operational Monitoring and Condition Evaluation, which assisted Accredited Standards Committee S2, Mechanical Vibration and Shock, in the development of this standard, had the following membership.

Max L'vov, Chair

David P. Butchy	Mark T. McGown	Thomas Turek
Art J. Cautilli	John Niemkiewicz	John J. Weil
Eric J. Lambert	Rajagopal Subbiah	Marion Williams

Suggestions for improvements to this standard will be welcomed. They should be sent to Accredited Standards Committee S2, Mechanical Vibration and Shock, in care of the Standards Secretariat of the Acoustical Society of America, 1305 Walt Whitman Road, Suite 300, Melville, New York 11747. Telephone: 631-390-0215; FAX: 631-923-2875; E-mail: asastds@acousticalsociety.org.

Introduction

The balance quality of a rotor is assessed in accordance with the requirements of ISO 1940-1 or ISO 11342 by measurements taken on the rotor. These measurements might contain errors which can originate from a number of sources. Where those errors are significant, they should be taken into account when defining the required balance quality of the rotor.

ISO 1940-1 and ISO 11342 do not consider in detail balance errors or, more importantly, the assessment of balance errors. Therefore this part of ISO 21940 gives examples of typical errors that can occur and provides recommended procedures for their evaluation.

Draft American National Standard

Mechanical vibration – Rotor balancing – Part 14: Procedures for assessing balance errors

1 Scope

This part of ISO 21940 specifies the requirements for the following:

a) identifying errors in the unbalance measuring process of a rotor;

b) assessing the identified errors;

c) taking the errors into account.

This part of ISO 21940 specifies balance acceptance criteria, in terms of residual unbalance, for both directly after balancing and for a subsequent check of the balance quality by the user.

For the main typical errors, this part of ISO 21940 lists methods for their reduction in an informative annex.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1925, *Mechanical vibration — Balancing — Vocabulary*[1]

ISO 1940-1, *Mechanical vibration — Balance quality requirements for rotors in a constant (rigid) state — Part 1: Specification and verification of balance tolerances*[2]

ISO 11342, *Mechanical vibration — Methods and criteria for the mechanical balancing of flexible rotors*[3]

ISO 21940-21, *Mechanical vibration — Rotor balancing — Part 21: Description and evaluation of balancing machines*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1925 apply.

[1]To become ISO 21940-2 when revised.

[2]To become ISO 21940-11 when revised.

[3]To become ISO 21940-12 when revised.