PD ISO/TR 17243-3:2020

BSI Standards Publication

Machine tool spindles – Evaluation of machine tool spindle vibrations by measurements on spindle housing

Part 3: Gear-driven spindles with rolling bearings operating at speeds between 600 r/min and 12 000 r/min

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National foreword

This Published Document is the UK implementation of ISO/TR 17243-3:2020.

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A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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TECHNICAL REPORT

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Machine tool spindles — Evaluation of machine tool spindle vibrations by measurements on spindle housing —

Part 3: Gear-driven spindles with rolling bearings operating at speeds between 600 r/min and 12 000 r/min

Broches pour machines-outils — Évaluation des vibrations d'une broche pour machine-outil par mesurage sur le corps de broche —

Partie 3: Broches à roulements à entraînement par engrenages opérant à des vitesses entre 600 tr/min et 12 000 tr/min

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Foreword

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This document was prepared by Technical Committee ISO/TC 39, *Machine tools*, Subcommittee SC 2, *Test conditions for metal cutting machine tools*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

A list of all parts in the ISO 17243 series can be found on the ISO website.

TECHNICAL REPORT **ISO/TR 17243-3:2020**

Machine tool spindles -- Evaluation of machine tool spindle vibrations by measurements on spindle housing —

Part 3:
Gear-driven spindles with rolling bearings operating at speeds between 600 r/min and 12 000 r/min

IMPORTANT — The electronic file of this document contains colours which are considered to be useful for the correct understanding of the document. Users should therefore consider printing this document using a colour printer.

1 Scope

This document provides information on how to assess the severity of machine tool spindle vibrations measured on the spindle housing. It gives specific guidance for assessing the severity of vibration measured on the spindle housing at customer sites or at the machine tool manufacturer's test facilities.

Its vibration criteria apply to gear-driven spindles intended for stationary machine tools with nominal operating speeds between 600 r/min and 12 000 r/min.

It is applicable to those spindles of the rolling bearing type only, to spindles assembled on metal cutting machine tools, and for testing, periodic verification, and continuous monitoring.

It does not address:

— geometrical accuracy of axes of rotation (see ISO 230-7);

— unacceptable cutting performance with regards to surface finish and accuracy;

— vibration severity issues of machine tool spindles operating at speeds below 600 r/min or exceeding 12 000 r/min (due to lack of supporting vibration data); or

— frequency domain analyses such as fast Fourier transform (FFT) analyses, envelope analyses or other similar techniques.

Annex A presents an introduction to alternative bearing condition assessment techniques.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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*

ISO 2041, *Mechanical vibration, shock and condition monitoring — Vocabulary*

ISO 2954, *Mechanical vibration of rotating and reciprocating machinery — Requirements for instruments for measuring vibration severity*

ISO 13372, *Condition monitoring and diagnostics of machines — Vocabulary*