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BSI Standards Publication

Test code for machine tools

Part 11: Measuring instruments suitable for machine tool geometry tests

bsi.

National foreword

This Published Document is the UK implementation of ISO/TR 230-11:2018.

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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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Test code for machine tools —

Part 11: Measuring instruments suitable for machine tool geometry tests

Code d'essai des machines-outils —

Partie 11: Instruments de mesure compatibles avec les essais de géométrie des machines-outils

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

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

A list of all parts in the ISO 230 series can be found on the ISO website.

Introduction

The purpose of this document is to provide information for instruments and equipment for testing machine tools as specified in the ISO 230 series (except ISO 230-5 and ISO/TR 230-8), and in machine-specific standards of ISO/TC 39/SC 2, test conditions for metal cutting machine tools.

The main parts of this document have been transferred from ISO 230-1:1996, Annex A, which is no longer part of ISO 230-1. Newly developed measuring instruments, like special purpose measuring instruments in Clause 12, have been added to this document as well as special application examples in Clause 13.

The concept of measuring uncertainty has been implemented. Uncertainty contributors for measuring instruments and measuring procedures are listed in Annex D to improve reliability of test results. In addition, Annex A addresses checking devices for instruments applied in the workshop and Annex C addresses influences of supporting systems.

Additional information for existing ISO and national standards for measuring equipment is included in Annex B.

This document and ISO 230-1:2012 together cover the entire content of ISO 230-1:1996, with updated instruments and concepts.

TECHNICAL REPORT **ISO/TR 230-11:2018(E)**

Test code for machine tools —

Part 11: Measuring instruments suitable for machine tool geometry tests

1 Scope

The aim of this document is to document the characteristics of precision measuring instruments for testing the geometric accuracy of machine tools, operating either under no-load or finishing quasi-static conditions.

Where necessary, reference is made to the appropriate International Standards.

The measuring instruments for operational testing of machine tools [vibrations (ISO/TR 230-8), noise (ISO 230-5), stick-slip motion of components, etc.] as well as instruments for checking of other characteristics of machine tools (speeds, feeds, temperature) are not covered in this document. The measuring instruments for checking of workpiece geometry (size, form, etc.) are not covered by this document either.

This document has list style construction for ease of search and identification of each instrument's characteristics.

Sources of uncertainty of instruments and measurements are described in this document for more accurate measurement procedures.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
calibration
operation that, under specified conditions, in a first step, establishes a relation between the quantity values with measurement uncertainties provided by measurement standards and corresponding indications with associated measurement uncertainties, and in a second step, uses this information to establish a relation for obtaining a measurement result from an indication

Note 1 to entry: A calibration may be expressed by a statement, calibration function, calibration diagram, calibration curve, or calibration table. In some cases, it may consist of an additive or multiplicative correction of the indication with associated measurement uncertainty.

Note 2 to entry: Calibration should not be confused with adjustment of a measuring system, often mistakenly called "self-calibration", nor with verification of calibration.