INTERNATIONAL ISO

Third edition
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Test code for machine tools —

Part 1:
Geometric accuracy of machines operating under no-load or quasi-static conditions

Code d'essai des machines-outils —

Partie 1: Exactitude géométrique des machines fonctionnant à vide ou dans des conditions quasi-statiques

Reference number
ISO 230-1:2012(E)

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 230-1 was prepared by Technical Committee ISO/TC 39, *Machine tools*, Subcommittee SC 2, *Test conditions for metal cutting machine tools*.

This third edition cancels and replaces the second edition (ISO 230-1:1996), which has been technically revised.

ISO 230 consists of the following parts, under the general title *Test code for machine tools*:

— *Part 1: Geometric accuracy of machines operating under no-load or quasi-static conditions*

— *Part 2: Determination of accuracy and repeatability of positioning of numerically controlled axes*

— *Part 3: Determination of thermal effects*

— *Part 4: Circular tests for numerically controlled machine tools*

— *Part 5: Determination of the noise emission*

— *Part 6: Determination of positioning accuracy on body and face diagonals (Diagonal displacement tests)*

— *Part 7: Geometric accuracy of axes of rotation*

— *Part 8: Vibrations* [Technical Report]

— *Part 9: Estimation of measurement uncertainty for machine tool tests according to series ISO 230, basic equations* [Technical Report]

— *Part 10: Determination of the measuring performance of probing systems of numerically controlled machine tools*

The following part is under preparation:

— *Part 11: Measuring instruments and their application to machine tool geometry tests* [Technical Report].

Introduction

ISO/TC 39/SC 2 decided to revise and restructure this part of ISO 230 for the following reasons:

a) some subclauses of the previous edition overlapped with other newly specified test codes;

b) for practical reasons, it was necessary to modify the definitions of parallelism error and squareness error in order to exclude straightness error when looking at machine tool motion;

NOTE These definitions are not intended to be used for describing parallelism and perpendicularity errors of components and features. For components and features, this part of ISO 230 directly complies with the parallelism error and perpendicularity error definitions derived from other International Standards (e.g. ISO 1101).

c) a clear separation was desired among error motions of a trajectory and imperfections of functional surfaces and workpieces;

d) there was a need to address advances in machine tool technologies, measurement methods and measurement instruments.

e) Annex A of the second edition became wider, as new measuring methods/apparatus have been developed and introduced for higher accuracy and faster measurements. Therefore, it was separated from the main body to become a future Part 11 (Technical Report).

f) furthermore, to align this part of ISO 230 with ISO 14253 (all parts), subclauses related to the uncertainty of measurement have been introduced.