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Test conditions for horizontal internal type broaching machines — Testing of accuracy

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National foreword

This British Standard is the UK implementation of ISO 6480:2019.

The UK participation in its preparation was entrusted to Technical Committee MTE/1/2, Machine tools - Accuracy.

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 conditions for horizontal internal type broaching machines — Testing of accuracy

Conditions de réception des machines horizontales à brocher les intérieurs — Contrôle de l'exactitude

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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).

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For an explanation of 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 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*.

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.

This third edition cancels and replaces the second edition (ISO 6480:1983), which has been technically revised. The main changes compared to the previous edition are as follows:

— the title has been changed;

— the document's format has been aligned with new published ISO/TC 39/SC 2 documents;

— some terms have been changed and equivalent non-formal terms in more languages have been added to Annex A;

— terms and definitions related to this machine and its process have been added in Clause 3;

— all diagrams have been regenerated;

— old references to ISO/R 230:1961 have been changed to ISO 230-1:2012;

— levelling test, G01, has been deleted and relevant explanations have been added to Clause 5;

— sections a) and b) of test items G1 have been merged; consequently, only single tolerance is applied;

— as the term "coincidence" is no longer existing in ISO 230-1:2012, the term "radial offset of coaxiality deviation" has been used for test item G5;

— Clause 7 has been created toto provide considerations machining tests to be agreed between manufacturer/supplier and user;

— imperial units of measurements have been deleted and only metric units are now used.

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In addition to terms given in the official ISO languages (English and French), this document gives the equivalent terms in German, Italian and Persian. These are published under the responsibility of the member bodies for Germany (DIN), Iran (ISIRI) and Italy (UNI) and are given for information only. Only the terms given in the official languages can be considered as ISO terms.

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Introduction

The object of this document is to supply information as wide and comprehensive as possible on tests on horizontal internal type broaching machines which can be carried out for comparison, acceptance, maintenance or any other purposes.

This document also establishes the tolerances for the test results corresponding to general purpose and normal accuracy horizontal internal type broaching machines.

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Test conditions for horizontal internal type broaching machines — Testing of accuracy

1 Scope

This document specifies, with reference to ISO 230-1, the geometric tests on internal type broaching machines with horizontal Z-axis providing the main cutting motion.

It also specifies the applicable tolerances corresponding to the tests mentioned above for normal-accuracy horizontal internal type broaching machines.

This document explains concepts or configurations and common features of horizontal internal type broaching machines. It also provides related terminology and designation of axes.

It deals only with the verification of the accuracy of the machine. It does not apply to the operational testing of the machine (e.g. vibration, abnormal noise, stick-slip motion of components), nor to machine characteristics (e.g. speeds, feeds) as such checks are generally carried out before testing the accuracy.

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 230-1:2012, *Test code for machine tools — Part 1: Geometric accuracy of machines operating under no-load or quasi-static conditions*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 230-1 and the following 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 http://www.electropedia.org/

3.1
broach
cutting tool that has multiple transverse cutting edges each with progressively increased size

3.2
broaching machine
machine tool in which broaching operation is executed

3.3
internal broaching operation
machining process in which a broach is pushed or pulled through a hole to remove material by linear cutting

3.4
horizontal internal type broaching machine
horizontal broaching machine in which its broach is pushed or pulled through a hole inside of the workpiece to remove materialNote 1 to entry: A horizontal broaching machine is understood to be a *broaching machine* (3.2) whose main cutting axis (Z-axis) is horizontal.

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