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# Test code for machine tools —

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

*Code d'essai des machines-outils —*

*Partie 10: Détermination des performances de mesure des systèmes de palpation des machines-outils à commande numérique*



Reference number  
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## Contents

	Page
<b>Foreword</b> .....	<b>v</b>
<b>Introduction</b> .....	<b>vi</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>2</b>
3.1 General terms.....	2
3.2 Terms relating to the probing system.....	2
3.3 Terms relating to probing.....	5
3.4 Terms relating to scanning probes (See <a href="#">Annex B</a> ).....	7
<b>4 Preliminary remarks</b> .....	<b>8</b>
4.1 Influences on the measurement performance of the probing system.....	8
4.2 Measurement units.....	9
4.3 Reference to ISO 230-1.....	9
4.4 Recommended instrumentation and test equipment.....	9
4.5 Machine conditions prior to testing.....	9
4.6 Testing sequence.....	9
4.7 Tests to be performed.....	9
4.8 Sources of test uncertainty.....	10
4.9 Reporting of test results.....	10
<b>5 Thermal influences</b> .....	<b>11</b>
5.1 General.....	11
5.2 Environmental temperature variation error (ETVE) test.....	11
5.3 Other thermal distortion tests.....	11
<b>6 Probing of workpiece</b> .....	<b>12</b>
6.1 General.....	12
6.2 Probing repeatability.....	12
6.2.1 General.....	12
6.2.2 Probing repeatability test for single-point surface measurement, $R_{SPT,X}$ , $R_{SPT,Y}$ and $R_{SPT,Z}$ ( $R_{Single\_PoinT,X,Y,Z}$ ).....	13
6.2.3 Probing repeatability test for circle centre location, $R_{CIR,X}$ and $R_{CIR,Y}$ ( $R_{CIRcle,X,Y}$ ).....	13
6.2.4 Probing repeatability test for sphere centre location, $R_{SPH,X}$ , $R_{SPH,Y}$ and $R_{SPH,Z}$ ( $R_{SPHere,X,Y,Z}$ ).....	14
6.3 Stylus tip offset test, $A$ .....	14
6.3.1 General.....	14
6.3.2 Test setup and procedure.....	14
6.3.3 Analysis of results.....	14
6.4 Probing-tool location repeatability test, $R_{PTL,X}$ , $R_{PTL,Y}$ and $R_{PTL,Z}$ ( $R_{Probing-Tool\_Location,X,Y,Z}$ ).....	15
6.4.1 General.....	15
6.4.2 Test setup and procedure.....	15
6.4.3 Analysis of results.....	15
6.5 2D probing error test, $P_{FTU,2D}$ ( $P_{Form\_Tactile\_Unique,2D}$ ).....	15
6.5.1 General.....	15
6.5.2 Test setup and procedure.....	16
6.5.3 Analysis of results.....	16
6.6 3D probing error test, $P_{FTU,3D}$ ( $P_{Form\_Tactile\_Unique,3D}$ ).....	17
6.6.1 General.....	17
6.6.2 Test setup and procedure.....	17
6.6.3 Analysis of test results.....	18
6.7 Workpiece position and orientation tests, $E_{PLA,Z}$ , $E_{LIN,Y}$ , $E_{COR,X}$ , $E_{COR,Y}$ and $E_{COR,Z}$ ( $E_{PLAne,Z}$ ), ( $E_{LINE,Y}$ ), ( $E_{CORner\ coordinates,X,Y,Z}$ ).....	18

This is a preview of "ISO 230-10:2016". Click here to purchase the full version from the ANSI store.

6.7.1	General.....	18
6.7.2	Test setup.....	21
6.7.3	Test procedure.....	22
6.7.4	Analysis of results.....	23
6.7.5	Alternative workpiece position and orientation test.....	23
6.8	Combined workpiece machining and location test, $E_{CML,X}$ , $E_{CML,Y}$ , $E_{CML,Z}$ , $R_{CML,X}$ , $R_{CML,Y}$ and $R_{CML,Z}$ ( $E$ Combined Machining and Location, X,Y,Z), ( $R$ Combined Machining and Location, X,Y,Z).....	25
6.8.1	General.....	25
6.8.2	Test setup and procedure.....	25
6.8.3	Analysis of results.....	26
6.9	Time delay variation tests.....	26
6.9.1	General.....	26
6.9.2	Time delay variation test for individual axes, $E_{SPT,TD,X}$ , $E_{SPT,TD,Y}$ , $E_{SPT,TD,Z}$ ( $E_{Single-Point}$ , Time Delay variation, X,Y,Z).....	27
6.9.3	Time delay variation test for XY plane circle measurement, $E_{CIR,TD,X}$ , $E_{CIR,TD,Y}$ , $E_{CIR,TD,D}$ and $E_{CIR,TD,F}$ ( $E_{CIRcle}$ , Time Delay variation, X,Y), ( $E_{CIRcle}$ , Time Delay variation, Diameter) and ( $E_{CIRcle}$ , Time Delay variation, Form).....	28
6.9.4	Time delay variation test for sphere measurement, $E_{SPH,TD,X}$ , $E_{SPH,TD,Y}$ , $E_{SPH,TD,Z}$ , $E_{SPH,TD,D}$ and $E_{SPH,TD,F}$ ( $E_{SPHHere}$ , Time Delay variation, X,Y,Z), ( $E_{SPHHere}$ , Time Delay variation, Diameter) and ( $E_{SPHHere}$ , Time Delay variation, Form).....	29
6.10	Feature size measurement performance tests.....	30
6.10.1	General.....	30
6.10.2	Web size measurement performance test, $E_{WEB,X}$ , $E_{WEB,Y}$ , $R_{WEB,X}$ and $R_{WEB,Y}$ .....	31
6.10.3	Circle diameter measurement performance test, $E_{CIR,D}$ and $R_{CIR,D}$ ( $E_{CIRcle}$ , Diameter) and ( $R_{CIRcle}$ , Diameter).....	31
6.10.4	Sphere diameter measurement performance test, $E_{SPH,D}$ and $R_{SPH,D}$ ( $E_{SPHHere}$ , Diameter) and ( $R_{SPHHere}$ , Diameter).....	32
<b>7</b>	<b>Probing of tools.....</b>	<b>32</b>
7.1	General.....	32
7.2	Tool-setting system qualification.....	33
7.3	Tool-setting repeatability.....	33
7.3.1	General.....	33
7.3.2	Tool length-setting repeatability with a non-rotating tool, $R_{SET,L,N}$ ( $R_{SETting,Length,Non-rotating}$ ).....	34
7.3.3	Tool length-setting repeatability of a rotating tool, $R_{SET,L,R}$ ( $R_{SETting,Length,Rotating}$ ).....	34
7.3.4	Tool diameter setting repeatability, $R_{SET,D,R}$ ( $R_{SETting,Diameter,Rotating}$ ).....	35
	<b>Annex A (informative) Alphabetical cross-references and short description of symbols.....</b>	<b>37</b>
	<b>Annex B (informative) Measuring performance with scanning probes.....</b>	<b>39</b>
	<b>Bibliography.....</b>	<b>45</b>

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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](http://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](http://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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 39, *Machine tools*, Subcommittee SC 2, *Test conditions for metal cutting machine tools*.

This second edition cancels and replaces the first edition (ISO 230-10:2011), of which it constitutes a minor revision. It also incorporates the amendment ISO 230-10:2011/Amd 1:2014. In [Table B.1](#) an entry with the value of "R x 0,050" has been replaced with "R x 0,500".

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 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

The purpose of ISO 230 (all parts) is to standardize methods of testing the accuracy of machine tools, excluding portable power tools.

This part of ISO 230 concerns test procedures to evaluate the measuring performance of contacting probing systems (used in a discrete-point probing mode) integrated with a numerically controlled machine tool. The test procedures are not intended to distinguish between the various causes of errors. They intend to demonstrate the combined influence of the environment, machine tool, probing system and probing software on the measuring performance.

The results of these tests do not reflect on the performance of the machine tool in a metal cutting mode. When the tests are required for acceptance purposes, it is up to the user to choose, in agreement with the manufacturer/supplier, those tests relating to the properties of the components of the machine probing system, which are of interest.

The results of these tests do not reflect on the performance of the machine tool used as a coordinate measuring machine (CMM). Such performance involves traceability issues and it is intended that they be evaluated according to ISO 10360-2 and ISO 10360-5.

An alphabetical list and short description of the symbols used in this part of ISO 230 is given in [Annex A](#).

Test procedures to measure performance with scanning probes are given in [Annex B](#).