

This is a preview of "ISO 10791-6:2014". [Click here to purchase the full version from the ANSI store.](#)

Second edition
2014-12-15

Test conditions for machining centres —

Part 6: Accuracy of speeds and interpolations

Conditions d'essai pour centres d'usinage —

Partie 6: Précision des vitesses et interpolations



Reference number
ISO 10791-6:2014(E)

© ISO 2014



COPYRIGHT PROTECTED DOCUMENT

© ISO 2014

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

This is a preview of "ISO 10791-6:2014". Click here to purchase the full version from the ANSI store.

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Preliminary remarks	2
4.1 Measurement units.....	2
4.2 Reference to ISO 230-1 and ISO 230-4.....	2
4.3 Testing sequence.....	2
4.4 Tests to be performed.....	2
4.5 Measuring instruments.....	2
4.6 Diagrams.....	2
4.7 Position of axes not under test.....	2
4.8 Software compensation.....	3
5 Kinematic tests	3
5.1 General.....	3
5.1.1 Tests described in Annexes A to C	3
5.1.2 Alternative tests in Annexes A and C	3
5.2 Spindle speeds and feed speeds.....	4
5.3 Linear interpolation motion.....	7
5.4 Circular interpolation motion.....	9
Annex A (normative) Kinematic tests for machines with two rotary axes in the spindle head	11
Annex B (normative) Kinematic tests for machines with two rotary axes in the workpiece side	23
Annex C (normative) Kinematic tests for machines with a swivel head and/or a rotary table	34
Annex D (informative) Precautions for test setup for Annexes A to C	44
Bibliography	50

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 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 10791-6:1998), which has been technically revised. It also incorporates Technical Corrigendum ISO 10791-6:1998/Cor 1:2004.

ISO 10791 consists of the following parts, under the general title *Test conditions for machining centres*:

- *Part 1: Geometric tests for machines with horizontal spindle (horizontal Z-axis)*
- *Part 2: Geometric tests for machines with vertical spindle or universal heads with vertical primary rotary axis (vertical Z-axis)*
- *Part 3: Geometric tests for machines with integral indexable or continuous universal heads (vertical Z-axis)*
- *Part 4: Accuracy and repeatability of positioning of linear and rotary axes*
- *Part 5: Accuracy and repeatability of positioning of work-holding pallets*
- *Part 6: Accuracy of speeds and interpolations*
- *Part 7: Accuracy of finished test pieces*
- *Part 8: Evaluation of contouring performance in the three coordinate planes*
- *Part 9: Evaluation of the operating times of tool change and pallet change*
- *Part 10: Evaluation of thermal distortions*

This is a preview of "ISO 10791-6:2014". [Click here to purchase the full version from the ANSI store.](#)

Introduction

ISO 10791 is concerned with methods of testing machining centres.

A machining centre is a numerically controlled machine tool capable of performing multiple machining operations, including milling, boring, and tapping, as well as automatic tool changing from a magazine or similar storage unit in accordance with a machining programme.

The object of ISO 10791 is to supply information as wide and comprehensive as possible on tests which can be carried out for comparison, acceptance, maintenance, or any other purpose deemed necessary by the user or the manufacturer.

ISO 10791 specifies, with reference to the relevant parts of ISO 230, several families of tests for machining centres. ISO 10791 also establishes the tolerances or maximum acceptable values for the test results corresponding to general purpose and normal accuracy machining centres.

ISO 10791 is also applicable, totally or partially, to numerically controlled milling and boring machines, when their configuration, components, and movements are compatible with the tests described herein.

In five-axis machining centres having three orthogonal linear axes and two rotary axes, there are such types as machines with two rotary axes in the spindle head (see [Annex A](#)), machines with two rotary axes in the workpiece side (see [Annex B](#)), and machines with a swivel head and/or a rotary table (see [Annex C](#)).

The annexes of this part of ISO 10791 specify the kinematic tests for five-axis machining centres.