

Acceptance tests for CO₂-laser beam machines for high quality welding and cutting - Part 2: Measurement of static and dynamic accuracy

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 15616-2:2003 sisaldab Euroopa standardi EN ISO 15616-2:2003 ingliskeelset teksti. Käesolev dokument on jõustatud 06.06.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN ISO 15616-2:2003 consists of the English text of the European standard EN ISO 15616-2:2003. This document is endorsed on 06.06.2003 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.
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Käsitlusala: This Part of this European Standard is applicable to the measurement of: - the precision of the manipulation system; - the positioning accuracy; - the repeatability of positioning; - the trajectory exactness, for the acceptance testing of CO₂-laser beam machines for high quality welding and cutting in two operation directions (2D) in accordance with EN ISO 15616-1	Scope: This Part of this European Standard is applicable to the measurement of: - the precision of the manipulation system; - the positioning accuracy; - the repeatability of positioning; - the trajectory exactness, for the acceptance testing of CO₂-laser beam machines for high quality welding and cutting in two operation directions (2D) in accordance with EN ISO 15616-1
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Võtmesõnad: acceptance testing, definitions, fidelity, inspection, laser beam cutting, laser beam machines, laser beam welding, laser beams, machines, measurement, precision, properties, quality assurance, testing, welded joints, welding, welding engineering, verification

English version

Acceptance tests for CO₂-laser beam machines for
high-quality welding and cutting

Part 2: Measurement of static and dynamic accuracy
(ISO 15616-2 : 2003)

Essais de réception des machines de soudage et de coupage de qualité par faisceau laser CO₂ – Partie 2: Mesure de la précision du système de mise en œuvre du faisceau en statique et en dynamique (ISO 15616-2 : 2003)

Abnahmeprüfungen für CO₂-Laserstrahlanlagen zum Qualitätsschweißen und -schneiden – Teil 2: Messen der statischen und dynamischen Genauigkeit (ISO 15616-2 : 2003)

This European Standard was approved by CEN on 2002-11-21.

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, the Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland, and the United Kingdom.

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Foreword

This document (EN ISO 15616-2:2003) has been prepared by Technical Committee CEN/TC 121, "Welding", the secretariat of which is held by DS, in collaboration with ISO/TC 44 "Welding and allied processes".

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2003, and conflicting national standards shall be withdrawn at the latest by September 2003.

This European Standard "Acceptance test for CO₂ – laser beam machines for high quality welding and cutting" consists of the following Parts:

- Part 1: General principles, acceptance conditions.
- Part 2: Measurement of static and dynamic accuracy.
- Part 3: Calibration of instruments for gas flow and pressure measurement.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovak Republic, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This Part of this European Standard is applicable to the measurement of:

- the precision of the manipulation system;
- the positioning accuracy;
- the repeatability of positioning;
- the trajectory exactness,

for the acceptance testing of CO₂-laser beam machines for high quality welding and cutting in two operation directions (2D) in accordance with EN ISO 15616-1. This standard specifies the testing procedure and equipment. The scope of the examination and the grades of precision shall be stated in the technical specification for the CO₂-laser beam machine and be in accordance with the application requirements due to the diversity of the requirements to the laser system.

The work piece and/or the optics are moved during laser beam processing. The movement of the work piece and/or the optics require a certain precision in the motion system, e.g. moving working table, rotary fixture, moving laser optics, etc. to achieve producible results. This standard establishes a classification system for the motion system related to the required precision for the application being used.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN ISO 15616-1:2003, *Acceptance tests for CO₂-laser beam machines for high quality welding and cutting — Part 1: General principles, acceptance conditions (ISO 15616-1:2003)..*

3 Terms and definitions

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

3.1

manipulation system precision

maximum deviation from the intended path of the position of the focus (or working point) measured perpendicularly to the feeding direction X, Y or Z or the evenness and accuracy of rotation of a rotary fixture

NOTE Moreover, the manipulation system precision is characterized by any deviation from the actual fixed point focus position in any direction to the set position along the beam axis in relation to the welding or cutting position on the surface of the work piece, as long as these deviations are caused by the motion system.