

**Acceptance tests for Nd:YAG laser beam  
welding machines - Machines with optical  
fibre delivery - Part 2: Moving mechanism**

Acceptance tests for Nd:YAG laser beam welding  
machines - Machines with optical fibre delivery - Part  
2: Moving mechanism

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 22827-2:2005 sisaldab Euroopa standardi EN ISO 22827-2:2005 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 28.12.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 22827-2:2005 consists of the English text of the European standard EN ISO 22827-2:2005.</p> <p>This document is endorsed on 28.12.2005 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p><b>Käsitlusala:</b> This part of ISO 22827 covers acceptance testing of equipment for 2D manipulation and also, to some extent, movements along the Z-axis.</p>	<p><b>Scope:</b> This part of ISO 22827 covers acceptance testing of equipment for 2D manipulation and also, to some extent, movements along the Z-axis.</p>
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English Version

**Acceptance tests for Nd:YAG laser beam welding machines -  
Machines with optical fibre delivery - Part 2: Moving mechanism  
(ISO 22827-2:2005)**

Essais de réception pour les machines de soudage par  
faisceau laser Nd:YAG - Machines avec transport de  
faisceau par fibre optique - Partie 2: Mécanisme de  
positionnement (ISO 22827-2:2005)

Abnahmeprüfungen für Nd:YAG-  
Laserstrahlschweißmaschinen - Maschinen mit Versorgung  
durch Lichtleitfaser - Teil 2: Mechanische  
Bewegungseinrichtung (ISO 22827-2:2005)

This European Standard was approved by CEN on 26 September 2005.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This document (EN ISO 22827-2:2005) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DIN.

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 April 2006, and conflicting national standards shall be withdrawn at the latest by April 2006.

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

## Endorsement notice

The text of ISO 22827-2:2005 has been approved by CEN as EN ISO 22827-2:2005 without any modifications.

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**Acceptance tests for Nd:YAG laser beam  
welding machines — Machines with  
optical fibre delivery —**

**Part 2:  
Moving mechanism**

*Essais de réception pour les machines de soudage par faisceau laser  
Nd:YAG — Machines avec transport de faisceau par fibre optique —*

*Partie 2: Mécanisme de positionnement*



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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 22827-2 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 10, *Unification of requirements in the field of metal welding*.

ISO 22827 consists of the following parts, under the general title *Acceptance tests for Nd:YAG laser beam welding machines — Machines with optical fibre delivery*:

- *Part 1: Laser assembly*
- *Part 2: Moving mechanism*



## Introduction

Requests for official interpretations of any aspect of this part of ISO 22827 should be sent to the Secretariat of ISO/TC 44/SC 10 via the member body in the user's country, a complete listing of which can be found at [www.iso.org](http://www.iso.org).



# Acceptance tests for Nd:YAG laser beam welding machines — Machines with optical fibre delivery —

## Part 2: Moving mechanism

### 1 Scope

This part of ISO 22827 covers acceptance testing of equipment for 2D manipulation and also, to some extent, movements along the Z-axis.

NOTE Welding robots and similar 3D equipment for manipulation are covered by other standards, notably ISO 9283.

This part of ISO 22827 specifies two methods for the testing of the accuracy of the moving mechanism. The first method (type 1 test) provides a test method capable of classification of the moving mechanism rigorously according to the required accuracy. The second method (type 2 test) provides a simpler method for testing the moving mechanism by marking. The selection of the test method is optional. However, for large-size laser beam welding machines, such as a laser beam welding machine using 2D moving optics or an X-Y table, the type 2 test is applicable.

This part of ISO 22827 is not applicable for welding cells with manual positioning of the welding head and/or the component, and for fixed-position welding without the moving mechanism.

The requirements can also be applied as a part of verification testing as part of maintenance, as appropriate.

If modifications are made to a laser beam machine (rebuilding, repairs, modifications to the operating conditions, etc.) that have an effect on the acceptance testing, a repeat test may be necessary to cover the machine parameters affected by such modifications.

NOTE The beam generating system, the optical delivery system and the devices for shielding and assist gasses are covered in ISO 22827-1.

This part of ISO 22827 can be applied to a part of the acceptance conditions for the delivery of the laser beam welding machine.

### 2 Normative references

The following referenced documents are indispensable for the application 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 230-2, *Test code for machine tools — Part 2: Determination of accuracy and repeatability of positioning numerically controlled axes*

ISO 15616-2:2003, *Acceptance tests for CO<sub>2</sub>-laser beam machines for high quality welding and cutting — Part 2: Measurement of static and dynamic accuracy*

ISO/TS 17477:2003, *Acceptance tests for CO<sub>2</sub>-laser beam machines for welding and cutting using 2D moving optics type*