



SLOVENSKI STANDARD
oSIST prEN ISO 28881:2010
01-junij-2010

Obdelovalni stroji - Varnost - Stroji EDM (ISO/DIS 28881:2010)

Machine tools - Safety - Electro discharge machines (ISO/DIS 28881:2010)

Werkzeugmaschinen - Sicherheit - Funkenerodiermaschinen (ISO/DIS 28881:2010)

Machines-outils - Sécurité - Machines d'électro-érosion (ISO/DIS 28881:2010)

Ta slovenski standard je istoveten z: prEN ISO 28881

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ICS:

25.120.40	Elektrokemijski stroji	Electrochemical machines
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NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN ISO 28881

April 2010

ICS 25.080.01

Will supersede EN 12957:2001+A1:2009

English Version

**Machine tools - Safety - Electro discharge machines (ISO/DIS
28881:2010)**

Machines-outils - Sécurité - Machines d'électro-érosion
(ISO/DIS 28881:2010)

Werkzeugmaschinen - Sicherheit -
Funkenerodiermaschinen (ISO/DIS 28881:2010)

This draft European Standard is submitted to CEN members for parallel enquiry. It has been drawn up by the Technical Committee CEN/TC 143.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

Page

Foreword.....	3
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Foreword

This document (prEN ISO 28881:2010) has been prepared by Technical Committee ISO/TC 39 "Machine tools" in collaboration with Technical Committee CEN/TC 143 "Machine tools - Safety" the secretariat of which is held by SNV.

This document is currently submitted to the parallel Enquiry.

This document will supersede EN 12957:2001+A1:2009.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

Endorsement notice

The text of ISO/DIS 28881:2010 has been approved by CEN as a prEN ISO 28881:2010 without any modification.

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DRAFT INTERNATIONAL STANDARD ISO/DIS 28881

ISO/TC 39/SC 10

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Machine tools — Safety — Electro discharge machines

Machines-outils — Sécurité — Machines d'électro-érosion

ICS 25.080.01

iTeh STANDARD PREVIEW
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ISO/CEN PARALLEL PROCESSING

This draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO-lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five-month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

Pour accélérer la distribution, le présent document est distribué tel qu'il est parvenu du secrétariat du comité. Le travail de rédaction et de composition de texte sera effectué au Secrétariat central de l'ISO au stade de publication.

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Contents

Page

Foreword	iv
Introduction.....	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	3
4 List of significant hazards	6
5 Safety requirements and/or measures	10
5.1 General requirements	10
5.2 Safety related parts of control systems for EDM equipment and/or EDM system	11
5.3 Operating modes	12
5.3.1 Operating mode selection	12
5.3.2 Protecting measures relating to operating modes	12
5.4 Stop functions	13
5.4.1 Operational stop	13
5.4.2 Emergency stop.....	14
5.5 Specific requirements	14
6 Information for use.....	23
6.1 General	23
6.2 Markings, signs, written warnings.....	23
6.3 Instruction handbook.....	23
6.3.1 General	23
6.3.2 Special recommendations for EDM site preparation	23
6.3.3 Special recommendations for EDM operation	26
6.3.4 Noise.....	27
Annex A (informative) Examples and schematic pictures.....	29
Annex B (informative) Noise emission measurements	38
Annex C (informative) Fire Protection codes for special regional cases.....	39
Annex D (informative) Discharge Alignment Mode - DAM.....	47
Annex E (informative) Guideline for risk assessment on EDM equipment and/or - system to identify the required performance level and if necessary, safety category	48
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC.....	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.

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 28881 was prepared by Technical Committee ISO/TC 39, *Machine tools*, Subcommittee SC 10, and by Technical Committee CEN/TC 143, *Machine tools* in collaboration.

This first edition cancels and replaces EN 12957:2001, *Machine tools – safety – Electro discharge machines* Which has been technically revised.

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Introduction

This International Standard has been prepared to be a Harmonised Standard to provide one means of conforming to the Essential Safety Requirements of the Machinery Directive of the European Union and associated EFTA regulations.

This International Standard is a type C standard as defined in ISO 12100-1:2003.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this standard. In addition EDM equipment and/or EDM system shall comply as appropriate with ISO 12100-1:2003 and ISO 12100-2:2003 for hazards which are not covered by this International Standard.

When provisions of this type-C standard are different from those which are stated in type-A or -B standards, the provisions of this type-C standard take precedence over the provisions of the other International Standards for machines that have been designed and built in accordance with the provisions of this type-C standard.

This International Standard replaces the "safety categories" defined in EN 954-1) as resistance to faults and their subsequent behaviour in the fault condition, by introducing the "performance level" and "safety categories" defined in ISO 13849-1:2006 in terms of probability of dangerous failure per hour.

The requirements of this International Standard concern designers, manufacturers, suppliers and importers of machines described in the Scope.

This International Standard also includes a list of informative items to be provided by the manufacturer to the user.

Machine tools — Safety — Electro discharge machines

1 Scope

1.1 This international standard specifies safety requirements and/or measures, applicable to EDM equipment and/or EDM system such as:

- manually controlled EDM die sinking or EDM drilling machines
- numerically controlled EDM die sinking or EDM drilling machines
- numerically controlled EDM wire cutting machines

to be adopted by persons undertaking the design, construction, installation and/or supply of such equipment. This international standard also includes information to be provided by the manufacturer to the user.

1.2 This international standard is not applicable to arc eroding and electro chemical machining equipment.

1.3 This international standard takes account of the precondition of the intended use in normal workshop environment and non explosive atmospheres including installation, setting, maintenance, repair and dismantling for removal or disposal of EDM equipment and/or EDM system.

1.4 This international standard is also applicable to auxiliary devices essential for EDM processing.

1.5 This international standard covers the significant hazards listed in clause 4, Table 1, and the safety requirements and/or measures in clause 5, Table 3.

1.6 This standard applies to machines that are manufactured after the date of issue of this International Standard.

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.

EN 2:2005, *Classification of fires*

EN 54-1:1998, *Fire detection and fire alarm systems - Part 1: Introduction*

EN 349:2008, *Safety of machinery - Minimum gaps to avoid crushing of parts of the human body*

EN 626-1:2008, *Safety of machinery - Reduction of risks to health from hazardous substances emitted by machinery - Part 1: Principles and specifications for machinery manufacturers*

EN 953:2009, *Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards*

ISO/DIS 28881

EN 982:2009, *Safety of machinery - Safety requirements for fluid power systems and their components - Hydraulics*

EN 983:2009, *Safety of machinery - Safety requirements for fluid power systems and their components - Pneumatics*

EN 999:2008, *Safety of machinery - The positioning of protective equipment in respect of approach speeds of parts of the human body*

EN 1037+A1:2008, *Safety of machinery - Prevention of unexpected start-up*

EN 1088:1995/A2:2008, *Safety of machinery - Interlocking devices associated with guards - Principles for design and selection*

EN 12198-1:2009, *Safety of machinery - Assessment and reduction of risks arising from radiation emitted by machinery - General Principles*

EN 12198-2:2009, *Safety of machinery - Assessment and reduction of risks arising from radiation emitted by machinery - Radiation emission measuring procedures*

EN 12198-3:2009, *Safety of machinery - Assessment and reduction of risks arising from radiation emitted by machinery - Reduction of radiation by attenuation or screening*

CISPR 11:2009, *Industrial, scientific and medical (ISM) radio frequency equipment - Radio disturbance characteristics - Limits and methods of measurement*

IEC 60903:2002, *Live working - Gloves of insulating material*

IEC 61558-1:2005 ff *Safety of power transformers, power supplies, reactors and similar products - Part 1: General requirements and tests (IEC 61558-1:2005)*

IEC 61000-6-2:2005, *Electromagnetic compatibility (EMC) Part 6-2: Generic standards - Immunity for industrial environments (IEC 61000-6-2:2005)*

IEC 61310-1:2007, *Safety of machinery - Indication, marking and actuation - Part 1: Requirements for visual, auditory and tactile signals (IEC 61310-1:2007)*

IEC 61310-2:2007, *Safety of machinery - Indication, marking and actuation - Part 2: Requirements for marking (IEC 61310-2:2007)*

EN 62226-1:2005, *Exposure to electric or magnetic fields in the low and intermediate frequency range - Methods for calculating the current density and internal electric field induced in the human body - Part 1: General (IEC 62226-1:2004)*

EN 62226-2-1:2005, *Exposure to electric and magnetic fields in the low and intermediate frequency range - Methods for calculating the current density and internal electric field induced in the human body by electric or magnetic fields induced in the human body - Part 2-1: Exposure to magnetic fields - 2D models (IEC 62226-2-1:2004)*

EN 62226-3-1:2007, *Exposure to electric or magnetic fields in the low and intermediate frequency range - Methods for calculating the current density and internal electric field induced in the human body - Part 3-1: Exposure to electric fields - Analytical and 2D numerical models (IEC 62226-3-1:2007)*

EN 62311:2008 *Assessment of electronic and electrical equipment related to human exposure restriction for electromagnetic field (0Hz -300Ghz) (IEC 62311:2007)*

ISO 3746: 1995, *Acoustics - Determination of sound power levels of noise sources using sound pressure - Survey method using an enveloping measurement surface over a reflecting plane*

ISO 4871: 1996, *Acoustics - Declaration and verification of noise emission values of machinery and equipment*

ISO 7010, *Graphical symbols -- Safety colours and safety signs -- Safety signs used in workplaces and public areas*

ISO 10218-1:2006, *Robots for industrial environments -- Safety requirements -- Part 1: Robot*

ISO 11202:1995, *Acoustics - Noise emitted by machinery and equipment - Measurement method of emission sound pressure levels at the workstation and at other specified positions - Survey method in situ*

ISO 11688-1:1998, *Acoustics - Recommended practice for the design of low noise machinery and equipment - Part 1: Planning*

ISO 12100-1:2003, *Safety of machinery - Basic concepts, General principles for design - Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

ISO 12100-2:2003, *Safety of machinery - Basic concepts, General principles for design - Part 2: Technical principles (ISO 12100-2:2003)*

ISO 13849-1:2006, *Safety of machinery - Safety related parts of control system - Part 1: General principles for design*

ISO 13849-2:2003, *Safety of machinery - Safety related parts of control system - Part 2: Validation*

ISO 13850:2006, *Safety of machinery - Emergency stop equipment, functional aspects - Principles for design*

ISO 13857:2008, *Safety of machinery - Safety distances to prevent danger zones being reached by the upper and lower limbs*

ISO 14118:2000, *Safety of machinery -- Prevention of unexpected start up*

ISO 14121-1:2007, *Safety of machinery -- Risk assessment -- Part 1: Principles*

ISO 14122-1:2001, *Safety of machinery -- Permanent means of access to machinery -- Part 1: Choice of fixed means of access between two levels*

ISO 14122-2:2001, *Safety of machinery -- Permanent means of access to machinery -- Part 2: Working platforms and walkways*

ISO 14122-3:2001, *Safety of machinery -- Permanent means of access to machinery -- Part 3: Stairs, stepladders and guard-rails*

IEC 60204-1:2005, *Safety of machinery - Electrical equipment of machines - Part 1: General requirements*

EN 60529:2007, *Degrees of protection provided by enclosures (IP code) (IEC 60529:2007)*

EN 61800-5-2:2007, *Adjustable speed electrical power drive systems - Part 5-2: Safety requirements - Functional*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100-1:2003 and ISO 13849-1:2006 and the following apply.

Other general definitions (e.g. hazard, risk, safeguarding) are mentioned in corresponding type A and type B Standards and in the Annex A of ISO 12100-2:2003.