



SLOVENSKI STANDARD

SIST EN 815:2000/A1:2005

01-maj-2005

Varnost strojev za vrtanje predorov (TBM) in jaškov (SBM) v kamnini

Safety of unshielded tunnel boring machines and rodless shaft boring machines for rock

Sicherheit von Tunnelbohrmaschinen ohne Schild und gestängelosen Schachtbohrmaschinen zum Einsatz in Fels

Sécurité des tunneliers sans bouclier et des machines foreuses pour puits sans tige de traction

[SIST EN 815:2000/A1:2005](https://standards.iteh.ai/catalog/standards/sist/088f4dec-23e4-4f94-b86a-963464eb48f8/sist-en-815-2000-a1-2005)

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Ta slovenski standard je istoveten z: **EN 815:1996/A1:2005**

ICS:

91.220	Gradbena oprema	Construction equipment
93.060	Gradnja predorov	Tunnel construction

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en

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ICS 91.220; 93.060

English version

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Sicherheit von Tunnelbohrmaschinen ohne Schild und gestängellosen Schachtbohrmaschinen zum Einsatz in Fels

This amendment A1 modifies the European Standard EN 815:1996; it was approved by CEN on 22 December 2004.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This amendment exists 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of 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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 815:1996/A1:2005) has been prepared by Technical Committee CEN/TC 151 “Construction equipment and building material machines — Safety”, the secretariat of which is held by DIN.

This Amendment to the European Standard EN 815:1996 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2005, and conflicting national standards shall be withdrawn at the latest by August 2005.

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).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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.

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Modification of 5.17

5.17 Fire protection

5.17.1 Fire extinguishing system

Power units, e.g. motors, transformers, hydraulic power packs and electrical cabinets for BMs generate fire risks. Areas with concentrations of hydraulic hoses and electrical cables also constitute a risk. Typical reasons for the increase of the fire risk and the origin of a fire are:

- short circuits in electric systems;
- connector faults;
- welding and cutting;
- hot surfaces;
- lack of lubrication;
- leakages in lines for lubricant or hydraulic fluids.

The construction of the BM shall minimize the hazard caused by fire. In particular the following shall be considered:

- [SIST EN 815:2000/A1:2005](https://standards.iteh.ai/catalog/standards/sist/088f1dee-23e4-4f94-b86a-963464eb4888/sist-en-815-2000-a1-2005)
- reduction of the combustible inventory, e.g. use fire resistant materials including hydraulic fluids, flexible ducts, hoses, electrical cables, conveyor belting;
 - removal of sources of ignition;
 - installation of fire alarms;
 - installation of fire extinguishing systems.

All BMs shall be provided with clear and unobstructed escape routes for all personnel working on the BM and its back-up equipment. All BMs shall be designed so that as far as reasonably practicable incombustible materials are used in the construction. Upholstery and insulation shall be made of fire retardant material which has a maximum linear velocity of flame propagation of 250 mm/min tested in accordance with ISO 3795.

5.17.2 Fixed fire extinguishing systems

BM and their back-up equipment shall be equipped with fixed fire extinguishing systems, which cover the areas, where the fire risk according to the fire load analysis is high. For example:

- at the main control point;
- at the main drive motors, except water-cooled motors, for the cutter head;
- at the hydraulic power packs;
- at the electrical cabinets;

— at the transformers.

The systems shall be filled with appropriate extinguishing agents for the relevant fire risks envisaged. Activation of each system shall be by manual operation although automatic operation may be utilised if requested by the BM user. Each system once activated, shall be capable of discharging extinguishant over a predetermined area of the BM or back-up equipment without the need for further human intervention. For equipment within enclosures, discharge shall be within that enclosure. Gas extinguishant shall only be used in sealed electrical cabinets.

The fixed fire extinguishing system shall be supplemented by portable fire extinguishers for minor fires not affecting equipment (see 5.17.3).

Verification of fixed installed fire extinguishing systems shall be by visual inspection and test of function during the site assembly.

NOTE For maintenance and service it may be preferable to have fire extinguishing system supplied from local suppliers. In that case, verification of fire extinguishing systems shall be by visual inspection during first site assembly to ensure that fire extinguishing systems are of the correct type and are correctly marked.

5.17.3 Installation of portable fire extinguishers

Portable fire extinguishers shall be distributed along the BM and its back-up equipment including at all operator's control points. They shall be easily accessible and positioned so that tools are not needed for their removal from the brackets. They shall be filled with an appropriate extinguishing agent. Portable extinguishers shall fulfil the requirements of EN 3.

Verification shall be by inspection during first site assembly to ensure that portable fire extinguishers are correctly located.

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5.17.4 Water sprays

[SIST EN 815:2000/A1:2005](https://standards.iteh.ai/catalog/standards/sist/088f4dec-23e4-4f94-b86a-7054f4c04018/sist-cip-013-2006-a1-2005)

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On TBMs a water spray system which provides a curtain of water across the whole of the tunnel cross section shall be fitted at the rear of the back-up equipment. It shall be capable of being operated manually without electrical energy from the TBM walkway(s).

Verification shall be by visual inspection and test of function during site assembly.

Water sprays are not applicable on SBMs.

Annex ZA (informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide one means of conforming to Essential Requirements of the New Approach Directive Machinery 98/37/EC, amended by Directive 98/79/EC.

Once this standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

WARNING: Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

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