

Puurseadmed. Ohutus KONSOLIDEERITUD TEKST

Drill rigs - Safety CONSOLIDATED TEXT

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 791:2005+A1:2009 sisaldab Euroopa standardi EN 791:1995+A1:2009 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 27.03.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 11.02.2009.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 791:2005+A1:2009 consists of the English text of the European standard EN 791:1995+A1:2009.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 27.03.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 11.02.2009.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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English Version

Drill rigs - Safety

Appareils de forage - Sécurité

Bohrgeräte - Sicherheit

This European Standard was approved by CEN on 1 July 1995 and includes Amendment 1 approved by CEN on 20 December 2008.

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Foreword

This document (EN 791:1995+A1:2009) has been prepared by CEN/TC 151 "Construction equipment and building material machines - Safety", 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of an identical text or by endorsement, at the latest by August 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

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

This document includes Amendment 1, approved by CEN on 2008-12-20.

This document supersedes EN 791:1995.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **A1**.

A1 For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. **A1**

This standard is a type C-standard in the structure of A-/B-/C-standards as defined in EN 292.

The Annex A is normative and contains "Measurement of noise and vibration", the Annex B is normative and contains "Instructions for the examination and checking of blocks, wire ropes and chains", the Annex C is normative and contains "Brake test for drill rigs excluding truck and tractor mounted drill rigs", the Annex D is normative and contains "Hazards related to operation modes of drill rigs", the Annex E is informative and contains "Symbols and signs" and the Annex F is informative and contains "Bibliography".

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

Introduction

The extent to which hazards are covered is indicated in the scope of this standard.

In addition, machinery should comply as appropriate with EN 292 for hazards which are not covered by this standard.

Those hazards that are relevant for all mechanical, electrical, hydraulic, pneumatic and other equipment of machinery and that are dealt with in standards for common use are not covered by this standard.

Reference to pertinent standards of this kind is made where such standards are applicable and so far as is necessary.

1 Scope

1.1 The general term "Drill Rig" covers several differing types of machines for use in the construction industry, water well drilling industry, mining and quarrying, for use above ground as well as underground and for tunnel construction. The differing tasks determine the choice of drilling method and type of machine. For this reason there are many possible ways to separate drill rigs into different groups, e.g. in accordance with:

- The task;
- The drilling method used;
- The cutting removal method;
- The type of construction work.

The methods used for drilling can be basically differentiated in percussive and rotary drilling principles.

Percussive drilling is a method by which the hole is produced by crushing the ground or rock at the bottom of the drill-hole by striking it with the drilling tool and removing the cuttings out of the bore-hole.

Rotary drilling is a method in which the drilling tool at the bottom of the borehole is rotated and at the same time, a feed force is applied by a feed system or drill collar. The ground or rock at the bottom of the borehole is crushed or cut by pressure, shear or tensile stress produced by the different drilling tools. The cuttings are periodically or continuously removed out of the bore hole.

Rotary percussive drilling is performed by a piston striking directly on the bit (down the hole hammer drills) or by percussive energy transmitted via a drill string to the bit. The piston is powered by either hydraulic fluid or compressed air.

At the same time the drill bit is rotated either continuously or intermittently.

The cuttings are continuously removed out of the borehole by a flushing medium, air or fluid which is carried to the drilling tool.

Typical examples of drill rigs covered by this standard are:

- Cable tool drill rig;

- Pile drill rigs;
- Pile top drill rig;
- Raise borer;
- Reverse circulation drill rig;
- Rotary and percussive drill rig for underground drilling;
- Rotary and percussive drill rig for surface drilling;
- Rotary drill rig with power swivel;
- Rotary spindle rig;
- Rotary drill rig for underground use.

A casing or a drilling fluid may be used to stabilize the bore hole.

Drill rigs are stationary during drilling. They may move from one place of work to another, under their own power. Self propelled drill rigs may include those mounted on lorries, wheeled chassis, tractors, crawlers, skid bases (pulled by winch). When drill rigs are mounted on lorries, tractors and trailers, or are wheeled based, transportation may be carried out at higher speeds and on public roads. When designing and constructing these units attention is drawn to regulations covering both the drill rig and traffic regulations.

The questions of safety and ergonomic criteria in this standard mainly refer to the principal work, e.g. when the machine is stationary and drilling. In many cases the driver is also the operator of the drill rig.

1.2 This standard deals with the significant hazards pertinent to mechanized drill rigs, when used as intended and under the conditions foreseen by the manufacturer. It specifies requirements of safety concerning the design, construction, operation and maintenance. This standard applies to drill rigs for surface and underground drilling in the tunnelling, mining, construction and water well drilling industries. Casing units are also covered by this standard.

If the base of a drill rig consists of an excavator, crane, etc. it shall be covered by its own standards to the extent the requirements of this standard are not applicable.

NOTE 1 If a drill rig operates with attachments other than those for drilling according to this standard, e.g. pile driving, the safety standards applying to such machines shall also be complied with.

For drill rigs to be used in an explosive atmosphere (coal mining etc.) the relevant standards apply additionally.

NOTE 2 CEN/TC 196 is preparing complementary standards for machines to be used in explosive atmospheres.

Oil and gas industry drill rigs are not covered by this standard.

2 Normative references

This European Standard incorporates, by dated or undated references, 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.

EN 3:1975, *Portable fire extinguishers*.

EN 292-1:1991, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology*.

EN 292-2:1991, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles and specifications*.

EN 294:1992, *Safety of machinery — Safety distances to prevent danger zones being reached by the upper limbs*.

EN 418:1992, *Safety of machinery — Emergency stop equipment, functional aspects — Principles for design*.

prEN 563, *Safety of machinery — Temperatures of touchable surfaces — Ergonomics data to establish temperature limit values for hot surfaces*.

prEN 953, *Safety of machinery — General requirements for the design and construction of guards (fixed, movable)*.

prEN 954-1, *Safety of machinery — Safety related parts of control systems — Part 1: General principles for design*.

prEN 982, *Safety requirements for fluid power systems and components — Hydraulics*

prEN 983, *Safety requirements for fluid power systems and components — Pneumatics*

prEN 1037, *Safety of machinery — Isolation and energy dissipation — Prevention of unexpected start-up*.

ENV 1070:1993, *Safety of machinery — Terminology*.

EN 22860:1985, *Earth-moving machinery — Minimum access dimensions*.

EN 23164:1985, *Earth-moving machinery — Laboratory evaluations of roll-over and falling-object protective structures — Specifications for the deflection-limiting volume*.

EN 23411:1988, *Earth-moving machinery — Human physical dimensions of operators and minimum operator space envelope*.

EN 50081-2:1993, *Electromagnetic compatibility — Generic emission standard — Part 2: Industrial environment*.

EN 50082-2:1994, *Electromagnetic compatibility — Generic immunity standard — Part 2: Industrial environment*.

EN 60204-1:1992, *Electrical equipment of industrial machines — Part 1: General requirements*.

ISO 2631-1:1985, *Evaluation of human exposure to whole-body vibration — Part 1: General requirements*.

ISO 2867:1989, *Earth-moving machinery — Access systems*.

ISO 3449:1992, *Earth-moving machinery — Falling-object protective structures — Laboratory tests and performance requirements.*

ISO 3450:1985, *Earth-moving machinery — Wheeled machines — Performance requirements and test procedures for braking systems.*

ISO 3457:1986, *Earth-moving machinery — Guards and shields — Definitions and specifications.*

ISO 3471-1:1986, *Earth-moving machinery — Roll-over protective structures — Laboratory tests and performance requirements — Part 1: Crawler, wheel loaders and tractors, backhoe loaders, graders, tractor scrapers, articulated steel dumpers.*

ISO 3795:1989, *Road vehicles and tractors and machinery for agriculture and forestry — Determination of burning behaviour of interior materials.*

ISO 4302:1981, *Cranes, wind load assessment.*

ISO 4309:1990, *Cranes — Wire ropes — Code of practice for examination and discard.*

ISO 4872:1978, *Acoustics — Measurement of airborne noise emitted by construction equipment intended for outdoor use — Method for determining compliance with noise limits.*

ISO 6682:1986, *Earth-moving machinery — Zones of comfort and reach for controls.*

ISO 10570:1992, *Earth-moving machinery — Articulated frame lock — Performance requirements.*

ISO/DIS 11201:1993, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at the work-station and at other specified positions — Engineering method in an essentially free field over a reflecting plane.*

IEC 651:1979, *Sound level meters.*

IEC 804:1985, *Integrating-averaging sound level meters.*