Maa-aluste kaevanduste masinad. Hüdroenergial töötavate katusetugede ohutusnõuded. Osa 3: Hüdraulilised juhtsüsteemid

Machines for underground mines - Safety requirements for hydraulic powered roof supports - Part 3: Hydraulic control systems

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 1804-3:2006+A1:2010 sisaldab Euroopa standardi EN 1804-3:2006+A1:2010 ingliskeelset teksti.	This Estonian standard EVS-EN 1804-3:2006+A1:2010 consists of the English text of the European standard EN 1804-3:2006+A1:2010.
Standard on kinnitatud Eesti Standardikeskuse 31.03.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 31.03.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 27.01.2010.	Date of Availability of the European standard text 27.01.2010.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

ICS 73.100.10

EUROPEAN STANDARD

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English Version

Machines for underground mines - Safety requirements for hydraulic powered roof supports - Part 3: Hydraulic control systems

Machines pour mines souterraines - Exigences de sécurité concernant les soutènements marchants applicables aux piles - Partie 3: Systèmes de commande hydrauliques

Maschinen für den Bergbau unter Tage - Sicherheitsanforderungen an hydraulischen Schreitausbau - Teil 3: Hydraulische Steuerungen

This European Standard was approved by CEN on 21 September 2004 and includes Amendment 1 approved by CEN on 21 December 2009.

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

This European Standard 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 CEN Management Centre has the same status as the official versions.

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Foreword

This document (EN 1804-3:2006+A1:2010) has been prepared by Technical Committee CEN/TC 196 “Machines for underground mines - 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 July 2010, and conflicting national standards shall be withdrawn at the latest by July 2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1, approved by CEN on 2009-12-21.

This document supersedes EN 1804-3:2006.

The start and finish of text introduced or altered by amendment is indicated in the text by tags 〚A1〛 〈A1〉.

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.

This document is Part 3 of a European Standard specifying the safety requirements for hydraulic control systems.
The other parts are:
Part 1: Support units and general requirements
Part 2: Power set legs and rams
Part 4[1]: Electro-hydraulic control systems

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, Croatia, 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.

[1] In preparation

Introduction

This document is a type C standard as stated in EN ISO 12100-1.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this document.

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 standards for machines that have been designed and built according to the provisions of this type C standard.

The extent to which hazards are covered is indicated in the scope of this document.
While preparing this document, it was assumed that:

— only trained and competent persons operate the machine;

— components without specific requirements are;

a) designed in accordance with the usual engineering practice and calculation code;

b) of sound mechanical construction;

c) free of defects;

— components are kept in good working order;

— a negotiation took place between the user and the manufacturer concerning the use of the machinery.

1 Scope

This document specifies the safety requirements for hydraulic control devices, including hydraulic valves and their control elements, valve combinations, control systems, pipes and hose assemblies, fittings, shut-off devices, measuring devices, filters, built-in pressure limiting and check valves in legs and rams and water spraying and dust suppression valves when used as specified by the manufacturer or his authorized representative. Excluded are electronic control devices, pressure generators, and internal valves of legs and rams (e.g. constant yield valves, see EN1804-2).

Some components are dealt with in other parts of this standard.

NOTE prEN1804-4 also applies to electro-hydraulic control devices. Part 4 also contains requirements for electrical control elements of valves.

This document applies to hydraulic control devices at ambient temperatures from –10 °C to 60 °C.
This document identifies and takes into account:

— possible hazards which may be caused by the operation of hydraulic control devices;

— areas and operating conditions which may create such hazards;

— hazardous situations which may cause injury or may be damaging to health;

— hazards which may be caused by firedamp and/or combustible dusts.

This document describes methods for the reduction of these hazards.
A list of significant hazards covered appears in clause 4.
This document is applicable to all hydraulic control devices placed on the market for the first time after the date of issue of this standard.
This document does not specify any additional requirements for:

— use in particularly corrosive environments;

— hazards occurring during construction, transportation, decommissioning;

— earthquakes.

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 853, *Rubber hoses and hose assemblies — Wire braid reinforced hydraulic type — Specification*

EN 854, *Rubber hoses and hose assemblies — Textile reinforced hydraulic type — Specification*

EN 855, *Plastic hoses and hose assemblies — Thermoplastics textile reinforced hydraulic type — Specification*

EN 856, *Rubber hoses and hose assemblies — Rubber-covered spiral wire reinforced hydraulic type — Specification*

EN 857, *Rubber hoses and hose assemblies — Wire braid reinforced compact type for hydraulic applications — Specification*

EN 982:1996, *Safety of machinery — Safety requirements for fluid power systems and their components — Hydraulics*

EN 1050:1996, *Safety of machinery — Principles for risk assessment*

EN 1804-1:2001*, Machines for underground mines — Safety requirements for hydraulic powered roof supports — Part 1: Support units and general requirements*

EN 1804-2:2001*, Machines for underground mines — Safety requirements for hydraulic powered roof supports — Part 2: Power set legs and rams*

prEN 1804-4:2004, *Machines for underground mines — Safety requirements for hydraulic powered roof supports — Part 4: Electro-hydraulic control systems*

EN 13463-1:2001, *Non-electrical equipment for potentially explosive atmospheres — Part 1: Basic method and requirements*

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

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

EN ISO 6743-4:2001, *Lubricants, industrial oils and related products (class L) — Classification — Part 4: Family H (Hydraulic systems) (ISO 6743-4:1999).*

ISO 1219-1 *Fluid power systems and components — Graphic symbols and circuit diagrams — Part 1: Graphic symbols*

ISO 6805:1994, *Rubber hoses and hose assemblies for underground mining — Wire-reinforced hydraulic types for coal mining — Specification*

ISO 7745:1989 *Hydraulic fluid power — Fire-resistant (FR) fluids — Guidelines for use*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1804-1:2001, EN 1804-2:2001, prEN 1804-4:2004 and the following apply:

3.1
hydraulic control devices
system required to control all the functions of the hydraulic powered roof supports

3.2
pressures

3.2.1
maximum permissible working pressure
maximum hydraulic pressure at which a hydraulic component may be operated (see EN 1804-2:2001)

3.2.2
setting pressure
hydraulic pressure in the legs and support rams on completion of the setting procedure. This pressure is supplied by the hydraulic system (see EN 1804-2:2001)

3.2.3
yield pressure of a pressure limiting valve
nominal hydraulic pressure to which a pressure limiting valve is adjusted and at which it should operate (see Figure A.2 and 5.3.3)

3.2.4
opening pressure of a pressure limiting valve
hydraulic pressure at which a valve begins to open and hydraulic fluid is passing through it (see Figure A.2 and 5.3.4)