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Machines for underground mines - Safety requirements
for hydraulic powered roof supports - Part 2: Power set
legs and rams

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 1804-2:2020 sisaldab Euroopa standardi EN 1804-2:2020 ingliskeelset teksti.	This Estonian standard EVS-EN 1804-2:2020 consists of the English text of the European standard EN 1804-2:2020.
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English Version

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

Machines pour mines souterraines - Exigences de
sécurité relatives aux soutènements marchants
applicables aux piles - Partie 2 : Étaçons et vérins à
pose mécanisée

Maschinen für den Bergbau unter Tage -
Sicherheitsanforderungen für hydraulischen
Schreitausbau - Teil 2: Stempel und Zylinder

This European Standard was approved by CEN on 25 October 2020.

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

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European foreword

This document (EN 1804-2:2020) has been prepared by Technical Committee CEN/TC 196 “Mining machinery and equipment - 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of an identical text or by endorsement, at the latest by June 2021, and conflicting national standards shall be withdrawn at the latest by June 2021.

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

This document supersedes EN 1804-2:2001+A1:2010.

The main differences between this document and EN 1804-2:2001+A1:2010 are as follows:

- a) Normative references (updated);
- b) Terms and definitions (modified);
- c) List of significant hazards (revised) (see Annex C);
- d) Requirements for steel (updated/modified);
- e) Requirements for static and dynamic overload (revised/modified);
- f) Requirements for overload fully retracted (deleted);
- g) List of tests (updated) (see Annex B).

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 organisations 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document is a type C standard, as specified in EN ISO 12100:2010.

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

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium and large enterprises);
- health and safety bodies (regulators, accident prevention organizations, market surveillance, etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

- machine users/employers (small, medium and large enterprises);
- machine users/employees (e.g. trade unions, organizations for people with special needs);
- service providers, e.g. for maintenance (small, medium and large enterprises);
- consumers (in the case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

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

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

The extent to which hazards are covered is indicated in the scope of this document. When drawing up this standard, the underlying assumptions were that:

- only trained and qualified personnel operate the machine;
- components without specific requirements are:
 - designed in accordance with the usual engineering practice and calculation codes;
 - of sound mechanical construction;
 - are free of defects;
- components are kept in good working order;
- the implementation conditions and requirements imposed on the machine have been agreed between manufacturer of the legs and cylinders and their user (manufacturers of the support unit or users in the case of spare parts).

1 Scope

This document stipulates the safety requirements for use of legs and rams as intended by the manufacturer. These include legs, support rams and rams, including the mechanical extensions, the inner valves and safety devices, seals, the hydraulic connections (up to the 1st hose line or to the valve of design B, see EN 1804-3:2020) and their lifting points, but excluding protective pipes and gaiters, external valves and hydraulic and electrohydraulic control systems.

NOTE Some components are discussed in other parts of this standard series.

This document applies for legs, support rams, and cylinders that are used at ambient temperatures between $-10\text{ }^{\circ}\text{C}$ and $60\text{ }^{\circ}\text{C}$.

This document identifies and takes account of:

- possible hazards which may be caused by the operation of legs, support rams and rams;
- the hazardous areas and the operating conditions that can cause any type of hazard;
- the situations that can result in hazards that cause an injury or impair health;
- dangers that can be caused through mine gas and/or flammable dusts.

This document describes methods for reducing these hazards.

Clause 4 contains a list of the hazards discussed.

This document does not specify any additional requirements for:

- specially corrosive environments;
- risks associated with manufacturing and decommissioning;
- earthquake.

A complete hydraulic powered roof support consists of the support units (EN 1804-1:2020), legs and support rams (EN 1804-2:2020) and the hydraulic and electro hydraulic controls (EN 1804-3:2020). Each part of this multipart document addresses the safety requirements of the components mentioned in the scopes of the respective parts of this multipart series.

This document is not applicable to legs and rams manufactured before the date of its publication.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1090-1:2009+A1:2011, *Execution of steel structures and aluminium structures — Part 1: Requirements for conformity assessment of structural components*

EN 1804-1:2020, *Machines for underground mines — Safety requirements for hydraulic powered roof supports — Part 1: Support units and general requirements*

EN 1804-3:2020, *Machines for underground mines — Safety requirements for hydraulic powered roof supports — Part 3: Hydraulic and electro hydraulic control systems*

EN 10204:2004, *Metallic products — Types of inspection documents*

EN ISO 148-1:2016, *Metallic materials — Charpy pendulum impact test — Part 1: Test method (ISO 148-1:2016)*

EN ISO 643:2020, *Steels — Micrographic determination of the apparent grain size (ISO 643:2019, Corrected version 2020-03)*

EN ISO 6892-1:2019, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature (ISO 6892-1:2019)*

EN ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 15614-1:2017,¹ *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys (ISO 15614-1:2017, Corrected version 2017-10-01)*

EN ISO 80079-36:2016, *Explosive atmospheres — Part 36: Non-electrical equipment for explosive atmospheres — Basic method and requirements (ISO 80079-36:2016)*

ISO 7745:2010, *Hydraulic fluid power — Fire-resistant (FR) fluids — Requirements and guidelines for use*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010, EN 1804-1:2020, EN 1804-3:2020 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

support unit

type of hydraulic powered roof support, e.g. frame support, chock support, shield support, consisting of support components and support accessories

[SOURCE: EN 1804-1:2020, definition 3.1.1]

3.2

support components

all components which lie within the flow of the support bearing force

3.2.1

actuator

any type of hydraulic linear reciprocating device referred to in this document

3.2.2

legs and support rams

hydraulic actuators for producing the support bearing force of the support unit

¹ As impacted by EN ISO 15614-1:2017/A1:2019.