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**Drilling and foundation equipment –
Safety –
Part 1: Common requirements;
English version EN 16228-1:2014+A1:2021,
English translation of DIN EN 16228-1:2022-07**

Geräte für Bohr- und Gründungsarbeiten –
Sicherheit –
Teil 1: Gemeinsame Anforderungen;
Englische Fassung EN 16228-1:2014+A1:2021,
Englische Übersetzung von DIN EN 16228-1:2022-07

Machines de forage et de fondation –
Sécurité –
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In case of doubt, the German-language original shall be considered authoritative.

A comma is used as the decimal marker.

National foreword

This standard includes safety requirements.

This document (EN 16228-1:2014+A1:2021) has been prepared by Technical Committee CEN/TC 151 “Construction equipment and building material machines — Safety” (Secretariat: DIN, Germany).

The responsible German body involved in its preparation was *DIN-Normenausschuss Maschinenbau* (DIN Standards Committee Mechanical Engineering), Working Committee NA 060-13-03 AA “Drilling and foundation equipment” of Section “Construction equipment and building material machines”. Representatives of manufacturers and users of “drilling and foundation equipment”, and of the employers’ liability insurance associations contributed to this standard.

This standard contains specifications which give detail to the essential requirements set out in Annex I of the “Machinery Directive”, Directive 2006/42/EC, and which apply to machines that are either first placed on the market or commissioned within the EEA. This standard serves to facilitate proof of compliance with the essential requirements of that directive.

Once this standard is cited in the Official Journal of the European Union, it is deemed a “harmonized” standard, and, thus, a manufacturer applying this standard may assume compliance with the requirements of the Machinery Directive (“presumption of conformity”).

The DIN documents corresponding to the documents referred to in this document are as follows:

ISO 4309:2010	DIN ISO 4309:2013-06
ISO 6683:2005	DIN EN ISO 6683:2005-07
ISO 7010:2011	DIN EN ISO 7010:2012-10
ISO 10262:1998	DIN 24082:1987-04, modified
ISO 14693:2003	DIN EN ISO 14693:2005-07

For current information on this document, please go to DIN’s website (www.din.de) and search for the document number in question.

Amendments

This standard differs from DIN EN 16228-1:2014-10 as follows:

- a) the Scope has been modified, and the following machines have been excluded:
 - specialized mining machinery and equipment for opencast mining;
 - underground mining machinery and equipment for the extraction of solid mineral substances;
 - machinery and equipment for underground mine development;
 - core drilling machines on stand;
 - hand-held machines.
- b) normative references have been updated and adapted throughout the text;
- c) Clause 3 “Terms and definitions” has been modified;
- d) Table 1 “List of significant hazards and associated requirements” in Clause 4 has been replaced;

- e) 5.2.3.4.4 “Wind load” has been modified;
- f) 5.2.3.4.5 “Dynamic loads” has been modified;
- g) 5.2.3.4.7 “Working loads” has been modified;
- h) 5.3.3 “Electromagnetic compatibility (EMC)” has been added as a new subclause;
- i) 5.4.1 “Hydraulic systems” has been modified;
- j) 5.4.3 “Hoses, pipes and fittings under pressure” has been modified;
- k) 5.7.1 “Brakes for travelling” has been adapted;
- l) 5.8.2 “Winches and pulleys” has been modified;
- m) 5.8.4 “Ropes and rope end terminations” has been modified;
- n) in 5.10.3 “Stroke limiting devices”, a note has been added;
- o) 5.11 “Ergonomics” has been modified;
- p) 5.13.2 “Working platform for lifting personnel” has been adapted;
- q) 5.14.1 “General” has been modified;
- r) 5.15.2 “Required performance levels for safety related parts of control systems” has been modified;
- s) 5.15.4 “Stopping” has been modified;
- t) 5.16.1 “General” has been modified;
- u) 5.17.2 “Operating position” has been modified;
- v) 5.17.4 “Control system” has been adapted;
- w) 5.19.1 “Common use” has been modified;
- x) 5.19.2 “Retrieval/Towing” has been modified;
- y) 5.19.3 “Tie-down” has been modified;
- z) 5.19.4 “Lifting points” has been modified;
- aa) 5.19.6 “Locking of articulation” has been included;
- bb) 5.23.1 “General” has been modified;
- cc) 5.23.2.1 “General” has been modified;
- dd) in 5.23.2.2.1 “General”, a note has been added;
- ee) 5.23.2.2.2 “Guards” has been modified and updated;
- ff) 5.23.2.2.3 “Sensitive protective devices” has been modified;
- gg) 5.23.2.2.4 “Restricted operating mode (ROM)” has been modified;
- hh) the text of subclause 5.23.2.2.5 “Special protective mode for specific circumstances” has been replaced;
- ii) the title of subclause 5.23.2.2.6 “Additional pressure sensitive devices” has been replaced by “Supplementary trip device”, and the subclause has been adapted;
- jj) 5.27.2.1 “Noise reduction at the design stage” has been adapted;
- kk) 5.28.1 “Engine exhausts” has been modified;
- ll) 5.28.2 “Dust” has been modified;
- mm) 5.30 “Warning devices” has been modified;
- nn) Table 4 in Clause 6 “Verification of safety requirements and/or protective measures” has been replaced;
- oo) 6.2.1 “General” has been modified;

- pp) 7.3.1 “General” has been modified;
- qq) 7.3.2.1 “General information” has been modified;
- rr) 7.3.2.2.1 “General” has been modified;
- ss) 7.3.2.2.3 “Capacities and limitations” has been modified;
- tt) 7.3.2.3 “Technical information” has been modified;
- uu) 7.3.2.4 “Operating instructions” has been modified;
- vv) the text of subclause 7.3.2.5 “Transportation and assembly instructions” has been replaced;
- ww) 7.3.2.6 “Disabling and scrapping” has been included;
- xx) 7.3.3 “Maintenance instructions” has been modified;
- yy) A.1 “General” has been modified;
- zz) A.2 “Illustrations” has been modified;
- aaa) Annex ZA has been replaced;
- bbb) the Bibliography has been updated.

Previous editions

DIN 24096: 1987-06
DIN EN 791: 1996-01, 2010-01
DIN EN 996: 1996-04, 2010-02
DIN EN 996/A1: 2000-03
DIN EN 996/A2: 2003-11
DIN EN 16228-1: 2014-10

National Annex NA
(informative)

Bibliography

DIN ISO 4309:2013-06, *Cranes — Wire ropes — Care and maintenance, inspection and discard*
(ISO 4309:2010)

DIN EN ISO 6683:2005-07, *Earth-moving machinery — Seat belts and seat belt anchorages — Performance requirements and tests* (ISO 6683:2005)

DIN EN ISO 7010:2012-10, *Graphical symbols — Safety colours and safety signs — Registered safety signs* (ISO 7010:2011)

DIN 24082:1987-04, *Earth moving machinery — Falling object protective structures for hydraulic excavators and rope-operated excavators — Requirements, laboratory tests*

DIN EN ISO 14693:2005-07, *Petroleum and natural gas industries — Drilling and well-servicing equipment*
(ISO 14693:2003)

English Version

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Part 1: Common requirements

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Sécurité -
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Sicherheit -
Teil 1: Gemeinsame Anforderungen

This European Standard was approved by CEN on 6 March 2014 and includes Amendment 1 approved by CEN on 22 November 2021.

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