



**NSAI**  
Standards

Irish Standard  
I.S. EN 16228-3:2014

# Drilling and foundation equipment - Safety - Part 3: Horizontal directional drilling equipment (HDD)

**I.S. EN 16228-3:2014**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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## Drilling and foundation equipment - Safety - Part 3: Horizontal directional drilling equipment (HDD)

Machines de forage et de fondation - Sécurité - Partie 3:  
Appareils de forage horizontal dirigé (HDD)

Geräte für Bohr- und Gründungsarbeiten - Sicherheit - Teil  
3: Geräte für das gerichtete Horizontalbohrverfahren

This European Standard was approved by CEN on 6 March 2014.

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-CENELEC Management Centre or to any CEN member.

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<b>Contents</b>	<b>Page</b>
Foreword.....	4
Introduction .....	5
<b>1 Scope .....</b>	<b>6</b>
<b>2 Normative references .....</b>	<b>6</b>
<b>3 Terms and definitions .....</b>	<b>7</b>
<b>4 List of additional significant hazards .....</b>	<b>8</b>
<b>5 Safety requirements and/or protective measures .....</b>	<b>9</b>
5.1 General.....	9
5.2 Stability .....	9
5.2.1 General.....	9
5.2.2 Ground pressure.....	10
5.3 Brakes .....	10
5.3.1 Brakes for travelling .....	10
5.3.2 Brakes for slewing .....	10
5.4 Winches, draw-works and ropes .....	10
5.4.1 General.....	10
5.4.2 Roller and leaf chains.....	10
5.5 Indicating devices for inclination .....	10
5.6 Operating position(s) .....	10
5.6.1 General.....	10
5.6.2 Cab/Cabin .....	11
5.6.3 Driving, tramming and operating(s) position.....	11
5.6.4 Falling Object Protection (FOPS) .....	11
5.7 Access to operating positions, intervention and servicing points .....	11
5.8 Retrieval, transportation, lifting and towing of horizontal directional drills and their parts .....	11
5.9 Travel speed .....	11
5.10 Control devices .....	12
5.10.1 General.....	12
5.10.2 Pedestrian controlled horizontal directional drills.....	12
5.10.3 Protective measures for stopping of rotation and feed.....	12
5.10.4 Restricted operating mode .....	12
5.11 Equipment for information and warning .....	12
5.11.1 General.....	12
5.11.2 Warning devices .....	12
5.12 Guards and protective devices .....	13
5.12.1 General.....	13
5.12.2 Design .....	13
5.12.3 Foot barrier.....	13
5.12.4 Danger zones at rear of machine .....	13
5.12.5 Elevating drill frame .....	13
5.12.6 Breakout clamps .....	13
5.12.7 Ground fixation device.....	14
5.12.8 Horizontal directional drills with a drill rod/pipe storage magazine.....	14
5.12.9 Horizontal directional drills without a mechanical drill/pipe handling system .....	14
5.13 Immobilisation system .....	15
5.14 Drill frame extensions .....	15
<b>6 Verification of the safety requirements and/or protective measures .....</b>	<b>15</b>
6.1 General.....	15

<b>6.2</b>	<b>Fitness for purpose testing .....</b>	<b>17</b>
<b>7</b>	<b>Information for use .....</b>	<b>17</b>
<b>7.1</b>	<b>General .....</b>	<b>17</b>
<b>7.2</b>	<b>Operator's manual .....</b>	<b>18</b>
<b>7.3</b>	<b>Warning signs .....</b>	<b>18</b>
<b>Annex A</b>	<b>(informative) Symbols and signs .....</b>	<b>19</b>
<b>A.1</b>	<b>General .....</b>	<b>19</b>
<b>A.2</b>	<b>Symbols for base machine and drilling rack .....</b>	<b>19</b>
<b>A.3</b>	<b>Symbols for front vice.....</b>	<b>20</b>
<b>A.4</b>	<b>Symbols for rod cradle .....</b>	<b>21</b>
<b>A.5</b>	<b>Symbols for drill head.....</b>	<b>22</b>
<b>A.6</b>	<b>Symbols for earth anchor.....</b>	<b>23</b>
<b>A.7</b>	<b>Symbols for rod clamp.....</b>	<b>24</b>
<b>A.8</b>	<b>Symbols for rod loader .....</b>	<b>25</b>
<b>A.9</b>	<b>Symbols for Drilling Fluid Supply.....</b>	<b>27</b>
<b>Annex B</b>	<b>(normative) Noise test code .....</b>	<b>31</b>
<b>B.1</b>	<b>General .....</b>	<b>31</b>
<b>B.2</b>	<b>Operating conditions .....</b>	<b>31</b>
<b>Annex ZA</b>	<b>(informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC .....</b>	<b>32</b>
<b>Bibliography</b>	<b>.....</b>	<b>33</b>

**EN 16228-3:2014 (E)****Foreword**

This document (EN 16228-3:2014) 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 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 November 2014 and conflicting national standards shall be withdrawn at the latest by November 2014.

This document supersedes EN 791:1995+A1:2009 and EN 996:1995+A3:2009.

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 European Standard is divided into several parts and covers drilling and foundation equipment.

Part 1 contains requirements that are/may be common to all drilling and foundation equipment. Other parts contain additional requirements for specific machines that supplement or modify the requirements of part 1. Compliance with the clauses of part 1 together with those of a relevant specific part of this standard giving requirements for a particular machine provides one means of conforming with the essential health and safety requirements of the Directive concerned.

When a relevant specific part does not exist, part 1 can help to establish the requirements for the machine, but will not by itself provide a means of conforming to the relevant essential health and safety requirements of the Directive.

This European Standard, EN 16228, *Drilling and foundation equipment – Safety*, consists of the following parts:

- *Part 1: Common requirements*
- *Part 2: Mobile drill rigs for civil and geotechnical engineering, quarrying and mining*
- *Part 3: Horizontal directional drilling equipment (HDD)*
- *Part 4: Foundation equipment*
- *Part 5: Diaphragm walling equipment*
- *Part 6: Jetting, grouting and injection equipment*
- *Part 7: Interchangeable auxiliary equipment*

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## **Introduction**

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

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 document are different from those, which are stated in type A or B documents, the provisions of this type C document take precedence over the provisions of the other documents, for machines that have been designed and built according to the provisions of this type C document.

## EN 16228-3:2014 (E)

### 1 Scope

This European Standard, together with part 1, deals with all significant hazards for horizontal directional drilling equipment (HDD) when they are used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer associated with the whole life time of the machine (see Clause 4).

The requirements of this part are complementary to the common requirements formulated in EN 16228-1:2014.

This document does not repeat the requirements from EN 16228-1, but adds or replaces the requirements for application for horizontal directional drills.

A machine is considered a horizontal directional drill if it is designed to drill in a shallow arc for the installation of pipes, conduits, and cables and typically has a drill string entry angle of less than 45° relative to the operating surface of the earth.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 474-1:2006+A4:2013, *Earth-moving machinery — Safety — Part 1: General requirements*

EN 12999:2011+A1:2012, *Cranes — Loader cranes*

EN 16228-1:2014, *Drilling and foundation equipment — Safety — Part 1: Common requirements*

EN ISO 2867:2011, *Earth-moving machinery — Access systems (ISO 2867:2011)*

EN ISO 3411:2007, *Earth-moving machinery — Physical dimensions of operators and minimum operator space envelope (ISO 3411:2007)*

EN ISO 3449:2008, *Earth-moving machinery — Falling-object protective structures — Laboratory tests and performance requirements (ISO 3449:2005)*

EN ISO 3471:2008, *Earth-moving machinery — Roll-over protective structures — Laboratory tests and performance requirements (ISO 3471:2008)*

EN ISO 5353:1998, *Earth-moving machinery, and tractors and machinery for agriculture and forestry — Seat index point (ISO 5353:1995)*

EN ISO 6682:2008, *Earth-moving machinery — Zones of comfort and reach for controls (ISO 6682:1986, including Amd 1:1989)*

EN ISO 7731:2008, *Ergonomics — Danger signals for public and work areas — Auditory danger signals (ISO 7731:2003)*

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

ISO 9244:2008, *Earth-moving machinery — Machine safety labels — General principles*

ISO 9533:2010, *Earth-moving machinery — Machine-mounted audible travel alarms and forward horns — Test methods and performance criteria*



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