

SLOVENSKI STANDARD
oSIST prEN ISO 20770-2:2025
01-april-2025

Oprema za vrtanje in temeljenje - Varnost - 2. del: Prenosna vrtalna oprema za gradbeništvo in geotehniko (ISO/DIS 20770-2:2025)

Drilling and foundation equipment - Safety - Part 2: Mobile drill rigs for civil and geotechnical engineering (ISO/DIS 20770-2:2025)

Geräte für Bohr- und Gründungsarbeiten - Sicherheit - Teil 2: Mobile Bohrgeräte für Tiefbau, Geotechnik und Gewinnung (ISO/DIS 20770-2:2025)

Machines de forage et de fondation - Sécurité - Partie 2: Machines de forage mobiles en génie civil et en ingénierie géotechnique (ISO/DIS 20770-2:2025)

Ta slovenski standard je istoveten z: prEN ISO 20770-2

[oSIST prEN ISO 20770-2:2025](https://standards.sist.si/standards/sist/prEN/ISO/20770-2/2025)

<https://standards.sist.si/standards/sist/prEN/ISO/20770-2/2025>

ICS:

25.080.40	Vrtalniki	Drilling machines
53.100	Stroji za zemeljska dela	Earth-moving machinery
93.020	Zemeljska dela. Izkopavanja. Gradnja temeljev. Dela pod zemljo	Earthworks. Excavations. Foundation construction. Underground works

oSIST prEN ISO 20770-2:2025

en,fr,de



DRAFT International Standard

ISO/DIS 20770-2

Drilling and foundation equipment — Safety —

Part 2:

Mobile drill rigs for civil and geotechnical engineering

Machines de forage et de fondation — Sécurité —

Partie 2: Machines mobiles de forage de génie civil et de géotechnique

ICS: 53.100

ISO/TC 195/SC 3

Secretariat: **AFNOR**

Voting begins on:

2025-02-13

Voting terminates on:

2025-05-08

This document is circulated as received from the committee secretariat.

ISO/CEN PARALLEL PROCESSING

Reference number
ISO/DIS 20770-2:2025(en)

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENTS AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

© ISO 2025

ISO/DIS 20770-2:2025(en)

iTeh Standards (<https://standards.iteh.ai>) Document Preview

[oSIST prEN ISO 20770-2:2025](https://standards.iteh.ai/catalog/standards/sist/4cf7791a-15ed-42f7-8b90-787e379c08ca/osist-pren-iso-20770-2-2025)

<https://standards.iteh.ai/catalog/standards/sist/4cf7791a-15ed-42f7-8b90-787e379c08ca/osist-pren-iso-20770-2-2025>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2025

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

ISO/DIS 20770-2:2025(en)

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	2
3 Terms and definitions	2
4 Safety requirements and/or protective/risk reduction measures	3
4.1 General.....	3
4.2 Boom mounted working platforms for underground use.....	3
4.3 Requirements for strength and stability.....	4
4.3.1 Stability calculation - Tipping angle.....	4
4.3.2 Operating conditions.....	4
4.4 Fire protection.....	4
4.5 Guards and sensitive protective devices.....	5
4.5.1 General.....	5
4.5.2 Guards.....	5
4.5.3 Sensitive protective devices.....	6
4.6 Supplementary trip device.....	6
4.7 Protection against moving parts on specific machine types.....	7
4.7.1 General.....	7
4.7.2 Underground pre-armouring machine.....	7
4.7.3 Suspended drill rigs.....	7
4.8 Rod/auger guide.....	8
4.9 Winches, draw-works and ropes for movement on slopes.....	8
4.10 Brakes of the carrier machine.....	8
4.10.1 General.....	8
4.10.2 General requirements for wheel mounted mobile drill rigs.....	9
4.10.3 Service braking system for wheel mounted mobile drill rigs.....	9
4.10.4 Secondary braking system for wheel mounted mobile drill rigs.....	9
4.10.5 Parking braking system for rubber-tyred rigs.....	9
4.10.6 Verification of brakes.....	10
4.10.7 Braking systems for skid steer wheel mounted drill rigs.....	10
4.11 Noise.....	10
4.12 Special protective mode.....	10
5 Verification of the safety requirements and/or protective/risk reduction measures	10
5.1 General.....	10
5.2 Functional test.....	11
6 Information for use	12
6.1 General.....	12
6.2 Drill rigs for underground operation.....	12
6.3 Suspended drill rigs.....	12
6.4 Special protective mode.....	13
Annex A (normative) Noise test code	14
Annex B (normative) Brake test for mobile drill rigs excluding truck and tractor mounted drill rigs	15
Annex C (normative) List of significant hazards	18
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered	19
Annex ZB (informative) Relationship between this European Standard and the essential requirements of Regulation EU 2023/1230 aimed to be covered	24
Bibliography	30

ISO/DIS 20770-2:2025(en)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO [*had/had not*] received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 195, *Building construction machinery and equipment*, Subcommittee SC 3, *Drilling and foundation machinery and equipment*.

A list of all parts in the ISO 20770 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

<https://standards.iteh.ai/catalog/standards/sist/4cf7791a-15ed-42f7-8b90-787e379c08ca/osist-pren-iso-20770-2-2025>

ISO/DIS 20770-2:2025(en)**Introduction**

This document is a type C standard as stated in ISO 12100:2010.

The machinery concerned and the extent to which hazards, hazardous situation and 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 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.

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[oSIST prEN ISO 20770-2:2025](https://standards.iteh.ai/catalog/standards/sist/4cf7791a-15ed-42f7-8b90-787e379c08ca/osist-pren-iso-20770-2-2025)

<https://standards.iteh.ai/catalog/standards/sist/4cf7791a-15ed-42f7-8b90-787e379c08ca/osist-pren-iso-20770-2-2025>

Drilling and foundation equipment — Safety —

Part 2: Mobile drill rigs for civil and geotechnical engineering

1 Scope

This document together with ISO 20770-1, deals with all significant hazards (see [Annex C](#)) for mobile drill rigs for in soil or soil and rock mixture in civil and geotechnical engineering, 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.

The requirements of this part are complementary to the common requirements formulated in ISO 20770-1:____.

This document does not repeat the common requirements from ISO 20770-1:____, but adds or replaces the requirements for application for mobile drill rigs.

In this document the general term “mobile drill rig” covers several different types of machines for use in:

- civil engineering;
- geotechnical engineering (including ground investigation, anchoring, soil nailing, mini-piling, ground stabilization, grouting);
- water well drilling;
- geothermal installations;
- landfill drilling;
- underpinning and tunnelling;
- for use above ground as well as underground.

Typically, the process of drilling involves the addition of drill rods, tubes, casings or augers etc., normally threaded, as the borehole extends to depth.

NOTE 1 ISO 20770-1:____ covers machines with a rotary torque greater than 35 kNm.

NOTE 2 The term “drill rigs” includes rigs with a separate power pack supplied by the rig manufacturer.

The following machines are excluded from the scope of this document:

- tunnelling machines, unshielded tunnel boring machines and rodless shaft boring machines for rock according to EN 16191;
- raise boring machines;
- drill rigs used in oil and gas industry;
- specialized mining machinery and equipment for opencast mining (e.g. rock drill rigs, blast hole drills) (under the scope of ISO/TC 82);

ISO/DIS 20770-2:2025(en)

- all underground mining machinery and equipment for the extraction of solid mineral substances (e. g. rock drill rigs, raise boring machines, shaft boring machines, mining auger boring machines, jumbos) as well as machinery and equipment for underground mine development (under the scope of ISO/TC 82);
- core drilling machines on stand covered by EN 12348;
- hand-held machines (in particular machines covered by ISO 11148-5).

This document is not applicable to mobile drill rigs for in soil or soil and rock mixture in civil and geotechnical engineering 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 280-1:2022, *Mobile elevating work platforms - Part 1 : design calculations - Stability criteria - Construction - Safety - Examinations and tests*

ISO 20770-1, ____¹⁾, *Drilling and foundation equipment — Safety — Part 1: Common requirements*

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

ISO 3450:2011, *Earth-moving machinery — Wheeled or high-speed rubber-tracked machines — Performance requirements and test procedures for brake systems*

ISO 11886, ____²⁾, *Drilling and foundation machinery — Soil or soil and rock mixture drilling and foundation machines — Commercial specifications*

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

ISO 13855:2010, *Safety of machinery — Positioning of safeguards with respect to the approach speeds of parts of the human body*

oSIST prEN ISO 20770-2:2025

<https://standards.iteh.ai/catalog/standards/sist/4cf7791a-15ed-42f7-8b90-787e379c08ca/osist-pren-iso-20770-2-2025>

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100:2010, ISO 11886:____, ISO 20770-1:____ and the following apply.

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

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

NOTE Examples of drilling and foundation equipment are given in ISO/DIS 11886-1:2023, Annex C.

3.1

boom mounted working platform

working platform used for raising or lowering personnel, consisting of a platform fitted onto a (articulated/telescopic) boom

3.2

upper clamping device

device to hold the drill string closest from the rotary head

1) Currently, under preparation.

2) At the stage of preparation : ISO/DIS 11886:2023

ISO/DIS 20770-2:2025(en)

3.3

specific initial speed

maximum rotation speed allowing a rotation head to stop in less than one revolution under the test conditions given in ISO 20770-1:____, Annex G

4 Safety requirements and/or protective/risk reduction measures

4.1 General

Drill rigs shall comply with the requirements of ISO 20770-1:____, as far as not modified or replaced by the requirements of this part.

4.2 Boom mounted working platforms for underground use

ISO 20770-1:____, 4.13.2 does not apply.

When a drill rig for underground use is equipped with a boom mounted working platform intended for use in an area where there is risk of object fall, the person(s) on the platform shall have adequate protection. A suitably designed protective structure, FOPS shall be provided over the platform.

Level I of ISO 3449:2008 shall be the minimum requirement (e.g. underground pre-armouring machines). Level II shall be chosen where there is the risk of rock fall.

NOTE The FOPS can be adjustable taking into account the various functions to be performed from the platform.

Drill rigs equipped with one or more boom mounted platforms shall comply with EN 280-1:2022.

Pre-armouring machines are exempted from the following requirements of EN 280-1:2022:

- a device that prevents driving of the vehicle when the boom mounted platform is not in its transport position;
- a device that prevents movement of the platform while the stabilizers are not set;
- a device that prevents adjustment of the stabilizers while the boom mounted platform is not in its transport position;
- a device, located in the operators compartment, that indicates that the boom mounted platform is not in its transport position;
- a load sensing system;
- an adjustment for uneven ground for base plates on stabilizing jacks.

NOTE The exceptions are justified for the following reasons:

- the primary function of the stabilizers is for use during drilling;
- the need to maneuver in narrow tunnels;
- risk of rock fall;
- size and weight of machine.

Pre-armouring machines are exempted from the requirements of EN 280-1:2022, 4.7.4. The boom mounted working platform shall be operated from both the platform and the operator's station. Only one control position shall be active at a time except for stop controls and emergency stop. In case of emergency, e.g. rock fall, it shall be possible to override the controls of the platform by the control at the operator's station.

Overturning of pre-armouring machines, due to overload of the platform, of a drill rig for underground use and equipped with a boom mounted working platform is not considered a significant hazard due to the size and weight of the rig. However overload of the boom and platform shall be prevented by restricting