



SLOVENSKI STANDARD
oSIST prEN ISO 20770-6:2025
01-april-2025

**Oprema za vrtanje in temeljenje - Varnost - 6. del: Zamenljiva pomožna oprema
(ISO/DIS 20770-6:2025)**

Drilling and foundation equipment - Safety - Part 6: Interchangeable auxiliary equipment
(ISO/DIS 20770-6:2025)

Geräte für Bohr- und Gründungsarbeiten - Sicherheit - Teil 6: Auswechselbare
Zusatzausrüstungen (ISO/DIS 20770-6:2025)

Machines de forage et de fondation - Sécurité - Partie 6: Équipements complémentaires
interchangeables (ISO/DIS 20770-6:2025)

Ta slovenski standard je istoveten z: prEN ISO 20770-6

[oSIST prEN ISO 20770-6:2025](http://standards.sist.si/standards/sist/20770-6/2025/prEN-ISO-20770-6-2025)

ICS:

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

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en,fr,de



DRAFT International Standard

ISO/DIS 20770-6

Drilling and foundation equipment — Safety —

Part 6: Interchangeable auxiliary equipment

Machines de forage et de fondation — Sécurité —

Partie 6: Équipements complémentaires interchangeables

ICS: 53.100

ISO/TC 195/SC 3

Secretariat: **AFNOR**

Voting begins on:
2025-02-13

Voting terminates on:
2025-05-08

iteh Standards
(<https://standards.iteh.ai>)
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Published in Switzerland

ISO/DIS 20770-6:2025(en)

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Foreword

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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.

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ISO/DIS 20770-6:2025(en)**Introduction**

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

The machinery concerned and the extent to which hazards are covered are indicated in the scope of this standard.

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 drilling and foundation equipment that have been designed and built according to the requirements of this type C standard.

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Drilling and foundation equipment — Safety —

Part 6: Interchangeable auxiliary equipment

1 Scope

This document together with ISO 20770-1:____, deals with all significant hazards for interchangeable auxiliary equipment 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 [Annex B](#)).

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

This document does not repeat the requirements from ISO 20770-1:____, but adds or replaces the requirements for application for interchangeable auxiliary equipment.

This document specifies the specific safety requirements for interchangeable auxiliary equipment to be used in drilling and foundation operations, connected with drilling and foundation equipment, agricultural equipment and/or earth moving machinery when they are used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer.

Interchangeable auxiliary equipment includes pile installation and extraction equipment, impact hammers, extractors, vibrators, deep vibrators, static pile pushing/pulling devices, rotary percussion heads, rotary drilling drives, drill leader equipment such as leaders equipped with a drill stem and gears attached to the boom of an excavator and casing oscillators/rotators.

Diaphragm wall cutting tools are dealt with in ISO 20770-4:____.

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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.

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

ISO 20770-2, ____²⁾, *Drilling and foundation equipment — Safety — Part 2: Mobile drill rigs for civil and geotechnical engineering in soil or soil and rock mixture*

ISO 20770-3, ____³⁾, *Drilling and foundation equipment — Safety — Part 3: Foundation equipment*

ISO 20770-4, ____⁴⁾, *Drilling and foundation equipment — Safety — Part 4: Diaphragm walling equipment*

ISO 20770-5, ____⁵⁾, *Drilling and foundation equipment — Safety — Part 5: Jetting, grouting and injection equipment*

1) Currently at stage DIS

2) Currently at stage DIS

3) Currently at stage DIS

4) Currently at stage DIS

5) Currently at stage DIS

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ISO 3744:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane*

ISO 11201:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections*

ISO 11203:1995, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions from the sound power level*

ISO 11203:1995/Amd 1:2020, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions from the sound power level — Amendment 1*

ISO 11886, ____⁶⁾, , *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*

3 Terms and definitions

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

3.1 down the hole hammer DTH-hammer

device in which the percussion mechanism is located directly behind the drill bit

Note 1 to entry: The drill pipes transmit the necessary feed force and rotation to hammer and bit plus compressed air or fluids for the hammer and flushing of cuttings. The drill pipes are added to the drill string successively behind the hammer as the hole gets deeper. The hammer piston strikes the impact surface of the bit directly, while the hammer casing gives straight and stable guidance of the drill bit. This means that the impact energy does not have to pass through any joints at all. The impact energy therefore is not lost in joints allowing for much deeper percussion drilling.

Note 2 to entry: ISO 11886:____, C.29 provides a detailed description of down the hole hammers.

3.2 sonic drilling device

equipment which superposes rotary drilling with vibrations at a high frequency

Note 1 to entry: The vibrations are mostly generated within the drill head and can be controlled by the operator to suit the specific conditions of the soil/rock geology. Resonance magnifies the amplitude of the drill bit, which fluidizes the soil particles at the bit face, generating a fast and easy penetration through most geological formations. The frequencies used with this method are normally between 50 Hz and 120 Hz. This equipment can be connected at the leader of a drilling and foundation equipment.

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

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3.3

casing oscillator/rotator

equipment to drive in or push out casings with great diameters by low-speed rotation and high push/pull force

Note 1 to entry: This equipment can be connected to the undercarriage of the drilling and foundation equipment. Some types of casing oscillator/rotator can be used as standalone equipment, controlled from the operator's position of the drilling and foundation equipment, or by an extra operator at the casing oscillator/rotator. In case of combination with the undercarriage, the drilling and foundation equipment has to be able to resist the reaction forces coming from the torque and the pushing/pulling forces of the casing oscillator/rotator. The movement of the clamp system holding the casing can be intermittent, changing the moving direction after each movement interval or can be a more or less turning movement in one direction.

Note 2 to entry: ISO 11886:____, C.42 and C.43 provide a detailed description of casing oscillator and casing rotator.

3.4

rotary drilling drive

equipment to actuate the rotating drilling stem, which is normally mounted at a leader

Note 1 to entry: Rotary drilling drives are rotating the drill stem continuously in one direction.

3.5

vibrator

equipment to install or extract piling elements by high-frequency oscillation into or out of the ground

Note 1 to entry: The force is generated by vibrations, which have a usual range between 20 Hz and 50 Hz. These vibrations will soften the ground; the weight or pull down or pulling force will move the elements. The vibrations are generated by unbalanced weights, which are driven by hydraulic or electric power. Vibrators can be mounted at the leader of a piling rig or can be free riding at top of the element, suspended by a rope or connected to a cardan/universal joint to the carrier machine.

4 Safety requirements and/or protective/risk reduction measures

4.1 General

The final combination of interchangeable auxiliary equipment with drilling and foundation equipment and/or earth-moving machinery shall fulfil the requirements of ISO 20770-1:____, ISO 20770-2:____, ISO 20770-3:____, ISO 20770-4:____ and ISO 20770-5:____, where applicable.

Interchangeable auxiliary equipment of drilling and foundation equipment shall comply with the requirements of ISO 20770-1:____, except as modified or replaced by the requirements of this part. In addition, interchangeable auxiliary equipment having no mobility nor lifting function, the corresponding clauses of ISO 20770-1:____ do not apply, e.g. 4.7, 4.10.2, 4.16.3, 4.2.3.6.6, 4.2.3.6.7.

NOTE ISO 23224:____^[1] deals with horizontal directional drilling (HDD) machines which would be combination of interchangeable auxiliary equipment and drilling and foundation equipment and/or earth-moving machinery.

4.2 Additional protective measures for interchangeable auxiliary equipment

4.2.1 Impact hammers

A device to control and limit the striking energy of impact type hammers/extractors shall be installed.

The exhaust channel for diesel hammers shall lead to upwards opening.

4.2.2 Casing oscillators/rotators

The controls (including emergency stop) shall stay at the operator's position, or if there is a separate control station, there shall be an additional emergency stop at the operator's position.