

STN	Stroje a zariadenia na ťažbu a spracovanie prírodného kameňa Bezpečnosť Požiadavky na mostové rezacie/frézovacie stroje vrátane verzií numerického riadenia (NC/CNC)	STN EN 16564 27 7946
------------	---	--

Machines and plants for mining and tooling of natural stone - Safety - Requirements for bridge type sawing/milling machines, included numerical control (NC/CNC) versions

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 04/21

Obsahuje: EN 16564:2020

Oznámením tejto normy sa ruší
STN EN 16564 (27 7946) z júna 2015

132320

EUROPEAN STANDARD

EN 16564

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2020

ICS 25.080.20; 25.080.60; 73.120

Supersedes EN 16564:2014

English Version

**Machines and plants for mining and tooling of natural
stone - Safety - Requirements for bridge type
sawing/milling machines, included numerical control
(NC/CNC) versions**

Machines et équipements pour l'exploitation et
l'usinage de pierres naturelles - Sécurité - Prescriptions
relatives aux machines à scier/fraiseuses de type pont,
y compris les versions à commande numérique
(NC/CNC)

Maschinen und Anlagen zur Gewinnung und
Bearbeitung von Naturstein - Sicherheit -
Anforderungen an Brücken-Säge-/Fräsmaschinen
einschließlich numerischer Steuerungsversionen
(NC/CNC)

This European Standard was approved by CEN on 28 September 2020.

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.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN 16564:2020 (E)

Contents	Page
European foreword.....	4
Introduction	6
1 Scope.....	7
2 Normative references.....	7
3 Terms and definitions	10
4 Safety requirements and/or protective measures	16
4.1 General.....	16
4.2 Controls.....	17
4.2.1 Safety and reliability of control system	17
4.2.2 Position of controls.....	17
4.2.3 Starting.....	18
4.2.4 Normal stop	19
4.2.5 Emergency stop.....	19
4.2.6 Operational stop.....	20
4.2.7 Mode selection	20
4.2.8 Failure of any power supply.....	21
4.2.9 Failure of the control circuits	21
4.2.10 Teleservice	22
4.3 Protection against mechanical hazards	22
4.3.1 Transport and installation of machine.....	22
4.3.2 Stability	22
4.3.3 Tool changing	23
4.3.4 Braking tool spindle.....	23
4.3.5 Prevention of access to moving parts and safeguards to minimize the effect of ejection.....	24
4.4 Protection against no mechanical hazards.....	28
4.4.1 Fire.....	28
4.4.2 Noise	28
4.4.3 Electrical hazards.....	29
4.4.4 Ergonomics and handling.....	29
4.4.5 Hydraulic and pneumatic components	29
4.4.6 Electromagnetic compatibility	30
4.4.7 Laser radiation.....	30
4.4.8 Unintended movements.....	30
4.4.9 Isolation.....	30
4.4.10 Maintenance.....	31
5 Information for use	31
5.1 General.....	31
5.2 Signals and warning devices	31
5.3 Marking, signs and written warnings	31
5.4 Instruction handbook.....	32
5.4.1 General.....	32
5.4.2 Operator's manual	32
5.4.3 Maintenance manual.....	35
Annex A (informative) List of significant hazards	37

Annex B (normative) Test for braking function	40
B.1 Conditions for all tests	40
B.2 Unbraked run-down time	40
B.3 Braked run-down time	40
Annex C (normative) Rigid guards on machines - Impact test method.....	41
C.1 General	41
C.2 Test method.....	41
C.2.1 Preliminary remarks.....	41
C.2.2 Testing equipment	41
C.2.2.1 General	41
C.2.2.2 Projectiles.....	41
C.2.2.3 Sampling and supporting the guard under test.....	42
C.2.3 Test procedure	42
C.3 Results	42
C.4 Assessment.....	43
C.5 Test report	43
C.6 Example of propulsion device for impact test.....	43
Annex D (normative) Noise test code.....	44
D.1 Introduction.....	44
D.2 Measurement of the A-weighted emission sound pressure level at the operator's positions or other specified positions.....	44
D.2.1 Basic standards	44
D.2.2 Measurement procedure and positions	44
D.2.3 Measurement uncertainty	45
D.3 Determination of sound power level.....	45
D.3.1 Measurement procedure and positions	45
D.3.2 Measurement uncertainty.....	45
D.4 Installation, mounting and operating conditions for noise emission measurement.....	46
D.5 Information to be recorded and reported.....	46
D.6 Declaration and verification of noise emission values	52
D.6.1 General	52
D.6.2 Examples of a declaration of noise emission values in the instruction handbook for a machine where the largest dimension does not exceed 6 m	53
D.6.3 Example of a declaration of noise emission values in the instruction handbook for a machine where at least one dimension exceeds 6 m.....	54
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered.....	57
Bibliography	61

EN 16564:2020 (E)**European foreword**

This document (EN 16564:2020) 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 May 2021, and conflicting national standards shall be withdrawn at the latest by month year of May 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 16564:2014.

The following major changes were introduced:

- list of the significant hazards has been moved from Clause 4 to Annex A, according to 6.10.3.1 of CEN Guide 414;
- normative references have been modified and updated to Clause 2;
- terms and definitions have been introduced to Clause 3 (e.g. control power on, telecontrol, teleservice);
- requirements related to hand-held control sets have been added or modified to 4.2.2.2;
- requirements related to starting have been added or modified to 4.2.3;
- requirements related to teleservice have been added to 4.2.10;
- requirements related to transport and installation of machine have been added to 4.3.1;
- requirements related to stability have been added to 4.3.2;
- requirements related to prevention of access to moving parts and safeguards to minimize the effect of ejection have been added or modified to 4.3.5;
- requirements related to noise have been added or modified to 4.4.2 and Annex D;
- requirements related to electrical hazards have been added or modified to 4.4.3;
- requirements related to unintended movements have been added to 4.4.8;
- requirements related to information for use have been added or modified to Clause 5;
- Annex ZA has been modified according to the last edition of CEN Guide 414.

This document has been prepared under a standardization request 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.

EN 16564:2020 (E)**Introduction**

This document has been prepared to be a harmonized standard to provide one means of conforming to the essential health and safety requirements of the Machinery Directive and associated EFTA Regulations.

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

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 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.

1 Scope

This document deals with all significant hazards, hazardous situations and events which are relevant to:

- bridge sawing machines;
- bridge sawing and milling machines;
- numerical control bridge sawing/milling machines.

These machines are designed to saw and mill natural stone and engineered/agglomerated stone as defined by EN 14618:2009, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Clause 4).

This document specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards.

This document deals with the foreseeable lifetime of the machinery including the phases of transport, assembly, dismantling, disabling and scrapping.

This document also applies to machines fitted with the following facilities/devices:

- mechanical, pneumatic, hydraulic or vacuum workpiece clamping;
- automatic tool change;
- loading and unloading conveyor system;
- tilting and/or rotating head axis;
- rotating workpiece support(s);
- tilting workpiece support(s) when loading;
- lathe unit;
- undercut grooving unit;
- axes operating in accordance with an NC work programme.

This document does not apply to:

- machines intended for operation in a potentially explosive atmosphere;
- machines operating in severe environmental conditions (e.g. extreme temperatures, corrosive environment);
- machines intended for outdoor operation;
- machines which are manufactured before the date of their publication as EN.

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 166:2001, *Personal eye-protection — Specifications*

EN 16564:2020 (E)

EN 1005-2:2003+A1:2008, *Safety of machinery — Human physical performance — Part 2: Manual handling of machinery and component parts of machinery*

EN 1005-4:2005+A1:2008, *Safety of machinery — Human physical performance — Part 4: Evaluation of working postures and movements in relation to machinery*

EN 14618:2009, *Agglomerated stone — Terminology and classification*

EN 50370-1:2005, *Electromagnetic compatibility (EMC) — Product family standard for machine tools — Part 1: Emission*

EN 50370-2:2003, *Electromagnetic compatibility (EMC) — Product family standard for machine tools — Part 2: Immunity*

EN 60204-1:2018, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2016, mod.)*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 60529:1991/A1:2000, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989/A1:1999)*

EN 60529:1991/A2:2013, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989/A2:2013)*

EN 60825-1:2007, *Safety of laser products — Part 1: Equipment classification and requirements (IEC 60825-1:2007)*

EN 61439-1:2011, *Low-voltage switchgear and controlgear assemblies — Part 1: General rules*

EN 61496-1:2013, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:2012)*

EN 61800-5-2:2017, *Adjustable speed electrical power drive systems — Part 5-2: Safety requirements — Functional (IEC 61800-5-2:2016)*

EN 82079-1:2012, *Preparation of instructions for use — Structuring, content and presentation — Part 1: General principles and detailed requirements (IEC 82079-1:2012)*

EN 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 3744:2010)*

EN ISO 3746:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:2010)*

EN ISO 3747:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering/survey methods for use in situ in a reverberant environment (ISO 3747:2010)*

EN ISO 4413:2010, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413:2010)*

EN ISO 4414:2010, *Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414:2010)*

EN ISO 4871:2009, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN 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 11201:2010)*

EN ISO 11202:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions applying approximate environmental corrections (ISO 11202:2010)*

EN ISO 11204:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions applying accurate environmental corrections (ISO 11204:2010)*

EN ISO 11688-1:2009, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1995)*

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

EN ISO 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2015)*

EN ISO 13850:2015, *Safety of machinery — Emergency stop function — Principles for design (ISO 13850:2015)*

EN ISO 13854:2019, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body (ISO 13854:2017)*

EN ISO 13856-3:2013, *Safety of machinery — Pressure-sensitive protective devices — Part 3: General principles for design and testing of pressure-sensitive bumpers, plates, wires and similar devices (ISO 13856-3:2013)*

EN ISO 13857:2019, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)*

EN ISO 14118:2018, *Safety of machinery — Prevention of unexpected start-up (ISO 14118:2017)*

EN ISO 14119:2013, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection (ISO 14119:2013)*

EN ISO 14120:2015, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards (ISO 14120:2015)*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN