



SLOVENSKI STANDARD

SIST EN 1870-3:2015

01-februar-2015

Nadomešča:

SIST EN 1870-3:2002+A1:2009

Varnost lesnoobdelovalnih strojev - Krožne žage - 3. del: Krožne žage za prečni rez od zgoraj navzdol in kombinirane žage za prečni rez z delovno mizo

Safety of woodworking machines - Circular sawing machines - Part 3: Down cutting cross-cut saws and dual purpose down cutting cross-cut saws/circular saw benches

Sicherheit von Holzbearbeitungsmaschinen - Kreissägemaschinen - Teil 3: Von oben schneidende Kappsägemaschinen und kombinierte Kapp- und Tischkreissägemaschinen

Sécurité des machines pour le travail du bois - Machines à scies circulaires - Partie 3: Tronçonneuses à coupe descendante et tronçonneuses mixtes à coupe descendante/scies à table

Ta slovenski standard je istoveten z: EN 1870-3:2014

ICS:

25.080.60	Strojne žage	Sawing machines
79.120.10	Lesnoobdelovalni stroji	Woodworking machines

SIST EN 1870-3:2015

en,fr,de

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EUROPEAN STANDARD

EN 1870-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2014

ICS 79.120.10

Supersedes EN 1870-3:2001+A1:2009

English Version

Safety of woodworking machines - Circular sawing machines - Part 3: Down cutting cross-cut saws and dual purpose down cutting cross-cut saws/circular saw benches

Sécurité des machines pour le travail du bois - Machines à
scies circulaires - Partie 3: Tronçonneuses à coupe
descendante et tronçonneuses mixtes à coupe
descendante et à scies circulaires à table de menuisier

Sicherheit von Holzbearbeitungsmaschinen -
Kreissägemaschinen - Teil 3: Von oben schneidende
Kappsägemaschinen und kombinierte Kapp- und
Tischkreissägemaschinen

This European Standard was approved by CEN on 11 October 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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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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EN 1870-3:2014 (E)**Foreword**

This document (EN 1870-3:2014) has been prepared by Technical Committee CEN/TC 142 "Woodworking machines - Safety", the secretariat of which is held by UNI.

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 2015, and conflicting national standards shall be withdrawn at the latest by May 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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.

The main modifications compared to EN 1870-3:2001+A1:2009 relate to the introduction of performance levels (PL) for control systems and to the following items:

- clarification of controls positions in 5.2.2;
- addition of PL where missing;
- addition of requirements on mode selection in 5.2.7 and on prevention of automatic restart in 5.2.8;
- deletion of material requirements on flanges in 5.3.3.3;
- addition of requirements on braking system in 5.3.4;
- up-date of references;
- addition of requirements in 5.4.3 on chips and dust performances;
- limitation of tightening torque for riving knife mounting screws in Annex B.

Organisations contributing to the preparation of this European Standard include the European Committee of Woodworking Machinery Manufacturers Association "EUMABOIS".

EN 1870, Safety of woodworking machines — Circular sawing machines, consists of the following parts:

- Part 3: Down cutting cross-cut saws and dual purpose down cutting cross-cut saws/circular saw benches;
- Part 4: Multi-blade rip sawing machines with manual loading and/or unloading;
- Part 5: Circular saw benches/up-cutting cross-cut sawing machines;
- Part 6: Circular sawing machines for firewood and dual purpose circular sawing machines for firewood/circular saw benches, with manual loading and/or unloading;
- Part 7: Single blade log sawing machines with integrated feed table and manual loading and/or unloading;
- Part 8: Single blade edging circular rip sawing machines with power driven saw unit and manual loading and/or unloading;

- Part 9: Double blade circular sawing machines for cross-cutting with integrated feed and with manual loading and/or unloading;
- Part 10: Single blade automatic and semi-automatic up-cutting cross-cut sawing machines;
- Part 11: Semi-automatic horizontal cross-cut sawing machines with one saw unit (radial arm saws);
- Part 12: Pendulum cross-cut sawing machines;
- Part 13: Horizontal beam panel sawing machines;
- Part 14: Vertical panel sawing machines;
- Part 15: Multi-blade cross-cut sawing machines with integrated feed of the workpiece and manual loading and/or unloading;
- Part 16: Double mitre sawing machines for V-cutting;
- Part 17: Manual horizontal cutting cross-cut sawing machines with one saw unit (manual radial arm saws);
- Part 18: Dimension saws;
- Part 19: Circular saw benches (with and without sliding table) and building site saws.

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.

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EN 1870-3:2014 (E)**Introduction**

This document has been prepared to be a harmonized standard to provide one means of conforming to the essential safety requirements of the Machinery Directive, and associated EFTA regulations. This European Standard is a type "C" standard as defined in EN ISO 12100:2010.

The extent to which hazards are covered is indicated in the scope of this document.

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

The requirements of this document are directed to manufacturers and their authorized representatives of down cutting cross-cut saws and dual purpose down cutting cross-cut saws/circular saw benches. They are also useful for designers.

This document also includes information to be provided by the manufacturer to the user.

Common requirements for tooling are given in EN 847-1:2013.

Electrically driven machines excluded by the scope of this document are covered by the requirements of EN 61029-1:2000, EN 61029-2-9:2009 and EN 61029-2-11:2009.

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1 Scope

This European Standard deals with all significant hazards, hazardous situations and events as listed in Clause 4 which are relevant to down cutting cross-cut saws and dual purpose down cutting cross-cut saws/circular saw benches, herein after referred to as “machines”, designed to cut solid wood, chipboard, fibreboard, plywood and also these materials where they are covered with plastic edging and/or plastic/light alloy laminates when they are used as intended and under the conditions foreseen by the manufacturer including reasonably foreseeable misuse.

NOTE 1 For the definition of down cutting cross-cut saws and dual purpose down cutting cross-cut saws/circular saw benches, see 3.2.2, 3.2.3 and 3.2.4, and for the definition of displaceable machine, see 3.2.8.

This document does not apply to:

- machines for cross cutting logs;
- hand-held motor-operated electric tools or any adaptation permitting their use in a different mode, e.g. bench mounting;

NOTE 2 Hand-held motor-operated electric tools and saw benches to form an integrated whole with a hand-held motor-operated electric tools are covered by EN 60745-1:2009 together with EN 60745-2–5:2010.

- transportable machines set up on a bench or a table similar to a bench, which are intended to carry out work in a stationary position, capable of being lifted by one person by hand i.e. maximum mass ≤ 25 kg.

NOTE 3 Transportable motor-operated electric tools are covered by the requirements of EN 61029-1:2009 together with EN 61029-2–9:2009 and EN 61029-2–11:2009.

This document is not applicable to down cutting cross-cut saws and dual purpose down cutting cross-cut saws/circular saw benches which are manufactured before the date of its publication as European Standard.

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 574:1996+A1:2008, *Safety of machinery - Two-hand control devices - Functional aspects - Principles for design*

EN 614-1:2006+A1:2009, *Safety of machinery - Ergonomic design principles - Part 1: Terminology and general principles*

EN 847-1:2013, *Tools for woodworking - Safety requirements - Part 1: Milling tools, circular saw blades*

EN 894-1:1997+A1:2008, *Safety of machinery - Ergonomics requirements for the design of displays and control actuators - Part 1: General principles for human interactions with displays and control actuators*

EN 894-2:1997+A1:2008, *Safety of machinery - Ergonomics requirements for the design of displays and control actuators - Part 2: Displays*

EN 894-3:2000+A1:2008, *Safety of machinery - Ergonomics requirements for the design of displays and control actuators - Part 3: Control actuators*

EN 953:1997+A1:2009, *Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards*

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EN 1005-1:2001+A1:2008, *Safety of machinery - Human physical performance - Part 1: Terms and definitions*

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

EN 1005-3:2002+A1:2008, *Safety of machinery - Human physical performance - Part 3: Recommended force limits for machinery operation*

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 1837:1999+A1:2009, *Safety of machinery - Integral lighting of machines*

EN 1870-19:2013, *Safety of woodworking machines - Circular sawing machines - Part 19: Circular saw benches (with and without sliding table) and building site saws*

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 50525-2-21:2011, *Electric cables - Low voltage energy cables of rated voltages up to and including 450/750 V (Uo/U) - Part 2-21: Cables for general applications - Flexible cables with crosslinked elastomeric insulation*

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EN 60204-1:2006 ¹⁾, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005, modified)*

EN 60439-1:1999 ²⁾, *Low-voltage switchgear and controlgear assemblies — Part 1: Type-tested and partially type-tested assemblies (IEC 60439-1:1999 + A1:2004)*

EN 60529:1991 ³⁾, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989 + A1:1999)*

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

EN 61310-1:2008, *Safety of machinery - Indication, marking and actuation - Part 1: Requirements for visual, acoustic and tactile signals (IEC 61310-1:2007)*

EN 61496-2:2013, *Safety of machinery - Electro-sensitive protective equipment - Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs) (IEC 61496-2:2013)*

EN 61800-5-2:2007, *Adjustable speed electrical power drive systems - Part 5-2: Safety requirements – Functional (IEC 61800-5-2:2007)*

EN ISO 3743-1:2010, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for small movable sources in reverberant fields - Part 1: Comparison method for a hard-walled test room (ISO 3743-1:2010)*

¹⁾ EN 60204-1:2006 is amended by EN 60204-1:2006/A1:2009, based on IEC 60204-1:2005/A1:2008.

²⁾ EN 60439-1:1999 is impacted by EN 60439-1:1999/A1:2004.

³⁾ EN 60529:1991 is impacted by EN 60529:1991/A1:2000.

EN ISO 3743-2:2009, *Acoustics - Determination of sound power levels of noise sources using sound pressure - Engineering methods for small, movable sources in reverberant fields - Part 2: Methods for special reverberation test rooms (ISO 3743-2:1994)*

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 3745:2012, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Precision methods for anechoic rooms and hemi-anechoic rooms (ISO 3745:2012)*

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 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 9614-1:2009, *Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 1: Measurement at discrete points (ISO 9614-1:1993)*

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 13849-1:2008, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2006)*

EN ISO 13850:2008, *Safety of machinery - Emergency stop - Principles for design (ISO 13850:2006)*

EN ISO 13856-1:2013, *Safety of machinery - Pressure-sensitive protective devices - Part 1: General principles for design and testing of pressure-sensitive mats and pressure-sensitive floors (ISO 13856-1:2013)*

EN ISO 13856-2:2013, *Safety of machinery - Pressure-sensitive protective devices - Part 2: General principles for design and testing of pressure-sensitive edges and pressure-sensitive bars (ISO 13856-2:2013)*

EN ISO 13857:2008, *Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)*

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

ISO 7960:1995, *Airborne noise emitted by machine tools — Operating conditions for woodworking machines*

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ISO 14118:2000, *Safety of machinery — Prevention of unexpected start-up*

3 Terms and definitions

3.1 General

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 and the following apply.

3.2 Terms and definitions

3.2.1

cross-cutting

operation of cutting across the grain of a wooden workpiece

3.2.2

down cutting cross-cut saw

machine where the saw blade spindle is situated above the workpiece when the saw blade is in its rest position and where the saw blade moves down through the workpiece during the cut (see Figure 1)

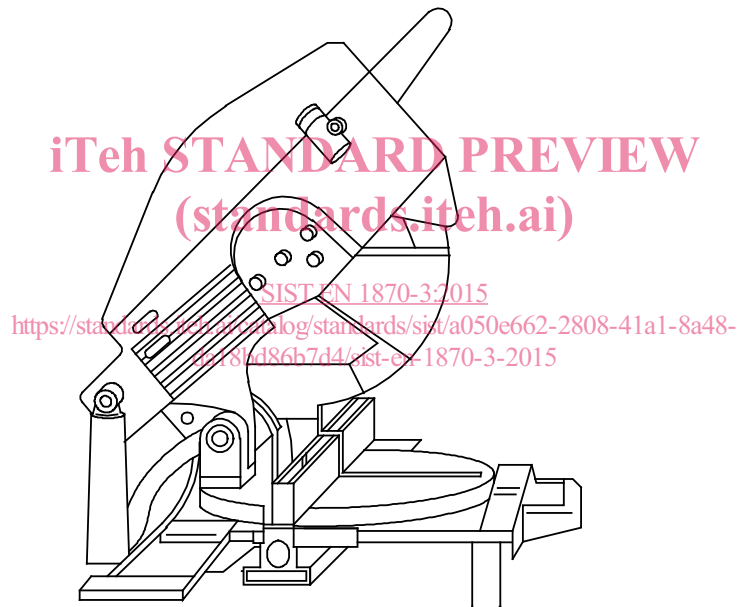


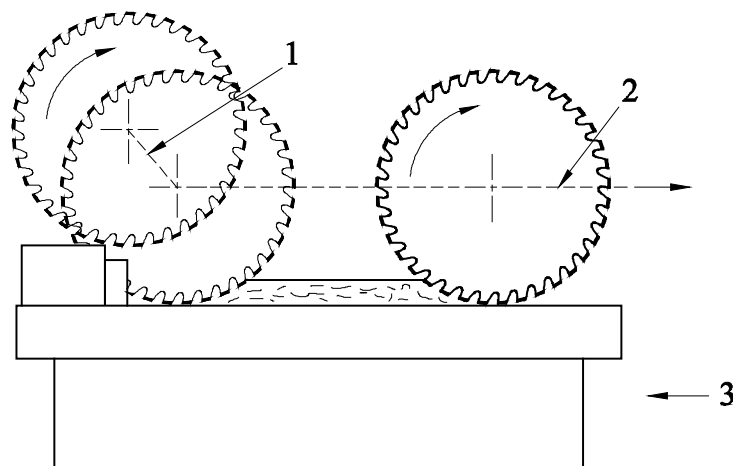
Figure 1 — Example of a down cutting cross-cut saw

3.2.3

down cutting and horizontal cutting cross-cut saw

machine where the saw unit is fed by hand and the workpiece is manually loaded and/or unloaded, and that can be used in two modes:

- a) as a down cutting cross cut saw (see 3.2.2);
- b) as a down cutting cross cut saw with an additional horizontal cutting stroke where the saw unit is pulled forward through wide work (see Figure 2)

**Key**

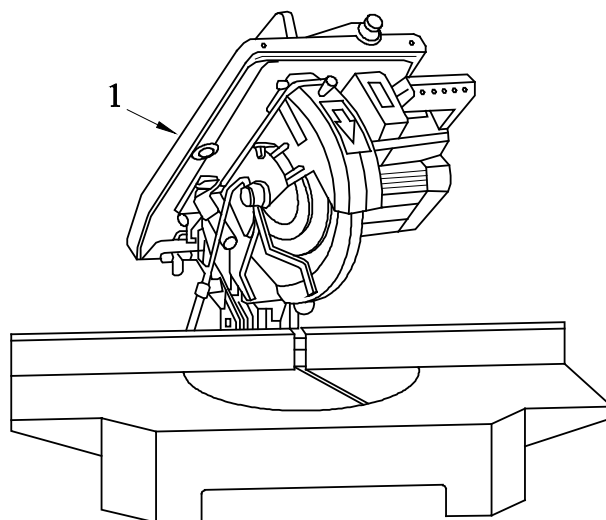
- 1 down cutting stroke
- 2 horizontal cutting stroke
- 3 operators side

Figure 2 — Diagrammatic illustration of a down cutting and horizontal cutting cross-cut saw (guarding not shown)

3.2.4

dual purpose down cutting cross-cut saw/circular saw bench machine which may be used in the following modes (see Figure 3):

- a) as a down cutting cross cut saw; [SIST EN 1870-3:2015](https://standards.iteh.ai/catalog/standards/sist/a050e662-2808-41a1-8a48-1870-19:2013-1/1870-3-2015)
- b) as a circular saw bench (see EN 1870-19:2013, 3.1) [1870-3-2015](https://standards.iteh.ai/catalog/standards/sist/a050e662-2808-41a1-8a48-1870-19:2013-1/1870-3-2015)

**Key**

- 1 table for use when saw unit is lowered into the circular saw bench mode

Figure 3 — Example of a dual purpose down cutting cross-cut saw/circular saw bench

EN 1870-3:2014 (E)**3.2.5****manual cross-cut saw**

machine where the saw unit is fed by hand and the workpiece is manually positioned for cutting to length

Note 1 to entry: This type of machine is not covered by Annex IV of the Machinery Directive.

3.2.6**semi-automatic cross-cut saw**

machine where the saw unit has integrated feed which is initiated manually and the workpiece is positioned manually or by means of a positioning mechanism for cutting to length

Note 1 to entry: This type of machine is covered by Annex IV of the Machinery Directive.

3.2.7**automatic cross-cut saw**

machine where the saw unit has integrated feed, the workpiece is manually loaded and/or unloaded, automatically positioned for cutting to pre-selected lengths and where the integrated feed of the saw unit is initiated automatically

Note 1 to entry: This type of machine is not covered by Annex IV of the Machinery Directive.

3.2.8**displaceable machine**

machine which is located on the floor, stationary during use and equipped with a device, normally wheels, which allow it to be moved between locations

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3.2.9**machine actuator**

power mechanism used to effect motion of the machine

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3.2.10**hand feed**

manual holding and/or guiding of the workpiece or of a machine element incorporating a tool (hand feed includes the use of a hand operated carriage on which the workpiece is placed manually or clamped and the use of a de-mountable power feed unit)

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Note 1 to entry: The words in brackets are not applicable to this machine.

3.2.11**integrated feed**

feed mechanism for the workpiece or tool which is integrated with the machine and where the workpiece or machine element with incorporated tool are held and controlled mechanically during the machining operation

3.2.12**cutting area of the saw blade**

area where the saw blade can be involved in the cutting process

3.2.13**non-cutting area of the saw blade**

area of the saw blade where the saw blade is not involved in the cutting process

3.2.14**ejection**

unexpected movement of the workpiece or parts of it or part of the machine from the machine during processing

3.2.15**kickback**

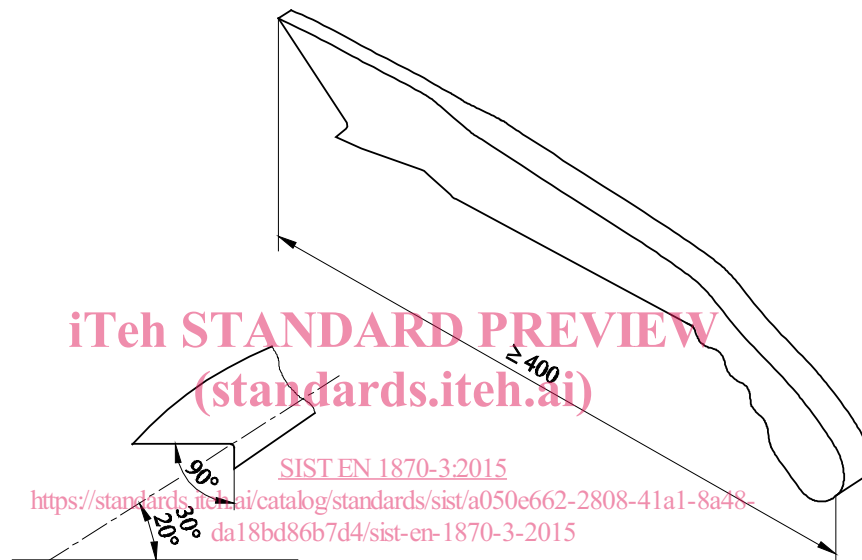
particular form of ejection and is describing the unexpected movement of the workpiece or parts of it or parts of the machine opposite to the direction of feed during processing

3.2.16**anti kick-back device**

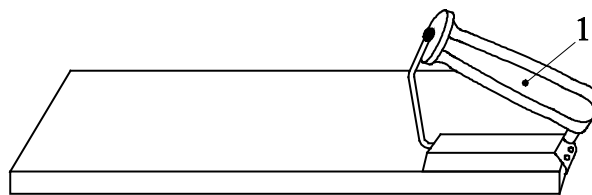
device which either reduces the possibility of kickback or arrests the motion during kickback of the workpiece or parts of it or parts of the machine

3.2.17**safety appliance**

additional device which is not an integral part of the machine but which assists the operator in the safe feeding of the workpiece, e.g. as illustrated in Figure 4



a) Example of push stick



b) Example of push block

Key

1 handle

Figure 4 — Example of push stick and push block (for dual purpose down cutting cross-cut saws/circular saw benches in the saw bench mode)

3.2.18**run-down time**

time elapsed from the actuation of the stop control device up to spindle standstill