SLOVENSKI STANDARD
SIST EN 1870-3:2002+A1:2009

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Varnost lesnoobdelovalnih strojev - Krožne žage - 3. del: Ļelilne žage za rezanje od zgoraj navzdol in kombinirane ļelilne in krožne žage 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 scier circulaires - Partie 3: Tronçonneuses à coupe descendante et tronçonneuses mixtes à coupe descendante et scies à table

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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

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This European Standard was approved by CEN on 29 June 2001 and includes Amendment 1 approved by CEN on 27 December 2008.

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Contents

Foreword 3

0 Introduction 5

1 Scope 5

2 Normative references 6

3 Terms and definitions 8

4 [A1] List of significant hazards [A1] 13

5 Safety requirements and/or protective measures 16
5.1 Controls 16
5.2 Protection against mechanical hazards 21
5.3 Protection against non-mechanical hazards 42

6 Information for use 46
6.1 Signals and warning devices 46
6.2 Marking 46
6.3 Instruction handbook 47

Annex A (normative) Dimensional tolerances of saw spindles 51

Annex B (normative) Riving knife mounting strength test 52

Annex C (normative) Riving knife lateral stability test 53

Annex ZA (informative) [A1] Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC [A1] 55

Annex ZB (informative) [A1] Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC [A1] 56

Bibliography 57

Foreword

This document (EN 1870-3:2001+A1:2009) 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of an identical text or by endorsement, at the latest by August 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

This document includes Amendment 1, approved by CEN on 2008-12-27.

This document supersedes EN 1870-3:2001.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ⟩A1⟨ ⟩A1⟨.

This European Standard 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).

⟩A1⟨ For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. ⟩A1⟨

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

Annexes A, B and C are normative, the ⟩A1⟨ Annexes E, ZA and ZB ⟩A1⟨ are informative.

⟩A1⟨ EN 1870 *Safety of woodworking machines — Circular sawing machines* consists of the following parts:

Part 1: Circular saw benches (with and without sliding table), dimension saws and building site saws

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 and 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) A1

The European Standards produced by CEN/TC142 are particular to woodworking machines and complement the relevant type A and type B Standards on the subject of general safety (see introduction of A1 EN ISO 12100-1:2003 A1 for a description of type A, type B and type C standards).

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

0 Introduction

This European Standard has been prepared to be a harmonised 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 [A1] EN ISO 12100-1:2003 [A1].

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

The requirements of this European Standard concern designers, manufacturers, suppliers and importers of down cutting cross-cut saws and dual purpose down cutting cross -cut saws/circular saw benches.

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

Common requirements for tooling are given in [A1] EN 847-1:2005 [A1].

Electrically driven machines excluded by the scope of this European Standard are covered by the requirements of [A1] EN 61029-1:2000 [A1], [A1] EN 61029-2-9 [A1] and [A1] EN 61029-2-11 [A1].

1 Scope

[A1] This document deals with the 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. [A1]

[A1] 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, 3.3 and 3.4 and for the definition of displaceable machine see 3.8. [A1]

This [A1] document [A1] does not apply to:

— machines for cross cutting logs;

— [A1] hand-held motor-operated electric tools or any adaptation permitting their use in a different mode, i.e. bench mounting; [A1]

[A1] 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 60745-1:2003 together with EN 60745-2-5:2003. [A1]

— [A1] 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. [A1]

[A1] NOTE 3 Transportable motor-operated electric tools are covered by the requirements of EN 61029-1:2000 together with EN 61029-2-1:2002. [A1]

[A1] *deleted text* [A1]

For Computer Numerically Controlled (CNC) machines this [A1] document [A1] does not cover hazards related to Electro-Magnetic Compatibility (EMC).

[A1] 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 EN. [A1]

This European Standard is primarily directed at machines which are manufactured after the date of issue of this European Standard.

2 Normative references

The following referenced documents are indispensable for the application 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.

〚A1〛 *deleted text* 〈A1〉

EN 574:1996, *Safety of machinery — Two hand control devices — Functional aspects, principles for design*

〚A1〛 EN 614-1:2006, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles* 〈A1〉

〚A1〛 EN 847-1:2005 〈A1〉, *Tools for woodworking — Safety requirements — Part 1: Milling tools and circular saw blades*

〚A1〛 EN 894-1:1997, *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, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 2: Displays*

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

〚A1〛 *deleted text* 〈A1〉

EN 983:1996, *Safety of machinery — Safety requirements for fluid power systems and their components — Pneumatics*

〚A1〛 EN 1005-1:2001, *Safety of machinery — Human physical performance — Part 1: Terms and definitions*

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

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

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

EN 1037:1995, *Safety of machinery — Prevention of unexpected start-up* 〈A1〉

〚A1〛 *deleted text* 〈A1〉

EN 1088:1995, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

EN 1760-1:1997, *Safety of machinery — Pressure sensitive protective devices — Part 1: General principles for the design and testing of pressure sensitive mats and pressure sensitive floors*

EN 1760-2:2000, *Safety of machinery — Pressure sensitive protective devices — Part 2: General principles for the design and testing of pressure sensitive edges and pressure sensitive bars*

〚A1〛 EN 1870-1:2007 〈A1〉, *Safety of woodworking machines — Circular sawing machines — Part 1: Circular saw benches (with and without sliding table) and dimension saws*

〚A1〛 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* 〚A1〛

〚A1〛 EN 60204-1:2006 〚A1〛, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements* 〚A1〛 *(IEC 60204-1:2005, modified)* 〚A1〛

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

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

〚A1〛 EN 60825-1:2007 〚A1〛, *Safety of laser products — Part 1: Equipment classification, requirements and user's guide* 〚A1〛 *(IEC 60825-1:2007)* 〚A1〛

〚A1〛 EN 60947-4-1:2001 〚A1〛, *Low voltage switchgear and controlgear — Part 4: Electromechanical contactors and motor starters — Section 1: Electromechanical contactors and motor starters* 〚A1〛 *(IEC 60947-4-1:2000)* 〚A1〛

〚A1〛 EN 60947-5-1:2004 〚A1〛, *Low-voltage switchgear and controlgear — Part 5-1: Control circuit devices and switching elements — Electromechanical control circuit devices* 〚A1〛 *(IEC 60947-5-1:2003)* 〚A1〛

〚A1〛 EN 61029-1:2000 〚A1〛, *Safety of transportable motor operated electric tools — Part 1: General requirements* 〚A1〛 *(IEC 61029-1:1990, modified)* 〚A1〛

〚A1〛 EN 61029-2-9 〚A1〛, *Safety of transportable motor operated electric tools — Part 2-9: Particular requirements for mitre saws (IEC 1029-2-9:1995, modified)*

〚A1〛 EN 61029-2-11 〚A1〛, *Safety of transportable motor operated electric tools —* 〚A1〛 *Part 2-11: Particular requirements for combined mitre and bench saws (IEC 61029-2-11:2001, modified)* 〚A1〛

〚A1〛 EN 61310-1:2008, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, auditory and tactile signals (IEC 61310-1:2007)* 〚A1〛

〚A1〛 CLC/TS 61496-2:2006 〚A1〛, *Safety of machinery — Electro-sensitive protective equipment -* 〚A1〛 *Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs) (IEC 61496-2:2006)* 〚A1〛

EN ISO 3743-1:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering methods for small, moveable sources in reverberant fields — Part 1: Comparison method for hard walled test rooms (ISO 3743-1:1994)*

EN ISO 3743-2:1996, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering methods for small, moveable sources in reverberant fields — Part 2: Method for special reverberation test rooms (ISO 3743-2:1994)*

EN ISO 3744:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essentially free field over a reflecting plane (ISO 3744: 1994)*

〚A1〛 EN ISO 3745:2003, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Precision methods for anechoic and semi-anechoic rooms (ISO 3745:2003)* 〚A1〛

EN ISO 3746:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:1995)*

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

EN ISO 9614-1:1995, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 1: Measurement at discrete points (ISO 9614-1:1993)*

EN ISO 11202:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a workstation and at other specified positions — Survey method in situ (ISO 11202:1995)*

EN ISO 11204:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a workstation and at other specified positions — Method requiring environmental corrections (ISO 11204: 1995)*

EN ISO 11688-1:1998, *Acoustics —- Recommended practice for the design of low noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1995)*

〚A1〛 EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)* 〈A1〛

〚A1〛 EN ISO 13849-1:2008, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2006)* 〈A1〛

〚A1〛 EN ISO 13850:2006, *Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)* 〈A1〛

〚A1〛 EN ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)* 〈A1〛

〚A1〛 *deleted text* 〈A1〛

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

〚A1〛 HD 21.1 S4:2002, *Cables of rated voltages up to and including 450/750 V and having thermoplastic insulation — Part 1: General requirements* 〈A1〛

〚A1〛 HD 22.1 S4:2002, *Cables of rated voltages up to and including 450/750 V and having cross-linked insulation — Part 1: General requirements* 〈A1〛

〚A1〛 HD 22.4 S4:2004, *Cables of rated voltages up to and including 450/750 V and having crosslinked insulation — Part 4: Cords and flexible cables* 〈A1〛

3 Terms and definitions

In addition to the terms and definitions of 〚A1〛 EN ISO 12100-1:2003 〈A1〛 for the purposes of this European Standard, the following definitions apply:

3.1
cross-cutting
operation of cutting across the grain of a wooden workpiece

3.2
down cutting cross-cut saw
machine where the sawblade spindle is situated above the workpiece when the sawblade is in its rest position. The sawblade moves down through the workpiece during the cut. (see Figure 1)

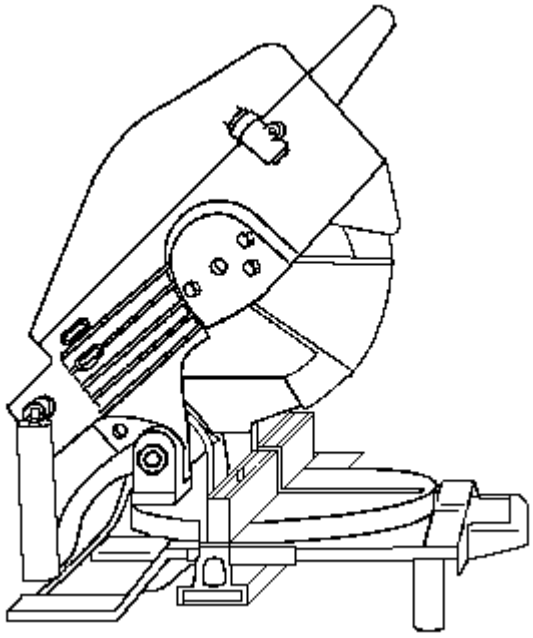
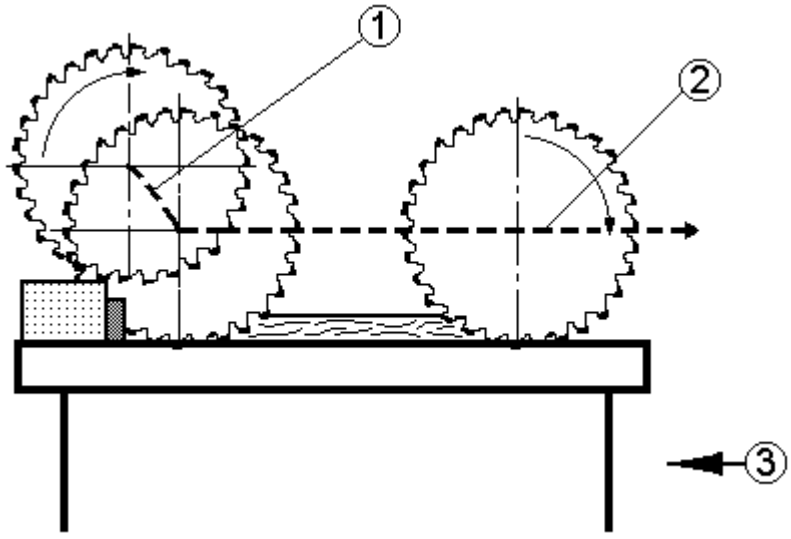


Figure 1 — Example of a down cutting cross-cut saw

3.3
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. The machine can be used in two modes:

a) as a down cutting cross cut saw (see 3.2);

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)



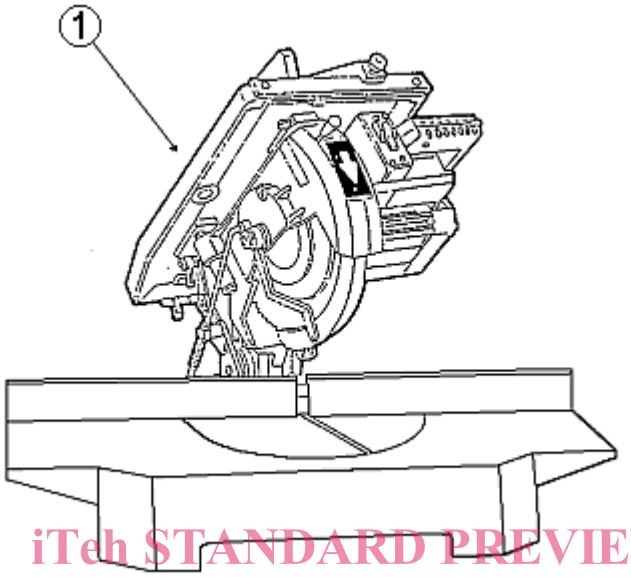
Key
1 Down cutting stroke
2 Horizontal cutting stroke
3 Operators side

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

3.4
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;

b) as a circular saw bench (see 3.1.1 of [A1] EN 1870-1:2007 [A1])



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

3.5
manual cross-cut saw
machine where the saw unit is fed by hand and the workpiece is manually positioned for cutting to length.

NOTE This type of machine is not covered by annex IV of the Machinery Directive

3.6
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 This type of machine is covered by annex IV of the Machinery Directive

3.7
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 This type of machine is not covered by annex IV of the Machinery Directive

3.8
[A1] displaceable machine [A1]
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

3.9
machine actuator
power mechanism used to effect motion of the machine

3.10
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)

NOTE The words in brackets are not applicable to this machine.

3.11
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

3.12
cutting area of the sawblade
area where the sawblade can be involved in the cutting process

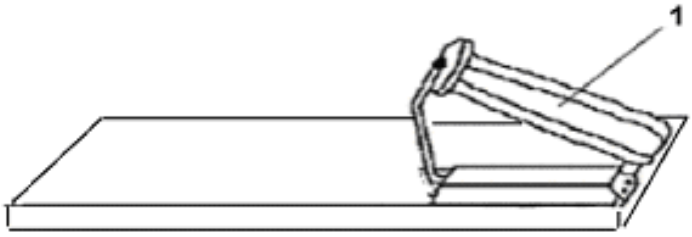
3.13
non-cutting area of the sawblade
area of the sawblade where the sawblade is not involved in the cutting process

3.14
ejection
unexpected movement of the workpiece or parts of it or part of the machine from the machine during processing

3.15
kickback
a 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

3.16
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

3.17
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



Key

1 handle

Figure 4b): Example of push block

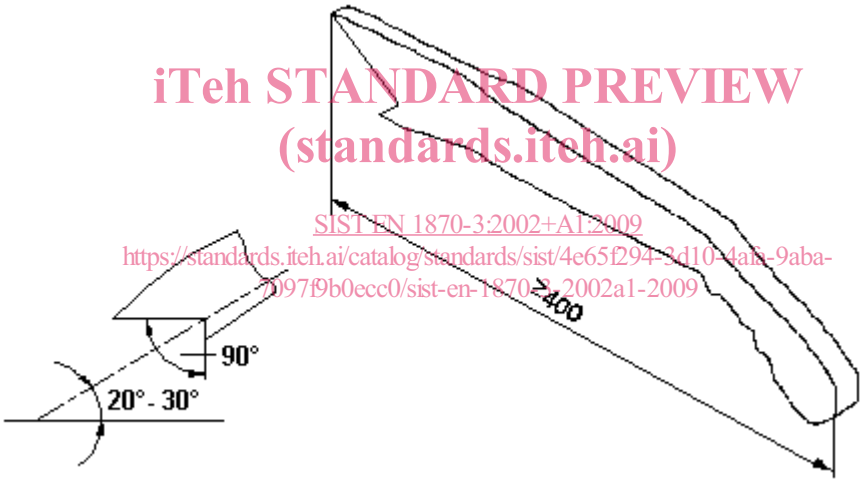


Figure 4a): Example of push stick

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)

3.18
run-down time
time elapsed from the actuation of the stop control device up to spindle standstill

3.19
manual loading of power fed machines
operation, where the workpiece is presented by the operator directly to the machine integrated feed, e.g. rotating feed rollers, travelling table or reciprocating carriage; i.e. for which there is no intermediate loading device to receive and transfer the workpiece from the operator to the integrated feed

3.20
manual unloading of power fed machines
operation, where the workpiece is removed by the operator directly from the machine out-feed; i.e. for which there is no intermediate unloading device to receive and transfer the workpiece from the machine out-feed to the operator

3.21
[A1] information from the supplier [A1]
statements, sales literature, leaflets or other documents where the manufacturer (or supplier) declares either the characteristics or the compliance of the material or product to a relevant standard

4 [A1] List of significant hazards [A1]

[A1] This clause contains the significant hazards, hazardous situations and events (see EN 1050:1996) as far as they are dealt with in this document, identified by risk assessment as significant for the machines as defined in the scope and which require action to eliminate or reduce the risk. This document deals with these significant hazards by defining safety requirements and/or measures or by reference to relevant standards.

These hazards are listed in Table 1 in accordance with Annex A of EN 1050:1996. [A1]