



SLOVENSKI STANDARD
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Safety of woodworking machines - Circular sawing machines - Part 10: Single blade automatic and semi-automatic up-cutting cross-cut sawing machines

Sicherheit von Holzbearbeitungsmaschinen - Kreissägemaschinen - Teil 10: Von unten schneidende automatische und halbautomatische Kappsägemaschinen mit einem Sägeblatt (Untertischkappkreissägemaschinen)

Sécurité des machines pour le travail du bois - Machines à scier circulaires - Partie 10: Tronçonneuses monolames automatiques et semi-automatiques à coupe ascendante

Ta slovenski standard je istoveten z: EN 1870-10:2003+A1:2009

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25.080.60	Strojne žage	Sawing machines
79.120.10	Lesnoobdelovalni stroji	Woodworking machines

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EUROPEAN STANDARD
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English Version

**Safety of woodworking machines - Circular sawing machines -
Part 10: Single blade automatic and semi-automatic up-cutting
cross-cut sawing machines**

Sécurité des machines pour le travail du bois - Machines à
scier circulaires - Partie 10: Tronçonneuses monolames
automatiques et semi-automatiques à coupe ascendante

Sicherheit von Holzbearbeitungsmaschinen -
Kreissägemaschinen - Teil 10: Von unten schneidende
automatische und halbautomatische Kappsägemaschinen
mit einem Sägeblatt (Untertischkappkreissägemaschinen)

This European Standard was approved by CEN on 1st September 2003 and includes Corrigendum 1 issued by CEN on 20 December 2006 and Amendment 1 approved by CEN on 6 August 2009.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 1870-10:2003+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of an identical text or by endorsement, at the latest by March 2010, and conflicting national standards shall be withdrawn at the latest by March 2010.

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 includes Amendment 1, approved by CEN on 2009-08-06 and Corrigendum 1¹ issued by CEN on 2006-12-20.

This document supersedes EN 1870-10:2003.

The start and finish of text introduced or altered by amendment is indicated in the text by tags $\boxed{A_1}$ $\boxed{A_1}$.

$\boxed{A_1}$ 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 the Machinery Directive.

For relationship with EU Directive(s), (see informative Annexes ZA and ZB, which are integral parts of this document. $\boxed{A_1}$)

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

Annex A is normative and $\boxed{A_1}$ Annexes ZA and ZB are informative $\boxed{A_1}$.

This document includes a Bibliography.

$\boxed{A_1}$ 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

¹ Applicable to the French version only.

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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/TC 142 are particular to woodworking machines and complement the relevant A and B Standards on the subject of general safety (see introduction of ^(A1) EN ISO 12100-1:2003 ^(A1) for a description of A, B and 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.

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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 machinery concerned and the extent to which hazards, hazardous situations and events covered are 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 C type 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 European Standard are directed to manufacturers and their authorised representatives of single blade automatic and semi-automatic up-cutting cross cut sawing machines. It is also useful for designers.

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

Common requirements for tooling are given in ^{A1} EN 847-1:2005 ^{A1}.

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1 Scope

^{A1} This document deals with all significant hazards, hazardous situations and events as listed in Clause 4 which are relevant to single blade automatic and semi-automatic up-cutting cross cut sawing machines with one sawing unit herein after referred to as 'machines' designed to cut solid wood, chipboard, fibreboard, plywood and also these materials when they are covered with plastic edging and/or plastic/light alloy laminates. ^{A1}

Any workpiece positioning equipment fitted to the machine is included in this European Standard.

^{A1} *deleted text* ^{A1}

This European Standard does not apply to machines designed for cross cutting logs.

For Computer Numerically Controlled (CNC) machines this European Standard does not cover hazards related to Electro-Magnetic Compatibility (EMC).

NOTE The requirements of this European Standard apply to all machines whatever their method of control e.g. electromechanical and/or electronic.

This European Standard is primarily directed to machines which are manufactured after the date of publication by CEN.

2 Normative references

^{A1} 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}

^{A1} *deleted text* ^{A1}

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

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Ⓐ EN 847-1:2005 Ⓐ, *Tools for woodworking — Safety requirements — Part 1: Milling tools* Ⓐ, Ⓐ *circular saw blades*

Ⓐ 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* Ⓐ

Ⓐ *deleted text* Ⓐ

EN 982:1996, *Safety of machinery — Safety requirements for fluid power systems and their components — Hydraulics.*

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

Ⓐ 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*

Ⓐ *deleted text* Ⓐ

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 1760-2:2001, *Safety of machinery — Pressure sensitive protection devices — Part 2: General principles for the design and testing of pressure sensitive edges and pressure sensitive bars*

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

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

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

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

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

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

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

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

EN ISO 3743-1:1995, *Acoustics — Determination of sound power levels of noise sources — 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: Methods 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)

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

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)

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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 work station 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 work station 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)

EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology and 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)

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

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

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

Ⓐ₁ 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* Ⓐ₁

Ⓐ₁ 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* Ⓐ₁

3 Terms and definitions

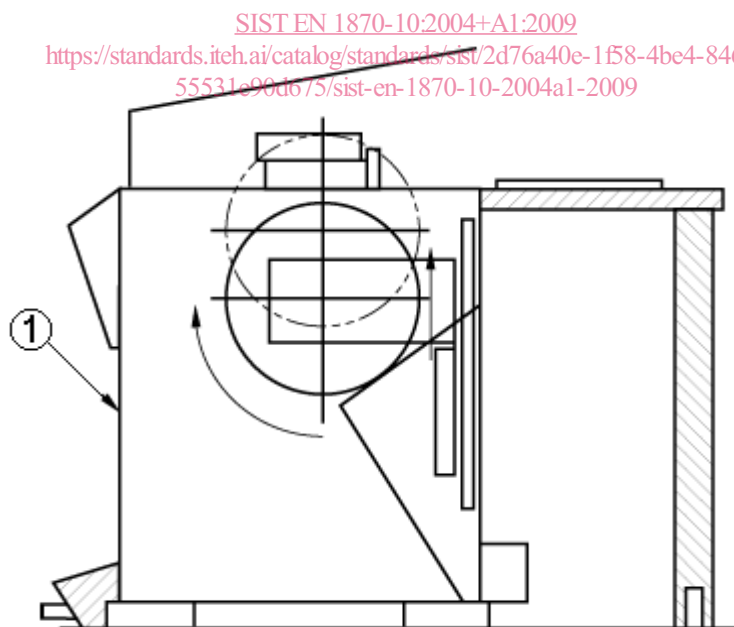
For the purposes of this European Standard the terms and definitions given in Ⓐ₁ EN ISO 12100-1:2003 Ⓐ₁ and the following apply.

3.1**up-cutting cross-cut sawing machine**

machine where the saw blade spindle is situated below the workpiece support when the saw blade is in its rest position. The saw blade moves upwards with possible additional horizontal movement through the workpiece during the cut (see Figure 1)

3.2**semi-automatic cross-cut sawing machine**

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

**Key**

1 Front of the machine

Figure 1 — Example of up-cutting cross cut saw (Diagrammatic)

3.3**automatic cross-cut sawing machine**

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

3.4**stationary machine**

machine designed to be located on or fixed to the floor or other parts of the structure of the premises and to be stationary during use

3.5**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

3.6**machine actuator**

power mechanism used to effect motion of the machine

3.7**hand feed on up-cutting cross-cut sawing machines**

manual holding and/or guiding of the workpiece

3.8**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

3.9**cutting area of the saw blade**

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

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

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

3.11**ejection**

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

3.12**unbraked run-down time**

time elapsed from the actuation of the stop control, but not the braking device (if fitted) up to spindle standstill

3.13**braked run-down time**

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

3.14**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

3.15**manual unloading of power fed machines**

operation where the workpiece is removed by the operator directly from the machine outfeed; i.e. for which there is no intermediate unloading device to receive and transfer the workpiece from the machine outfeed to the operator

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3.16

A1) information from the supplier A1)

statements, sales literature, leaflets or other documents where a manufacturer (supplier) declares either the characteristics of e.g. a material or product or the compliance of the material or product to a relevant standard

4 A1) List of significant hazards A1)

A1) This clause contains all 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.

Table 1 — List of significant hazards

No	Hazards, hazardous situations and hazardous events	EN ISO 12100		Relevant sub-clause of this document
		Part 1: 2003	Part 2: 2003	
1	Mechanical hazards related to:			
	- machine parts or workpieces:			
	a) shape;	4.2	4.2.1, 4.2.2, 5	5.1.2, 5.1.3, 5.2.3, 5.2.6, 5.2.7, 5.2.8
	b) relative location;			5.1.2, 5.2.6.2, 5.2.7.1, 5.2.7.2, 5.3.5
	c) mass and stability (potential energy of elements which may move under the effect of gravity)			5.2.6
	d) mass and velocity (kinetic energy of elements in controlled or uncontrolled motion);			5.2.7.2
	e) mechanical strength			5.2.2, 5.2.3.1
- accumulation of energy inside the machinery:				
	g) liquids and gases under pressure;	4.2	4.10, 5.5.4	5.3.6, 5.3.7
1.1	Crushing hazard	4.2.1		5.2.7, 5.2.8
1.2	Shearing hazard			5.2.7, 5.2.8
1.3	Cutting or severing hazard			5.2.2, 5.2.3, 5.2.4, 5.2.7
1.4	Entanglement hazard			5.2.7
1.5	Drawing-in or trapping hazard			5.2.7
1.6	Impact hazard			5.2.7.2
1.8	Friction or abrasion hazard			5.2.4
1.9	High pressure fluid injection or ejection hazard	5.2.4, 5.3.6, 5.3.7		
2	Electrical hazards due to:			
2.1	Contact of persons with live parts (direct contact)	4.3	4.9, 5.5.4	5.3.4, 5.3.12, 5.3.13

2.2	Contact of persons with parts which have become live under faulty conditions (indirect contact)	4.3	4.9	5.3.4, 5.3.12, 5.3.13
2.4	Electrostatic phenomena	4.3	4.9	5.3.10
4	Hazards generated by noise , resulting in:			
4.1	Hearing loss (deafness), other physiological disorders (loss of balance, loss of awareness)	4.5	4.2.2, 5	5.3.2
4.2	Interference with speech communication, acoustic signals.			5.3.2
6	Hazards generated by radiation			
6.5	Lasers	4.7		5.3.9
7	Hazards generated by materials and substances (and their constituent elements) processed or used by the machinery			
7.1	Hazards from contact with or inhalation of harmful fluids and dusts	4.8	4.3b, 4.4	5.3.3, 6.3
7.2	Fire hazard	4.8	4.4	5.3.1, 5.3.3
8	Hazards generated by neglecting ergonomic principles in machinery design related to:			
8.1	Unhealthy postures or excessive effort	4.9	4.7, 4.8.2, 4.11.12, 5.5.5, 5.5.6	5.1.2, 5.3.5, 6.3
8.2	Hand-arm or foot-leg anatomy	4.9	4.8.3	5.1.2, 5.3.5, 6.3
8.4	Local lighting		4.8.6	6.3
8.6	Human error, human behaviour		4.8, 4.11.8, 4.11.10, 5.5.2, 6	6.3
8.7	Design, location or identification of manual controls		4.8.7, 4.11.8	5.1.2
8.8	Design or location of visual display units		4.8.8, 6.2	5.1.2
9	Combination of hazards		4.11	5.1.6, 5.1.7, 5.1.8, 5.2.7.2, 5.3.3, 5.3.4
10	Unexpected start up, unexpected overrun/overspeed (or any similar malfunction) from:			
10.1	Failure/disorder of the control system		4.11, 5.5.4	5.1.8, 5.1.9, 5.2.3.1
10.2	Restoration of energy supply after an interruption		4.11.4	5.1.8, 5.1.9, 5.2.4, 5.3.7, 5.3.8
10.3	External influences on electrical equipment		4.11.11	5.3.4, 5.3.8
10.6	Errors made by the operator (due to mismatch of machinery with human characteristics and abilities, see 8.6)	4.9	4.8, 4.11.8, 4.11.10, 5.5.2, 6	5.1.1, 5.3.5, 6.3
11	Impossibility of stopping the machine in the best possible conditions		4.11.1, 4.11.3, 5.5.2	5.1.2, 5.1.4, 5.1.5
13	Failure of the power supply		4.11.1, 4.11.4	5.1.8, 5.1.9, 5.2.4, 5.3.7, 5.3.8
14	Failure of the control circuit		4.11, 5.5.4	5.2.1
15	Errors of fitting		4.9	4.7, 6.5
				5.2.3, 5.3.11, 6.1, 6.3
16	Break-up during operation		4.2.2	4.3
				5.2.2