



SLOVENSKI STANDARD

SIST EN 860:2009+A1:2009

01-oktober-2009

Varnost lesnoobdelovalnih strojev - Debelinski skobeljniki za enostransko obdelavo

Safety of woodworking machines - One side thickness planing machines

Sicherheit von Holzbearbeitungsmaschinen - Dickenhobelmaschinen für einseitige Bearbeitung

Sécurité des machines pour le travail du bois - Machines à raboter sur une face

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79.120.10 Lesnoobdelovalni stroji Woodworking machines

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EUROPEAN STANDARD

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Safety of woodworking machines - One side thickness planing machines

Sécurité des machines pour le travail du bois - Machines à raboter sur une face

Sicherheit von Holzbearbeitungsmaschinen - Dickenhobelmaschinen für einseitige Bearbeitung

This European Standard was approved by CEN on 10 May 2007 and includes Amendment 1 approved by CEN on 16 July 2009.

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EN 860:2007+A1:2009 (E)**Foreword**

This document (EN 860:2007+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of an identical text or by endorsement, at the latest by February 2010, and conflicting national standards shall be withdrawn at the latest by February 2010.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 2009-07-16.

This document supersedes ^{A1} EN 860:2007 _{A1}.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ^{A1} _{A1}.

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 the Machinery Directive.

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

Organisation contributing to the preparation of the European Standard include the European Association of Manufacturer of Woodworking Machines "EUMABOIS".

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 EN ISO 12100-1:2003 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.

Introduction

This document 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 document is a type C standard as defined in EN ISO 12100-1:2003.

The machinery concerned and the extent to which hazards, hazardous situations and events are 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 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 authorised representatives of one side thickness planing machines. They are also useful for designers and importers.

This document also includes provisions and examples of information to be provided by the manufacturer to the user.

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

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EN 860:2007+A1:2009 (E)**1 Scope**

This document **A1** specifies all significant **A1** hazards, hazardous situations and events as listed in Clause 4, relevant to stationary and displaceable one side thickness planing machines fitted with an integrated feed and with cutterblock fixed in position and manual loading and unloading of the work-piece, hereinafter referred to as "machines", designed to cut solid wood, chipboard, fibreboard and plywood when they are used as intended and under the conditions foreseen by the manufacturer.

This document does not apply to:

- a) machines set up on a bench or a table similar to a bench, which is intended to carry out work in a stationary position, capable of being lifted by one person by hand;

NOTE 1 Transportable motor-operated electric tools are dealt with in EN 61029-1:2000 together with prEN 61029-2-3:2004.

- b) hand held planers or any adaptation permitting their use in a different mode, i.e. bench mounting;

NOTE 2 Hand-held motor-operated electric tools are dealt with in EN 60745-1:2003 together with EN 60745-2-14:2003.

- c) thickness planing machines where the cutterblock is adjustable for depth of cut setting.

This document is not applicable to one side thickness planing machines fitted with an integrated feed and with cutterblock fixed in position which are manufactured before the date of its publication as EN.

NOTE 3 Machines covered by this European Standard are listed under A3 of Annex IV of the Machinery Directive.

2 Normative references

[SIST EN 860:2009+A1:2009](https://standards.itech.ai/catalog/standards/sist/f61418df-f573-41f6-b7cb-f87926c17649/sist-en-860-2009a1-2009)

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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.

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

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 1005-4:2005, *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*

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

EN 50178:1997, *Electronic equipment for use in power installations*

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 61496-1:2004, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:2004, modified)*
- EN 61508-3:2001, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 3: Software requirements (IEC 61508-3:1998 + Corrigendum:1999)*
- EN 62061:2005, *Safety of machinery — Functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061:2005)*
- EN ISO 3743-1:1995, *Acoustics — Determination of sound power levels of noise sources — Engineering methods for small, movable 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, movable sources in reverberant fields — Part 2: Methods for special reverberant 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 semi-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)*
- 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 the 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, 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)*

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

EN ISO 13849-2:2008 ^{A1}, *Safety of machinery — Safety-related parts of control systems — Part 2: Validation (ISO 13849-2:2003)*

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*

ISO 7568:1986, *Woodworking machines — Thickness planing machines with rotary cutterblock for one-side dressing — Nomenclature and acceptance conditions*

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

3 Terms and definitions**3.1 General**

For the purposes of this document, the terms and definitions given in EN ISO 12100-1:2003 and the following apply:

3.2 Definitions**3.2.1****one side thickness planing machine**

machine designed for cutting off layers of the upper surface of a work-piece by a cutterblock rotating around a horizontal axis, mounted at right angles to the infeed direction above the table designed to position and support the work-piece

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NOTE The cutterblock is a cylindrical shaped complex tool equipped with blades with horizontal straight cutting line that cuts while rotating (see also EN 847-1:2005 for a description of the complex tool). The work-piece is fed into the machine against the direction of the cut

3.2.2**table**

table used to support the work-piece at the machine which may comprise an assembly of rollers, belts or other fixed or moving mechanical elements

3.2.3**cutterblock**

machine component designed to hold the cutting knives or cutting blades

3.2.4**tool**

complex tool as defined in EN 847-1:2005 which consists of the cutterblock, the cutting blades and their fixings

3.2.5**integrated feed**

feed mechanism for the work-piece which is integrated with the machine and where the work-piece is held and controlled mechanically during the machining operation

¹⁾ EN ISO 13849-1:2006 superseded EN 954-1:1996. ^{A1}

3.2.6**loading of a one side thickening machine**

manual placing of the work-piece to an integrated feed device consisting in feed rollers

3.2.7**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 used

3.2.8**displaceable machine**

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

3.2.9**kickback**

particular form of ejection describing the uncontrolled movement of the work-piece or parts of it or parts of the machine opposite to the direction of feed during processing

3.2.10**anti-kickback device**

device which either reduces the possibility of kickback or arrests the motion during kickback of the work-piece parts of it

3.2.11**run-down time**

elapsed time from the actuation of the stop control device to cutterblock stand still

3.2.12**run-up time**

elapsed time from the actuation of the start control device until the spindle reaches the actual speed related to the intended speed

3.2.13**information from the supplier**

statement, sales literature, leaflet or other documents in which a manufacturer (or supplier) declares either the characteristics of e.g. a material or product or the conformity of the material or product to a relevant standard

3.2.14**machine actuator**

power mechanism used to effect motion of the machine

3.2.15**safety related electrical control system (SRECS)**

electrical part of a control system whose failure can result in a hazard

[3.2.4 of EN 62061:2005]

3.2.16**embedded software**

software that is part of the system supplied by the manufacturer and is not accessible for modification by the end user

NOTE 1 Embedded software is also referred to as firmware or system software (3.2.47 of EN 62061:2005).

NOTE 2 Manufacturer means manufacturer of the system.

NOTE 3 For example the operating system of a speed monitoring device.

EN 860:2007+A1:2009 (E)**3.2.17****application software**

software specific to the application specifically implemented for the SRECS

NOTE 1 In general it contains logic sequences, limits and expressions that control the appropriate outputs, decisions necessary to meet SRECS functional requirements (3.2.46 of EN 62061:2005)

NOTE 2 For example, the PLC program to run a machine.

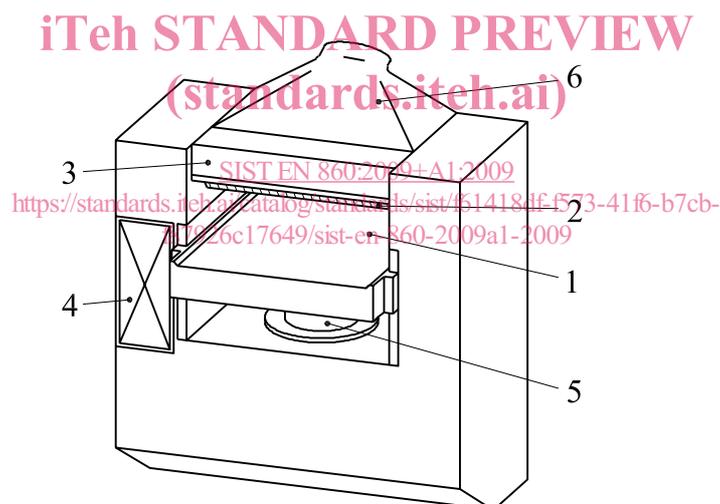
3.2.18**safety related part of a control system (SRP(CS))**

part or subpart(s) of a control system that responds to input signals and generates safety-related output signals.

NOTE The combined safety-related parts of a control system start at the point where the safety-related signals are initiated (including e.g. the actuating cam and the roller of the position switch) and end at the output of the power control elements (including e.g. the main contacts of the contactor). This also includes monitoring systems (3.1 of  EN ISO 13849-1:2008 )

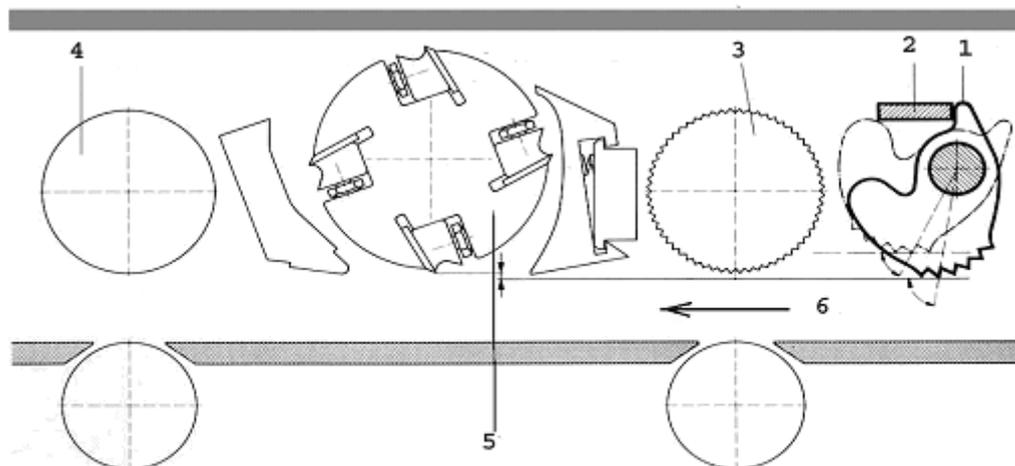
3.3 Terms

The names of the main parts of the machine are shown in Figure 1 and Figure 2.

**Key**

- 1 infeed table
- 2 anti-kickback fingers
- 3 upper guard
- 4 controls panel
- 5 table lifting system
- 6 extraction hood

Figure 1 — Example of a one side thickness planing machine



Key

- 1 anti kickback fingers
- 2 stop for the rotation of the finger
- 3 infeed roller
- 4 outfeed roller
- 5 cutterblock
- 6 direction of feed

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Figure 2 — Example of the internal of a one side thickness planing machine

4 List of significant hazards

This clause contains **A1** all significant **A1** 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 clause of this document
		Part 1: 2003	Part 2: 2003	
1	Mechanical hazards related to: - machine parts or work-pieces due to:	4.2	4.2.1, 4.2.2, 5	5.3.1, 5.3.2, 5.3.3
	a) shape;			5.3.3, 5.3.5
	b) relative location;			5.3.1
	c) mass and stability (potential energy of elements which may move under the effect of gravity);			5.3.7
	d) mass and velocity (kinetic energy of elements in controlled or uncontrolled motion);			5.3.2, 5.3.3, 5.3.7, Annex A
	e) mechanical strength;			
	- accumulation of energy inside the machinery by:			
	f) liquids and gases under pressure	4.2	4.10, 5.5.4	5.4.5, 5.4.6, 5.4.7
1.1	Crushing hazard	4.2.1		5.3.7
1.2	Shearing hazard			5.3.7
1.3	Cutting or severing hazard			5.3.7, 6.3
1.4	Entanglement hazard			5.3.3,
1.5	Drawing-in or trapping hazard			5.3.7
1.6	Impact hazard			5.3.7
1.9	High pressure air ejection hazard			5.4.6
2	Electrical hazards due to:			
2.1	Contact of persons with live parts (direct contact)	4.3	4.9, 5.5.4	5.4.4
2.2	Contact of persons with parts which have become live under faulty conditions (indirect contact)	4.3	4.9	5.4.4
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	5.4.2
4.2	Interference with speech communication, acoustic signals			5.4.2
				<i>to be continued</i>

Table 1 — List of significant hazards (continued)

No	Hazards, hazardous situations and hazardous events	EN ISO 12100		Relevant clause of this document
		Part 1: 2003	Part 2: 2003	
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	5.4.3
7.2	Fire hazard	4.8	4.4	5.4.1
8	Hazards generated by neglecting ergonomic principles in machinery design:			
8.1	Unhealthy postures or excessive effort	4.9	4.7, 4.8.2, 4.11.12, 5.5.5, 5.5.6	5.2.2, 5.4.5, 6.3
8.2	Hand-arm or foot-leg anatomy	4.9	4.8.3	5.2.2, 5.3.6
8.4	Local lighting	4.9	4.8.6	6.3
8.6	Human error, human behaviour	4.9	4.8, 4.11.8, 4.11.10, 5.5.2, 6	6.3
8.7	Design, location or identification of manual controls	4.9	4.8.7, 4.11.8	5.2.2
8.8	Design or location of visual display units		4.8.8, 6.2	5.4.5, 5.4.9, 6.1, 6.2
9	Combination of hazards	4.11		5.2.3, 5.2.5, 5.2.7, 5.3.8, 5.4.9
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	5.2.1, 5.2.2, 5.2.3, 5.2.4, 5.2.5, 5.2.6, 5.2.7
10.2	Uncontrolled restoration of energy supply after an interruption		4.11.4	5.2.6
10.3	External influences on electrical equipment		4.11.11	5.4.4, 5.4.8
10.5	Errors in the software		4.11.7	Annex E
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	5.4.5, 6.3
				<i>to be continued</i>