



SLOVENSKI STANDARD

SIST EN 1870-4:2002

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Safety of woodworking machines - Circular sawing machines - Part 4: Multiblade rip sawing machines with manual loading and/or unloading

Safety of woodworking machines - Circular sawing machines - Part 4: Multiblade rip sawing machines with manual loading and/or unloading

Sicherheit von Holzbearbeitungsmaschinen - Kreissägemaschinen - Teil 4: Mehrblattkreissägemaschinen für Längsschnitt mit Handbeschickung und/oder Handentnahme

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Sécurité des machines pour le travail du bois - Machines à scies circulaires - Partie 4: Scies circulaires à déligner multilames à chargement et/ou déchargement manuel

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79.120.10	Lesnoobdelovalni stroji	Woodworking machines

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1870-4

March 2001

ICS 79.120.10

English version

**Safety of woodworking machines - Circular sawing machines -
Part 4: Multiblade rip sawing machines with manual loading
and/or unloading**

Sécurité des machines pour le travail du bois - Machines à
scies circulaires - Partie 4: Scies circulaires à déligner
multilames à chargement et/ou déchargement manuel

Sicherheit von Holzbearbeitungsmaschinen -
Kreissägemaschinen - Teil 4:
Mehrblattkreissägemaschinen für Längsschnitt mit
Handbeschickung und/oder Handentnahme

This European Standard was approved by CEN on 19 January 2001.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 142 "Woodworking machines - Safety", the secretariat of which is held by BSI.

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 September 2001, and conflicting national standards shall be withdrawn at the latest by September 2001.

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).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this standard.

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

Annex A is normative, the annexes B and ZA are informative.

The European Standards produced by CEN/TC142 are particular to woodworking machines and complement the relevant A and B Standards on the subject of general safety (see introduction of EN 292-1 : 1991 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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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 EN 292-1 : 1991.

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 multiblade rip sawing machines with manual loading and/or unloading.

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

Common requirements for tooling are given in EN 847-1 : 1997.

1 Scope

This European Standard sets out the requirements and/or measures to remove the hazards and limit the risk on multiblade rip sawing machines with manual loading and/or unloading as defined in 3.1, 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.

This European Standard covers the hazards relevant to this machine as stated in clause 4.

This European Standard does not apply to machines with vertical roller feed or vertical chain conveyor feed or machines designed to make the first rip cut on a log.

For Computer Numerically Controlled machines (CNC) this European Standard does not cover hazards related to electromagnetic compatibility (EMC).

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

2 Normative References

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of, any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 292 - 1 : 1991	Safety of machinery - Basic concepts, general principles for design - Part 1 : Basic terminology, methodology
EN 292 - 2 : 1991 EN 292-2/A1 : 1995	Safety of machinery - Basic concepts, general principles for design - Part 2 : Technical principles and specifications
EN 294 : 1992	Safety of machinery - Safety distances to prevent danger zones being reached by the upper limbs
EN 418 : 1992	Safety of machinery - Emergency stop equipment, functional aspects - Principles for design
EN 847-1 : 1997	Tools for woodworking - Safety requirements - Part 1 : Milling tools and circular sawblades
EN 954-1 : 1996	Safety of machinery - Safety-related parts of control systems - Part 1 : General principles for design
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 1088 : 1995	Safety of machinery. - Interlocking devices with and without guard locking - Principles for design and selection
prEN 1760-2 : 1996	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 60204-1 : 1992	Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1 : 1992 modified)
EN 60529 : 1991	Degrees of protection provided by enclosures (IP Code) (IEC 529: 1989)
EN 60825-1 : 1994	Safety of laser products – Part 1: Equipment classification, requirements and user's guide (IEC 825-1 : 1993)

EN 60947-4-1 : 1992	Low voltage switchgear and control gear - Part 4: Contactors and motor starters – Section 1: Electromechanical contactors and motor starters (IEC 60947-4-1 : 1990)
EN 60947-5-1 : 1997	Low voltage switchgear and control gear - Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices (IEC 60947-5-1 : 1997)
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 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 the 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)
ISO 3745 : 1977	Acoustics - Determination of sound power levels of noise sources - Precision methods for anechoic and semi-anechoic rooms
ISO 7960 : 1995	Airborne noise emitted by woodworking machine tools - Operating conditions for woodworking machines
HD 21.1 S3 : 1997	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750V - Part 1: General requirements
HD 22.1 S3 : 1997	Rubber insulated cables of rated voltages up to and including 450/750V - Part 1: General requirements

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3 Terms and definitions

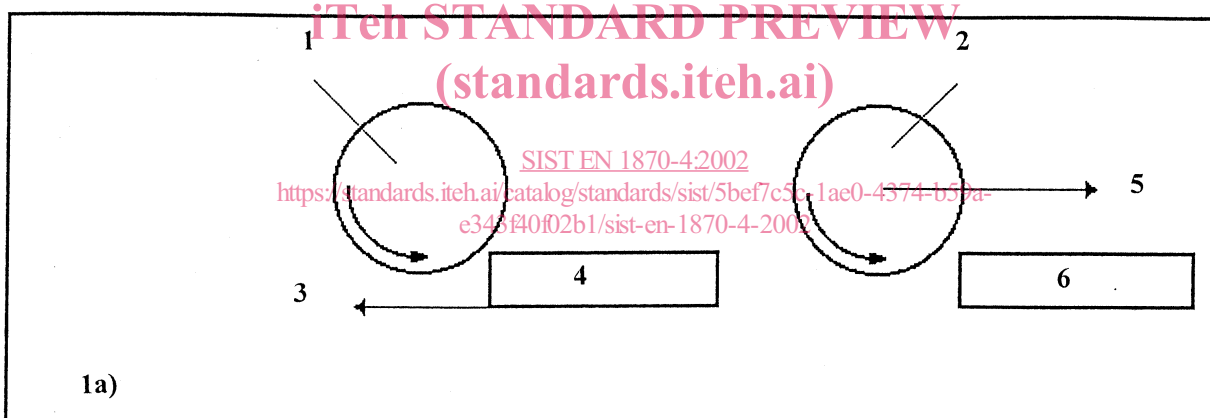
For the purposes of this European Standard the following terms and definitions apply :

3.1 multiblade rip sawing machine

a machine designed to be used with sawblades at different positions on the spindle(s) which are fixed in position during cutting, where the workpiece is fed to the blades by an integrated power feed e.g. rollers, chain conveyor or chain bed, and which has manual loading and/or unloading. The sawblades can be mounted on one or more saw spindle(s) which may be capable of vertical adjustment. The sawblades may be capable of axial adjustment. The sawblade spindle(s) may be arranged so that they are :

- a) all mounted above the workpiece support;
- b) all mounted below the workpiece support;
- c) mounted both above and below the workpiece support.

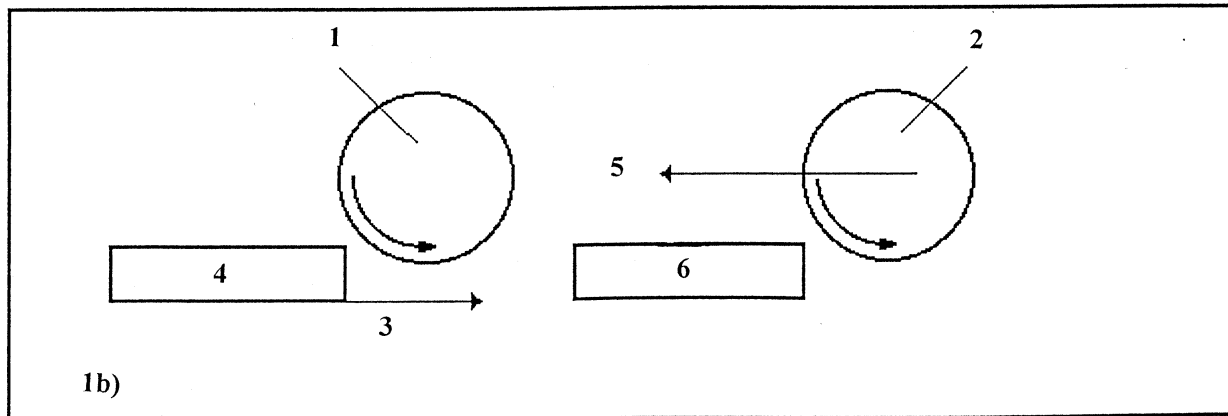
The cutting mode can be ‘against the feed’ (see figure 1a).or ‘climb cutting’ (see figure 1b) or a combination of both.



Key

- | | |
|---|---------------------|
| 1 | Sawblade not moved |
| 2 | Sawblade |
| 3 | Feed |
| 4 | Workpiece |
| 5 | Feed |
| 6 | Workpiece not moved |

Figure 1a) - Cutting against the feed: Direction of the workpiece feed in relation to the sawblade rotation

**Key**

- 1 Sawblade not moved
- 2 Sawblade
- 3 Feed
- 4 Workpiece
- 5 Feed
- 6 Workpiece not moved

Figure 1b) - Climb cutting: Direction of the workpiece feed in relation to the sawblade rotation

3.2 machine actuator

a power mechanism used to effect motion of the machine.

3.3 integrated feed

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

NOTE In the case of machines covered by this European Standard, integrated feed is in the form of rollers, chain conveyor or chain bed. The words in brackets are not applicable to the machine covered by this European Standard.

3.4 stationary machine

a 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 loading the machine

the manual or automatic placing of the workpiece onto a carriage, magazine, lift, hopper, moveable bed, conveyor or the presentation of the workpiece to an integrated feed device.

3.6 cutting against the feed

when the relative direction of the tool to the workpiece is as illustrated in figure 1 a).

3.7 climb cutting

when the relative direction of the tool to the workpiece is as illustrated in figure 1 b).

3.8 ejection

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

3.9 kickback

a particular form of ejection describing the unexpected movement of the workpiece or divided parts of it opposite to the direction of feed during processing.

3.10 anti-kickback fingers

moveable elements at the infeed or the outfeed of the machine to prevent kickback of the workpiece or divided parts of it.

3.11 anti-splinter fingers

moveable elements at the infeed of the machine to prevent the ejection of splinters.

3.12 run-up time

the time elapsed from the actuation of the start control device until the spindle speed reaches the intended speed.

3.13 run-down time

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

3.14 cutting width capacity

the maximum distance between the two outside sawblades, or, where a single sawblade is used, the maximum distance between the sawblade and fence.

3.15 manual loading of power fed machines

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.

3.16 manual unloading of power fed machines

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.

3.17 confirmation

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 List of hazards

This European Standard deals with all hazards listed and relevant to the machines as defined in the scope :

- for significant hazards by defining safety requirements and/or measures or by reference to relevant type B standards;
- for hazards which are not significant e.g. general, minor or secondary hazards by reference to relevant type A or B standards, especially EN 292-1 : 1991 and EN 292-2 : 1991/A1 : 1995.

These hazards are listed in table 1 in accordance with annex A of EN 292-2 : 1991/A1 : 1995.

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Table 1 - List of hazards

Number	Hazard	Relevant clause of this standard
1	Mechanical Hazards (caused for example by : - shape - relative location - mass and stability (potential energy of elements) - mass and velocity (kinetic energy of elements) - inadequacy of the mechanical strength - accumulation of potential energy by : . elastic elements (springs) or . liquid or gases under pressure, or . vacuum of the machine parts or workpieces).	
1.1	Crushing hazard	5.2.5, 5.2.6, 5.2.7
1.2	Shearing hazard	5.2.5, 5.2.6, 5.2.7
1.3	Cutting or severing hazard	5.2.2, 5.2.3, 5.2.4, 5.2.5, 5.2.6, 5.2.7
1.4	Entanglement hazard	5.2.7
1.5	Drawing-in or trapping hazard	5.2.7
1.6	Impact hazard	5.2.2, 5.2.5
1.7	Stabbing or puncture hazard	5.2.2, 5.2.5
1.8	Friction or abrasion hazard	Not relevant
1.9	High pressure fluid injection hazard	5.3.7, 5.3.8
1.10	Ejection of parts (of machinery and processed material/workpieces)	5.2.2, 5.2.5, 5.2.7
1.11	Loss of stability (of machinery and machine parts)	5.2.1
1.12	Slip, trip and fall hazards in relationship with machinery (because of their mechanical nature)	5.2.7
2	Electrical hazards, caused for example by :	
2.1	Electrical contact (direct or indirect)	5.3.4, 5.3.16
2.2	Electrostatic phenomena	Not relevant
2.3	Thermal radiation or other phenomena such as ejection of molten particles, and chemical effects from short circuits, overloads etc.	Not relevant
2.4	External influences on electrical equipment	5.1.1, 5.3.4, 5.3.12
3	Thermal hazards resulting in :	
3.1	Burns and scalds, by a possible contact of persons, by flames or explosions and also by the radiation of heat sources	5.3.1
3.2	Health damaging effects by hot or cold work environment	Not relevant
4	Hazards generated by noise resulting in :	
4.1	Hearing loss (deafness) other physiological disorders (e.g. loss of balance, loss of awareness)	5.3.2
4.2	Interference with speech communication, acoustic signals etc.	5.3.2
5	Hazards generated by vibration (resulting in a variety of neurological and vascular disorders)	Not relevant
6	Hazards generated by radiation, especially by :	
6.1	Electric arcs	Not relevant
6.2	Lasers	5.3.13

(continued)