

SLOVENSKI STANDARD

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Varnost lesnoobdelovalnih strojev - Krožne žage - 10. del: Enolistne zajeralne avtomatske in polavtomatske krožne žage za prečni rez

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)

SIST EN 1870-10:2013

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

Ta slovenski standard je istoveten z: EN 1870-10:2013

ICS:

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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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EUROPÄISCHE NORM

EN 1870-10

May 2013

ICS 79.120.10

Supersedes EN 1870-10:2003+A1:2009

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
scies 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 14 March 2013.

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.

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 CEN-CENELEC Management Centre has the same status as the official versions.

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Contents

Page

| | |
|--|----|
| Foreword..... | 4 |
| Introduction | 6 |
| 1 Scope..... | 7 |
| 2 Normative references..... | 7 |
| 3 Terms and definitions | 9 |
| 3.1 General | 9 |
| 3.2 Definitions | 9 |
| 4 List of significant hazards | 11 |
| 5 Safety requirements and/or measures | 14 |
| 5.1 General | 14 |
| 5.2 Controls..... | 14 |
| 5.2.1 Safety and reliability of control systems..... | 14 |
| 5.2.2 Position of controls..... | 15 |
| 5.2.3 Starting | 18 |
| 5.2.4 Normal stopping..... | 19 |
| 5.2.5 Emergency stop | 19 |
| 5.2.6 Integrated feed | 20 |
| 5.2.7 Mode selection | 20 |
| 5.2.8 Failure of the power supply | 20 |
| 5.2.9 Failure of the control circuits | 21 |
| 5.3 Protection against mechanical hazards | 21 |
| 5.3.1 Stability..... | 21 |
| 5.3.2 Risk of break up during operation..... | 21 |
| 5.3.3 Tool holder and tool design..... | 22 |
| 5.3.4 Braking | 23 |
| 5.3.5 Devices to minimise the possibility or effect of ejection..... | 24 |
| 5.3.6 Work piece supports and guides..... | 25 |
| 5.3.7 Prevention of access to moving parts | 26 |
| 5.3.8 Clamping devices..... | 35 |
| 5.4 Protection against non-mechanical hazards | 35 |
| 5.4.1 Fire..... | 35 |
| 5.4.2 Noise..... | 35 |
| 5.4.3 Emission of chips and dust | 36 |
| 5.4.4 Electricity..... | 37 |
| 5.4.5 Ergonomics and handling..... | 37 |
| 5.4.6 Pneumatics..... | 38 |
| 5.4.7 Hydraulics | 38 |
| 5.4.8 Electromagnetic compatibility..... | 38 |
| 5.4.9 Laser | 38 |
| 5.4.10 Static electricity..... | 38 |
| 5.4.11 Errors of fitting..... | 39 |
| 5.4.12 Supply disconnecting device (isolation)..... | 39 |
| 5.4.13 Maintenance | 39 |
| 6 Information for use..... | 39 |
| 6.1 Warning devices..... | 39 |
| 6.2 Marking..... | 40 |
| 6.3 Instruction handbook..... | 40 |
| Annex A (normative) Saw spindle dimensional tolerances..... | 44 |

| | |
|---|-----------|
| Annex B (normative) Braking tests | 45 |
| B.1 Conditions for all tests..... | 45 |
| B.2 Tests | 45 |
| B.2.1 Un-braked run-down time | 45 |
| B.2.2 Braked run-down time..... | 45 |
| Annex C (normative) Impact test method for guards | 46 |
| C.1 General | 46 |
| C.2 Test method..... | 46 |
| C.2.1 Preliminary remarks | 46 |
| C.2.2 Testing equipment..... | 46 |
| C.2.3 Projectile for guards..... | 46 |
| C.2.4 Sampling..... | 46 |
| C.2.5 Test procedure | 47 |
| C.3 Results..... | 47 |
| C.4 Assessment..... | 47 |
| C.5 Test report | 47 |
| C.6 Test equipment for impact test..... | 47 |
| Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC | 49 |
| Bibliography..... | 50 |

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[SIST EN 1870-10:2013](https://standards.iteh.ai/catalog/standards/sist/05bd1443-ca64-4861-a0f8-062394a72758/sist-en-1870-10-2013)

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EN 1870-10:2013 (E)**Foreword**

This document (EN 1870-10:2013) 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 November 2013, and conflicting national standards shall be withdrawn at the latest by November 2013.

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 supersedes EN 1870-10:2003+A1:2009.

The main modifications compared to EN 1870-10:2003+A1:2009 relate to the introduction of performance levels (PL) for control systems.

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.

For relationship with EU Directive see informative Annex ZA, which is an integral part of this document.

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 work piece 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.*

Organisations contributing to the preparation of this European Standard include European Committee of Woodworking Machinery Manufacturers Association "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 12100:2010 for a description of A, B and C standards).

According to the CEN/CENELEC Internal Regulations, the national standards organisations 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 1870-10:2013 (E)**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 12100:2010.

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

Common requirements for tooling are given in EN 847-1:2005+A1:2007.

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1 Scope

This document deals with all significant hazards, hazardous situations and events as listed in Clause 4 which are relevant to stationary and displaceable 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, chip-board, fibreboard, plywood and also these materials if 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.

Machines which are designed to work wood based materials may also be used for working hardened plastic materials with similar physical characteristics as wood.

For the definition of stationary and displaceable machine see 3.2.4 and 3.2.5.

Any work piece positioning equipment fitted to the machine is included in this document.

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

This document is not applicable to machines which are manufactured before the date of its publication as EN.

NOTE Machines covered by this document are listed under 1.4 of Annex IV of the Machinery Directive.

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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 847-1:2005+A1:2007, *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 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 1870-10:2013 (E)

EN 1037:1995+A1:2008, *Safety of machinery — Prevention of unexpected start-up*

EN 1088:1995+A2:2008, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

EN 1760-1:1997+A1:2009, *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+A1:2009, *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 60439-1:1999¹, *Low-voltage switchgear and controlgear assemblies — Part 1: Type-tested and partially type-tested assemblies (IEC 60439-1:1999)*

EN 60529:1991², *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 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 — Electro-sensitive protective equipment — Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs) (IEC 61496-2:2006)*

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)*

EN ISO 3743-2:2009, *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 3744:2010, *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)*

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

² EN 60529:1991 is impacted by EN 60529:1991/A1:2000.

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 4413:2010, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413:2010)*

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

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 12100:2010 and the following apply.

3.2 Definitions

3.2.1

up-cutting cross-cut sawing machine

machine where the saw blade spindle is situated below the work piece support when the saw blade is in its rest position

Note 1 to entry: The saw blade moves upwards with possible additional horizontal movement through the work piece during the cut (see Figure 1).

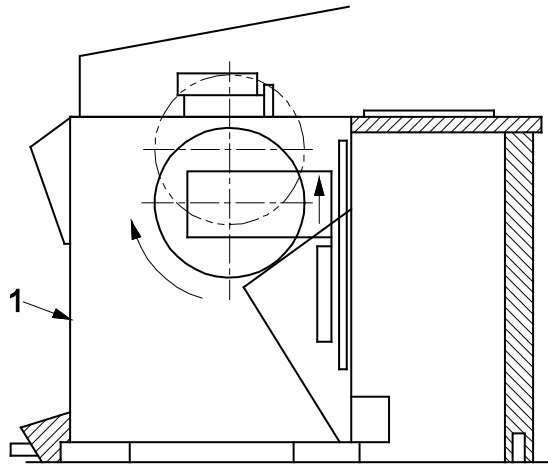
EN 1870-10:2013 (E)

Note 2 to entry: Up-cutting cross-cut sawing machines are stationary machines.

3.2.2

semi-automatic cross-cut sawing machine

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

**Key**

1 front of the machine

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

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3.2.3

automatic cross-cut sawing machine

machine where the saw unit has integrated feed, the work piece 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

3.2.4

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

3.2.5

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

3.2.6

machine actuator

power mechanism used to effect motion of the machine

3.2.7

hand feed on up-cutting cross-cut sawing machines

manual holding and/or guiding of the work piece

3.2.8

integrated feed

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

3.2.9**cutting area of the saw blade**

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

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

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

3.2.11**ejection**

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

3.2.12**un-braked run-down time**

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

3.2.13**braked run-down time**

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

3.2.14**manual loading of power fed machines**

operation where the work piece 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 work piece from the operator to the integrated feed

3.2.15**manual unloading of power fed machines**

operation where the work piece 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 work piece from the machine outfeed to the operator

3.2.16**information from the supplier**

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

3.2.17**performance level (PL)**

discrete level used to specify the ability of safety-related parts of control systems to perform a safety function under foreseeable conditions

[SOURCE: EN ISO 13849-1:2008, 3.1.23]

4 List of significant hazards

This clause contains all significant hazards, hazardous situations and events (see EN ISO 12100:2010), 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.

Table 1 — List of significant hazards

| No | Hazards, hazardous situations and hazardous events | EN ISO 12100:2010 | Relevant sub-clause of this document |
|--------------------------------------|---|-----------------------|--|
| 1 | Mechanical hazards related to: | | |
| | - machine parts or work pieces: | | |
| | a) shape; | 6.2.2.1, 6.2.2.2, 6.3 | 5.2.2, 5.2.3, 5.3.3, 5.3.6, 5.3.7, 5.3.8 |
| | b) relative location; | | 5.2.2, 5.3.6.2, 5.3.7.1, 5.3.7.2, 5.4.5 |
| | c) mass and stability (potential energy of elements which may move under the effect of gravity) | | 5.3.6 |
| | d) mass and velocity (kinetic energy of elements in controlled or uncontrolled motion); | | 5.3.7.2 |
| | e) mechanical strength | | 5.3.2, 5.3.3.1 |
| | - accumulation of energy inside the machinery: | | |
| g) liquids and gases under pressure: | 6.2.10, 6.3.5.4 | 5.4.6, 5.4.7 | |
| 1.1 | Crushing hazard | 6.2.10, 6.3.5.4 | 5.3.7, 5.3.8 |
| 1.2 | Shearing hazard | | 5.3.7, 5.3.8 |
| 1.3 | Cutting or severing hazard | | 5.3.2, 5.3.3, 5.3.4, 5.3.7 |
| 1.4 | Entanglement hazard | | 5.3.7 |
| 1.5 | Drawing-in or trapping hazard | | 5.3.7 |
| 1.6 | Impact hazard | | 5.3.7.2 |
| 1.8 | Friction or abrasion hazard | | 5.3.4 |
| 1.9 | High pressure fluid injection or ejection hazard | | 5.3.4, 5.4.6, 5.4.7 |
| 2 | Electrical hazards due to: | | |
| 2.1 | Contact of persons with live parts (direct contact) | 6.2.9, 6.3.5.4 | 5.4.4, 5.4.12, 5.4.13 |
| 2.2 | Contact of persons with parts which have become live under faulty conditions (indirect contact) | 6.2.9 | 5.4.4, 5.4.12, 5.4.13 |
| 2.4 | Electrostatic phenomena | 6.2.9 | 5.4.10 |
| 4 | Hazards generated by noise , resulting in: | | |
| 4.1 | Hearing loss (deafness), other physiological disorders (loss of balance, loss of awareness) | 6.2.2.2, 6.3 | 5.4.2, 6.3 |
| 4.2 | Interference with speech communication, acoustic signals. | | 5.4.2, 6.3 |
| 6 | Hazards generated by radiation | | |
| 6.5 | Lasers | 6.3.4.5 | 5.4.9 |

| | | | |
|------|--|---|---|
| 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 | 6.2.3, 6.2.4 | 5.4.3, 6.3 |
| 7.2 | Fire hazard | 6.2.4 | 5.4.1, 5.4.3 |
| 8 | Hazards generated by neglecting ergonomic principles in machinery design related to: | | |
| 8.1 | Unhealthy postures or excessive effort | 6.2.7, 6.2.8, 6.2.11.12, 6.3.5.5, 6.3.5.6 | 5.2.2, 5.4.5, 6.3 |
| 8.2 | Hand-arm or foot-leg anatomy | 6.2.8.3 | 5.2.2, 5.4.5, 6.3 |
| 8.4 | Local lighting | 6.2.8.6 | 6.3 |
| 8.6 | Human error, human behaviour | 6.2.8, 6.2.11.8, 6.2.11.10, 6.3.5.2, 6.4 | 6.3 |
| 8.7 | Design, location or identification of manual controls | 6.2.8.7, 6.2.11.8 | 5.2.2 |
| 8.8 | Design or location of visual display units | 6.2.8.8, 6.4.2 | 5.2.2 |
| 9 | Combination of hazards | 6.3.2.1 | 5.2.6, 5.2.7, 5.2.8, 5.3.7.2, 5.4.3, 5.4.4 |
| 10 | Unexpected start up, unexpected overrun/overspeed (or any similar malfunction) from: | | |
| 10.1 | Failure/disorder of the control system | 6.2.11, 6.3.5.4 | 5.2.8, 5.2.9, 5.3.3.1 |
| 10.2 | Restoration of energy supply after an interruption | 6.2.11.4 | 5.2.8, 5.2.9, 5.3.4, 5.4.7, 5.4.8 |
| 10.3 | External influences on electrical equipment | 6.2.11.11 | 5.4.4, 5.4.8 |
| 10.6 | Errors made by the operator (due to mismatch of machinery with human characteristics and abilities, see 8.6) | 6.2.8, 6.2.11.8, 6.2.11.10, 6.3.5.2, 6.4 | 5.2.1, 5.4.5, 6.3 |
| 11 | Impossibility of stopping the machine in the best possible conditions | 6.2.11.1, 6.2.11.3, 6.3.5.2 | 5.2.2, 5.2.4, 5.2.5 |
| 13 | Failure of the power supply | 6.2.11.1, 6.2.11.4 | 5.2.8, 5.2.9, 5.3.4, 5.4.7, 5.4.8 |
| 14 | Failure of the control circuit | 6.2.11, 6.3.5.4 | 5.3.1 |
| 15 | Errors of fitting | 6.2.7, 6.4.5 | 5.3.3, 5.4.11, 6.1, 6.3 |
| 16 | Break-up during operation | 6.2.3 | 5.3.2 |
| 17 | Falling or ejected objects or fluids | 6.2.3, 6.2.10 | 5.2.6, 5.2.9, 5.3.2, 5.3.3, 5.3.5, 5.3.6, 5.3.8, 5.4.7, 5.4.8, 5.4.12 |
| 18 | Loss of stability / overturning of machinery | 6.3.2.6 | 5.3.1 |