



SLOVENSKI STANDARD

SIST EN 1870-2:2000

01-april-2000

Varnost lesnoobdelovalnih strojev - Krožne žage - 2. del: Horizontalni in vertikalni krožni žagalni stroji za razrez plošč

Safety of woodworking machines - Circular sawing machines - Part 2: Horizontal beam panel saws and vertical panel saws

Sicherheit von Holzbearbeitungsmaschinen - Kreissägemaschinen - Teil 2: Horizontale Plattenkreissägemaschinen mit Druckbalken und Vertikalplattenkreissägemaschinen

Sécurité des machines pour le travail du bois - Machines à scies circulaires - Partie 2: Scies circulaires à panneaux horizontales et à presseur et scies à panneaux verticales

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ICS:

25.080.60	Strojne žage	Sawing machines
79.120.10	Lesnoobdelovalni stroji	Woodworking machines

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1870-2

June 1999

ICS 79.120.10

English version

Safety of woodworking machines - Circular sawing machines - Part 2: Horizontal beam panel saws and vertical panel saws

Sécurité des machines pour le travail du bois - Machines à
scies circulaires - Partie 2: Scies circulaires à panneaux
horizontales et à presseur et scies à panneaux verticales

Sicherheit von Holzbearbeitungsmaschinen -
Kreissägemaschinen - Teil 2: Horizontale
Plattenkreissägemaschinen mit Druckbalken und
Vertikalplattenkreissägemaschinen

This European Standard was approved by CEN on 26 December 1998.

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 Central Secretariat 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 Central Secretariat 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.

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

Central Secretariat: 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 December 1999, and conflicting national standards shall be withdrawn at the latest by December 1999.

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.

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.

Organizations contributing to the preparation of this European Standard include the European 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 292-1 : 1991 for a description of "A", "B" and "C" standards).

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

0 Introduction

This European Standard has been prepared to be a harmonized 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 horizontal beam panel saws and vertical panel saws.

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

1 Scope

This European Standard specifies the requirements and/or measures to remove the hazards and limit the risks on manually loaded and/or unloaded horizontal beam panel saws and vertical panel saws hereinafter 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 all the hazards relevant to this machine. These hazards are listed in 4.

This European Standard does not cover machines intended only for ripping solid wood or machines where the workpiece is moved during the cutting process, or machines specifically designed for cutting veneers.

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This European Standard does not apply to hand-held woodworking machines or any adaptation permitting their use in a different mode, i.e. bench mounting.

For Computer Numerically Controlled (CNC) machines, this European Standard does not cover the hazards related to Electromagnetic Compatibility (EMC) as stated in the EMC Directive 89/336/EEC dated 3-5-89.

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

NOTE : Machines covered by this standard are listed under Annex IV, clause A.1.4 of the Machinery Directive.

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.

EN 292-1 :	1991	Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology and methodology
EN 292-2 :	1991	Safety of machinery - Basic concepts, general principles for design - Part 2 :
EN 292/A1:	1995	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 953 :	1997	Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards
EN 954-1:	1996	Safety of machinery - Safety related parts of control systems - Part 1: General principles for design
EN 982 :	1996	Safety requirements for fluid power systems and their components - Hydraulics
EN 983 :	1996	Safety requirements for fluid power systems and their components - Pneumatics
EN 1088 :	1995	Safety of machinery. - Interlocking devices associated with guards - General principles and provisions for design

EN 1760-1:	1997	Safety of machinery - Pressure-sensitive protection devices- Part 1: General principles for the design and testing of pressure sensing mats and pressure sensing floors
EN 60204-1:	1992	Safety of machinery - Electrical equipment of Machines - Part 1 : General requirements (IEC 204-1 : 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
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 947-4-1 : 1990)
EN 60947-5-1:	1991	Low voltage switchgear and control gear - Part 5 : Control circuit devices and switching elements - Section 1: Electromechanical control circuit devices (IEC 947-5-1 : 1990)
prEN 61496-2		Safety of machinery - electro-sensitive protective equipment - Part 2 : Particular requirements for equipment using active opto-electronic protective devices
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 - 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)
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 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 - Survey method for the measurement of emission sound pressure levels at the 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)

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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
ISO TR 11688-1:	1995	Acoustics - Recommended practice for the design of low noise machinery and equipment - Part 1: Planning
HD 21.1 S3	1997	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V - Part 1: General requirements
HD 22.1 S3	1997	Rubber insulated cables of rated voltages up to and including 450/750 V - Part 1: General requirements

3 Definitions

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

3.1 panel saw

Machine fitted with one or more travelling circular sawblades which is designed mainly for cutting panels.

3.2 horizontal beam panel saw

Panel saw where the workpiece is supported in the horizontal plane during cutting. The saw unit is mounted below the workpiece, and the cutting stroke is power driven. Before the cutting stroke commences, the sawblade is automatically raised through a slot in the worktable and is retracted from the workpiece for the return stroke. Machines are fitted with a pressure beam which holds the workpiece in position during the cut, and are designed to cut in a single straight line only (see figure 1).

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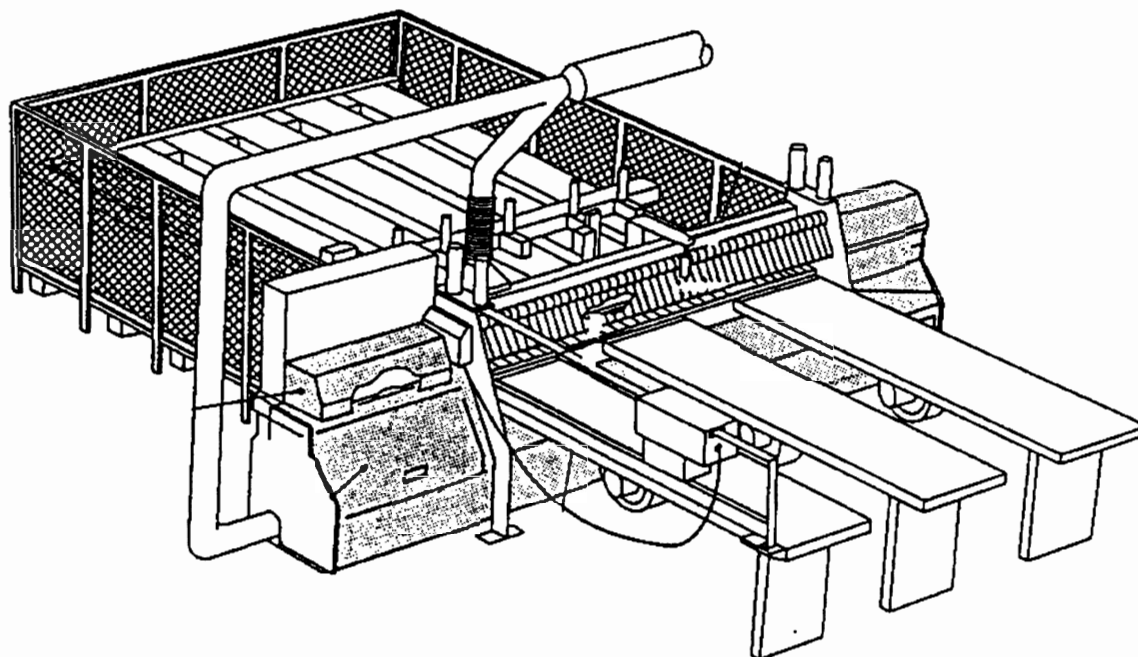


Figure 1 : Example of horizontal beam panel saw

3.3 vertical panel saw

Panel saw where the workpiece is supported in a near vertical plane during cutting (see figures 2a) and 2b)).

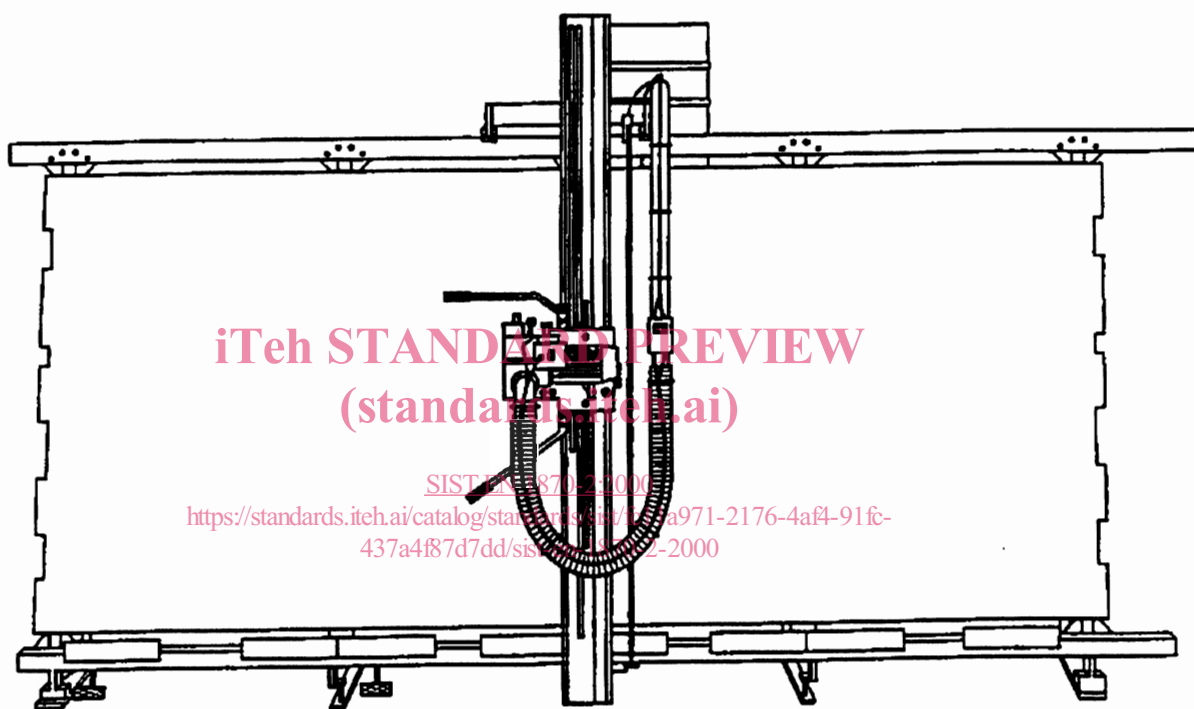


Figure 2 a) : With saw unit mounted in front of the workpiece

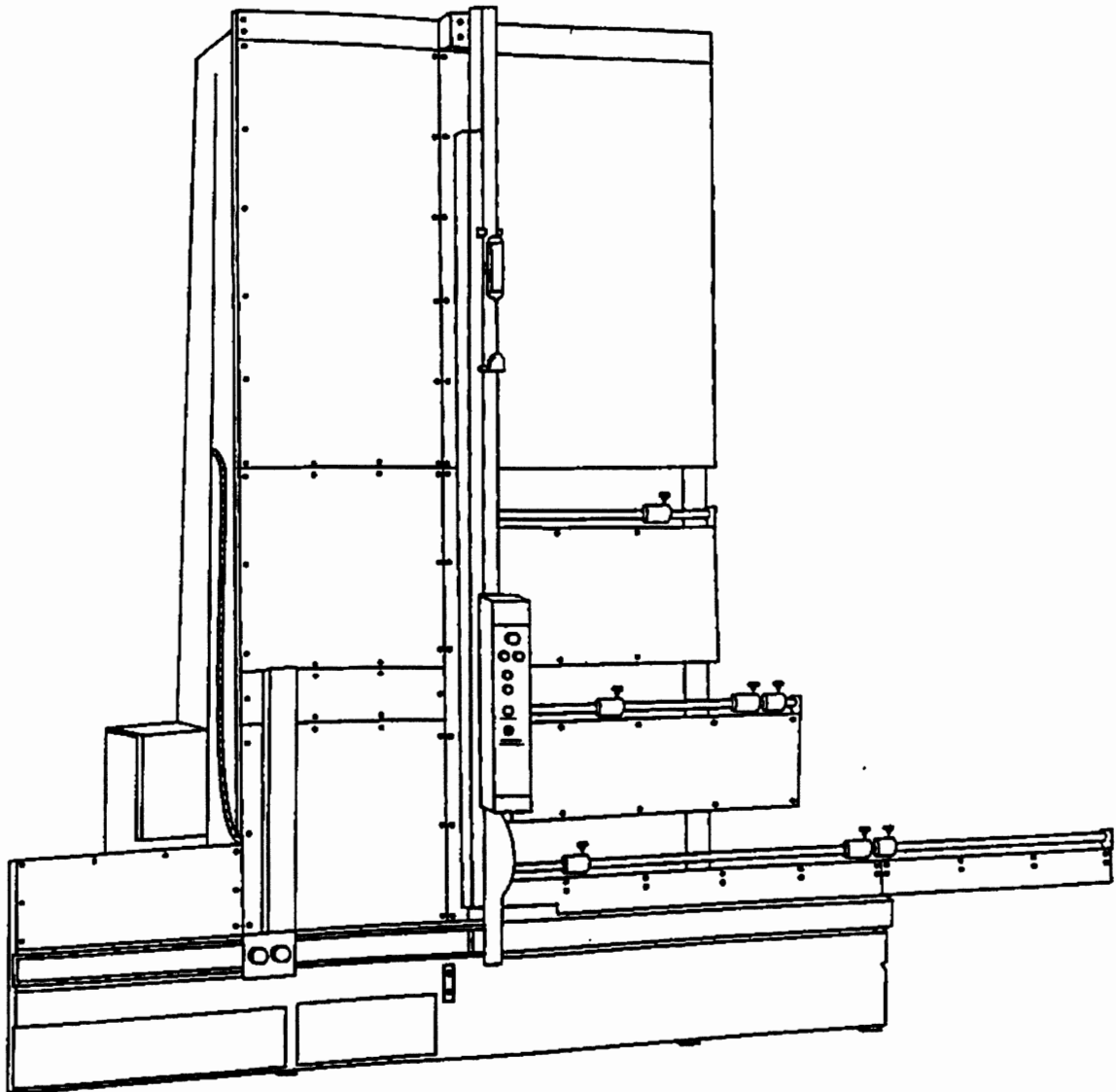


Figure 2 b) : With the saw unit behind the workpiece

Figure 2 : Examples of vertical panel saws
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3.4 vertical panel saw with hand feed

Vertical panel saw where the saw unit is hand fed through the workpiece during vertical and/or horizontal cutting.

3.5 vertical panel saw with integrated feed

Vertical panel saw where the saw unit has integrated feed for its vertical, and/or horizontal movement. The sawblade is automatically projected through the workpiece during the cutting stroke and retracted from the workpiece during the return stroke.

3.6 hand feed

Manual (holding and/or manual) 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, as illustrated in figure 5, and the use of a demountable power feed unit.)

NOTE : The words in brackets are not applicable to this European Standard.

3.7 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.

3.8 manual loading of panel saws

Where the operator positions the workpiece on the workpiece support at the cutting position i.e. there is no intermediate loading device to receive and transfer the workpiece from the operator to the cutting position.

3.9 manual unloading of panel saws

Where the operator removes the workpiece from the workpiece support at the cutting position, i.e. there is no intermediate unloading device to transfer the workpiece from the cutting position to the operator.

3.10 main sawblade

Circular sawblade which is used for separating the workpiece.

3.11 scoring

Making of a shallow cut in the surface of a workpiece, deep enough to pass through any veneer or plastic facing on the workpiece, so as to prevent surface damage when the main saw blade makes its cut.

3.12 scoring sawblade

Sawblade mounted in front of the main sawblade which is used for scoring.

3.13 post-formed edge pre-cutting

Cut made in the rear profiled edge of the workpiece deep enough to prevent surface damage when the main sawblade makes its cut.

3.14 post-formed edge pre-cutting sawblade

Sawblade used for post-formed edge pre-cutting. This may be the scoring sawblade or a separate sawblade specifically for this purpose.

3.15 pressure beam

Workpiece clamping device which extends across the full working width of the machine. Its function is to hold the workpiece down to the table during cutting.

3.16 **panel pusher**

Movable workpiece guiding device which is used to position the workpiece over the line of cut. The positioning of the panel pusher may be under NC control.

3.17 **side pressure**

Movable workpiece-guiding device used to push workpieces to the side of the table against the side fence.

3.18 **machine actuator**

Power mechanism used to effect motion of the machine.

3.19 **ejection**

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

3.20 **run-up time**

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

3.21 **run-down time**

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

3.22 **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.

3.23 **saw unit rest position**

The position to which the saw unit returns at the end of each cutting cycle on integrated fed machines.

4 **List of hazards**

This 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 parts 1 and 2 of EN 292 : 1991.

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

Table 1 : List of hazards

Number	Hazard	Relevant clause of this European Standard
1	<p>Mechanical hazards (caused for example by :</p> <ul style="list-style-type: none"> - shape - relative location - mass and stability (potential energy of elements) - mass and velocity (kinetic energy of elements) - inadequacy of the mechanical strength - accumulation of <p>Potential energy by :</p> <ul style="list-style-type: none"> - elastic elements (springs), or - liquids or gases under pressure, or - vacuum <p>of the machine parts or workpieces</p>	
1.1	Crushing hazard	5.2.1, 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, 5.2.7
1.4	Entanglement hazard	5.2.3, 5.2.6, 5.2.7
1.5	Drawing in or trapping hazard	5.2.7
1.6	Impact hazard	5.2.7
1.7	Stabbing or puncture hazard	Not relevant
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 materials/workpieces)	5.2.2, 5.2.3, 5.2.5, 5.2.6, 5.2.8
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)	Not relevant
2	Electrical hazards, caused for example by :	
2.1	electrical contact (direct or indirect)	5.3.4, 5.3.15
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	Not relevant
3.2	health damaging effects by hot or cold work environment	Not relevant
4	Hazards generated by noise, resulting in :	
4.1	hearing losses (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

(continued)