



SLOVENSKI STANDARD

SIST EN 848-1:2000

01-april-2000

Safety of woodworking machines - One side moulding machines with rotating tool - Part 1: Single spindle vertical moulding machines

Safety of woodworking machines - One side moulding machines with rotating tool - Part
1: Single spindle vertical moulding machines

Sicherheit von Holzbearbeitungsmaschinen - Fräsmaschinen für einseitige Bearbeitung
mit drehendem Werkzeug - Teil 1: Einspindelige senkrechte Tischfräsmaschinen

Sécurité des machines pour le travail du bois - Machines à fraiser sur une face, a outil
rotatif - Partie 1: Toupies monobroche a arbre vertical

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ICS:

79.120.10 Lesnoobdelovalni stroji Woodworking machines

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EUROPEAN STANDARD

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July 1998

ICS 79.120.10

Descriptors: woodworking machinery, milling machines, spindling machines, safety of machines, dangerous machines, hazards, design, safety measures, safety devices, protection against mechanical hazards, marking

English version

Safety of woodworking machines - One side moulding machines with rotating tool - Part 1: Single spindle vertical moulding machines

Sécurité des machines pour le travail du bois - Machines à fraiser sur une face, à outil rotatif - Partie 1: Toupies monobroche à arbre vertical

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This European Standard was approved by CEN on 10 April 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

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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 January 1999, and conflicting national standards shall be withdrawn at the latest by January 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".

Normative and informative annexes to this standard are listed in the Contents list.

The European Standards produced by CEN/TC 142 are particular to woodworking machines and compliment 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 : 1991

The extent to which hazards are covered is indicated in the scope of this standard.

The requirements of this standard concern designers, manufacturers, suppliers and importers of single spindle vertical moulding machines.

Electrically driven machines excluded from the scope of this standard are covered by the requirements of EN 61029-1 : 1996 or EN 50144-1 : 1995 and prEN 61029-2-8 : 1996.

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 risk on hand fed vertical spindle moulding machines, herein after referred to as "machines", designed to cut solid wood, chip board, fiberboard, plywood and also these materials where they are covered with plastic laminate or edgings.

This European Standard covers all the hazards relevant to this machine. These hazards are listed in 4.

This European Standard does not apply to machines set up on a bench or a table similar to a bench which are intended to carry out work in a stationary position and capable of being lifted by hand by one person.

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 and Numeric Control (NC).

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

This European Standard does not apply to machines equipped with outboard bearings.

2 Normative references

This European Standard incorporates by dated or undated references 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, methodology
EN 292-2	1991	Safety of machinery - Basic concepts, general principles for design - Part 2 : Technical principles and specifications
EN 292-2/A1	1995	
EN 418	1992	Safety of machines - Emergency stop equipment, functional aspects - Principles for design
EN 847-1	1997	Tools for woodworking - Part 1 : Milling tools - Circular saw blades
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 1050	1996	Safety of machinery - Principles for risk assessments
EN 1088	1995	Safety of machinery - Interlocking devices associated with guards - General principles and provisions for design
EN 50144-1	1995	Safety of hand held electric motor operated tools - Part 1 : General requirements
EN 60204-1	1992	Safety of machinery - Electrical equipment of machines - Part 1 : General requirements (IEC 204-1 : 1992, modified)
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
EN 60439-1/pr A11	1995	Low voltage switch gear and control gear assemblies - Part 1 : Type tested and partially type tested assemblies.
EN 60529	1991	Degree of protection provided by enclosure (IP code) (IEC 529 : 1989)
EN 60947-4-1	1992	Low voltage switch gear and control gear - Part 4 : contractors and motors starters - Section 1 : Electromechanical contractors and motor starters (IEC 947-4-1 : 1990)
EN 60947-5-1	1991	Low voltage switch gear and control gear - Part 5 : Control circuits devices and switching elements - Section 1 : Electromechanical control circuit devices (IEC 947-5-1 : 1990)
EN 61029-1	1996	Safety of transportable motor operated tools - Part 1 : General requirements
prEN 61029-2-8		Safety of transportable motor operated tools - Part 2-8 : Particular requirements for single spindle vertical moulders
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 12 : 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 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 other specified positions (ISO 11202 : 1995)

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EN ISO 11204	1995	Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at the workstation and other specified positions with environmental corrections (ISO 11204 : 1995)
ISO 3745	1977	Acoustics - determination of sound power levels of noise sources - Precision methods for anechoic and semi anechoic rooms
ISO 7009	1983	Woodworking machines - Single spindle moulding machines - Nomenclature and acceptance conditions
ISO 7960	1995	Airborne noise emitted by 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

3 Definitions and terminology

For the purposes of this standard the following definitions apply :

3.1 Definitions

3.1.1 single spindle vertical moulding machine

A hand fed machine fitted with a single vertical spindle (fixed or removable) the position of which is fixed during machining and a horizontal table, all or part of which are fixed during operation. The spindle passes through the table and its drive motor is situated beneath the table. The machine may have any of the following features :

- a) the facility for the spindle to be raised and lowered through the table;
- b) the facility to tilt the spindle;
- c) the facility for fitting an additional manually operated traveling table.

3.1.2 straight work

The shaping of a workpiece with one face in contact with the table and a second with the fence, and where the work starts at one end of the workpiece and continues through to the other end (see figure 1).

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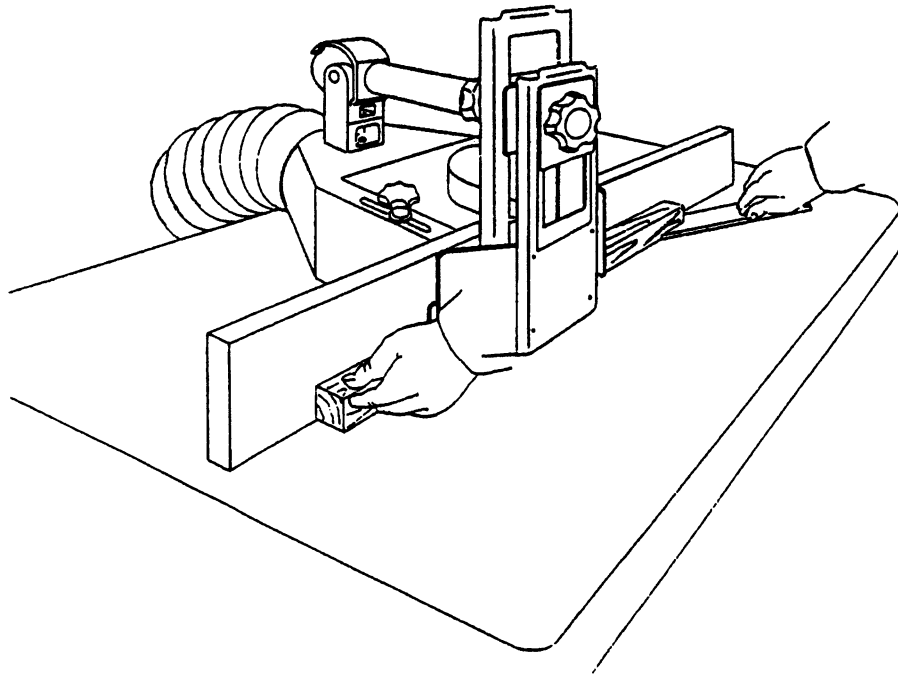


Figure 1 : An example of straight work

3.1.3 curved work

The machining of a curve on a workpiece by having one side in contact with the table (or if held in a jig with the jig in contact with the table) and the other in contact with the vertical reference of a steady or ring guide when using a jig (see figure 2).

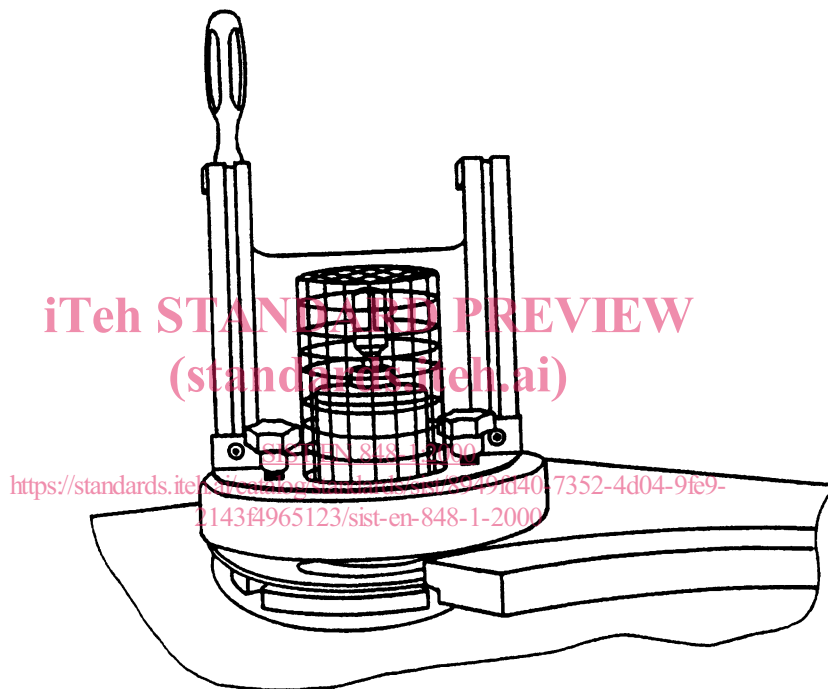


Figure 2 : A example of curved work

3.1.4 tenoning

The machining of projections and slots on the end of a workpiece to facilitate the joining of workpieces. This includes profiled tenons (see figure 3).

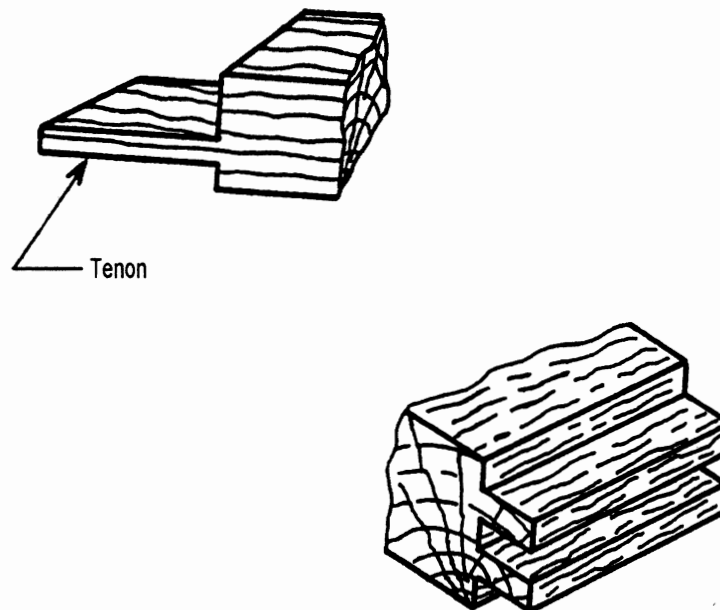


Figure 3 : Examples of tenons

3.1.5 stopped straight work

The machining of only a part of the workpiece length (see figure 4).



Figure 4 : An example of stopped straight work

3.1.6 hand feed

The manual holding and/or guiding of the workpiece. Hand feed includes the use of a hand operated carriage on which the workpiece is placed manually or clamped and the use of a demountable power feed unit.

3.1.7 demountable power feed unit

A feed mechanism which is mounted on the machine so that it can be moved from its working position without the use of a spanner or similar additional device.

3.1.8 speed range

The speeds within which the tool spindle or tool is designed to operate.

3.1.9 ejection

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

3.1.10 kickback

A particular form of ejection describing the unexpected movement of the workpiece, parts of it or parts of the machine opposite to the direction of feed during processing.

3.1.11 anti-kickback device

A device which either reduces the possibility of kickback or arrests the motion during kickback of the workpiece, parts of it or parts of the machine.

3.1.12 removable spindle

A tool spindle capable of being changed without removing the main spindle bearings.

3.1.13 machine actuator

A power mechanism used to effect motion of the machine.

3.1.14 confirmation

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

3.1.15 run-up time

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

3.1.16 run-down time

The elapsed time from the actuation of the stop control device to spindle stand still.

3.1.17 stationary machine

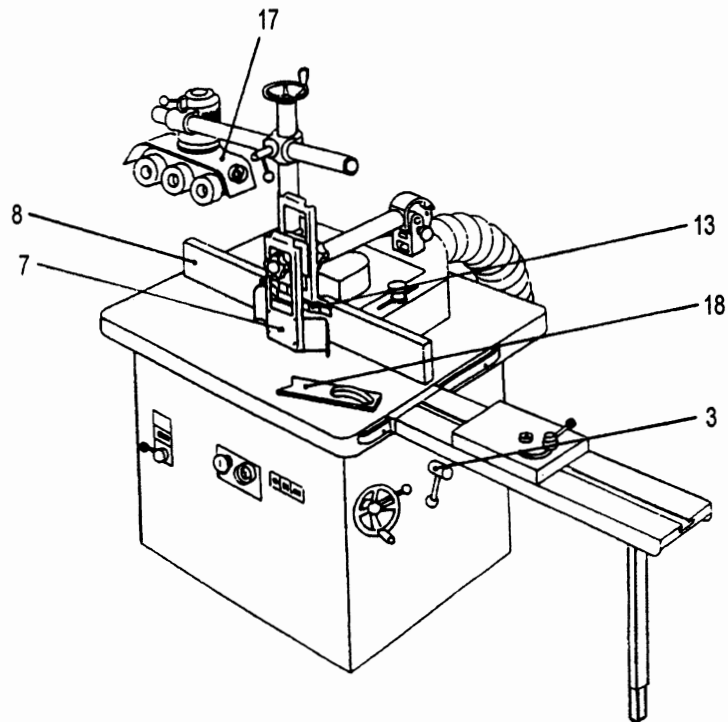
A machine designed to be located on or fixed to the floor or other parts of the structure of the premises and to be stationary during use.

3.1.18 transportable machine

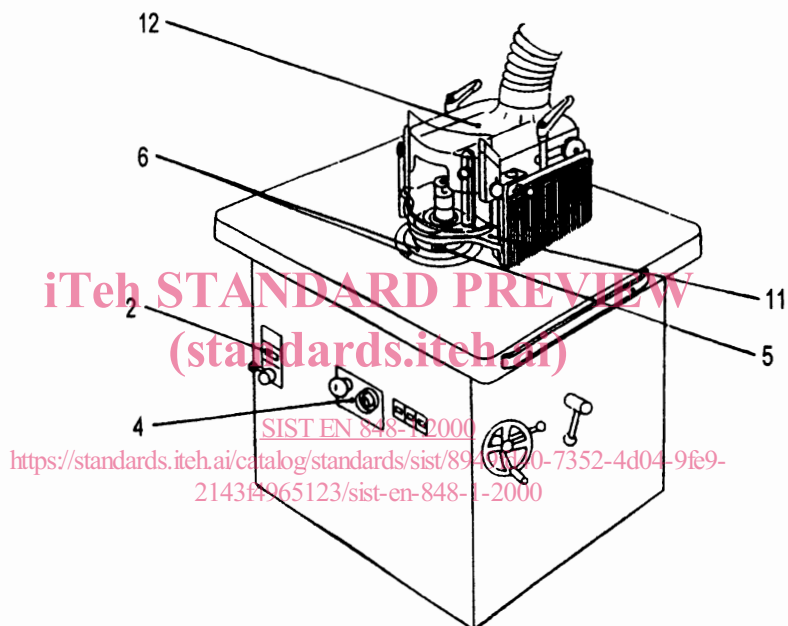
A machine which is located on the floor, stationary during use and equipped with a device, normally wheels, which allows it to be moved between locations.

3.2 Terminology

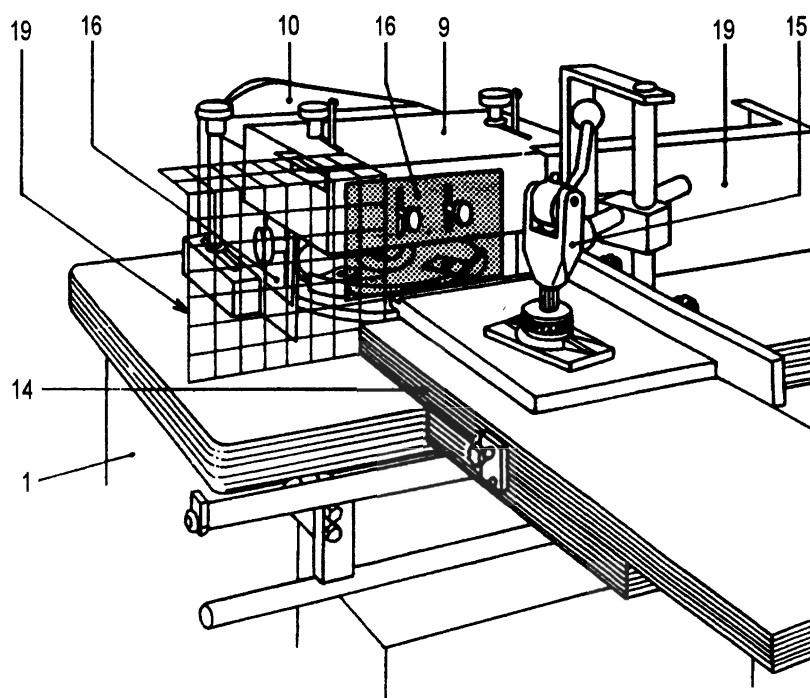
The names of the main parts of the machine are shown in table 1 and figures 5a), 5b) and 5c).



a) Single spindle vertical moulding machine equipped for straight work



b) Single spindle vertical moulding machine equipped for curved work



c) Single spindle vertical moulding machine equipped for tenoning

Figure 5

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Table 1 : Main components of single spindle vertical moulding machines

Reference item	Terminology
1	Main frame
2	Speed indicator
3	Spindle lock
4	Start and stop controls
5	Tool
6	Table rings
7	Straight work guard
8	Fence plates
9	Enclosure
10	Chip and dust extraction outlet
11	Curved work guard
12	Bonnet guard
13	Guiding steady
14	Traveling table
15	Workpiece clamping device
16	Adjustable guard
17	Demountable power feed unit
18	Push stick
19	Guards fixed to the traveling table

4 List of hazards

This standard deals with all hazards listed and relevant to the machines defined in the scope :

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

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

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Table 2 : 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 . liquids or gases under pressure, or . vacuum of the machine parts or workpieces)	
1.1	Crushing hazard	5.2.4, 6.3
1.2	Shearing hazard	not significant
1.3	Cutting or severing hazard	5.2.3, 5.2.6, 5.2.7.1
1.4	Entanglement hazard	5.2.3, 5.2.7
1.5	Drawing-in or trapping hazard	5.2.7
1.6	Impact hazard	5.2.5
1.7	Stabbing or puncture hazard	not relevant
1.8	Friction or abrasion hazard	not significant
1.9	High pressure fluid injection hazard	not relevant
1.10	Ejection of parts (of machinery and processed materials/workpieces)	5.2.2, 5.2.3, 5.2.5
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
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	5.3.12
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.	not relevant

(continued)