
Safety of woodworking machines - Circular sawing machines - Part 3: Down cutting cross-cut saws and dual purpose down cutting cross-cut saws/circular saw benches

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Sicherheit von Holzbearbeitungsmaschinen - Kreissägemaschinen - Teil 3: Von oben schneidende Kappsägemaschinen und kombinierte Kapp- und Tischkreissägemaschinen
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Sécurité des machines pour le travail du bois - Machines à scier circulaires - Partie 3: Tronçonneuses à coupe descendante et tronçonneuses mixtes à coupe descendante et à scie à table
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**Safety of woodworking machines - Circular sawing machines -
Part 3: Down cutting cross-cut saws and dual purpose down
cutting cross-cut saws/circular saw benches**

Sécurité des machines pour le travail du bois - Machines à
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Sicherheit von Holzbearbeitungsmaschinen -
Kreissägemaschinen - Teil 3: Von oben schneidende
Kappsägemaschinen und kombinierte Kapp- und
Tischkreissägemaschinen

This European Standard was approved by CEN on 29 June 2001.

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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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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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of an identical text or by endorsement, at the latest by April 2002, and conflicting national standards shall be withdrawn at the latest by April 2002.

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 document.

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

Annexes A, B and C are normative, the annexes D, E and ZA are informative.

The European Standards produced by CEN/TC142 are particular to woodworking machines and complement the relevant type A and type B Standards on the subject of general safety (see introduction of EN 292-1:1991 for a description of type A, type B and type 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, 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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EN 1870-3:2001 (E)**0 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 down cutting cross-cut saws and dual purpose down cutting cross-cut saws/circular saw benches.

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.

Electrically driven machines excluded by the scope of this European Standard are covered by the requirements of EN 61029-1:1996, prEN 61029-2-9 and prEN 61029-2-11.

1 Scope

This European Standard sets out the requirements and/or measures to remove the hazards and limit the risk on down cutting cross-cut saws and dual purpose down cutting cross-cut saws/circular saw benches as defined in 3.2, 3.3 and 3.4, 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 does not apply to:

- machines for cross cutting logs; [SIST EN 1870-3:2002](https://standards.iteh.ai/catalog/standards/sist/541fb964-9b6f-4e66-aa11-18985c3ed16a/en-1870-3:2002)
- hand held woodworking machines or any adaptation permitting their use in a different mode i.e. bench mounting;
- machines set up on a bench or a table similar to a bench, which are intended to carry out work in a stationary position, capable of being lifted by one person by hand.

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

For Computer Numerically Controlled (CNC) machines this European Standard does not cover hazards related to Electro-Magnetic 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	<i>Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology</i>
EN 292-2:1991	<i>Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles and specifications</i>

EN 292-2/A1:1995	<i>Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles and specifications</i>
EN 294:1992	<i>Safety of machinery - Safety distances to prevent danger zones being reached by the upper limbs</i>
EN 418:1992	<i>Safety of machinery - Emergency stop equipment, functional aspects - Principles for design</i>
EN 574:1996	<i>Safety of machinery - Two hand control devices - Functional aspects, principles for design</i>
EN 847-1:1997	<i>Tools for woodworking - Safety requirements - Part 1: Milling tools and circular saw blades</i>
EN 954-1:1996	<i>Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design</i>
EN 983:1996	<i>Safety of machinery - Safety requirements for fluid power systems and their components - Pneumatics</i>
EN 1070:1998	<i>Safety of machinery - Terminology</i>
EN 1088:1995	<i>Safety of machinery - Interlocking devices associated with guards - Principles for design and selection</i>
EN 1760-1:1997	<i>Safety of machinery - Pressure sensitive protective devices - Part 1: General principles for the design and testing of pressure sensitive mats and pressure sensitive floors</i>
EN 1760-2:2000	<i>Safety of machinery - Pressure sensitive protective devices - Part 2: General principles for the design and testing of pressure sensitive edges and pressure sensitive bars</i>
EN 1870-1:1999	<i>Safety of woodworking machines - Circular sawing machines - Part 1: Circular saw benches (with and without sliding table) and dimension saws</i>
EN 60204-1:1992	<i>Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:1992, modified)</i>
EN 60529:1991	<i>Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)</i>
EN 60825-1:1994	<i>Safety of laser products - Part 1: Equipment classification, requirements and user's guide (IEC 60825-1:1993)</i>
EN 60947-4-1:1992	<i>Low voltage switchgear and controlgear - Part 4: Electromechanical contactors and motor starters - Section 1: Electromechanical contactors and motor starters (IEC 60947-4-1:1990)</i>
EN 60947-5-1:1997	<i>Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices (IEC 60947-5-1:1997)</i>
EN 61029-1:1996	<i>Safety of transportable motor operated electric tools - Part 1: General requirements (IEC 1029-1:1990, modified)</i>
prEN 61029-2-9	<i>Safety of transportable motor operated electric tools - Part 2-9: Particular requirements for mitre saws (IEC 1029-2-9:1995, modified)</i>
prEN 61029-2-11	<i>Safety of transportable motor operated electric tools - Part 2-11: Particular requirements for combined mitre/bench saws</i>

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prEN 61496-2	<i>Safety of machinery - Electro-sensitive protective equipment - Part 2: Particular requirements for equipment using active opto-electronic protective devices (IEC 60496-2:1997)</i>
EN ISO 3743-1:1995	<i>Acoustics – Determination of sound power levels of noise sources using sound pressure – Engineering methods for small, moveable sources in reverberant fields – Part 1: Comparison method for hard walled test rooms. (ISO 3743-1 : 1994)</i>
EN ISO 3743-2:1996	<i>Acoustics – Determination of sound power levels of noise sources using sound pressure – Engineering methods for small, moveable sources in reverberant fields - Part 2: Method for special reverberation test rooms (ISO 3743-2 : 1994)</i>
EN ISO 3744:1995	<i>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)</i>
EN ISO 3746:1995	<i>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)</i>
EN ISO 4871:1996	<i>Acoustics – Declaration and verification of noise emission values of machinery and equipment (ISO 4871 : 1996)</i>
EN ISO 9614-1:1995	<i>Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 1: Measurement at discrete points (ISO 9614-1 : 1993)</i>
EN ISO 11202:1995	<i>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)</i>
EN ISO 11204:1995	<i>Acoustics - Noise emitted by machinery and equipment – Measurement of emission sound pressure levels at a workstation and at other specified positions - Method requiring environmental corrections (ISO 11204 : 1995)</i>
EN ISO 11688-1:1998	<i>Acoustics - Recommended practice for the design of low noise machinery and equipment - Part 1: Planning (ISO/TR 11688-1 : 1995)</i>
ISO 3745:1977	<i>Acoustics - Determination of sound power levels of noise sources - Precision methods for anechoic and semi-anechoic rooms</i>
ISO 7960:1995	<i>Airborne noise emitted by machine tools - Operating conditions for woodworking machines</i>
HD 21.1 S3:1997	<i>Polyvinyl chloride insulated cables of rated voltages up to and including 450/750V - Part 1: General requirements</i>
HD 22.1 S3:1997	<i>Rubber insulated cables of rated voltages up to and including 450/750V - Part 1: General requirements</i>
HD 22.4 S3:1995	<i>Rubber insulated cables of rated voltages up to and including 450/750V - Part 4: Cords and flexible cables (IEC 60245-4:1994, modified)</i>

3 Terms and definitions

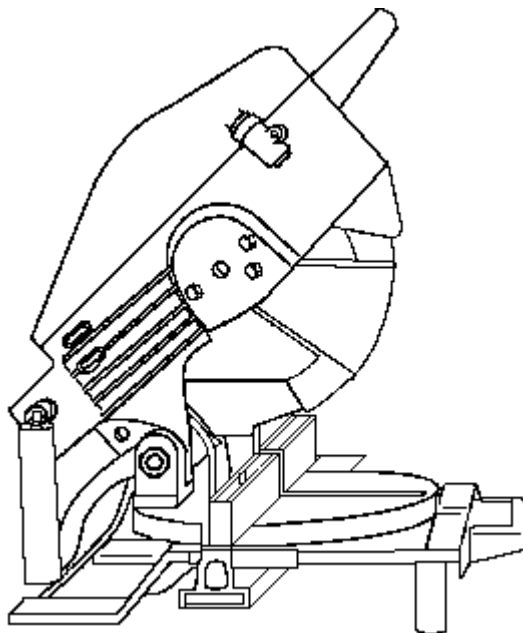
In addition to the terms and definitions of EN 1070:1998 for the purposes of this European Standard, the following definitions apply:

3.1**cross-cutting**

operation of cutting across the grain of a wooden workpiece

3.2 down cutting cross-cut saw

machine where the sawblade spindle is situated above the workpiece when the sawblade is in its rest position. The sawblade moves down through the workpiece during the cut. (see Figure 1)

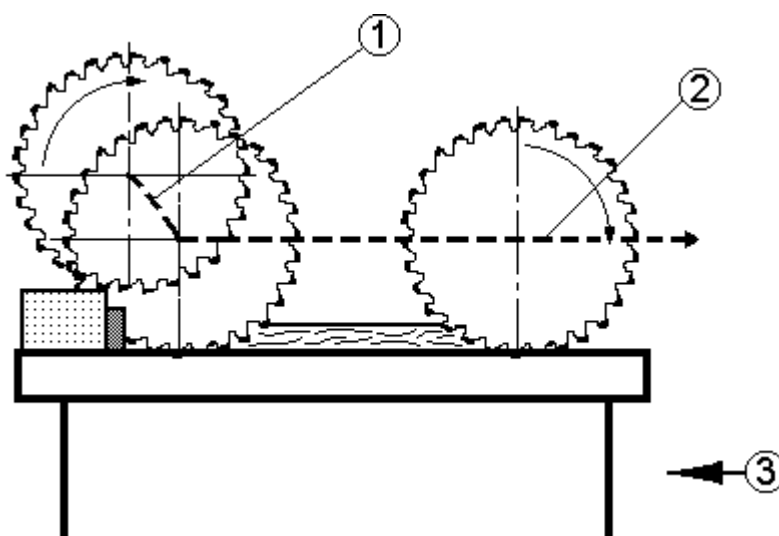


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Figure 1 — Example of a down cutting cross-cut saw
 (standards.iteh.ai)

3.3 down cutting and horizontal cutting cross-cut saw

machine where the saw unit is fed by hand and the workpiece is manually loaded and/or unloaded. The machine can be used in two modes :

- a) as a down cutting cross cut saw (see 3.2);
- b) as a down cutting cross cut saw with an additional horizontal cutting stroke where the saw unit is pulled forward through wide work (see Figure 2)



Key	1	Down cutting stroke
	2	Horizontal cutting stroke
	3	Operators side

Figure 2 — Diagrammatic illustration of a down cutting and horizontal cutting cross-cut saw
 (guarding not shown)

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3.4

dual purpose down cutting cross-cut saw/circular saw bench

machine which may be used in the following modes (see Figure 3):

- a) as a down cutting cross cut saw;
- b) as a circular saw bench (see 3.1.1 of EN 1870-1:1999)

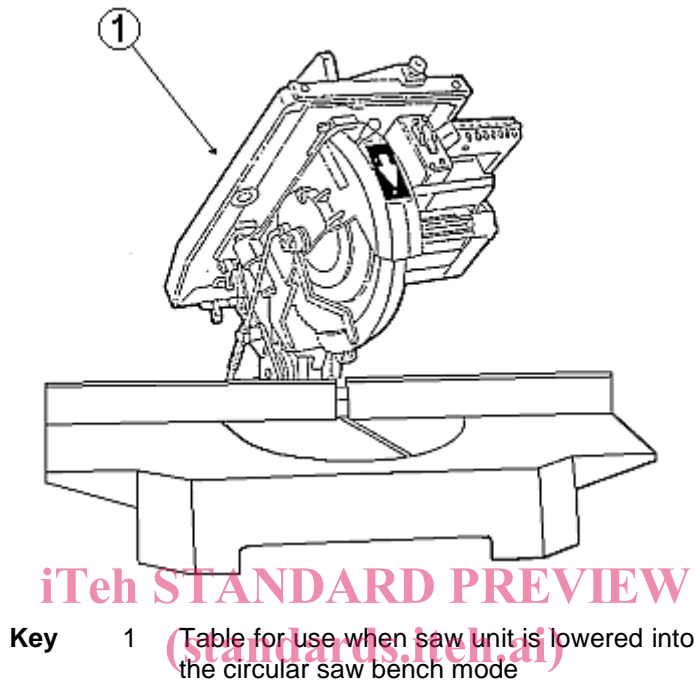


Figure 3 — Example of a dual purpose down cutting cross-cut saw/circular saw bench

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3.5

manual cross-cut saw

machine where the saw unit is fed by hand and the workpiece is manually positioned for cutting to length.

NOTE This type of machine is not covered by annex IV of the Machinery Directive

3.6

semi-automatic cross-cut saw

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

NOTE This type of machine is covered by annex IV of the Machinery Directive

3.7

automatic cross-cut saw

machine where the saw unit has integrated feed, the workpiece 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.

NOTE This type of machine is not covered by annex IV of the Machinery Directive

3.8

transportable 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

3.9

machine actuator

power mechanism used to effect motion of the machine

3.10**hand feed**

manual holding and/or 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 and the use of a de-mountable power feed unit)

NOTE The words in brackets are not applicable to this machine.

3.11**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

3.12**cutting area of the sawblade**

area where the sawblade can be involved in the cutting process

3.13**non-cutting area of the sawblade**

area of the sawblade where the sawblade is not involved in the cutting process

3.14**ejection**

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

3.15**kickback**

a particular form of ejection and is describing the unexpected movement of the workpiece or parts of it or parts of the machine opposite to the direction of feed during processing

3.16**anti kick-back device**

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

3.17**safety appliance**

additional device which is not an integral part of the machine but which assists the operator in the safe feeding of the workpiece, e.g. as illustrated in Figure 4

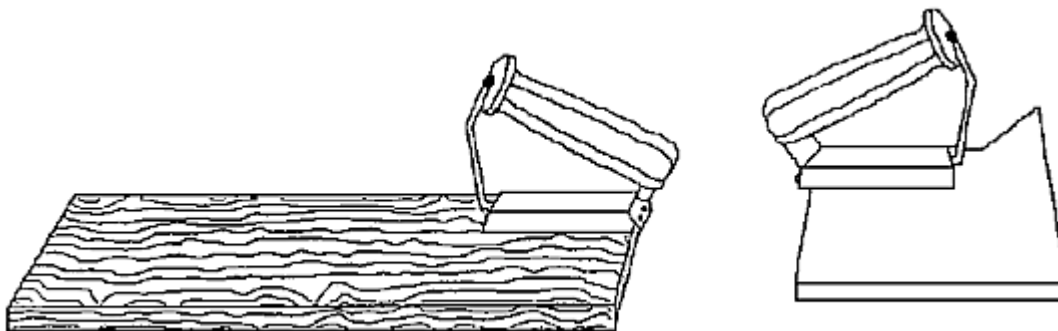


Figure 4b) : Example of push block

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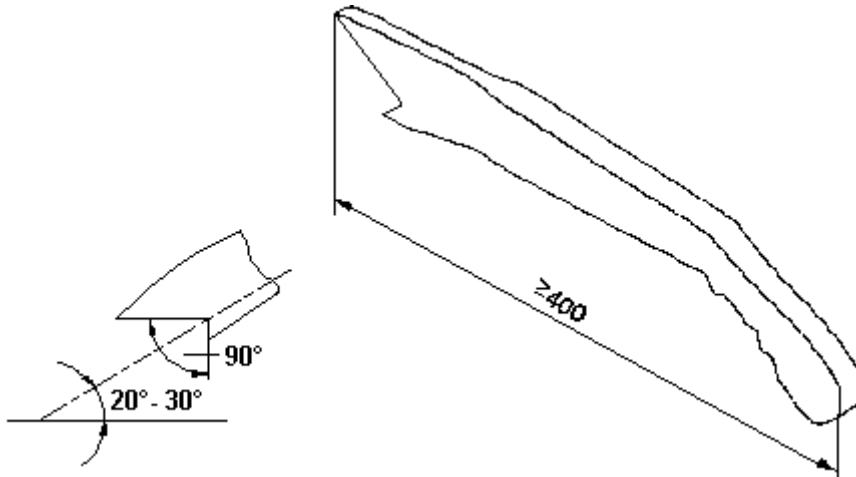


Figure 4a) : Example of push stick

Figure 4 — Example of push stick and push block (for dual purpose down cutting cross-cut saws/circular saw benches in the saw bench mode)

3.18 run-down time

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

3.19 manual loading of power fed machines

operation, 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

3.20 manual unloading of power fed machines

operation, where the workpiece is removed by the operator directly from the machine out-feed; i.e. for which there is no intermediate unloading device to receive and transfer the workpiece from the machine out-feed to the operator

3.21 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.

Table 1 — List of significant hazards

Number	Significant hazard	Relevant clauses of this standard
1	Mechanical hazards caused for example by : <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 potential energy by : <ul style="list-style-type: none"> . elastic elements (springs) or . liquid or gases under pressure, or . vacuum of the machine parts or workpieces	
1.1	Crushing hazard	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, 5.2.4, 5.2.7
1.4	Entanglement hazard	5.2.7
1.5	Drawing-in or trapping hazard	5.2.7
1.6	Impact hazard	Not present
1.7	Stabbing or puncture hazard	Not present
1.8	Friction or abrasion hazard	Not present
1.9	High pressure fluid injection hazard	5.3.7
1.10	Ejection of parts (of machinery and processed material/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 present
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 present
2.3	Thermal radiation or other phenomena such as ejection of molten particles, and chemical effects from short circuits, overloads etc.	Not present
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 present
3.2	Health damaging effects by hot or cold work environment	Not present
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 present
6	Hazards generated by radiation, especially by :	
6.1	Electric arcs	Not present
6.2	Lasers	5.3.13
6.3	Ionising radiation sources	Not present
6.4	Machines making use of high frequency electrical fields	Not present

(continued)