
JUfbcgh`YgbccVXYcj Ub] \ `ghfc^Yj `!`?fcybYÿU[Y!* "XY. `?fcybYÿU[YnUXfj U]b
j Y bUa Ybg_YÿU[YnUXfj Un`XYcj bc`a]nc`n`fc b]a `dcg`i ÿYj Ub^Ya

Safety of woodworking machines - Circular 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

Sicherheit von Holzbearbeitungsmaschinen - Kreissägemaschinen - Teil 6: Brennholzkreissägemaschinen und kombinierte Brennholz- und Tischkreissägemaschinen, mit Handbeschickung und/oder Handentnahme

Sécurité des machines pour le travail du bois - Machines à scies circulaires - Partie 6: Scies circulaires à chevalet et/ou à table pour la coupe du bois de chauffage, avec chargement et/ou déchargement manuel

Ta slovenski standard je istoveten z: EN 1870-6:2002

ICS:

25.080.60	Strojne žage	Sawing machines
79.120.10	Lesnoobdelovalni stroji	Woodworking machines

SIST EN 1870-6:2003**en**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1870-6

April 2002

ICS 79.120.10

English version

**Safety of woodworking machines - Circular 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**

Sécurité des machines pour le travail du bois - Machines à
scies circulaires - Partie 6: Scies circulaires à chevalet
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Kreissägemaschinen - Teil 6:
Brennholzkreissägemaschinen und kombinierte Brennholz-
und Tischkreissägemaschinen, mit Handbeschickung
und/oder Handentnahme

This European Standard was approved by CEN on 8 November 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.

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Foreword

This document (EN 1870-6:2002) has been prepared by Technical Committee 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 October 2002, and conflicting national standards shall be withdrawn at the latest by October 2002.

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 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 European Committee of Woodworking Machinery Manufacturers Association "EUMABOIS".

Annexes A, B, C, D, E, F and G are normative and Annexes H, I and ZA are informative.

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).

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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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EN 1870-6:2002 (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 circular sawing machines for firewood and dual-purpose circular sawing machines for firewood/circular saw benches, 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 specifies the requirements and/or the measures to remove the hazards and limit the risk on circular sawing machines for firewood and dual-purpose circular sawing machines for firewood/circular saw benches, with manual loading and/or unloading, hereinafter referred to as "machines", designed to cut solid wood.

On Combined circular sawing machines for firewood - Log splitting machines only the circular sawing machine for firewood is covered by this European Standard. For the requirements for the log splitting part of this machine see EN 609-1 : 1999 and EN 609-2 : 1999.

This European Standard covers the hazards relevant to these machines as stated in 4.

For Computer Numerically Controlled (CNC) machines this European Standard does not cover hazards related to Electro-Magnetic Compatibility (EMC).

This European Standard does not apply to :

- log sawing machines where the saw unit moves to cut the workpiece;
- machines where the sawblade is capable of tilting;
- hand held woodworking machines or any adaptation permitting their use in a different mode, i.e. bench mounting;
- machines driven by an internal combustion engine

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

NOTE Machines covered by this European Standard are listed under A.1.1 and/or A.1.2 of annex IV 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 (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 EN 292-2:1991/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	<i>Safety of machinery - Emergency stop equipment, functional aspects - Principles for design</i>
EN 847-1:1997	<i>Tools for woodworking - Safety requirements - Part 1: Milling tools and circular sawblades</i>
EN 954-1:1996	<i>Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design</i>
EN 982	<i>Safety of machinery - Safety requirements for fluid power systems and their components - Hydraulics</i>
EN 983	<i>Safety of machinery - Safety requirements for fluid power systems and their components - Pneumatics</i>
EN 1088:1995	<i>Safety of machinery - Interlocking devices associated with guards - Principles for design and selection</i>
EN 1553:1999	<i>Agricultural machinery - Agricultural self-propelled, mounted, semi-mounted and trailed machines - Common safety requirements</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	<i>Degree of protection provided by enclosures (IP code) (IEC 60529:1989)</i>
EN 60947-4-1	<i>Low voltage switchgear and control gear - Part 4: 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 control gear - Part 5: Control circuit devices and switching elements - Section 1: Electromechanical control circuit devices (IEC 60947-5-1:1990)</i>
EN ISO 3743-1	<i>Acoustics - Determination of sound power levels of noise sources - Engineering methods for small, moveable sources in reverberant fields - Part 1: Comparison method for hard wall test rooms (ISO 3743-1:1994)</i>
EN ISO 3743-2	<i>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)</i>

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EN ISO 3744	<i>Acoustics - Determination of sound power levels of noise sources using sound pressure engineering methods 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 employing 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	<i>Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 1: Measurements at discrete points (ISO 9614-1:1993)</i>
EN ISO 11202:1995	<i>Acoustics - Noise emitted by machinery and equipment - Measurement method of emission sound pressure levels at the 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 the workstation and at other specified positions - Method requiring environmental corrections (ISO 11204:1995)</i>
EN ISO 11688-1	<i>Acoustics - Recommended practice for the design of low noise machinery and equipment - Part 1: Planning (ISO/TR 11688-1:1995)</i>
ISO 3745	<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 woodworking machine tools - Operating conditions for woodworking machines</i>
HD 21.1 S3	<i>Polyvinyl chloride insulated cables of rated voltages up to and including 450/750v - Part 1: General requirements</i>
HD 22.1 S3	<i>Rubber insulated cables of rated voltages up to and including 450/750v - Part 1: General requirements</i>
HD 22.4 S3	<i>Rubber insulated cables of rated voltages up to and including 450/750 V - Part 4: Cords and flexible cables (IEC 60245-4:1994, modified)</i>

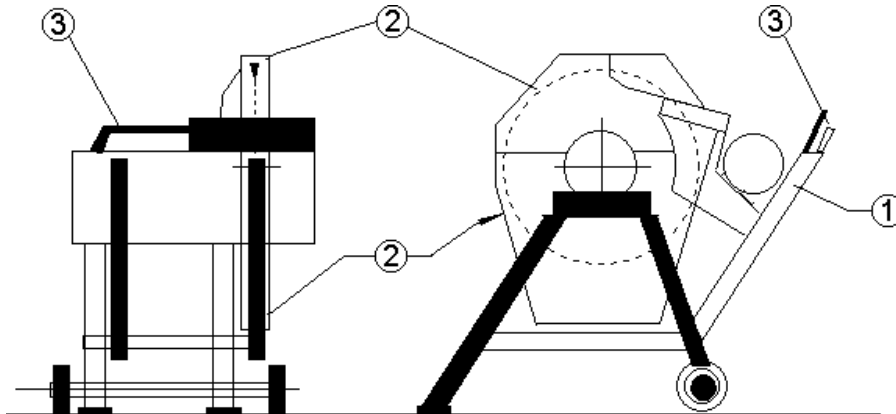
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3 Terms and definitions

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

3.1 Terms

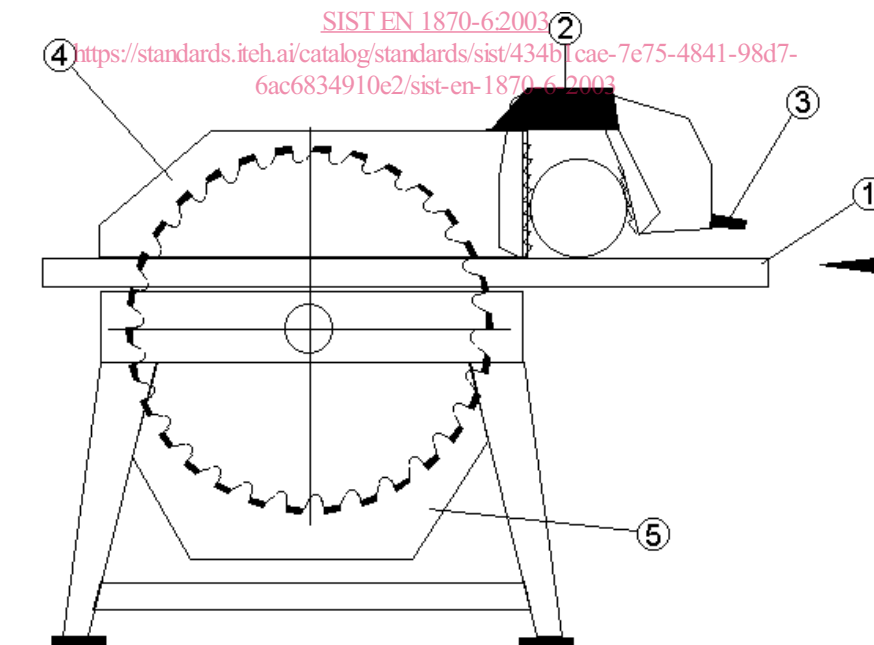
The different types of circular sawing machines for firewood and dual-purpose circular sawing machines for firewood/circular saw benches and their main parts of the machine are illustrated in the Figures 1, 2, 3 and 4.



Key	1	Pivoting log carriage
	2	Sawblade guard
	3	Handle

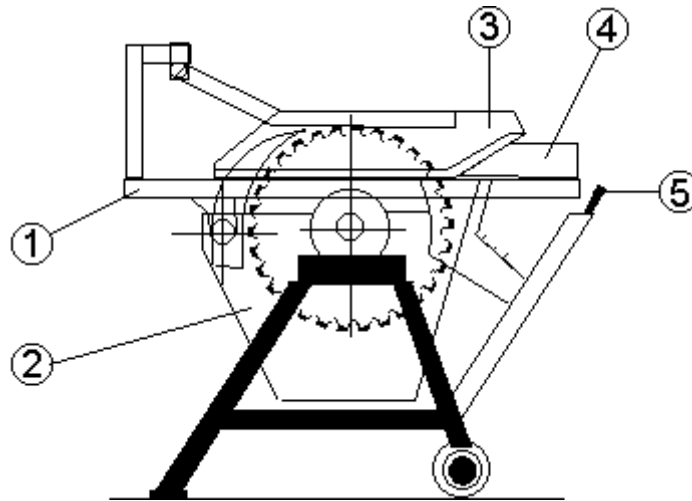
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Figure 1 — Example of a circular sawing machine for firewood with pivoting log carriage

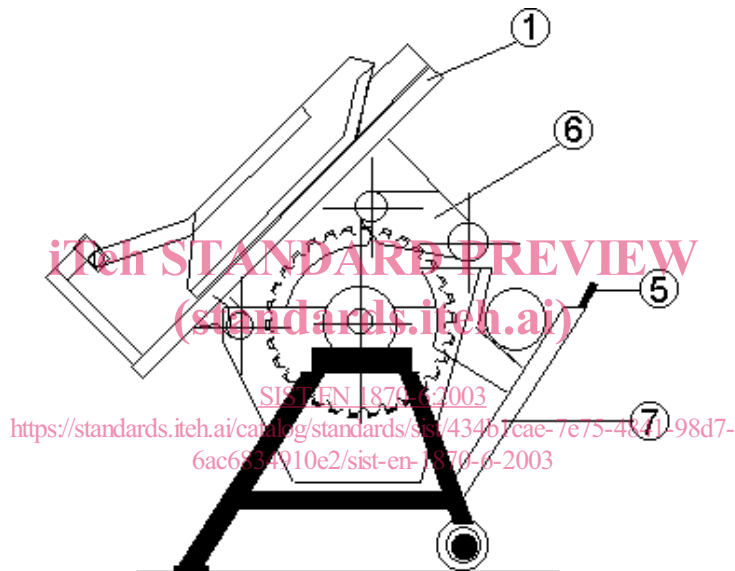


Key	1	Sliding table
	2	Workpiece holding device
	3	Operating handle
	4	Fixed guard above the table
	5	Fixed guard below the table

Figure 2 — Example of a circular sawing machine for firewood with sliding table



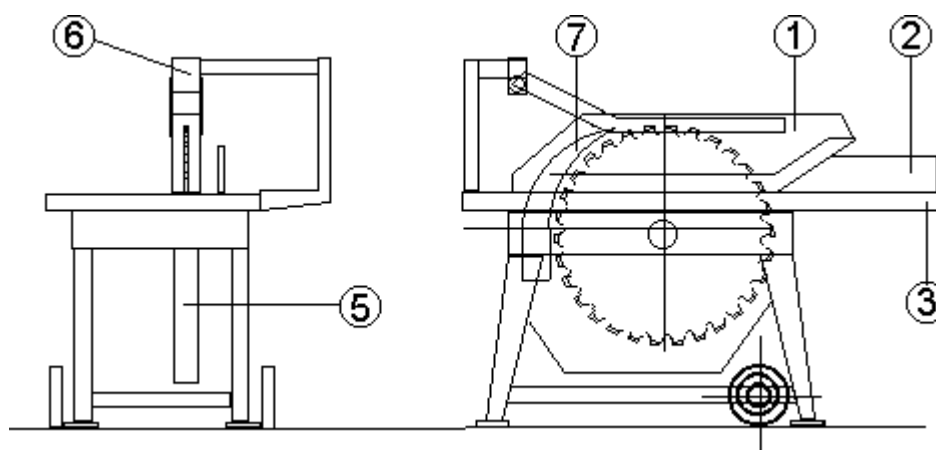
a) — Dual-purpose circular sawing machine for firewood/circular saw bench with pivoting log carriage in saw bench mode



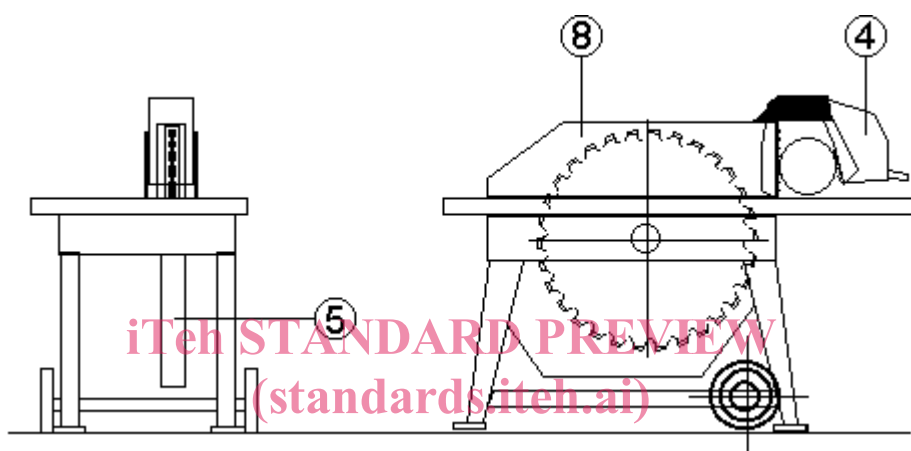
b) — Dual-purpose circular sawing machine for firewood/circular saw bench with pivoting log carriage in firewood sawing mode

Key		
1	Tilting saw bench table	
2	Sawblade guard below the table	
3	Adjustable sawblade guard	
4	Rip fence	
5	Handle	
6	Sawblade guard – firewood cutting	
7	Pivoting log carriage	

Figure 3 — Example of a dual-purpose circular sawing machine for firewood/circular saw bench with pivoting log carriage



a) — Dual-purpose circular sawing machine for firewood/circular saw bench with sliding table in saw bench mode



b) — Dual-purpose circular sawing machine for firewood/circular saw bench with sliding table in firewood sawing mode

Key		
1	Adjustable sawblade guard	
2	Rip fence	
3	Saw bench table	
4	Workpiece holding device	
5	Sawblade guard with chip outlet	
6	Adjustable support for sawblade guard	
7	Riving knife	
8	Fixed sawblade guard – log sawing	

Figure 4 — Example of a dual-purpose circular sawing machine for firewood/circular saw bench with sliding table

3.2 Definitions

3.2.1

cross-cutting

the operation of cutting across the grain of a wooden workpiece.

3.2.2

circular sawing machine for firewood

a sawing machine for cross-cutting logs for firewood, with a single sawblade driven by either an electric motor or a Power Take Off (PTO) device and which has manual loading and/or unloading. The workpiece is moved manually to the sawblade either by :

- a) a pivoting log carriage (circular sawing machine for firewood with pivoting log carriage - see Figure 1); or
- b) a sliding table with a clamping device (circular sawing machine for firewood with sliding table - see Figure 2).

EN 1870-6:2002 (E)**3.2.3****dual-purpose circular sawing machine for firewood/circular saw bench**

a dual-purpose machine which is either :

- a) a circular sawing machine for cross-cutting logs for firewood with a pivoting log carriage (see Figure 3b)); and a circular saw bench. When used as a circular sawing machine for firewood the saw bench table is tilted toward the rear of the machine (see Figure 3a)); or
- b) a circular sawing machine for cross-cutting logs for firewood with sliding table (see Figure 4b)) and a circular saw bench. When used as a saw bench the sliding table is locked in position (see Figure 4a)).

3.2.4**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.

3.2.5**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.

3.2.6**machine actuator**

a power mechanism used to effect motion of the machine.

3.2.7**hand feed**

the 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, (and the use of a demountable power feed unit).

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

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3.2.8**safety appliance**

an 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. see Figure 5.

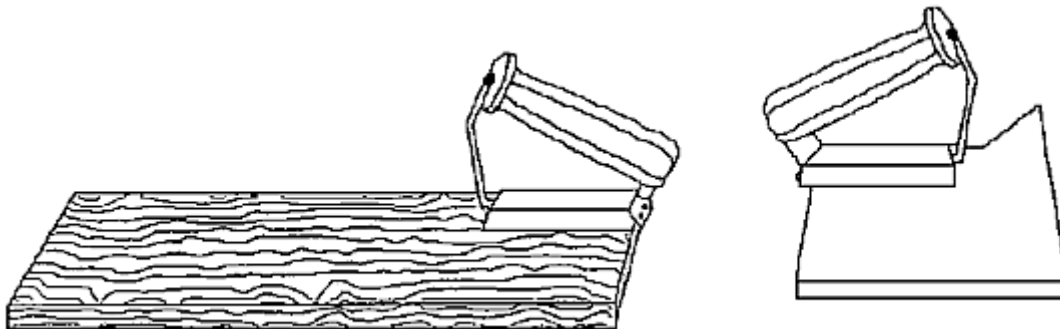


Figure 5b) : Example of push block

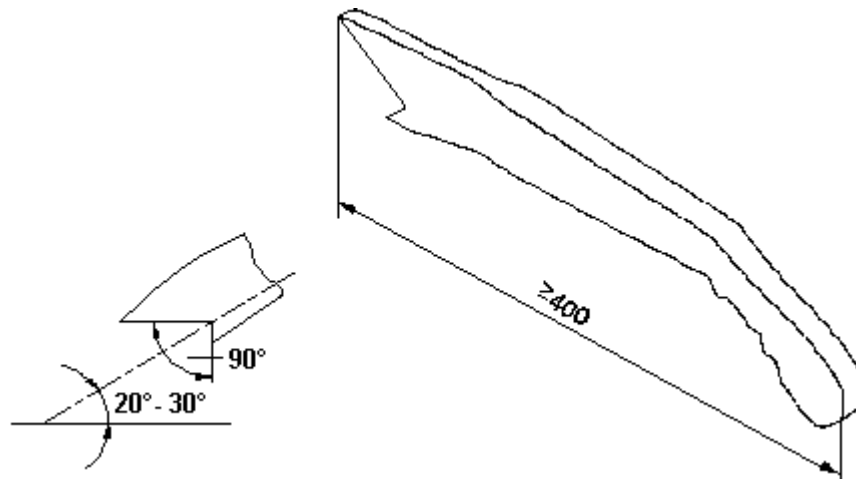


Figure 5a) : Example of push stick

Figure 5 — Examples of a push stick and push block

3.2.9

ejection

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

3.2.10

run-down time

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

3.2.11

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.

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4 List of significant 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 the Annex A of EN 292-2:1991/A1:1995.

Table 1 — List of significant hazards

Number	Significant hazard	Relevant clauses of this European 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 - liquids 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 relevant
1.7	Stabbing or puncture hazard	Not relevant
1.8	Friction or abrasion hazard	Not relevant
1.9	High pressure fluid ejection 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, 5.3.16
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 explosion 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	Interference with speech communication, acoustic signals etc.	5.3.2
4.2	Hearing losses (deafness), or other physiological disorders (e.g. loss of balance, loss of awareness)	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
6.3	Ionising radiation sources	Not relevant
6.4	Machines making use of high frequency electrical fields	Not relevant

(continued)

Table 1 — List of significant hazards (concluded)

Number	Significant hazard	Relevant clauses of this European Standard
7	Hazards generated by materials and substances processed, used or exhausted by machinery for example:	
7.1	Hazards resulting from contact with or inhalation of harmful fluids, gases, mists, fumes and dust	5.3.3
7.2	Fire or explosion hazard	5.3.1, 5.3.3, 5.3.4, Annex H
7.3	Biological and microbiological (viral or bacterial hazards)	Not relevant
8	Hazards generated by neglecting ergonomic principles in machine design (mismatch of machinery with human characteristics and abilities) caused for example by :	
8.1	Unhealthy postures or excessive efforts	5.1.2
8.2	Inadequate consideration of human hand-arm or foot-leg anatomy	5.1.2
8.3	Neglect of use of personal protection equipment	6.3
8.4	Inadequate area lighting	Annex H
8.5	Mental overload or underload, stress etc	Not relevant
8.6	Human error	6.3, Annex H
9	Hazard combinations	5.1.7
10	Hazards caused by failure of energy supply breaking down of machinery parts and other functional disorders, for example :	
10.1	Failure of energy supply (of energy and/or control circuits)	5.1.8, 5.1.9, 5.3.7, 5.3.8
10.2	Unexpected ejection of machine parts or fluids	5.2.5
10.3	Failure, malfunction of control systems (unexpected start up, unexpected overrun)	5.1.1
10.4	Errors of fitting	5.2.3, 5.3.15
10.5	Overturn, unexpected loss of machine stability	5.2.1
11	Hazards caused by (temporary) missing and/or incorrectly positioned safety related measures/means for example :	
11.1	All kinds of guard	5.2.7
11.2	All kinds of safety related (protection) devices	5.1.1, 5.2.7
11.3	Starting and stopping devices	5.1.2, 5.1.3, 5.1.4, 5.1.5, 5.2.4
11.4	Safety signs and signals	6.2
11.5	All kinds of information and warning devices	6.2, 6.3
11.6	Energy supply disconnection devices	5.3.16
11.7	Emergency devices	5.1.5
11.8	Feeding/removal means of workpieces	5.2.6
11.9	Essential equipment and accessories for safe adjusting and/or maintaining	5.3.17
11.10	Equipment evacuating gases etc	5.3.3

5 Safety requirements and/or measures

For guidance in connection with risk reduction by design, see clause 3 of EN 292-2:1991/A1:1995, and in addition :

5.1 Controls

5.1.1 Safety and reliability of control systems

For the purposes of this European Standard a safety related control system is one from and including the initial manual control or position detector to the point of input to the final actuator or element e.g. motor. The safety related control systems of this machine (see EN 954-1:1996) are those for :

- starting (see 5.1.3) ;