



SLOVENSKI STANDARD

SIST EN 691-1:2012

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Varnost lesnoobdelovalnih strojev - 1. del: Splošne zahteve

Safety of woodworking machines - Part 1: Common requirements

Sicherheit von Holzbearbeitungsmaschinen - Teil 1: Gemeinsame Anforderungen

Sécurité des machines pour le travail du bois - Partie 1: Prescriptions communes

Ta slovenski standard je istoveten z: EN 691-1:2012

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ICS:

79.120.10 Lesnoobdelovalni stroji Woodworking machines

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Safety of woodworking machines - Part 1: Common requirements

Sécurité des machines pour le travail du bois - Partie 1:
Prescriptions communes

Sicherheit von Holzbearbeitungsmaschinen - Teil 1:
Gemeinsame Anforderungen

This European Standard was approved by CEN on 8 September 2012.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Contents

	Page
Foreword.....	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	9
3.1 General.....	9
3.2 Definitions	9
4 List of significant hazards	14
5 Safety requirements and/or measures	16
5.1 General.....	16
5.2 Controls	17
5.2.1 Safety and reliability of control systems.....	17
5.2.2 Position of control actuators.....	25
5.3 Protection against mechanical hazards	26
5.3.1 Stability	26
5.3.2 Risk of break-up during operation	26
5.3.3 Tool holder and tool design.....	26
5.3.4 Braking.....	26
5.3.5 Guards, protective devices; design, arrangement.....	27
5.3.6 Prevention of access to moving parts.....	29
5.3.7 Impact hazard.....	30
5.3.8 Clamping devices	30
5.3.9 Devices to minimise the possibility or the effect of ejection.....	30
5.3.10 Work-piece supports and guides	32
5.4 Protection against non-mechanical hazards	32
5.4.1 Fire	32
5.4.2 Noise	32
5.4.3 Emission of chips and dust	33
5.4.4 Electricity.....	34
5.4.5 Ergonomics and handling.....	35
5.4.6 Lighting.....	35
5.4.7 Pneumatic.....	35
5.4.8 Hydraulic.....	35
5.4.9 Electromagnetic compatibility.....	36
5.4.10 Laser	36
5.4.11 Static electricity	36
5.4.12 Isolation	36
5.4.13 Maintenance	37
6 Information for use	37
6.1 Warning devices	37
6.2 Marking	37
6.3 Instruction handbook	38
Annex A (normative) Stability test for displaceable machines	42
A.1 Test of stability during machining	42
A.2 Test of stability during transportation.....	43
Annex B (normative) Impact test method for guards	44
B.1 General.....	44
B.2 Test method.....	44
B.2.1 Preliminary remarks	44

B.2.2	Testing equipment	44
B.2.3	Projectile for impact tests	44
B.2.4	Sampling	45
B.2.5	Test procedure	45
B.3	Results	45
B.4	Assessment	45
B.5	Test report	46
B.6	Test equipment for impact test	46
Annex C	(normative) Test for braking function	47
C.1	Conditions for all tests	47
C.2	Un-braked run-down time	47
C.3	Braked run down time	47
C.4	Run-up time	48
Annex D	(normative) Operating conditions for noise emission measurement for machines not included in ISO 7960:1995	49
D.1	General	49
D.2	Noise measurements	49
D.2.1	Test conditions	49
D.2.2	Microphone positions	49
D.3	Machine operating conditions	53
Annex E	(informative) Spindle overspeed detection	55
E.1	General	55
E.2	Spindle overspeed detection	55
E.2.1	General	55
E.2.2	Design of control circuits in category 2	55
E.2.3	Design of control circuits in category 3	56
Annex F	(informative) Recommended airflow rates for woodworking machines	57
Bibliography	60

[SIST EN 691-1:2012](https://standards.iteh.ai/catalog/standards/sist/d56bc92b-aa38-4555-a441-1c2de6d26301/sist-en-691-1-2012)

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EN 691-1:2012 (E)**Foreword**

This document (EN 691-1:2012) 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 April 2013, and conflicting national standards shall be withdrawn at the latest by April 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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This document, EN 691-1, which concerns general requirements which are common to most woodworking machines, is intended to be used with the parts XX of EN 691, i.e.:

- EN 691-XX: Requirements for particular types of woodworking machines which either supplement or modify the requirements given in EN 691-1 to account for the particular hazards and characteristics of these specific machines.

Compliance with the relevant clauses of EN 691-1 together with a relevant EN 691-XX provides one means of conforming with the essential health and safety requirements of the Machinery Directive.

Organisations contributing to the preparation of this document 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.

Introduction

This document is a type C standard as stated in EN ISO 12100:2010.

The machinery concerned and the extent to which hazards, hazardous situations and events 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 and B standards, the provisions of this 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 woodworking machines. They are also useful for designers and importers.

This document also includes examples which can be provided and information which shall be provided by the manufacturer to the user.

Requirements for milling tools, circular saw blades are given in EN 847-1:2005+A1:2007, for the shank of shank mounted milling tools in EN 847-2:2001, for clamping devices in EN 847-3:2004.

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EN 691-1:2012 (E)**1 Scope**

This European Standard is applicable to woodworking machines with cutting tools and/or sanding tools as defined in 3.2.1, when they are used as intended and under the conditions foreseen by the manufacturer.

This document deals with some but not all significant hazards, hazardous situations and events relevant to woodworking machines: those that are common to most of such machines and are listed in Clause 4.

When a relevant part EN 691-XX does not exist, EN 691-1 can help to establish the requirements for the machine, but will not by itself provide a means of conforming to the relevant essential health and safety requirements of the Machinery Directive. In this case a risk assessment should be performed.

NOTE 1 Reasonably foreseeable misuse of machines is dealt with in the relevant parts EN 691-XX.

This document is not applicable 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, capable of being lifted by one person by hand, having a mass not exceeding 25 kg; the bench can also be an integrated part of the machine if it consists of hinged legs which can be extended down;

NOTE 2 A relevant part EN 691-XX may define different criteria for delimiting the Scope.

NOTE 3 Transportable electrically driven machines excluded by the Scope of this document are covered by the requirements of EN 61029-1:2009 and parts of EN 61029-2-XX.

- hand held woodworking machines (hand held motor operated tools) or any adaptation permitting their use in a different mode, i.e. bench mounting

NOTE 4 Driven hand held motor operated tools are covered by EN 60745-1:2009 and parts of EN 60745-2-XX.

NOTE 5 Machines for capturing and extracting dust are covered by EN 12779:2004+A1:2009.

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

NOTE 6 This document covers also woodworking machines which fulfil the criteria of the Machinery Directive, Annex IV.

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 847-1:2005+A1:2007, *Tools for woodworking — Safety requirements — Part 1: Milling tools, circular saw blades*

EN 847-2:2001¹⁾, *Tools for woodworking — Safety requirements — Part 2: Requirements for the shank of shank mounted milling tools*

EN 847-3:2004, *Tools for woodworking — Safety requirements — Part 3: Clamping devices*

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*

1) This document is impacted by the corrigendum EN 847-2:2001/AC:2003.

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 953:1997+A1:2009, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

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 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 protective devices — Part 2: General principles for the design and testing of pressure sensitive edges and pressure sensitive bars*

EN 1760-3:2004+A1:2009, *Safety of machinery — Pressure sensitive protective devices — Part 2: General principles for the design and testing of pressure sensitive bumpers, plates, wires and similar devices*

EN 50178:1997, *Electronic equipment for use in power installations*

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 50525-2-21:2011, *Electric cables — Low voltage energy cables of rated voltages up to and including 450/750 V (U₀/U) — Part 2-21: Cables for general applications — Flexible cables with crosslinked elastomeric insulation*

EN 60204-1:2006²⁾, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005, modified)*

EN 60439-1:1999³⁾, *Low-voltage switchgear and controlgear assemblies — Part 1: Type-tested and partially type-tested assemblies (IEC 60439-1:1999)*

²⁾ This document is impacted by EN 60204-1:2006/A1:2009.

³⁾ This document is impacted by EN 60439-1:1999/A1:2004.

EN 691-1:2012 (E)

EN 60529:1991⁴⁾, *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)*

EN 61496-1:2004⁵⁾, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:2004, modified)*

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)*

CLC/TS 61496-3:2008, *Safety of machinery — Electro-sensitive protective equipment — Part 3: Particular requirements for active opto-electronic protective devices responsive to diffuse reflection (AOPDDR) (IEC 61496-3:2008)*

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, movable 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)*

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 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 9614-2:1996, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 2: Measurement by scanning (ISO 9614-2:1996)*

EN ISO 11201:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections (ISO 11201:2010)*

4) This document is impacted by EN 60529:1991/A1:2000.

5) This document is impacted by EN 61496-1:2004/A1:2008.

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 11688-2:2000, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 2: Introduction to the physics of low-noise design (ISO/TR 11688-2:1998)*

EN ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13849-1:2008⁶⁾, *Safety of machinery — Safety-related parts of controls systems — Part 1: General principles for design (ISO 13849-1:2006)*

EN ISO 13849-2:2008, *Safety of machinery — Safety-related parts of control systems — Part 2: Validation (ISO 13849-2:2003)*

EN ISO 13850:2008, *Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)*

ISO 7960:1995, *Airborne noise emitted by machine tools — Operating conditions for woodworking machines*

3 Terms and definitions (standards.iteh.ai)

3.1 General

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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

woodworking machine

machine designed to machine wood, material similar to wood, wood based materials and also these materials if they are covered with edgings and/or laminates made of plastic, light alloy, veneer, etc.

Note 1 to entry: Materials analogous to wood include, for example, chipboard, fibreboard, plywood (and also these materials when they are covered with plastic or light alloy laminates), cork, bone, rigid rubber or plastic.

3.2.2

machine actuator

power mechanism used to effect motion on the machine

3.2.3

run-up time

time elapsed from the actuation of the start control device until the spindle or machine part reaches the intended speed

6) This document is impacted by the corrigendum EN ISO 13849-1:2008/AC:2009.

EN 691-1:2012 (E)**3.2.4****run-down time**

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

3.2.5**stationary machine**

machine designed to be located on or fixed to the floor or other parts of the structure of the premises

3.2.6**displaceable machine**

machine, stationary during use and equipped with a device, e.g. wheels, which allows it to be moved between locations

3.2.7**climb cutting**

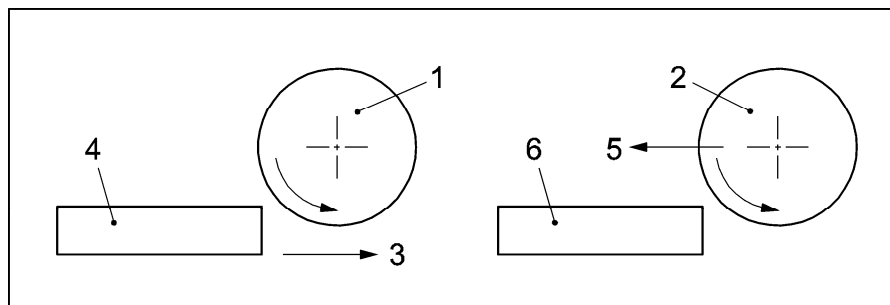
cutting where the projection of the movement of the cutting knife in direction of the feed movement shows in the same direction as the relative movement of the work-piece against the tool

Note 1 to entry: See Figure 1a).

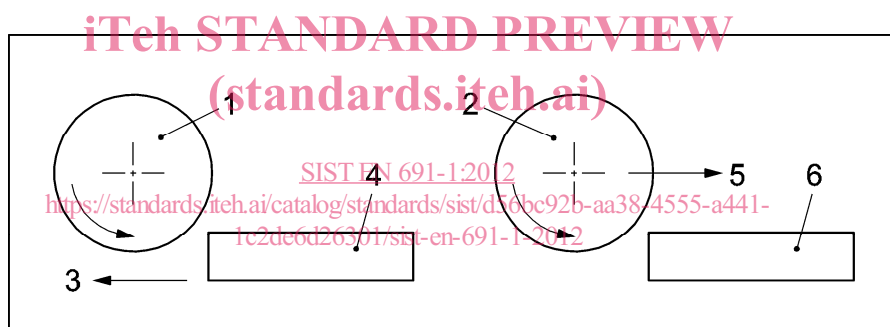
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**Key**

- 1 tool, fixed axis
- 2 tool, moving axis
- 3 feed direction (work-piece)
- 4 work-piece (moving)
- 5 feed direction (tool)
- 6 work-piece (fixed)

a) Climb cutting**Key**

- 1 tool, fixed axis
- 2 tool, moving axis
- 3 feed direction (work-piece)
- 4 work-piece (moving)
- 5 feed direction (tool)
- 6 work-piece (fixed)

b) Cutting against the feed**Figure 1 — Climb cutting and cutting against the feed****3.2.8****cutting against the feed**

cutting where the projection of the movement of the cutting knife in direction of the feed movement shows in the opposite direction as the relative movement of the work-piece against the tool

Note 1 to entry: See Figure 1b).

EN 691-1:2012 (E)**3.2.9****information of the supplier**

statements, sales literature, leaflets or other documents, in which a manufacturer (supplier) declares either the characteristics of e.g. a material or product or the conformity of the material or product to a relevant standard or specification

3.2.10**feed**

relative movement between work-piece and tool(s) during machining

3.2.11**hand feed**

manual holding and/or guiding of the work-piece or machine element with incorporated tool during machining; hand feed includes the use of a hand operated support on which the work-piece is placed manually or clamped and the use of a demountable power feed unit

3.2.12**integrated feed****mechanical 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) is held and controlled mechanically during the machining operation

3.2.13**kickback**

particular form of ejection describing the unexpected movement of the work-piece or parts of it opposite to the direction of feed during processing

3.2.14**safety function**

function of the machine whose failure can result in an immediate increase of the risk(s)

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[SOURCE: EN ISO 12100-1:2010, 3.30]

3.2.15**safety-related part of a control system (SRP/CS)**

part of a control system that responds to safety-related input signals and generates safety-related output signals

[SOURCE: EN ISO 13849-1:2008, 3.1.1]

Note 1 to entry: The combined safety-related parts of a control system start at the point where the safety-related input signals are initiated (including for example, the actuating cam and the roller of the position switch) and end at the output of the power control elements (including, for example, the main contacts of the contactor).

Note 2 to entry: If monitoring systems are used for diagnostics, they are also considered as SRP/CS.

3.2.16**application software****SRASW**

software specific to the application, implemented by the machine manufacturer, and generally containing logic sequences, limits and expressions that control the appropriate inputs, outputs, calculations and decisions necessary to meet the SRP/CS requirements

[SOURCE: EN ISO 13849-1:2008, 3.1.36]

3.2.17
embedded software
firmware
system software
SRESW

software that is part of the system supplied by the control manufacturer and which is not accessible for modification by the user of the machinery

[SOURCE: EN ISO 13849-1:2008, 3.1.37]

3.2.18
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, 4.5.1]

3.2.19
operational stop

stop for operational reasons without cutting off the energy supply to the actuator(s) where the stop condition is monitored and maintained

3.2.20
start-up of a machine
starting

change from rest to motion of a machine or of one of its parts, e.g. tool spindle(s)

3.2.21
manual control

situation where each process movement is initiated by the operator

3.2.22
automatic machine

machine which after initiation of start-up by the operator is capable of autonomously repeating machining cycles; the work-piece may be manually loaded and/or unloaded

3.2.23
semi-automatic machine

machine which needs to be initiated by the operator for each cycle; the work-piece may be manually loaded and/or unloaded

3.2.24
cutting area

area where the tool(s) can be involved in the cutting process

3.2.25
non-cutting area

area where the tool(s) is(are) not involved in the cutting process

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