

**Safety of woodworking machines - One side moulding machines with rotating tool - Part 2: Single spindle hand fed/integrated fed routing machines CONSOLIDATED TEXT**

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## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 848-2:2007+A2:2012 sisaldab Euroopa standardi EN 848-2:2007+A2:2012 ingliskeelset teksti.	This Estonian standard EVS-EN 848-2:2007+A2:2012 consists of the English text of the European standard EN 848-2:2007+A2:2012.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 26.09.2012.	Date of Availability of the European standard is 26.09.2012.
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English Version

## Safety of woodworking machines - One side moulding machines with rotating tool - Part 2: Single spindle hand fed/integrated fed routing machines

Sécurité des machines pour le travail du bois - Machines à fraiser sur une face, à outil rotatif - Partie 2: Défonceuses monobroche à avance manuelle/mécanisée

Sicherheit von Holzbearbeitungsmaschinen - Fräsmaschinen für einseitige Bearbeitung mit drehendem Werkzeug - Teil 2: Einspindelige Oberfräsmaschinen mit Handvorschub/mechanischem Vorschub

This European Standard was approved by CEN on 13 January 2007 and includes Amendment 1 approved by CEN on 3 October 2009 and Amendment 2 approved by CEN on 13 August 2012.

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## Foreword

This document (EN 848-2:2007+A2:2012) 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of an identical text or by endorsement, at the latest by March 2013, and conflicting national standards shall be withdrawn at the latest by March 2013.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 includes Amendment 1, approved by CEN on 2009-10-03 and Amendment 2, approved by CEN on 2012-08-13.

This document supersedes  $\text{A}_2$  EN 848-2:2007+A1:2009  $\text{A}_2$ .

The start and finish of text introduced or altered by amendment is indicated in the text by tags  $\text{A}_1$   $\text{A}_1$  and  $\text{A}_2$   $\text{A}_2$ .

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 the  $\text{A}_1$  Machinery Directives  $\text{A}_1$ .

$\text{A}_1$  For relationship with EU Directive(s), see informative  $\text{A}_2$  Annexe ZA, which is an integral part  $\text{A}_2$  of this document.  $\text{A}_1$

Organisation contributing to the preparation of this document include the European Association of Manufacturer of Woodworking Machines "EUMABOIS".

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  $\text{A}_2$  EN ISO 12100:2010  $\text{A}_2$  for a description of A, B and C standards).

$\text{A}_1$  EN 848 *Safety of woodworking machines — One side moulding machines with rotating tool* consists of the following parts:

*Part 1: Single spindle vertical moulding machines*

*Part 2: Single spindle hand fed/integrated fed routing machines*

*Part 3: Numerically controlled (NC) boring and routing machines*  $\text{A}_1$

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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 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 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 are 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 or B standards, the provisions of this type C 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 single spindle hand fed/integrated fed routing machines. It is also useful for designers.

This document also includes examples of information which are to be provided by the manufacturer to the user.

Common requirements for tooling are given in [EN 847-1:2005+A1:2007](#), [EN 847-2:2001](#) and [EN 847-3:2004](#).

## 1 Scope

This document <sup>A1</sup> specifies all significant <sup>A1</sup> hazards, hazardous situations and events as listed in Clause 4 which are relevant to stationary and displaceable single spindle hand fed/integrated fed routing machines with fixed head but allowing only movement along the axis of the tool during machining hereinafter referred to as "machines" designed to cut solid wood, chip board, fibreboard, plywood and also these materials if they are covered with plastic laminate, edgings or veneer when they are used as intended and under the conditions foreseen by the manufacturer <sup>A2</sup> including reasonably foreseeable misuse <sup>A2</sup>.

<sup>A2</sup> For the definition of stationary and displaceable machine see 3.2.17 and 3.2.18.

Machines which are designed to work wood based materials may also be used for working hardened plastic materials with similar physical characteristics as wood. <sup>A2</sup>

This document does not apply to:

- a) inverted pin routers and radial arm routers (machines where the work piece is fixed and the tool head is manually moved);
- b) NC boring machines and NC routing machines;

<sup>A2</sup> NC boring machines and NC routing machines are dealt with in EN 848-3:2007+A1:2009. <sup>A2</sup>

- c) hand-held routers or any adaptation permitting their use in a different mode, e.g. bench mounting;

<sup>A2</sup> NOTE 1 <sup>A2</sup> Hand-held motor-operated electric tools are dealt with in <sup>A2</sup> EN 60745-1:2009 <sup>A2</sup> together with EN 60745-2-17:2003.

- d) routing 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. The bench can also be an integrated part of the machine if it consists of hinged legs which can be extended down.

<sup>A2</sup> NOTE 2 <sup>A2</sup> Transportable motor-operated electric tools are dealt with in EN 61029-1:2000 together with <sup>A2</sup> EN 61029-2-8:2010 <sup>A2</sup>.

This document is not applicable to single spindle hand fed/integrated fed routing machines which are manufactured before the date of its publication as EN.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

<sup>A2</sup> EN 847-1:2005+A1:2007 <sup>A2</sup>, *Tools for woodworking — Safety requirements — Part 1: Milling tools, circular saw blades*

EN 847-2:2001, *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*

<sup>A2</sup> EN 894-1:1997+A1:2008 <sup>A2</sup>, *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*



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*

deleted text

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 1837:1999+A1:2008, *Safety of machinery — Integral lighting of machines*

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 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005, modified)*

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

EN 60529:1991<sup>2)</sup>, *Degrees of protection provided by enclosure (IP code) (IEC 60529:1989)*

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: Method for special reverberation test rooms (ISO 3743-2:1994)*

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<sup>1)</sup> EN 60439-1:1999 is impacted by EN 60439-1:1999/A1:2004.

<sup>2)</sup> EN 60529:1991 is impacted by EN 60529:1991/A1:2000.

**A2** EN ISO 3744:2010 **A2**, **A2** 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) **A2**

**A2** EN ISO 3745:2009<sup>3)</sup> **A2**, Acoustics — Determination of sound power levels of noise sources using sound pressure — Precision methods for anechoic and semi-anechoic rooms (ISO 3745:2003)

**A2** EN ISO 3746:2010 **A2**, **A2** 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) **A2**

**A2** EN ISO 4413:2010, Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413:2010)

EN ISO 4414:2010, Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414:2010) **A2**

**A2** EN ISO 4871:2009 **A2**, Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)

**A2** EN ISO 9614-1:2009 **A2**, Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 1: Measurements at discrete points (ISO 9614-1:1993)

**A2** EN ISO 11202:2010 **A2**, **A2** 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) **A2**

**A2** deleted text **A2**

**A2** EN ISO 11204:2010 **A2**, **A2** 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) **A2**

**A2** deleted text **A2**

**A2** EN ISO 11688-1:2009 **A2**, Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1995)

**A2** deleted text **A2**

**A2** EN ISO 12100:2010, Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010) **A2**

**A1** EN ISO 13849-1:2008 **A1**, Safety of machinery — Safety-related parts of controls systems — Part 1: General principles for design (ISO 13849-1:2006)

**A2** EN ISO 13850:2008 **A2**, Safety of machinery — Emergency stop - Principles for design (ISO 13850:2006)

ISO 7948:1987, Woodworking machines — Routing machines — Nomenclature and acceptance conditions

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

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<sup>3)</sup> EN ISO 3745:2009 is replaced by EN ISO 3745:2012.

HD 22.4 S4:2004<sup>4)</sup>, *Cables of rated voltages up to and including 450/750 V and having crosslinked insulation — Part 4: Cords and flexible cables*

### 3 Terms and definitions

#### 3.1 General

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

##### **routing machine**

C-frame type machine for the moulding of workpieces by means of:

- a) one tool spindle located above the table and running at speeds between 6 000 min<sup>-1</sup> and generally 24 000 min<sup>-1</sup>. The work head is tiltable or not and may be movable only along the direction of the axis of the tool during machining;
- b) a table to support the workpiece or jig. The table is tiltable or not and/or movable in X, Y and Z directions and/or adjustable round the C axis;
- c) the tool spindle/work head is either manually or power driven moved vertically during machining or moved by means of hydraulic or pneumatic devices. The workpiece is normally fed to the machine in a direction opposite to the direction of the tool spindle either manually or by means of an integrated feed system

##### 3.2.2

##### **straight work**

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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4) HD 22.4 S4:2004 is replaced by EN 50525-2-21:2011.