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Varnost premiļ nih elektriļ nih orodij - 2-11. del: Posebne zahteve za kombinirane kroġne ġage z delovno mizo in za zajeralne ġage (IEC 61029-2-11:2001, spremenjen)

Safety of transportable motor-operated electric tools -- Part 2-11: Particular requirements for combined mitre and bench saws

Sicherheit transportabler motorbetriebener Elektrowerkzeuge -- Teil 2-11: Besondere Anforderungen für kombinierte Tisch- und Gehrungssägen

Sécurité des machines-outils électriques semi-fixes -- Partie 2-11: Règles particulières pour les scies d'établi-scies à mortaiser

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ICS:

25.080.60	Strojne žage	Sawing machines
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EUROPEAN STANDARD
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English version

Safety of transportable motor-operated electric tools - Part 2-11: Particular requirements for combined mitre and bench saws

(IEC 61029-2-11:2001, modified)

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This European Standard was approved by CENELEC on 2009-06-01. CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC
European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of the International Standard IEC 61029-2-11:2001, prepared by SC 61F (transformed into IEC TC 116, Safety of hand-held motor-operated electric tools), together with the common modifications prepared by the Technical Committee CENELEC TC 116, former TC 61F, Safety of hand-held motor-operated electric tools, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 61029-2-11 on 2009-06-01.

This European Standard supersedes EN 61029-2-11:2003.

This revised version has been prepared to take into account the comments received from the MD consultant and the authority of the Netherlands.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2010-06-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2012-06-01

This European Standard is divided into two parts:

Part 1 General requirements, which are common to most transportable motor, operated tools (for the purpose of this European Standard referred to simply as tools) which could come within the scope of this European Standard.

Part 2 Requirements for particular types of tool which either supplement or modify the requirements given in Part 1 to account for the particular hazards and characteristics of these specific tools.

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directives 98/37/EC (amended by Directive 98/79/EC) and 2006/42/EC. See Annexes ZZA and ZZB.

Compliance with the relevant clauses of Part 1 together with a relevant Part 2 of this European Standard provides one means of confirming with the specified essential requirements of the Directive. The requirements defined in EN 1050 are also dealt with in this European Standard.

The standard follows the overall requirements of EN ISO 12100-1 and EN ISO 12100-2.

For noise and vibration this European Standard covers the requirements for their measurement, the provisions of information arising from these measurements and the provision of information about the Personal Protective Equipment required. Specific requirements for the reduction of the risk arising from noise and vibration through the design of the tool are not given as this reflects the current state of art.

Warning: Other requirements arising from other European Directives can be applicable to the products falling within the scope of this European Standard.

CEN has prepared standards for industrial machines, which may extend to transportable machines. Although CEN and CENELEC have where appropriate used common solutions to provide uniform levels of protection, persons using this European Standard should check the scope of both this and CEN standards to ensure that a correct standard is used.

This Part 2-11 is to be used in conjunction with EN 61029-1:2009. This Part 2-11 supplements or modifies the corresponding clauses of EN 61029-1, so as to convert it into the European Standard: “Particular requirements for combined mitre and bench saws”.

Where a particular subclause of Part 1 is not mentioned in this Part 2-11, that subclause applies as far as reasonable. Where this Part 2-11 states "addition" "modification" or "replacement", the relevant text of Part 1 is to be adapted accordingly.

Clauses, subclauses, notes, tables and figures which are additional to those in Part 1 are numbered starting from 101.

Clauses, subclauses, notes, tables and figures which are additional to those in IEC 61029-2-11 are prefixed "Z".

NOTE In this standard the following print types are used:

- requirements proper: in roman type;
- *test specifications: in italic type;*
- explanatory matter: in smaller roman type.

Contents

Figures

Tables

1 Scope

This clause of Part 1 is applicable except as follows:

1.1 *Addition:*

This European Standard applies to transportable combined mitre and bench saws with a saw blade diameter not exceeding 315 mm and intended for cutting wood and analogous materials.

1.2 *Addition:*

This European Standard does not apply to transportable mitre and bench saws intended to be used to cut steel, iron, brass or food.

This standard does not apply to

– single function bench saws;
– single function mitre saws;
– combined mitre and bench saws other than transportable.

NOTE Z101 Transportable single function bench saws are covered by EN 61029-2-1.

NOTE Z102 Transportable single function mitre saws are covered by EN 61029-2-9.

NOTE Z103 EN 1870-3 gives requirements for combined mitre and bench saws for cutting wood other than transportable.

2 Definitions

This clause of Part 1 is applicable except as follows:

2.21 *Replacement:*

2.21
normal load
load to obtain rated input

Addition:

2.101
combined mitre and bench saw
saw intended to be used:
a) as a down-cutting cross cut saw;
b) as a circular bench saw.

The saw may be of type “A” or type “B” as defined in 2.Z101 and 2.Z102

2.Z101
type “A” saw
combined mitre and bench saw equipped with two tables: a mitre saw table having a fence to support the material to be cut as the saw blade is brought down and a bench table which supports the material to be cut as it is fed by hand towards to the saw blade. In mitre mode the saw blade is suspended over the mitre saw table from an arm, normally from a point located at the table or on a part of the frame of the machine. A sliding cutting movement may follow a downward cutting action or vice-versa. In bench mode the saw blade projects through a slot in the bench saw table (see Figure Z101)

2.Z102
type “B” saw
combined mitre and bench saw equipped with a single table which supports and positions the work piece during mitre and bench sawing operations. The saw blade is capable of being located either above or below the table. In the bench mode the saw blade projects through a slot in the table. In the mitre mode the saw blade is suspended over the table from an arm, normally from a point located at the table or on a part of the frame of the machine. In some cases a sliding movement follows a downward cutting action or vice-versa (see Figure Z102)

3 General requirement

This clause of Part 1 is applicable.

4 General notes on tests

This clause of Part 1 is applicable.

5 Rating

This clause of Part 1 is applicable.

6 Classification

This clause of Part 1 is applicable.

7 Marking and information for use

This clause of Part 1 is applicable except as follows:

7.1 *Addition:*

Combined mitre and bench saws shall be marked with

- maximum and minimum saw blade diameter;
- rated no-load speed;
- indication of direction of rotation of the saw blade;
- the maximum cutting depth for bench sawing operation;
- saw blade bore diameter;
- thickness of riving knife.

If the top guard in bench mode is made of non-transparent material, an indication of the cutting line in alignment with the plane of the saw blade shall be marked on the top guard.

7.6 *Addition:*

The direction of rotation of the blade shall be indicated on a fixed part of the saw in the vicinity of the spindle axis by an arrow raised or sunk, which is visible when changing the blade, or by any other means not less visible and indelible.

Where the machine is designed to operate at more than one spindle speed, the following requirements shall apply:

- on machines where a speed change is achieved by changing the position of the drive belts on the drive pulleys, the selected speed shall be indicated on the same side of the machine as the start control by a diagram showing the relevant speed selected for each combination of pulleys;
- on machines where a speed change is achieved by an electronic control circuit, the selected speed shall be indicated on the machine at the selecting device (e.g. variable speed control dial provided with numerical speed settings).

7.13 *Addition:*

The substance of the following instructions shall also be given.

c) Safety precautions

- warning to not use saw blades which are damaged or deformed;
- warning to not use the saw without the guards in position, especially after a mode change, and instruction to keep guards in good working order and properly maintained;
- instruction to replace the table insert when worn;
- instruction to use only saw blades specified by the manufacturer, with a warning that the riving knife shall not be thicker than the width of the groove cut by the saw blade and not thinner than the body of the blade;
- instruction to ensure that the arm is securely fixed when bevelling;
- warning to not use saw blades manufactured from high speed steel;
- instruction to wear suitable personal protective equipment, this could include:
  - hearing protection to reduce the risk of induced hearing loss;
  - eye protection;
  - respiratory protection to reduce the risk of inhalation of harmful dust;
  - gloves for handling saw blades and rough material; (recommendation that saw blades should be carried in a holder wherever practicable);
- instruction to always put the push-stick into storage when is not in use.

e) Safe operation

- lifting and transportation information: Information shall include where to lift and support the saw and when necessary a warning not to use guards for this purpose;
- instruction to keep the floor area free of loose material e.g. chips and cut-offs;
- instruction how to correctly replace and reposition the blade, including details for correct guard repositioning in mitre saw and bench saw mode;
- instruction to use push-sticks or a push-block handle to avoid working with the hands close to the saw blade when using in the bench sawing mode;
- recommendation that the operator shall be adequately trained in the use, adjustment and operation of the machine;
- instruction to ensure that the arm is securely fixed when bevelling;
- instruction to ensure that the arm is securely fixed in the working position in the bench sawing mode;
- instruction to stop the saw when unattended;
- instruction to ensure that the bench saw table is securely fixed at the chosen height (for type “A” saws only);
- instruction to use sharp saw blades;
- instruction to ensure the speed marked on the saw blade is at least equal to the speed marked on the saw;

– instruction to ensure that any spacers and spindle rings used are suitable for the purpose as stated by the manufacturer;
– when fitted with a laser: warning to not exchange the laser with a different type. Instruction that repairs shall only be carried out by laser manufacturer or an authorized agent;
– instruction to ensure that the upper portion of the saw blade is completely enclosed in the mitre sawing mode;
– warning to refrain from removing any cut-offs or other parts of the work piece from the cutting area whilst the machine is running and the saw head is not in the rest position;
– instruction how to use and correct adjustment of riving knife in the bench saw mode;
– in bench saw mode, instruction whether and how rebating or grooving should be carried out, e.g. guarding requirements;
– warning that the saw shall not be used for slotting (stopped groove);
– information: a table giving guidance on spindle speed selection for different materials to be sawn shall be given for variable speed machines;
– instruction that during transportation the upper part of the saw blade shall be covered, for example by the top guard or the saw blade is adjusted to the lowest position;
– instruction how to use and correct adjustment of the lower saw guard in bench sawing mode;
– instruction how to perform cuts correctly and safely:
  - in mitre saw mode, always to clamp work pieces to the saw table;
  - to ensure before each cut that the machine is stable;
  - if needed, to fix the machine to a work bench or the like;
  - if needed, to support long work pieces with appropriate additional supports;
– instruction how to clamp work pieces to the mitre table;
– instruction how to support long work pieces;
– instruction how to fix the machine to a workbench or the like;
– information about the minimum size of the work piece;
– information about the maximum cross-section size of the work piece for cross-cutting.

The following information shall also be given:

– the maximum and minimum diameters, thickness and bore diameter of saw blade which may be used;
– maximum cutting depth;
– about the types of cuts that can be performed by the machine and how to perform them;
– for Type “B” saws: How to correctly locate the saw in either the mitre or bench sawing mode.

NOTE Sketches may be used to illustrate the modes of operation.

8 Protection against electric shock

This clause of Part 1 is applicable.

9 Starting

This clause of Part 1 is applicable.

10 Input and current

This clause of Part 1 is applicable.

11 Heating

This clause of Part 1 is applicable.

12 Leakage current

This clause of Part 1 is applicable.

13 Environmental requirements

This clause of Part 1 is applicable except as follows:

13.2.1 *Addition:*

The most important sources of noise are

– the work piece,
– the saw blade,
– the gear,
– the motor/fan.

NOTE For general information concerning the reduction of noise see EN ISO 11688-1.

13.2.4 *Replacement of Paragraphs 1, 2 and 3:*

Combined mitre and bench saws are tested in the bench mode under the conditions shown in Table Z101.

Table Z101 - Noise test conditions for combined mitre and bench saws

Material	Cutting a horizontal piece of chipboard 800 mm x 400 mm x 19 mm
Feed speed	(3 ± 1) m/min
Width of cut-off	Approximately 10 mm wide strips (set by rip fence) across the 400 mm width of the chipboard
Depth of cut	Blade adjusted to cut 22 mm
Test time	Five cuts quickly following each other, measurement starting 100 mm behind front edge up to end of the work piece. The sound pressure is averaged over the test work cycle.
Tool bit	New blade at the start of the test, tungsten carbide tipped for crosscutting and having the maximum diameter as recommended by the manufacturer
Test position	To be used on a bench above reflecting plane as shown in Figure 12 of Part 1

13.3.6.3 *Replacement:*

Combined mitre and bench saws are tested at no-load in the mitre saw mode.

14 Protection against ingress of foreign bodies and moisture resistance

This clause of Part 1 is applicable.

15 Insulation resistance and electric strength

This clause of Part 1 is applicable.

16 Endurance

This clause of Part 1 is applicable.

17 Abnormal operation

This clause of Part 1 is applicable except as follows:

17.1 *Addition:*

Combined mitre and bench saws are considered to be saws in which moving parts are liable to be jammed, if equipped with an induction motor.

18 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows:

18.1 *Addition:*

Combined mitre and bench saws shall be equipped with an adequate guarding system, which cannot be removed without the aid of a tool, except for the top guard.

The guarding system shall comply with the requirements of 18.1.101, 18.1.102 and 18.1.103.

18.1.101 Blade guards

18.1.101.1 Mitre sawing mode

Combined mitre and bench saws shall be provided with a combination of fixed and self-closing guards (see Figure Z104).

The areas 1 and 2 of the machine are as shown in Figure Z104.

The machine shall have a fixed guard to guard the area 1. This guard shall, as a minimum, cover the periphery of the saw blade within the area 1 and both sides of the saw blade within area 1 at least down to the root of the teeth, irrespective of the position of the saw unit. When the flange / clamping nut is not circular it shall be covered by a fixed guard**.** The top guard of bench saw mode shall be lockable in the mitre saw mode, or the bench saw table shall completely protect the blade when the top table is adjusted in the highest position (type “A” saw).

In the rest position the machine shall have a combination of fixed and self-closing guards which guard the area 2. These guards shall, as a minimum, cover the periphery of the saw blade within the area 2 and both sides of the saw blade within area 2 at least down to the root of the teeth. See Figure Z104 for illustration.

The guard shall comply with this requirement at any mitre and bevel position which is possible.

The self-closing saw guard shall comply with either a) or b):

a) The guard shall be of a U-shaped construction (see Figure Z101a), spring-loaded and/or connected by positive mode to the saw unit. The guard shall enclose the teeth of the blade.

   “Positive mode” means that the opening and closing of the guard is related to the corresponding up and down movement of the saw unit.