SLOVENSKI STANDARD
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Varnost premičnih električnih orodij - 2-1. del: Posebne zahteve za krožne žage z delovno mizo

Safety of transportable motor-operated electric tools - Part 2-1: Particular requirements for circular saw benches

Sicherheit transportabler motorbetriebener Elektrowerkzeuge - Teil 2-1: Besondere Anforderungen an Tischkreissägen

Sécurité des machines outils électrique semi-fixes - Partie 2-1: Règles particulières pour les scies circulaires à table

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Safety of transportable motor-operated electric tools - Part 2-1: Particular requirements for circular saw benches

(IEC 61029-2-1:1993, modified + A1:1999 + A2:2001)

Sécurité des machines-outils électriques semi-fixes - Partie 2-1: Règles particulières pour les scies circulaires à table (CEI 61029-2-1:1993, modifiée + A1:1999 + A2:2001)

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CENELEC

European Committee for Electrotechnical Standardization
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Foreword

This document (EN 61029-2-1:2012*)* consists of the text of IEC 61029-2-1:1993 and its amendments 1:1999 and 2:2001 prepared by IEC/SC 61F (transformed into IEC TC 116 "Safety of hand-held motor-operated electric tools"), together with the common modifications prepared by CLC/TC 116 "Safety of motor-operated electric tools".

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2013-09-03
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2015-09-03

This document supersedes EN 61029-2-1:2010.

EN 61029-2-1:2012 includes the following significant technical changes with respect to EN 61029-2-1:2010:

– rewording of Clause 7 and

– change of Subclause 13.1 into Annex ZD.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

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.

Compliance with the relevant clauses of Part 1 together with this Part 2 provides one means of conforming to the specified essential health and safety requirements of the Directive.

This European Standard follows the overall requirements of EN ISO 12100.

For noise and vibration, this European Standard covers the requirements for their measurement, the provision 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 the art.

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

This Part 2-1 is to be used in conjunction with EN 61029-1:2009. This Part 2-1 supplements or modifies the corresponding clauses of EN 61029-1, so as to convert it into the European Standard: “Safety requirements for transportable circular saw benches".

Where a particular subclause of Part 1 is not mentioned in this Part 2-1, that subclause applies as far as is reasonable. Where this Part 2-1 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 61029-2-1 are prefixed “Z”.

NOTE In this European Standard, the following print types are used:

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

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For the relationship with EU Directive 2006/42/EC, see informative Annex ZZ, which is an integral part of this document.

Endorsement notice

The text of the International Standard IEC 61029-2-1:1993 was approved by CENELEC as a European Standard with agreed common modifications.

1 Scope

This clause of Part 1 is applicable except as follows:

1.1 *Addition:*

This standard applies to circular saw benches intended for cutting wood and analogous materials, plastics and nonferrous metals except magnesium with a saw blade diameter not exceeding 315 mm, which hereinafter may simply be referred to as saw or tool.

1.2 *Addition:*

This standard does not apply to circular saw benches intended to cut other metals, such as magnesium, steel and iron. This standard does not apply to circular saw benches with an automatic feeding device.

This standard does not apply to saws designed for use with abrasive wheels.

NOTE Z101 Hand-held electric circular saws and hand-held circular saws mounted on a bench are covered by EN 60745-2-5.

NOTE Z102 EN 1870-1 gives requirements for circular saw benches other than transportable or hand-held electric tools.

NOTE Z103 EN 13898 gives requirements for sawing machines for cold metal.

2 Definitions

This clause of Part 1 is applicable except as follows:

2.21 *Replacement:*

2.21
normal load
load to obtain rated input

2.101
circular saw bench
machine designed to cut wood or similar materials by means of a rotating toothed saw blade which projects through a slot in a table which supports and positions the workpiece. The workpiece is fed by hand towards the saw blade. The motor and drive assembly for the saw blade are located below the level of the table

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:*

Circular saw benches shall be marked with

- maximum and minimum saw blade diameter;
- rated no-load speed;
- thickness of riving knife;
- maximum cutting capacity;
- indication of direction of rotation of the saw blade;
- saw blade bore diameter.

If the upper guard 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 guard.

Circular saw benches for which different no-load speeds can be selected shall be marked, close to the means of adjustment, with details of the method of changing the speed and the resultant no-load speed. This may be done by means of diagrams, etc.

Where a 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).

7.6 *Addition:*

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

7.13 *Addition:*

The substance of the following instructions shall also be given:

c) Safety precautions

Z101) warning not to use saw blades which are damaged or deformed;

Z102) instruction to replace table insert when worn;

Z103) instruction to use only saw blades recommended by the manufacturer, which conform to EN 847-1, if intended for wood and similar materials;

Z104) instruction that, when changing the saw blade, the width of the groove cut of the saw blades shall not be less than and the thickness of the body of the saw blade shall not be more than the thickness of the riving knife;

Z105) instruction that the selection of the saw blade shall be suitable for the material to be cut;

Z106) instruction to wear suitable personal protective equipment, this could include:

i) hearing protection to reduce the risk of induced hearing loss;

ii) eye protection;

iii) respiratory protection to reduce the risk of inhalation of harmful dust;

iv) gloves for handling saw blades and rough material (recommendation that saw blades should be carried in a holder wherever practicable).

Z107) instruction to connect circular saws to a dust-collecting device when sawing wood;

Z108) warning not to use high speed steel (HS) saw blades;

Z109) instruction to store the push-stick or push block always with the machine when not in use.

e) Safe operation

Z101) instruction to use push-sticks or push blocks to feed the workpiece past the saw blade;

Z102) information about use and correct adjustment of the riving knife;

Z103) information about use and correct adjustment of the upper saw blade guard;

Z104) warning not to rebate or groove unless suitable guarding, such as a tunnel guard, is fitted above the saw table;

Z105) warning not to use saws for slotting (stopped groove);

Z106) for tools with variable speed: a table giving guidance on spindle speed selection for different materials to be sawn;

Z107) instruction to use only saw blades for which the maximum possible speed is not less than the maximum spindle speed of the tool and the material to be cut;

Z108) instruction to use only transportation devices and do never use guards for handling or transportation when transporting the machine;

Z109) instruction to cover the upper part of the saw blade during transportation, for example by the guard;

Z110) information regarding the range of saw blade outside diameter, thickness and bore diameter which may be used with the tool;

Z111) instruction how to support long workpieces.

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 major sound sources of tools are:

- the saw blade;
- gears;
- the motor / the 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:*

Circular saw benches are tested under load under the conditions shown in Table Z101.

Table Z101 – Noise test conditions for circular saw benches

Orientation	Cutting a horizontal piece of chipboard 800 mm × 400 mm × 19 mm
Tool bit	New saw blade as recommended by the manufacturer for cutting chipboard
Feed force	Just sufficient to cut at a brisk pace ((3 ± 1) m/min)
Depth of cut	Saw blade adjusted for a 22 mm depth of cut
Test cycle	Cutting off approximately 10 mm wide strips (set by rip fence) across the 400 mm width of the chipboard
Test position	Saws supplied with an own stand are to be used standing on a reflecting plane. Other saws to be used on a bench above reflecting plane as shown in Figure 12 of Part 1.
Test time	Five cuts, measurement starting 100 mm behind front edge up to end of the workpiece

13.3 This subclause is not applicable.

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:*

Circular saw benches shall be considered to be machines 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:*

Circular saw benches shall be equipped with a guarding system, which cannot be removed without the aid of a tool. This requirement does not apply to a top guard fixed to a riving knife.

18.1.101 Guarding above the saw table

18.1.101.1 Circular saw benches shall have a top guard for the crown and the front of the saw blade that may be an adjustable guard, a self-closing guard or a combination of these. An adjustable guard when adjusted shall remain in any position necessary to give the required protection.

- For riving knife mounted guards:

  For all intended saw blade diameters and all positions of the saw blade, the guard shall cover the top and sides of the exposed saw teeth above a straight line between the guard mounting point on the riving knife and the first cutting tooth at the top of the table with the saw blade in the vertical position (an example is shown in Figure Z102). The maximum external width except a dust extraction port, if any, shall be 40 mm.

- For other top guards:

  When mounted separately from the riving knife, but integral with the machine, the support for the top guard shall not be in line with the riving knife.

  The guard shall be capable of screening the top and both sides of the saw blade horizontally between the riving knife and the table at the front of the saw blade, shall be adjustable from a position 5 mm above the maximum height of cut down to the table and shall remain parallel with the table. The maximum external width shall be 50 mm.

  For tools that have the facility to tilt the saw blade, either an auxiliary guard shall be provided, or the tool guard shall be capable of being fitted with an extension piece for use during angled cutting. The guards or extension pieces shall be exchangeable without the aid of a tool.

18.1.101.2 The top guard shall be constructed from soft material (e.g. aluminium or plastic) which will minimize damage to the saw blade should contact occur.

The guard shall be designed to bear against the smooth sides of the saw blade in order to minimize the risk of damage to the guard. Either

- the guard side walls shall have a thickness of minimum 6 mm or

- the guard side walls shall be equipped with internal ribs on at least the lowest 3 mm of the side walls providing a total thickness of minimum 6 mm (see Figure Z103).

If one side wall of a self-closing guard is made longer for bevelling, the 6 mm requirement does not apply to the additional side wall portion.

18.1.101.3 Void

18.1.101.4 Void

18.1.101.5 A self-closing guard shall automatically

a) open by contact with the workpiece to be cut as it is moved towards the saw blade;

b) remain in contact with the upper surface of the workpiece as it is cut, to screen both sides of the saw blade at least down to the root of the teeth and at least between the upper surface of the workpiece and the riving knife;

c) return to the initial position, in contact with the top of the table, after the workpiece has moved past the guard.

Compliance with 18.101.1, 18.101.2 and 18.101.5 is checked by inspection and by measurement.

18.1.101.Z1 The guard and its supporting system shall have sufficient stability to reduce the risk of the saw blade making contact with the guard.

Compliance is checked, with no saw blade fitted, by the following test (see Figures Z104 a) and Z104 b)).

- *For riving knife mounted saw blade guards:*

  While the guard is subjected to a load of 5 N at the front edge of the guard as defined in Figure Z104 a), the maximum deflection shall not be more than 15 mm.

- *For separately from riving knife mounted saw blade guards:*

  While the guard is subjected to a load of 20 N at the front edge of the guard as defined in Figure Z104 b), the maximum allowable deflection shall not be more than 8 mm.

18.1.102 Guarding below the saw table

18.1.102.1 Access to dangerous moving parts under the table shall not be possible at any depth of cut and any angle of inclination of the saw blade.

Compliance with 18.1.102.1 is checked by using the test probe in Figure Z105.

18.1.102.2 Void

18.1.103 Riving knife

18.1.103.1 Circular saw benches shall be equipped with a riving knife.

18.1.103.2 The riving knife shall be rigidly fixed and be in alignment with the plane of the saw blade (tolerance ± 0,2 mm) and disposed to it so as to pass freely through the cutting groove. The position of the riving knife shall not change relative to the saw blade when the depth of cut is adjusted.

18.1.103.3 The riving knife and its holder shall be so designed as to allow the adjustment of the riving knife, for all saw blade diameters resulting in cutting capacities between 100 % and 95 % of the maximum cutting capacity, to comply with the following conditions:

a) above the saw table the radial distance between the riving knife and the toothed rim of the saw blade shall not at any point exceed 5 mm as shown at Figure Z106, at any depth of cut;

b) the tip of the riving knife shall not be lower than 5 mm from the tooth peak, as shown at Figure Z106. The leading edge of the riving knife shall be chamfered to provide a lead-in and the riving knife shall be of constant thickness (within ± 0,2 mm) throughout its working length.

18.1.103.4 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 saw blade.

The riving knife shall have a hardness of 43 HRC ± 5 HRC.

Compliance with 18.1.103.1 to 18.1.103.4 is checked by inspection and by measurement.

18.1.103.Z1 Riving knives shall have sufficient stability in the plane of the saw blade to prevent movement of the riving knife towards the saw blade.

Compliance is checked by the following test.

The riving knife is adjusted as specified in 18.1.103.3 for the largest diameter saw blade for which the machine is designed and the fixing means are tightened to a torque as specified in Figure Z107. A horizontal load as given in this figure is applied. The maximum deflection shall not be more than 1,5 mm.

18.1.103.Z2 Riving knives shall have sufficient resiliency.

Compliance is checked by the following test.

With the riving knife adjusted as specified in 18.1.103.3 for the largest saw blade for which the machine is designed and the fixing means tightened to a torque as specified in Figure Z108. A horizontal load as given in this figure is applied at the tip of the riving knife for 1 min.

After the load is removed, the remaining deflection shall not be more than 0,5 mm.

18.1.104 Saw table

18.1.104.1 The dimensions of the table for supporting the workpiece shall comply with Figure Z109.

The dimensions specified are overall dimensions of the table, the surface of which may not be continuous and the table may be assembled by the user from more than one part. Separate parts shall not be detachable without the aid of a tool.

Compliance is checked by inspection and measurement.

18.1.104.2 The slot in the table surface shall comply with the dimensions shown in Figure Z110. The area surrounding the saw blade where it passes through the table shall be of material that can be easily cut such as plastic, wood or light-alloy. This may be a replaceable insert.

Compliance is checked by inspection and measurement.

18.1.104.Z1 When the machine is designed for bevel cutting the adjustment shall be performed by tilting the saw blade and not by tilting the table.

Compliance is checked by inspection.

18.1.105 Rip fence

18.1.105.1 Circular saws shall be provided with a rip fence.

The minimum height of the working surface of the rip fence shall be 50 mm or the maximum cutting capacity, whichever is the smaller.

Compliance is checked by inspection and measurement.

18.1.105.2 The workpiece guiding part of the rip fence shall be adjustable parallel with the saw blade so that its out-feed end can be positioned forward to a point in line with the front edge of the riving knife, and rearwards to a point at the table level which is in line with the first cutting tooth of the largest saw blade for which the tool is designed when adjusted to the maximum depth of cut.

Material of the guiding surface that may come in contact with the saw blade shall be made from a material that can easily be cut such as aluminium, plastic or wood.

The rip fence shall be provided with two guiding surfaces, one for large depths of cut and one for small depths of cut, so that the saw blade cannot come in contact with the fence when the saw blade is tilted for 45°. The height of the lower guiding surface shall be not more than 12 mm (see also Figure Z111).

Compliance is checked by inspection and measurement.

18.1.105.Z1 Cross-cutting fence

The saw may be provided with a cross-cutting fence. The fixing arrangement shall ensure that the fence cannot rise or swing out of position.

The distance between the end of the cross-cutting fence closest to the saw blade and the saw blade shall not exceed 15 mm.

If contact between the cross-cutting fence and the saw blade cannot be avoided, the part close to the saw blade shall be made of a material that can easily be cut such as aluminium, wood or plastic.

The minimum height of the guiding surface of the fence shall be 30 mm or the maximum cutting capacity, whichever is the smaller.

Where the fence passes beneath the saw blade top guard the maximum height of the fence shall not exceed 12 mm.

Compliance is checked by inspection and measurement.

18.1.106 Flanges

The outer diameter of the contact surface shall be not less than 0,2 times the saw blade diameter. The overlap *a* of the clamping area of the two flanges shall be at least 1,5 mm wide as specified in Figure Z112.

Compliance is checked by inspection and measurement.

18.1.107 Dust outlet

Connection ports for external dust collection equipment, if any, shall be directed away from the operator.

Compliance is checked by inspection.

It shall not be possible to gain access to the saw blade through the dust outlet opening.

Compliance is checked by applying the test probe of Figure Z105.