
Varnost premičnih električnih orodij - 2-8. del: Posebne zahteve za enovretenske namizne rezkalne stroje (IEC 61029-2-8:1995 + A1:1999 + A2:2001; spremenjen)

Safety of transportable motor-operated electric tools - Part 2: Particular requirements for single spindle vertical moulders

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EUROPEAN STANDARD

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EUROPÄISCHE NORM

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English version

Safety of transportable motor-operated electric tools
Part 2: Particular requirements for single spindle vertical moulders
(IEC 61029-2-8:1995 + A1:1999 + A2:2001, modified)

Sécurité des machines-outils électriques
semi-fixes
Partie 2: Règles particulières pour
les toupies monobroches verticales
(CEI 61029-2-8:1995 + A1:1999 +
A2:2001, modifiée)

Sicherheit transportabler
motorbetriebener Elektrowerkzeuge
Teil 2: Besondere Anforderungen
für einspindelige senkrechte
Tischfräsmaschinen
(IEC 61029-2-8:1995 + A1:1999 +
A2:2001, modifiziert)

This European Standard was approved by CENELEC on 2003-06-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

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CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of the International Standard IEC 61029-2-8:1995 + A1:1999 + A2:2001, prepared by SC 61F, Safety of hand-held motor-operated electric tools, of IEC TC 61, Safety of household and similar electrical appliances, together with the common modifications prepared by the Technical Committee CENELEC TC 61F, Hand-held and transportable electric motor-operated tools, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 61029-2-8 on 2003-06-01.

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) 2004-06-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2006-06-01

In this document the common modifications to the International Standard are indicated by a vertical line in the left margin of the text.

This European Standard is divided into two parts:

- Part 1 General requirements that are common to most transportable electric motor operated tools (for the purpose of this standard referred to simply as tools) which could come within the scope of this 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 CEN/CENELEC by the European Commission and the European Free Trade Association and supports the essential health and safety requirements of the Machinery Directive.

Compliance with the relevant clauses of part 1 together with this part 2 provides one means of conforming with the specified essential health and safety requirements of the Directive. The requirements defined in EN 1050 are also dealt with in this standard.

For noise and vibration this 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 EC Directives can be applicable to the products falling within the scope of this standard.

Part 2-8 is to be used in conjunction with EN 61029-1:2000.
Part 2-8 supplements or modifies the corresponding clauses of EN 61029-1, so as to convert it into the European Standard: Safety requirements for transportable vertical spindle moulders.

Where a particular subclause of part 1 is not mentioned in this part 2-8, that subclause applies as far as is reasonable. Where this part 2-8 states "addition", "modification" or "replacement", the relevant text of part 1 is to be adapted accordingly.

Subclauses, tables and figures which are additional to those in part 1 are numbered starting from 101. Subclauses, tables and figures which are additional to those in IEC 61029-2-8 are prefixed "Z".

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

- Requirements proper;
- *Test specifications*;
- Explanatory matter.

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1 Scope

This clause of part 1 is applicable except as follows:

1.1 Addition:

This European Standard applies to transportable single spindle vertical moulders, with a maximum cutter block diameter of 200 mm maximum, designed to cut wood and analogue materials also covered with plastic laminate or edgings by hand-feed operation.

Single spindle vertical moulders other than transportable are covered by EN 848-1:1998.

2 Definitions

This clause of part 1 is applicable except as follows:

2.21 Replacement:

2.21

normal load

the load to obtain rated input

2.101

transportable single spindle vertical moulder

a hand fed vertical spindle moulder used on a table or similar support which is intended to carry out work in a stationary position, capable of being lifted by hand by one person. It has a single spindle (fixed or removable) the position of which is fixed during machining and a horizontal table. The motor is integral with the machine. The machine may have any of the following additional features:

- a) the facility for the spindle to be raised and lowered through the table;
- b) the facility for fitting an additional manually operated sliding table;
- c) the facility to tilt the spindle.

(See Figure Z101)

2.102

cutter block

rotating assembly consisting of the tool holder and the cutting tool

2.103

tool holder

single piece spindle or removable spindle to which the cutting tool is fixed

2.104

removable spindle

spindle capable of being changed without removing the bearings

2.Z101

straight work

the 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 continuous through to the other end (See Figure Z102).

2.Z102

stopped straight work

the machining of only a part of the workpiece length

(See Figure Z103)

2.Z103**curved work**

the machining of a curve on a workpiece by having one side in contact with the table (or if held in a jig in contact with the table) and the other in contact with the vertical reference of a steady or ring guide when using a jig (See Figure Z104)

2.Z104**tenoning**

the machining of projections and slots on the end of a workpiece to facilitate the joining of workpieces. This included profiled tenons. (See Figure Z105)

2.Z105**hand feed**

the manual holding and/or guiding of the workpiece. 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

2.Z106**speed range**

the speeds within which the tool spindle or tool is designed to operate

2.Z107**ejection**

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

2.Z108**kick back**

a particular form of ejection describing unexpected movement of the workpiece, parts of it or part of the machine opposite to the direction of feed during processing.

2.Z109**anti kickback device**

a device which either reduces the possibility of kickback or arrests the motion during kickback of the workpiece, parts of it or part of the machine

3 General requirements

This clause of part 1 is applicable.

4 General notes on tests

This clause of part 1 is applicable.

5 Rating

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This clause of part 1 is applicable.

6 Classification

This clause of part 1 is applicable.

7 Marking

This clause of part 1 is applicable except as follows:

7.1 Addition:

- maximum and minimum no-load speed of the cutter block;
- indication of direction of rotation of the cutter block;
- the maximum diameter of the cutter block to be used;
- a diagram similar to Figure Z106, giving the optimum speed corresponding to the tool type and diameter.

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

- on machines where speed change is achieved by changing the position of the drive belts on the drive pulley the selected speed shall be indicated on the same side of machine as the start control by a diagram showing the relevant speed selected for each combination of pulleys.
- on machines where speed change is achieved by an electrical control circuit, the selected speed shall be indicated on the same side of machine as the switching device (eg. A variable speed control dial provided with numbers).

7.6 Addition:

The direction of rotation of the spindle shall be indicated on a fixed part of the machine in the vicinity of the spindle axis by an arrow raised or sunk which is visible when changing the cutter block.

7.13 Addition:

The instruction handbook shall contain at least a repeat of the warnings affixed to the tool. Furthermore, it shall contain warnings against the following hazards and/or hazardous situations and related instructions for safe use:

c) Safety precautions

- The necessity to check cutter block for faultless condition before use;
- Instruction to use the correct table rings in relation to the size of cutter block;
- The necessity to wear always suitable personal protective equipment. This includes:
 - hearing protection to reduce the risk of induced hearing loss,
 - respiratory protection to reduce the risk of inhalation of harmful dust,
 - possible injuries when handling cutter block and rough material due to sharp edges;
 - safety glasses to avoid eye injury caused by flying particles;
- When sawing wood, detailed instruction for the correct assembling of a dust-collecting device shall be given. The operator shall be informed of the factors that influence exposure of dust e.g. type of material being machined and importance of local extraction (capture or source) and proper adjustment of hoods/baffles/chutes;
- Warning not to use non-recommended cutting tools, which can lead to injuries due to the loss of control. Instruction shall be given to use cutting tools designed for hand feed only and to be marked with MAN (Manual Operation) according to EN 847-1.

d) Maintenance and servicing

- The manufacturer shall define which faults on the machine, including guards or cutter block, shall be rectified as soon as they are discovered.

e) Safe operation

- Possible contact of the cutter block with hand and fingers of the operator. Instruction shall be given defining the correct guard and how to adjust guard(s) to prevent accessibility to portions of the cutter tool not being used;
- Possible kickback, a sudden reaction to uncontrolled guiding of small workpieces. Instruction shall be given to use additional measures such as horizontal pressure devices when working narrow workpieces to ensure safe working;
- Hazardous situation due to uncontrolled lift up of the workpiece. Instruction shall be given to support adequately large workpieces to be held in place;
- When performing curved work, the necessity to guide the workpiece in the correct way to prevent cutting injuries. Instruction shall be given what type of guard or guard system is needed to ensure safe operation;
- Incorrect use of cutter tools, workpiece and guiding devices may lead to dangerous situation. Instruction shall be given how the operator shall be trained in the handling of the workpiece, use, adjustment and operation of workpiece clamps and guiding devices and tool selection;
- Unmaintained tools can cause uncontrolled situations. Instruction shall be given to use cutting tools which are sharpened, maintained and adjusted in accordance with the tool manufacturers instructions;
- Possible contact with moving parts. Instruction shall be given to switch off the machine and pull the plug when changing or adjusting;
- Incorrect adjustment of fences. Instruction shall be given how the fences shall be adjusted in relation to the different work. When and how to use a false fence to minimise the gap between cutting tool and fence plate;
- Possible mistake of tool position. Instruction shall be given to fit the cutter tooling to the machine correctly and to feed the workpiece against the direction of spindle rotation;
- The necessity to select correct speed. Instruction shall be given to select the right speed corresponding to the tooling and material being used;
- The necessity to keep hands away during straight work it. Instruction shall be given to use – where possible – pressure pads in conjunction with the fence;
- Missing stops can cause kickback. Instruction shall be given to use back and/or front stops fixed to the fence when doing stopped work;
- The non-use of roller table and enclosure, which can lead to cutting injuries due to loss of control. Instruction shall be given in which case and how to correctly use roller table and enclosure when tenoning;
- Wood dust may cause health risks. Instruction shall be given how to correctly fit the dust collection system and information on its effectiveness. Results of dust efficiency measurement defined in 13.1 shall be given;
- Detailed Information shall be given in regard to residual risks and how to manage them;

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:

13.1 Replacement:

The tests under working conditions, orientation within the cabin (see Figure Z107) and material to be cut shall be in accordance with Table Z101.

Table Z101 – Conditions for dust measurements

For tools for straight work	
Material	Chipboard - 800 mm × 200 mm × 23 mm
Feed speed	(5,0 ± 0,5) m/min.
Cut-off	45° bevel to 11 mm depth
Tool bit	New cutter, 50 mm diameter, at start of test as specified by manufacturer
Speed	As recommended by the manufacturer for the specified cutter and material
Orientation	Across the width of the cabin with air flow from left to right of the operator (see Figure Z107)
Test cycle	3 passes in 2 min (10 s cutting, 30 s rest time)
Test period	90 cycles (total 1 h)
Adjustable fences to be set 2 mm from cutter.	
Table inserts to be as small as possible for size of cutter.	
For tools for curved work	
Material	Chipboard - 90 mm × 23 mm × (curved section 420 mm centre radius × 700 mm long)
Feed speed	As necessary for practical working
Cut-off	1,5 mm
Tool bit	New cutter, 50 mm diameter, at start of test, straight cut tungsten carbide tipped
Speed	As recommended by the manufacturer for the specified cutter and material
Orientation	Across the width of the cabin with air flow from left to right of the operator (see Figure Z107)
Test cycle	Rest time 4 times longer than working time
Test period	Total 1 h (including all working and rest periods)
Guide ring to be adjusted to 12 mm above table and underside of workpiece to be 23 mm above table.	

13.2.1 Addition:

The most important sources of noise in single vertical spindle moulders are:

- the gear,
- the motor / fan,
- the cutter block.

13.2.4 Replacement of paragraphs 1, 2 and 3:

Single vertical spindle moulders are tested under load under the conditions shown in Table Z102:

Table Z102 – Noise test conditions for single vertical spindle moulders

Material	Chipboard 800 mm × 200 mm × 23 mm
Feed speed	(5,0 ± 0,5) m/min.
Cut-off	2,5 mm, cutter vertically set, along the 800 mm length of the chipboard
Spindle speed	As recommended by the manufacturer corresponding to the tool type and diameter
Tool bit	New cylindrical cutter with vertical blades, diameter 50 mm at start of test as specified by manufacturer
Test cycle	5 passes, each following the other quickly

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:

Single spindle vertical moulders equipped with an induction motor are considered to be tools in which moving parts are liable to be jammed.

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18 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows:

18.1 Addition:

The main body, the table with the table rings, the tool holder spindle, the workpiece guiding system, the stopping device including the automatic brake, if any, the guarding systems and speed changing device are the main parts of a single spindle vertical moulder.