



SLOVENSKI STANDARD

SIST EN 50144-2-5:1999

01-julij-1999

Nadomešča:
SIST HD 400.2E S2:1995

Safety of hand-held electric motor operated tools - Part 2-5: Particular requirements for circular saws and circular knives

Safety of hand-held electric motor operated tools -- Part 2-5: Particular requirements for circular saws and circular knives

Sicherheit handgeführter motorbetriebener Elektrowerkzeuge -- Teil 2-5: Besondere Anforderungen an Kreissägen und Rundmesser

Sécurité des outils électroportatifs à moteur -- Partie 2-5: Règles particulières pour les scies circulaires et les couteaux circulaires

Ta slovenski standard je istoveten z: EN 50144-2-5:1996

ICS:

| | | |
|-----------|-------------------|-----------------|
| 25.080.60 | Strojne žage | Sawing machines |
| 25.140.20 | Električna orodja | Electric tools |

SIST EN 50144-2-5:1999 en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 50144-2-5:1999

<https://standards.iteh.ai/catalog/standards/sist/b3f07c20-9277-43ba-a9b9-72abe142e84e/sist-en-50144-2-5-1999>

EUROPEAN STANDARD

EN 50144-2-5

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 1996

ICS 25.080.60; 25.140.20

Supersedes HD 400.2E S2:1988 and its amendment

Descriptors: Hand-held electric motor operated tools, circular saws, circular knives, safety requirements, protection against electric shocks, fire protection, protection against mechanical hazards

English version

Safety of hand-held electric motor operated tools
Part 2-5: Particular requirements for circular saws and circular knives

Sécurité des outils électroportatifs à
moteur
Partie 2-5: Règles particulières pour
les scies circulaires et les couteaux
circulaires

Sicherheit von handgeführten
motorbetriebenen Elektrowerkzeugen
Teil 2-5: Besondere Anforderungen
für Kreissägen und Rundmesser

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 50144-2-5:1999](https://standards.iteh.ai/catalog/standards/sist/b3f07c20-9277-43ba-a9b9-72abe142e84e/sist-en-50144-2-5-1999)

<https://standards.iteh.ai/catalog/standards/sist/b3f07c20-9277-43ba-a9b9-72abe142e84e/sist-en-50144-2-5-1999>

This European Standard was approved by CENELEC on 1995-03-06. 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

This European Standard has been prepared by the Technical Committee 61F, Hand-held and transportable electric motor operated tools.

The text of the draft was submitted to the Unique Acceptance Procedure (UAP) in April 1994 and was approved by CENELEC as EN 50144-2-5 on 1995-03-06.

A draft for an amendment was submitted to the Unique Acceptance Procedure in April 1994 and was approved by CENELEC on 1995-03-06 for inclusion into the European Standard.

This European Standard replaces HD 400.2E S2:1988 + A1:1991.

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) 1996-09-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1996-12-01

As far as certification is concerned, CENELEC Memorandum 6 applies.

This standard is divided into two parts:

Part 1: General Requirements, comprising clauses of a general character.

Part 2: Particular Requirements, dealing with particular types of appliances. The clauses of these particular requirements supplement or modify the corresponding clauses in Part 1. Where the text of Part 2 indicates an "addition" to or a "replacement" of the relevant requirement, test specification or explanation of Part 1, these changes are made to the relevant text of Part 1, which then becomes part of the standard. Where no change is necessary, the words "This clause of Part 1 is applicable" are used in Part 2.

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

NOTE - In this standard the following print types are used:

- Requirements proper: in roman type;
- *Test specification: in italic type;*
- Explanatory matter: in smaller roman type.

Contents

| Clause | Page |
|--|------|
| 1 Scope | 4 |
| 2 Definitions | 4 |
| 3 General requirements | 5 |
| 4 General conditions for the tests | 5 |
| 5 Rating | 5 |
| 6 Classification | 5 |
| 7 Marking | 5 |
| 8 Protection against electric shock | 6 |
| 9 Starting | 6 |
| 10 Input and current | 6 |
| 11 Heating | 6 |
| 12 Leakage current | 6 |
| 13 Environmental requirements | 7 |
| 14 Moisture resistance | 8 |
| 15 Insulation resistance and electric strength | 8 |
| 16 Endurance | 8 |
| 17 Abnormal operation | 8 |
| 18 Mechanical hazards | 8 |
| 19 Mechanical strength | 12 |
| 20 Construction | 12 |
| 21 Components | 13 |
| 22 Internal wiring | 13 |
| 23 Supply connection and external flexible cables and cords | 13 |
| 24 Terminals for external conductors | 13 |
| 25 Provision for earthing | 13 |
| 26 Screws and connections | 13 |
| 27 Creepage distances, clearances and distances through insulation | 13 |
| 28 Resistance to heat, fire and tracking | 13 |
| 29 Resistance to rusting | 13 |
| 30 Radiation | 13 |
| | |
| Figures | |
| 101 Circular saw with outer pendulum guard | 14 |
| 102 Circular saw with inner pendulum guard | 14 |
| 103 Circular saw with tow guard | 14 |
| 104 Plunge type saw | 14 |
| 105 Test probe "a" | 15 |
| 106 Test probe "b" | 15 |
| 107 Circular saw with inclinable guide plate | 16 |
| 108 Aperture in movable guard | 16 |
| 109 Riving knife adjustment | 17 |
| 110 Parameters of the guide plate | 17 |
| | |
| Annexes | 18 |

1 Scope

This clause of Part 1 is applicable except as follows:

1.1 Addition:

This standard applies to all types of circular saws for cutting wood and similar materials, and to circular knives.

These requirements do not cover circular saws when mounted in a support for use as fixed tools.

2 Definitions

This clause of Part 1 is applicable except as follows:

2.2.18 Addition:

normal load for circular saws intended to cut materials other than metal: The load obtained when the circular saw is operated continuously with the saw blade in the vertical position, the load being such that the input, in watts, is equal to:

$0,25 s\sqrt{n}$ for saws with a.c. asynchronous induction motors.

$0,2 s\sqrt{n}$ for other saws (designed for cutting depths exceeding 55 mm.

$0,13 s\sqrt{n}$ for other saws designed for cutting depths not exceeding 55 mm, and for multi-purpose tools which can be fitted with circular-saw accessories.

where s is the maximum cutting depth, in millimetres, and n the no-load speed of the saw blade, in revolutions per minute, after the tool has been operating for a period of 15 min at no-load, at rated voltage or at the upper limit of the rated voltage range.

NOTE - Definitions for normal load for metal cutting circular saws and normal load for circular knives are under consideration.

2.2 Additions:

101 circular saw with outer pendulum guard: A tool the lower guard of which, for operation, swings around the upper fixed guard (see figure 101).

102 circular saw with inner pendulum guard: A tool the lower guard of which, for operation, swings inside the upper fixed guard (see figure 102).

103 circular saw with tow guard: A tool the lower guard of which, for operation, slides along the upper fixed guard (see figure 103).

104 plunge type circular saw: A tool having only a fixed upper guard into which the saw blade retracts when not in use (see figure 104).

105 guide plate: Part constituting the plane of reference on the material to be cut.

106 fixed guard: Cover linked to the motor unit which prevents access to the part of the blade situated above the guide plate.

107 movable guard: Cover which, in the rest position, prevents access to the part of the blade which is not covered by the fixed guard and which, in most cases, is situated below the guide plate. Plunge type circular saws have only one guard into which the saw blade retracts at the end of the sawing operation.

108 riving knife: metal part placed in the plane of the saw blade which prevents the wood from tightening onto the rear part of the saw blade and thus prevents the backward movement of the tool or jamming of the saw blade.

3 General requirements

This clause of Part 1 is applicable.

4 General conditions for the 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.

ITeH STANDARD PREVIEW
(standards.iteh.ai)

7 Marking

This clause of Part 1 is applicable except as follows:

[SIST EN 50144-2-5:1999](https://standards.iteh.ai/catalog/standards/sist/b3f07c20-9277-43ba-a9b9-72a0c142c64c/sist-en-50144-2-5-1999)

<https://standards.iteh.ai/catalog/standards/sist/b3f07c20-9277-43ba-a9b9-72a0c142c64c/sist-en-50144-2-5-1999>

7.1 Addition:

Circular saws and circular knives shall be marked with the indication of direction of rotation. This shall be clearly indicated by a raised or sunk arrow on the fixed guard or by any other means no less visible and indelible.

7.13.1 Addition:

For circular saws, the instruction sheet shall also include:

- how to connect the external dust collection equipment where applicable;
- the maximum and minimum diameter, the thickness range and other characteristics of the blades which can be fitted to the tool;
- the rated no-load speed of the working spindle.

7.13.2 Addition:

Instructions shall also include the substance of the following:

- Do not use blades which are deformed or cracked.
- Do not use blades made of high speed steel.
- Do not use blades which do not comply with the characteristics specified in these instructions.
- Do not stop the blades by lateral pressure on the disc.

- Ensure that movable guards operate freely without jamming.
- Do not lock the moving guard in the open position.
- Ensure that any retraction mechanism of the guard system operates correctly.
- Remove plug from the mains supply before replacement of the blade, making adjustments, or other maintenance work.
- Using manufacturer data
 - ensure that the diameter, thickness and other characteristics of the saw blade are suitable for the tool,
 - ensure that the saw blade is suitable for the spindle speed of the tool.
- Do not use saw blades the body of which is thicker or the set of which is smaller than the thickness of the riving knife.
- Ensure that the riving knife is adjusted so that:
 - the distance between the riving knife and the toothed rim of the saw blade is not more than 5 mm,
 - the toothed rim does not extend more than 5 mm beyond the lower edge of the riving knife.
- Always used the riving knife except when plunging in the middle of the work piece.

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 Addition:

The tests under working conditions, orientation within the cabin and material to be worked shall be in accordance with the following:

| | |
|---|--|
| Material | Chipboard 19 mm x 800 mm x 400 mm |
| Feed-speed | At a brisk pace without overloading the tool |
| Depth of cut | 30 mm below guide plate or as close to this value as is possible |
| Width of cut-off | 10 mm minimum, as set by the rip fence |
| Tool bit/cutter/ abrasive | New blade, as recommended by the manufacturer for chipboard, at the start of each test period |
| Integral collection (If any) | Emptied during each 2 min rest time |
| Orientation | Across the width of the cabin with the airflow from left to right of the tool. |
| Test cycle | 3 cuts per minute across 400 mm width for 10 min, then 2 min rest time (total 12 min) |
| Test period | 5 complete cycles (total 1 h) |

13.2.3 Replacement of paragraphs 1, 2 and 3:

Circular saws are tested under load under the conditions shown in table 101:

Table 101 - Test conditions for circular saws

| | |
|--------------------|---|
| <i>Orientation</i> | <i>Cutting a horizontal piece of chipboard 800 mm x 400 mm x 19 mm supported on resilient material and fixed to a bench</i> |
| <i>Tool bit</i> | <i>New blade, as recommended by the manufacturer for cutting chipboard</i> |
| <i>Feed force</i> | <i>Just sufficient to cut at a brisk pace</i> |
| <i>Test cycle</i> | <i>Cutting off approximately 10 mm wide strips (set by rip fence) across the 400 mm width of the chipboard</i> |

Circular knives are tested at no load.

13.2.4 Addition:

For circular knives the blade shall be vertical.

13.3 Addition:

Circular knives are not tested, the vibration level to be quoted as being less than 2,5 m/s².

Page 8
EN 50144-2-5:1996

13.3.7 Replacement of paragraph 1:

Circular saws are tested under load under the conditions shown in table 101.

Paragraph 3 is not applicable.

14 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.

18 Mechanical hazards

This clause of Part 1 is applicable except as follows:

18.1 Replacement:

Circular saws and circular knives shall be equipped with an adequate guarding system which cannot be removed without the aid of a tool.

The guarding system for circular saws designed for cutting wood and the like shall comply with the requirements of clauses 18.101, 18.102, 18.103, 18.104.

Compliance is checked by inspection.

This requirement does not apply to tools with a peripheral speed of the blade of less than 5 m/s.

NOTE 1 - For these tools, the relevant requirements are under consideration.

NOTE 2 - Other means of achieving the necessary degree of mechanical safety are allowed provided these are as equally effective and reliable as those specified.

18.3 Addition:

Circular saws shall have at least two handles to control the tool.

For saws the mass of which is less than or equal to 6 kg, the motor casing if suitably shaped may be considered one of the handles.

An accessory intended to be used with a drill to convert it into a circular saw shall have at least one handle.

Compliance is checked by inspection.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 50144-2-5:1999](https://standards.iteh.ai/catalog/standards/sist/b3f07c20-9277-43ba-a9b9-72abe142e84e/sist-en-50144-2-5-1999)

<https://standards.iteh.ai/catalog/standards/sist/b3f07c20-9277-43ba-a9b9-72abe142e84e/sist-en-50144-2-5-1999>

Additional subclauses:

18.101 In order to prevent inadvertent contact of the operator's hand or fingers with the toothed rim of the saw blade, or with rotating parts on the handle side of the saw above the guide plate, these parts shall be screened by means of a guard or guards.

18.101.1 For saws of the types shown in figures 101, 102 and 103 a fixed guard shall screen the toothed rim of the saw blade radially at least down to the root of the saw teeth.

For the purpose of this requirement the diameter of the root of the saw teeth is considered to be not less than 0,9 times the diameter of the smallest saw blade specified in the instruction sheet.

18.101.2 Plunge type saws as shown in figure 104 shall be equipped with a guard into which the saw blade and the riving knife automatically retract when not in use. The guard shall cover the whole of the root of the teeth for all possible depths of cut.

For the purpose of this requirement the diameter of the root of the saw teeth is considered to be not less than 0,9 times the diameter of the smallest saw blade specified in the instruction sheet.

This requirement does not apply between the guide plate and the lower side of the motor, but the opening must not be wider than necessary.

The guard shall automatically lock in the closed position when the saw is not in use, whilst gripped by its handles and held in any position liable to occur in normal use and with the guide plate not in contact with the work piece.

18.101.3 All apertures including chip outlets, shall be so designed and arranged as to comply with the requirements of 18.101.1 or 18.101.2.

Compliance is checked by the following tests and measurements:

The test is carried out with the movable guard closed.

All apertures in the guard shall be tested with the rigid test probe "a" of figure 105. At no angle of the test probe shall it be possible to touch the toothed rim of the saw blade at any depth of cut the saw set cut, nor the rotating parts on the handle side of the saw with the saw set at maximum depth of cut.

The accessibility of the toothed rim of the saw blade at the front of the saw shall be checked as follows:

The rigid test probe "b" of figure 106 is so positioned that its longitudinal axis is parallel to the axis of the saw spindle and is centrally aligned with the saw blade plane. When the saw is set for any depth at right angled cut, it shall not be possible to touch with the test probe, the toothed rim of the saw blade plane the probe is moved laterally.

For circular saws having an inclinable guide plate the test with the rigid test probe "a" (figure 105) to check the accessibility between the front part of the guard and the guide plate is not made.

However in the area of the toothed rim of the saw blade, the distance between the lateral side of the guard and the guide plate (or the top of any bent up edge) shall be less than 3 mm for the maximum cutting angle at maximum depth of cut, measured at right angles to the guide plate (see figure 107.)

18.102 Saws of the types shown in figures 101, 102 and 103 shall, on the working side below the guide plate, have a movable guard which when the saw is not in use, shall screen both sides of the saw blade radially down to the root of the teeth.