

INTERNATIONAL STANDARD

IEC 60745-2-5

Third edition
2003-01

Hand-held motor-operated electric tools – Safety –

Part 2-5: Particular requirements for circular saws

*Outils électroportatifs à moteur –
Sécurité –*

*Partie 2-5:
Règles particulières pour les scies circulaires*

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HAND-HELD MOTOR-OPERATED ELECTRIC TOOLS –
SAFETY –****Part 2-5: Particular requirements for circular saws**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60745-2-5 has been prepared by subcommittee 61F: Safety of hand-held motor-operated electric tools, of IEC technical committee 61: Safety of household and similar electrical appliances.

This third edition cancels and replaces the second edition published in 1993, of which it constitutes a technical revision.

The text of this standard is based on the following documents:

| FDIS | Report on voting |
|--------------|------------------|
| 61F/503/FDIS | 61F/512/RVD |

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This part 2-5 is to be used in conjunction with the third edition of IEC 60745-1: Hand-held motor-operated electric tools – Safety – Part 1: General Requirements. When this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

NOTE in this standard, the following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in smaller roman type.

Subclauses, tables and figures which are additional to those in Part 1 are numbered starting from 101; additional annexes are lettered AA, BB, etc.

The committee has decided that the contents of this publication will remain unchanged until January 2007. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

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HAND-HELD MOTOR-OPERATED ELECTRIC TOOLS – SAFETY –

Part 2-5: Particular requirements for circular saws

1 Scope

This clause of Part 1 is applicable, except as follows:

1.1 Addition:

This standard applies to all types of circular saws. Circular saws hereinafter will be referred to as saws. This standard does not apply to saws used with abrasive wheels.

2 Normative references

This clause of Part 1 is applicable.

3 Definitions

This clause of Part 1 is applicable, except as follows:

Additional definitions:

3.101

circular saw

tool intended for cutting various materials with a rotating toothed blade

3.102

cutting edge zone

the outer 20 % of the blade's radius

3.103

guide plate

the part of the saw resting on the material to be cut (see Figure 113)

3.104

lower guard

movable blade-covering device which, in the closed or rest position, is generally situated below the guide plate

3.105

upper guard

fixed and/or movable cover of the blade situated above the guide plate

3.106

riving knife

metal part placed in the plane of the saw blade with the intent of preventing the workpiece from closing on the rear part of the saw blade

3.107

saw with outer pendulum guard

saw having a lower guard which swings outside the upper guard (see Figure 101)

3.108

saw with inner pendulum guard

saw having a lower guard which swings inside the upper guard (see Figure 102)

3.109

saw with tow guard

saw having a lower guard which slides along the upper guard (see Figure 103)

3.110

kickback

sudden reaction to a pinched, bound or misaligned saw blade, causing an uncontrolled saw to lift up and out of the workpiece

3.111

plunge type saw

saw having only an upper guard into which the saw blade retracts when not in use (see Figure 104)

4 General requirements

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable.

6 Void

7 Classification

This clause of Part 1 is applicable.

8 Marking and instructions

This clause of Part 1 is applicable, except as follows:

8.1 Addition:

Saws shall be marked with:

- direction of rotation, indicated on the tool by an arrow, raised or recessed or by any other means no less visible and indelible;
- rated no-load speed of the output spindle;
- recommended blade diameter.

8.12.2 a) Addition:

- 101) Instructions not to use any abrasive wheels
- 102) For saws with riving knife the instruction shall include the following:

Instructions to ensure that the riving knife is adjusted so that the distance between the riving knife and the rim of the blade is not more than 5 mm, and the rim of the blade does not extend more than 5 mm beyond the lowest edge of the riving knife.

8.12.2 b) Addition

- 101) Instructions for the blade changing procedure

Additional subclause:

8.12.101 The following additional safety instructions shall be given. If in English they shall be verbatim and in the following order as applicable and equivalent in any other language. This part may be printed separately from the General Safety Instructions. All notes are not to be printed, they are information for the designer of the manual.

8.12.101.1 Safety instructions for all saws**DANGER:**

- a) **Keep hands away from cutting area and the blade. Keep your second hand on auxiliary handle, or motor housing.** *If both hands are holding the saw, they cannot be cut by the blade.*

NOTE For circular saws with 140 mm or smaller diameter blades, the "Keep your second hand on auxiliary handle, or motor housing" may be omitted.

- b) **Do not reach underneath the workpiece.** *The guard cannot protect you from the blade below the workpiece.*
- c) **Adjust the cutting depth to the thickness of the workpiece.** *Less than a full tooth of the blade teeth should be visible below the workpiece.*
- d) **Never hold piece being cut in your hands or across your leg. Secure the workpiece to a stable platform.** *It is important to support the work properly to minimize body exposure, blade binding, or loss of control.*
- e) **Hold power tool by insulated gripping surfaces when performing an operation where the cutting tool may contact hidden wiring or its own cord.** *Contact with a "live" wire will also make exposed metal parts of the power tool "live" and shock the operator.*
- f) **When ripping always use a rip fence or straight edge guide.** *This improves the accuracy of cut and reduces the chance of blade binding.*
- g) **Always use blades with correct size and shape (diamond versus round) of arbour holes.** *Blades that do not match the mounting hardware of the saw will run eccentrically, causing loss of control.*
- h) **Never use damaged or incorrect blade washers or bolt.** *The blade washers and bolt were specially designed for your saw, for optimum performance and safety of operation.*

8.12.101.2 Further safety instructions for all saws

Causes and operator prevention of kickback:

- kickback is a sudden reaction to a pinched, bound or misaligned saw blade, causing an uncontrolled saw to lift up and out of the workpiece toward the operator;
- when the blade is pinched or bound tightly by the kerf closing down, the blade stalls and the motor reaction drives the unit rapidly back toward the operator;

- if the blade becomes twisted or misaligned in the cut, the teeth at the back edge of the blade can dig into the top surface of the wood causing the blade to climb out of the kerf and jump back toward the operator.

Kickback is the result of saw misuse and/or incorrect operating procedures or conditions and can be avoided by taking proper precautions as given below.

- a) **Maintain a firm grip with both hands on the saw and position your arms to resist kickback forces. Position your body to either side of the blade, but not in line with the blade.** *Kickback could cause the saw to jump backwards, but kickback forces can be controlled by the operator, if proper precautions are taken.*

NOTE For circular saws with 140 mm or smaller diameter blades, the words "with both hands" may be omitted.

- b) **When blade is binding, or when interrupting a cut for any reason, release the trigger and hold the saw motionless in the material until the blade comes to a complete stop. Never attempt to remove the saw from the work or pull the saw backward while the blade is in motion or kickback may occur.** *Investigate and take corrective actions to eliminate the cause of blade binding.*
- c) **When restarting a saw in the workpiece, centre the saw blade in the kerf and check that saw teeth are not engaged into the material.** *If saw blade is binding, it may walk up or kickback from the workpiece as the saw is restarted.*
- d) **Support large panels to minimise the risk of blade pinching and kickback.** *Large panels tend to sag under their own weight. Supports must be placed under the panel on both sides, near the line of cut and near the edge of the panel.*
- e) **Do not use dull or damaged blades.** *Unsharpened or improperly set blades produce narrow kerf causing excessive friction, blade binding and kickback.*
- f) **Blade depth and bevel adjusting locking levers must be tight and secure before making cut.** *If blade adjustment shifts while cutting, it may cause binding and kickback.*
- g) **Use extra caution when making a "plunge cut" into existing walls or other blind areas.** *The protruding blade may cut objects that can cause kickback.*

8.12.101.3 Safety instructions for saws shown in Figures 101, 102 and 103

- a) **Check lower guard for proper closing before each use. Do not operate the saw if lower guard does not move freely and close instantly. Never clamp or tie the lower guard into the open position.** *If saw is accidentally dropped, lower guard may be bent. Raise the lower guard with the retracting handle and make sure it moves freely and does not touch the blade or any other part, in all angles and depths of cut.*

NOTE Alternate wording may be substituted for "retracting handle."

- b) **Check the operation of the lower guard spring. If the guard and the spring are not operating properly, they must be serviced before use.** *Lower guard may operate sluggishly due to damaged parts, gummy deposits, or a build-up of debris.*
- c) **Lower guard should be retracted manually only for special cuts such as "plunge cuts" and "compound cuts."** *Raise lower guard by retracting handle and as soon as blade enters the material, the lower guard must be released. For all other sawing, the lower guard should operate automatically.*

NOTE Alternate wording may be substituted for "retracting handle."

- d) **Always observe that the lower guard is covering the blade before placing saw down on bench or floor.** *An unprotected, coasting blade will cause the saw to walk backwards, cutting whatever is in its path. Be aware of the time it takes for the blade to stop after switch is released.*

8.12.101.4 Safety instructions for saws shown in Figure 104

- a) **Check guard for proper closing before each use. Do not operate the saw if guard does not move freely and enclose the blade instantly. Never clamp or tie the guard with the blade exposed.** *If saw is accidentally dropped, guard may be bent. Check to make sure that guard moves freely and does not touch the blade or any other part, in all angles and depths of cut.*

- b) **Check the operation and condition of the guard return spring. If the guard and the spring are not operating properly, they must be serviced before use.** *Guard may operate sluggishly due to damaged parts, gummy deposits, or a build-up of debris.*
- c) **Assure that the guide plate of the saw will not shift while performing the “plunge cut” when the blade bevel setting is not at 90°.** *Blade shifting sideways will cause binding and likely kick back.*
- d) **Always observe that the guard is covering the blade before placing saw down on bench or floor.** *An unprotected, coasting blade will cause the saw to walk backwards, cutting whatever is in its path. Be aware of the time it takes for the blade to stop after switch is released.*

8.12.101.5 Additional safety instructions for all saws with riving knife

- a) **Use the appropriate riving knife for the blade being used.** *For the riving knife to work, it must be thicker than the body of the blade but thinner than the tooth set of the blade.*
- b) **Adjust the riving knife as described in this instruction manual.** *Incorrect spacing, positioning and alignment can make the riving knife ineffective in preventing kickback.*
- c) **Always use the riving knife except when plunge cutting.** *Riving knife must be replaced after plunge cutting. Riving knife causes interference during plunge cutting and can create kickback.*
- d) **For the riving knife to work, it must be engaged in the workpiece.** *The riving knife is ineffective in preventing kickback during short cuts.*
- e) **Do not operate the saw if riving knife is bent.** *Even a light interference can slow the closing rate of a guard.*

9 Protection against access to live parts

This clause of Part 1 is applicable.

10 Starting

This clause of Part 1 is applicable.

11 Input and current

This clause of Part 1 is applicable.

12 Heating

This clause of Part 1 is applicable.

13 Leakage current

This clause of Part 1 is applicable.

14 Moisture resistance

This clause of Part 1 is applicable.