IEC 60745-2-13

Edition 2.1 2011-04
CONSOLIDATED VERSION

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Hand-held motor-operated electric tools – Safety – Part 2-13: Particular requirements for chain saws

Outils électroportatifs à moteur – Sécurité – Partie 2-13: Règles particulières pour les scies à chaîne

IEC 60745-2-13:2006-03+AMD1:2009-07 CSV(en-fr)

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 25.140.20; 65.060.80

ISBN 978-2-8891-2419-0

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. 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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This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 60745-2-13 edition 2.1 contains the second edition (2006) [documents 61F/625/FDIS and 61F/637/RVD] and its amendment 1 (2009) [documents 116/17/FDIS and 116/18/RVD].

A vertical line in the margin shows where the base publication has been modified by amendment 1. Additions and deletions are displayed in red, with deletions being struck through.

International Standard IEC 60745-2-13 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.

The amendment modifies the present part 2-13 to ensure its conformity with the fourth edition (2006) of IEC 60745-1, *Hand-held motor-operated electric tools – Safety – Part 1: General requirements*

This edition constitutes a technical revision. Main changes include Clause 8: Markings and instructions, introducing detailed safety warnings; Clause 19: Mechanical hazards, with requirements for handles, hand guards, guarding of moving parts, chain catcher, spiked bumper, chain brake, computed kickback angle, guide bar cover, saw chain tension, oiler, balance and run down time; Clause 20: Mechanical strength, with requirements for handles and hand guards; Clause 21: Construction, with requirements for the insulation of knobs and handles.

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

This part 2 is to be used in conjunction with the latest edition of IEC 60745-1, *Hand-held motor-operated electric tools – Safety – Part 1: General requirements,* and its amendments. It was established on the basis of the fourth edition (2006) of that standard.

NOTE 1 When “Part 1” is mentioned in this standard, it refers to IEC 60745-1.

This part 2 supplements or modifies the corresponding clauses of IEC 60745-1, so as to convert that publication into the IEC standard: Safety requirements for chain saws.

When a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. When this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

– subclauses, items, tables and figures that are numbered starting from 101 are additional to those in Part 1;
– additional annexes are lettered AA, BB, etc.

NOTE 3 In this standard, the following print types are used:

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

IEC 60745 consists of the following parts, under the general title *Hand-held motor-operated electric tools – Safety:*

Part 1: General requirements
Part 2-1: Particular requirements for drills and impact drills
Part 2-2: Particular requirements for screwdrivers and impact wrenches
Part 2-3: Particular requirements for grinders, polishers and disk-type sanders
Part 2-4: Particular requirements for sanders and polishers other than disk type
Part 2-5: Particular requirements for circular saws
Part 2-6: Particular requirements for hammers
Part 2-7: Particular requirements for spray guns for non-flammable liquids
Part 2-8: Particular requirements for shears and nibblers
Part 2-9: Particular requirements for tappers
Part 2-11: Particular requirements for reciprocating saws (jig and sabre saws)
Part 2-12: Particular requirements for concrete vibrators

Part 2-13: Particular requirements for chain saws
Part 2-14: Particular requirements for planers
Part 2-15: Particular requirements for hedge trimmers
Part 2-16: Particular requirements for tackers
Part 2-17: Particular requirements for routers and trimmers
Part 2-18: Particular requirements for strapping tools
Part 2-19: Particular requirements for jointers
Part 2-20: Particular requirements for band saws
Part 2-21: Particular requirements for drain cleaners

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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

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HAND-HELD MOTOR-OPERATED ELECTRIC TOOLS – SAFETY

Part 2-13: Particular requirements for chain saws

1 Scope

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

Addition:

This standard applies to chain saws for cutting wood and designed for use by one person. This standard does not cover chain saws designed for use in conjunction with a guide-plate and riving knife or in any other way such as with a support or as a stationary or transportable machine.

This standard does not apply to chain saws for tree service as defined in ISO 11681-2, pole cutters and pruners.

2 Normative references

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

Addition:

ISO 3864-3[1)], *Graphical symbols – Safety colours and safety signs – Part 3: Design criteria for graphical symbols used in safety signs*

ISO 6533:2001, *Forestry machinery – Portable chain-saw front hand-guard – Dimensions and clearances*

ISO 6534:1992, *Portable chain-saws – Hand-guards – Mechanical strength*

ISO 7914:2002, *Forestry machinery – Portable chain-saws – Minimum handle clearance and sizes*

ISO 7915:1991, *Forestry machinery – Portable chain-saws – Determination of handle strength*

ISO 8334:1985, *Forestry machinery – Portable chain-saws – Determination of balance*

ISO 9518:1998, *Forestry machinery – Portable chain-saws – Kickback test*

ISO 10726:1992, *Portable chain-saws – Chain catcher – Dimensions and mechanical strength*

ISO 11681-2:1998, *Machinery for forestry – Portable chain-saws – Safety requirements and testing – Part 2: Chain-saws for tree service*

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1) ISO 3864-3 is currently at the DIS stage.

3 Terms and definitions

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

3.101
chain saw
tool designed to cut wood with a saw chain and consisting of an integrated unit of handles, motor and cutting attachment, designed to be supported with two hands (see Figure 101)

3.102
chain brake
device for stopping or locking the saw chain activated manually or non-manually when kickback occurs

3.103
bar tip guard
shield that prevents contact with the saw chain at the tip of the guide bar, for reducing the incidence of kickbacks

3.104
chain brake lever
device, usually the front hand guard, used to activate the chain brake

3.105
chain catcher
device for restraining the saw chain if it breaks or degrooves (see Figure 101)

3.106
drive sprocket
chain drive wheel with teeth

3.107
front handle
support handle located at or towards the front of the motor housing (see Figure 101)

3.108
front hand guard
guard between the front handle and the saw chain for protecting the hand from injuries if the hand slips off the handle (see Figure 101)

3.109
guide bar
part that supports and guides the saw chain (see Figure 101)

3.110
kickback
rapid upward and/or backward motion of the chain saw which can occur when the moving saw chain near the tip of the guide bar contacts an object such as a log or branch

3.111
rear hand guard
extension on the lower part of the rear handle for protecting the hand from the saw chain if it breaks or degrooves (see Figure 101)

3.112
rear handle
support handle located on the housing or towards the rear of the motor housing (see Figure 101)

3.113
saw chain
chain, serving as a cutting tool, consisting of drive links, cutters and side links, held together by rivets (see Figure 101)

3.114
spiked bumper
device, fitted in front of the guide bar mounting point, acting as a pivot when in contact with a tree or log (see Figure 101 and Figure 102)

3.115
cutting length
distance from the root of the spiked bumper, along the guide bar axis to the outside edge of the cutting link, or on the inside part of the bar tip guard with the chain tension adjuster set at mid- position (see Figure 102)

3.116
run down time
elapsed time from the release of the mains switch until the saw chain stops

4 General requirements

This clause of Part 1 is applicable.

5 General conditions for the tests

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

5.2 *Addition:*

For the tests of 19.113 one additional sample may be provided.

5.14 *Addition:*

For tests carried out at normal load, the saw chain and the guide bar may be removed and the drive sprocket of the chain saw loaded by means of a brake.

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:*

Chain saws shall be marked with the following:

~~– maximum length of the guide bar in mm;~~

~~– identification of the direction of rotation of the saw chain by a legible and durable mark.~~

~~In addition, chain saws shall be marked with safety recommendations and warnings of the following substance which shall be written in one of the official languages of the country in which the tool is to be sold.~~

~~– "Wear eye protection" or the sign M004 of ISO 7010[2)].~~

~~– "Wear ear protection" or the sign M003 of ISO 7010[3)].~~

~~For chain saws with a degree of protection of less than IPX4:~~

~~– "Do not expose to rain" or the symbol specified in Annex AA.~~

~~For mains supplied tools:~~

~~– "Remove plug from the mains immediately if the cable is damaged or cut" or the symbol specified in Annex AA.~~

~~If other symbols are used they shall be in accordance with ISO 3864-3.~~

– maximum length of the guide bar in mm;

– identification of the direction of rotation of the saw chain by a legible and durable mark.

In addition, chain saws shall be marked with safety recommendations and warnings of the following substance which shall be written in one of the official languages of the country in which the tool is to be sold:

– "Wear eye protection" or the sign M004 of ISO 7010 or the sign specified in Annex AA;

– "Wear ear protection" or the sign M003 of ISO 7010 or the sign specified in Annex AA.

A combination of symbols, such as eye, ear and head protection, is allowed.

For chain saws with a degree of protection of less than IPX4:

– "Do not expose to rain" or the symbol specified in Annex AA.

For mains supplied tools:

– "Remove plug from the mains immediately if the cable is damaged or cut" or the symbol specified in Annex AA.

If other symbols are used, they shall be in accordance with ISO 3864-3.

~~2) The future safety sign M004 is currently at the DIS stage as ISO 7010:2003/DAmd6.~~

~~3) The future safety sign M003 is currently at the DIS stage as ISO 7010:2003/DAmd5.~~

8.12.1.1 *Addition:*

Chain saw safety warnings:

- **Keep all parts of the body away from the saw chain when the chain saw is operating. Before you start the chain saw, make sure the saw chain is not contacting anything.** *A moment of inattention while operating chain saws may cause entanglement of your clothing or body with the saw chain.*
- **Always hold the chain saw with your right hand on the rear handle and your left hand on the front handle.** *Holding the chain saw with a reversed hand configuration increases the risk of personal injury and should never be done.*

  NOTE For chain saws designed with the guide bar on the left side, the reference to “right hand” and “left hand” positioning is reversed.

- **Hold the power tool by insulated gripping surfaces only, because the saw chain may contact hidden wiring or its own cord.** *Saw chains contacting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.*
- **Wear safety glasses and hearing protection. Further protective equipment for head, hands, legs and feet is recommended.** *Adequate protective clothing will reduce personal injury by flying debris or accidental contact with the saw chain.*
- **Do not operate a chain saw in a tree.** *Operation of a chain saw while up in a tree may result in personal injury.*
- **Always keep proper footing and operate the chain saw only when standing on fixed, secure and level surface.** *Slippery or unstable surfaces such as ladders may cause a loss of balance or control of the chain saw.*
- **When cutting a limb that is under tension be alert for spring back**. *When the tension in the wood fibres is released the spring loaded limb may strike the operator and/or throw the chain saw out of control.*
- **Use extreme caution when cutting brush and saplings**. *The slender material may catch the saw chain and be whipped toward you or pull you off balance.*
- **Carry the chain saw by the front handle with the chain saw switched off and away from your body. When transporting or storing the chain saw always fit the guide bar cover.** *Proper handling of the chain saw will reduce the likelihood of accidental contact with the moving saw chain.*
- **Follow instructions for lubricating, chain tensioning and changing accessories.** *Improperly tensioned or lubricated chain may either break or increase the chance for kickback.*
- **Keep handles dry, clean, and free from oil and grease.** *Greasy, oily handles are slippery causing loss of control.*
- **Cut wood only. Do not use chain saw for purposes not intended. For example: do not use chain saw for cutting plastic, masonry or non-wood building materials.** *Use of the chain saw for operations different than intended could result in a hazardous situation.*

Causes and operator prevention of kickback:

Kickback may occur when the nose or tip of the guide bar touches an object, or when the wood closes in and pinches the saw chain in the cut.

Tip contact in some cases may cause a sudden reverse reaction, kicking the guide bar up and back towards the operator.

Pinching the saw chain along the top of the guide bar may push the guide bar rapidly back towards the operator.

Either of these reactions may cause you to lose control of the saw which could result in serious personal injury. Do not rely exclusively upon the safety devices built into your saw. As a chain saw user, you should take several steps to keep your cutting jobs free from accident or injury.

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

- **Maintain a firm grip, with thumbs and fingers encircling the chain saw handles, with both hands on the saw and position your body and arm to allow you to resist kickback forces.** *Kickback forces can be controlled by the operator, if proper precautions are taken. Do not let go of the chain saw.*

  NOTE A possible illustration for this warning is given in Figure 103.

- **Do not overreach and do not cut above shoulder height.** *This helps prevent unintended tip contact and enables better control of the chain saw in unexpected situations.*
- **Only use replacement bars and chains specified by the manufacturer.** *Incorrect replacement bars and chains may cause chain breakage and/or kickback.*
- **Follow the manufacturer's sharpening and maintenance instructions for the saw chain.** *Decreasing the depth gauge height can lead to increased kickback.*

8.12.2 a) *Addition:*

101) Explanation of the safety devices that the chain saw incorporates as part of the original equipment and/or other safety devices that are recommended in the instruction manual

102) Instructions for properly installing and adjusting the guide bar and saw chain

103) An explanation of the safety devices that the chain saw incorporates as part of the original equipment and/or other safety devices that are recommended in the instruction manual

8.12.2 b) *Addition:*

101) Recommendation for the use of a residual current device with a tripping current of 30 mA or less

102) Statement to position the cord so that it will not be caught on branches and the like, during cutting

103) Recommendation that the first-time user should, as a minimum practice, cutting logs on a saw-horse or cradle

104) Instructions to explain the proper techniques for making the basic felling, limbing, and cross-cutting. Examples for the required instructions are given in Annex BB.1 to BB.5

105) If a manual oiler control is provided, instructions regarding its use

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.