

BS EN 60745-2-13:2009+A1:2011



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Hand-held motor-operated electric tools — Safety —

Part 2-13: Particular requirements for chain saws

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National foreword

This British Standard is the UK implementation of EN 60745-2-13:2009+A1:2010. It was derived from IEC 60745-2-13:2006, incorporating amendment 1:2009. It supersedes BS EN 60745-2-13:2009, which will be withdrawn on 1 December 2013.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by A1 A1.

The CENELEC common modifications have been implemented at the appropriate places in the text and are indicated by tags (e.g. C C1).

The UK participation in its preparation was entrusted to Technical Committee CPL/116, Portable motor-operated tools.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Amendments/corrigenda issued since publication

Date	Text affected
31 July 2011	Implementation of IEC amendment 1:2009 with CENELEC endorsement A1:2010

English version

**Hand-held motor-operated electric tools -
Safety -
Part 2-13: Particular requirements for chain saws
(IEC 60745-2-13:2006, modified)**

Outils électroportatifs à moteur -
Sécurité -
Partie 2-13: Règles particulières
pour les scies à chaîne
(CEI 60745-2-13:2006, modifiée)

Handgeführte motorbetriebene
Elektrowerkzeuge -
Sicherheit -
Teil 2-13: Besondere Anforderungen
für Kettensägen
(IEC 60745-2-13:2006, modifiziert)

This European Standard was approved by CENELEC on 2009-06-01. 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, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of the International Standard IEC 60745-2-13:2006, 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 the Technical Committee CENELEC TC 61F (transformed into TC 116), was submitted to the CENELEC Unique Acceptance Procedure and was approved by CENELEC as EN 60745-2-13 on 2007-03-01.

A draft amendment (prAB), extending Annex ZZ to include the new MD 2006/42/EC, was submitted to the formal vote.

The combined texts were approved by CENELEC as a new edition of EN 60745-2-13 on 2009-06-01.

This European Standard supersedes EN 60745-2-13:2007.

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) 2009-12-29
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2009-12-29

This standard is divided into two parts:

- Part 1: General requirements which are common to most hand-held 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 tools 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 CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directives 98/37/EC (Machinery Directive), amended by Directive 98/79/EC, and 2006/42/EC. See Annexes ZZA and ZZB.

Compliance with the clauses of Part 1 together with this Part 2 provides one means of conforming with the essential health and safety requirements of the Directives concerned.

CEN/TC 144 is producing standards for non-electric chain saws (EN 608).

Warning: Other requirements and other EC Directives can be applicable to the products falling within the scope of this standard.

This standard follows the overall requirements of EN ISO 12100-1 and EN ISO 12100-2.

This Part 2-13 is to be used in conjunction with EN 60745-1:2009. When this standard states "addition", "modification" or "replacement", the relevant text in Part 1 is to be adapted accordingly.

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

Subclauses, notes, tables and figures which are additional to those in IEC 60745-2-13:2006 are prefixed “Z”.

Annexes ZA, ZZA and ZZB have been added by CENELEC.

NOTE In this standard the following print types are used:

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

Endorsement notice

The text of the International Standard IEC 60745-2-13:2006 was approved by CENELEC as a European Standard with agreed common modifications.

Foreword to amendment A1

The text of document 116/17/FDIS, future amendment 1 to IEC 60745-2-13:2006, prepared by TC 116, Safety of hand-held motor-operated electric tools, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 60745-2-13:2009 on 2010-12-01.

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

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2011-09-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2013-12-01

This amendment to European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directive 2006/42/EC. See Annex ZZ of EN 60745-2-13:2009.

Endorsement notice

The text of amendment 1:2009 to the International Standard IEC 60745-2-13:2006 was approved by CENELEC as an amendment to the European Standard without any modification.

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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.

☐ The chain saws covered by this standard are designed only to be operated with the right hand on the rear handle and the left hand on the front handle. ☐

2 Normative references

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

Addition:

ISO 3864-3¹⁾, *Graphical symbols – Safety colours and safety signs – Part 3: Design ☐ principles ☐ for graphical symbols ☐ for use ☐ 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*

☐ ISO 22868:2005, *Forestry machinery – Noise test code for portable hand-held machines with an internal combustion engine – Engineering method (Grade 2 accuracy) ☐*

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 Environmental requirements

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

6.1.2.2 Replacement:

The sound power level shall be measured according to EN ISO 3744, where the acoustic environment, instrumentation, quantities to be measured, quantities to be determined, and the measurement procedure are specified. 

- Ⓒ The sound power level shall be given as A-weighted sound power level in dB reference 1 pW. The A-weighted sound pressure levels, from which the sound power is to be determined, shall be measured directly, and not calculated from frequency band data.

The sound power level shall be determined according to Clause 5 of EN ISO 22868, with the test environment, measurement surface and six microphone positions specified there and in Clause 6 of EN ISO 22868.

The A-weighted sound power level, L_{WA} , shall be calculated, in accordance with 8.6 of EN ISO 3744, as follows:

$$L_{WA} = \overline{L_{pfA}} + 10\lg\left(\frac{S}{S_0}\right), \text{ in dB} \quad (\text{Z101})$$

with $\overline{L_{pfA}}$ determined from

$$\overline{L_{pfA}} = 10\lg\left[\frac{1}{6}\sum_{i=1}^6 10^{0,1L'_{pA,i}}\right] - K_{1A} - K_{2A}$$

where

$\overline{L_{pfA}}$ is the A-weighted surface sound pressure level according to EN ISO 3744

$L'_{pA,i}$ A-weighted sound pressure level measured at the i-th microphone position, in decibels

K_{1A} background noise correction, A-weighted

K_{2A} environmental correction, A-weighted

S area of the measurement surface, in m²

$S_0 = 1 \text{ m}^2$

If the test environment meets the requirements of EN ISO 22868, then the environmental correction factor K_{2A} shall be considered as negligible.

For the hemispherical measurement surface, the area S of the measurement surface is calculated as follows:

$$S = 2\pi r^2, \text{ in m}^2. \quad (\text{Z102})$$

where r , the radius of the hemisphere, is 4 m as specified in Clause 5 of EN ISO 22868.

6.1.2.4 Modification:

The installation and mounting conditions shall be in accordance with A.1 and A.2 of EN ISO 22868, as far as applicable to electric chain saws.

The ambient conditions shall be as specified in 6.1 of EN ISO 22868. Ⓒ

6.1.2.5 Modification:

Chain saws are tested under the two operating conditions “idling” and “full load” in accordance with A.3.1 of EN ISO 22868.

“Idling” shall be operation at no-load, with maximum speed settings.

“Full load” shall be in accordance with A.3.3 of EN ISO 22868, with maximum speed settings.

Four consecutive tests for “idling” and four for “full load” shall be carried out, with each sound power level determined in accordance with the procedure stated in A.3.1 of EN ISO 22868. With L_{W1} and L_{W2} being the average sound power levels of the two different modes of operation defined above, the resulting sound power level L_{WA} is calculated by:

$$L_{WA} = 10 \lg \frac{1}{2} \left[10^{0,1L_{W1}} + 10^{0,1L_{W2}} \right]$$

6.2.4.2 Location of the measurement

Addition:

Figure Z101 shows the positions on the front handle and rear handle.

6.2.6.3 Operating conditions

Chain saws are tested under load observing the conditions shown in Table Z101.

Table Z101 – Test conditions

Material	Freshly felled softwood log of local timber, not frozen. Width of the log to be trimmed to 75 % of the usable cutting length of the guide bar
Orientation	Log to be rigidly clamped horizontally so that the centre line of the log is at 0,6 m from the ground
Tool bit	Saw chain to be as supplied or recommended by the manufacturer
Feed force	Sufficient force, using the spiked bumper, to achieve rated input ± 10 %
Test cycle	Cutting across the width of the log in a part substantially free of knots

6.2.7.2 Declaration of the vibration total value

Addition:

The vibration total value a_h of the handle with the highest emission and the uncertainty K shall be declared. 