

INTERNATIONAL STANDARD



**Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety –
Part 4-1: Particular requirements for chain saws**

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CONTENTS

FOREWORD	4
1 Scope	6
2 Normative references	6
3 Terms and definitions	7
4 General requirements	9
5 General conditions for the tests	9
6 Radiation, toxicity and similar hazards	9
7 Classification	9
8 Marking and instructions	9
9 Protection against access to live parts	13
10 Starting	13
11 Input and current	13
12 Heating	13
13 Resistance to heat and fire	13
14 Moisture resistance	13
15 Resistance to rusting	14
16 Overload protection of transformers and associated circuits	14
17 Endurance	14
18 Abnormal operation	14
19 Mechanical hazards	15
20 Mechanical strength	21
21 Construction	22
22 Internal wiring	24
23 Components	24
24 Supply connection and external flexible cords	25
25 Terminals for external conductors	26
26 Provision for earthing	26
27 Screws and connections	26
28 Creepage distances, clearances and distances through insulation	26
Annexes	38
Annex C (normative) Leakage current	39
Annex I (informative) Measurement of noise and vibration emissions	40
Annex K (normative) Battery tools and battery packs	47
Annex L (normative) Battery tools and battery packs provided with mains connection or non-isolated sources	67
Annex AA (normative) Safety signs	71
Annex BB (informative) Examples of instructions concerning the proper techniques for basic felling, limbing, and cross-cutting	73
Annex CC (informative) Example of a material and construction for fulfilling the requirements for an artificial surface	77
Annex DD (normative) Other machine and battery signs	79
Annex EE (normative) Ageing test for gaskets, o-rings, seals and tubing used for moisture resistance	80

Bibliography.....	81
Figure 101 – Chain saw nomenclature	31
Figure 102 – Cutting length.....	32
Figure 103 – Holding the chain saw	33
Figure 104 – Minimum rear hand guard dimensions	33
Figure 105 – Straight test probe.....	34
Figure 106 – Measuring direction of static activation force F	34
Figure 107 – Impact direction and pendulum.....	35
Figure 108 – Saw chain drive link spacing	35
Figure 109 – Chain saw balance	36
Figure 110 – Test assembly for accessibility of attachment plug blades	36
Figure 111 – Application of steel rod when rotated around the rear handle	37
Figure 112 – Application of steel rod when applied in the direction perpendicular to the rear handle axis	37
Figure I.101 – Microphone positions on the hemisphere (see Table I.101)	45
Figure I.102 – Positions of transducers for chain saws.....	46
Figure BB.101 – Description of felling: escape routes	74
Figure BB.102 – Description of felling: undercutting	75
Figure BB.103 – Tree limbing.....	75
Figure BB.104 – Log supported along the entire length.....	75
Figure BB.105 – Log supported one end	76
Figure BB.106 – Log supported both ends	76
Figure BB.107 – Cross-cutting/bucking a log.....	76
Figure CC.1 – Sketch of the measurement surface covered with an artificial surface (not to scale).....	78
Table 4 – Required performance levels	15
Table 12 – Minimum creepage distances and clearances	28
Table I.101 – Co-ordinates of microphone positions.....	42
Table I.102 – Absorption coefficients	42
Table I.103 – Test conditions	45
Table K.301 – Chain saw moisture resistance classification and marking.....	49
Table K.302 – Battery pack moisture resistance classification and marking.....	51
Table K.303 – Permissible contact area for terminals.....	54
Table K.1 – Minimum creepage distances and clearances between parts of different potential.....	65
Table K.2 – Minimum total sum of creepage distances and clearances to accessible surfaces.....	66
Table EE.1 – Accelerated ageing test	80

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE
TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY –****Part 4-1: Particular requirements for chain saws**

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 62841-4-1 edition 1.1 contains the first edition (2017-10) [documents 116/339/FDIS and 116/344/RVD] and its amendment 1 (2024-10) [documents 116/816/FDIS and 116/837/RVD].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 62841-4-1 has been prepared by IEC technical committee 116: Safety of motor-operated electric tools.

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

This Part 4-1 is to be used in conjunction with the first edition of IEC 62841-1 (2014).

This Part 4-1 supplements or modifies the corresponding clauses in IEC 62841-1, so as to convert it into the IEC Standard: Particular requirements for chain saws.

Where a particular subclause of Part 1 is not mentioned in this Part 4-1, that subclause applies as far as relevant. Where this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

The following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in small roman type;
- **terms defined in Clause 3: in bold typeface.**

Subclauses, notes, tables and figures which are additional to those in Part 1, except as described for Annex K and Annex L below, are numbered starting from 101.

Subclauses, notes, tables and figures in Annex K and Annex L which are additional to those in the main body of this Part 4-1 as well as Annex K and Annex L of Part 1 are numbered starting from 301.

A list of all parts of the IEC 62841 series, under the general title: *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety*, can be found on the IEC website.

<https://standards.iteh.ai/catalog/standards/iec/b4ca821e-d38c-4664-9c6d-07679aa8f7aa/iec-62841-4-1-2017>

The committee has decided that the contents of this document and its amendment will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

NOTE The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 36 months from the date of publication.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY –

Part 4-1: 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; or
- pole-mounted pruners.

NOTE 101 Pole-mounted pruners will be covered by a future part of IEC 62841.

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:

IEC 60664-3:2016, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

IEC 61672-1, *Electroacoustics – Sound level meters – Part 1: Specifications*

ISO 37:2017, *Rubber, vulcanized or thermoplastic – Determination of tensile stress-strain properties*

ISO 354:2003, *Acoustics – Measurement of sound absorption in a reverberation room*

ISO 3744:2010, *Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure – Engineering methods for an essentially free field over a reflecting plane*

ISO 6533:2012/2020, *Forestry machinery – Portable chain-saw front hand-guard – Dimensions and clearances*

ISO 6534:2007, *Forestry machinery – Portable chain-saw hand-guards – Mechanical strength*

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

ISO 7915:1994/2021, *Forestry machinery – Portable chain-saws – Determination of handle strength*

ISO 9518:2018, *Forestry machinery – Portable chain-saws – Kickback test*

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

ISO 11681-2:2011, *Machinery for forestry – Portable chain-saw safety requirements and testing – Part 2: Chain-saws for tree service*

ISO 13772:2009, *Forestry machinery – Portable chain saws – Non-manually actuated chain brake performance*

ISO 17080:2005, *Manually portable agricultural and forestry machines and powered lawn and garden equipment – Design principles for single-panel product safety labels*

ISO 22868:2011, *Forestry and gardening machinery – Noise test code for portable hand-held machines with internal combustion engine – Engineering method (Grade 2 accuracy)*

3 Terms and definitions

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

3.101 bar tip guard

shield that prevents contact with the **saw chain** at the tip of the **guide bar**

3.102 chain brake

function or device for stopping the **saw chain** activated manually or non-manually when **kickback** occurs

3.102.1 manually activated chain brake

braking function triggered by the hand of the operator

3.102.2 non-manually activated chain brake

braking function triggered by **kickback** motion independent of operator activation

3.103 chain catcher

device for restraining the **saw chain** if it breaks or derails (see Figure 101)

3.104 chain saw

machine designed to cut wood with a **saw chain** and consisting of an integrated unit of handles, motor, **guide bar** and **saw chain**, designed to be supported with two hands (see Figure 101)

3.105 cutting length

approximate effective length of cut of the **chain saw**

Note 1 to entry: The method for determining **cutting length** is specified in 21.101.

3.106**drive sprocket**

chain drive wheel with teeth

3.107**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)

3.108**front handle**

support handle located at or towards the front of the machine (see Figure 101)

3.109**guide bar**

attachment 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** contacts an object such as a log or branch near the tip of the **guide bar** or when the wood closes in and pinches the moving **saw chain**

3.111**maximum speed**

highest **steady-state saw chain** speed attainable under all conditions of **normal use**, including no-load, when adjusted in accordance with the manufacturer's specifications and/or instructions

Note 101 to entry: The steady-state **saw chain** speed excludes transients such as overshoot that can occur before attaining a steady-state condition. <https://standards.itech.ai/catalog/standards/iec/b4ca821e-d38e-4664-9c6d-07679aa8f7aa/iec-62841-4-1-2017>

3.112**operator presence sensor**

device to detect the presence of an operator's hand

3.113**rear hand guard**

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

3.114**rear handle**

support handle located towards the rear of the machine (see Figure 101)

3.115**saw chain**

attachment, serving as a cutting tool, consisting of drive links and cutters (see Figure 101 and Figure 108)

3.116**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)

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:

~~5.14 Addition:~~

~~For tests carried out at any percentage of rated input or rated current, except for no-load, the saw chain and the guide bar may be removed and the chain saw loaded by means of a brake.~~

5.15 Addition:

For tests carried out at any percentage of **rated input** or **rated current**, except for no-load, the **saw chain** and the **guide bar** may be removed and the **chain saw** loaded by means of a brake.

5.17 Addition:

The mass of the machine includes the heaviest **guide bar** and **saw chain** combination in accordance with 8.14.2 c) 101) as well as the lubrication tank, if any, filled to the maximum specified level, but excludes the **guide bar** cover.

5.101 For tests that are performed at **maximum speed** and no-load, the manufacturer may need to provide special hardware and/or software.

6 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.

7 Classification

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

7.2 Replacement:

Chain saws shall not be classified with a degree of protection against harmful ingress of water higher than IPX0 according to IEC 60529:1989, IEC 60529:1989/AMD1:1999 and IEC 60529:1989/AMD2:2013.

Compliance is checked by inspection.

8 Marking and instructions

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

8.1 Replacement:

Chain saws shall be marked with rating information as follows:

- **rated voltage(s)** or **rated voltage range**, in volts. Machines for star-delta connection shall be clearly marked with the two **rated voltages** (for example 230 Δ / 400 Y). A machine that complies with this standard for a voltage range, may also be marked with any single voltage or smaller voltage range within that range;
- symbol for nature of supply, unless the **rated frequency(ies)** or **rated frequency range** is marked. The symbol for nature of supply shall be placed next to the marking for **rated voltage**;
- **rated input**, in watts or **rated current**, in amperes. The **rated input** or **rated current** to be marked on the machine is the total maximum input or current that can be drawn from external circuit at the same time. If a machine has alternative components which can be selected by a **control device**, the **rated input** or **rated current** is that corresponding to the highest loading possible;
- symbol for **class II construction**, for **class II tools** (machines) only.

8.1.101 Chain saws shall not be marked with an IP rating for the degree of protection against harmful ingress of water higher than IPX0 in accordance with IEC 60529:1989, IEC 60529:1989/AMD1:1999 and IEC 60529:1989/AMD2:2013. **Chain saws** may be marked with an IP rating for the degree of protection against solid foreign objects and access to hazardous parts in accordance with IEC 60529:1989, IEC 60529:1989/AMD1:1999 and IEC 60529:1989/AMD2:2013.

Compliance is checked by inspection.

8.2 Addition:

Chain saws shall be marked with safety information which shall be written in one of the official languages of the country in which the machine is to be sold or marked with the appropriate symbol:

- “Wear eye protection” or a relevant safety sign of ISO 7010 or the safety sign specified in Annex AA;
- “Wear ear protection”, a relevant safety sign of ISO 7010 or the safety sign specified in Annex AA. This marking may be omitted if the measured sound pressure level at the operator’s ear in accordance with Annex I does not exceed 85 dB(A).

A combination of ISO safety signs, such as eye, ear, dust and head protection, is allowed. In addition, a combination of safety signs as specified in Annex AA is allowed.

- “Do not expose to rain” or the safety sign specified in Annex AA, ~~unless the chain saw has a degree of protection of at least IPX4.~~
- “Beware of chain saw kickback and avoid contact with bar tip”, or A.1.3 of ISO 17080:2005.
- “Always use chain saw two-handed” or A.3.1 of ISO 17080:2005.

For mains supplied machines:

“Remove plug from the mains immediately if the cable is damaged or cut” or the safety sign specified in Annex AA.

8.3 Addition:

Chain saws shall be marked with the following:

- specified nominal **guide bar** size or size range;

NOTE 101 The nominal **guide bar** size is not necessarily the same as the **cutting length**.

- identification of the direction of rotation of the **saw chain** by a legible and durable mark on the body of the machine. This may be located under the **drive sprocket** cover.

8.14.1 Addition:

The additional safety instructions as specified in 8.14.1.101 shall be given. This part may be printed separately from the “General Machine Safety Warnings”.

8.14.1.101 Safety instructions for chain saws

1) General chain saw safety warnings:

- a) **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.*
- b) **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.*
- c) **Hold the chain saw 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 chain saw "live" and could give the operator an electric shock.*
- d) **Wear eye protection. Further protective equipment for hearing, head, hands, legs and feet is recommended.** *Adequate protective equipment will reduce personal injury from flying debris or accidental contact with the saw chain.*
- e) **Do not operate a chain saw in a tree, on a ladder, from a rooftop, or any unstable support.** *Operation of a chain saw in this manner could result in serious personal injury.*
- f) **Always keep proper footing and operate the chain saw only when standing on fixed, secure and level surface.** *Slippery or unstable surfaces may cause a loss of balance or control of the chain saw.*
- g) **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.*
- h) **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.*
- i) **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.*
- j) **Follow instructions for lubricating, chain tensioning and changing the bar and chain.** *Improperly tensioned or lubricated chain may either break or increase the chance for kickback.*
- k) **Cut wood only. Do not use chain saw for purposes not intended. For example: do not use chain saw for cutting metal, plastic, masonry or non-wood building materials.** *Use of the chain saw for operations different than intended could result in a hazardous situation.*
- l) **Do not attempt to fell a tree until you have an understanding of the risks and how to avoid them.** *Serious injury could occur to the operator or bystanders while felling a tree.*

NOTE The above warning is omitted for **chain saws** that are not suitable for tree felling as specified by the manufacturer. See 8.14.2 b) 104).

- m) **This chain saw is not intended for tree felling.** *Use of the chain saw for operations different than intended could result in serious injury to the operator or bystanders.*

NOTE The above warning is omitted for **chain saws** that are suitable for tree felling.

2) 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 chain 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 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 Figure 103 may be used as an illustration in the instruction manual for holding the machine properly.

- b) **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.*
- c) **Only use replacement guide bars and saw chains specified by the manufacturer.** *Incorrect replacement guide bars and saw chains may cause chain breakage and/or kickback.*
- d) **Follow the manufacturer's sharpening and maintenance instructions for the saw chain.** *Decreasing the depth gauge height can lead to increased kickback.*

8.14.2 a) Addition:

- 101) Explanation of **chain saw** safety devices;
- 102) Instructions for properly installing and adjusting the **guide bar** and **saw chain**;
- 103) Instruction for selection and use of protective equipment for eyes, ears, head, hands, legs and feet, as applicable.

8.14.2 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, practise cutting logs on a saw-horse or cradle;
- 104) Information that the **chain saw** is not suitable for tree felling, if applicable;
- 105) Instructions to explain the proper techniques for basic felling, limbing, and cross-cutting. Examples for the required instructions are given in Clause BB.1 to BB.5. If the **chain saw** is not suitable for tree felling as specified by the manufacturer, then instructions for felling techniques may be omitted;
- 106) If applicable, instruction on the use of a manual lubrication control;
- 107) If applicable, instruction not to operate the **chain saw** without lubrication and to replenish it in due time before the container is empty;
- 108) Instruction to use only recommended lubricants;