UL 62841-4-1

STANDARD FOR SAFETY

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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UL Standard for Safety for Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 4-1: Particular Requirements For Chain Saws, UL 62841-4-1

First Edition, Dated March 6, 2020

Summary of Topics

This revision of ANSI/UL 62841-4-1 dated May 5, 2021 includes the following changes in requirements:

- ***Revisions To Clause 101.DVA.1.14 To Correct The Longitudinal Balance Test Method For Top-Handle Saws***

- ***Addition Of National Difference To Clause K.1 To Delete Reference To Chain Saws As Not Applicable; K.1DV***

- ***Editorial correction to title of Clause K.14.301 to match IEC document***

This standard is an adoption of IEC 62841-4-1, Edition 1, published by the IEC October 2017. The national difference document incorporates all of the U.S. national differences for UL 60745-4-1.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated January 15, 2021.

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CSA Group
CSA C22.2 No. 62841-4-1:20
First Edition
(IEC 62841-4-1:2017, MOD)

Underwriters Laboratories Inc.
UL 62841-4-1
First Edition

Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 4-1: Particular Requirements For Chain Saws

March 6, 2020

(Title Page Reprinted: May 5, 2021)

This national standard is based on publication IEC 62841-4-1, First Edition (2017).

ANSI/UL 62841-4-1-2021

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This Standard is subject to review within five years from the date of publication, and suggestions for its improvement will be referred to the appropriate committee. The technical content of IEC and ISO publications is kept under constant review by IEC and ISO. To submit a proposal for change, please send the following information to inquiries@csagroup. org and include "Proposal for change" in the subject line: Standard designation (number); relevant clause, table, and/or figure number; wording of the proposed change; and rationale for the change.

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This ANSI/UL Standard for Safety consists of the First Edition including revisions through May 5, 2021. The most recent designation of ANSI/UL 62841-4-1 as an American National Standard (ANSI) occurred on May 5, 2021. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), or the Preface. The National Difference Page and IEC Foreword are also excluded from the ANSI approval of IEC-based standards.

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Preface

This is the harmonized CSA Group and UL Standard For Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 4-1: Particular Requirements For Chain Saws. It is the First edition of CSA C22.2 No. 62841-4-1 and the First edition of UL 62841-4-1. This harmonized standard has been jointly revised on May 5, 2021. For this purpose, CSA Group and UL are issuing revision pages dated May 5, 2021.

This harmonized standard is based on IEC Publication 62841-4-1: First edition, Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 4-1: Particular Requirements For Chain Saws, issued October 2017. IEC 62841-4-1 is copyrighted by the IEC.

This harmonized standard was prepared by CSA Group and Underwriters Laboratories Inc. (UL). The efforts and support of the International Harmonization Committee (IHC) for the adoption of the IEC series of standards for Hand-Held, Motor-Operated, and Transportable Tools and Lawn and Garden Machinery are gratefully acknowledged.

This standard is considered suitable for use for conformity assessment within the stated scope of the standard.

This standard was reviewed by the CSA Subcommittee on Safety of Hand-Held Motor-Operated Electric Tools, under the jurisdiction of the CSA Technical Committee on Consumer and Commercial Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee. This standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

Application of Standard

Where reference is made to a specific number of samples to be tested, the specified number is to be considered a minimum quantity.

> Note: Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.

CSA C22.2 No. 62841-4-1 is to be used in conjunction with the First edition of CAN/CSA-C22.2 No. 62841-1. The requirements for chain saws are contained in this Part 4 Standard and CAN/CSA-C22.2 No. 62841-1. Requirements of this Part 4 Standard, where stated, amend the requirements of CAN/CSA-C22.2 No. 62841-1. Where a particular subclause of CAN/CSA-C22.2 No. 62841-1 is not mentioned in CSA C22.2 No. 62841-4-1, the CAN/CSA-C22.2 No. 62841-1 subclause applies.

UL 62841-4-1 is to be used in conjunction with the First edition of UL 62841-1. The requirements for chain saws are contained in this Part 4 Standard and UL 62841-1. Requirements of this Part 4 Standard, where stated, amend the requirements of UL 62841-1. Where a particular subclause of UL 62841-1 is not mentioned in UL 62841-4-1, the UL 62841-1 subclause applies.

Level of harmonization

This standard adopts the IEC text with national differences.

This standard is published as an equivalent standard for CSA Group and UL.

An equivalent standard is a standard that is substantially the same in technical content, except as follows: Technical national differences are allowed for codes and governmental regulations as well as those

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recognized as being in accordance with NAFTA Article 905, for example, because of fundamental climatic, geographical, technological, or infrastructural factors, scientific justification, or the level of protection that the country considers appropriate. Presentation is word for word except for editorial changes.

All national differences from the IEC text are included in the CSA Group and UL versions of the standard. While the technical content is the same in each organization's version, the format and presentation may differ.

Reasons for Differences From IEC

National differences from the IEC are being added in order to address safety and regulatory situations present in the US and Canada.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard is based on the literal text to determine compliance with the standard in accordance with the procedural rules of the standards development organization. If more than one interpretation of the literal text has been identified, a revision is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

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For CSA Group, the text, figures, and tables of International Electrotechnical Commission Publication 62841-4-1, Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 4-1: Particular requirements for chain saws, copyright 2017, are used in this standard with the consent of the International Electrotechnical Commission. The IEC Foreword is not a part of the requirements of this standard but is included for information purposes only.

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NATIONAL DIFFERENCES

National Differences from the text of International Electrotechnical Commission (IEC) Publication 62841-4-1, Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 4-1: Particular Requirements For Chain Saws, copyright 2017, are indicated by notations (differences) and are presented in bold text. The national difference type is included in the body.

There are five types of National Differences as noted below. The difference type is noted on the first line of the National Difference in the standard. The standard may not include all types of these National Differences.

DR – These are National Differences based on the **national regulatory requirements**.

D1 – These are National Differences which are based on **basic safety principles and requirements**, elimination of which would compromise safety for consumers and users of products.

D2 – These are National Differences from IEC requirements based on existing **safety practices**. These requirements reflect national safety practices, where empirical substantiation (for the IEC or national requirement) is not available or the text has not been included in the IEC standard.

DC – These are National Differences based on the **component standards** and will not be deleted until a particular component standard is harmonized with the IEC component standard.

DE – These are National Differences based on **editorial comments or corrections**.

Each national difference contains a description of what the national difference entails. Typically one of the following words is used to explain how the text of the national difference is to be applied to the base IEC text:

> ***Addition / Add*** - An addition entails adding a complete new numbered clause, subclause, table, figure, or annex. Addition is not meant to include adding select words to the base IEC text.
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>
> ***Deletion / Delete*** - A deletion entails complete deletion of an entire numbered clause, subclause, table, figure, or annex without any replacement text.

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FOREWORD

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

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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8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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

The text of this International Standard is based on the following documents:

FDIS	Report on voting
116/339/FDIS	116/344/RVD

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

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).

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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.

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

• reconfirmed,

• withdrawn,

• replaced by a revised edition, or

• amended.

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.

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101DV DE ***Modification: Add the following to the IEC Foreword:***

The numbering system in the standard uses a space instead of a comma to indicate thousands and uses a comma instead of a period to indicate a decimal point. For example, 1 000 means 1,000 and 1,01 means 1.01.

102DV DE ***Modification: Add the following to the IEC Foreword:***

For this Standard, all references to "Part 1" refer to CAN/CSA-C22.2 No. 62841-1 and UL 62841-1.

103DV DE ***Modification: Add the following to the list of dashed items in the IEC Foreword:***

– terms defined in Annex 101.DVA and Annex 101.DVB appear in ALL CAPS.

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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**.

1DV DE *Modification: Add the following to Clause 1 of the Part 4:*

Requirements applicable to battery-operated top-handle chain saws are specified in Annex 101.DVA and are applicable in the U.S. only. In Canada, battery-operated top-handle chain saws are covered in CSA Z62.1, as Class 2B chain saws.

Requirements applicable to battery-operated PRUNING SAWS are specified in Annex 101.DVB and are applicable in the U.S. and Canada.

2 Normative references

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

Addition:

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

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, *Forestry machinery – Portable chain-saw front hand-guard – Dimensions and clearances*

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

ISO 9518, *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)*

2DV DR *Modification: Add the following reference standards to Clause 2 of the Part 4:*

CSA Z62.1-15, *Chain saws*

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)

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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 **saw chain** speed attainable under all conditions of **normal use**, including no-load

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)

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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.*

5.17 *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.

8 Marking and instructions

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

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.

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– “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.

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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).

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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;

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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 crosscutting. 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;

109) Information on the **maximum speed** of the **saw chain**, or if the **maximum speed** of the **saw chain** is less than 20 m/s, this may be stated.

8.14.2 c) *Addition:*

101) Information on recommended **guide bar** and **saw chain** combination(s) that can be used and that maintains compliance with this standard;

102) Instructions on sharpening and maintenance of the **saw chain** and/or a recommendation to have sharpening and maintenance of the **saw chain** performed by authorised service centres.

8.14.3 *Replacement:*

If information about the mass or weight of the machine is provided, it shall be the mass of the machine without the **saw chain**, **guide bar**, **guide bar** cover, oil and optional **accessories**.

Compliance is checked by inspection.

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, except as follows:

12.2.1 *Replacement:*

The load conditions for the heating test of 12.2 are as follows:

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