UL 62841-2-5

STANDARD FOR SAFETY

Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-5: Particular Requirements for Hand-Held Circular Saws

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UL Standard for Safety for Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-5: Particular Requirements for Hand-Held Circular Saws, UL 62841-2-5

First Edition, Dated August 10, 2016

Summary of Topics

This revision of ANSI/UL 62841-2-5, dated December 13, 2019, includes the following:

Revision to Clause 17.102.3DV.2 to Clarify the Requirements. (The revisions do not change the technical content of the requirements)

Deletion of Clause 24.1DV Involving Protection Against Moisture for Appliance Inlets

This standard is an adoption of IEC 62841-2-5, Edition 1 published June 2014. Please note that the National Difference document incorporates all of the U.S. national differences for UL 62841-2-5.

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 revised requirements are substantially in accordance with Proposal(s) on this subject dated June 21, 2019 and September 27, 2019.

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First Edition

Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-5: Particular Requirements for Hand-Held Circular Saws

August 10, 2016

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This national standard is based on publication IEC 62841-2-5, First Edition (2014).

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Commitment for Amendments

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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 December 13, 2019. The most recent designation of ANSI/UL 62841-2-5 as an American National Standard (ANSI) occurred on December 13, 2019. 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 2-5: Particular Requirements for Hand-Held Circular Saws. It is the First edition of CAN/CSA-C22.2 No. 62841-2-5 and the First edition of UL 62841-2-5. This harmonized standard has been jointly revised on December 13, 2019. For this purpose, CSA Group and UL are issuing revision pages dated December 13, 2019.

This harmonized standard is based on IEC Publication 62841-2-5: First edition Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-5: Particular Requirements for Hand-Held Circular Saws issued June 2014. IEC 62841-2-5 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.

This CAN/CSA-C22.2 No. 62841-2-5 Standard for Safety for Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-5: Particular Requirements for Hand-Held Circular Saws is to be used in conjunction with the First edition of CAN/CSA-C22.2 No. 62841-1. The requirements for hand-held circular saws are contained in this Part 2 Standard and CAN/CSA-C22.2 No. 62841-1. Requirements of this Part 2 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 CAN/CSA-C22.2 No. 62841-2-5, the CAN/CSA-C22.2 No. 62841-1 subclause applies.

This UL Standard 62841-2-5 Standard for Safety for Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-5: Particular Requirements for Hand-Held Circular Saws, is to be used in conjunction with the First edition of UL 62841-1. The requirements for hand-held circular saws are contained in this Part 2 Standard and UL 62841-1. Requirements of this Part 2 Standard, where stated, amend the requirements of UL 62841-1. Where a particular subclause of UL 62841-1 is not mentioned in UL 62841-2-5, the UL 62841-1 subclause applies.

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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 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 IEC 62841-2-5 Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-5: Particular Requirements for Hand-Held Circular Saws, copyright 2014, 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.

These materials are subject to copyright claims of IEC and UL. No part of this publication may be reproduced in any form, including an electronic retrieval system, without the prior written permission of UL. All requests pertaining to the Standard for Safety for Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-5: Particular Requirements for Hand-Held Circular Saws, UL 62841-2-5 Standard should be submitted to UL.

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NATIONAL DIFFERENCES

National Differences from the text of International Electrotechnical Commission (IEC) Publication 62841-2-5, Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-5: Particular Requirements for Hand-Held Circular Saws, copyright 2014 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.

Modification / Modify - A modification is an altering of the existing base IEC text such as the addition, replacement or deletion of certain words or the replacement of an entire clause, subclause, table, figure, or annex of the base IEC text.

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FOREWORD

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY – PART 2-5: PARTICULAR REQUIREMENTS FOR HAND-HELD CIRCULAR SAWS

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International Standard IEC 62841-2-5 has been prepared by IEC technical committee 116: Safety of motor-operated electric tools.

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

FDIS	Report on voting
116/166/FDIS	116/180/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.

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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 first edition of IEC 62841-1:2014.

This Part 2-5 supplements or modifies the corresponding clauses in IEC 62841-1, so as to convert it into the IEC Standard: Particular Requirements for Hand-Held Circular Saws.

Where a particular subclause of Part 1 is not mentioned in this Part 2-5, that subclause applies as far as reasonable. 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 smaller roman type

The terms defined in Clause 3 are printed in **bold typeface**.

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

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 publication 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.

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.

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.

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102DV ***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.

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ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY – PART 2-5: PARTICULAR REQUIREMENTS FOR HAND-HELD CIRCULAR SAWS

1 Scope

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

Addition:

This part of IEC 62841 applies to hand-held **circular saws**, which hereinafter will be referred to as saws.

This standard does not apply to saws designed for use with abrasive wheels.

NOTE Saws designed for use with abrasive wheels as cut-off machines are covered by IEC 62841-2-22.

2 Normative references

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

Addition:

NOTE In Europe (EN 62841-2-5), the following normative reference applies:

EN 847-1, *Tools for woodworking – Safety requirements – Part 1: Milling tools, circular saw blade*

3 Terms and definitions

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

Addition:

3.53DV D1 ***Modification: Replace Clause 3.53 of the Part 1 with the following:***

supply cord: flexible cord which can be detachable or fixed to the tool

3.101 **base plate:** part supporting the saw on the material being cut (see Figure 113)

3.102 angular displacement of the saw blade plane with respect to the **base plate** plane, the position of the saw blade plane that is perpendicular to the **base plate** being the 0° bevel position

3.103 **circular saw:** tool intended for cutting various materials with a rotating toothed blade

3.104 **cutting edge zone:** outer 20 % of the blade's radius

3.105 ***D*** maximum specified diameter of the saw blade

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3.106 **guarding system:** combination of some or all of the following elements as applicable for the type of saw: **upper guard**, **lower guard**, **base plate** and the mechanism to facilitate the performance of these elements

3.107 **kickback:** sudden reaction to a pinched, jammed or misaligned saw blade, causing an uncontrolled saw to lift up and out of the workpiece

3.108 **lower guard:** movable blade-covering device which, in the closed or rest position, is mainly situated below the **base plate**

3.109 **maximum depth of cut:** maximum thickness of the workpiece that can be cut through when the saw is set to 0° bevel position, at the maximum protrusion of the largest specified saw blade through the plane of the **base plate**

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

3.111 **riving knife:** metal part placed in the plane of the saw blade with the intent of preventing the kerf in the workpiece from closing on the rear part of the saw blade

3.112 **saw with outer pendulum guard:** saw having a **lower guard** which swings outside the **upper guard** (see Figure 101)

3.113 **saw with inner pendulum guard:** saw having a **lower guard** which swings inside the **upper guard** (see Figure 102)

3.114 **saw with tow guard:** saw having a **lower guard** which slides along the **upper guard** (see Figure 103)

3.115 **upper guard:** fixed and/or movable cover of the blade situated above the **base plate**

3.116DV D1 ***Addition: Add the following definition to Clause 3 of the Part 2:***

detachable cord: flexible cord provided with an appliance inlet connector and intended to be connected to a tool through an appliance inlet.

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:

5.17 *Addition:*

The weight of the tool includes the dust extraction adapter and the auxiliary handle, if any.

6 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.

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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:

– rated no-load speed of the output spindle.

8.2DV D1 ***Modification: Add the following to Clause 8.2 of the Part 1:***

Tools shall be marked with the following additional safety warnings:

a) "DANGER – Keep hands and body away from and to the side of the blade. Contact with blade will result in serious injury."

b) "WARNING – Check guarding system. It must cover the blade instantly!"

c) For saws with a blade diameter greater than 140 mm the following warning shall be used: "WARNING – Hold saw with both hands."

d) "WARNING – Support and clamp work."

8.3 *Addition:*

– specified blade diameter or specified blade diameter range.

The direction of rotation of the spindle shall be indicated on the tool by an arrow, raised or recessed or by any other means no less visible and indelible.

8.14.1.101 Additional safety instructions for circular saws

8.14.1.101.1 **General**

The additional safety instructions as specified in 8.14.1.101.2 to 8.14.1.101.6 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 Power Tool Safety Warnings".

All notes are not to be printed; they are information for the designer of the manual.

8.14.1.101.2 **Safety instructions for all saws**

Cutting procedures

a) **DANGER: 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.*

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NOTE For **circular saws** with a maximum blade diameter of 140 mm or smaller, the words "Keep your second hand on auxiliary handle, or motor housing" do not apply.

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 the workpiece in your hands or across your leg while cutting. Secure the workpiece to a stable platform.** *It is important to support the work properly to minimise body exposure, blade binding, or loss of control.*

e) **Hold the 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 could give the operator an electric shock.*

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 off-centre, 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.*

8.14.1.101.3 **Further safety instructions for all saws**

Kickback causes and related warnings

– kickback is a sudden reaction to a pinched, jammed 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 jammed 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 a maximum blade diameter of 140 mm or smaller, the words "with both hands" do not apply.

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.*

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