

AS/NZS 62841.4.4:2021
IEC 62841-4-4:2020



STANDARDS
Australia

Australian/New Zealand Standard™

Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery — Safety

Part 4.4: Particular requirements for lawn trimmers, lawn edge trimmers,
grass trimmers, brush cutters and brush saws



AS/NZS 62841.4.4:2021

This Joint Australian/New Zealand Standard™ was prepared by Joint Technical Committee EL-002, Safety of Household and Similar Electrical Appliances and Small Power Transformers and Power Supplies. It was approved on behalf of the Council of Standards Australia on 20 October 2021 and by the New Zealand Standards Approval Board on 6 October 2021.

This Standard was published on 26 November 2021.

The following are represented on Committee EL-002:

- Association of Accredited Certification Bodies
- Australian Industry Group
- Australian Retailers Association
- Better Regulation Division (Fair Trading, Safework NSW, TestSafe)
- Business New Zealand
- Consumer Electronic Suppliers Association, Australia
- Consumers' Federation of Australia
- Electrical Regulatory Authorities Council, Australia
- Electrical consultants
- Engineers Australia
- JAS-ANZ
- New Zealand Electric Fence Energizer Manufacturers' Standards Group
- Testing Interests New Zealand
- WorkSafe, New Zealand

This Standard was issued in draft form for comment as DR AS/NZS 62841.4.4:2021.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

www.standards.org.au

www.standards.govt.nz

ISBN 978 1 76113 590 3

Australian/New Zealand Standard™

Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery — Safety

Part 4.4: Particular requirements for lawn trimmers, lawn edge trimmers, grass trimmers, brush cutters and brush saws

Originated as AS/NZS 60335.2.91:2002.
Jointly revised and redesignated as AS/NZS 60335.2.91:2008.
Jointly revised and redesignated as AS/NZS 62841.4.4:2021.



© IEC Geneva Switzerland 2021 — All rights reserved
© Standards Australia Limited/the Crown in right of New Zealand, administered by the New Zealand Standards Executive 2021

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of either the IEC or the publisher, unless otherwise permitted under the Copyright Act 1968 (Cth) or the Copyright Act 1994 (New Zealand). If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please see the contact details on the back cover or the contact us page of the website for further information.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

AS/NZS 62841.4.4:2021

**ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS
AND LAWN AND GARDEN MACHINERY –
SAFETY –****Part 4.4: Particular requirements for lawn trimmers, lawn edge trimmers, grass trimmers, brush cutters and brush saws****Foreword**

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-002 - Safety of Household and Similar Electrical Appliances and Small Power Transformers to supersede AS/NZS 60335.2.91:2008 three years from the date of publication of this Standard. During this period AS/NZS 60335.2.91:2008 will also remain current. Regulatory authorities that reference this Standard in regulation may apply these requirements at a different time. Users of this Standard should consult with these authorities to confirm their requirements.

The objective of this Standard is to provide manufacturers, designers, regulatory authorities, testing laboratories and similar organizations with safety requirements designed to give the user protection against hazards that might occur during normal operation and abnormal operation of the appliance and which may be used as the basis for approval for sale or for connection to the electricity supply mains in Australia and New Zealand.

The text of IEC 62841-4-4 Ed 1, prepared by IEC Technical Committee TC 116, was submitted to the Standards Australia/Standards New Zealand Combined Procedure (dual public comment and committee vote) for adoption of the IEC standard as a Standards Australia/Standards New Zealand joint standard.

This Standard is an adoption with national modifications of the first edition of IEC 62841-4-4 *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 4-4 Particular requirements for lawn trimmers, lawn edge trimmers, grass trimmers, brush cutters and brush saws*. It has been varied as indicated to take account of Australian and New Zealand conditions.

This part of AS/NZS 62841 has to be used in conjunction with the latest edition of AS/NZS 62841.1 *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 1: General requirements* and its Amendments. It was established on the basis of AS/NZS 62841.1:2005.

This part of AS/NZS 62841 supplements or modifies the corresponding clauses of Part 1 of AS/NZS 62841 so as to convert it into the Australian/New Zealand Standard: Safety requirements for lawn trimmers, lawn edge trimmers, grass trimmers, brush cutters and brush saws.

When a particular subclause of Part 1 of AS/NZS 62841 is not mentioned in this part of AS/NZS 62841, that subclause applies as far as is reasonable. When this standard states "addition", "modification" or "replacement", the relevant text of Part 1 of AS/NZS 62841 is to be adapted accordingly.

NOTE 1 The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in AS/NZS 62841.1;
- unless notes are in a new subclause or involve notes in AS/NZS 62841.1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.;
- subclauses, notes and annexes that are additional to those in the IEC standard are prefixed with the letters AZ.

NOTE 2 The following print types are used:

- requirements: in roman type;

COPYRIGHT

- *test specifications: in italic type;*
- notes: in small roman type.

Words in **bold** in the text are defined in Clause 3.

p NOTE 3 In this document, p is used in the margin to indicate instructions for preparing a consolidated version.

The essential safety requirements in AS/NZS 3820¹ that could be applicable to requirements for lawn trimmers, lawn edge trimmers, grass trimmers, brush cutters and brush saws are covered by this standard.

The national variations to IEC 62841-4-4 Ed 1 form the Australian and New Zealand national variations for purposes of the IECEE scheme for recognition of results of testing to standards for safety of electrical equipment (the CB scheme).

¹ AS/NZS 3820 *Essential safety requirements for electrical equipment*

The text of the International Standard IEC 62841-4-4 Ed 1 was approved as a joint Australia/New Zealand Standard with the agreed national variations as given below.

AUSTRALIAN NATIONAL VARIATIONS

There are no national variations to this part of AS/NZS 62841 other than those listed in the national variations in AS/NZS 62841.1:2015.

NEW ZEALAND NATIONAL VARIATIONS

There are no national variations to this part of AS/NZS 62841 other than those listed in the national variations in AS/NZS 62841.1:2015.

Currently in preview, click buy full version

Annex ANZ (normative)

Normative references to international publications with their corresponding joint Australia/New Zealand publications

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by national variations the relevant joint Australia/New Zealand publication applies if the national variations are needed to ensure the safety of the appliance for Australia/New Zealand conditions. These international publications are indicated by (mod). If an international publication is not so indicated, then either it or the listed Australia/New Zealand publication may be used.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>AS/NZS</u>	<u>Year</u>
IEC 60664-3		<i>Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution</i>		
IEC 60664-4		<i>Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress</i>		
ISO 354	2003	<i>Acoustics – Measurement of sound absorption in a reverberation room</i>		
ISO 683-4	2016	<i>Heat-treatable steels, alloy steels and free-cutting steels – Part 4: Free-cutting steels</i>		
ISO 3744	2010	<i>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</i>		
ISO 7918	1995	<i>Forestry machinery – Portable brush-cutters and grass-trimmers – Cutting attachment guard dimensions</i>		
ISO 11201	2010	<i>Acoustics – Noise emitted by machinery and equipment – Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections</i>		
ISO 22668	2011	<i>Forestry and gardening machinery – Noise test code for portable hand-held machines with internal combustion engine – Engineering method (Grade 2 accuracy)</i>		

Currently in preview, click buy full version

CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references	8
3 Terms and definitions	9
4 General requirements	17
5 General conditions for the tests	17
6 Radiation, toxicity and similar hazards.....	17
7 Classification.....	17
8 Marking and instructions.....	18
9 Protection against access to live parts.....	25
10 Starting	25
11 Input and current	25
12 Heating.....	26
13 Resistance to heat and fire.....	26
14 Moisture resistance	27
15 Resistance to rusting.....	27
16 Overload protection of transformers and associated circuits	27
17 Endurance.....	28
18 Abnormal operation	28
19 Mechanical hazards.....	31
20 Mechanical strength	45
21 Construction.....	53
22 Internal wiring.....	60
23 Components.....	61
24 Supply connection and external flexible cords	62
25 Terminals for external conductors.....	63
26 Provision for earthing.....	64
27 Screws and connections.....	64
28 Creepage distances, clearances and distances through insulation.....	64
Annexes	69
Annex I (informative) Measurement of noise and vibration emissions.....	69
Annex K (normative) Battery tools and battery packs	78
Annex L (normative) Battery tools and battery packs provided with mains connection or non-isolated sources.....	91
Annex AA (normative) Safety signs which may be used on machines.....	96
Annex BB (normative) Thrown objects test for grass trimmers, brush cutters and brush saws.....	105
Annex CC (normative) Impact test for brush cutter and brush saw cutting accessories and grass trimmer cutting means	109
Annex DD (informative) Example of a material and construction fulfilling the requirements for an artificial surface	110

Annex EE (informative) Summary of characteristics for lawn trimmers, lawn edge trimmers, grass trimmers, brush cutters and brush saws.....	112
Bibliography.....	114
Figure 101 – Example of a brush cutter.....	11
Figure 102 – Example of a brush saw	12
Figure 103 – Examples of grass trimmers	13
Figure 104 – Example of a lawn edge trimmer	14
Figure 105 – Example of a lawn trimmer	15
Figure 106 – Example of a walk-behind trimmer.....	16
Figure 107 – Minimum guard coverage, lawn trimmer (see 19.101.1).....	33
Figure 108 – Cross-sectional view of lawn edge trimmer cutting means guard	35
Figure 109 – Shaft angle measurement.....	36
Figure 110 – Lawn edge trimmer guarding when $\theta < 45^\circ$	37
Figure 111 – Lawn edge trimmer guarding when $\theta \geq 45^\circ$	38
Figure 112 – Measurement of handle gripping length.....	40
Figure 113 – Measurement of distance between handles for grass trimmers, brush cutters and brush saws	41
Figure 114 – Examples of brush cutters and brush saws with different handle and barrier configurations: Measurement of distance to cutting accessory.....	43
Figure 115 – Impact test apparatus for handle insulation	48
Figure 116 – Cutting means guard drop test	49
Figure 117 – Cutting head strength test	50
Figure 118 – Cutting accessory guard test.....	52
Figure 119 – Example of an operator presence sensor.....	55
Figure 120 – Lawn trimmer and lawn edge trimmer cutting means measurement	57
Figure 121 – Test assembly for accessibility of attachment plug blades	63
Figure I.101 – Microphone positions on the hemisphere (see Table I.101)	69
Figure I.102 – Examples of positions of transducers (hand-held machines).....	75
Figure I.103 – Examples of positions of transducers (walk-behind machines).....	76
Figure AA.1 – Optional safety sign illustrating – "Wear eye and ear protection"	96
Figure AA.2 – Optional safety sign illustrating – "Wear eye and head protection"	96
Figure AA.3 – Optional safety sign illustrating – "Wear eye, ear and head protection".....	96
Figure AA.4 – Safety signs illustrating – "Wear eye protection"	97
Figure AA.5 – Safety sign illustrating – "Wear ear protection"	97
Figure AA.6 – Safety sign illustrating – "Do not expose to rain".....	98
Figure AA.7 – Safety signs illustrating – "WARNING – Keep bystanders away".....	98
Figure AA.8 – Safety signs illustrating – "WARNING – The distance between the machine and bystanders shall be at least 15 m (50 ft)"	99
Figure AA.9 – Safety sign illustrating – "WARNING – Beware of thrown objects"	99
Figure AA.10 – Safety sign illustrating – "Wear head protection".....	100
Figure AA.11 – Safety sign illustrating – "Wear hand protection".....	100
Figure AA.12 – Safety sign illustrating – "Wear slip-resistant footwear".....	100
Figure AA.13 – Safety signs illustrating – "WARNING – Beware of blade thrust"	101

Figure AA.14 – Alternative safety signs illustrating – "WARNING – Beware of blade thrust"	102
Figure AA.15 – Safety sign illustrating – "Do not use metal blades"	102
Figure AA.16 – Safety sign illustrating – "WARNING – Remove plug from the mains immediately if the power cord or cable is damaged or cut"	103
Figure AA.17 – Safety sign illustrating – "WARNING – Disconnect battery before maintenance"	103
Figure AA.18 – Safety sign illustrating – "WARNING – Remove the disabling device before maintenance"	103
Figure AA.19 – Safety sign illustrating – "WARNING – Operate the disabling device before maintenance"	104
Figure BB.1 – Machine position on test stand	105
Figure BB.2 – Insertion positions of the test pieces	106
Figure BB.3 – Test piece	108
Figure CC.1 – Impact test	109
Figure DD.1 – Sketch of the measurement surface covered with an artificial surface (not to scale).....	111
Table 4 – Required performance levels	30
Table 7 – Switch trigger force	53
Table 9 – Pull and torque value	63
Table 12 – Minimum creepage distances and clearances.....	66
Table I.101 – Co-ordinates of microphone positions.....	71
Table I.102 – Absorption coefficients	72
Table 4 – Required performance levels.....	82
Table 301 – Pull and torque value.....	88
Table K.1 – Minimum creepage distances and clearances between parts of different potential.....	89
Table K.2 – Minimum total sum of creepage distances and clearances to accessible surfaces.....	90
Table 4 – Required performance levels.....	92
Table EE.1 – Machine categories.....	112

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 4-4: Particular requirements for lawn trimmers, lawn edge trimmers, grass trimmers, brush cutters and brush 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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 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.

International Standard IEC 62841-4-4 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
116/468/FDIS	116/479/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 4-4 is to be used in conjunction with the first edition of IEC 62841-1:2014.

This Part 4-4 supplements or modifies the corresponding clauses in IEC 62841-1, so as to convert it into the IEC Standard: Particular requirements for lawn trimmers, lawn edge trimmers, grass trimmers, brush cutters and brush saws.

Where a particular subclause of Part 1 is not mentioned in this Part 4-4, 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 small roman type.

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

Subclauses, notes, tables and figures which are additional to those in Part 1 as well as Annexes of 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 4-4 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.

INTRODUCTION

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of patents concerning prevention of inadvertent starting given in Subclause 21.18.101.

IEC takes no position concerning the evidence, validity and scope of this patent right.

The holders of these patent rights have assured the IEC that they are willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statements of the holders of these patent rights are registered with IEC. Information may be obtained from:

Andreas Stihl AG & Co. KG
Stuttgarter Strasse 80
71332 Waiblingen, Germany

Husqvarna AB
SE-561 82 Huskvarna
Sweden

Robert Bosch GmbH
Postfach 30 02 20
D-70442 Stuttgart, Germany

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those identified above. IEC shall not be held responsible for identifying any or all such patent rights.

ISO (www.iso.org/patents) and IEC (<http://patents.iec.ch>) maintain on-line data bases of patents relevant to their standards. Users are encouraged to consult the data bases for the most up to date information concerning patents.

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

Part 4-4: Particular requirements for lawn trimmers, lawn edge trimmers, grass trimmers, brush cutters and brush saws

1 Scope

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

Addition:

This document applies to hand-held and **walk-behind lawn trimmers** and **lawn edge trimmers**, used by a standing operator for cutting grass, weeds or similar soft vegetation, and **grass trimmers**, **brush cutters** and **brush saws** used by a standing operator for cutting grass, weeds, brush, bushes, saplings and similar vegetation.

This document does not apply to

- hand-held machines having a mass of 18 kg or greater;
- self-propelled **lawn trimmers** or **lawn edge trimmers**;
- scissors type **lawn trimmers** and **lawn edge trimmers**;
- machines equipped with metallic **cutting accessories** consisting of more than one piece, e.g. pivoting chains or flail blades;
- edgers with rigid and/or metallic cutting devices.

NOTE 101 Freely pivoting non-metallic **cutting elements** are considered not to be rigid cutting devices.

NOTE 102 Edgers with rigid or metal cutting devices will be covered by a future part of IEC 62841-4.

NOTE 103 Annex EE provides an informative summary of characteristics for **lawn trimmers**, **lawn edge trimmers**, **grass trimmers**, **brush cutters** and **brush saws**.

Brush cutters and **brush saws** covered by this document are designed only to be operated with the machine to the right of the operator.

2 Normative references

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

Replacement of undated normative reference for ISO 3744:

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*

Addition:

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

IEC 60664-4, *Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress*