



IEC 62841-4-5

Edition 1.0 2021-08

# INTERNATIONAL STANDARD

---

**Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety –  
Part 4-5: Particular requirements for grass shears**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

---

ICS 25.140.20

ISBN 978-2-8322-9807-7

**Warning! Make sure that you obtained this publication from an authorized distributor.**

## CONTENTS

FOREWORD .....	4
INTRODUCTION .....	6
1 Scope .....	7
2 Normative references .....	7
3 Terms and definitions .....	8
4 General requirements .....	11
5 General conditions for the tests .....	11
6 Radiation, toxicity and similar hazards .....	12
7 Classification .....	12
8 Marking and instructions .....	12
9 Protection against access to live parts .....	14
10 Starting .....	14
11 Input and current .....	14
12 Heating .....	14
13 Resistance to heat and fire .....	15
14 Moisture resistance .....	15
15 Resistance to rusting .....	15
16 Overload protection of transformers and associated circuits .....	15
17 Endurance .....	16
18 Abnormal operation .....	16
19 Mechanical hazards .....	16
20 Mechanical strength .....	28
21 Construction .....	35
22 Internal wiring .....	38
23 Components .....	38
24 Supply connection and external flexible cords .....	38
25 Terminals for external conductors .....	40
26 Provision for earthing .....	40
27 Screws and connections .....	40
28 Creepage distances, clearances and distances through insulation .....	40
Annexes .....	45
Annex I (informative) Measurement of noise and vibration emissions .....	45
Annex K (normative) Battery tools and battery packs .....	53
Annex L (normative) Battery tools and battery packs provided with mains connection or non-isolated sources .....	62
Annex AA (normative) Safety signs for safety instructions and warnings .....	67
Annex BB (informative) Example of a material and construction fulfilling the requirements for an artificial surface .....	69
Bibliography .....	71
Figure 101 – Cutting device with one cutter blade and shear plate .....	9
Figure 102 – Cutting device with two cutter blades .....	10

Figure 103 – Examples of grass shears .....	11
Figure 104 – Measurement of handle dimensions .....	18
Figure 105 – Measurement of handle dimensions for machines fitted with an extension shaft .....	19
Figure 106 – Minimum radial clearance around the power switch .....	19
Figure 107 – Examples of handle attachment and measurement of distance for hand protection .....	22
Figure 108 – Measurement of distance for hand protection for machines with a front hand barrier .....	24
Figure 109 – Measurement of distance for hand protection for machines with bail or closed handles or centrally supported (i.e. T-type) handles without a front hand barrier .....	25
Figure 110 – Projection incorporated as an integral part of a cutter blade .....	26
Figure 111 – Projection incorporated as an integral part of a shear plate .....	27
Figure 112 – Projection as a separate stationary plate .....	28
Figure 113 – Grass shear positions for drop test .....	31
Figure 114 – Impact test apparatus for handle insulation .....	33
Figure 115 – Cutting device strength test .....	34
Figure 116 – Example of a lock-off device located within the gripping surface of a handle .....	37
Figure 117 – Example of an operator presence sensor .....	38
Figure 118 – Test assembly for accessibility of attachment plug blades .....	39
Figure I.101 – Microphone positions on the hemisphere (see Table I.101) .....	45
Figure I.102 – Positions of transducers for grass shears .....	51
Figure AA.1 – Safety sign illustrating – "DANGER – Keep hands away from blade" .....	67
Figure AA.2 – Alternative safety sign illustrating – "DANGER – Keep hands away from blade" .....	67
Figure AA.3 – Safety sign illustrating – "Do not expose to rain" .....	68
Figure AA.4 – Safety sign illustrating – "Remove plug from the mains immediately if the cable is damaged or cut" .....	68
Figure AA.5 – Safety sign illustrating – "Wear ear protection" .....	68
Figure BB.1 – Sketch of the measurement surface covered with an artificial surface .....	70
Table 4 – Required performance levels .....	16
Table 7 – Switch trigger force .....	35
Table 12 – Minimum creepage distances and clearances .....	42
Table I.101 – Coordinates of microphone positions .....	47
Table I.102 – Absorption coefficients .....	47
Table 301 – Pull and torque value .....	58
Table K.1 – Minimum creepage distances and clearances between parts of different potential .....	59
Table K.2 – Minimum total sum of creepage distances and clearances to accessible surfaces .....	60

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

**ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE  
TOOLS AND LAWN AND GARDEN MACHINERY –  
SAFETY –****Part 4-5: Particular requirements for grass shears****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.
- 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.

IEC 62841-4-5 has been prepared by IEC technical committee 116: Safety of motor-operated electric tools. It is an International Standard.

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

FDIS	Report on voting
116/495/FDIS	116/502/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

This Part 4-5 is to be used in conjunction with the first edition of IEC 62841-1:2014.

This Part 4-5 supplements or modifies the corresponding clauses in IEC 62841-1, so as to convert it into the IEC Standard: Particular requirements for grass shears.

Where a particular subclause of Part 1 is not mentioned in this Part 4-5, 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.

The terms defined in Clause 3 are printed 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 4-5 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.

The contents of the corrigendum 1 (2024-01) have been included in this copy.

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

The holder of this patent right has assured IEC that s/he is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with IEC. Information may be obtained from the patent database available at <http://patents.iec.ch>.

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

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

## Part 4-5: Particular requirements for grass shears

### 1 Scope

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

*Addition:*

This document applies to **grass shears** with a maximum **cutting width** of 200 mm designed primarily for cutting grass.

This document does not apply to hedge trimmers.

NOTE 101 Hedge trimmers are covered by IEC 62841-4-2.

### 2 Normative references

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

*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*

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

ISO 22868:2011<sup>1</sup>, *Forestry and gardening machinery – Noise test code for portable hand-held machines with internal combustion engine – Engineering method (Grade 2 accuracy)*

*Replacement:*

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*

---

<sup>1</sup> Withdrawn.