



PRE-RELEASE VERSION (FDIS)

**Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety –
Part 4-7: Particular requirements for pedestrian controlled walk-behind lawn scarifiers and aerators**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 25.140.30

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



This is a preview - click here to buy the full publication

116/589/FDIS

FINAL DRAFT INTERNATIONAL STANDARD (FDIS)

PROJECT NUMBER:

IEC 62841-4-7 ED1

DATE OF CIRCULATION:

2022-05-06

CLOSING DATE FOR VOTING:

2022-06-17

SUPERSEDES DOCUMENTS:

116/508/CDV, 116/541A/RVC

IEC TC 116 : SAFETY OF MOTOR-OPERATED ELECTRIC TOOLS

SECRETARIAT:

United States of America

SECRETARY:

Mr Joseph Harding

OF INTEREST TO THE FOLLOWING COMMITTEES:

HORIZONTAL STANDARD:

FUNCTIONS CONCERNED:

EMC

ENVIRONMENT

QUALITY ASSURANCE

SAFETY

SUBMITTED FOR CENELEC PARALLEL VOTING

NOT SUBMITTED FOR CENELEC PARALLEL VOTING

Attention IEC-CENELEC parallel voting

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Final Draft International Standard (FDIS) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.

This document is a draft distributed for approval. It may not be referred to as an International Standard until published as such.

In addition to their evaluation as being acceptable for industrial, technological, commercial and user purposes, Final Draft International Standards may on occasion have to be considered in the light of their potential to become standards to which reference may be made in national regulations.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 4-7: Particular requirements for pedestrian controlled walk-behind lawn scarifiers and aerators

PROPOSED STABILITY DATE: 2027

NOTE FROM TC/SC OFFICERS:

Copyright © 2022 International Electrotechnical Commission, IEC. All rights reserved. It is permitted to download this electronic file, to make a copy and to print out the content for the sole purpose of preparing National Committee positions. You may not copy or "mirror" the file or printed version of the document, or any part of it, for any other purpose without permission in writing from IEC.

CONTENTS

FOREWORD	5
INTRODUCTION	7
1 Scope	8
2 Normative references	8
3 Terms and definitions	9
4 General requirements	12
5 General conditions for the tests	12
6 Radiation, toxicity and similar hazards	12
7 Classification	12
8 Marking and instructions	13
9 Protection against access to live parts	16
10 Starting	16
11 Input and current	17
12 Heating	17
13 Resistance to heat and fire	17
14 Moisture resistance	17
15 Resistance to rusting	18
16 Overload protection of transformers and associated circuits	19
17 Endurance	19
18 Abnormal operation	19
19 Mechanical hazards	20
20 Mechanical strength	33
21 Construction	34
22 Internal wiring	38
23 Components	38
24 Supply connection and external flexible cords	40
25 Terminals for external conductors	42
26 Provision for earthing	42
27 Screws and connections	42
28 Creepage distances, clearances and distances through insulation	42
Annexes	47
Annex I (informative) Measurement of noise and vibration emissions	47
Annex K (normative) Battery tools and battery packs	56
Annex L (normative) Battery tools and battery packs provided with mains connection or non-isolated sources	71
Annex AA (normative) Product safety labels	75
Annex BB (normative) Test surface	80
Annex CC (normative) Lawn scarifier and lawn aerator foot protection test	82
Annex DD (normative) Lawn scarifier and lawn aerator tines stopping time test	85
Annex EE (informative) Example of a material and construction for fulfilling the requirements for an artificial surface	87

Bibliography.....	89
Figure 101 – Example of a lawn scarifier or a lawn aerator	11
Figure 102 – Operator control zones	23
Figure 103 – Safety distances – single-axle machines	25
Figure 104 – Handle distance – machines with more than one axle.....	26
Figure 105 – Guarding of lawn scarifier and lawn aerator tines, general.....	27
Figure 106 – Guarding of lawn scarifier and lawn aerator tines, side coverage.....	28
Figure 107 – Guarding of lawn scarifier and lawn aerator tines, rear discharge	29
Figure 108 – Guarding of lawn scarifier and lawn aerator tines, front discharge	30
Figure 109 – Thrown object test rig for rear discharge lawn scarifiers and lawn aerators	32
Figure 110 – Strength of tines assembly	34
Figure 111 – Impact test fixture for handle insulation	36
Figure 112 – Test assembly for accessibility of attachment plug blades	41
Figure I.101 – Microphone positions on the hemisphere (see Table I.101)	47
Figure I.102 – Examples of positions of transducers for lawn scarifiers and lawn aerators	54
Figure K.301 – Examples of separable battery pack connection points and direction of applied force.....	65
Figure AA.1 – Product safety labels illustrating – "WARNING – Beware of thrown objects – keep bystanders away"	75
Figure AA.2 – Product safety label illustrating – "WARNING – Keep hands and feet away from the tines"	76
Figure AA.3 – Product safety labels illustrating – "WARNING – Remove plug from mains before maintenance or if cord is damaged"	76
Figure AA.4 – Product safety label illustrating – "WARNING – Keep the supply cord away from the tines"	77
Figure AA.5 – Product safety labels illustrating – "WARNING – Disconnect battery before maintenance"	77
Figure AA.6 – Product safety labels illustrating – "WARNING – Remove the disabling device before maintenance"	78
Figure AA.7 – Product safety labels illustrating – "WARNING – Activate the disabling device before maintenance".....	79
Figure BB.1 – Test surface detail	80
Figure BB.2 – Example of test surface, nail plan	81
Figure CC.1 – Foot probe	82
Figure CC.2 – Area to be probed for lawn scarifiers and lawn aerators	84
Figure EE.1 – Sketch of the measurement surface covered with an artificial surface.....	88
Table 4 – Required performance levels	20
Table 9 – Pull and torque value	42
Table 12 – Minimum creepage distances and clearances	44
Table I.101 – Co-ordinates of microphone positions.....	50
Table I.102 – Values of the constant <i>a</i>	50
Table I.103 – Absorption coefficients	50
Table 4 – Required performance levels.....	61

[This is a preview - click here to buy the full publication](#)

Table K.301 – Pull and torque value	67
Table K.1 – Minimum creepage distances and clearances between parts of different potential.....	69
Table K.2 – Minimum total sum of creepage distances and clearances to accessible surfaces.....	70

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 4-7: Particular requirements for pedestrian controlled walk-behind lawn scarifiers and aerators

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 62841-4-7 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:

Draft	Report on voting
116/XX/FDIS	116/XX/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 is to be used in conjunction with the first edition of IEC 62841-1 (2014).

This document supplements or modifies the corresponding clauses in IEC 62841-1, so as to convert it into the IEC Standard: Particular requirements for pedestrian controlled walk-behind lawn scarifiers and aerators.

Where a particular subclause of IEC 62841-1 is not mentioned in this document, that subclause applies as far as reasonable. Where this document states "addition", "modification" or "replacement", the relevant text in IEC 62841-1 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 IEC 62841-1 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 document are numbered starting from 301.

A list of all parts in the IEC 62841 series, published 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.

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. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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

- reconfirmed,
- withdrawn,
- 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 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 4-7: Particular requirements for pedestrian controlled walk-behind lawn scarifiers and aerators

1 Scope

IEC 62841-1:2014, Clause 1 is applicable, except as follows:

Addition:

This document applies to pedestrian controlled walk-behind **lawn scarifiers** and **lawn aerators** which are designed for regenerating lawns by combing out materials such as grass, thatch and moss or cutting vertically into the lawn face using

- metallic **tines**; and/or
- rigid non-metallic **tines**

which rotate about a horizontal axis.

This document does not apply to

- pedestrian controlled walk-behind lawnmowers;
- towed/semi-mounted **lawn scarifiers** and **lawn aerators**;
- ride-on machines;
- non-powered **lawn scarifiers** and **lawn aerators**;
- combustion engine powered **lawn scarifiers** and **lawn aerators**;
- plug aerators (corers);
- hybrid and fuel cell powered machines and associated charging systems; and
- garden tractors or their attachments.

NOTE 101 Pedestrian controlled walk-behind lawnmowers are covered by IEC 62841-4-3.

2 Normative references

IEC 62841-1:2014, Clause 2 is applicable, except as follows:

Addition:

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

IEC 60664-4:2005, *Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress*

IEC 61058-2-6:2018, *Switches for appliances – Part 2-6: Particular requirements for switches used in electric motor-operated hand-held tools, transportable tools and lawn and garden machinery*

IEC 61672-1:2013, *Electroacoustics – Sound level meters – Part 1: Specifications*

IEC 62841-1:2014, *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 1: General requirements*

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

ISO 2758:2014, *Paper – Determination of bursting strength*

ISO 13857:2019, *Safety of machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs*

Replacement:

IEC 61058-1:2016, *Switches for appliances – Part 1: General requirements*

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 11201:2010, *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*