



BSI Standards Publication

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

National foreword

This British Standard is the UK implementation of EN IEC 62841-4-7:2022+A11:2022, incorporating corrigendum October 2023. It is derived from IEC 62841-4-7:2022, incorporating corrigendum May 2023. It supersedes BS EN IEC 62841-4-7:2022 and BS EN 50636-2-92:2014, which are withdrawn.

The start and finish of text introduced or altered by corrigendum is indicated in the text by tags. Text altered by IEC corrigendum May 2023 is indicated in the text by AC1 AC1. The text altered by CENELEC corrigendum October 2023 is indicated in the text by AC2 AC2.

The start and finish of text introduced or altered by amendment A11:2022 is indicated in the text by tags. Tags indicating changes to text carry the number of the CENELEC amendment. For example, text altered by CENELEC amendment A11 is indicated by A11 A11.

The UK participation in its preparation was entrusted to Technical Committee CPL/116, Safety of motor-operated electric tools.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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For the Great Britain market (England, Scotland and Wales), if UK Government has designated this publication for conformity with UKCA marking (or similar) legislation, it may contain an additional National Annex. Where such a National Annex exists, it shows the correlation between this publication and the relevant UK legislation. If there is no National Annex of this kind, the relevant Annex ZA or ZZ in the body of the European text will indicate the relationship to UK regulation applicable in Great Britain. References to EU legislation may need to be read in accordance with the UK designation and the applicable UK law. Further information on designated standards can be found at www.bsigroup.com/standardsandregulation.

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UK Government is responsible for legislation. For information on legislation and policies relating to that legislation, consult the relevant pages of www.gov.uk.

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Date	Text affected
31 December 2022	Implementation of CENELEC amendment A11:2022
30 September 2024	Implementation of IEC corrigendum May 2023 and CENELEC corrigendum October 2023.

English Version

**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**

Outils électroportatifs à moteur, outils portables et machines
pour jardins et pelouses - Sécurité - Partie 4-7: Exigences
particulières pour les scarificateurs à gazon et les aérateurs
de gazon à conducteur à pied

Elektrische motorbetriebene handgeführte Werkzeuge,
transportable Werkzeuge und Rasen- und
Gartenmaschinen - Sicherheit - Teil 4-7: Besondere
Anforderungen für personengeführte Rasenvertikutierer und
Rasenbelüfter

This European Standard was approved by CENELEC on 2022-08-24. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 116/589/FDIS, future edition 1 of IEC 62841-4-7, prepared by IEC/TC 116 "Safety of motor-operated electric tools" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62841-4-7:2022.

AC2 This document supersedes EN 50636-2-92:2014 and all of its amendments and corrigenda (if any). **AC2**

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2023-08-08 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2026-08-08 document have to be withdrawn

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

This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For the relationship with EU Directive(s) / Regulation(s), see informative Annex ZZ, which is an integral part of EN IEC 62841-4-7:2022/A11:2022.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62841-4-7:2022 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 62841-4-3 NOTE Harmonized as EN IEC 62841-4-3

European foreword to amendment A11

This document (EN IEC 62841-4-7:2022/A11:2022) has been prepared by CLC/TC 116 “Safety and environmental aspects of motor-operated electric tools”.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2023-08-27
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2025-08-27

This document modifies by common modifications EN IEC 62841-4-7:2022, which consists of the text of 116/589/FDIS (future IEC 62841-4-7, Ed. 1) prepared by IEC/TC 116 “Safety of motor-operated electric tools”.

This series is divided into four parts.

Part 1: General requirements which are common to most hand-held electric motor operated tools (for the purpose of this document referred to simply as tools) which could come within the scope of this document;

Part 2, 3 or 4: Requirements for particular types of tools which either supplement or modify the requirements given in Part 1 to account for the particular hazards and characteristics of these specific tools.

The Part 4-7 is used in conjunction with EN 62841-1:2015 and its amendments.

The Part 4-7 supplements or modifies the corresponding clauses in EN 62841-1:2015, so as to convert it into the European Standard: Particular requirements for pedestrian controlled walk-behind lawn scarifiers and aerators.

Where a particular subclause of Part 1 is not mentioned in the Part 4-7, that subclause applies as far as relevant. When this document 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, tables and figures which are additional to those in Part 1 are numbered starting from 101.

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62841-4-7:2022 are prefixed “Z”.

This document follows the overall requirements of EN ISO 12100.

This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association and supports essential requirements of EU Directive(s) / Regulation(s).

EN IEC 62841-4-7:2022+A11:2022 (E)

For the relationship with EU Directive(s) / Regulation(s), see informative Annex ZZ, which is an integral part of this document.

Compliance with the clauses of Part 1 together with Part 4-7 provides one means of conforming with the essential health and safety requirements of the Directive concerned.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Annex ZA of EN 62841-1:2015 is applicable, except as follows:

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
<i>Addition:</i>				
IEC 60664-3	2016	Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution	EN 60664-3	2017
IEC 60664-4	2005	Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress	EN 60664-4	2006
			+ AC	2006
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	EN IEC 61058-2-6	2019
IEC 61672-1	2013	Electroacoustics – Sound level meters – Part 1: Specifications	EN 61672-2	2013
IEC 62841-1	2014	Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 1: General requirements	EN 62841-1	2015
			+ AC	2015
			+ A11	2022
ISO 354	2003	Acoustics – Measurement of sound absorption in a reverberation room	EN ISO 354	2003
ISO 2758	2014	Paper – Determination of bursting strength	EN ISO 2758	2014
ISO 13857	2019	Safety of machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs	EN ISO 13857	2019

EN IEC 62841-4-7:2022+A11:2022 (E)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
<i>Replacement:</i>				
IEC/TR 60083	2015 ⁴	Plugs and socket-outlets for domestic and similar general use standardized in member countries of IEC	-	-
IEC 60320-1	-	Appliance couplers for household and similar general purposes - Part 1: General requirements	EN IEC 60320-1	2021
IEC 60664-1	-	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN IEC 60664-1	2020
IEC 60884-1	2002 ⁴	Plugs and socket-outlets for household and similar purposes – Part 1: General requirements	-	-
+ A1	2006 ⁴		-	-
+ A2	2013 ⁴		-	-
IEC 60884-2-1	2006 ⁴	Plugs and socket-outlets for household and similar purposes – Part 2-1: Particular requirements for fused plugs	-	-
IEC 60884-2-2	2006 ⁴	Plugs and socket-outlets for household and similar purposes – Part 2-2: Particular requirements for socket-outlets for appliances	-	-
IEC 60884-2-5	2017 ⁴	Plugs and socket-outlets for household and similar purposes – Part 2-5: Particular requirements for adaptors	-	-
IEC 60884-2-7	2011 ⁴	Plugs and socket-outlets for household and similar purposes – Part 2-7: Particular requirements for cord extension sets	-	-
+ A1	2013 ⁴		-	-
IEC 60906-1	2009 ⁴	IEC system of plugs and socket-outlets for household and similar purposes - Part 1: Plugs and socket-outlets 16 A 250 V a.c.	-	-
IEC 61058-1	2016	Switches for appliances – Part 1: General requirements	EN IEC 61058-1	2018
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	EN ISO 3744	2010
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	EN ISO 11201	2010
-	-	Mechanical vibration – Declaration and verification of vibration emission values	EN 12096	1997

⁴ Dated as no equivalent European Standard exists.

Annex ZZ (informative)

Relationship between this European Standard and the essential requirements of Directive 2006/42/EC [2006 OJ L157] aimed to be covered

This European Standard has been prepared under a Commission's standardization request "M/396 Mandate to CEN and CENELEC for Standardisation in the field of machinery" to provide one voluntary means of conforming to essential requirements of Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast)

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZZ.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

Table ZZ.1 — Correspondence between this European Standard and Annex I of Directive 2006/42/EC

The relevant Essential Requirements of Directive 2006/42/EC	Clause(s) / subclause(s) of this EN	Remarks / Notes:
1.1.2 a)	4	-
1.1.2 c)	8.14.1.1, 18, K.8.14.1.1, K.8.14.1.101, K.18, L.8.302, L.8.14.1.1, L.18	
1.1.3 (Materials and products)	5, 6.1, 21.6, K.5, L.5, L.21	-
1.1.5 (Design of machinery to facilitate its handling)	19.102, K.21.305	-
1.1.6 (Ergonomics)	5, 21.104.1, K.5, L.5, L.21	-
1.2.1 (Safety and reliability of control systems)	5, 18.6, 18.8, 23.1.6, 23.1.10, 23.1.11, 23.3, K.5, K.18.6, K.18.8, K.23.1.10, K.23.1.201, L.5, L.18, L.23.1.10	-
1.2.2 (Control devices)	5, 8.5, 8.9, 8.10, 8.11, 21.1, 21.2, 21.4, 21.17, 21.18, K.5, K.21.17.1.2, L.5, L.21	-
1.2.3 (Starting)	5, 21.17, K.5, K.21.17.1.2, L.5, L.21	-
1.2.4.1 (Normal stop)	5, 21.17, K.5, K.21.17.1.2, L.5, L.21	-

The relevant Essential Requirements of Directive 2006/42/EC	Clause(s) / subclause(s) of this EN	Remarks / Notes:
1.2.5 (Selection of control or operating modes)	4	-
1.2.6 (Failure of the power supply)	5, 21.104.2, 23.3, K.5, L.5, L.21	-
1.3.1 (Risk of loss of stability)	5, 19.7, K.5, L.5	-
1.3.2 (Risk of break-up during operation)	5, 8.14.2 c), 13.1, 17, 20, 21.23, 21.103, 24.11, 24.12, 24.13, 27, K.5, K.13.1, K.17, K.20, K.24.201, K.27.1, L.5, L.13.1, L.17, L.20, L.21	-
1.3.3 (Risk due to falling or ejected objects)	5, 18.1, 18.3, 19.105, K.5, L.5, L.18, L.21	-
1.3.4 (Risks due to surfaces, edges or angles)	19.2, 21.24, L.21	-
1.3.7 (Risks related to moving parts)	5, 19.1, 19.104, K.5, K.19.1, L.5	-
1.3.8.1 (Moving transmission parts)	5, 19.1, K.5, K.19.1, L.5	-
1.3.8.2 (Moving parts involved in the process)	5, 19.1, 19.103, 19.104, K.5, K.19.1, L.5	-
1.3.9 (Risk of uncontrolled movements)	5, 19.101.3, K.5, K.19.101.3, L.5	-
1.4.1 (General requirements (for guards and protective devices))	5, 19.1, 20.1, 20.2, 20.3, 20.4, 21.22, K.5, K.20.1, K.20.3, L.5, L.20, L.21	-
1.4.2.1 (Special requirements for fixed guards)	5, 19.1, 19.9, 19.103, 19.104, K.5, L.5	-
1.4.2.3 (Special requirements for adjustable guards restricting access)	5, 19.1, K.5, K.19.1, L.5	-
1.5.1 (Risks due to electricity supply)	5, 7, 9, 10, 11, 12, 14, 15, 16, 17, 18.1 to 18.7, 21.3, 21.5 to 21.16, 21.19 to 21.22, 21.25 to 21.34, 21.101, 21.102, 22, 23.1.1 to 23.1.5, 23.1.7 to 23.1.9, 23.2, 23.4, 23.5, 24, 25, 26, 27, 28, K.5, K.7, K.9, K.10, K.11, K.12, K.14, K.16, K.17, K.18.1 to K.18.7, K.21.5 to K.21.16, K.21.19 to K.21.22, K.21.25 to K.21.34, K.21.303, K.22, K.24, K.25, K.26, K.27.1, K.28.1, K.28.2, L.5, L.7.1, L.9, L.10, L.11, L.12, L.14, L.16, L.17, L.18, L.20, L.21, L.22, L.24, L.25, L.26, L.28.1, Annex C	-
1.5.4 (Risks due to errors of fitting)	5, 8.7, 8.8, 8.13, 8.14.2, 21.7, 21.8, 21.19, 27.1, K.5, K.8.7, K.8.8, K.19.201, K.21.201, K.21.203, K.27.1, L.5, L.19.201, L.21	-

The relevant Essential Requirements of Directive 2006/42/EC	Clause(s) / subclause(s) of this EN	Remarks / Notes:
1.5.5 (Risks due to extreme temperatures)	5, 12.5, K.5, K.12.1, L.5	-
1.5.6 (Risks due to fire)	5, 13, 18.1, 18.2, 18.4, 18.6, 28.1, K.5, K.12.201, K.13, K.18.1, K.18.6, K.18.201, K.18.202, K.18.203, K.20.1, K.20.3, K.21.201, K.21.203, K.23.201, K.23.202, K.28.1, L.5, L.12.201, L.13, L.18, L.20.201, L.20.202, L.21.201, L.21.203, L.23.201, L.23.202, L.28.1, L.28.201	-
1.5.7 (Risks due to explosion)	5, K.5, K.12.201, K.18.201, K.18.202, K.18.203, K.19.202, K.20.1, K.20.3, K.21.202, K.21.203, L.5, L.12.201, L.18.202, L.18.203, L.18.204, L.19.202, L.20.201, L.20.202, L.21.202, L.21.203	-
1.5.8 (Noise reduction)	I.2.Z1	-
1.5.9 (Vibration reduction)	I.3.Z1	-
1.5.10 (Risks due to radiation)	5, 6.1, 6.3, K.5, L.5	-
1.5.11 (Risks due to external radiation)	5, 18.8, K.5, K.18.8, L.5, L.18.8	-
1.5.12 (Risks due to laser radiation)	6.2	-
1.5.13 (Risks due to emissions of hazardous materials and substances)	K.23.301	-
1.6.1 (Machinery maintenance)	24.1, K.21.18.Z101	-
1.6.2 (Access to operating positions and servicing points)	19.101.2, 21.104.1,	-
1.6.3 (Isolation of energy sources)	24.1, K.21.18.Z101, K.21.301, K.21.302, K.21.304	-
1.7.1 (Information and warnings on machinery)	8.1, 8.2, 8.4, 8.6, K.8.1, K.8.4, L.8.301	-
1.7.2 (Warning of residual risks)	8.2, 8.4, K.8.4	-
1.7.3 (Marking of machinery)	8.3, 8.4, 8.12, K.8.3, K.8.4, L.8.301	-
1.7.4 (Instructions)	8.14	-
1.7.4.1 (General principles for drafting of instructions)	8.14	-

The relevant Essential Requirements of Directive 2006/42/EC	Clause(s) / subclause(s) of this EN	Remarks / Notes:
1.7.4.2 (Contents of the instructions)	8.14, 8.14.1, 8.14.2, 8.14.3, K.8.14.1.1, K.8.14.1.101, K.8.14.2, L.8.302	-
1.7.4.3 (Sales literature)	-	Not covered
2.2.1 (General requirements for portable hand-held and/or hand-guided machinery)	5, 19.102, 21.104.2, K.5	-
2.2.1.1 (Instructions for portable hand-held and/or hand-guided machinery)	5, 8.14.2 Za) 3), I.3.6.2, K.5	-
3.3.1 (Control devices)	21.104.3	-
3.3.3 (Travelling function)	5, 19.101, K.5	-
3.3.4 (Movement of a pedestrian controlled machinery)	5, 18.8, 19.101, 21.104, K.5	-
3.4.1 (Uncontrolled movements)	5, 19.7, K.5	-
3.5.1 (Batteries)	K.21	-
3.6.1 (Signs, signals and warnings)	8.2, K.8.2	-
3.6.2 (Marking)	8.1, 8.3, K.8.1, L.8.301	-
3.6.3.1 (Vibrations)	5, 8.14.2 Za) 3), I.3.6.2, K.5	-

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

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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

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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
116/589/FDIS	116/621/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

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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

EN 62841-1:2015 ^{A11}, 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.

^{A11} This document covers all significant hazards, hazardous situations or hazardous events relevant for machines covered by this document.

NOTE Z101 Essential requirements not mentioned in Table ZZ.1 are deemed to be not applicable, because the corresponding hazards are either not relevant for machines covered by this document or do not require specific action by the designer. ^{A11}

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

2 Normative references

EN 62841-1:2015 ^{A11}, 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*

Ⓐ₁₁ EN 62841-1:2015,¹ *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 1: General requirements* Ⓐ₁₁

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:

Ⓐ₁₁ IEC 60884-1:2002,² *Plugs and socket-outlets for household and similar purposes – Part 1: General requirements*

IEC 60884-2-1:2006, *Plugs and socket-outlets for household and similar purposes – Part 2-1: Particular requirements for fused plugs*

IEC 60884-2-2:2006, *Plugs and socket-outlets for household and similar purposes – Part 2-2: Particular requirements for socket-outlets for appliances*

IEC 60884-2-5:2017, *Plugs and socket-outlets for household and similar purposes – Part 2-5: Particular requirements for adaptors*

IEC 60884-2-7:2011,³ *Plugs and socket-outlets for household and similar purposes – Part 2-7: Particular requirements for cord extension sets* Ⓐ₁₁

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*

3 Terms and definitions

Ⓐ₁₁ EN 62841-1:2015 Ⓐ₁₁, Clause 3 is applicable, except as follows:

Addition:

3.101 catcher

part or combination of parts, intended to be used with the **lawn scarifier** or **lawn aerator**, which provides a means for collecting material such as grass, thatch, moss or other debris

3.102 cutting width

total width of scarification/aeration measured across the **tines** at 90° to the direction of travel

Ⓐ₁₁ ¹ As impacted by EN 62841-1:2015/AC:2015 and EN 62841-1:2015/A11:2022.

² As impacted by IEC 60884-1:2002/A1:2006 and IEC 60884-1:2002/A2:2013.

³ As impacted by IEC 60884-2-7:2011/A1:2013. Ⓐ₁₁

3.103

discharge chute

extension of the **tines enclosure** from the **discharge opening**, generally used to control the discharge of material from the **tines**

3.104

discharge opening

gap or opening in the **tines enclosure** through which grass, thatch, moss and other debris may be discharged

3.104.1

front discharge

discharge opening for throwing out grass, thatch and moss so that they will be collected in a **catcher** which is located in front of the **tines**

3.104.2

rear discharge

discharge opening for throwing out grass, thatch and moss so that they will be collected in a **catcher** which is located behind the **tines**

3.105

lawn aerator

machine equipped with a **tines assembly** which uses the ground to determine the depth of cut, designed for penetrating the lawn surface

Note 101 to entry: See Figure 101.

Note 102 to entry: **Lawn aerators** that are designed to only make shallow cuts or slices in the soil are also known as verticutters.

3.106

lawn scarifier

machine equipped with a **tines assembly** designed to scratch the surface or earth face

Note 101 to entry: See Figure 101.

Note 102 to entry: **Lawn scarifiers** are also known as lawn rakes and dethatchers.

3.107

maximum speed

highest steady-state **tines** speed attainable under all conditions of **normal use**, including no-load, when adjusted in accordance with the manufacturer's specifications and/or instructions

Note 101 to entry: The steady-state **tines** speed excludes transients such as overshoot that may occur before attaining a steady-state condition.

3.108

operator control

device requiring operator actuation to perform specific functions during **normal operation**

3.109

operator presence control

device that deactivates rotation of the **tines** when the operator's hand(s) is removed from the control

Note 101 to entry: The device typically consists of a combination of a mechanical actuator and other mechanical and electrical components (e.g. tactile switch, relays, load switches or **electronic components**).

3.110

parking brake

device to prevent a stationary machine from moving

3.111

service brake

device for decelerating and stopping a machine from its ground travel speed

3.112

tines

mechanism used to provide the penetrating action or scratching action of the machine

3.113

tines assembly

tines together with any supporting part(s), which together perform the aerating or scarifying action

3.114**tines enclosure**

part or assembly which provides the protective means around the **tines**

3.115**tines tip circle**

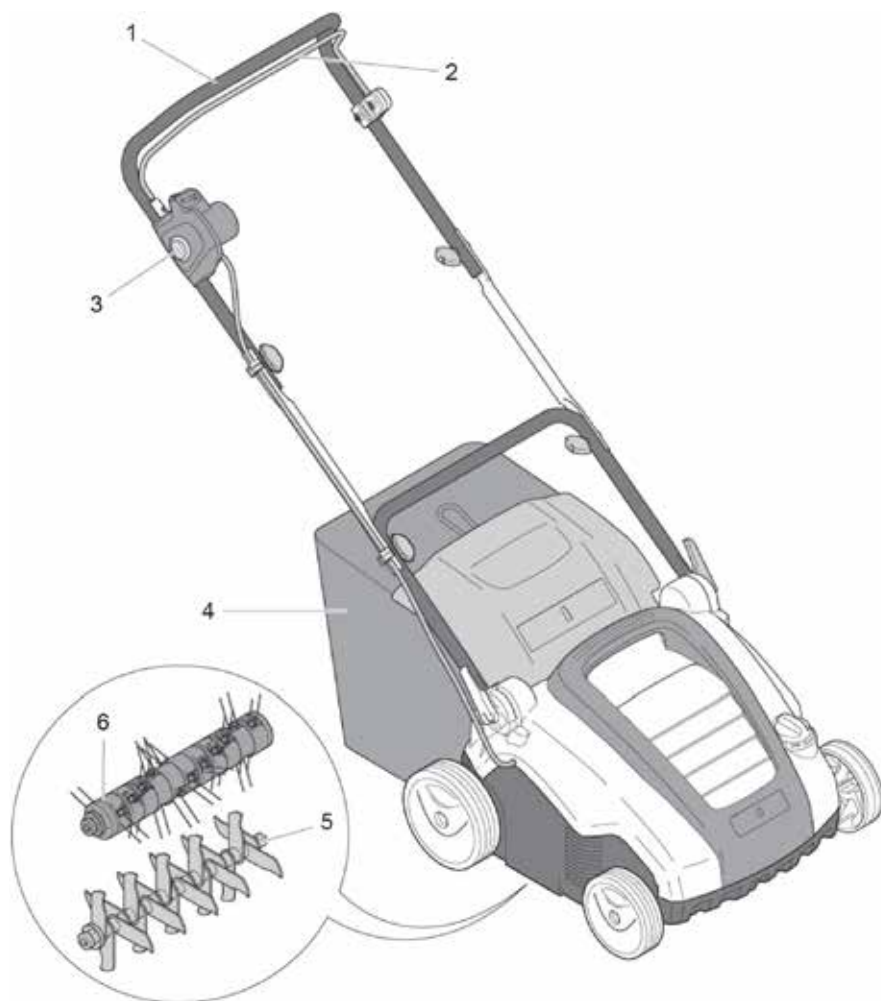
path described by the outermost point of the **tines** as they rotate about their shaft axis

3.116**traction drive**

means (system) used to transmit power from the motor to the ground drive means

3.117**working position**

any depth setting of the **tines** designated by the manufacturer



IEC

Key

- 1 handle
- 2 **operator presence control**
- 3 lock-off device
- 4 **catcher**
- 5 **tines assembly** for a lawn aerator
- 6 **tines assembly** for a lawn scarifier

Figure 101 – Example of a lawn scarifier or a lawn aerator

4 General requirements

EN 62841-1:2015 ^{A11}, Clause 4 is applicable.

5 General conditions for the tests

EN 62841-1:2015 ^{A11}, Clause 5 is applicable, except as follows:

5.4 Addition:

Handle positions that are used for storage purposes are not included in this requirement.

5.7.2 Replacement:

*Machines are tested at **rated voltage**. Machines having more than one **rated voltage** or having a **rated voltage range** are tested at the highest voltage.*

5.17 Addition:

*The mass of the machine includes the **tines assembly**, **catcher** (empty) (if any), **catcher adapter** (if any), **tines enclosure cover** (if any) in the heaviest configuration in accordance with 8.14.2.*

5.101 *During the tests, the **tines** may be adjusted and lubricated as needed to permit operation for extended periods.*

5.102 *For tests that are performed at **maximum speed** and no-load, the manufacturer may need to provide special hardware and/or software in order to achieve **maximum speed** at no-load.*

5.103 *The tests are performed using all **tines** in accordance with 8.14.2 a) 103).*

6 Radiation, toxicity and similar hazards

EN 62841-1:2015 ^{A11}, Clause 6 is applicable.

7 Classification

EN 62841-1:2015 ^{A11}, Clause 7 is applicable, except as follows:

7.1 Replacement:

Machines shall be of one of the following classes with respect to protection against electric shock:

class II tool (machine) or **class III tool** (machine).

Compliance is checked by inspection and by the relevant tests.

7.2 Addition:

Class II tools (machines) shall be at least IPX4. **Class III tools** (machines) shall be at least IPX1.

8 Marking and instructions

EN 62841-1:2015 A11, Clause 8 is applicable, except as follows:

8.1.101 Machines with more than one motor (i.e. separate motors for the **tines** and **traction drive**) shall be marked with the **rated input** or **rated current** for each motor. These markings may be located on each motor.

Compliance is checked by inspection.

8.2 Addition:

Lawn scarifiers and **lawn aerators** shall be marked with the following safety warnings:

- "⚠️ WARNING – Beware of thrown objects – keep bystanders away" or one of the product safety labels specified in Figure AA.1;
- "⚠️ WARNING – Keep hands and feet away from the tines" or the product safety label specified in Figure AA.2.

For mains supplied machines:

- "⚠️ WARNING – Remove plug from mains before maintenance or if cord is damaged" or one of the product safety labels specified in Figure AA.3;
- "⚠️ WARNING – Keep the supply cord away from the tines" or the product safety label specified in Figure AA.4.

A11 8.3 Replacement of the sixth dash:

— the mass of the machine in kg. For this requirement, the mass of the machine includes the mass of a **supply cord** with a length not less than 10 m, if any, in addition to the items specified in 5.17. A11

8.9 Replacement:

Unless it is obviously unnecessary, switches and controls (e.g. a **tines** brake/clutch) which may give rise to a hazard when operated shall be marked or so placed as to indicate clearly which part of the machine they control.

Compliance is checked by inspection.

8.11 This subclause of IEC A11 EN 62841-1:2015 A11 is not applicable for traction drive speed controls.

8.14.1 Addition:

The additional safety instructions as specified in 8.14.1.101 shall be given. These additional safety instructions may be printed separately from the "General Machine Safety Warnings".

NOTE 101 "General Machine Safety Warnings" are referred to as "General Power Tool Safety Warnings" in A11 EN 62841-1:2015 A11.

8.14.1.1 Replacement for item 2) c) of A11 EN 62841-1:2015 A11, 8.14.1.1:

- c) **Do not expose the machine to rain or wet conditions.** *Water entering the machine will increase the risk of electric shock.*

For machines classified at least IPX4, the warning in item c) above may be replaced as specified below.

- c) **Do not operate the machine in rain or wet conditions.** *This may increase the risk of electric shock.*

8.14.1.101 Lawn scarifier and lawn aerator safety warnings

For the warnings below, the term "machine" may be replaced by alternate wording (e.g. "scarifier", "lawn rake", "aerator", "verticutter" or "lawn scarifier or aerator").

- a) **Do not use the machine in bad weather conditions, especially when there is a risk of lightning.** *This decreases the risk of being struck by lightning.*
- b) **Thoroughly inspect the area for wildlife where the machine is to be used.** *Wildlife may be injured by the machine during operation.*
- c) **Thoroughly inspect the area where the machine is to be used and remove all stones, sticks, wires, bones, and other foreign objects.** *Thrown objects can cause personal injury.*
- d) **Before using the machine, always visually inspect to see that the tines and the tines assembly are not worn or damaged.** *Worn or damaged parts increase the risk of injury.*
- e) **Before use, check the supply cord and any extension cord for signs of damage or aging. Do not use the machine if the cord is damaged or worn. If the cord is damaged or worn during use, switch off the machine and do not touch the cord before disconnecting it from the supply. A damaged supply cord or extension cord may result in electric shock, fire and/or serious injury.**
- f) **Check the catcher frequently for wear or deterioration.** *A worn or damaged catcher may increase the risk of personal injury.*

NOTE 101 It is possible to replace the term "catcher" by an alternative term such as "collector" or "bag".

NOTE 102 The warning in item f) above is omitted for machines that are not designed to be used with a **catcher**.

- g) **Keep guards in place. Guards must be in working order and be properly mounted.** *A guard that is loose, damaged, or is not functioning correctly may result in personal injury.*
- h) **Keep all cooling air inlets clear of debris.** *Blocked air inlets and debris may result in overheating or risk of fire.*
- i) **While operating the machine, always wear non-slip and protective footwear. Do not operate the machine when barefoot or wearing open sandals.** *This reduces the chance of injury to the feet from contact with the moving tines.*
- j) **While operating the machine, always wear long trousers.** *Exposed skin increases the likelihood of injury from thrown objects.*
- k) **Do not operate the machine in wet grass. Walk, never run.** *This reduces the risk of slipping and falling which may result in personal injury.*
- l) **Do not operate the machine on excessively steep slopes.** *This reduces the risk of loss of control, slipping and falling which may result in personal injury.*
- m) **When working on slopes, always be sure of your footing, always work across the face of slopes, never up or down and exercise extreme caution when changing direction.** *This reduces the risk of loss of control, slipping and falling which may result in personal injury.*
- n) **Use extreme caution when reversing or pulling the machine towards you. Always be aware of your surroundings.** *This reduces the risk of tripping during operation.*
- o) **Keep the supply cord away from the tines.** *A damaged supply cord may result in electric shock, fire and/or serious injury.*

- p) **Switch off and remove plug from mains if the cord is entangled or damaged.** *Entangled or damaged cords can increase the risk of electric shock.*
- q) **Hold the machine by insulated gripping surfaces only, because the tines may contact hidden wiring or its own cord.** *Tines contacting a "live" wire may make exposed metal parts of the machine "live" and could give the operator an electric shock.*
- r) **Do not touch tines and other hazardous moving parts while they are still in motion.** *This reduces the risk of injury from moving parts.*
- s) **When clearing jammed material or cleaning the machine, make sure all power switches are off and the power cord is disconnected.** *Unexpected operation of the machine may result in serious personal injury.*

8.14.2 a) Addition:

- 101) Explanation of the safety devices that the **lawn scarifier** or **lawn aerator** incorporates as part of the original equipment;
- 102) Information regarding pre-operating procedures;
- 103) Information regarding the **tines** to be used on the **lawn scarifier** or **lawn aerator**;
- 104) Instructions on the permitted operating positions for handles.

8.14.2 b) Addition:

- 101) Hazards which may be encountered while using the **lawn scarifier** or **lawn aerator**, such as blockage of the **tines**, and how to avoid them while performing typical tasks;
- 102) Instructions to stop the **tines** if the machine has to be tilted for transportation when crossing surfaces other than grass and when transporting the machine to and from the area in which it is to be used;
- 103) Instructions not to tilt the machine when switching on the motor, except if the machine has to be tilted for starting. In this case, instruction not to tilt it more than is absolutely necessary and to lift only the part which is away from the operator;
- 104) For single-axle machines, instructions to maintain operating position and stability by properly grasping and supporting the handle;
- 105) Instructions to stop the machine, and remove plug from the socket, and to make sure that all moving parts have come to a complete stop
 - after striking a foreign object, and to inspect the machine for damage and make repairs before restarting and operating the machine;
 - if the machine starts to vibrate abnormally, and then to immediately inspect for damage, replace or repair any damaged parts and to check for and tighten any loose parts;
- 106) Recommendation for the use of a **residual current device** with a tripping current of 30 mA or less;
- 107) Instructions to empty the **catcher** before storage, if applicable.

8.14.2 c) Addition:

- 101) Information regarding regular maintenance routines;
- 102) Recommendations for cleaning and maintenance before storage;
- 103) Information explaining the consequences of improper maintenance, the use of non-conforming replacement components, or the removal or modification of safety components;
- 104) Instruction to replace worn or damaged components in sets to preserve balance, as applicable;
- 105) Instructions to be careful during adjustment of the machine to prevent entrapment of the fingers between moving **tines** and fixed parts of the machine;
- 106) Instructions to always allow the machine to cool down before storing;

- 107) Instructions regarding replacing or servicing **tines**;
- 108) For machines where the **tines** may be serviced by **user maintenance**, advice that when servicing the **tines** to be aware that, even though the power source is switched off, the **tines** can still be moved.

8.14.2 Za) Replacement:

Emissions:

- 1) The noise emission, measured in accordance with Clause I.2, as follows:
 - A-weighted emission sound pressure level L_{pA} and its uncertainty K_{pA} , where L_{pA} exceeds 70 dB(A). Where L_{pA} does not exceed 70 dB(A), this fact shall be indicated;
 - A-weighted guaranteed sound power level L_{WA} .
- 2) Recommendation for the operator to wear hearing protection.
- 3) The vibration total value and its uncertainty measured in accordance with Clause I.3.

When the vibration total value does not exceed 2,5 m/s², this shall be stated.

When the vibration total value exceeds 2,5 m/s², its value shall be given in the instructions.

- 4) The following information:
 - that the declared vibration total value(s) and the declared noise emission value(s) have been measured in accordance with a standard test method and may be used for comparing one machine with another;
 - that the declared vibration total value(s) and the declared noise emission value(s) may also be used in a preliminary assessment of exposure.
- 5) A warning:
 - that the vibration and noise emissions during actual use of the machine can differ from the declared total value depending on the ways in which the machine is used; and
 - of the need to identify safety measures to protect the operator that are based on an estimation of exposure in the actual conditions of use (taking account of all parts of the operating cycle such as the times when the machine is switched off and when it is running idle in addition to the trigger time). 

8.14.3 Replacement:

If information about the mass or weight of the machine is provided, it shall be the mass specified in 5.17 together with the mass of a **supply cord** with a length not less than 10 m, if any.

Compliance is checked by inspection.

9 Protection against access to live parts

 EN 62841-1:2015 , Clause 9 is applicable.

10 Starting

 EN 62841-1:2015 , Clause 10 is applicable, except as follows:

10.1 Addition:

*For the test, the **tines** are raised so that they are not in contact with any surface.*

10.2 Addition:

*For the test, the **tines** are raised so that they are not in contact with any surface.*



Documents

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11 Input and current

EN 62841-1:2015 A11, Clause 11 is applicable.

12 Heating

EN 62841-1:2015 A11, Clause 12 is applicable, except as follows:

12.2.1 Replacement:

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

*The test is conducted with the machine mounted on an unperforated flat horizontal surface with the **tines** attached, and with the minimum size of openings for connection to the torque load. The **traction drive** wheels, if any, are lifted the minimum amount required to avoid contact with the unperforated flat horizontal surface. The **working position** is adjusted to the minimum position required to avoid contact with the unperforated flat horizontal surface. The **lawn scarifier** or **lawn aerator** is operated with a torque load applied such that **rated input** or **rated current** is drawn until thermal equilibrium is reached under the most unfavourable conditions. For machines with more than one motor (i.e. separate motors for the **tines** and **traction drive**), the **lawn scarifier** or **lawn aerator** is operated with torque loads such that **rated input** or **rated current** of each motor in accordance with 8.1.101 is drawn until thermal equilibrium is reached under the most unfavourable conditions.*

*The most unfavourable conditions are determined using the configuration of **attachments** and **tines** in accordance with 8.14.2, which yields the highest temperature at a reference location. This determination may be made at one of the required voltages of 12.2 using thermocouples.*

The reference location is chosen on the motor assembly at a location that minimises the cooling effect of air flow.

NOTE A measurement of the rotating speed of the **tines** during the heating test is needed in some cases for the test of 17.2.

13 Resistance to heat and fire

EN 62841-1:2015 A11, Clause 13 is applicable.

14 Moisture resistance

EN 62841-1:2015 A11, Clause 14 is applicable, except as follows:

14.2 Replacement:

The enclosure of the machine shall provide the degree of protection against moisture in accordance with the marking of the machine.

Compliance is checked by the appropriate treatment specified in 14.2.2, with the machine conditions as in 14.2.1.

14.2.1 Replacement:

The machine is not connected to the supply.

Detachable parts which can be removed without the aid of a tool are removed and subjected, if necessary, to the relevant treatment with the main part. Machines fitted with an appliance inlet, plug or other connector are tested without the mating connector in place. Air filters are not removed.

14.2.2 Replacement:

Machines other than IPX0 are subjected to tests of IEC 60529, as follows:

- IPX1 machines are subjected to the test described in IEC 60529:1989, 14.2.1;
- IPX2 machines are subjected to the test described in IEC 60529:1989, 14.2.2;
- IPX3 machines are subjected to the test described in IEC 60529:1989, 14.2.3 a);
- IPX5 machines are subjected to the test described in IEC 60529:1989, 14.2.5. For this test, the water stream is applied from all practicable directions, including the underside of the machine;
- IPX6 machines are subjected to the test described in IEC 60529:1989, 14.2.6. For this test, the water stream is applied from all practicable directions, including the underside of the machine;
- IPX7 machines are subjected to the test described in IEC 60529:1989, 14.2.7. For this last test, the machine is immersed in water containing approximately 1,0 % NaCl.

Machines classified as IPX4 are subjected to the test described in 14.2.4 a) of IEC 60529:1989, except as follows:

- the test is conducted with a circular horizontal unperforated support having a diameter of twice the oscillating tube radius minus 15 cm. The support is placed at the level of the pivot axis of the oscillating tube. During the test, the support is rotated about its vertical axis at a rate of $(1 \pm 0,1)$ r/min; and
- the machine is placed on the unperforated support; and
- the **working position** of the **lawn scarifier** or **lawn aerator** is set to the highest position at which the **tines** would still drive when the **operator presence control** is engaged. If this setting still allows the **tines** to make contact with the ground surface, the ground support system of the machine (e.g. wheels) are raised on support blocks to ensure ground clearance. The blocks are to be as small as is practicable; and
- the horizontal centreline of the machine is aligned with the pivot axis of the oscillating tube at the start of test. The movement of the oscillating tube is limited to 90° either side from the vertical, the time for one complete oscillation ($2 \times 90^\circ$) being (6 ± 1) s; and
- the duration of the test is 10 min.

Immediately after the appropriate treatment, the machine shall withstand the electric strength test of [A11](#) EN 62841-1:2015 [A11](#), Annex D between **live parts** and **accessible parts**, the test voltage being 2 500 V. Afterwards, having carefully wiped the external enclosure to remove any surplus water, inspection shall show that there is no trace of water on insulation which could result in a reduction of **creepage distances** and **clearances** below the values specified in 28.1. Water drops on an appliance inlet, plug or other connector are not considered.

The machine is then evaluated for

- the risk of fire in accordance with item a) of 18.6.1; and
- the loss of any **SCF**, unless the machine is rendered into a safe state.

14.3 to 14.5 These subclauses of [A11](#) EN 62841-1:2015 [A11](#) are not applicable.

15 Resistance to rusting

[A11](#) EN 62841-1:2015 [A11](#), Clause 15 is applicable.

16 Overload protection of transformers and associated circuits

EN 62841-1:2015 A11, Clause 16 is applicable.

17 Endurance

EN 62841-1:2015 A11, Clause 17 is applicable, except as follows:

17.2 Replacement:

The machine is operated at no-load. The machine is fitted with the most unfavourable tines in accordance with 8.14.2 a) 103).

*Series motors are supplied at a voltage such that the rotating speed of the tines is the same as that obtained in 12.2.1 at **rated voltage** or the lower limit of the **rated voltage range**. Other motor types are operated at **rated voltage** or the lower limit of the **rated voltage range**.*

The machine is operated for 48 h. If the test is conducted on the same sample used for the tests of Clause 12, the 48 h is reduced by the running time necessary for the tests of Clause 12. During the test, the machine is placed in its normal operating position according to 8.14.2.

Machines are operated continuously, or for a corresponding number of periods, each period being not less than 8 h.

The machine may be switched on and off by means of a switch other than that incorporated in the machine unless this disables a functionality of the machine switch.

*During this test, replacement of the carbon brushes is allowed, and the machine is oiled and greased as in **normal use**. If mechanical failure occurs and does not impair compliance with this document, the part that failed may be replaced.*

If the temperature rise of any part of the machine exceeds the temperature rise determined during the test of 12.1, forced cooling may be applied. If forced cooling is applied, it shall not alter the air flow of the machine or redistribute carbon deposits.

During these tests, overload protection devices incorporated in the machine shall not activate.

18 Abnormal operation

EN 62841-1:2015 A11, Clause 18 is applicable, except as follows:

18.5 Replacement:

Protection against electric shock shall not be impaired when a **class II tool** (machine) is subjected to overload conditions according to the type of motor.

For machines with

- motors having electronically commutated stator windings, compliance is checked by the test of 18.5.4;*
- series motors, compliance is checked by the test of 18.5.1;*
- other motors, compliance is checked by the test of 18.5.3.*

18.5.2 This subclause of EN 62841-1:2015 A11 is not applicable.