

**Majapidamis- ja muud taolised elektriseadmed. Ohutus.
Osa 2-92: Erinõuded jalgsi juhitavatele võrgutoitega
murukobestitele- ja õhutitele (aeraatorid)**

**Household and similar electrical appliances - Safety -
Part 2-92: Particular requirements for
pedestrian-controlled mains-operated lawn scarifiers
and aerators**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 50636-2-92:2014 sisaldab Euroopa standardi EN 50636-2-92:2014 inglisekeelset teksti.	This Estonian standard EVS-EN 50636-2-92:2014 consists of the English text of the European standard EN 50636-2-92:2014.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 20.06.2014.	Date of Availability of the European standard is 20.06.2014.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 65.060.70

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Aru 10, 10317 Tallinn, Eesti; www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:
Aru 10, 10317 Tallinn, Estonia; www.evs.ee; phone 605 5050; e-mail info@evs.ee

English Version

**Household and similar electrical appliances - Safety - Part 2-92:
Particular requirements for pedestrian-controlled mains-operated
lawn scarifiers and aerators**

Appareils électrodomestiques et analogues - Sécurité -
Partie 2-92: Règles particulières pour les scarificateurs de
gazon et les aérateurs fonctionnant sur le réseau et pour
conducteur à pied

Sicherheit elektrischer Geräte für den Hausgebrauch und
ähnliche Zwecke - Teil 2-92: Besondere Anforderungen für
handgeführte netzbetriebene Rasen-Vertikutierer und
Rasen-Lüfter

This European Standard was approved by CENELEC on 2013-09-02. 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword	4
Introduction.....	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	8
4 General requirement.....	10
5 General conditions for the tests.....	10
6 Classification.....	11
7 Marking and instructions	11
8 Protection against access to live parts	14
9 Starting of motor-operated appliances	14
10 Power input and current	14
11 Heating.....	15
12 Void	15
13 Leakage current and electric strength at operating temperature.....	15
14 Transient overvoltages	15
15 Moisture resistance	15
16 Leakage current and electric strength	15
17 Overload protection of transformers and associated circuits	15
18 Endurance	15
19 Abnormal operation.....	16
20 Stability and mechanical hazards	16
21 Mechanical strength	23
22 Construction.....	24
23 Internal wiring	25
24 Components	25
25 Supply connection and external flexible cords	26
26 Terminals for external conductors.....	27
27 Provision for earthing	27
28 Screws and connections.....	27
29 Clearances, creepage distances and solid insulation	27
30 Resistance to heat and fire	27
31 Resistance to rusting	27
32 Radiation, toxicity and similar hazards	27
Annex AA (normative) Safety signs and symbols.....	39
Annex BB (informative) Safety Instructions.....	42

Annex CC (normative) Vibration	45
Annex DD (normative) Noise test code – Engineering method (grade 2)	50
Annex EE (informative) Example of a material and construction fulfilling the requirements for an artificial surface	56
Annex FF (normative) Base	58
Annex ZZ (informative) Coverage of Essential Requirements of EU Directives	60
Bibliography.....	61

Figures

Figure 101 — Safety distances – Machines with more than one axle	28
Figure 102 — Safety distances – Single axle machines	29
Figure 103 — Foot probe	30
Figure 104 — Strength of tine assembly	31
Figure 105 — Operator zone.....	32
Figure 106 — Front and rear guarding of tines	33
Figure 107 — Side guarding of tines	34
Figure 108 — Guarding of rear discharge machines	35
Figure 109 — Guarding of front discharge machines	36
Figure 110 — Thrown object test rig for rear discharge scarifiers with rigid tines	37
Figure 111 — Impact test fixture for handle insulation	38
Figure AA.1 — “Read operator’s manual”	39
Figure AA.2 — “Keep bystanders away”	40
Figure AA.3 — “WARNING – Beware of sharp tines, keep fingers and toes away. Remove plug from mains before maintenance, adjusting, cleaning or if the cord is entangled or damaged. Tines continue to rotate after the motor is switched off”	40
Figure AA.4 — “Keep supply flexible cord away from tines”	41
Figure CC.1 – Examples of transducer location/orientation	47
Figure CC.2 – Examples of transducer location/orientation for hand-arm vibration	48
Figure DD.1 — Microphone positions on the hemisphere (see Table DD.1)	51
Figure EE.1 — Sketch of the measurement surface covered with an artificial surface (not to scale)	57
Figure FF.1 — Base detail.....	58
Figure FF.2 — Nail plan of base	59

Tables

Table DD.1 — Co-ordinates of microphone positions	52
Table DD.2 — Absorption coefficients	53

Foreword

This document (EN 50636-2-92:2014) has been prepared by CLC/TC 116 "Safety of motor-operated electric tools".

The following dates are fixed:

- latest date by which this document has to be implemented (dop) 2014-12-20
at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2016-09-02

This document supersedes EN 60335-2-92:2005.

EN 60335-2-92:2014 includes the following significant technical changes:

- rewording of some clauses;
- alignment to the European Machinery Directive 2006/42/EC;
- alignment to EN 60335-1:2012.

This document is to be used in conjunction with EN 60335-1:2012 "*Household and similar electrical appliances — Safety — Part 1: General requirements*".

When "Part 1" is mentioned in this standard, it refers to EN 60335-1:2012.

This document supplements or modifies the corresponding clauses in Part 1, so as to convert that publication into the European Standard "*Particular requirements for **pedestrian-controlled** walk-behind mains operated scarifiers and aerators*".

Where a particular subclause of Part 1 is not mentioned in this document, that subclause applies as far as is relevant. Where this standard states "addition", "modification" or "replacement", the relevant text in Part 1 is to be adapted accordingly.

Compliance with the relevant clauses of Part 1 together with this document provides one means of conforming to the specified essential health and safety requirements of the Directive.

This European Standard follows the overall requirements of EN ISO 12100.

Warning: Other requirements arising from other EU Directives can be applicable to the products falling within the scope of this European Standard.

The following numbering system is used:

- subclauses, notes, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- additional annexes are lettered AA, BB, etc.;

Note In this European Standard the following print types are used:

- requirements proper: in roman type;
- *test specifications: in italic type;*
- explanatory matter: in smaller roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold. Common modifications are indicated by a vertical line in the left margin of the text.

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

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

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

This document is a preview generated by EVS

Introduction

This document is a type C standard as stated in EN ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered is as indicated in the scope of this document.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the other standards, for machines which have been built and designed to the provisions of this type C standard.

1 Scope

This clause of Part 1 is replaced by the following.

This European Standard specifies safety requirements and their verification for the design and construction of **pedestrian controlled** walk-behind mains operated scarifiers and aerators, hereinafter referred to as 'machine(s)', which are designed for re-generating lawns by, for instance, combing out grass, thatch and moss or cutting vertically into the lawn face using **tines** which rotate about a horizontal axis. This standard applies in conjunction with Part 1.

NOTE 1 Lawn scarifiers are also known as lawn rakes.

This European Standard does not apply to non-powered scarifiers and aerators, battery powered scarifiers and aerators, vertical axis scarifiers and aerators or those aerators which cut into the soil by means of a reciprocating motion and ride-on machines.

This European Standard does not apply to

- lawnmowers (EN 60335-2-77);
- lawn trimmers (EN 60335-2-91);
- lawn edge trimmers (EN 60335-2-91);
- lawn edgers, flail mowers, sickle-bar mowers or agricultural mowers.

This European Standard is not applicable to aerators/scarifiers which are manufactured before the date of publication of this document.

This European Standard deals with all the significant hazards presented by **pedestrian-controlled lawn scarifiers and lawn aerators** when they are used as intended and under conditions of misuse which are reasonably foreseeable.

NOTE 2 Combustion engine machines are covered by EN 13684.

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

EN 60335-1:2012, *Household and similar electrical appliances — Safety — Part 1: General requirements (IEC 60335-1:2010, modified)*

EN ISO 354:1993, *Acoustics — Measurement of sound absorption in a reverberation room (ISO 354:2003)*

EN ISO 2758:2003, *Paper — Determination of bursting strength (ISO 2758:2001)*

EN 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 3744:2010)*

EN ISO 4871:2009, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN 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 (ISO 11201:2010)*

EN ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)*

EN ISO 20643:2008, *Mechanical vibration — Hand-held and hand-guided machinery — Principles for evaluation of vibration emission (ISO 20643:2005)*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1.9 Replacement:

3.1.9

normal operation

operation of the machine under the following conditions: the machine is operated at **rated voltage** with the load necessary to attain **rated power input**

Addition:

3.101

braking system

combination of one or more brakes and related means of operation and **control**

3.102

catcher

part or combination of parts which provides a means for collecting grass, thatch, moss or other debris

3.103

control

means or device which will control the operation of the machine or any specific operating function thereof

3.104

discharge chute

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

3.105

discharge opening

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

a) **front discharge**

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

b) **rear discharge**

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