

# INTERNATIONAL STANDARD

# IEC 60335-2-92

Second edition  
2002-07

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**Household and similar electrical appliances –  
Safety –**

**Part 2-92:  
Particular requirements for pedestrian-controlled  
mains-operated lawn scarifiers and aerators**

**STANDARD PREVIEW**  
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*Appareils électrodomestiques et analogues –  
Sécurité –*

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**Partie 2-92:**

*Règles particulières pour les scarificateurs de gazon  
et les aérateurs fonctionnant sur le réseau et pour  
conducteur à pied*



Reference number  
IEC 60335-2-92:2002(E)

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## Household and similar electrical appliances – Safety –

### Part 2-92: Particular requirements for pedestrian-controlled mains-operated lawn scarifiers and aerators

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### *Partie 2-92:*

### *Règles particulières pour les scarificateurs de gazon et les aérateurs fonctionnant sur le réseau et pour conducteur à pied*

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –  
SAFETY –**

**Part 2-92: Particular requirements for pedestrian-controlled  
mains-operated lawn scarifiers and aerators**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.  
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- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

This part of International Standard IEC 60335 has been prepared by IEC subcommittee 61F: Safety of hand-held motor-operated electric tools, of IEC technical committee 61: Safety of household and similar electrical appliances.

This second edition cancels and replaces the first edition published in 2000. It constitutes a technical revision.

The text of this standard is based on the following documents:

FDIS	Report on voting
61F/453/FDIS	61F/474/RVD

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

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments. It was established on the basis of the fourth edition (2001) of that standard.

NOTE 1 When "Part 1" is mentioned in this standard, it refers to IEC 60335-1.

This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for pedestrian-controlled mains-operated electric lawn scarifiers and aerators.

When a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. When this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.

NOTE 3 The following print types are used:

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

The committee has decided that the contents of this publication will remain unchanged until 2004. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

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A bilingual version of this publication may be issued at a later date.

The contents of the corrigendum of May 2003 have been included in this copy.

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## INTRODUCTION

It has been assumed in the drafting of this international standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules may differ.

If an appliance within the scope of this standard also incorporates functions that are covered by another part 2 of IEC 60335, the relevant part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features that impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

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IEC 60335-2-92:2002



## HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

### Part 2-92: Particular requirements for pedestrian-controlled mains-operated lawn scarifiers and aerators

#### 1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of **pedestrian-controlled** mains-operated electrical lawn scarifiers and aerators with rotating cutters for regenerating lawns by, for instance, combing out grass thatch and moss, or by cutting vertically into the lawn face. These scarifiers are designed primarily for use at and around the home or for similar purposes, their **rated voltage** being not more than 250 V single phase.

This standard does not, in general, take into account:

- the use of appliances by young children or infirm persons without supervision;
- playing with the appliance by young children.

NOTE 101 Attention is drawn to the fact that

- in many countries additional requirements are specified by the national authorities responsible for the protection of labour.

NOTE 102 This standard does not apply to

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

#### 2 Normative references

This clause of Part 1 is applicable except as follows.

*Addition:*

ISO 2758:2001, *Paper – Determination of bursting strength*

ISO 3411:1995, *Earth-moving machinery – Human physical dimensions of operators and minimum operator space envelope*

ISO 3767-1:1998, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment – Symbols for operator controls and other displays – Part 1: Common symbols*

ISO 3767-3:1995, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment – Symbols for operator controls and other displays – Part 3: Symbols for powered lawn and garden equipment*

ISO 3864, *Safety colours and safety signs*

ISO 13852:1996, *Safety of machinery – Safety distances to prevent danger zones being reached by the upper limbs*

### 3 Definitions

This clause of Part 1 is applicable except as follows.

#### 3.1.9 *Replacement:*

##### **normal operation**

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

#### 3.101

##### **braking system**

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

#### 3.102

##### **catcher**

a 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 appliance or any specific operating function thereof

#### 3.104

##### **cutting means**

for the purposes of this standard, the mechanism used to provide the cutting action of a scarifier or aerator

#### 3.105

##### **cutting means enclosure (housing)**

the part of the assembly which provides the protective means around the **cutting means**

#### 3.106

##### **cutting means tip circle**

the path described by the outermost point of the **cutting means** as it rotates about its shaft axis.

#### 3.107

##### **cutting position**

any setting of the **cutting means** designated by the manufacturer

#### 3.108

##### **cutting width**

the width of cut measured across the **cutting means** at right angles to the direction of travel and calculated from the dimensions of the **cutting means** or the diameter(s) of the **cutting means tip circle(s)**

#### 3.109

##### **discharge chute**

an extension of the **cutting means enclosure** from the **discharge opening**, generally used to control the discharge of material from the cutting means

#### 3.110

##### **discharge opening**

a gap or opening in the **cutting means enclosure** through which grass, thatch and moss may be discharged

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**3.111****guard**

a part of the appliance or component incorporated to provide protection for the operator and/or bystander

**3.112****handle**

any part likely to be hand-held for guiding the appliance in normal use

**3.113****hit**

the test projectile passing completely through all layers of the target material

**3.114****intended use**

any use of the appliance which is reasonably foreseeable, as described in the user instructions, and which is consistent with such activities as operating, starting, stopping or connecting to (or disconnecting from) a **power source**

**3.115****lawn aerator**

a powered appliance designed for slitting the lawn surface. The appliance uses the ground to determine the height of cut

**3.116****lawn scarifier**

lawn rake

an appliance where the cutting means cuts vertically into the lawn or earthface, or scratches the surface, thereby also combing the lawn. The appliance uses the ground to determine the height of cut

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**3.117****maximum operating motor speed**

the highest motor speed obtainable when the motor is adjusted in accordance with the manufacturer's specifications and/or instructions, with the cutting means engaged

**3.118****operator control**

any **control** requiring the operator's actuation to perform specific functions

**3.119****operator presence control**

a **control** designed so that it will automatically interrupt power to a drive when the operator's actuating force is removed

**3.120****operator zone**

the operator zone for persons operating a **lawn scarifier** or **lawn aerator**

**3.121****parking brake**

a device incorporated into the appliance which, when operated, prevents the appliance from moving from a stationary position and remains applied without the operator present

**3.122****pedestrian-controlled**

ground-supported, controlled by an operator walking behind

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**3.123**

**power source**

a motor which provides mechanical energy for linear or rotational movement

**3.124**

**rotary appliance**

a scarifier/ aerator in which the **cutting means** rotates about an axis or axes normal to the ground

**3.125**

**service brake**

the designated primary means for decelerating and stopping a machine from its ground travel speed

**3.126**

**thrown object hazard**

the potential for injury caused by object(s) propelled by the moving **cutting means**

**3.127**

**tine(s)**

for the purposes of this standard, a term used in warnings and instructions to denote "**cutting means**" (see 3.104)

**3.128**

**traction drive**

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

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**4 General requirement**

[IEC 60335-2-92:2002](https://standards.iteh.ai/catalog/standards/sist/d6f0e666-2c23-4825-aadc-1617ac30ce17/iec-60335-2-92-2002)

This clause of Part 1 is applicable. <https://standards.iteh.ai/catalog/standards/sist/d6f0e666-2c23-4825-aadc-1617ac30ce17/iec-60335-2-92-2002>

**5 General conditions for the tests**

This clause of Part 1 is applicable except as follows.

**5.5 Addition:**

*During the tests the **cutting means** are adjusted and lubricated in accordance with the manufacturer's instructions specific to the test.*

**5.6 Addition:**

*Electronic speed **control** devices are set for the highest speed.*

**6 Classification**

This clause of Part 1 is applicable except as follows.

**6.1 Replacement:**

Appliances shall be either **class II** or **class III** with respect to protection against electric shock.

*Compliance is checked by inspection and by the relevant tests.*

## 6.2 Addition:

Appliances shall be at least IPX4.

## 7 Marking and instructions

This clause of Part 1 is applicable except as follows.

### 7.1 Addition:

Appliances shall be marked with their **rated power input**.

The substance of the following warning shall be placed in a prominent position on the appliance. The letters, which may be in upper or lower case, shall be a minimum of 3 mm high, in black on a yellow background. Where appropriate IEC/ISO symbols or pictograms are available, they may be used. Markings or symbols giving cautionary information shall be located close to the hazard.

WARNING: Switch off and remove plug from mains before adjusting, cleaning or if the cord is entangled or damaged.

Read the instructions sheet.

Keep the supply flexible cord away from the cutting blades.

Blades continue to rotate after machine is switched off.

For rotary **lawn scarifiers/lawn aerators**, if applicable, an instruction that the appliance shall not be operated without either the entire **catcher** or **guard** in place shall be fixed near the **discharge opening** and the **catcher** adaptor, if one is used.

### 7.6 Addition:

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NOTE 101 Information on operator symbols may be found in ISO 3767-1 and ISO 3767-3, and in ISO 3864 for colours.

### 7.9 Modification:

*Replace the first paragraph by the following:*

**Operator controls** as described in 20.101.1, other than those whose purpose is obvious, shall have the function, direction and/or method of operation clearly identified by a durable label or mark.

### 7.12 Replacement:

An instruction sheet shall be supplied with the appliance.

The instructions shall include

- those warnings required to be marked on the appliance together with further explanation, where appropriate;
- instructions for the proper assembly of the appliance for use, if the appliance is not supplied in a completely assembled form;
- for rear delivery appliances with exposed rear rollers when used without a **catcher**, full eye protection shall be worn;