



NSAI
Standards

Irish Standard
I.S. EN 60335-2-77:2010

Safety of household and similar appliances -- Part 2-77: Particular requirements for pedestrian-controlled walk-behind electrically powered lawn mowers (IEC 60335-2-77:2002 (MOD))

I.S. EN 60335-2-77:2010

Incorporating amendments/corrigenda issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

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EUROPEAN STANDARD

EN 60335-2-77

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2010

ICS 65.060.70

Supersedes EN 50338:2006, EN 60335-2-77:2006

English version

**Safety of household and similar appliances -
Part 2-77: Particular requirements for pedestrian-controlled walk-behind
electrically powered lawn mowers
(IEC 60335-2-77:2002, modified)**

Appareils électrodomestiques
et analogues - Sécurité -
Partie 2-77: Règles particulières pour
les tondeuses à gazon fonctionnant sur
le réseau et à conducteur à pied
(CEI 60335-2-77:2002, modifiée)

Sicherheit elektrischer Geräte für den
Hausgebrauch und ähnliche Zwecke -
Teil 2-77: Besondere Anforderungen
für handgeführte elektrisch betriebene
Rasenmäher
(IEC 60335-2-77:2002, modifiziert)

This European Standard was approved by CENELEC on 2010-09-01. 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 Central Secretariat 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 Central Secretariat 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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of the International Standard IEC 60335-2-77:2002, prepared by SC 61F, Safety of hand-held motor-operated electric tools, of IEC TC 61, Safety of household and similar electrical appliances, together with the common modifications prepared by the Technical Committee CENELEC TC 61F, Safety of hand-held and transportable motor-operated electric tools, was submitted to the CENELEC formal vote and was approved as EN 60335-2-77 on 2010-09-01.

This document supersedes EN 50338:2006 and EN 60335-2-77:2006.

The text of EN 60335-2-77:2006 has been revised by CLC/TC 116/WG 5, Garden appliances, to add the mechanical requirements and bring this standard in line with the Machinery Directive 2006/42/EC. Additionally the safety requirements for battery powered lawnmowers have been included to replace EN 50338:2006; therefore the title is renamed.

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

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2011-09-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2013-09-01

This Part 2-77 is to be used in conjunction with EN 60335-1. This Part 2-77 supplements or modifies the corresponding clauses of EN 60335-1, so as to convert it into the European Standard: Particular requirements for pedestrian-controlled walk-behind electrically powered lawn mowers.

When a particular subclause of Part 1 is not mentioned in this Part 2-77, that subclause applies as far as is reasonable. When this standard states “addition”, “modification” or “replacement”, the relevant text of Part 1 is to be adapted accordingly.

This European Standard has been prepared under Mandate M/396 given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EU Directive 2006/42/EC. See Annex ZZ.

There are no special national conditions causing a deviation from this European Standard, other than those listed in Annex ZA to EN 60335-1.

There are no national deviations from this European Standard, other than those listed in Annex ZB to EN 60335-1.

Other harmonised standards referred to in this European Standard are listed in Annex ZC of Part 1 and this Part 2. The annex lists the valid edition of those documents at the time of issue of this EN. All references are however to be understood as references to the latest edition.

The following numbering system is used:

- subclauses 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.

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Introduction

This document is a C type standard as stated in EN ISO 12100-1.

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 electrically powered lawnmowers. This standard applies in conjunction with EN 60335-1.

This European Standard does not apply to

- lawn trimmers, lawn edge trimmers, lawn edgers, flail mowers, scrub cutters, automatic (robot) lawn mowers, sickle-bar mowers, agricultural mowers, trailing seat/sulky units, ride-on machines or non-powered lawnmowers
- rotary lawnmowers for which the cutting means is a generally circular central drive unit on which is mounted, either one or more non-metallic filaments or one or more non-metallic, pivotally mounted cutting elements. These cutting elements rely on centrifugal force to achieve cutting, with the kinetic energy of a single cutting element not exceeding 10 J,
- battery powered lawnmowers with a rated voltage of the battery more than 42 V d.c.

Requirements for battery chargers, including those incorporated into the machine are dealt with in EN 60335-2-29.

This European Standard is not applicable to lawnmowers, which are manufactured before the date of publication of this document by CENELEC.

NOTE Combustion engine driven machines are covered by EN 836.

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

EN 60320-2-3, Appliance couplers for household and similar general purposes – Part 2-3: Appliance couplers with a degree of protection higher than IPX0 (IEC 60320-2-3)

EN 60335-1, Household and similar electrical appliances – Safety – Part 1: General requirements (IEC 60335-1, mod.)

EN 60335-2-29, Household and similar electrical appliances – Safety – Part 2-29: Particular requirements for battery chargers (IEC 60335-2-29)

EN ISO 354:1993 ¹⁾, Acoustics – Measurement of sound absorption in a reverberation room (ISO 354:1985)

EN ISO 3744:1995, Acoustics – Determination of sound power levels of noise sources using sound pressure – Engineering method in an essentially free field over a reflecting plane (ISO 3744:1994)

EN ISO 3767-1:1995 ²⁾, Tractors, machinery for agriculture and forestry, powered lawn and garden equipment – Symbols for operator controls and other displays – Part 1: Common symbols (ISO 3767-1:1991)

¹⁾ Superseded by EN ISO 354:2003, *Acoustics - Measurement of sound absorption in a reverberation room* (ISO 354:2003).

²⁾ Superseded by EN ISO 3767-1:2000, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment - Symbols for operator controls and other displays - Part 1: Common symbols* (ISO 3767-1:1998), withdrawn.

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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

Partie 2-77: Règles particulières pour les tondeuses à gazon fonctionnant sur le réseau et à conducteur à pied

AVANT-PROPOS

- 1) La CEI (Commission Électrotechnique Internationale) est une organisation mondiale de normalisation composée de l'ensemble des comités électrotechniques nationaux (Comités nationaux de la CEI). La CEI a pour objet de favoriser la coopération internationale pour toutes les questions de normalisation dans les domaines de l'électricité et de l'électronique. A cet effet, la CEI, entre autres activités, publie des Normes internationales. Leur élaboration est confiée à des comités d'études, aux travaux desquels tout Comité national intéressé par le sujet traité peut participer. Les organisations internationales, gouvernementales et non gouvernementales, en liaison avec la CEI, participent également aux travaux. La CEI collabore étroitement avec l'Organisation Internationale de Normalisation (ISO), selon des conditions fixées par accord entre les deux organisations.
- 2) Les décisions ou accords officiels de la CEI concernant les questions techniques représentent, dans la mesure du possible, un accord international sur les sujets étudiés, étant donné que les Comités nationaux intéressés sont représentés dans chaque comité d'études.
- 3) Les documents produits se présentent sous la forme de recommandations internationales. Ils sont publiés comme normes, spécifications techniques, rapports techniques ou guides et agréés comme tels par les Comités nationaux.
- 4) Dans le but d'encourager l'unification internationale, les Comités nationaux de la CEI s'engagent à appliquer de façon transparente, dans toute la mesure possible, les Normes internationales de la CEI dans leurs normes nationales et régionales. Toute divergence entre la norme de la CEI et la norme nationale ou régionale correspondante doit être indiquée en termes clairs dans cette dernière.
- 5) La CEI n'a fixé aucune procédure concernant le marquage comme indication d'approbation et sa responsabilité n'est pas engagée quand un matériel est déclaré conforme à l'une de ses normes.
- 6) L'attention est attirée sur le fait que certains des éléments de la présente Norme internationale peuvent faire l'objet de droits de propriété intellectuelle ou de droits analogues. La CEI ne saurait être tenue pour responsable de ne pas avoir identifié de tels droits de propriété et de ne pas avoir signalé leur existence.

La présente partie de la Norme internationale CEI 60335 a été établie par le sous-comité 61F: Sécurité des outils électroportatifs à moteur, du comité d'études 61 de la CEI: Sécurité des appareils électrodomestiques et analogues.

Cette seconde édition annule et remplace la première édition parue en 1996. Elle constitue une révision technique.

Le texte de cette partie de la CEI 60335 est issu des documents suivants:

FDIS	Rapport de vote
61F/452/FDIS	61F/472/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cette norme.

La présente partie 2 doit être utilisée conjointement avec la dernière édition de la CEI 60335-1 et ses amendements. Elle a été établie sur la base de la quatrième édition (2001) de cette norme.

NOTE 1 L'expression «Partie 1» utilisée dans la présente norme fait référence à la CEI 60335-1.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY****Part 2-77: Particular requirements for pedestrian controlled
mains-operated lawnmowers**

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.
- 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. 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 1996. It constitutes a technical revision.

The text of this part of IEC 60335 is based on the following documents:

FDIS	Report on voting
61F/452/FDIS	61F/472/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.

La présente partie 2 complète ou modifie les articles correspondants de la CEI 60335-1 de façon à transformer cette publication en norme CEI: Règles de sécurité pour les tondeuses à gazon fonctionnant sur le réseau et à conducteur à pied.

Lorsqu'un paragraphe particulier de la Partie 1 n'est pas mentionné dans cette partie 2, ce paragraphe s'applique pour autant qu'il est raisonnable. Lorsque la présente norme spécifie «addition», «modification» ou «remplacement», le texte correspondant de la Partie 1 doit être adapté en conséquence.

NOTE 2 Le système de numérotation suivant est utilisé:

paragraphes, tableaux et figures: ceux qui sont numérotés à partir de 101 sont complémentaires à ceux de la Partie 1;

notes: à l'exception de celles qui sont dans un nouveau paragraphe ou de celles qui concernent des notes de la Partie 1, les notes sont numérotées à partir de 101, y compris celles des articles ou paragraphes qui sont modifiés ou remplacés;

annexes: les annexes complémentaires sont appelées AA, BB, etc.

NOTE 3 Les caractères d'imprimerie suivants sont utilisés:

prescriptions: caractères romains;

modalités d'essais: caractères italiques;

notes: petits caractères romains.

Les mots en **gras** dans le texte sont définis à l'Article 3. Lorsqu'une définition concerne un adjectif, l'adjectif et le nom associé figurent également en gras.

Le comité a décidé que le contenu de cette publication ne sera pas modifié avant 2004. A cette date, la publication sera

- reconduite;
- supprimée;
- remplacée par une édition révisée, ou
- amendée.

I.S. EN 60335-2-77:2010

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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 lawnmowers.

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.

INTRODUCTION

Il a été considéré en établissant la présente Norme internationale que l'exécution de ses dispositions était confiée à des personnes expérimentées et ayant une qualification appropriée.

Cette norme reconnaît le niveau de protection internationalement accepté contre les risques électriques, mécaniques, thermiques, liés au feu et au rayonnement des appareils, lorsqu'ils fonctionnent comme en usage normal en tenant compte des instructions du fabricant. Elle couvre également les situations anormales auxquelles on peut s'attendre dans la pratique.

Cette norme tient compte autant que possible des prescriptions de la CEI 60364, de façon à rester compatible avec les règles d'installation quand l'appareil est raccordé au réseau d'alimentation. Cependant, des règles nationales d'installation peuvent être différentes.

Si un appareil compris dans le domaine d'application de cette norme comporte également des fonctions qui sont couvertes par une autre partie 2 de la CEI 60335, la partie 2 correspondante est appliquée à chaque fonction séparément, dans la limite du raisonnable. Si cela est applicable, on tient compte de l'influence d'une fonction sur les autres fonctions.

Cette norme est une norme de famille de produits traitant de la sécurité d'appareils et a préséance sur les normes horizontales et génériques couvrant le même sujet.

Un appareil conforme au texte de la présente norme ne sera pas nécessairement jugé conforme aux principes de sécurité de la norme si, lorsqu'il est examiné et soumis aux essais, il apparaît qu'il présente d'autres caractéristiques qui compromettent le niveau de sécurité visé par ces prescriptions.

Un appareil utilisant des matériaux ou présentant des modes de construction différents de ceux décrits dans les prescriptions de cette norme peut être examiné et essayé en fonction de l'objectif poursuivi par ces prescriptions et, s'il est jugé pratiquement équivalent, il peut être estimé conforme aux principes de sécurité de la norme.

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.

APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

Partie 2-77: Règles particulières pour les tondeuses à gazon fonctionnant sur le réseau et à conducteur à pied

1 Domaine d'application

L'article de la Partie 1 est remplacé par le suivant.

La présente Norme internationale traite de la sécurité des **tondeuses à gazon, à lames hélicoïdales ou à axe vertical**, électriques fonctionnant sur le réseau et **à conducteur à pied**, spécialement conçues pour une utilisation autour de la maison ou pour des usages analogues, dont la **tension assignée** n'est pas supérieure à 250 V monophasé.

Les prescriptions de la présente norme ne s'appliquent pas aux **tondeuses à axe vertical** si **l'organe de coupe** est constitué d'un ou de plusieurs filaments non métalliques, ou d'un ou de plusieurs éléments de coupe non métalliques montés d'une manière pivotante sur une unité d'entraînement centrale, en général circulaire. L'action de coupe de ces **organes de coupe** dépend de la force centrifuge. L'énergie cinétique d'un **organe de coupe** ne dépassera pas 10 J, les **organes de coupe** n'étant pas remplaçables par des équivalents métalliques ou par d'autres matériaux rigides fournis par le fabricant.

La présente norme ne tient pas compte en général

- de l'utilisation des appareils par de jeunes enfants ou par des personnes handicapées sans surveillance;
- de l'emploi de l'appareil comme jouet par de jeunes enfants.

NOTE 101 L'attention est attirée sur le fait que

- dans de nombreux pays, des prescriptions supplémentaires sont spécifiées par les organismes nationaux de la santé, par les organismes nationaux responsables de la protection des travailleurs et par des organismes similaires.

NOTE 102 Cette norme ne s'applique pas aux

- **coupe-gazon, coupe-bordure de gazon, coupe-bordure, tondeuses à fléaux et tondeuses à barre de coupe** ou tondeuses agricoles.

2 Références normatives

L'article de la Partie 1 est applicable avec les exceptions suivantes.

Addition:

ISO 2758:2001, *Papier – Détermination de la résistance à l'éclatement*

ISO 3411:1995, *Engins de terrassement – Dimensions ergonomiques des opérateurs et espace enveloppe minimal des postes de travail*

ISO 3767-1:1998, *Tracteurs, matériels agricoles et forestiers, matériel à moteur pour jardins et pelouses – Symboles pour les commandes de l'opérateur et autres indications – Partie 1: Symboles communs*

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY

Part 2-77: Particular requirements for pedestrian controlled mains-operated lawnmowers

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, **cylinder** or **rotary lawnmowers** designed primarily for use around the home or for similar purposes, their **rated voltage** being not more than 250 V single phase.

Rotary mowers are excluded from the requirements of this standard if the **cutting means** is either one or more non-metallic filaments, or one or more non-metallic cutting elements pivotally mounted on a generally circular central drive unit. These **cutting means** rely on centrifugal force to achieve cutting. The kinetic energy of a single **cutting means** will not exceed 10 J, the **cutting means** not being replaceable with metallic or other rigid material equivalents supplied by the manufacturer.

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 health authorities, the national authorities responsible for the protection of labour, and similar authorities.

NOTE 102 This standard does not apply to

- **lawn trimmers, lawn edge trimmers, 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*

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