



BSI Standards Publication

Garden equipment - Safety requirements for combustion-engine-powered lawnmowers

Part 2: Pedestrian-controlled lawnmowers

National foreword

This British Standard is the UK implementation of EN ISO 5395-2:2013+A2:2017. It is identical to ISO 5395-2:2013, incorporating amendment 1:2016 and amendment 2:2017. It supersedes BS EN ISO 5395-2:2013+A1:2016, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to ISO text carry the number of the ISO amendment. For example, text altered by ISO amendment 1 is indicated by **A1** **A1**.

The UK participation in its preparation was entrusted to Technical Committee AGE/20, Powered lawn and garden equipment.

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

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English Version

Garden equipment - Safety requirements for combustion-
engine-powered lawnmowers - Part 2: Pedestrian-
controlled lawnmowers (ISO 5395-2:2013)

Matériel de jardinage - Exigences de sécurité
pour les tondeuses à gazon à moteur à
combustion interne - Partie 2: Tondeuses à
gazon à conducteur à pied (ISO 5395-2:2013)

Gartengeräte - Sicherheitsanforderungen
für verbrennungsmotorisch angetriebene
Rasenmäher (ISO 5395-2:2013)

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European foreword

This document (EN ISO 5395-2:2013) has been prepared by Technical Committee ISO/TC 23 "Tractors and machinery for agriculture and forestry" in collaboration with Technical Committee CEN/TC 144 "Tractors and machinery for agriculture and forestry" the secretariat of which is held by AFNOR.

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The text of ISO 5395-2:2013 has been approved by CEN as EN ISO 5395-2:2013 without any modification.

Foreword to amendment A1

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Endorsement notice

The text of ISO 5395-2:2013/Amd 1:2016 has been approved by CEN as EN ISO 5395-2:2013/A1:2016 without any modification.

Foreword to amendment A2

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Endorsement notice

The text of ISO 5395-2:2013/Amd 2:2017 has been approved by CEN as EN ISO 5395-2:2013/A2:2017 without any modification.

Annex ZA (informative)

Relationship between this European Standard and the essential requirements of EU Directive 2006/42/EC amended by Directive 2009/127/EC aimed to be covered

This European Standard has been prepared under 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 the New Approach 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) amended by Directive 2009/127/EC of the European Parliament and of the Council of 21 October 2009 amending Directive 2006/42/EC with regard to machinery for pesticide application (Text with EEA relevance).

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 ZA.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.

WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

Table ZA.1 — Correspondence between this European Standard and EU Directive 2006/42/EC amended by Directive 2009/127/EC

Essential Requirements of Directive 2006/42/EC	Clause(s)/subclause(s) of this EN	Remarks/Notes
All relevant Essential Requirements	All normative clauses/subclauses including 4.5.2 and 7.1.2.	1) For the purpose of compliance with 4.5.2, of this document, 4.5.2 (c) is not sufficient to achieve presumption of conformity for side discharge openings. 2) Compliance with EN ISO 5395-1 and EN ISO 5395-2 is required to achieve presumption of conformity.

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.

Contents

Page

Foreword	vii
Introduction	viii
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Requirements for pedestrian-controlled lawnmowers	2
4.1 General	2
4.2 Controls	2
4.2.1 Location	2
4.2.2 Engine speed	4
4.2.3 Engine starting	5
4.2.4 Engine stopping	5
4.2.5 Brake steering or clutch steering	5
4.2.6 Traction drive	5
4.3 Operator presence control (OPC)	5
4.4 Handle	6
4.4.1 Distance	6
4.4.2 Pivoting	6
4.5 Guards	7
4.5.1 General	7
4.5.2  Opening or detaching of guards	8
4.6 Brakes	8
4.6.1 Service-brake performance	8
4.6.2 Parking brake	9
4.7 Transport position of the cutting-means assembly	10
4.7.1 Disengagement of the cutting means	10
4.7.2 Manual movement to the transport position	10
4.7.3 Securing in the transport position	11
4.7.4 Movement from the transport position	11
4.8 Separate fan for grass collection	11
4.9 Hot surfaces	11
4.10 Exhaust fumes	11
4.11  Pressurized hoses of hydraulic systems	11
4.12 Liquid spillage	12
4.12.1 Requirements	12
4.12.2 Spillage test	12
4.13 Electrical system	12
4.13.1 Electrical cables and wiring (including high tension cables)	12
4.13.2 Starting battery installation	12
4.13.3 Overload protection	12
4.13.4 Terminals and electrical parts	13
4.13.5 Ignition circuits (spark ignition engines)	13
4.14 Electromagnetic immunity	13
4.15 Noise	13
4.15.1 Reduction by design, at source and by protective measures	13
4.15.2 Noise measurements	13
4.16 Vibration	13
4.16.1 Reduction by design, at source and by protective measures	13
4.16.2 Vibration measurements	14
4.17 Additional requirements for a lawnmower with a sully with a seat	14
4.17.1 Braking	14
4.17.2 Controls	14
4.17.3 Platform and foot rest	16

	4.17.4 Stability	16
5	Particular requirements for pedestrian-controlled rotary lawnmowers	16
	5.1 Stopping time of the cutting means	16
	5.1.1 Stopping time and durability	16
	5.1.2 Imbalance	17
	5.2 Impact of the cutting means	17
	5.3 Cutting-means enclosure	17
	5.3.1 Enclosure	17
	5.3.2 Foot protection	19
	5.4 Structural integrity	22
	5.5 Thrown objects	23
	5.6 Grass catcher	23
6	Particular requirements for pedestrian-controlled cylinder lawnmowers	23
	6.1 Throw line	23
	6.2 Cutting-means enclosure	24
	6.2.1 Requirements	24
	6.2.2 Verification	24
	6.3 Stopping time of the cutting means	26
7	Information for use	27
	7.1 Instruction handbook	27
	7.1.1 General	27
	7.1.2 Technical data	27
	7.1.3 Other information	27
	7.2 Markings and warnings	30
	7.2.1 Marking requirements	30
	7.2.2 Warning requirements	30
	7.2.3 Artificial weathering test	31
	Annex A (informative) List of significant hazards	32
	Bibliography	34

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 5395-2 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 144, *Tractors and machinery for agriculture and forestry* in collaboration with ISO Technical Committee TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 13, *Powered lawn and garden equipment*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition of ISO 5395-2, together with ISO 5395-1 and ISO 5395-3, cancels and replaces ISO 5395:1990, which has been technically revised. These three parts also incorporate the Amendment ISO 5395:1990/Amd.1:1992.

ISO 5395 consists of the following parts, under the general title *Garden equipment — Safety requirements for combustion-engine-powered lawnmowers*:

- *Part 1: Terminology and common tests*
- *Part 2: Pedestrian-controlled lawnmowers*
- *Part 3: Ride-on lawnmowers with seated operator*

Introduction

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

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

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

Garden equipment - Safety requirements for combustion-engine-powered lawnmowers —

Part 2: Pedestrian-controlled lawnmowers

1 Scope

1.1 This part of ISO 5395 specifies safety requirements and their verification for combustion-engine-powered pedestrian-controlled rotary lawnmowers and cylinder lawnmowers, including pedestrian-controlled mowers with a sulky having a seated operator (hereafter named “lawnmower”), and equipped with:

- metallic cutting means; and/or
- non-metallic cutting means with one or more cutting elements pivotally mounted on a generally circular drive unit, where these cutting elements rely on centrifugal force to achieve cutting, and have a kinetic energy for each single cutting element of 10 J or more.

This part of ISO 5395 does not apply to:

- robotic and remote-controlled lawnmowers, flail mowers, grassland mowers, sickle bar mowers, towed/semi-mounted grass-cutting machines, and scrub-clearing machines;
- electrically powered and battery-powered lawnmowers;
- pedestrian-controlled lawnmowers with a swing-over handle.

NOTE IEC 60335-1[2] together with IEC 60335-2-77,[3] give requirements for pedestrian-controlled walk-behind electrically powered lawnmowers.

1.2 This part of ISO 5395 deals with all significant hazards, hazardous situations or events (see [Annex A](#)) relevant to lawnmowers when used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer.

1.3 It is not applicable to lawnmowers which are manufactured before the date of publication of this document.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61032:1997, *Protection of persons and equipment by enclosures — Probes for verification*

ISO 5395-1:2013, *Garden equipment — Safety requirements for combustion-engine-powered lawnmowers — Part 1: Terminology and common tests*

ISO 5395-3:2013, *Garden equipment — Safety requirements for combustion-engine-powered lawnmowers — Part 3: Ride-on lawnmowers with seated operator*

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

ISO 13849-1:2006, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

Text deleted

ISO 14119:1998, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

ISO 14982:1998, *Agricultural and forestry machinery — Electromagnetic compatibility — Test methods and acceptance criteria*

ISO 17398:2004, *Safety colours and safety signs — Classification, performance and durability of safety signs*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100 and ISO 5395-1 apply.

4 Requirements for pedestrian-controlled lawnmowers

4.1 General

The lawnmower shall comply with the safety requirements and/or protective measures of this clause. The lawnmower shall be marked and carry warnings according to [7.2](#) and shall be provided with an instruction handbook which complies with [7.1](#).

In addition, the lawnmower shall be designed according to the principles of ISO 12100 for relevant but not significant hazards which are not dealt with by this document. An audible warning device (for example, horn) is not required. Unless otherwise stated, all tests shall be carried out at an ambient temperature between 15 °C and 35 °C.

If not otherwise specified within this part of ISO 5395, the tests may be carried out in any order and on separate machines, cutting-means enclosures, and cutting-means components.

When the order in which tests should be carried out and the number of permitted machines are not defined in this part of ISO 5395, these conditions should be determined by agreement between the persons carrying out the tests and the manufacturer.

Where it is specified that the engine shall run during the test, it shall be operated at the maximum operating engine speed (see definition in ISO 5395-1). If the measured engine speed is not within the limits specified in the instruction handbook, the engine speed shall be adjusted in accordance with the manufacturer's instructions.

4.2 Controls

4.2.1 Location

The location of operator controls which require sustained activation shall be within the gripping area of the handle(s).

The location of operator controls that do not require sustained activation but that might be operated during grass cutting shall be within the zones shown in [Figure 1](#).

The operator control zone defined in [Figure 1](#) includes the maximum movement range of the controls but is not intended to represent preferred operator control positions.

NOTE 1 ISO/TS 15079[12] gives useful information about the location and operation of operator controls.

For lawnmowers with a sulky, see the additional requirements in [4.17.2](#).

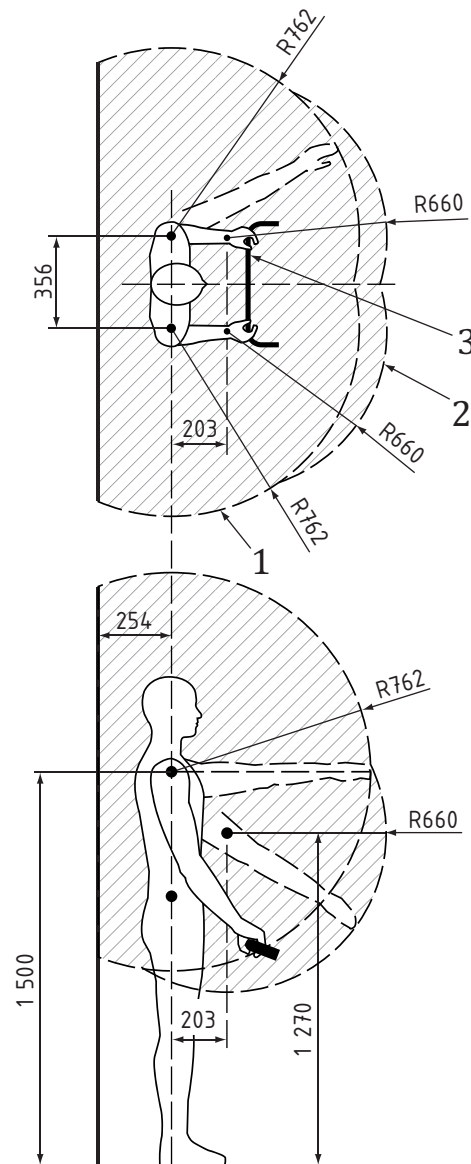
For the purpose of this subclause, the following shall not be considered as controls that are operated during grass cutting:

- height-of-cut setting;
- fixed cutting-means setting or adjustment;
- grass discharge opening to the grass catcher;
- hydrostatic bypass valve;
- engine-starting controls which meet [4.2.3](#) requirements;
- engine-stopping controls, if separate from cutting-means stopping.

A manually operated parking brake shall be operable from the operator position.

Compliance shall be checked by inspection and measurements.

Dimensions in millimetres, tolerance ± 3 mm



Key

- 1 operator control zone
- 2 operator control zone when leaning against handle barrier
- 3 handle barrier

Figure 1 — Operator control zone

NOTE 2 The operator control zone, illustrated in [Figure 1](#), is the area into which the extremities of a 95th percentile male can reach from the normal operator position. The lowest forward zone is the area into which a 5th percentile male or a 50th percentile female can reach when against the handle barrier. This zone can also be reached by a 95th percentile male leaning forward against the handle barrier.

4.2.2 Engine speed

The lawnmower shall be designed so that it is not possible to sustain an engine speed greater than the maximum operating engine speed (see definition in ISO 5395-1) by the use of any control or by adjustments made without breaking a manufacturer's seal, if so provided, or without replacing or reconfiguring engine speed control components.