



BSI Standards Publication

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

Part 3: Ride-on lawnmowers with seated operator

National foreword

This British Standard is the UK implementation of EN ISO 5395-3:2013+A2:2018. It is identical to ISO 5395-3:2013, incorporating amendment 1:2017 and amendment 2:2017. It supersedes BS EN ISO 5395-3:2013+A1:2017, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee AGE/29, Forestry machinery.

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

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English Version

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

Matériel de jardinage - Exigences de sécurité pour les tondeuses à gazon à moteur à combustion interne - Partie 3: Tondeuses à gazon à conducteur assis (ISO 5395-3:2013)

Gartengeräte - Sicherheitsanforderungen für verbrennungsmotorisch angetriebene Rasenmäher - Teil 3: Rasenmäher mit Fahrersitz mit sitzendem Benutzer (ISO 5395-3:2013)

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European foreword

This document (EN ISO 5395-3:2013) 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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Endorsement notice

The text of ISO 5395-3:2013 has been approved by CEN as EN ISO 5395-3:2013 without any modification.

European foreword to amendment A1

This document (EN ISO 5395-3:2013/A1:2017) 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.

This Amendment to the European Standard EN ISO 5395-3:2013 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2017, and conflicting national standards shall be withdrawn at the latest by August 2017.

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Endorsement notice

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European foreword to amendment A2

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Endorsement notice

The text of ISO 5395-3:2013/A2:2017 has been approved by CEN as EN ISO 5395-3:2013/A2:2018 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 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 4.5.1 and 7.1.2.	1) For the purpose of compliance with 4.5.1, of this document, 4.5.1 (c) is not sufficient to achieve presumption of conformity for side discharge openings. 2) Compliance with EN ISO 5395-1 and EN ISO 5395-3 is required to achieve presumption of conformity.

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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.

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

ISO 5395-3 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 5395-3, together with ISO 5395-1 and ISO 5395-2, 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 3: Ride-on lawnmowers with seated operator

1 Scope

1.1 This part of ISO 5395 specifies safety requirements and their verification for combustion-engine-powered ride-on (seated) rotary lawnmowers and cylinder lawnmowers (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;
- cutting-means assembly when used in combination with an agricultural tractor;
- electrically powered and battery-powered lawnmowers.

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

1.3 This part of ISO 5395 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 3776-2:2013, *Tractors and machinery for agriculture — Seat belts — Part 2: Anchorage strength requirements*

ISO 3776-3:2009, *Tractors and machinery for agriculture — Seat belts — Part 3: Requirements for assemblies*

ISO 5353, *Earth-moving machinery, and tractors and machinery for agriculture and forestry — Seat index point*

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

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

 Text deleted 

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

ISO 14119:2013, *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*

ISO 21299:2009, *Powered ride-on turf care equipment — Roll-over protective structures (ROPS) — Test procedures and acceptance criteria*

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 ride-on 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 part of ISO 5395. An audible warning device (for example, a 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 General

Separate controls shall be provided for the traction drive and cutting-means engagement.

Directional control mechanisms that cause forward and reverse propulsion as well as forward and reverse speed control shall have a neutral position.

Except for lever-steer lawnmowers, when released, a traction drive speed control shall automatically return to the neutral position or shall be capable of being overridden by the service brake.

Foot control pedals shall have slip-resistant surfaces or other means of minimizing the possibility of the operator's foot slipping off the control pedal.

Except for lever-steer lawnmowers, forward/reverse directional controls shall require at least one of the following:

- a) a distinct change in direction of the control actuation (for example, right angle to general path of control motion) at a point before a change in direction occurs; or
- b) a distinct change in force level at the point of entry into the selected direction; or
- c) a positive means of retarding machine acceleration, for example hydrostatic control with valves operated by rigid linkages.

The traction drive and cutting means shall automatically stop or disengage when the operator leaves the operating position.

Compliance shall be checked by functional test and inspection to demonstrate that it meets the above requirements.

The location of operator controls, to be operated from the operator's position during grass cutting, shall be within the zones of [Figure 1](#) for an operator in the required operator position.

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.

For the seated operator, the operator control zone is established with the seat in the rear-most position.

NOTE ISO/TS 15079[11] gives useful information about location and operation of operator controls.

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

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

Compliance shall be checked by inspection and measurement.

Dimensions in millimetres, tolerances ± 3 mm

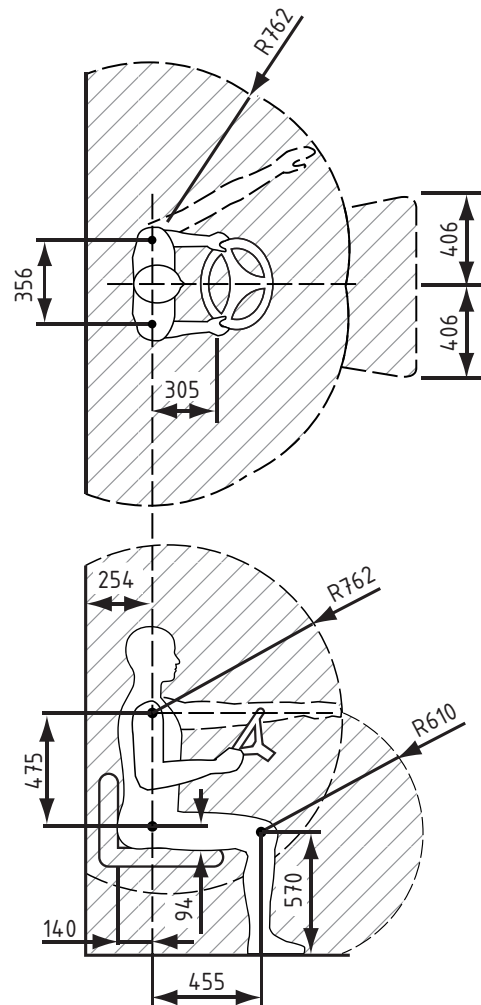


Figure 1 — Operator control zone for seated operator

NOTE 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.

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 without replacing or reconfiguring engine speed control components.

Compliance shall be checked by inspection and measurement.

4.2.3 Engine-starting device

Any engine-starting device (e.g. start switch, recoil rope starter) shall require intentional activation in order to start the engine.

A starter operated by means of a loose rope is not allowed.

For battery started engines, the start switch shall be operated by a removable key or a similar device to prevent unauthorized starting.