INTERNATIONAL STANDARD

**ISO 5395-2**

Second edition
2013-09-01

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

## Part 2: Pedestrian-controlled lawnmowers

*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*



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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 5395-2 was prepared by the European Committee for Standarization (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*

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

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.