SLOVENSKI STANDARD
SIST EN 12733:2018

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Kmetijski in gozdarski stroji - Ročno upravljane motorne kosilnice - Varnost

Agricultural and forestry machinery - Pedestrian controlled motor mowers - Safety

Land- und forstwirtschaftliche Maschinen - Handgeführte Motormäher - Sicherheit

Matériel agricole et forestier - Motofaucheuses à conducteur à pied - Sécurité

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Agricultural and forestry machinery - Pedestrian controlled motor mowers - Safety

Matériel agricole et forestier - Motofaucheuses à conducteur à pied - Sécurité

Land- und forstwirtschaftliche Maschinen - Handgeführte Motormäher - Sicherheit

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 12733:2018) has been prepared by Technical Committee CEN/TC 144 “Tractors and machinery for agriculture and forestry”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2019 and conflicting national standards shall be withdrawn at the latest by January 2020.

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

This document supersedes EN 12733:2001+A1:2009.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

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

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

— machine manufacturers (small, medium and large enterprises);

— health and safety bodies (regulators, accident prevention organizations, market surveillance, etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

— machine users/employers (small, medium and large enterprises);

— machine users/employees (e.g. trade unions, organizations for people with special needs);

— service providers, e.g. for maintenance (small, medium and large enterprises);

— consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are 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 provisions of the other standards, for machines that have been designed and built according to the provisions of this type C standard.

The requirements of this document concern designers, manufacturers and their authorized representatives of pedestrian controlled motor mowers. This document also includes information to be provided by the manufacturer to the user.

1 Scope

This European Standard specifies safety requirements and their verification for design and construction of pedestrian controlled motor mowers with rotary or reciprocating cutting means used in agricultural, forestry and landscaping to cut and/or mulch grass or similar plants or scrub and woody vegetation.

For the purposes of this standard the following types of pedestrian controlled machines are considered to be motor mowers:

— flail mowers;

— grassland mowers;

— scrub clearing machines;

— sickle bar mowers.

This standard applies also to multipurpose machines when used for cutting or mulching grass or scrub.

NOTE When they are used for other operations (e.g. soil working) other standards can apply.

This standard does not cover lawn mowers (see EN ISO 5395-1, EN ISO 5395-2), engine driven brush cutters and grass trimmers (see EN ISO 11806) or other lawn maintenance equipment.

This document deals with significant hazards, hazardous situations and events, as listed in Annex A, relevant to pedestrian controlled motor mowers when used as intended and under conditions of misuse foreseeable by the manufacturer during normal operation and service. Additionally, it specifies the type of information to be provided by the manufacturer on safe working practices.

Environmental aspects (except noise) have not been considered in this standard.

This document is not applicable to motor mowers manufactured before the date of its publication.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CR 1030-1:1995, *Hand-arm vibration - Guidelines for vibration hazards reduction - Part 1: Engineering methods by design of machinery*

EN 709:1997+A4:2009, *Agricultural and forestry machinery - Pedestrian controlled tractors with mounted rotary cultivators, motor hoes, motor hoes with drive wheel(s) - Safety*

EN 12096, *Mechanical vibration - Declaration and verification of vibration emission values*

EN 61672-1:2013, *Electroacoustics - Sound level meters - Part 1: Specifications (IEC 61672-1:2013)*

EN 61672-2:2013, *Electroacoustics - Sound level meters - Part 2: Pattern evaluation tests (IEC 61672-2:2013)*

EN 61672-3:2013, *Electroacoustics - Sound level meters - Part 3: Periodic tests (IEC 61672-3:2013)*

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

EN ISO 845:2009, *Cellular plastics and rubbers - Determination of apparent density (ISO 845)*

EN ISO 2758:2014, *Paper - Determination of bursting strength (ISO 2758)*

EN ISO 3744, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane (ISO 3744)*

EN ISO 4413:2010, *Hydraulic fluid power - General rules and safety requirements for systems and their components (ISO 4413:2010)*

EN ISO 4871, *Acoustics - Declaration and verification of noise emission values of machinery and equipment (ISO 4871)*

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

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

EN ISO 11102-1:2009, *Reciprocating internal combustion engines - Handle starting equipment - Part 1: Safety requirements and tests (ISO 11102-1:1997)*

EN ISO 11102-2:2009, *Reciprocating internal combustion engines - Handle starting equipment - Part 2: Method of testing the angle of disengagement (ISO 11102-2:1997)*

EN ISO 11201, *Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections (ISO 11201)*

EN ISO 11688-1:2009, *Acoustics - Recommended practice for the design of low-noise machinery and equipment - Part 1: Planning (ISO/TR 11688-1:1995)*

EN ISO 11688-2:2000, *Acoustics - Recommended practice for the design of low-noise machinery and equipment - Part 2: Introduction to the physics of low-noise design (ISO/TR 11688-2:1998)*

EN ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)*

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

EN ISO 20643:2008, *Mechanical vibration - Hand-held and hand-guided machinery - Principles for evaluation of vibration emission (ISO 20643:2005)*

ISO 3767-1, *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, *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 3864-1:2011, *Graphical symbols - Safety colours and safety signs - Part 1: Design principles for safety signs and safety markings*

ISO 5718:2013, *Harvesting equipment - Blades for agricultural rotary mowers - Requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
attachment
device designed for mounting only on a specific machine to perform a specific task related to mowing and not intended to be universally adaptable to other lawnmowers

[SOURCE: EN ISO 5395-1:2013, 3.1]

3.2
discharge chute
extension of the discharge opening designed to safely guide the ejection of the cut material

3.3
discharge opening
opening in the cutting blade enclosure through which the cut material is ejected

[SOURCE: EN ISO 5395-1:2013, 3.13, modified]

3.4
flail mower
mower with a multiplicity of free-swinging cutting elements that rotate about a horizontal axis, which cuts the grass by impact and mulches it with the same tools

Note 1 to entry: See Figure L.4.

[SOURCE: EN ISO 5395-1:2013, 3.14]

3.5
grassland mower
motor mower with rotary cutting blade(s) rotating about a vertical axis designed for cutting or mulching high grass, having a minimum cutting height of 50 mm and the cutting blade protective enclosure of which is not fully enclosing

Note 1 to entry: See Figure L.2.

[SOURCE: EN ISO 5395-1:2013, 3.16, modified]

3.6
handlebar
device equipped with grips enabling the machine to be manually controlled

[SOURCE: EN 709:1997+A4:2009, 3.6]

3.7
maximum operating engine speed
highest engine speed obtainable when adjusted in accordance with the machine manufacturer's specifications and/or instructions with the cutting blades engaged

[SOURCE: EN ISO 5395-1:2013, 3.19, modified]

3.8
multipurpose machine
machine on which different attachments can be mounted

3.9
normal operation
use of the machine, by the operator, which is reasonably foreseeable and which is consistent with such activities as starting, cutting grass, stopping, fuelling, connecting to (or disconnecting from) a power source

[SOURCE: EN ISO 5395-1:2013, 3.22, modified]

3.10
normal use
normal operation, routine maintenance, servicing, cleaning, transporting, storage, attaching or removing attachments, and making routine adjustments as determined by the manufacturer's instructions

[SOURCE: EN ISO 5395-1:2013, 3.23, modified]

3.11
rotary cutting blade
cutting blade on which one or more knives or several blades fixed on drums or discs rotate around a vertical or horizontal axis

3.12
scrub clearing machine
motor mower, with rotary cutting blade(s) rotating about a vertical axis, designed for cutting scrub and woody vegetation, with no ground support forward of cutting blade(s) and supported on either side by skids, not wheels

Note 1 to entry: At the front the cutting blade(s) enclosure may be open.

Note 2 to entry: See Figure L.3.

[SOURCE: EN ISO 5395-1:2013, 3.34, modified]

3.13
sickle bar mower
motor powered mower that reciprocates a knife or knives to provide a shearing action with a stationary cutter bar or movable knife

Note 1 to entry: See Figure L.1.

[SOURCE: EN ISO 5395-1:2013, 3.36, modified]

4 List of hazards

The hazards, among those appearing in EN ISO 12100 considered as applicable to the machines covered in this standard, are given in Annex A.

5 Safety requirements and/or protective/risk reduction measures

5.1 General

Machinery shall comply with the safety requirements and/or protective/risk reduction measures of this clause. In addition, the machine shall be designed according to the principles of EN ISO 12100:2010 for relevant but not significant hazards which are not dealt with by this document.

Unless otherwise specified in this standard, the machine shall conform to the requirements of EN ISO 13857:2008, Tables 1, 3, 4 and 6 as appropriate.

5.2 Engine starting and stopping devices

5.2.1 General

For the purpose of the following requirements, the meaning of "within the hand reach zone of the operator" shall be determined in accordance with 5.3.

A control to allow starting the engine shall be provided within the hand-reach zone of the operator.

A control for stopping the engine shall be provided within the hand-reach zone of the operator.

A control which combines starting and stopping according to the requirements above is allowed.

5.2.2 Primary engine starting

5.2.2.1 A switch operated by a removable key, or a similar device shall be provided to prevent unauthorized or unintended starting of the engine unless a manual starter is the only means of engine starting.

5.2.2.2 Engine starting controls may be outside the hand reach zone defined in 5.3 if starting can only be accomplished with the cutting blade drive disengaged.

5.2.2.3 Movement of the wheels when the engine is started shall be prevented.

NOTE This requirement can also be regarded as fulfilled, when a separate hold-to-run control which only actuates the traction drive is released.

In addition the device to start the engine shall be located so that it can be reached by the operator only staying out of the danger zone. The danger zone is defined as the forward projection of the width of the machine measured as distance between the wheels or width of the cutting means, whichever is the largest.

5.2.2.4 Should the operator have to lean on the machine to start the engine manually, the appropriate place shall be described regarding its location and proper use in the instruction handbook or a support shall be provided and described regarding its location and proper use in the instruction handbook.

5.2.2.5 With the exception of hand cranks (see EN ISO 11102-1:2009 and EN ISO 11102-2:2009) starting devices shall be integral with the machine (e.g. recoil pull start). Loose belts, cables, etc. are not accepted.

5.2.2.6 If starting is achieved by means of a hand crank it shall be equipped with a device that disconnects the hand crank immediately when the engine starts and prevents its connection when the engine is running or kick-back during starting.

5.2.3 Secondary engine starting

If a secondary or an auxiliary starting device is provided it shall also conform to the requirements of the primary starting device.