SLOVENSKI STANDARD
oSIST prEN 703:2018

01-oktober-2018

Kmetijski stroji - Varnost - Stroji za nalaganje, mešanje in/ali rezanje ter raztros silaže

Agricultural machinery - Safety - Silage loading, mixing and/or chopping and distributing machines

Landmaschinen - Sicherheit - Maschinen zum Laden, Mischen und/oder Zerkleinern und Verteilen von Silage

Matériel agricole - Sécurité - Désileuses chargeuses, mélangeuses et/ou hacheuses et distributrices

Ta slovenski standard je istoveten z: **prEN 703**

ICS:

65.060.99	Drugi kmetijski stroji in oprema	Other agricultural machines and equipment

oSIST prEN 703:2018 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 703

August 2018

ICS 65.060.99

Will supersede EN 703:2004+A1:2009

English Version

Agricultural machinery - Safety - Silage loading, mixing and/or chopping and distributing machines

Matériel agricole - Sécurité - Désileuses chargeuses, mélangeuses et/ou hacheuses et distributrices

Landmaschinen - Sicherheit - Maschinen zum Laden, Mischen und/oder Zerkleinern und Verteilen von Silage

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 144.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 703:2018) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 703:2004+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.

EN 703:2004+A1:2009 has been technically revised. The main following changes were introduced:

— update the normative references;

— clarification of the scope (excludes silage buckets);

— improvement of the safety requirements in particular regarding controls, visibility, protection against cutting tools, blockages, loading door, inspection of mixing, access (addition of feedstuffs), conveyors, access to turbines;

— addition of new clauses on: jacking points, brakes, stability and immobilisation, remote control, electro-magnetic compatibility (EMC), completion of instructions, safety signs.

Introduction

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

The machinery concerned and the extent to which hazards, hazardous situations and hazardous events are covered are indicated in the scope of this document. These hazards are specific to silage loading, mixing and/or chopping and distributing machines.

Significant hazards that are common to all the agricultural machines (self-propelled, mounted, semi-mounted and trailed) are dealt with in EN ISO 4254-1.

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.

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.

1 Scope

This document, used together with EN ISO 4254-1, specifies the safety requirements and their verification for the design and construction of mounted, semi-mounted, trailed or self-propelled machines that have a combination of two or more of the following functions: loading, mixing, chopping and distributing silage and/or other feedstuffs or materials used for animal bedding such as straw, to be used by one operator only. It includes those fitted with a built-in loading crane. In addition, it specifies the type of information on safe working practices (including residual risks) to be provided by the manufacturer.

This document applies only to machines that have the following functional combinations:

— mixing and distributing functions; or

— mixing, chopping and distributing functions; or

— loading, mixing and distributing functions; or

— loading, mixing, chopping and distributing functions; or

— chopping and distributing functions; or

— loading, chopping and distributing functions.

Silage block cutters, even if they carry out a single function, are covered by this document.

This document does not apply to:

— machines which pick up green fodder directly from the field;

— loading cranes;

— silage buckets.

NOTE 1 Loading cranes are dealt with in EN 12999.

NOTE 2 Autonomous silage loading, mixing and/or chopping and distributing machines (robotic feed systems) are to be dealt with in a separate standard (under preparation).

This document deals with the significant hazards, hazardous situations and events relevant to machines for loading, mixing and/or chopping and distributing silage and/or other feedstuffs, when they are used as intended and under the conditions foreseen by the manufacturer as listed in Clause 4, except for the hazards arising from:

— failure of the control circuit;

— inadequate seating;

— inadequate lighting;

— travelling of machinery;

— break-up of parts rotating at high speed;

— cutting hazard during service on sharp parts (e.g. blades of the mixing and/or chopping device).

It is not applicable to environmental hazards (except noise).

It does not deal with stability when travelling.

This document is not applicable to machines for loading, mixing and/or chopping and distributing silage and/or other feedstuffs which are manufactured before the date of publication of this document by CEN.

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.

EN ISO 4254-1:2015, *Agricultural machinery — Safety — Part 1: General requirements (ISO 4254-1:2013)*

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

ISO 15817:2012, *Earth-moving machinery — Safety requirements for remote operator control systems*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 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

Note 1 to entry: Examples of machines and components, illustrating the following definitions are given in Annex A.

3.1 machines

3.1.1
silage block cutter
machine mounted on the rear 3-point linkage of a tractor that consists of a main guiding frame, equipped with a set of horizontal tines, carrying the cutting frame equipped with one or more cutting knives, intended to cut out a silage block, to take it from the silo and to discharge or distribute it (this machine can be equipped with a distribution device)

3.1.2
silage bucket
bucket intended to be fitted as an attachment on a front loader or a self-propelled variable reach truck and which carries out at least loading and distributing functions

3.2 functions

3.2.1
mixing
operation for blending two or more different materials without reducing the size of their components

3.2.2
chopping
operation to reduce the size of the constituent elements of a material or to break up an agglomerated or an entangled material

3.3 loading device

3.3.1
cutting and loading tools
set of elements, consisting of the loading arm and of tools for taking the materials such as rotary cutters, knives, blades, teeth, etc., needed for picking-up (i.e. cutting) the material and for loading the machine

3.3.2
loading crane
powered crane comprising a column, which slews about a base, and a boom system which is attached onto the top of the column. The crane is fitted on the machine and is designed for loading product into the machine by means of a grab, a hook or any other device

Note 1 to entry: Adapted from EN 12999:2002, definition 3.1.1.

3.3.3
loading door
mobile part fitted generally at the rear of the machine, which is used for handling and/or for containing the material and/or loading the products inside the machine. It is used as a door for closing the mixing and/or chopping compartment

3.4
mixing and/or chopping device
set of elements such as one or more rotating auger(s), rotating paddle auger, conveyor, separator, turbine

3.5
distribution device
set of elements (such as conveyor belt, auger, distributor cylinder, turbine) operated to unload the materials from the machine and to deposit them where required (on the ground, in troughs, on feeding belts, etc.)

3.6
work station
position of the operator, standing on the ground or on a platform or sitting, to actuate controls or carry out any other task

3.7
driver's station
position of the operator from where the driving of the machine is controlled

3.8
flap
hinged guard which is closed when the machine is operating and which can be opened for service and maintenance operations

4 List of significant hazards

Table 1 gives the significant hazard(s), the significant hazardous situation(s) and hazardous event(s) covered by this document that have been identified by risk assessment as being significant for this type of machine, and which require specific action by the designer or manufacturer to eliminate or reduce the risk.

Attention is drawn to the necessity to verify that the safety requirements specified in this document apply to each significant hazard presented by a given machine and to validate that the risk assessment is complete.

Table 1 — List of significant hazards associated with machines for loading, mixing and/or chopping and distributing silage and/or other feedstuffs

No.	Hazard, hazardous situation or hazardous event	Origin	Clause/subclause of EN ISO 4254-1:2015	Clause/subclause of this document
1.1	Crushing hazard	Contact with unguarded working tools, unexpected opening of the loading door	4.9.1, 4.17, 5.1.4, 6.4.1	5.2, 5.4.1, 5.4.2
1.2	Shearing hazard	Contact with unguarded working tools, unexpected opening of the loading door	4.11, 5.1.4	5.2, 5.4.2, 5.6.1, 5.6.5, 5.7
1.3	Cutting or severing hazard	Contact with unguarded working tools	4.1.1, 4.1.2, 4.9.1, 4.17, 6.4.1	5.2, 5.4.1, 5.5, 5.6.1, 5.6.5 5.7.1
1.4	Entanglement hazard	Contact with unguarded working tools checking of the mixing, contact with the PTO drive shaft	4.1.1, 4.1.2, 4.9.1, 4.17, 6.4.1	5.1, 5.2, 5.4.1, 5.5, 5.6.1, 5.6.2, 5.7.1, 5.7.2, 5.8
1.5	Drawing-in or trapping hazard	Contact with unguarded working tools, contact with the PTO drive shaft, checking of the mixing	-	5.2, 5.4.1, 5.6.1, 5.6.2, 5.7, 5.8
1.6	Impact hazard	Contact with unguarded working tools, unexpected opening of the loading door, lifting of the drawbar	4.1.1, 4.1.2, 4.11, 4.9.1, 4.17, 6.4.1	5.2, 5.4.1, 5.4.2
1.7	Stabbing or puncture hazard	Contact of fingers with unguarded working tools, unexpected opening of the loading door	-	5.7.1

No.	Hazard, hazardous situation or hazardous event	Origin	Clause/subclause of EN ISO 4254-1:2015	Clause/subclause of this document
1.9	High pressure fluid injection or ejection hazard	Hazardous location of pressurized hoses	4.13	7.1 o), 7.2
2.2	Contact of persons with parts which have become live under faulty conditions (indirect contact)	Contact of the loading device with overhead power lines	-	7.1 f), 7.2
2.3	Approach to live parts under high voltage	Contact of the loading device with overhead power lines	8.1, 8.2	7.1 f), 7.2
2.5	Thermal radiation or other phenomena such as the projection of molten particles and chemical effects from short circuits, overloads, etc.	Hazardous location of cables	4.12, 5.3	-
4.1	Hearing loss (deafness), other physiological disorders (e.g. loss of balance, loss of awareness)	Hearing damage due to the working machine	4.3, Annex B	5.9, 7.1
5.2	Whole body vibration, particularly when combines with poor postures	Seat insufficiently dampened	4.4	-
7.1	Hazards from contact with or inhalation of harmful fluids, gases, mists, fumes, and dusts	Leakage from the fuel tank or from the engine	4.15, 5.4, 8.1, 8.2	-
7.2	Fire or explosion hazard	Leakage from the engine	4.15, 8.1, 8.2	-
7.3	Biological or microbiological (viral or bacterial) hazards	Leakage from the fuel tank	5.4	-
8.1	Unhealthy postures or excessive efforts	Unergonomic design of operator's station	4.5.3, 4.7.1, 4.8.3, 4.9.1, 4.17	-
8.2	Inadequate consideration of hand-arm or foot-leg anatomy	Inability to check of the mixing	4.7.1, 4.8.3, 5.1.4, 5.1.1, 5.1.7	5.6, 5.7
8.6	Human error, human behaviour	Misunderstanding of the meaning of controls	4.5, 5.1.3, 8.1, 8.2	7.1.c), g), h), i), p), 7.2
8.7	Inadequate design, location or identification of manual controls	Manual controls located in an unusual way	4.5, 5.1.3, 8.1, 8.2	7.1 c), g), h), i), p), 7.2

No.	Hazard, hazardous situation or hazardous event	Origin	Clause/subclause of EN ISO 4254-1:2015	Clause/subclause of this document
10.2	Restoration of energy supply after an interruption	Activation of the cutting and loading tools while the operator is standing around	4.5, 5.1.3	-
13	Failure of power supply	Unexpected opening of the loading door, inadvertent lowering of the cutting and loading tools	-	5.4.2, 5.5
15	Errors of fitting	Confusion in the connection of hoses or electrical cables	6.5, 8.1, 8.2	7.1 k), 7.2
17	Falling or ejected objects or fluids	Rupture of pressurized hoses	4.13	7.1, 7.2
18	Loss of stability/overturning of machinery	Incorrect location of attachments for towing, tie-down points or application points for jacks	5.2, 6.2	7.1 m)
19	Slip, trip and fall of persons (relating to machinery)	Inability to check of the mixing, accumulation of material on the top of the machine	4.7.1, 4.7.2, 4.8.3, 4.15, 5.4	5.6.2, 5.6.3, 7.1
20.1	Movement when starting the engine	Unexpected opening of the loading door	5.1.8	5.4.2, 7.1 m)
21.5	Insufficient visibility from the work positions	Incorrect location of the manual controls, obstruction around the working area	-	5.2, 5.3, 6.1, 7.1 b), t)
21.10	Insufficient means for evacuation/emergency exit	Checking of the mixing	5.1.7	5.6.2
22.1	Inadequate location of manual controls	Manual controls located in an unusual way	4.5, 5.1.3	7.1 c), g), h), i), p), 7.2
22.2	Inadequate design of manual controls and their mode of operation	Manual controls located in an unusual way	4.5, 5.1.3	7.1 c), g), h), i), p), 7.2
24.3	Hazards from coupling and towing	Incorrect location of attachments for towing	5.2.1, 6.3	7.1 s), 7.2