



SLOVENSKI STANDARD

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Nadomešča:

SIST EN 707:1999+A1:2010

Kmetijski stroji - Cisterne za gnojevko - Varnost

Agricultural machinery - Slurry tankers - Safety

Landmaschinen - Flüssigmisttankwagen - Sicherheit

Matériel agricole - Epandeurs de lisier - Sécurité

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Ta slovenski standard je istoveten z: EN 707:2018

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ICS:

65.060.25

Oprema za skladiščenje,
pripravo in razdeljevanje
gnojiv

Equipment for storage,
preparation and distribution
of fertilizers

SIST EN 707:2019

en,fr,de

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 707

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ICS 65.060.25

Supersedes EN 707:1999+A1:2009

English Version

Agricultural machinery - Slurry tankers - Safety

Matériel agricole - Épandeurs de lisier - Sécurité

Landmaschinen - Flüssigmisttankwagen - Sicherheit

This European Standard was approved by CEN on 24 September 2018.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.

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

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European foreword

This document (EN 707:2018) 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of an identical text or by endorsement, at the latest by June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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 707:1999+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 707:1999+A1:2009 has been technically revised. The main following changes were introduced:

- deletion of Annex Z relative to directive 98/37/EC;
- updating of normative references;
- addition of requirements for Level indicator, overhead power lines, means of access, stability, pressure gauge, overpressure;
- addition of instructions and marking;
- updating of Annex A List of hazards.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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.

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 slurry tankers.

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.

The requirements of the European Directive on pressure equipment will be dealt with by the revision of this 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, to be used together with EN ISO 4254-1, specifies the safety requirements and their verification for the design and construction of semi-mounted, trailed and self-propelled slurry tankers, including their spreading or injecting devices, intended for handling and transporting and/or distributing slurry which are operated by either pneumatic or mechanical power. In addition, it specifies the type of information on safe working practices to be provided by the manufacturer.

When requirements of this document are different from those which are stated in EN ISO 4254-1, the requirements of this document take precedence over the requirements of EN ISO 4254-1 for machines that have been designed and built according the provisions of this document.

This document, taken together with EN ISO 4254-1, deals with all the significant hazards, hazardous situations and events relevant to slurry tankers, when they are used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer (see Table A.1), excepting the hazards related to road safety (e.g. steering, braking).

Environmental aspects have not been considered in this document.

This document is not applicable to slurry tankers which are manufactured before the date of its publication as EN.

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 764 (all parts), *Pressure equipment*

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)*

ISO 1728:2006, *Road vehicles — Pneumatic braking connections between motor vehicles and towed vehicles — Interchangeability*

ISO 3767-1:2016, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 1: Common symbols*

ISO 5676, *Tractors and machinery for agriculture and forestry — Hydraulic coupling — Braking circuit*

ISO 11684, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Safety signs and hazard pictorials — General principles*

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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: Annex B gives illustrations of slurry tankers and components.

3.1

slurry tanker

machine for handling and transporting and/or distributing slurry

3.2

mechanically powered slurry tanker

machine for which the energy required for filling the tank and for spreading is directly provided by a pump

3.3

pneumatically powered slurry tanker

machine for which the energy required for filling the tank and for spreading is provided by an air compressor that creates respectively either a vacuum or pressure in the tank

3.4

floating position

position in which the slurry injecting devices enter into the ground under the effect of their own weight

3.5

position with weight transfer

position in which the slurry injecting devices enter into the ground under the effect of their own weight and application of an additional vertical downward force

3.6

filling arm

articulated device intended to support the pipe used for the filling of the tank

4 Safety requirements and/or measures

4.1 General

Machinery shall comply with the safety requirements and/or protective measures of this clause.

In addition, the machine shall be designed according to the principles of EN ISO 12100 for relevant, but not significant, hazards which are not dealt with by this document.

Unless otherwise specified in this European Standard, the machine shall comply with the requirements of EN ISO 4254-1:2015 and with EN ISO 13857:2008, Table 1, Table 3 and Table 4, as appropriate.

4.2 Requirements for all types of slurry tankers

4.2.1 Manual controls

4.2.1.1 Manual control of the distributing operation

It shall be possible to start and stop the distributing operation from the driving position of the tractor or the self-propelled machine.

4.2.1.2 Manual control for the compressor or the pump

Preferably, it shall be possible to actuate the manual control for the compressor or the pump from the driving position of the tractor or self-propelled machine.

Otherwise one manual control, accessible from the ground, shall be located on each side of the tank at a minimum horizontal distance of 550 mm from the central axis of PTO drive shaft, measured perpendicular to this axis (see example in Figure 1).

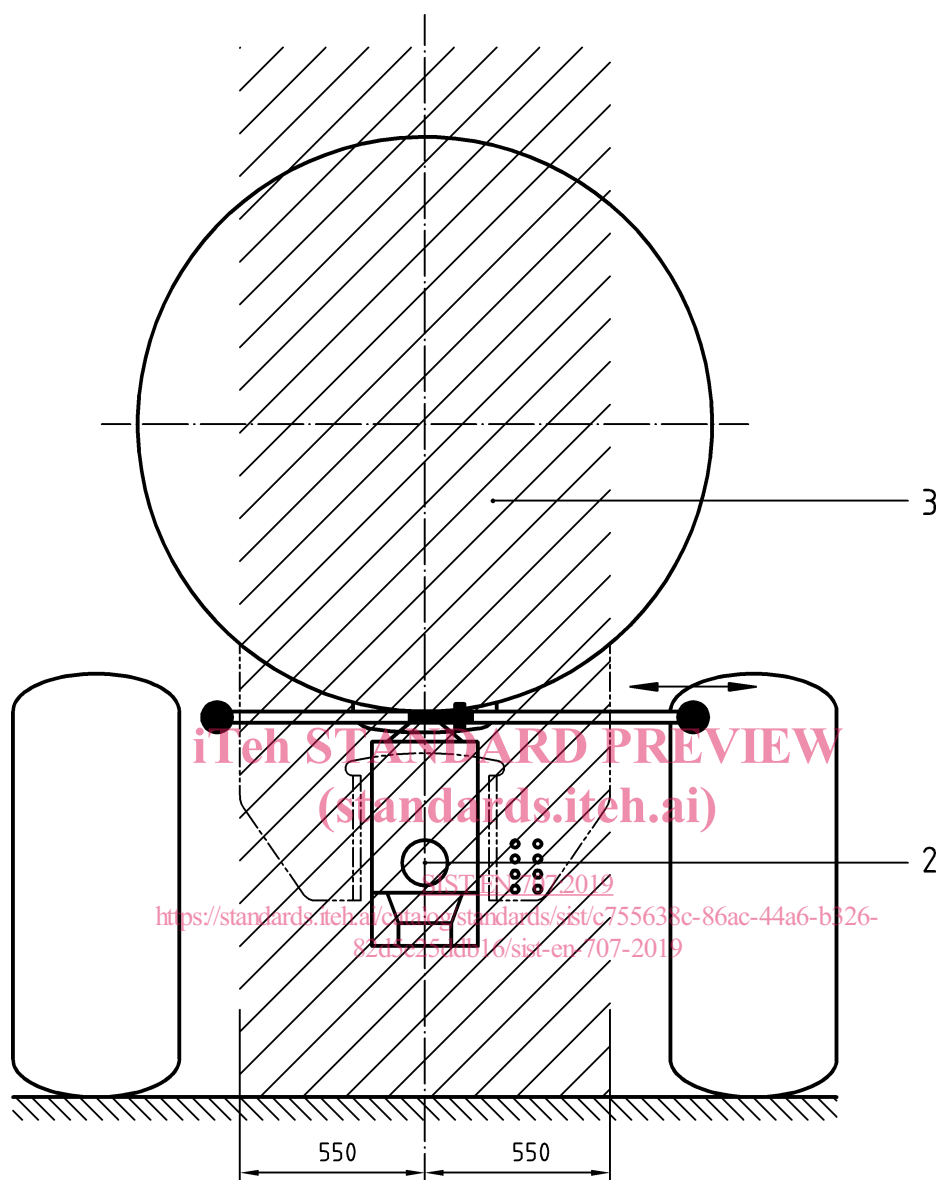
The functions linked to the different positions of the manual control shall be clearly identified.

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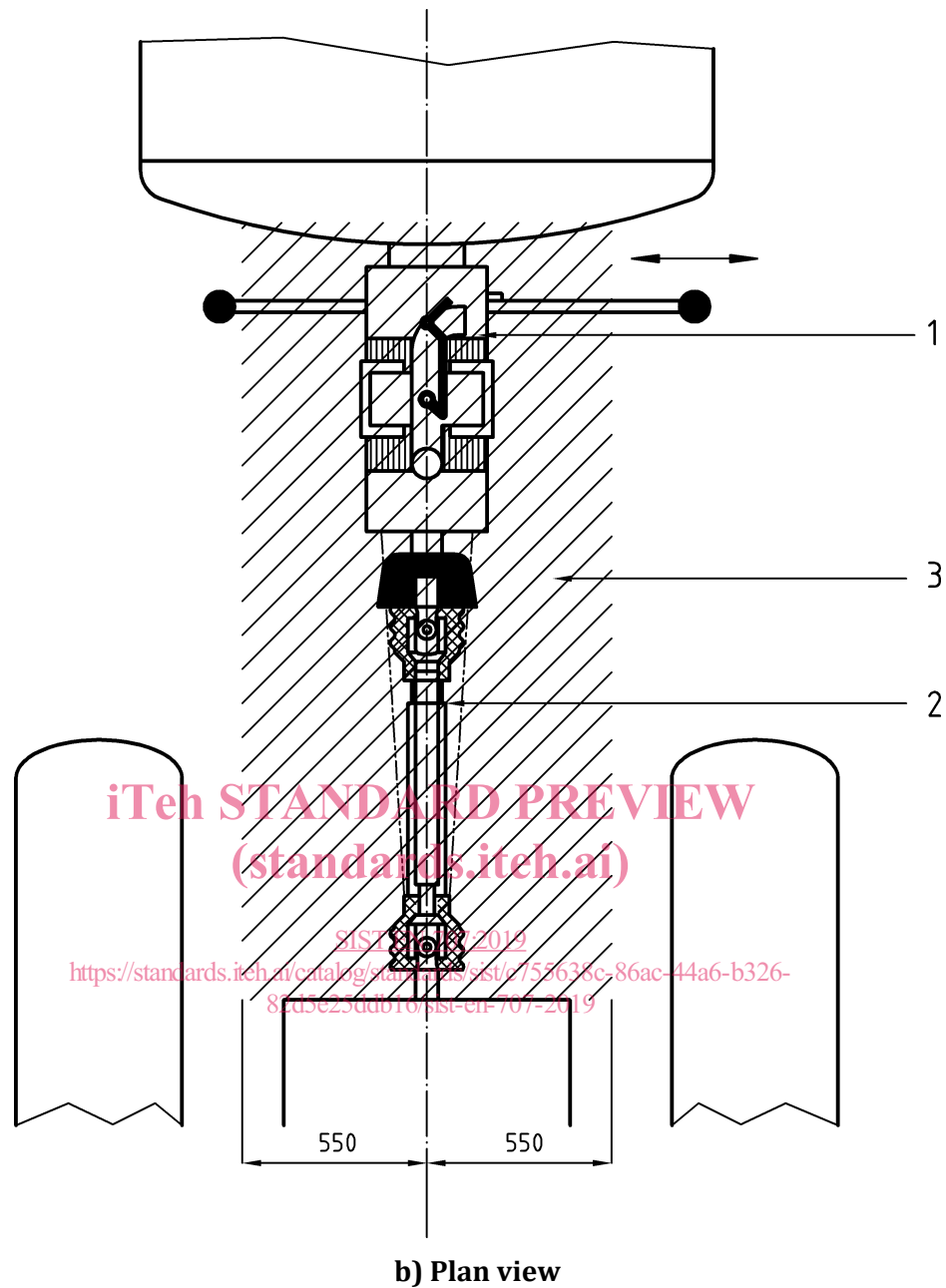
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Dimensions in millimetres



a) Front view

**Key**

- 1 compressor or pump
- 2 central axis of PTO drive shaft
- 3 area in which manual controls shall not be located (danger zone)

Figure 1 — Manual control for the compressor or the pump**4.2.2 Tank****4.2.2.1 Cleaning or filling openings**

The tank shall have sufficiently sized and placed opening(s) to allow routine service and maintenance, effective cleaning of the entire tank interior or to eliminate any clogging without the necessity for personnel to enter the tank.

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To avoid the risk of whole body access into the tank, the openings in the tank shall not be greater than 400 mm in diameter, or not greater than 400 mm × 300 mm, if rectangular.

Larger openings shall be provided with a grating which can only be removed by the use of tools. The apertures in the grating shall not exceed these dimensions.

Covers of cleaning or filling openings on the tank shall be designed, or fitted with a device, to prevent their unintentional closing.

Where the cover of a cleaning or filling opening is hydraulically controlled, it shall be possible to actuate the manual control from the driving position of the tractor or self-propelled machine and the hydraulic hose coupling connected to the tractor shall be clearly identified.

4.2.2.2 Manholes

If provided, the size of manholes shall have a minimum clear diameter of 600 mm.

NOTE Access through a manhole is intended only for access by professional service personnel for work other than normal operation, service or maintenance, i.e. repairing [see 6.1.1 u)].

Unintended whole-body access into the tank through the manhole aperture shall be prevented by a grating removable by tools.

Manhole covers shall be designed to be manually opened and closed.

The mass of the manhole cover, if removable, shall not exceed 25 kg.

Manhole covers, if hinged, shall be designed, or fitted with a device, to prevent their unintentional closing. A warning shall be provided indicating that climbing into the tank is only allowed for professional service personnel (see 6.2.2).

4.2.2.3 Partitions

Tanks having a capacity equal to or greater than 6 000 l shall be equipped with anti-surge partition(s) according to Table 1. The partition(s) shall be perpendicular to the direction of movement of the machine and each of them shall have a surface area at least equal to 2/3 of the tank cross-section (see Figure 2 for examples).

The partitions should be installed as evenly as possible over the length of the tank.

Partitions and their fastenings shall be designed to be resistant against corrosion.

Table 1 — Partitions

Capacity C of the tank <i>L</i>	Minimum number of partitions
$6\,000 \leq C < 10\,000$	1
$10\,000 \leq C < 15\,000$	2
$15\,000 \leq C < 22\,000$	3
$C \geq 22\,000$	4