



# SLOVENSKI STANDARD SIST EN 690:1995+A1:2009

01-november-2009

## Kmetijski stroji - Trosilniki hlevskega gnoja - Varnost

Agricultural machinery - Manure spreaders - Safety

Landmaschinen - Stalldungstreuer - Sicherheit

Matériel agricole - Epandeurs de fumier - Sécurité

Ta slovenski standard je istoveten z: EN 690:1994+A1:2009

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Equipment for storage,  
preparation and distribution  
of fertilizers

SIST EN 690:1995+A1:2009

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 690:1994+A1**

July 2009

ICS 65.060.25

Supersedes EN 690:1994

English Version

**Agricultural machinery - Manure spreaders - Safety**

Matériel agricole - Epandeurs de fumier - Sécurité

Landmaschinen - Stallungstreuer - Sicherheit

This European Standard was approved by CEN on 10 November 1994 and includes Amendment 1 approved by CEN on 23 May 2009.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

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## Foreword

This document (EN 690:1994+A1:2009) 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 January 2010, and conflicting national standards shall be withdrawn at the latest by January 2010.

This document includes Amendment 1, approved by CEN on 2009-05-23.

This European Standard supersedes EN 690:1994.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** and **A1**.

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.

**A1** For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. **A1**

Annex A is normative and contains the "List of hazards".

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

## Introduction

The extent to which hazards are covered is indicated in the scope of this standard. The hazards that are common to all the agricultural and forestry machines will be dealt with in a general standard currently in preparation.

Until the publication of this general standard on common requirements, machines shall comply as appropriate with EN 292 for hazards which are not dealt with and especially with annex A of EN 292-2:1991 when EN 292 does not give precise requirements.

## 1 Scope

This standard specifies safety requirements and their verification for the design and construction of all types of manure spreaders, including self-propelled machines, whether the spreading is made to the rear or laterally.

It describes methods for elimination or reduction of hazards which need specific requirements for manure spreaders. It does not deal with general hazards particularly general hazards related to mobility, including those specific to self-propelled machines. These aspects will be dealt with in another standard produced by CEN/TC 14 (see introduction).

In addition, it specifies the type of information on safe working practices to be provided by the manufacturer.

The list of significant hazards dealt with in this standard is given in annex A. Annex A also indicates the hazards which have not been dealt with.

Environmental aspects have not been considered in this standard.

This standard applies primarily to machines which are manufactured after the date of issue of the standard.

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 292-1:1991, *Safety of machinery – Basic concepts, general principles for design – Part 1: Basic terminology, methodology.*

EN 292-2:1991, *Safety of machinery – Basic concepts, general principles for design – Part 2: Technical principles and specifications.*

EN 294:1992, *Safety of machinery – Safety distances to prevent danger zones being reached by the upper limbs.*

EN 25353:1988, *Earth-moving machinery and tractors and machinery for agriculture and forestry – Seat index point.*

### 3 Safety requirements and/or measures

#### 3.1 General

Unless otherwise specified in this standard, the machine shall comply with the requirements of tables 1, 3, 4 and 6 of EN 294:1992.

#### 3.2 Protection against projectiles

Manure spreaders that spread to the rear, whatever type of rotor, shall be fitted with a grating to protect the driver from projectiles:

- For trailed machines, the grating shall be the same width as the machine body and shall extend at least to a height of 2,60 m from the ground;
- For self-propelled machines, the grating shall be the same width as the machine body and shall extend at least 1 m above the SIP (as defined in clause 3 of EN 25353:1998) of the driver's seat, unless any other part of the machine provides equivalent protection.

The grating shall have a mesh size approximately 30 mm x 30 mm and provide protection at least equal to a steel grating having a wire diameter of 1,8 mm.

Additionally, in the case of rotors with horizontal axes, a protective device, such as board, sheet or canvas, shall be placed in front of and for the full width of the upper rotor. The lower edge of the protective device shall not be higher than the axis of the upper rotor (see figure 1).

If a canvas is used, its lower edge shall be ballasted with 0,6 kg/m.



#### Key

1 protective device

Figure 1

## EN 690:1994+A1:2009 (E)

### 3.3 Conveyors

#### 3.3.1 Guarding

For conveyors with slats, there shall be no access to the shearing and crushing points at the front and rear turning points.

Below the body, the distance between the conveyors slats and any fixed part (frame or slats for example) shall be at least 25 mm, except when the design of the machine is such that protective devices (for example guide plates) eliminate all hazards involving the fingers.

If access to shearing and crushing points remains:

- When the outer lower edges of the machine body are equal or less than 1 100 mm above ground level, any points located within 550 mm from the outer lower edges shall be guarded (see figure 2);
- When the outer lower edges of the machine body are more than 1 100 mm above ground level, any points located within 850 mm from the outer edges shall be guarded (see figure 2).

Dimensions in millimetres

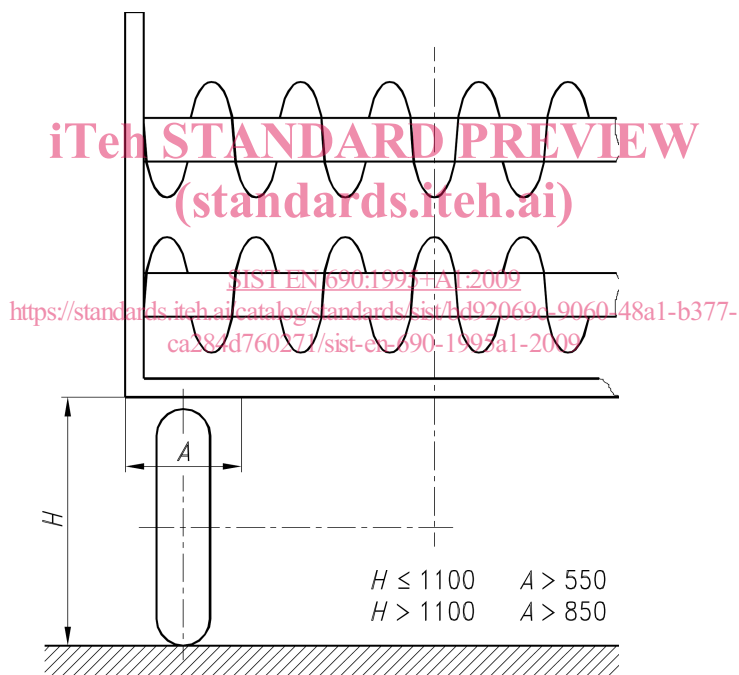


Figure 2

#### 3.3.2 Adjustment

The tension of the conveyor chains shall be adjustable without the operator having to get underneath the machine body.

### 3.4 Means of access

When the upper part of the wall of the machine body is more than 1,5 m from the ground, a means of access shall be provided.



For machines with a power take-off (PTO) drive shaft above the drawbar, the means of access shall not be directly above the PTO drive shaft.

Spreaders with walls more than 900 mm in height from the bed shall be fitted with an inside means of access. This means of access, when provided, shall be located adjacent to the outside means of access.

### 3.5 Removal of the spreading device

A spreading device that can be removed shall be fitted with two clearly identifiable lifting points.

When the machine is designed so that it can be used without the spreading device, the driving gear of the spreading device which remains on the machine shall be fitted with a guard. This guard shall be an integral part of the machine and provide guarding of the driving gear when the spreading device is removed.

### 3.6 Transmission shafts

Transmission shafts beneath the machine body shall be guarded.

### 3.7 Location of the manual controls

Manual controls, in particular those which are intended for adjusting the speed of conveyors, shall be located at a minimum distance of 850 mm from any moving unguarded parts of the spreading device.

## 4 Information for use

### 4.1 Instruction handbook

Comprehensive instructions and information on all aspects of maintenance and the safe use of the machine shall be provided in the instruction handbook. It shall comply with 5.5 of EN 292-2:1991.

In particular the following points shall be emphasised:

- a) That the engine shall be stopped before any intervention;
- b) The instructions to be followed for clearing blockages from the machine;
- c) That all persons not concerned with the machine shall be kept away;
- d) The need to ensure that no bystander is in the spreading area;
- e) The fact that the load can influence tractor manoeuvrability and that if the balance of the spreaders is affected when partially unloaded, then care shall be taken;
- f) That persons shall not enter the machine when the spreading device is running;
- g) The hazards involved during removal and refitting of the spreading device and the instructions to be followed for its handling;
- h) The need to use a PTO drive shaft equipped with a guard in good condition;
- i) The need to ensure, before moving the machine, that the braking system is connected and that it functions correctly;
- j) The relevant characteristics of the original tyres (load, speed, dimensions and inflation pressure).