



SLOVENSKI STANDARD

SIST EN 13140:2001

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Kmetijski stroji - Stroji za spravilo sladkorne in krmne pese - Varnost

Agricultural machinery - Sugar beet and fodder beet harvesting equipment - Safety

Landmaschinen - Zuckerrüben- und Futterrüben-Erntemaschinen - Sicherheit

Matériel agricole - Matériel de récolte de betteraves à sucre et fourrageres - Sécurité

Ta slovenski standard je istoveten z: **EN 13140:2000**

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ICS:

65.060.50 Oprema za spravilo pridelkov Harvesting equipment

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EUROPEAN STANDARD

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English version

Agricultural machinery - Sugar beet and fodder beet harvesting equipment - Safety

Matériel agricole - Matériel de récolte de betteraves à sucre et fourragères - Sécurité

Landmaschinen - Zuckerrüben- und Futterrüben-Erntemaschinen - Sicherheit

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Contents

Foreword.....3

Introduction4

1 Scope4

2 Normative references4

3 Terms and definitions.....5

4 Safety requirements and/or measures5

4.1 General.....5

4.2 Controls6

4.3 Rear-view6

4.4 Leaf stripper6

4.5 Beet lifting devices12

4.6 Cleaning devices.....12

4.7 Conveying device12

4.8 Tipping and/or high-tip hopper.....14

4.9 Unloading device14

4.10 Protection of the operator in the driving position.....14

5 Verification of the safety requirements and/or measures14

6 Information for use14

6.1 Instruction handbook14

6.2 Marking15

Annex A (normative) List of hazards.....17

Annex B (informative) Examples of machine and components22

Annex C (informative) Prevention of hazards related to blockages and removal of blockages on agricultural machinery27

Annex D (informative) Examples of suitable pictograms.....29

Annex ZA (informative) Clauses of this European Standard addressing essential requirements or other provisions of EU directives.....31

Bibliography32

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(standards.iteh.ai)

[SIST EN 13140:2001](https://standards.iteh.ai/catalog/standards/sist/a1c0e893-05f4-41d0-af9f-a61b1662fe4a/sist-en-13140-2001)
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Foreword

This European Standard 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 2001, and conflicting national standards shall be withdrawn at the latest by April 2001.

This European Standard 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 standard.

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

Annexes B, C and D are informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

This European standard is a type C standard as stated in EN 1070:1998.

The machinery concerned and the extent to which hazards are covered are indicated in the scope of this standard.

Hazards that are common to all the agricultural machines (self-propelled, mounted, semi-mounted and trailed) are dealt with in EN 1553:1999.

1 Scope

This standard specifies specific safety requirements and their verification for the design and construction of all sugar beet and fodder beet harvesting machines trailed, mounted or self-propelled which carry out one or more of the following operations : leaf stripping, topping, lifting, picking-up, cleaning, conveying and unloading of beet.

This standard is not applicable to cleaner-loaders which operate from a heap of beet.

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 (including amendments).

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 (including amendment A1:1995).*

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

prEN 620:1998, *Continuous handling equipment and systems – Safety requirements for fixed belt conveyors for bulk material.*

EN 1553:1999, *Agricultural machinery - Agricultural self-propelled, mounted, semi-mounted and trailed machines - Common safety requirements.*

ISO 9533:1989, *Earth-moving machinery – Machine-mounted forward and reverse audible warning alarm – Sound test method.*

3 Terms and definitions

For the purposes of this standard, the terms and definitions given in EN 292-1:1991 and EN 292-2:1991 apply together with the following.

NOTE Examples of machine and components, illustrating the following definitions, are given in Annex B.

3.1

leaf stripper

device intended to cut and to remove the leaves

NOTE It is generally composed of the following types of parts : one or more rotors, a conveyor, a leaf spreader.

3.1.1

rotor

rotating device intended to remove the leaves of beet and/or to clean the top part of the beet still in the ground

3.1.2

conveyor

device for transport of leaves to leaf spreader or to the loading device, if any, or to the outside of the machine

3.1.3

leaf spreader

device which distributes leaves evenly on the soil surface

3.2

leaf loading device

device which transports leaves collected at the conveyor outlet

3.3

beet lifting device

device which extracts beets from the ground

3.4

cleaning device

device mainly intended to separate the beets from the soil adhering to them

3.5

conveying device

device which transports the beets from one part of the machine to another

3.6

unloading device

device which transfers the beets out of the machine

3.7

high-tip hopper

hopper equipped with a system to raise the tipping axis in relation to the chassis

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4 Safety requirements and/or measures

4.1 General

The machinery shall comply as appropriate with EN 292 for hazards which are not dealt with and especially with Annex A of EN 292-2:1991/A.1:1995 when EN 292 does not give precise requirements.

Unless otherwise specified in this standard, the machine shall comply with the requirements of EN 1553:1999 and to Tables 1, 3, 4 and 6 of EN 294:1992.

4.2 Controls

On self-propelled machines, the starting and the stopping of the moving parts shall be controlled only from the driver's station. On trailed and mounted machines, the starting and the stopping of moving parts shall be controllable only from the driver's station of the towing machine.

Tipping and/or high-tip controls shall be of the hold-to-run type and shall be operated from the driver's station.

4.3 Rear-view

Self-propelled machines shall be fitted with an audible warning alarm complying with ISO 9533. This alarm shall be automatically engaged during reversing manoeuvres.

This alarm is not required if the machine is equipped with a closed circuit television (CCTV) which permits the driver to have a clear view on the rear of the machine.

4.4 Leaf stripper

4.4.1 Protection against unintentional contact with the rotor(s)

Machines shall be designed or guarded in such a way that any unintentional contact with the tools at the front, at the rear and at the sides and on the top is avoided.

On the top, an imperforate guard shall cover the tools at least up to the outer points of their path.

At the front, at the rear and at the sides of the accessible zones, the protective devices shall be :

- a barrier, located at a maximum height of 400 mm from the lowest point of the tools path and at a minimum horizontal distance of 200 mm from the tools path (see Figure 1a). It shall be possible to fold the lateral barriers for transport. They shall remain attached to the machine and be secured in position; or
- an imperforate guard located near the tools and in such a way that its lower edge extends by a minimum of 3 mm below the tools path (see Figure 1b) ; or
- a combination of these two previous devices.

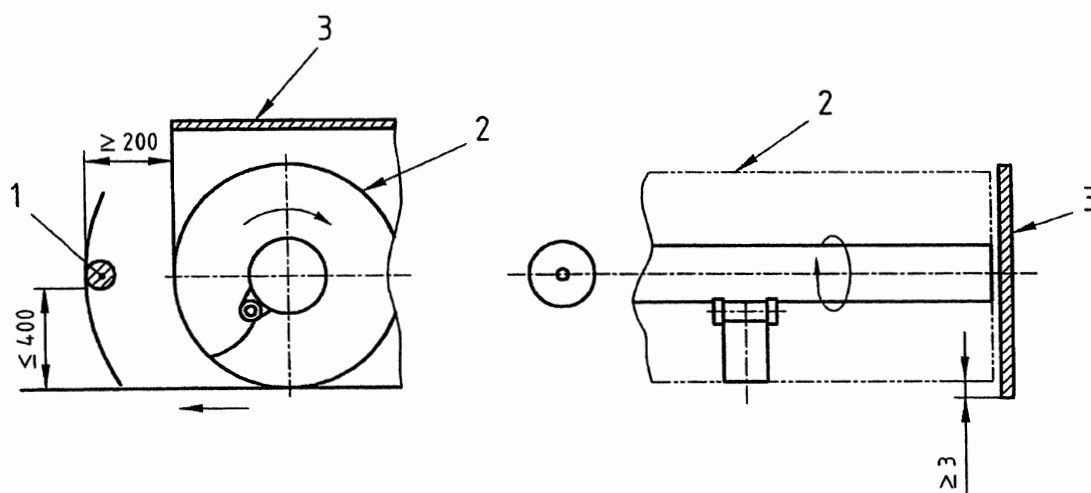
The projection on a horizontal plane of these protective devices shall be continuous.

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Dimensions in millimetres



1 – barrier
2 – tools path
3 – imperforate guard

Figure 1a - Protection ensured by a barrier

Figure 1b - Protection ensured by an imperforate guard

Figure 1 - Leaf stripper rotor - Protective devices

4.4.2 Conveyor

The leaf loading device shall meet 4.1.

Any other mobile elements of the conveyor located less than 850 mm from the outer contour of the machine shall be guarded except the ejection outlet.

This ejection outlet shall be fitted with :

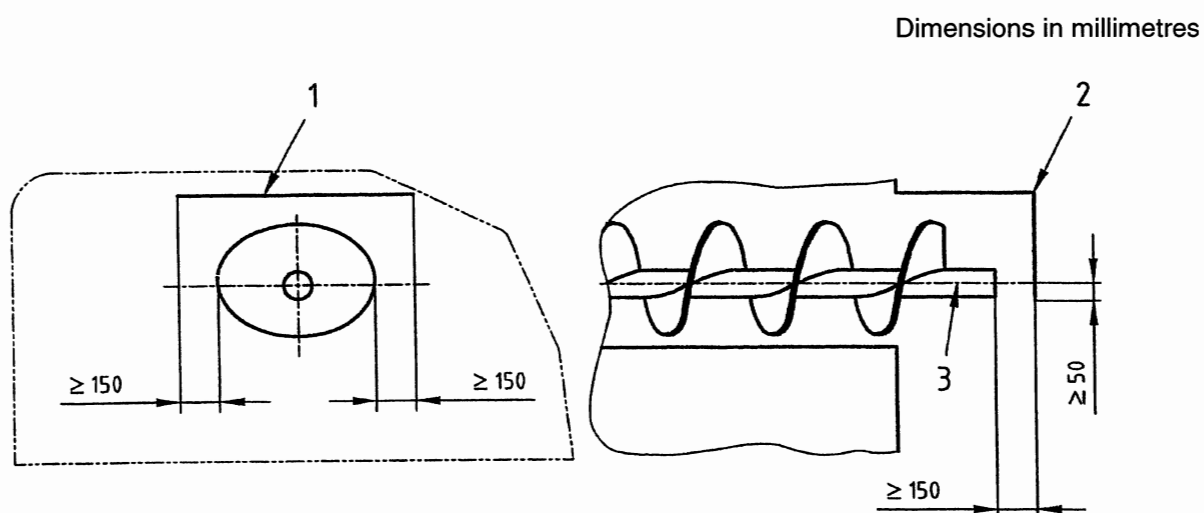
— a protective device composed of :

- a) on the top, an imperforate guard which extends beyond the outer part of the conveyor by a minimum of 150 mm (see Figure 2). When a conveyor belt is used, the lower edge of the top guard shall be placed at 200 mm maximum above the upper plane of the conveyor belt (see Figure 3) ;
- b) at the outer point of the conveyor :
 - when an auger is used, a fixed guard, the lower end of which shall extend at least 50 mm below the axis of the screw (see Figure 2) ;
 - when a conveyor belt is used, a barrier located in the horizontal plane at 150 mm minimum from any mobile part of the conveyor and in the vertical plane at 200 mm maximum above the upper plane of the conveyor belt (see Figure 4).

The lateral part of the conveying belt shall be guarded against unintentional contact in accordance with 5.1. of prEN 620:1998.

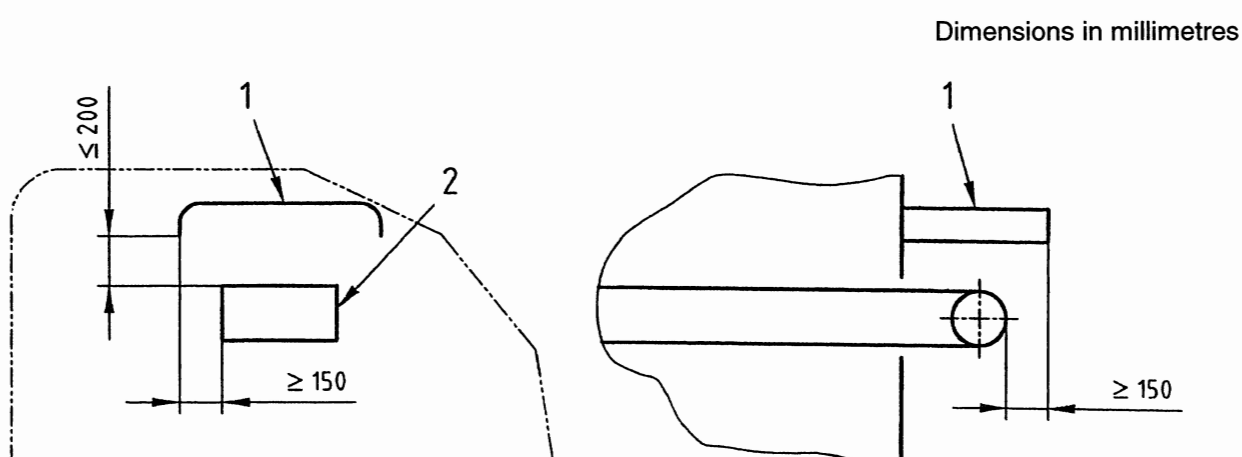
or

- a mobile guard which completely seals the ejection outlet and automatically returns to the closed position when no more material is ejected (see Figure 5).



- 1 – imperforate top guard
2 – fixed guard
3 – axis of the screw

Figure 2



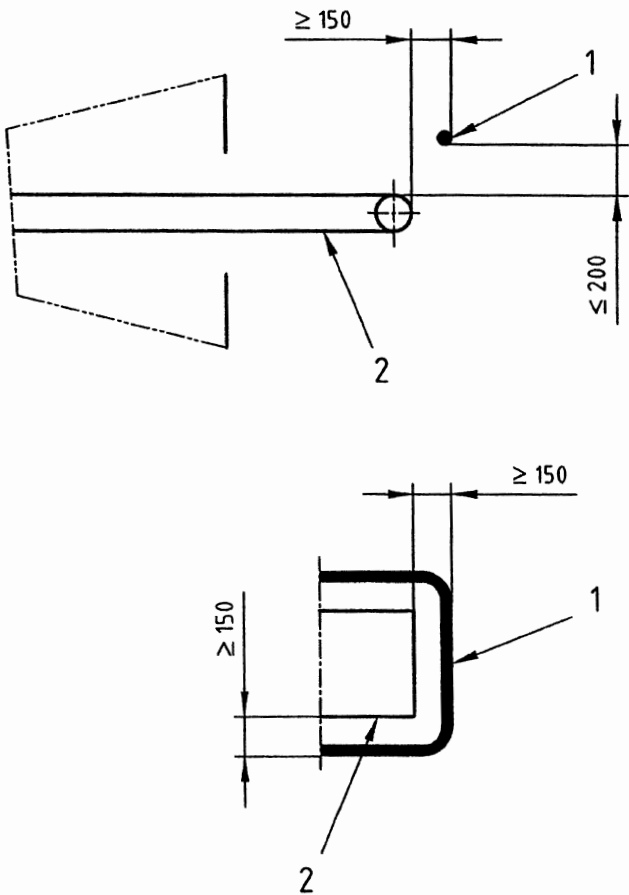
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- 1 – imperforate top guard
2 – conveyor belt

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Figure 3

Dimensions in millimetres



- 1 – barrier
- 2 – conveyor belt

Figure 4

Dimensions in millimetres



- 1 – mobile guard

Figure 5

4.4.3 Leaf spreader

The protection against unintentional contact with any of the accessible moving parts at the front and at the sides of the leaf spreader shall be ensured by protective devices the projection of which on an horizontal plane shall be continuous.

4.4.3.1 Leaf spreaders with a vertical axle (see Figure 6)

This protection shall be ensured with :

- a barrier located in the horizontal plane at a minimum distance of 150 mm from mobile parts and in the vertical plane at a maximum distance of 50 mm below the lower plane of the leaf spreader ; or
- an imperforate guard which extends below the lower plane of the leaf spreader by 50 mm minimum ; or
- a combination of the two previous protective devices.

4.4.3.2 Leaf spreaders with an horizontal axle (see Figure 7)

This protection shall be ensured with :

- in the front part, a barrier located in the vertical plane at 150 mm maximum below its rotating axle and in the horizontal plane at 150 mm minimum from the path;
- on the other sides, an imperforate guard which extends beyond the outer path by 150 mm minimum upwards, forwards and by 50 mm minimum downwards.

The leaf spreaders with folding elements shall be fitted with a device to lock them in the transport position. The change from the working position to the transport position and vice versa shall occur without causing a crushing or pinching hazard. The movement of the folding elements shall be powered if the manual force needed for the manoeuvre exceeds 250 N.

NOTE : Additional requirements and/or test method on locking devices will be added in a future revision of the standard.

In the case of powered operation, it shall be controlled from the driver's station of self-propelled machines, or it shall be controllable from the driver's station of the towing machine for trailed and mounted machines. The control shall be of the hold-to-run type.

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