SLOVENSKI STANDARD
SIST EN 908:1999+A1:2009

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Kmetijski in gozdarski stroji - Bobenski namakalniki - Varnost

Agricultural and forestry machinery - Reel machines for irrigation - Safety

Land- und Forstmaschinen - Beregnungsmaschinen mit Schlauchtrommel - Sicherheit

Matériel agricole et forestier - Enrouleurs d'irrigation - Sécurité

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65.060.35	Namakalna in drenažna oprema	Irrigation and drainage equipment

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Agricultural and forestry machinery - Reel machines for irrigation - Safety

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Land- und Forstmaschinen - Beregnungsmaschinen mit Schlauchtrommel - Sicherheit

This European Standard was approved by CEN on 14 December 1998 and includes Amendment 1 approved by CEN on 23 May 2009.

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Foreword

This document (EN 908:1999+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of an identical text or by endorsement, at the latest by January 2010, and conflicting national standards shall be withdrawn at the latest by January 2010.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 908:1999.

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1) (A1].

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).

[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. These hazards are specific to reel machines for irrigation.

The hazards that are common to all the agricultural machines (self-propelled, mounted, semi-mounted and trailed) will be dealt with in a standard currently in preparation (prEN 1553).

1 Scope

This standard specifies safety requirements and their verification for the design and construction of reel machines for irrigation including self-propelled machines.

It describes methods for elimination or reduction of risks which need specific requirements for reel machines for irrigation.

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 (and amendment A1:1995)*.

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

EN 953:1997, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*.

prEN 1553:1998, *Agricultural machinery — Agricultural self-propelled, mounted, semi-mounted and trailed machines — Common safety requirements*.

3 Definitions

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

3.1
reel machine
type of traveller irrigation machine featuring a stationary structure with a reel, coiling a hose which carries irrigation water to, and drags, a travelling cart, upon which is affixed the emitting system, which is most often an irrigation gun

3.2
irrigation gun
large sprinkler used on reel machines and other systems

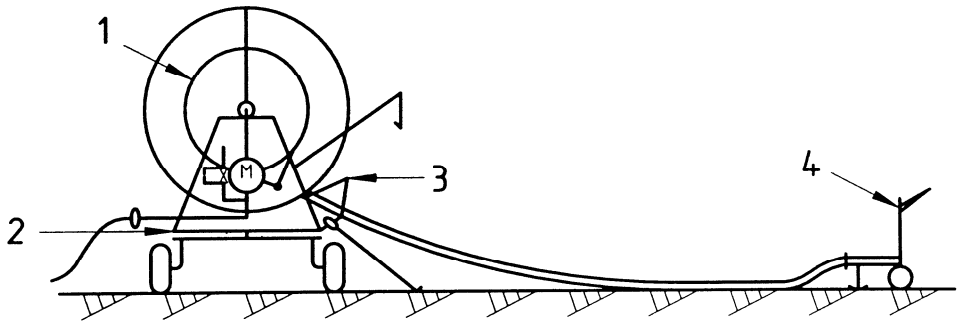
NOTE The usual flow-rates from guns range from 10 m^3/h to 100 m^3/h, and their nozzle diameter from 10 mm to 40 mm.

3.3
coiling
one of the actions performed by the reel machine when irrigating: the reel machine is progressively coiling all the polyethylene hose on the drum, causing the irrigation gun to move regularly across the irrigation field. When the irrigation gun reaches the machine, the coiling is completed and the machine stops

3.4
guiding system
lateral guiding device of the hose that permits its steady coiling with joined spirals

3.5
drive system of the guiding system
mechanism providing power to the guiding system that ensures the even layering of the hose

3.6
sweeping zone
envelope of the different positions of the turret corresponding to its different possible orientations



1 - Drum of the spool
2 - Turret
3 - Hose guiding system
4 - Irrigation gun

Figure 1

4 Safety requirements and/or measures

4.1 General

The reel machines for irrigation shall comply as appropriate with EN 292 for hazards which are not dealt with and especially with annex A of EN 292-2:1991/A1:1995 when EN 292 does not give precise requirements.

Unless otherwise specified in this standard, the machine shall comply with the requirements of prEN 1553:1998 and with tables 1, 3, 4 and 6 of EN 294:1992.

4.2 Irrigation gun

The adjustment controls of the irrigation gun that have to be operated during the working (for example adjustment of the sector angle and of the rotation speed of the irrigation gun) shall be located at a distance less than 1,80 m from the ground or from the access platform, whatever the speed of rotation of the irrigation gun.

Irrigation guns with a speed of rotation greater than 1 rad.s^{-1} shall be located at a height equal to or more than 2 m from the ground or from any platform (vertical distance between the ground or the platform and the lowest rotating part of the irrigation gun).

This requirement does not apply:

— when the swivelling range of the irrigation gun is restricted to a maximum of 300° provided that the adjustment platform be located outside the swivelling range;

— when the irrigation gun is fitted with a guard providing a safety distance in accordance with EN 294:1992.

4.3 Guiding system of hose

When the coiling speed of the hose is greater than 0,4 m.s^{-1}, access to crushing and shearing points between the hose and the guiding system and between the guiding system and the frame of the machine shall be prevented by fixed guards according to EN 953 or by the framework of the machine using the safety distances according to table 1 of EN 294:1992.

When the uncoiling speed of the hose can be greater than 0,4 m.s-1, access to crushing and shearing points between the guiding system and the frame of the machine shall be prevented by fixed guards according to EN 953 or by the framework of the machine using the safety distances of table 1 of EN 294:1992.

Access to the drive system of the guiding system shall be prevented by fixed guards according to EN 953.

4.4 Spool

If the rotation of the drum generates crushing or shearing points between the spool and the machine frame, such points shall be guarded.

Satisfactory methods include for example:

— a guard providing the safety distance according to tables 3 and 4 of EN 294:1992;

or

— a full (without opening) side wall without any prominent feature including the water delivery pipe between the axis of the drum and the hose.

Machines equipped with hose speed selector shall be fitted with:

— a device which allows for the removal of tension from the hose before changing gear;

or

— a device which enables the operator to change gear under tension.

4.5 Stability

Any means needed to ensure stability when working (e.g. jacks, supporting wheels) shall be an integral part of the machine. They shall comply with 4.3.2.1.1. of prEN 1553:1998.

The machine shall be stable when resting on a slope of 8,5° in the following conditions:

— without using the additional means to ensure stability;

— hoses full of water and with irrigation gun hooked;

— in all the directions of the turret around its vertical axis (if applicable);

— with the axle positioned parallel, then perpendicular to the slope.

Any functional outlet of water, associated with the use of the machine, except the possible leakages, shall be at a minimum distance of 5 m away from the machine.

4.6 Orientation of the turret

If applicable, turrets shall be lockable in both working and transport positions.

The centre of gravity of the mobile part shall be located at less than 0,20 m from its rotational axis when the hoses are filled of water. Failing this, the rotation shall be ensured by a hold-to-run control device located outside from the sweeping zone.

4.7 Hydraulic lifting

When hydraulic lifting systems are used, they shall be fitted with antifall devices to ensure a falling speed of less than 0,1 $m.s^{-1}$ in the event of rupture of a hydraulic pipe.

4.8 Accessories

An appropriate housing shall be provided on the machine for the storage of specific tools.

4.9 Transport

The hose reel or machine shall be provided with means for attaching the hose to the machine during transportation.

5 Verification of safety requirements and/or measures

Dimensions, where given, shall be verified by measurements. Controls shall be verified by a functional test and positional measurements; guards by functional tests.