SLOVENSKI STANDARD
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Agricultural machinery - Safety - Part 1: General requirements - Amendment 1 (ISO 4254 -1:2013/DAM 1:2019)

Landmaschinen - Sicherheit - Teil 1: Generelle Anforderungen - ÄNDERUNG 1 (ISO 4254-1:2013/DAM 1:2019)

Matériel agricole - Sécurité - Partie 1: Exigences générales - Amendement 1 (ISO 4254-1:2013/DAM 1:2019)

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Agricultural machinery — Safety —

Part 1: General requirements

AMENDMENT 1

Matériel agricole — Sécurité —

Partie 1: Exigences générales

AMENDEMENT 1

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

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This document was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 3, *safety and comfort*.

A list of all parts in the ISO 4254 series can be found on the ISO website.

Agricultural machinery — Safety —

Part 1: General requirements

AMENDMENT 1

2 Normative references

Up-date the reference to ISO 3600 by deleting the year of edition.

Add: ISO 9533, Earth-moving machinery – Machine-mounted audible travel alarms and forward horns – Test methods and performance criteria

4.7.1.2 Steps and ladders

Modify 4.7.1.2.1 to read:

4.7.1.2.1 The height of the first step shall not exceed 550 mm when measured with the specified tyres and with the maximum diameter at specified inflation pressure [see 8.2.3 w)]. The vertical distance between successive steps shall be equal within a tolerance of ± 20 mm. Each step shall have a slip-resistant surface, a lateral stop at each end and be so designed (for example mudguards, perforated steps) that an accumulation of mud and/or snow is minimized under normal work conditions.

A flexible connection(s) between the first and second steps is permitted.

Add key E to Figure 3.

Add 'E Height of first step' to the key.

Add: the dimension of 550 mm for both ladders and steps to table 1.

4.8.2 Place to stand

Replace 4.8.2 by:

4.8.3 Place to stand

4.8.3.1 A place provided for standing shall be a minimum of 300 mm width, be flat and have a slip-resistant surface. Depending on the machine configuration, it may consist of two separate surfaces and may use machine components. In case of separate surfaces each surface shall be a minimum of 150 mm width. It shall be positioned so the operator can maintain stability while carrying out the service required and be on the same height level with a tolerance of ± 50 mm.

4.8.3.2 Handhold(s) and/or railings shall be provided in order to allow three point contact. Parts of the machine can be considered to fulfil this requirement.

4.8.3.3 When access is needed above or next to the PTO (power take-off) drive shaft, an adequate place to stand and boarding means shall be provided in order to eliminate the need to use the PTO drive shaft or its guard as a step or a place to stand.

Add **4.8.4 Walkways**

Walkways shall be a minimum of 300 mm width. It is allowable for the width to reduce to 250 mm for short distances to accommodate handrail support members or machine components if it does not create additional hazards.

4.8.3 Boarding means

Replace '4.8.3' by '4.8.2'.

4.20 Safety-related parts of control systems

Replace 4.20 by the following:

Safety-related parts of control systems shall be in accordance with ISO 25119, Parts 1 to 4 or ISO 13849-1 and ISO 13849-2 (see Annex E).

5.1.7 Visibility

Replace 5.1.7.1 by the following:

5.1.7.1 The design and position of the operator's station shall be such that the operator has adequate visibility direct or indirect to operate the machine and view the work area of the machine.

If during driving operation direct visibility to the area just behind the machine is not possible, an appropriate device, or combination of devices, shall be provided, such as:

— means for indirect visibility (such as mirrors);

— an audible reverse warning alarm which is automatically engaged and in accordance with ISO 9533;

— visual warning signal;

— protective device, to detect the presence of persons and stop the machinery or warn the driver.

6.4 Transmission of mechanical power between self-propelled machines/tractors and recipient machinery

Add the following note at the end of 6.4.1:

NOTE It is intended to move the specifications of 6.4.1 into another standard in the future (for example ISO 5673-1).

8.2 Operators manual

Modify 8.2.3 b) to read

b) compatibility with the tractors, e.g. hitching system, PTO drive shaft, vertical load at hitching point, engine power, stability (see 6.3.1, 6.3.2, 6.4.1), including instructions where replacement of the drive shaft and/or PIC guard are needed, to be clear, concise, and maintain the safety level of the elements that are replaced:

   — type of connections on the PTO side;

   — type of connections on the PIC side

   — maximum allowed diameter of the guards for compatibility with the PIC guard;

   — type of allowed locking system(s);

   — type and setting of overload protection device;

   — power and speed to be transmitted;

   — length and procedure to adapt the length;

Add to 8.2.3:

z) information on the use of the PTO-drive-shaft for PTO-driven equipment, such as:

   — information about the interaction between PTO-drive-shaft guarding and PIC guard;

— information if necessary how to attach the restraining system;

— the need to and how to use a support for the PTO drive shaft when it is not in use, that is different from the restraining system and which does not cause such damage to the guard that the telescoping of the inner and outer tubes is prevented;

Add the following annex:

Annex E
(informative)

Guidance for risk assessment and determination of performance levels for safety-related parts of control systems

E.1 To implement risk assessment and risk reduction, the principles specified by ISO 12100 should be used. If the machine design includes control systems with safety related functions, performance levels (PL or $AgPL_r$) should be allocated to the safety-related parts of the control system. **Figure E.1** illustrates the risk assessment process in accordance with ISO 12100 and refers to ISO 13849 or ISO 25119 with respect to the functional safety of safety-related parts of control systems.

E.2 To achieve optimum results, the machine design accompanying risk assessment and the determination of the required performance level are considered in parallel. This is due to the interdependence of the machine's safety concept (for example inherently safe design, protective measures, ...) with the determination of the required performance level. Specification of the required performance level without consideration of the machine's limits and architecture is not an appropriate approach.

NOTE The consideration of the machine/system limits, its architecture, functions, etc. is needed in both cases – the manufacturer's product development and the standardization process.

All relevant and appropriate aspects should be considered by machine designers when addressing hazardous situations.

EXAMPLE Analysis of hazards related to the opening and closing of the rear door of a trailer with a tipping body can include various aspects such as

— design related aspects, for example
  — height of the door above the ground when open and closed
  — speed of opening and closing
  — closing force
  — angle of opening and final position of the door when open
  — control system (on machine and for interchangeable equipment on the tractor)
— operation related aspects, for example
  — view to the danger zone by the operator
  — actuation of controls (for example hold-to-run)
  — manual or automatic locking / unlocking of the door
  — capability for complete self-emptying

E.3 It is essential that the risk assessment and required performance level determination process is executed by a team with members having different expertise (for example design, manufacturing, application/operation, service, hydraulics, electronics, ...) and the team for validation of the results has different members.