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Agricultural machinery — Safety —

Part 11: Pick-up balers

Matériel agricole — Sécurité —

Partie 11: Ramasseuses-presses

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 4254-11 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 7, *Equipment for harvesting and conservation*.

For the purposes of global relevance, the requirements related to the guarding of moving parts for power transmission have been transferred and published as two separate Technical Specifications: ISO/TS 28923:2007 (Guard opening with tool) and ISO/TS 28924:2007, which include the requirements taken from both 4.6 and Annex C of ISO 4254-1:2008.

ISO 4254 consists of the following parts, under the general title *Agricultural machinery — Safety*:

— *Part 1: General requirements*

— *Part 5: Power-driven soil-working machines*

— *Part 6: Sprayers and liquid fertilizer distributors*

— *Part 7: Combine harvesters, forage harvesters and cotton harvesters*

— *Part 8: Solid fertilizer distributors*

— *Part 9: Seed drills*

— *Part 10: Rotary tedders and rakes*

— *Part 11: Pick-up balers*

— *Part 12: Rotary disc and drum mowers and flail mowers*

— *Part 13: Large rotary mowers*[1)]

Part 2, *Anhydrous ammonia applicators*, has been withdrawn; Part 3, *Tractors*, has been cancelled and is to be replaced by ISO 26322 (all parts), *Tractors for agriculture and forestry — Safety*; and Part 4, *Forestry winches*, has been cancelled and replaced by ISO 19472, *Machinery for forestry — Winches — Dimensions, performance and safety*.

1) Under preparation.

Introduction

The structure of safety standards in the field of machinery is as follows:

a) type-A standards (basic standards) giving basic concepts, principles for design, and general aspects that can be applied to machinery;

b) type-B standards (generic safety standards) dealing with one or more safety aspects or one or more types of safeguards that can be used across a wide range of machinery:

   — type-B1 standards on particular safety aspects (e.g. safety distances, surface temperature, noise);

   — type-B2 standards on safeguards (e.g. two-hand controls, interlocking devices, pressure-sensitive devices, guards);

c) Type-C standards (machinery safety standards) dealing with detailed safety requirements for a particular machine or group of machines.

This document is a type-C standard as stated in ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope of this part of ISO 4254. These hazards are specific to self-propelled and trailed pick-up balers, including the combination of pick-up balers with wrappers.

Significant hazards that are common to all the agricultural machines (self-propelled ride-on, mounted, semi-mounted and trailed) are dealt with in ISO 4254-1.

When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the provisions of this type-C standard.

Agricultural machinery — Safety —

Part 11: Pick-up balers

1 Scope

This part of ISO 4254, intended to be used together with ISO 4254-1, specifies the safety requirements and their verification for the design and construction of self-propelled and trailed pick-up balers, including the combination of pick-up balers with wrappers, independent of the shape or size of the bales formed. It describes methods for the elimination or reduction of hazards arising from the intended use and reasonably foreseeable misuse of these machines by one person (the operator) in the course of normal operation and service. In addition, it specifies the type of information on safe working practices to be provided by the manufacturer.

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

This part of ISO 4254, taken together with ISO 4254-1, deals with all the significant hazards (as listed in Table 1), hazardous situations and events relevant to self-propelled and trailed pick-up balers, including the combination of pick-up balers with wrappers, when they are used as intended and under the conditions of misuse that are reasonably foreseeable by the manufacturer (see Clause 4).

This part of ISO 4254 is not applicable to pedestrian-controlled round balers, environmental hazards, road safety, vibration and hazards related to moving parts for power transmission. It is not applicable to hazards related to maintenance or repairs carried out by professional service personnel.

NOTE Specific requirements related to road traffic regulations are not taken into account in this part of ISO 4254.

This part of ISO 4254 is not applicable to machines manufactured before the date of its publication.

2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 3600:1996, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Operator's manuals — Content and presentation*

ISO 4254-1:2008, *Agricultural machinery — Safety — Part 1: General requirements*

ISO 11684:1995, *Tractors, machinery for agricultural and forestry, powered lawn and garden equipment — Safety signs and hazard pictorials — General principles*

ISO 12100:—, *Safety of machinery —General principles for design — Risk assessment and risk reduction*[2)]

2) To be published.

ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs*

ISO 14982:1998, *Agricultural and forestry machinery — Electromagnetic compatibility — Test methods and acceptance criteria*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100 and ISO 4254-1 apply.

4 List of significant hazards

Table 1 specifies the significant hazards, the significant hazardous situations and significant hazardous events that have been identified by risk assessment as being significant for this type of machine, covered by this part of ISO 4254, and which may require specific action by the designer or manufacturer to eliminate or reduce the risk.

Attention is drawn to the necessity to verify that the safety requirements specified in this part of ISO 4254 apply to each significant hazard presented by a given machine and to validate that the risk assessment is complete.

Table 1 — List of significant hazards associated with self-propelled and trailed pick-up balers, including the combination of pick-up balers with wrappers

No.[a]	Hazard	Hazardous situation and event	Clause/subclause of ISO 4254-1:2008	Clause/subclause of this part of ISO 4254
A.1 Mechanical hazards				
A.1.1	Crushing	Manual feeding; uncontrolled movements of the drawbar; contact with pick-up device; contact with feeding elements; contact with the flywheel or other moving parts, ejection of the bale	4.7; 4.8; 4.14.1; 4.14.3; 4.14.5; 4.14.6; 5.2; 6.4	5.1; 5.2; 5.3; 5.4; 7.1; 7.2
A.1.2	Shearing	Manual feeding; uncontrolled movements of the drawbar; contact with pick-up device; contact with feeding elements; contact with the flywheel, knotting mechanism or other moving parts	4.7; 4.8; 4.14.1; 4.14.3; 4.14.5; 4.14.6; 5.2; 6.4	5.1; 5.2; 5.3; 5.4; 7.1; 7.2
A.1.3	Cutting or severing	Manual feeding; contact with pick-up device; contact with feeding elements; contact with the flywheel, knotting mechanism or other moving parts	4.7	5.1; 5.2; 5.3; 5.4; 7.1; 7.2
A.1.4	Entanglement	Manual feeding; contact with pick-up device; contact with feeding elements; contact with the flywheel, knotting mechanism or other moving parts	6.4; 4.7	5.1; 5.2; 5.3; 5.4; 7.1; 7.2
A.1.5	Drawing-in or trapping	Manual feeding; contact with pick-up device; contact with feeding elements; contact with the flywheel, knotting mechanism or other moving parts	6.4; 4.7	5.1; 5.2; 5.3; 5.4; 7.1; 7.2
A.1.6	Impact	Manual feeding; uncontrolled movements of the drawbar; contact with pick-up device; contact with feeding elements; contact with the flywheel, knotting mechanism or other moving parts	4.14.5; 4.14.6; 5.1.3.1	5.1; 5.2; 5.3; 5.4; 7.1; 7.2

Table 1 (*continued*)

No.[a]	Hazard	Hazardous situation and event	Clause/subclause of ISO 4254-1:2008	Clause/subclause of this part of ISO 4254
A.1.7	Stabbing or puncture	Manual feeding; contact with pick-up device; contact with feeding elements; contact with the flywheel, knotting mechanism or other moving parts	4.7	5.1; 5.3.4; 7.1; 7.2
A.1.8	Friction or abrasion	Manual feeding; contact with pick-up device; contact with feeding elements; contact with the flywheel, knotting mechanism or other moving parts	4.4.3; 5.1.3.2; 4.9.1; 4.5.1.1.2	5.1; 5.3.1; 7.1; 7.2
A.1.9	High-pressure fluid injection	Ejection due to excessive pressure in the hoses	4.10; 6.5	7.1
A.1.10	Ejection of parts	Ejection of the bales	—	5.3.6; 5.4.2
A.5 Hazards generated by materials and substances				
A.5.2	Fire or explosion		4.12; 5.1.6; 5.5	7.1
A.6 Hazards generated by neglecting ergonomic principles in machinery design				
A.6.6	Human error, human behaviour		4.4; 8.1; 8.2	7.1; 7.2.3
A.6.7	Inadequate design, location or identification manual controls		4.4; 5.1.3; 6.1; 8.1; 8.2	5.2.4.2; 5.2.7.1; 5.3.4.6; 5.4.1.2; 6; 7.2.3.3
A.7 Combination of hazards				
A.7.1	Manual operation of individual assemblies; Missing or insufficient information about manual operation of individual assemblies and, if required, use of special tools in the operator's manual		8.1.3	7.1 7.2
A.7.2	Safety signs and signals		8.2	7.2.3
A.7.3	Essential equipment and accessories for safe adjusting and/or maintaining		4.8; 4.14; 8.1.3	7.1; 7.2
A.8 Unexpected start-up, unexpected overrun/overspeed				
A.8.1	Failure/disorder of the control system		4.8.2; 5.1.8; 6.1.1	5.2.7.1; 5.2.7.2; 5.3.1; 5.3.3; 5.3.4.6
A.11	**Failure of power supply**	Starting and stopping devices	4.8.2; 5.1.8; 6.1.1	5.2.4; 5.4.1; 5.4.2
A.13	**Errors of fitting**		6.2; 6.3; 8.1; 8.2	7.1; 7.2

Table 1 (*continued*)

No.[a]	Hazard	Hazardous situation and event	Clause/subclause of ISO 4254-1:2008	Clause/subclause of this part of ISO 4254
A.14	Guards and barriers		4.7	7.1
	Supports		4.8	7.2
A.21	**Lack of stability**		6.2; 8.1.3	7.1.4
A.22 Due to the power source and to the transmission of power				
A.22.3	Hazards from coupling and towing		6.3; 8.1.3	—
[a] With reference to ISO 4254-1:2008, Table A.1.				

5 Safety requirements and/or protective measures

5.1 General

5.1.1 Machinery shall comply with the safety requirements and/or protective measures of this clause. In addition, the machine shall be designed in accordance with the principles of ISO 12100:—, Clause 4, for hazards relevant, but not significant, which are not dealt with by this part of ISO 4254.

5.1.2 Except where otherwise specified in this part of ISO 4254, the machine shall comply with the requirements of ISO 4254-1 and with Tables 1, 3, 4 and 6 of ISO 13857:2008 as appropriate.

5.1.3 Machinery shall comply with ISO 14982 for evaluating the electromagnetic compatibility.

5.2 Requirements for all types of balers

5.2.1 Drawbar

When the drawbar has separate positions, for transport and for working, it shall be provided with a mechanical or hydraulic locking device that requires an intentional action to change from transport to working position and from working to transport position (e.g. pin, latch or hydraulic cylinder). When a hydraulic device is used, the drawbar shall remain locked in position if the hydraulic circuit fails or else the requirements of 4.8.3 of ISO 4254-1:2008 shall apply.

5.2.2 Pick-up device

Protection against inadvertent contact with the pick-up device shall be provided by parts of the machine, guards, barriers or a combination of these. The position of parts which may be adjustable shall always remain within the limits specified in 5.2.2.1. The projection on a horizontal plane of these protective devices shall be continuous.

NOTE Requirements for the strength of barriers and guards are given in ISO 4254-1:2008, Annex C.

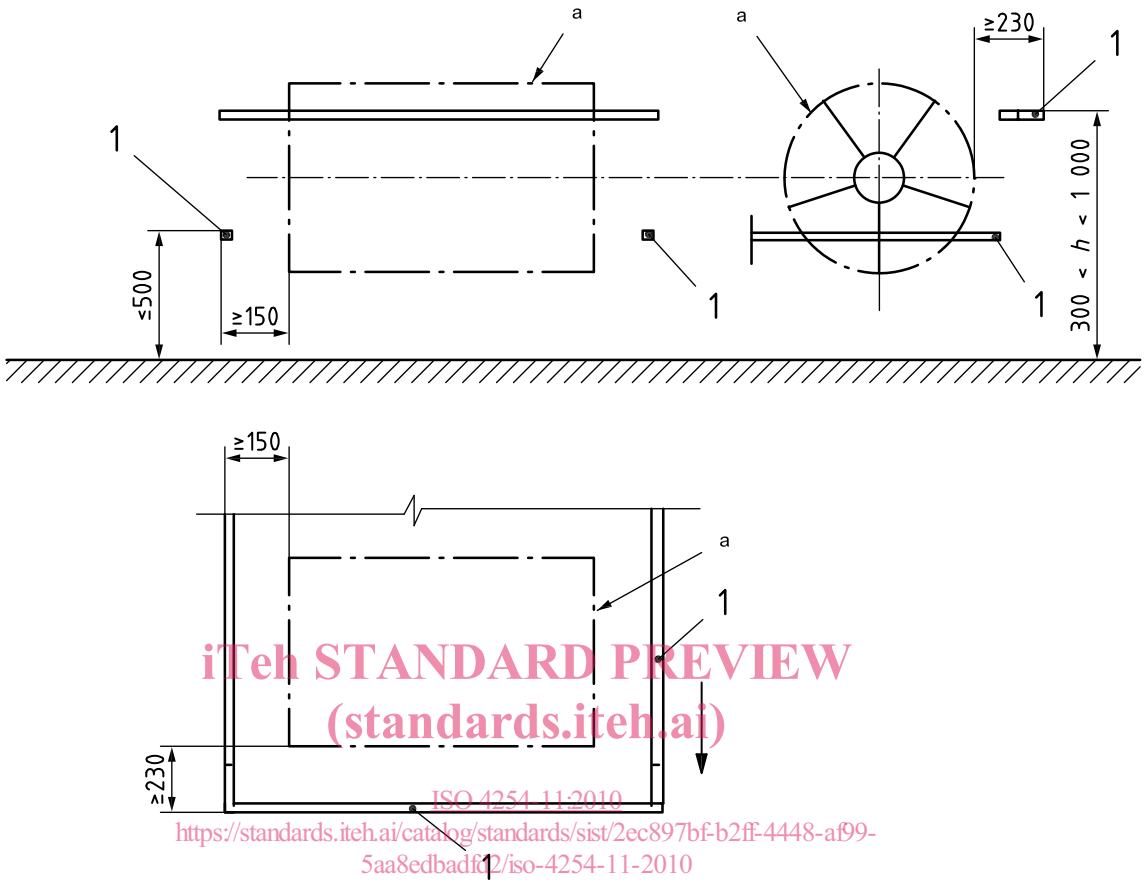
5.2.2.1 When the pick-up device is in the working position as defined in the operator's manual, these barriers shall be:

— a minimum of 230 mm in front of the most forward point of the tine path and at a height, h, as low as practicable between 300 mm and 1 000 mm above the ground, as defined in Figure 1;

— a minimum of 150 mm from the sides of the tine path at a maximum height above the ground of 500 mm (see Figure 1). If the tine path is totally covered by a part of the machine when viewed from the side, as defined and shown in Figure 2, this barrier is not required.

5.2.2.2 When the pick-up device is in the working position, side guards, if fitted, shall be located in accordance with Figure 2.

Dimensions in millimetres



Key

1 barrier

a Tine path.

NOTE This figure illustrates an example of protective devices complying with 5.2.2.

Figure 1 — Guarding of the pick-up device definable by a combination of barriers